

|   |                                 |         |         |        |
|---|---------------------------------|---------|---------|--------|
| 1 | Hapmap43437-BTA-101873          | 0       | 135098  |        |
| 1 | ARS-BFGL-NGS-16466              | 0       | 267940  |        |
| 1 | ARS-BFGL-NGS-105096             | 0       | 353745  |        |
| 1 | Hapmap34944-BES1_Contig627_1906 | 0       |         | 393248 |
| 1 | BTA-07251-no-rs                 | 0       | 434180  |        |
| 1 | ARS-BFGL-NGS-98142              | 0       | 471078  |        |
| 1 | Hapmap53946-rs29015852          | 0       | 516404  |        |
| 1 | ARS-BFGL-NGS-114208             | 0       | 533815  |        |
| 1 | ARS-BFGL-NGS-66449              | 0       | 571340  |        |
| 1 | ARS-BFGL-NGS-51647              | 0       | 654413  |        |
| 1 | ARS-BFGL-BAC-32770              | 0       | 845494  |        |
| 1 | ARS-BFGL-NGS-65067              | 0       | 883895  |        |
| 1 | ARS-BFGL-BAC-31497              | 0       | 905632  |        |
| 1 | ARS-BFGL-BAC-32722              | 0       | 929617  |        |
| 1 | ARS-BFGL-BAC-34682              | 0       | 950841  |        |
| 1 | ARS-BFGL-NGS-39640              | 974586  |         |        |
| 1 | ARS-BFGL-NGS-98203              | 0       | 1009504 |        |
| 1 | ARS-BFGL-BAC-36895              | 0       | 1078256 |        |
| 1 | ARS-BFGL-BAC-23760              | 1114422 |         |        |
| 1 | ARS-BFGL-BAC-31722              | 0       | 1189382 |        |
| 1 | BTA-49284-no-rs                 | 0       | 1209308 |        |
| 1 | ARS-BFGL-BAC-65570              | 1234172 |         |        |
| 1 | ARS-BFGL-BAC-71960              | 1264369 |         |        |
| 1 | ARS-BFGL-BAC-12931              | 0       | 1288510 |        |
| 1 | ARS-BFGL-BAC-649                | 0       | 1312323 |        |
| 1 | ARS-BFGL-BAC-14857              | 0       | 1336351 |        |
| 1 | Hapmap53766-ss46526150          | 0       | 1359951 |        |
| 1 | ARS-BFGL-NGS-115971             | 0       | 1385605 |        |
| 1 | ARS-BFGL-NGS-62826              | 0       | 1436503 |        |
| 1 | BTA-39394-no-rs                 | 0       | 1513277 |        |
| 1 | ARS-BFGL-NGS-109301             | 0       | 1543411 |        |
| 1 | ARS-BFGL-NGS-105306             | 0       | 1582828 |        |
| 1 | ARS-BFGL-NGS-87636              | 0       | 1603944 |        |
| 1 | Hapmap24070-BTA-123581          | 0       | 1625471 |        |
| 1 | ARS-BFGL-NGS-39992              | 0       | 1668494 |        |
| 1 | ARS-BFGL-BAC-13059              | 0       | 1760113 |        |
| 1 | ARS-BFGL-BAC-14930              | 0       | 1782724 |        |
| 1 | ARS-BFGL-BAC-15552              | 0       | 1805584 |        |
| 1 | ARS-BFGL-BAC-15580              | 0       | 1828653 |        |
| 1 | ARS-BFGL-NGS-11433              | 0       | 1851399 |        |
| 1 | ARS-BFGL-NGS-25183              | 0       | 1896112 |        |
| 1 | ARS-BFGL-NGS-76349              | 0       | 1921756 |        |
| 1 | ARS-BFGL-BAC-16253              | 0       | 1953465 |        |
| 1 | ARS-BFGL-BAC-73170              | 1983902 |         |        |
| 1 | ARS-BFGL-NGS-29653              | 0       | 2049400 |        |
| 1 | ARS-BFGL-BAC-14982              | 0       | 2089647 |        |
| 1 | BTA-120704-no-rs                | 0       | 2128924 |        |
| 1 | ARS-BFGL-BAC-67330              | 2173375 |         |        |
| 1 | ARS-BFGL-NGS-85297              | 0       | 2211567 |        |
| 1 | ARS-BFGL-NGS-16727              | 0       | 2291153 |        |
| 1 | ARS-BFGL-NGS-115671             | 0       | 2313042 |        |
| 1 | ARS-BFGL-NGS-71085              | 0       | 2393763 |        |
| 1 | ARS-BFGL-NGS-21352              | 0       | 2415018 |        |
| 1 | ARS-BFGL-NGS-103391             | 0       | 2462297 |        |

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| 1 | ARS-BFGL-NGS-22858                    | 0 | 2524748 |  |  |
| 1 | ARS-BFGL-NGS-92033                    | 0 | 2582894 |  |  |
| 1 | ARS-BFGL-NGS-89044                    | 0 | 2645246 |  |  |
| 1 | ARS-BFGL-NGS-79093                    | 0 | 2676888 |  |  |
| 1 | ARS-BFGL-NGS-58892                    | 0 | 2714141 |  |  |
| 1 | ARS-BFGL-NGS-98287                    | 0 | 2749920 |  |  |
| 1 | BTB-00001612                          | 0 | 2771830 |  |  |
| 1 | Hapmap53592-rs29009975                | 0 | 2799458 |  |  |
| 1 | ARS-BFGL-NGS-15775                    | 0 | 2847001 |  |  |
| 1 | ARS-BFGL-NGS-101618                   | 0 | 2909025 |  |  |
| 1 | BTB-00001299                          | 0 | 2942947 |  |  |
| 1 | ARS-BFGL-NGS-37412                    | 0 | 2977063 |  |  |
| 1 | ARS-BFGL-NGS-16784                    | 0 | 3010948 |  |  |
| 1 | BTB-02081949                          | 0 | 3079342 |  |  |
| 1 | BTB-00001074                          | 0 | 3116101 |  |  |
| 1 | ARS-BFGL-NGS-43924                    | 0 | 3148834 |  |  |
| 1 | ARS-BFGL-NGS-30999                    | 0 | 3197378 |  |  |
| 1 | Hapmap57114-rs29012843                | 0 | 3248926 |  |  |
| 1 | ARS-USMARC-Parent-DQ381153-rs29012842 | 0 | 3249057 |  |  |
| 1 | ARS-BFGL-NGS-37505                    | 0 | 3295844 |  |  |
| 1 | ARS-BFGL-NGS-107481                   | 0 | 3343059 |  |  |
| 1 | ARS-BFGL-NGS-108686                   | 0 | 3377291 |  |  |
| 1 | BTA-31687-no-rs                       | 0 | 3404571 |  |  |
| 1 | ARS-BFGL-NGS-36096                    | 0 | 3433611 |  |  |
| 1 | BTA-32603-no-rs                       | 0 | 3459530 |  |  |
| 1 | ARS-BFGL-NGS-109014                   | 0 | 3495838 |  |  |
| 1 | ARS-BFGL-NGS-69957                    | 0 | 3541738 |  |  |
| 1 | ARS-BFGL-NGS-43005                    | 0 | 3568205 |  |  |
| 1 | Hapmap59750-rs29024375                | 0 | 3601437 |  |  |
| 1 | BTB-00002335                          | 0 | 3628012 |  |  |
| 1 | ARS-BFGL-NGS-107287                   | 0 | 3649944 |  |  |
| 1 | Hapmap42514-BTA-33574                 | 0 | 3687110 |  |  |
| 1 | ARS-BFGL-NGS-81011                    | 0 | 3792863 |  |  |
| 1 | BTB-00003162                          | 0 | 3846214 |  |  |
| 1 | BTB-00003073                          | 0 | 3873380 |  |  |
| 1 | BTB-00002966                          | 0 | 3913742 |  |  |
| 1 | ARS-BFGL-BAC-15173                    | 0 | 3953844 |  |  |
| 1 | BTB-00002874                          | 0 | 3999035 |  |  |
| 1 | BTA-34568-no-rs                       | 0 | 4029125 |  |  |
| 1 | Hapmap42913-BTA-33619                 | 0 | 4052161 |  |  |
| 1 | BTA-33606-no-rs                       | 0 | 4076896 |  |  |
| 1 | BTB-00002687                          | 0 | 4104195 |  |  |
| 1 | BTB-01747944                          | 0 | 4282516 |  |  |
| 1 | BTB-01991572                          | 0 | 4290404 |  |  |
| 1 | BTB-02105769                          | 0 | 4311365 |  |  |
| 1 | ARS-BFGL-NGS-65157                    | 0 | 4348137 |  |  |
| 1 | BTB-01996267                          | 0 | 4451105 |  |  |
| 1 | Hapmap38555-BTA-101264                | 0 | 4602508 |  |  |
| 1 | BTB-01160486                          | 0 | 4648383 |  |  |
| 1 | Hapmap60540-rs29021339                | 0 | 4727118 |  |  |
| 1 | BTB-01160333                          | 0 | 4755056 |  |  |
| 1 | Hapmap60652-rs29022048                | 0 | 4784221 |  |  |
| 1 | BTB-01160178                          | 0 | 4827245 |  |  |
| 1 | ARS-BFGL-NGS-111125                   | 0 | 4910208 |  |  |

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| 1 | BTB-01160026                     | 0 | 4933748 |         |
| 1 | BTB-01159977                     | 0 | 4957717 |         |
| 1 | Hapmap44178-BTA-101248           | 0 | 5010974 |         |
| 1 | ARS-BFGL-NGS-114983              | 0 | 5034441 |         |
| 1 | BTB-01728863                     | 0 | 5179453 |         |
| 1 | BTB-00003983                     | 0 | 5215680 |         |
| 1 | ARS-BFGL-NGS-100349              | 0 | 5319965 |         |
| 1 | BTA-123503-no-rs                 | 0 | 5351369 |         |
| 1 | BTA-122021-no-rs                 | 0 | 5374084 |         |
| 1 | BTB-00003770                     | 0 | 5398072 |         |
| 1 | BTB-00003715                     | 0 | 5428215 |         |
| 1 | Hapmap38892-BTA-36614            | 0 | 5496635 |         |
| 1 | BTB-00003652                     | 0 | 5519845 |         |
| 1 | BTA-120711-no-rs                 | 0 | 5541297 |         |
| 1 | BTA-36594-no-rs                  | 0 | 5568133 |         |
| 1 | BTA-35637-no-rs                  | 0 | 5610335 |         |
| 1 | ARS-BFGL-NGS-115182              | 0 | 5649323 |         |
| 1 | BTA-35610-no-rs                  | 0 | 5671987 |         |
| 1 | BTA-35598-no-rs                  | 0 | 5712202 |         |
| 1 | Hapmap58931-rs29010773           | 0 | 5741816 |         |
| 1 | BTA-15152-rs29026517             | 0 | 5776974 |         |
| 1 | BTB-01560572                     | 0 | 5821018 |         |
| 1 | BTB-01560539                     | 0 | 5849779 |         |
| 1 | BTB-01560502                     | 0 | 5880498 |         |
| 1 | Hapmap36132-SCAFFOLD45728_8109   | 0 |         | 5906404 |
| 1 | ARS-BFGL-NGS-113844              | 0 | 5936648 |         |
| 1 | ARS-BFGL-NGS-28832               | 0 | 5962522 |         |
| 1 | BTB-01489336                     | 0 | 5997487 |         |
| 1 | ARS-BFGL-NGS-115389              | 0 | 6024691 |         |
| 1 | BTB-01489466                     | 0 | 6082018 |         |
| 1 | Hapmap56173-ss46526166           | 0 | 6154638 |         |
| 1 | Hapmap51901-BTA-42438            | 0 | 6187555 |         |
| 1 | BTA-43315-no-rs                  | 0 | 6254730 |         |
| 1 | ARS-BFGL-NGS-109057              | 0 | 6307443 |         |
| 1 | ARS-BFGL-NGS-41525               | 0 | 6383413 |         |
| 1 | Hapmap34831-BES10_Contig712_1090 | 0 |         | 6432366 |
| 1 | UA-IFASA-8265                    | 0 | 6492449 |         |
| 1 | BTA-44295-no-rs                  | 0 | 6526757 |         |
| 1 | BTA-45181-no-rs                  | 0 | 6623322 |         |
| 1 | BTA-45221-no-rs                  | 0 | 6674252 |         |
| 1 | Hapmap39203-BTA-46163            | 0 | 6821798 |         |
| 1 | ARS-BFGL-NGS-96381               | 0 | 6846585 |         |
| 1 | BTA-46228-no-rs                  | 0 | 6882069 |         |
| 1 | BTA-46243-no-rs                  | 0 | 6940697 |         |
| 1 | BTA-47159-no-rs                  | 0 | 6967148 |         |
| 1 | BTA-16441-no-rs                  | 0 | 7013625 |         |
| 1 | ARS-BFGL-NGS-62077               | 0 | 7035977 |         |
| 1 | BTB-00004951                     | 0 | 7162655 |         |
| 1 | ARS-BFGL-NGS-38621               | 0 | 7212793 |         |
| 1 | ARS-BFGL-NGS-103833              | 0 | 7260284 |         |
| 1 | Hapmap44081-BTA-48210            | 0 | 7297592 |         |
| 1 | ARS-BFGL-NGS-114174              | 0 | 7344117 |         |
| 1 | BTA-48234-no-rs                  | 0 | 7370460 |         |
| 1 | BTA-29644-no-rs                  | 0 | 7405025 |         |

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| 1 | Hapmap48967-BTA-97940  | 0 | 7483936  |
| 1 | BTB-01493780           | 0 | 7530524  |
| 1 | Hapmap48369-BTA-50306  | 0 | 7627111  |
| 1 | BTA-50285-no-rs        | 0 | 7669386  |
| 1 | Hapmap41255-BTA-40460  | 0 | 7706031  |
| 1 | BTA-114657-no-rs       | 0 | 7728571  |
| 1 | ARS-BFGL-NGS-116504    | 0 | 7755400  |
| 1 | BTA-114662-no-rs       | 0 | 7782816  |
| 1 | ARS-BFGL-NGS-105113    | 0 | 7943430  |
| 1 | ARS-BFGL-NGS-44292     | 0 | 8054589  |
| 1 | ARS-BFGL-BAC-32146     | 0 | 8132280  |
| 1 | Hapmap42827-BTA-116887 | 0 | 8148041  |
| 1 | BTA-116886-no-rs       | 0 | 8169172  |
| 1 | ARS-BFGL-NGS-109383    | 0 | 8217339  |
| 1 | Hapmap54851-rs29025437 | 0 | 8286930  |
| 1 | ARS-BFGL-NGS-119108    | 0 | 8347160  |
| 1 | BTA-94232-no-rs        | 0 | 8377141  |
| 1 | ARS-BFGL-BAC-27364     | 0 | 8437530  |
| 1 | BTA-120428-no-rs       | 0 | 8519686  |
| 1 | Hapmap49483-BTA-120432 | 0 | 8627862  |
| 1 | Hapmap59566-rs29024165 | 0 | 8837296  |
| 1 | BTA-120430-no-rs       | 0 | 8895681  |
| 1 | Hapmap58026-ss46526282 | 0 | 8963404  |
| 1 | Hapmap52559-rs29015773 | 0 | 8998063  |
| 1 | ARS-BFGL-NGS-118398    | 0 | 9019409  |
| 1 | ARS-BFGL-NGS-40533     | 0 | 9072009  |
| 1 | ARS-BFGL-NGS-14644     | 0 | 9114098  |
| 1 | Hapmap39995-BTA-39516  | 0 | 9323844  |
| 1 | Hapmap50953-BTA-39491  | 0 | 9375752  |
| 1 | BTA-38496-no-rs        | 0 | 9404794  |
| 1 | ARS-BFGL-NGS-41048     | 0 | 9484167  |
| 1 | ARS-BFGL-NGS-113570    | 0 | 9601018  |
| 1 | Hapmap54975-rs29019203 | 0 | 9636803  |
| 1 | Hapmap49138-BTA-37549  | 0 | 9768177  |
| 1 | UA-IFASA-5979          | 0 | 9852144  |
| 1 | ARS-BFGL-NGS-548       | 0 | 9900095  |
| 1 | ARS-BFGL-NGS-43310     | 0 | 9940497  |
| 1 | Hapmap38887-BTA-22281  | 0 | 9982398  |
| 1 | Hapmap57724-rs29022825 | 0 | 10056851 |
| 1 | Hapmap44892-BTA-50337  | 0 | 10102749 |
| 1 | BTA-50328-no-rs        | 0 | 10125531 |
| 1 | Hapmap25334-BTA-160518 | 0 | 10274301 |
| 1 | ARS-BFGL-NGS-113551    | 0 | 10369662 |
| 1 | Hapmap51416-BTA-19350  | 0 | 10416295 |
| 1 | ARS-BFGL-NGS-113751    | 0 | 10468415 |
| 1 | Hapmap49509-BTA-17127  | 0 | 10587853 |
| 1 | BTA-122626-no-rs       | 0 | 10643238 |
| 1 | Hapmap60823-rs29019235 | 0 | 10717144 |
| 1 | ARS-BFGL-NGS-36767     | 0 | 10776728 |
| 1 | Hapmap40304-BTA-17131  | 0 | 10848225 |
| 1 | ARS-BFGL-NGS-84168     | 0 | 10925802 |
| 1 | Hapmap38737-BTA-22640  | 0 | 11023298 |
| 1 | Hapmap54322-rs29009637 | 0 | 11158004 |
| 1 | Hapmap43814-BTA-22629  | 0 | 11221889 |

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| 1 | BTA-22639-no-rs        | 0 | 11255831 |
| 1 | Hapmap40340-BTA-19161  | 0 | 11290827 |
| 1 | Hapmap55642-rs29027263 | 0 | 11379578 |
| 1 | BTA-29334-no-rs        | 0 | 11400265 |
| 1 | Hapmap50731-BTA-55344  | 0 | 11603310 |
| 1 | BTA-55326-no-rs        | 0 | 11635104 |
| 1 | ARS-BFGL-NGS-115663    | 0 | 11743590 |
| 1 | ARS-BFGL-BAC-13575     | 0 | 11767093 |
| 1 | BTA-54331-no-rs        | 0 | 11818998 |
| 1 | Hapmap55464-rs29015665 | 0 | 11865992 |
| 1 | BTA-54318-no-rs        | 0 | 11887794 |
| 1 | Hapmap24370-BTA-123717 | 0 | 11982766 |
| 1 | BTB-00005611           | 0 | 12196038 |
| 1 | ARS-BFGL-NGS-28701     | 0 | 12223821 |
| 1 | ARS-BFGL-BAC-14244     | 0 | 12342374 |
| 1 | Hapmap60346-rs29019231 | 0 | 12380238 |
| 1 | Hapmap28058-BTA-161831 | 0 | 12468631 |
| 1 | Hapmap38791-BTA-89194  | 0 | 12587339 |
| 1 | ARS-BFGL-BAC-11044     | 0 | 12805406 |
| 1 | ARS-BFGL-BAC-11034     | 0 | 12839893 |
| 1 | Hapmap41477-BTA-20618  | 0 | 12889396 |
| 1 | ARS-BFGL-BAC-685       | 0 | 12996787 |
| 1 | BTA-93452-no-rs        | 0 | 13019983 |
| 1 | Hapmap24222-BTA-88936  | 0 | 13089432 |
| 1 | ARS-BFGL-BAC-673       | 0 | 13220647 |
| 1 | Hapmap61111-rs29019811 | 0 | 13258809 |
| 1 | ARS-BFGL-NGS-21333     | 0 | 13304658 |
| 1 | BTA-89311-no-rs        | 0 | 13376687 |
| 1 | Hapmap38049-BTA-104527 | 0 | 13462673 |
| 1 | BTA-103292-no-rs       | 0 | 13979316 |
| 1 | ARS-BFGL-NGS-26402     | 0 | 14025660 |
| 1 | Hapmap24335-BTA-127763 | 0 | 14064065 |
| 1 | ARS-BFGL-BAC-14883     | 0 | 14102864 |
| 1 | ARS-BFGL-NGS-104754    | 0 | 14260986 |
| 1 | Hapmap52363-rs29013338 | 0 | 14417802 |
| 1 | ARS-BFGL-NGS-27558     | 0 | 14438946 |
| 1 | ARS-BFGL-NGS-107530    | 0 | 14468037 |
| 1 | BTB-01807638           | 0 | 14502746 |
| 1 | BTA-28028-no-rs        | 0 | 14551165 |
| 1 | BTB-00502293           | 0 | 14587033 |
| 1 | BTB-00502247           | 0 | 14626307 |
| 1 | BTB-00502081           | 0 | 14669727 |
| 1 | BTB-01487662           | 0 | 14693262 |
| 1 | BTA-97382-no-rs        | 0 | 14708162 |
| 1 | BTB-01224604           | 0 | 14853644 |
| 1 | Hapmap51685-BTA-113867 | 0 | 14876816 |
| 1 | Hapmap50227-BTA-113868 | 0 | 14909272 |
| 1 | BTB-01224765           | 0 | 14961941 |
| 1 | ARS-BFGL-NGS-78179     | 0 | 15048776 |
| 1 | ARS-BFGL-NGS-102441    | 0 | 15071831 |
| 1 | ARS-BFGL-BAC-13008     | 0 | 15091381 |
| 1 | BTB-01225182           | 0 | 15109714 |
| 1 | BTA-113886-no-rs       | 0 | 15122719 |
| 1 | BTA-113888-no-rs       | 0 | 15149266 |

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| 1 | BTB-01225435           | 0 | 15188359 |
| 1 | Hapmap58809-rs29017514 | 0 | 15528039 |
| 1 | BTB-01193748           | 0 | 15562295 |
| 1 | BTB-01193581           | 0 | 15605365 |
| 1 | BTB-00569345           | 0 | 15646164 |
| 1 | ARS-BFGL-NGS-95377     | 0 | 15677492 |
| 1 | BTB-00569130           | 0 | 15713535 |
| 1 | BTB-01193494           | 0 | 15755523 |
| 1 | ARS-BFGL-NGS-109692    | 0 | 15796320 |
| 1 | Hapmap41782-BTA-16216  | 0 | 15853040 |
| 1 | BTB-01999110           | 0 | 15893046 |
| 1 | ARS-BFGL-NGS-32422     | 0 | 15937076 |
| 1 | UA-IFASA-6298          | 0 | 15976386 |
| 1 | BTA-110801-no-rs       | 0 | 16094228 |
| 1 | BTB-01650452           | 0 | 16119771 |
| 1 | Hapmap50624-BTA-22932  | 0 | 16145053 |
| 1 | BTB-01919348           | 0 | 16196001 |
| 1 | BTB-01084253           | 0 | 16245203 |
| 1 | BTB-01084177           | 0 | 16277524 |
| 1 | BTB-01084226           | 0 | 16367685 |
| 1 | BTB-01083987           | 0 | 16452185 |
| 1 | Hapmap51162-BTA-118728 | 0 | 16477085 |
| 1 | ARS-BFGL-NGS-22727     | 0 | 16525498 |
| 1 | BTB-01872049           | 0 | 16585111 |
| 1 | BTA-118719-no-rs       | 0 | 16673009 |
| 1 | Hapmap60239-rs29019581 | 0 | 16715975 |
| 1 | Hapmap39625-BTA-118605 | 0 | 16744848 |
| 1 | Hapmap25883-BTA-155422 | 0 | 16797316 |
| 1 | BTB-00757818           | 0 | 16831770 |
| 1 | BTB-00757868           | 0 | 16886289 |
| 1 | BTB-00757888           | 0 | 16923285 |
| 1 | ARS-BFGL-NGS-51809     | 0 | 16963232 |
| 1 | BTA-118731-no-rs       | 0 | 16997662 |
| 1 | Hapmap55434-rs29009793 | 0 | 17021138 |
| 1 | ARS-BFGL-BAC-11101     | 0 | 17050262 |
| 1 | BTB-01083468           | 0 | 17073972 |
| 1 | Hapmap44195-BTA-112008 | 0 | 17124625 |
| 1 | Hapmap54349-rs29011587 | 0 | 17160556 |
| 1 | Hapmap48613-BTA-112066 | 0 | 17296638 |
| 1 | BTA-20344-no-rs        | 0 | 17330771 |
| 1 | BTB-01846351           | 0 | 17358448 |
| 1 | ARS-BFGL-NGS-112632    | 0 | 17425222 |
| 1 | BTB-00005987           | 0 | 17448939 |
| 1 | Hapmap44269-BTA-67047  | 0 | 17504974 |
| 1 | ARS-BFGL-NGS-104769    | 0 | 17641624 |
| 1 | ARS-BFGL-NGS-26632     | 0 | 17790637 |
| 1 | BTB-00006408           | 0 | 17868835 |
| 1 | Hapmap28603-BTA-123758 | 0 | 17930486 |
| 1 | ARS-BFGL-NGS-99611     | 0 | 18002981 |
| 1 | BTB-01511592           | 0 | 18028700 |
| 1 | BTB-01511655           | 0 | 18052292 |
| 1 | BTB-01511695           | 0 | 18099231 |
| 1 | BTB-01511764           | 0 | 18131757 |
| 1 | BTB-01931918           | 0 | 18170722 |

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| 1 | Hapmap60697-rs29009870 | 0 | 18188932 |
| 1 | Hapmap50395-BTA-57301  | 0 | 18231821 |
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| 1 | ARS-BFGL-NGS-74290     |   | 18946871 |
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| 1 | ARS-BFGL-NGS-29732     | 0 | 19182174 |
| 1 | BTA-109550-no-rs       | 0 | 19321965 |
| 1 | Hapmap38278-BTA-104803 | 0 | 19431193 |
| 1 | BTA-119061-no-rs       | 0 | 19592552 |
| 1 | BTA-39399-no-rs        | 0 | 19641727 |
| 1 | UA-IFASA-3994          | 0 | 19667901 |
| 1 | ARS-BFGL-BAC-11761     | 0 | 19709807 |
| 1 | Hapmap43257-BTA-39396  | 0 | 19743015 |
| 1 | ARS-BFGL-BAC-11750     | 0 | 19778380 |
| 1 | Hapmap51222-BTA-39456  | 0 | 19805218 |
| 1 | ARS-BFGL-NGS-34218     | 0 | 19829143 |
| 1 | Hapmap51978-BTA-39455  | 0 | 19854736 |
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| 1 | ARS-BFGL-NGS-116430    | 0 | 20084515 |
| 1 | Hapmap49594-BTA-39447  | 0 | 20165566 |
| 1 | ARS-BFGL-BAC-15578     | 0 | 20192420 |
| 1 | ARS-BFGL-NGS-10334     | 0 | 20213558 |
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| 1 | Hapmap28298-BTA-123775 | 0 | 20342544 |
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| 1 | Hapmap54489-rs29018413 | 0 | 20594409 |
| 1 | Hapmap60044-rs29010295 | 0 | 20634675 |
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| 1 | Hapmap53902-rs29027390 | 0 | 21224496 |
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| 1 | BTB-01210202                   | 0 | 21330326 |          |  |
| 1 | Hapmap34985-BES1_Contig424_935 | 0 |          | 21355656 |  |
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| 1 | BTB-01798639                   | 0 | 21747892 |          |  |
| 1 | BTA-07140-rs29026807           | 0 | 21772072 |          |  |
| 1 | BTB-01116193                   | 0 | 21800968 |          |  |
| 1 | ARS-BFGL-NGS-51361             | 0 | 21864313 |          |  |
| 1 | ARS-BFGL-BAC-15637             | 0 | 21925903 |          |  |
| 1 | UA-IFASA-9053                  | 0 | 21965277 |          |  |
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| 1 | ARS-BFGL-NGS-117957            | 0 | 22031001 |          |  |
| 1 | BTB-00010729                   | 0 | 22074275 |          |  |
| 1 | BTA-59229-no-rs                | 0 | 22110938 |          |  |
| 1 | BTB-00010930                   | 0 | 22148647 |          |  |
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| 1 | BTB-01548042                   | 0 | 22720015 |          |  |
| 1 | BTB-01438016                   | 0 | 22823600 |          |  |
| 1 | ARS-BFGL-NGS-46591             | 0 | 22863734 |          |  |
| 1 | BTB-01562871                   | 0 | 22888847 |          |  |
| 1 | Hapmap52694-rs29013683         | 0 | 22943646 |          |  |
| 1 | ARS-BFGL-NGS-97225             | 0 | 22985729 |          |  |
| 1 | BTB-01153475                   | 0 | 23071253 |          |  |
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| 1 | ARS-BFGL-BAC-16283             | 0 | 23489264 |          |  |
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| 1 | BTA-49259-no-rs                | 0 | 23734326 |          |  |
| 1 | BTA-49269-no-rs                | 0 | 23794188 |          |  |
| 1 | Hapmap39273-BTA-49264          | 0 | 23847228 |          |  |
| 1 | BTB-01976950                   | 0 | 23869907 |          |  |
| 1 | BTB-00007697                   | 0 | 23920676 |          |  |



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| 1 | ARS-BFGL-NGS-103546    | 0 | 23973432 |
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| 1 | BTB-00007842           | 0 | 24032482 |
| 1 | BTB-00007882           | 0 | 24057738 |
| 1 | Hapmap52764-rs29022780 | 0 | 24143414 |
| 1 | BTA-39462-no-rs        | 0 | 24166595 |
| 1 | BTB-00008090           | 0 | 24196197 |
| 1 | ARS-BFGL-NGS-57091     | 0 | 24223635 |
| 1 | BTA-49236-no-rs        | 0 | 24255576 |
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| 1 | BTB-00010532           | 0 | 24692046 |
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| 1 | ARS-BFGL-NGS-85045     | 0 | 24779790 |
| 1 | Hapmap39274-BTA-49324  | 0 | 24802375 |
| 1 | ARS-BFGL-NGS-115371    | 0 | 24835526 |
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| 1 | BTA-49319-no-rs        | 0 | 24920136 |
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| 1 | BTA-49289-no-rs        | 0 | 25154731 |
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| 1 | ARS-BFGL-BAC-13724     | 0 | 26223335 |
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| 1 | ARS-BFGL-BAC-58340     |   | 26710358 |
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| 1 | Hapmap33501-BTA-152681 | 0 | 26966818 |
| 1 | BTA-108804-no-rs       | 0 | 27034490 |
| 1 | Hapmap29626-BTA-155192 | 0 | 27057982 |
| 1 | Hapmap52574-rs29013556 | 0 | 27101326 |
| 1 | Hapmap42876-BTA-23541  | 0 | 27145992 |
| 1 | ARS-BFGL-NGS-115015    | 0 | 27181523 |
| 1 | BTB-00011225           | 0 | 27249385 |
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| 1 | ARS-BFGL-NGS-46004     | 0 | 27357510 |
| 1 | BTA-59258-no-rs        | 0 | 27434665 |
| 1 | Hapmap50048-BTA-59263  | 0 | 27465349 |
| 1 | Hapmap51266-BTA-59273  | 0 | 27554075 |
| 1 | BTB-01285382           | 0 | 27786985 |
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| 1 | ARS-BFGL-NGS-111117    | 0 | 28012133 |
| 1 | BTB-01285855           | 0 | 28034525 |
| 1 | Hapmap59457-rs29010971 | 0 | 28074319 |
| 1 | BTB-01285931           | 0 | 28111487 |
| 1 | BTB-01334157           | 0 | 28162105 |
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| 1 | ARS-BFGL-BAC-15050     | 0 | 28242625 |
| 1 | BTB-01333903           | 0 | 28362687 |
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| 1 | Hapmap28062-BTA-163502 | 0 | 28485185 |
| 1 | BTB-00012150           | 0 | 28572974 |
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| 1 | BTA-59279-no-rs        | 0 | 28965587 |
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| 1 | ARS-BFGL-NGS-100058    | 0 | 29130628 |
| 1 | ARS-BFGL-NGS-74692     | 0 | 29151717 |
| 1 | BTB-00012560           | 0 | 29195211 |
| 1 | Hapmap40010-BTA-59286  | 0 | 29242993 |
| 1 | BTB-00012627           | 0 | 29273705 |

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| 1 | ARS-BFGL-BAC-11193                    | 0 | 29303546 |   |          |
| 1 | ARS-BFGL-NGS-24142                    | 0 | 29420091 |   |          |
| 1 | ARS-BFGL-NGS-101348                   | 0 | 29454246 |   |          |
| 1 | ARS-BFGL-NGS-114084                   | 0 | 29507209 |   |          |
| 1 | ARS-USMARC-Parent-DQ451555-rs29010795 | 0 | 29524658 | 0 | 29524658 |
| 1 | BTB-00013095                          | 0 | 29624956 |   |          |
| 1 | ARS-BFGL-NGS-40513                    | 0 | 29655324 |   |          |
| 1 | BTB-02049040                          | 0 | 29696010 |   |          |
| 1 | BTB-00013185                          | 0 | 29703470 |   |          |
| 1 | ARS-BFGL-BAC-73590                    | 0 | 29763188 |   |          |
| 1 | BTA-59299-no-rs                       | 0 | 29807709 |   |          |
| 1 | BTB-00013370                          | 0 | 29849130 |   |          |
| 1 | BTA-59305-no-rs                       | 0 | 29889334 |   |          |
| 1 | BTB-00013460                          | 0 | 29917811 |   |          |
| 1 | ARS-BFGL-BAC-73690                    | 0 | 29984406 |   |          |
| 1 | ARS-BFGL-NGS-14285                    | 0 | 30024945 |   |          |
| 1 | BTA-29609-no-rs                       | 0 | 30101706 |   |          |
| 1 | BTB-01370718                          | 0 | 30156822 |   |          |
| 1 | BTB-01884758                          | 0 | 30185657 |   |          |
| 1 | BTB-01490065                          | 0 | 30224415 |   |          |
| 1 | ARS-BFGL-NGS-73149                    | 0 | 30259943 |   |          |
| 1 | BTA-97531-no-rs                       | 0 | 30333360 |   |          |
| 1 | BTB-01490270                          | 0 | 30414871 |   |          |
| 1 | BTB-01739066                          | 0 | 30465288 |   |          |
| 1 | BTA-18114-no-rs                       | 0 | 30543596 |   |          |
| 1 | ARS-BFGL-NGS-40158                    | 0 | 30570926 |   |          |
| 1 | ARS-BFGL-BAC-11830                    | 0 | 30606444 |   |          |
| 1 | BTB-01303393                          | 0 | 30655372 |   |          |
| 1 | BTB-01303334                          | 0 | 30701874 |   |          |
| 1 | BTA-87372-no-rs                       | 0 | 30724028 |   |          |
| 1 | BTA-41946-no-rs                       | 0 | 30744150 |   |          |
| 1 | Hapmap32039-BTA-131798                | 0 | 30813844 |   |          |
| 1 | Hapmap50687-BTA-41950                 | 0 | 30865885 |   |          |
| 1 | BTB-00013894                          | 0 | 30987508 |   |          |
| 1 | ARS-BFGL-NGS-97949                    | 0 | 31013633 |   |          |
| 1 | BTB-00013847                          | 0 | 31038475 |   |          |
| 1 | BTA-110980-no-rs                      | 0 | 31173269 |   |          |
| 1 | BTB-01653833                          | 0 | 31206393 |   |          |
| 1 | BTB-01653794                          | 0 | 31239593 |   |          |
| 1 | BTB-01335754                          | 0 | 31269020 |   |          |
| 1 | BTB-01335860                          | 0 | 31325294 |   |          |
| 1 | Hapmap33671-BTA-153460                | 0 | 31407370 |   |          |
| 1 | ARS-BFGL-NGS-11623                    | 0 | 31551425 |   |          |
| 1 | BTB-01843131                          | 0 | 31659179 |   |          |
| 1 | ARS-BFGL-NGS-80747                    | 0 | 31700738 |   |          |
| 1 | BTB-01955576                          | 0 | 31815750 |   |          |
| 1 | ARS-BFGL-NGS-64530                    | 0 | 31840031 |   |          |
| 1 | BTB-01755357                          | 0 | 31870106 |   |          |
| 1 | BTB-02018681                          | 0 | 31923335 |   |          |
| 1 | BTB-00014284                          | 0 | 31991587 |   |          |
| 1 | Hapmap43017-BTA-69173                 | 0 | 32036293 |   |          |
| 1 | BTB-00014368                          | 0 | 32078797 |   |          |
| 1 | ARS-BFGL-NGS-11790                    | 0 | 32115552 |   |          |
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| 1 | BTB-00014500                    | 0 | 32207504 |          |  |
| 1 | BTB-00014527                    | 0 | 32251123 |          |  |
| 1 | Hapmap38175-BTA-69177           | 0 | 32309198 |          |  |
| 1 | Hapmap52004-BTA-69178           | 0 | 32340451 |          |  |
| 1 | BTB-00014686                    | 0 | 32411801 |          |  |
| 1 | BTB-00014722                    | 0 | 32449976 |          |  |
| 1 | BTB-00014850                    | 0 | 32509969 |          |  |
| 1 | BTB-00014929                    | 0 | 32558213 |          |  |
| 1 | BTB-00015102                    | 0 | 32598751 |          |  |
| 1 | BTA-69182-no-rs                 | 0 | 32640760 |          |  |
| 1 | BTB-00015164                    | 0 | 32700496 |          |  |
| 1 | Hapmap58994-rs29021251          | 0 | 32738897 |          |  |
| 1 | Hapmap40138-BTA-69192           | 0 | 32781614 |          |  |
| 1 | ARS-BFGL-NGS-19127              | 0 | 32883377 |          |  |
| 1 | BTB-00016647                    | 0 | 32905173 |          |  |
| 1 | BTA-69212-no-rs                 | 0 | 32961952 |          |  |
| 1 | Hapmap32679-BTA-69218           | 0 | 33004440 |          |  |
| 1 | BTB-00015939                    | 0 | 33036107 |          |  |
| 1 | BTB-00015961                    | 0 | 33068789 |          |  |
| 1 | BTB-00016058                    | 0 | 33098389 |          |  |
| 1 | Hapmap48855-BTA-69221           | 0 | 33125906 |          |  |
| 1 | BTA-69226-no-rs                 | 0 | 33176151 |          |  |
| 1 | BTB-00901823                    | 0 | 33284142 |          |  |
| 1 | BTB-00901868                    | 0 | 33305018 |          |  |
| 1 | BTB-00901957                    | 0 | 33343019 |          |  |
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| 1 | ARS-BFGL-NGS-45064              | 0 | 33487311 |          |  |
| 1 | ARS-BFGL-NGS-21650              | 0 | 33509735 |          |  |
| 1 | Hapmap43403-BTA-91448           | 0 | 33535419 |          |  |
| 1 | BTB-01419032                    | 0 | 33561227 |          |  |
| 1 | BTA-91456-no-rs                 | 0 | 33593708 |          |  |
| 1 | Hapmap34824-BES10_Contig592_452 | 0 |          | 33641578 |  |
| 1 | BTB-01419286                    | 0 | 33673851 |          |  |
| 1 | BTA-60805-no-rs                 | 0 | 33752708 |          |  |
| 1 | BTB-00929993                    | 0 | 33806073 |          |  |
| 1 | ARS-BFGL-BAC-11852              | 0 | 33883601 |          |  |
| 1 | Hapmap55373-rs29027574          | 0 | 33933829 |          |  |
| 1 | BTB-00930093                    | 0 | 33970922 |          |  |
| 1 | BTB-00930215                    | 0 | 33995685 |          |  |
| 1 | BTB-00930351                    | 0 | 34033754 |          |  |
| 1 | Hapmap49364-BTA-89353           | 0 | 34076119 |          |  |
| 1 | BTB-01965833                    | 0 | 34179096 |          |  |
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| 1 | Hapmap43629-BTA-60810           | 0 | 34240957 |          |  |
| 1 | BTB-00930398                    | 0 | 34274411 |          |  |
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| 1 | Hapmap47907-BTA-29493           | 0 | 34337867 |          |  |
| 1 | Hapmap43823-BTA-27227           | 0 | 34362750 |          |  |
| 1 | BTB-01890914                    | 0 | 34386012 |          |  |
| 1 | UA-IFASA-4161                   | 0 | 34407892 |          |  |
| 1 | BTB-01210899                    | 0 | 34450639 |          |  |
| 1 | ARS-BFGL-BAC-12481              | 0 | 34492226 |          |  |
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| 1 | BTA-79188-no-rs        | 0 | 34562999 |
| 1 | BTA-111131-no-rs       | 0 | 34584932 |
| 1 | BTB-01210835           | 0 | 34613754 |
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| 1 | BTB-01210766           | 0 | 34679130 |
| 1 | BTA-111133-no-rs       | 0 | 34734151 |
| 1 | ARS-BFGL-NGS-100434    | 0 | 34864497 |
| 1 | BTB-00016718           | 0 | 34903570 |
| 1 | BTB-00016701           | 0 | 34934516 |
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| 1 | Hapmap32018-BTA-123851 | 0 | 35157504 |
| 1 | BTB-00016898           | 0 | 35314693 |
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| 1 | BTB-01682411           | 0 | 35483657 |
| 1 | Hapmap24792-BTA-123860 | 0 | 35561495 |
| 1 | DPI-2                  | 0 | 35604177 |
| 1 | BTA-79199-no-rs        | 0 | 35631308 |
| 1 | ARS-BFGL-BAC-837       | 0 | 35692760 |
| 1 | BTB-00017157           | 0 | 35812530 |
| 1 | Hapmap40144-BTA-79228  | 0 | 35892692 |
| 1 | Hapmap41641-BTA-79222  | 0 | 35952652 |
| 1 | BTB-00017988           | 0 | 35993477 |
| 1 | ARS-BFGL-NGS-110234    | 0 | 36036600 |
| 1 | ARS-BFGL-BAC-49960     | 0 | 36059447 |
| 1 | Hapmap57330-rs29009759 | 0 | 36086641 |
| 1 | BTA-79216-no-rs        | 0 | 36119886 |
| 1 | Hapmap48471-BTA-79215  | 0 | 36161750 |
| 1 | BTB-00017697           | 0 | 36181744 |
| 1 | ARS-BFGL-BAC-11284     | 0 | 36209316 |
| 1 | ARS-BFGL-NGS-116207    | 0 | 36239709 |
| 1 | Hapmap50474-BTA-79209  | 0 | 36267086 |
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| 1 | BTA-79205-no-rs        | 0 | 36374201 |
| 1 | Hapmap43356-BTA-79201  | 0 | 36399349 |
| 1 | Hapmap50634-BTA-26738  | 0 | 36595968 |
| 1 | ARS-BFGL-NGS-44057     | 0 | 36636902 |
| 1 | ARS-BFGL-NGS-38419     | 0 | 36664556 |
| 1 | Hapmap49369-BTA-89952  | 0 | 36824286 |
| 1 | Hapmap52575-rs29013932 | 0 | 36874545 |
| 1 | BTA-115758-no-rs       | 0 | 36903496 |
| 1 | DPI-27                 | 0 | 36985868 |
| 1 | BTA-111760-no-rs       | 0 | 37017145 |
| 1 | DPI-28                 | 0 | 37046480 |
| 1 | ARS-BFGL-BAC-11938     | 0 | 37088650 |
| 1 | Hapmap46343-BTA-111768 | 0 | 37117597 |
| 1 | BTA-111771-no-rs       | 0 | 37174447 |
| 1 | ARS-BFGL-NGS-84905     | 0 | 37209389 |
| 1 | BTA-120277-no-rs       | 0 | 37245658 |
| 1 | BTA-89302-no-rs        | 0 | 37289127 |
| 1 | ARS-BFGL-NGS-12168     | 0 | 37321005 |
| 1 | ARS-BFGL-BAC-14429     | 0 | 37355979 |
| 1 | Hapmap39875-BTA-97144  | 0 | 37385708 |

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| 1 | ARS-BFGL-NGS-114608    | 0 | 37909243 |
| 1 | ARS-BFGL-NGS-103535    | 0 | 38054226 |
| 1 | BTA-115317-no-rs       | 0 | 38098101 |
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| 1 | ARS-BFGL-NGS-85768     | 0 | 38307976 |
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| 1 | Hapmap23652-BTA-16748  | 0 | 38488896 |
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| 1 | ARS-BFGL-NGS-97815     | 0 | 38624975 |
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| 1 | ARS-BFGL-NGS-84800     | 0 | 38700827 |
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| 1 | BTA-109574-no-rs       | 0 | 38811666 |
| 1 | Hapmap39970-BTA-117984 | 0 | 38863022 |
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| 1 | ARS-BFGL-NGS-84347     | 0 | 39083240 |
| 1 | ARS-BFGL-BAC-11946     | 0 | 39232695 |
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| 1 | Hapmap27571-BTA-123885 | 0 | 39500943 |
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| 1 | BTB-01806368           | 0 | 39779727 |
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| 1 | BTB-00018345           | 0 | 39973939 |
| 1 | BTB-01249999           | 0 | 40046179 |
| 1 | BTA-117821-no-rs       | 0 | 40078462 |
| 1 | BTA-122545-no-rs       | 0 | 40110845 |
| 1 | Hapmap51160-BTA-117818 | 0 | 40169491 |
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| 1 | Hapmap45471-BTA-117823 | 0 | 40379850 |
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| 1 | ARS-BFGL-NGS-111921    | 0 | 40427450 |

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| 1 | BTB-01952363                    | 0 | 40465985 |          |
| 1 | BTA-111731-no-rs                | 0 | 40495849 |          |
| 1 | ARS-BFGL-NGS-32825              | 0 | 40540792 |          |
| 1 | BTB-01462455                    | 0 | 40589118 |          |
| 1 | Hapmap34927-BES7_Contig453_1164 | 0 |          | 40621580 |
| 1 | Hapmap38709-BTA-88324           | 0 | 40656841 |          |
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| 1 | ARS-BFGL-NGS-45335              | 0 | 40879690 |          |
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| 1 | BTB-01135743                    | 0 | 41067306 |          |
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| 1 | Hapmap33740-BTA-95578           | 0 | 41288098 |          |
| 1 | BTA-95584-no-rs                 | 0 | 41315418 |          |
| 1 | Hapmap38486-BTA-30602           | 0 | 41379300 |          |
| 1 | Hapmap38103-BTA-28646           | 0 | 41417336 |          |
| 1 | Hapmap33759-BTA-160998          | 0 | 41441063 |          |
| 1 | BTB-01848824                    | 0 | 41465449 |          |
| 1 | BTA-122159-no-rs                | 0 | 41490266 |          |
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| 1 | Hapmap54599-rs29019617          | 0 | 41608221 |          |
| 1 | ARS-BFGL-NGS-23369              | 0 | 41639553 |          |
| 1 | ARS-BFGL-NGS-118356             | 0 | 41732937 |          |
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| 1 | Hapmap48210-BTA-120730          | 0 | 41834501 |          |
| 1 | BTB-00019290                    | 0 | 41870746 |          |
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| 1 | ARS-BFGL-BAC-15157              | 0 | 41913980 |          |
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| 1 | ARS-BFGL-NGS-56548              | 0 | 42190693 |          |
| 1 | BTB-02094179                    | 0 | 42227217 |          |
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| 1 | ARS-BFGL-NGS-81807              | 0 | 42313742 |          |
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| 1 | BTA-27636-no-rs                 | 0 | 42434198 |          |
| 1 | BTB-00019569                    | 0 | 42464966 |          |
| 1 | BTB-00019582                    | 0 | 42493010 |          |
| 1 | ARS-BFGL-NGS-10059              | 0 | 42542346 |          |
| 1 | BTA-89689-no-rs                 | 0 | 42570535 |          |
| 1 | Hapmap53820-rs29010070          | 0 | 42620205 |          |
| 1 | BTB-00019683                    | 0 | 42690743 |          |
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| 1 | BTB-00019769                    | 0 | 42771916 |          |

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| 1 | ARS-BFGL-NGS-12781     | 0 | 42843006 |
| 1 | Hapmap60973-rs29018366 | 0 | 42890259 |
| 1 | Hapmap23873-BTA-139450 | 0 | 42926817 |
| 1 | ARS-BFGL-BAC-15804     | 0 | 42960837 |
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| 1 | ARS-BFGL-NGS-89857     | 0 | 43145332 |
| 1 | BTA-89698-no-rs        | 0 | 43181180 |
| 1 | Hapmap59911-rs29013984 | 0 | 43246545 |
| 1 | BTA-20952-no-rs        | 0 | 43271718 |
| 1 | BTA-89708-no-rs        | 0 | 43293171 |
| 1 | BTB-00020263           | 0 | 43317853 |
| 1 | Hapmap47773-BTA-89713  | 0 | 43344918 |
| 1 | BTA-89717-no-rs        | 0 | 43383595 |
| 1 | BTB-00020638           | 0 | 43424668 |
| 1 | BTA-89719-no-rs        | 0 | 43471154 |
| 1 | ARS-BFGL-NGS-19097     | 0 | 43541278 |
| 1 | ARS-BFGL-NGS-106743    | 0 | 43569660 |
| 1 | BTB-00161977           | 0 | 43598618 |
| 1 | ARS-BFGL-NGS-118112    | 0 | 43670143 |
| 1 | ARS-BFGL-NGS-96886     | 0 | 43694788 |
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| 1 | Hapmap28225-BTA-123915 | 0 | 43800144 |
| 1 | BTB-00020882           | 0 | 43831317 |
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| 1 | ARS-BFGL-NGS-118317    | 0 | 43932562 |
| 1 | BTB-00021048           | 0 | 43954931 |
| 1 | Hapmap57419-rs29025772 | 0 | 43989116 |
| 1 | Hapmap43396-BTA-89742  | 0 | 44019050 |
| 1 | BTB-00021157           | 0 | 44045405 |
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| 1 | ARS-BFGL-NGS-57355     | 0 | 44118691 |
| 1 | BTB-00021247           | 0 | 44143107 |
| 1 | BTA-89748-no-rs        | 0 | 44176118 |
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| 1 | ARS-BFGL-NGS-57470     | 0 | 44569518 |
| 1 | BTA-15338-no-rs        | 0 | 44593858 |
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| 1 | BTA-86397-no-rs        | 0 | 44643255 |
| 1 | ARS-BFGL-NGS-40860     | 0 | 44692942 |
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| 1 | BTB-01585499           | 0 | 44922334 |
| 1 | ARS-BFGL-NGS-113905    | 0 | 44960165 |
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| 1 | Hapmap26498-BTA-33060  | 0 | 45067210 |
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| 1 | BTA-21519-no-rs        | 0 | 45214460 |
| 1 | ARS-BFGL-NGS-113539    | 0 | 45292210 |
| 1 | ARS-BFGL-NGS-75951     | 0 | 45375265 |
| 1 | ARS-BFGL-NGS-31349     | 0 | 45423220 |
| 1 | BTA-95285-no-rs        | 0 | 45452593 |
| 1 | BTB-01462206           | 0 | 45515052 |
| 1 | BTB-01462237           | 0 | 45546359 |
| 1 | ARS-BFGL-NGS-68706     | 0 | 45569587 |
| 1 | ARS-BFGL-NGS-113748    | 0 | 45592209 |
| 1 | Hapmap38803-BTA-104250 | 0 | 45614604 |
| 1 | ARS-BFGL-NGS-119382    | 0 | 45657940 |
| 1 | BTB-00478386           | 0 | 45683339 |
| 1 | BTB-00478347           | 0 | 45772634 |
| 1 | ARS-BFGL-NGS-10512     | 0 | 45804182 |
| 1 | BTB-01781942           | 0 | 45830593 |
| 1 | BTA-90373-no-rs        | 0 | 45864540 |
| 1 | ARS-BFGL-NGS-34687     | 0 | 45900804 |
| 1 | BTB-01462011           | 0 | 45926861 |
| 1 | BTB-01461996           | 0 | 45957974 |
| 1 | ARS-BFGL-NGS-31674     | 0 | 46038017 |
| 1 | BTA-10863-rs29016414   | 0 | 46118784 |
| 1 | BTA-95262-no-rs        | 0 | 46138869 |
| 1 | BTB-01786029           | 0 | 46201490 |
| 1 | BTA-89822-no-rs        | 0 | 46223040 |
| 1 | BTA-14361-rs29023125   | 0 | 46251987 |
| 1 | ARS-BFGL-NGS-114234    | 0 | 46283541 |
| 1 | BTA-89820-no-rs        | 0 | 46321775 |
| 1 | Hapmap60140-ss46526251 | 0 | 46370195 |
| 1 | UA-IFASA-4106          | 0 | 46402519 |
| 1 | BTB-00468532           | 0 | 46518842 |
| 1 | BTB-00468519           | 0 | 46556034 |
| 1 | ARS-BFGL-NGS-110320    | 0 | 46595049 |
| 1 | ARS-BFGL-NGS-67684     | 0 | 46620571 |
| 1 | BTB-00468485           | 0 | 46648008 |
| 1 | BTB-00468476           | 0 | 46675519 |
| 1 | BTB-01608930           | 0 | 46778649 |
| 1 | BTA-109011-no-rs       | 0 | 46926971 |
| 1 | Hapmap39710-BTA-108633 | 0 | 47011181 |
| 1 | Hapmap54262-rs29018839 | 0 | 47102513 |
| 1 | ARS-BFGL-NGS-41577     | 0 | 47123160 |
| 1 | BTB-01546768           | 0 | 47177862 |
| 1 | BTB-01686544           | 0 | 47222075 |
| 1 | ARS-BFGL-NGS-23106     | 0 | 47251774 |
| 1 | Hapmap40153-BTA-99041  | 0 | 47296021 |
| 1 | BTA-99040-no-rs        | 0 | 47320175 |
| 1 | ARS-BFGL-BAC-24524     | 0 | 47389301 |
| 1 | Hapmap55429-rs29012753 | 0 | 47417243 |
| 1 | BTB-02090792           | 0 | 47445935 |
| 1 | BTB-01702372           | 0 | 47479177 |
| 1 | BTB-01572184           | 0 | 47524118 |
| 1 | Hapmap43751-BTA-104783 | 0 | 47552065 |
| 1 | Hapmap27626-BTA-155536 | 0 | 47637704 |
| 1 | BTB-01967977           | 0 | 47669197 |
| 1 | BTB-01663516           | 0 | 47701359 |

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| 1 | Hapmap42068-BTA-111564 | 0 | 47745480 |
| 1 | Hapmap32121-BTA-156159 | 0 | 47771799 |
| 1 | BTB-01202368           | 0 | 47788706 |
| 1 | BTB-01202377           | 0 | 47807494 |
| 1 | BTA-122400-no-rs       | 0 | 47831916 |
| 1 | Hapmap60003-rs29024905 | 0 | 47856002 |
| 1 | BTB-01202460           | 0 | 47945210 |
| 1 | Hapmap27230-BTA-162491 | 0 | 47973478 |
| 1 | ARS-BFGL-NGS-105365    | 0 | 48026603 |
| 1 | ARS-BFGL-NGS-73983     | 0 | 48105788 |
| 1 | ARS-BFGL-BAC-16973     | 0 | 48130491 |
| 1 | Hapmap49948-BTA-29490  | 0 | 48181287 |
| 1 | BTB-00021951           | 0 | 48222988 |
| 1 | BTB-00021917           | 0 | 48257875 |
| 1 | BTB-00021776           | 0 | 48394374 |
| 1 | Hapmap59092-rs29024583 | 0 | 48425887 |
| 1 | ARS-BFGL-NGS-41264     | 0 | 48523202 |
| 1 | Hapmap38806-BTA-110152 | 0 | 48629895 |
| 1 | BTB-01645206           | 0 | 48658685 |
| 1 | BTB-01645280           | 0 | 48701612 |
| 1 | BTB-01146938           | 0 | 48726549 |
| 1 | Hapmap26719-BTA-151471 | 0 | 48772543 |
| 1 | BTB-01146838           | 0 | 48802718 |
| 1 | BTB-01847183           | 0 | 48843080 |
| 1 | Hapmap50572-BTA-113037 | 0 | 48866528 |
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| 1 | ARS-BFGL-NGS-49634     | 0 | 48971016 |
| 1 | BTB-00132817           | 0 | 49161822 |
| 1 | BTA-113021-no-rs       | 0 | 49230292 |
| 1 | BTB-01077379           | 0 | 49279500 |
| 1 | BTB-01077277           | 0 | 49318678 |
| 1 | BTB-01077261           | 0 | 49341658 |
| 1 | Hapmap57446-rs29023998 | 0 | 49393074 |
| 1 | Hapmap50571-BTA-112994 | 0 | 49436561 |
| 1 | BTA-103555-no-rs       | 0 | 49480638 |
| 1 | BTB-01077007           | 0 | 49532893 |
| 1 | Hapmap50221-BTA-112986 | 0 | 49578738 |
| 1 | Hapmap32123-BTA-156557 | 0 | 49618441 |
| 1 | BTB-01615915           | 0 | 49734575 |
| 1 | Hapmap33052-BTA-154887 | 0 | 49765653 |
| 1 | BTB-01076801           | 0 | 49906537 |
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| 1 | BTA-114651-no-rs       | 0 | 50252331 |
| 1 | Hapmap24476-BTA-130730 | 0 | 50291207 |
| 1 | Hapmap41715-BTA-100026 | 0 | 50320575 |
| 1 | Hapmap30497-BTA-123949 | 0 | 50359829 |
| 1 | BTB-00022097           | 0 | 50410352 |
| 1 | BTB-00022142           | 0 | 50434457 |
| 1 | BTB-01165120           | 0 | 50465233 |
| 1 | BTB-01165109           | 0 | 50511043 |
| 1 | Hapmap49829-BTA-101896 | 0 | 50574353 |

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| 1 | Hapmap29401-BTA-152822 | 0        | 50621585 |
| 1 | BTB-01164952           | 0        | 50652927 |
| 1 | BTB-01164946           | 0        | 50680039 |
| 1 | Hapmap52897-rs29012790 | 0        | 50732049 |
| 1 | BTB-01164879           | 0        | 50775613 |
| 1 | BTB-00022352           | 0        | 50815882 |
| 1 | BTB-00022376           | 0        | 50857462 |
| 1 | Hapmap41716-BTA-100042 | 0        | 50884893 |
| 1 | ARS-BFGL-NGS-103521    | 0        | 50993685 |
| 1 | ARS-BFGL-NGS-101533    | 0        | 51033230 |
| 1 | ARS-BFGL-NGS-65210     | 51169451 |          |
| 1 | ARS-BFGL-NGS-14638     | 0        | 51211635 |
| 1 | Hapmap42747-BTA-97910  | 0        | 51258380 |
| 1 | BTB-00184675           | 0        | 51289087 |
| 1 | ARS-BFGL-NGS-27696     | 0        | 51329816 |
| 1 | BTB-01661970           | 0        | 51403723 |
| 1 | ARS-BFGL-NGS-80227     | 0        | 51598998 |
| 1 | BTB-01303321           | 0        | 51654778 |
| 1 | BTA-100070-no-rs       | 0        | 51687463 |
| 1 | UA-IFASA-6260          | 0        | 51721572 |
| 1 | BTA-07486-rs29027151   | 0        | 51768647 |
| 1 | BTB-00023604           | 0        | 51804778 |
| 1 | Hapmap54644-rs29022483 | 0        | 51845103 |
| 1 | BTB-02033694           | 0        | 51854830 |
| 1 | BTA-100081-no-rs       | 0        | 51902748 |
| 1 | ARS-BFGL-NGS-29536     | 0        | 52075648 |
| 1 | ARS-BFGL-NGS-26781     | 0        | 52135065 |
| 1 | BTA-27925-no-rs        | 0        | 52191701 |
| 1 | Hapmap23148-BTA-123974 | 0        | 52251694 |
| 1 | UA-IFASA-5103          | 0        | 52306846 |
| 1 | ARS-BFGL-NGS-105123    | 0        | 52409229 |
| 1 | BTB-01743557           | 0        | 52430945 |
| 1 | ARS-BFGL-NGS-17305     | 0        | 52493772 |
| 1 | Hapmap42392-BTA-100065 | 0        | 52537365 |
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| 1 | ARS-BFGL-NGS-112553    | 0        | 52644883 |
| 1 | BTA-100060-no-rs       | 0        | 52676405 |
| 1 | ARS-BFGL-BAC-23725     | 0        | 52696732 |
| 1 | BTA-100058-no-rs       | 0        | 52719660 |
| 1 | Hapmap47522-BTA-120738 | 0        | 52748123 |
| 1 | BTA-120739-no-rs       | 0        | 52801665 |
| 1 | ARS-BFGL-NGS-89588     | 0        | 52834285 |
| 1 | BTB-00026002           | 0        | 52874728 |
| 1 | Hapmap33710-BTA-110763 | 0        | 52915041 |
| 1 | Hapmap27147-BTA-124015 | 0        | 52953518 |
| 1 | ARS-BFGL-NGS-76469     | 0        | 52979497 |
| 1 | ARS-BFGL-NGS-78259     | 0        | 53064069 |
| 1 | Hapmap24136-BTA-124014 | 0        | 53084847 |
| 1 | BTB-00025875           | 0        | 53133677 |
| 1 | BTB-00025760           | 0        | 53238076 |
| 1 | Hapmap47502-BTA-110302 | 0        | 53270356 |
| 1 | ARS-BFGL-NGS-100189    | 0        | 53296440 |
| 1 | BTB-00025322           | 0        | 53364989 |

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| 1 | BTB-00025259           | 0 | 53416332 |
| 1 | ARS-BFGL-BAC-18388     | 0 | 53489802 |
| 1 | BTB-00025135           | 0 | 53528573 |
| 1 | Hapmap47174-BTA-110289 | 0 | 53551656 |
| 1 | BTA-110282-no-rs       | 0 | 53582877 |
| 1 | ARS-BFGL-NGS-18743     | 0 | 53630189 |
| 1 | ARS-BFGL-NGS-94761     | 0 | 53656600 |
| 1 | BTB-00025053           | 0 | 53706235 |
| 1 | Hapmap53221-rs29019635 | 0 | 53968516 |
| 1 | Hapmap57738-rs29023662 | 0 | 53995142 |
| 1 | Hapmap48975-BTA-99363  | 0 | 54032055 |
| 1 | ARS-BFGL-BAC-20881     | 0 | 54052439 |
| 1 | BTB-00026752           | 0 | 54102324 |
| 1 | BTB-00026585           | 0 | 54179627 |
| 1 | BTA-110335-no-rs       | 0 | 54259681 |
| 1 | Hapmap38807-BTA-110324 | 0 | 54317344 |
| 1 | ARS-BFGL-NGS-111929    | 0 | 54342104 |
| 1 | ARS-BFGL-NGS-40967     | 0 | 54371655 |
| 1 | UA-IFASA-7275          | 0 | 54390349 |
| 1 | BTB-00217542           | 0 | 54460795 |
| 1 | ARS-BFGL-NGS-24057     | 0 | 54501549 |
| 1 | Hapmap42092-BTA-119864 | 0 | 54523895 |
| 1 | ARS-BFGL-NGS-114712    | 0 | 54556914 |
| 1 | BTB-01044365           | 0 | 54625163 |
| 1 | BTA-30265-no-rs        | 0 | 54646465 |
| 1 | Hapmap49009-BTA-107212 | 0 | 54690810 |
| 1 | BTB-01605050           | 0 | 54714755 |
| 1 | ARS-BFGL-NGS-43783     | 0 | 54774488 |
| 1 | BTB-01712157           | 0 | 54819828 |
| 1 | BTB-01712147           | 0 | 54844550 |
| 1 | BTB-01315615           | 0 | 54873112 |
| 1 | BTA-21826-no-rs        | 0 | 54958273 |
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| 1 | Hapmap47540-BTA-21819  | 0 | 55107953 |
| 1 | Hapmap39813-BTA-21834  | 0 | 55150553 |
| 1 | BTB-01315457           | 0 | 55174553 |
| 1 | Hapmap51652-BTA-89898  | 0 | 55259756 |
| 1 | BTB-01131103           | 0 | 55288120 |
| 1 | Hapmap49383-BTA-93867  | 0 | 55326027 |
| 1 | BTB-01131178           | 0 | 55359042 |
| 1 | BTA-93863-no-rs        | 0 | 55386945 |
| 1 | ARS-BFGL-BAC-32896     | 0 | 55444187 |
| 1 | Hapmap38361-BTA-93866  | 0 | 55469249 |
| 1 | BTB-01131384           | 0 | 55499124 |
| 1 | BTB-01914655           | 0 | 55544288 |
| 1 | ARS-BFGL-NGS-115305    | 0 | 55784222 |
| 1 | Hapmap32092-BTA-149957 | 0 | 55810689 |
| 1 | ARS-BFGL-NGS-85105     | 0 | 55832662 |
| 1 | Hapmap47445-BTA-93870  | 0 | 55930246 |
| 1 | Hapmap33225-BTA-151395 | 0 | 55995337 |
| 1 | ARS-BFGL-NGS-39684     | 0 | 56084928 |
| 1 | Hapmap43173-BTA-120253 | 0 | 56193336 |

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| 1 | ARS-BFGL-NGS-115307                   | 0 | 56294040 |  |  |
| 1 | ARS-BFGL-NGS-87494                    | 0 | 56505444 |  |  |
| 1 | BTA-25876-no-rs                       | 0 | 56551196 |  |  |
| 1 | ARS-BFGL-NGS-31315                    | 0 | 56648072 |  |  |
| 1 | BTA-25809-no-rs                       | 0 | 56669858 |  |  |
| 1 | BTA-25883-no-rs                       | 0 | 56706072 |  |  |
| 1 | BTA-25886-no-rs                       | 0 | 56726646 |  |  |
| 1 | ARS-BFGL-NGS-111138                   | 0 | 56817352 |  |  |
| 1 | ARS-BFGL-NGS-38890                    | 0 | 56864714 |  |  |
| 1 | ARS-BFGL-NGS-59270                    | 0 | 56901848 |  |  |
| 1 | ARS-BFGL-NGS-15221                    | 0 | 56983259 |  |  |
| 1 | ARS-BFGL-NGS-52696                    | 0 | 57050886 |  |  |
| 1 | Hapmap39218-BTA-25795                 | 0 | 57141557 |  |  |
| 1 | ARS-BFGL-NGS-89                       | 0 | 57170980 |  |  |
| 1 | UA-IFASA-5597                         | 0 | 57192123 |  |  |
| 1 | ARS-BFGL-NGS-18996                    | 0 | 57238377 |  |  |
| 1 | BTA-25386-no-rs                       | 0 | 57290689 |  |  |
| 1 | Hapmap59481-rs29019616                | 0 | 57341049 |  |  |
| 1 | Hapmap44594-BTA-25389                 | 0 | 57426987 |  |  |
| 1 | BTA-25403-no-rs                       | 0 | 57590207 |  |  |
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| 1 | Hapmap38147-BTA-25404                 | 0 | 57660748 |  |  |
| 1 | ARS-BFGL-NGS-102073                   | 0 | 57692535 |  |  |
| 1 | Hapmap55498-ss46527080                | 0 | 57752344 |  |  |
| 1 | BTA-25421-no-rs                       | 0 | 57812704 |  |  |
| 1 | ARS-BFGL-NGS-94399                    | 0 | 57842473 |  |  |
| 1 | ARS-BFGL-NGS-109258                   | 0 | 57890954 |  |  |
| 1 | ARS-BFGL-NGS-112451                   | 0 | 57913747 |  |  |
| 1 | ARS-BFGL-NGS-87988                    | 0 | 57941195 |  |  |
| 1 | Hapmap50295-BTA-25892                 | 0 | 58210936 |  |  |
| 1 | ARS-BFGL-NGS-109846                   | 0 | 58402388 |  |  |
| 1 | ARS-BFGL-NGS-40337                    | 0 | 58444431 |  |  |
| 1 | ARS-BFGL-NGS-63947                    | 0 | 58668639 |  |  |
| 1 | Hapmap36459-SCAFFOLD9563_462          | 0 | 58695977 |  |  |
| 1 | Hapmap23307-BTA-124083                | 0 | 58722694 |  |  |
| 1 | ARS-BFGL-NGS-103637                   | 0 | 58760778 |  |  |
| 1 | BTA-02836-rs29010381                  | 0 | 58934843 |  |  |
| 1 | Hapmap44172-BTA-96950                 | 0 | 58985342 |  |  |
| 1 | Hapmap47450-BTA-96948                 | 0 | 59071436 |  |  |
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| 1 | BTA-31615-no-rs                       | 0 | 59337004 |  |  |
| 1 | ARS-USMARC-Parent-DQ404150-rs29012530 | 0 | 59409838 |  |  |
| 1 | UA-IFASA-2169                         | 0 | 59435634 |  |  |
| 1 | ARS-BFGL-NGS-16908                    | 0 | 59463782 |  |  |
| 1 | Hapmap34104-BES10_Contig701_1260      | 0 | 59509438 |  |  |
| 1 | Hapmap28737-BTA-124074                | 0 | 59535729 |  |  |
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| 1 | BTB-01868157                          | 0 | 59590958 |  |  |
| 1 | Hapmap40924-BTA-21991                 | 0 | 59614492 |  |  |
| 1 | BTB-00028238                          | 0 | 59647840 |  |  |
| 1 | Hapmap48289-BTA-31617                 | 0 | 59683842 |  |  |
| 1 | ARS-BFGL-NGS-94997                    | 0 | 59754059 |  |  |
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| 1 | BTB-00028406                   | 0 | 59824412 |          |
| 1 | BTB-00028484                   | 0 | 59852828 |          |
| 1 | Hapmap25636-BTA-31622          | 0 | 59879169 |          |
| 1 | Hapmap48717-BTA-31633          | 0 | 59971879 |          |
| 1 | BTB-00028647                   | 0 | 60008528 |          |
| 1 | BTB-00028594                   | 0 | 60082447 |          |
| 1 | BTB-00028547                   | 0 | 60116734 |          |
| 1 | Hapmap31065-BTA-123406         | 0 | 60140981 |          |
| 1 | BTA-31638-no-rs                | 0 | 60187594 |          |
| 1 | ARS-BFGL-NGS-110620            | 0 | 60231667 |          |
| 1 | BTA-31643-no-rs                | 0 | 60254737 |          |
| 1 | Hapmap46976-BTA-31645          | 0 | 60285264 |          |
| 1 | BTB-00028937                   | 0 | 60321156 |          |
| 1 | Hapmap59475-rs29014975         | 0 | 60411957 |          |
| 1 | ARS-BFGL-NGS-36297             | 0 | 60435125 |          |
| 1 | ARS-BFGL-NGS-115239            | 0 | 60477492 |          |
| 1 | BTB-01413909                   | 0 | 60562020 |          |
| 1 | BTB-01414057                   | 0 | 60691438 |          |
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| 1 | BTA-23353-no-rs                | 0 | 60787763 |          |
| 1 | ARS-BFGL-NGS-117152            | 0 | 60822626 |          |
| 1 | UA-IFASA-7336                  | 0 | 60862725 |          |
| 1 | UA-IFASA-5504                  | 0 | 60889674 |          |
| 1 | ARS-BFGL-NGS-63954             | 0 | 60930420 |          |
| 1 | Hapmap57078-ss46526391         | 0 | 60956897 |          |
| 1 | ARS-BFGL-NGS-30543             | 0 | 60983992 |          |
| 1 | BTB-00029666                   | 0 | 61026239 |          |
| 1 | Hapmap48290-BTA-31675          | 0 | 61069157 |          |
| 1 | Hapmap42177-BTA-31679          | 0 | 61125554 |          |
| 1 | ARS-BFGL-NGS-58051             | 0 | 61155727 |          |
| 1 | Hapmap35167-VSWCP1D5775A_scf01 | 0 |          | 61189139 |
| 1 | ARS-BFGL-NGS-107624            | 0 | 61228131 |          |
| 1 | BTB-00030270                   | 0 | 61259392 |          |
| 1 | ARS-BFGL-NGS-38210             |   | 61286751 |          |
| 1 | Hapmap41191-BTA-16674          | 0 | 61329180 |          |
| 1 | BTB-02006134                   | 0 | 61357379 |          |
| 1 | Hapmap59735-rs29016420         | 0 | 61381912 |          |
| 1 | ARS-BFGL-BAC-20015             | 0 | 61450475 |          |
| 1 | ARS-BFGL-NGS-14821             | 0 | 61469035 |          |
| 1 | Hapmap48293-BTA-32595          | 0 | 61508119 |          |
| 1 | BTB-00031129                   | 0 | 61530474 |          |
| 1 | BTA-92181-no-rs                | 0 | 61540639 |          |
| 1 | BTB-01426064                   | 0 | 61582726 |          |
| 1 | ARS-BFGL-BAC-20592             | 0 | 61611726 |          |
| 1 | BTB-00030962                   | 0 | 61652849 |          |
| 1 | Hapmap38402-BTA-32592          | 0 | 61681629 |          |
| 1 | BTB-00030894                   | 0 | 61749066 |          |
| 1 | BTA-31690-no-rs                | 0 | 61777879 |          |
| 1 | BTB-00030699                   | 0 | 61806466 |          |
| 1 | ARS-BFGL-NGS-27164             | 0 | 61832670 |          |
| 1 | BTB-00030560                   | 0 | 61900596 |          |
| 1 | Hapmap53538-rs29018897         | 0 | 61936456 |          |
| 1 | ARS-BFGL-NGS-21890             |   | 61996164 |          |
| 1 | BTB-01644632                   | 0 | 62046242 |          |

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| 1 | Hapmap51585-BTA-32601  | 0 | 62104120 |
| 1 | BTA-103663-no-rs       | 0 | 62124386 |
| 1 | ARS-BFGL-NGS-40229     | 0 | 62184184 |
| 1 | ARS-BFGL-NGS-101934    | 0 | 62230401 |
| 1 | BTB-02071091           | 0 | 62251590 |
| 1 | Hapmap33719-BTA-153081 | 0 | 62303320 |
| 1 | Hapmap42400-BTA-102731 | 0 | 62344691 |
| 1 | ARS-BFGL-NGS-91410     | 0 | 62420424 |
| 1 | Hapmap23096-BTA-159937 | 0 | 62585258 |
| 1 | BTB-01806856           | 0 | 62607089 |
| 1 | BTA-32604-no-rs        | 0 | 62652993 |
| 1 | Hapmap38640-BTA-92406  | 0 | 62742180 |
| 1 | BTA-32620-no-rs        | 0 | 62765705 |
| 1 | BTB-00031464           | 0 | 62811670 |
| 1 | BTB-00031535           | 0 | 62842581 |
| 1 | ARS-BFGL-NGS-42248     | 0 | 62873964 |
| 1 | ARS-BFGL-NGS-102719    | 0 | 62909449 |
| 1 | BTB-00031657           | 0 | 62943586 |
| 1 | ARS-BFGL-NGS-115080    | 0 | 62968592 |
| 1 | ARS-BFGL-NGS-114995    | 0 | 62998921 |
| 1 | ARS-BFGL-NGS-100977    | 0 | 63025706 |
| 1 | BTB-01665387           | 0 | 63061634 |
| 1 | ARS-BFGL-NGS-14335     | 0 | 63098616 |
| 1 | BTB-01506507           | 0 | 63127376 |
| 1 | ARS-BFGL-NGS-106011    | 0 | 63159279 |
| 1 | BTB-01285049           | 0 | 63199096 |
| 1 | ARS-BFGL-NGS-112682    | 0 | 63235795 |
| 1 | BTB-01285245           | 0 | 63277846 |
| 1 | Hapmap49510-BTA-17452  | 0 | 63372417 |
| 1 | ARS-BFGL-NGS-45830     | 0 | 63421529 |
| 1 | BTA-32633-no-rs        | 0 | 63445511 |
| 1 | BTB-00031779           | 0 | 63491880 |
| 1 | BTA-108948-no-rs       | 0 | 63575356 |
| 1 | BTA-101821-no-rs       | 0 | 63653354 |
| 1 | ARS-BFGL-NGS-116361    | 0 | 63706033 |
| 1 | Hapmap49061-BTA-122268 | 0 | 63742577 |
| 1 | ARS-BFGL-NGS-44433     | 0 | 63799085 |
| 1 | Hapmap44333-BTA-104611 | 0 | 63825188 |
| 1 | ARS-BFGL-NGS-105436    | 0 | 63951419 |
| 1 | ARS-BFGL-NGS-31320     | 0 | 64031787 |
| 1 | BTB-00640138           | 0 | 64077996 |
| 1 | BTB-00639971           | 0 | 64145803 |
| 1 | Hapmap31089-BTA-130737 | 0 | 64207146 |
| 1 | Hapmap46935-BTA-113728 | 0 | 64253061 |
| 1 | BTB-01687826           | 0 | 64276370 |
| 1 | BTB-01687859           | 0 | 64301934 |
| 1 | BTB-00639914           | 0 | 64322900 |
| 1 | Hapmap51521-BTA-92920  | 0 | 64407671 |
| 1 | ARS-BFGL-NGS-31791     | 0 | 64445959 |
| 1 | ARS-BFGL-NGS-27619     | 0 | 64474719 |
| 1 | BTB-00450945           | 0 | 64501909 |
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| 1 | UA-IFASA-9174          | 0 | 64592861 |

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| 1 | BTB-00451094           | 0 | 64629383 |
| 1 | BTB-00033025           | 0 | 64667900 |
| 1 | ARS-BFGL-NGS-10860     | 0 | 64692368 |
| 1 | BTB-00033060           | 0 | 64730690 |
| 1 | ARS-BFGL-NGS-71757     | 0 | 64766940 |
| 1 | BTB-00033090           | 0 | 64788160 |
| 1 | Hapmap31536-BTA-34573  | 0 | 64817535 |
| 1 | BTB-00033167           | 0 | 64864266 |
| 1 | ARS-BFGL-NGS-15927     | 0 | 64908763 |
| 1 | ARS-BFGL-NGS-112971    | 0 | 64955929 |
| 1 | BTB-00026837           | 0 | 64990681 |
| 1 | Hapmap31713-BTA-124020 | 0 | 65025357 |
| 1 | ARS-BFGL-NGS-33635     | 0 | 65082461 |
| 1 | BTB-00027047           | 0 | 65103965 |
| 1 | BTB-00027056           | 0 | 65126749 |
| 1 | BTA-15412-no-rs        | 0 | 65171617 |
| 1 | Hapmap45865-BTA-15414  | 0 | 65203417 |
| 1 | ARS-BFGL-NGS-112600    | 0 | 65226899 |
| 1 | ARS-BFGL-NGS-36873     | 0 | 65252905 |
| 1 | BTB-00027149           | 0 | 65276480 |
| 1 | BTB-00027170           | 0 | 65305965 |
| 1 | BTB-00027201           | 0 | 65338549 |
| 1 | ARS-BFGL-NGS-54090     | 0 | 65410263 |
| 1 | BTB-00027298           | 0 | 65433706 |
| 1 | BTB-00027332           | 0 | 65466612 |
| 1 | BTB-00027405           | 0 | 65495613 |
| 1 | Hapmap42852-BTA-15416  | 0 | 65522044 |
| 1 | BTB-00027409           | 0 | 65556352 |
| 1 | Hapmap32539-BTA-124026 | 0 | 65580210 |
| 1 | Hapmap55251-rs29014781 | 0 | 65624310 |
| 1 | BTA-15421-no-rs        | 0 | 65663517 |
| 1 | BTB-00027516           | 0 | 65769328 |
| 1 | ARS-BFGL-NGS-83021     | 0 | 65937547 |
| 1 | BTB-00027583           | 0 | 65992275 |
| 1 | BTB-02069463           | 0 | 66017181 |
| 1 | ARS-BFGL-NGS-39960     | 0 | 66121259 |
| 1 | ARS-BFGL-NGS-115763    | 0 | 66139653 |
| 1 | ARS-BFGL-NGS-43799     | 0 | 66188527 |
| 1 | Hapmap40403-BTA-15429  | 0 | 66230091 |
| 1 | ARS-BFGL-BAC-19439     | 0 | 66252625 |
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| 1 | BTB-00027638           | 0 | 66369026 |
| 1 | ARS-BFGL-NGS-111569    | 0 | 66398856 |
| 1 | ARS-BFGL-NGS-61672     | 0 | 66450521 |
| 1 | Hapmap39399-BTA-33610  | 0 | 66483743 |
| 1 | Hapmap40951-BTA-33609  | 0 | 66519111 |
| 1 | ARS-BFGL-NGS-35041     | 0 | 66604133 |
| 1 | ARS-BFGL-NGS-38335     | 0 | 66630647 |
| 1 | BTA-33604-no-rs        | 0 | 66668755 |
| 1 | ARS-BFGL-NGS-117561    | 0 | 66696653 |
| 1 | ARS-BFGL-NGS-14087     | 0 | 66721297 |
| 1 | Hapmap54041-ss46526276 | 0 | 66759099 |
| 1 | Hapmap51211-BTA-33586  | 0 | 66864968 |
| 1 | ARS-BFGL-BAC-19447     | 0 | 66917399 |



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| 1 | Hapmap31714-BTA-124164 | 0 | 66976165 |
| 1 | ARS-BFGL-NGS-103348    | 0 | 67055698 |
| 1 | BTB-00032674           | 0 | 67083238 |
| 1 | BTB-00032648           | 0 | 67115284 |
| 1 | BTB-00033186           | 0 | 67160040 |
| 1 | Hapmap25638-BTA-33585  | 0 | 67191387 |
| 1 | ARS-BFGL-NGS-45720     | 0 | 67212088 |
| 1 | ARS-BFGL-NGS-60750     | 0 | 67286095 |
| 1 | BTB-00026096           | 0 | 67310117 |
| 1 | BTB-00026110           | 0 | 67331639 |
| 1 | BTA-31636-no-rs        | 0 | 67399528 |
| 1 | BTA-05186-no-rs        | 0 | 67444188 |
| 1 | BTB-00028704           | 0 | 67491689 |
| 1 | UA-IFASA-7116          | 0 | 67702576 |
| 1 | BTB-00032205           | 0 | 67734488 |
| 1 | BTB-00032200           | 0 | 67764428 |
| 1 | BTB-00032163           | 0 | 67792994 |
| 1 | BTB-00032153           | 0 | 67814251 |
| 1 | Hapmap58284-rs29018937 | 0 | 67885415 |
| 1 | BTA-33571-no-rs        | 0 | 67909755 |
| 1 | ARS-BFGL-NGS-119133    | 0 | 67969838 |
| 1 | ARS-BFGL-NGS-39596     | 0 | 68000140 |
| 1 | Hapmap41826-BTA-31654  | 0 | 68023878 |
| 1 | ARS-BFGL-NGS-117312    | 0 | 68066718 |
| 1 | ARS-BFGL-NGS-113914    | 0 | 68135318 |
| 1 | BTB-01736179           | 0 | 68153635 |
| 1 | BTA-34599-no-rs        | 0 | 68227488 |
| 1 | ARS-BFGL-NGS-75210     | 0 | 68268931 |
| 1 | ARS-BFGL-NGS-45030     | 0 | 68307813 |
| 1 | ARS-BFGL-NGS-27724     | 0 | 68353295 |
| 1 | ARS-BFGL-BAC-35700     | 0 | 68373678 |
| 1 | Hapmap46988-BTA-34591  | 0 | 68403441 |
| 1 | ARS-BFGL-NGS-111491    | 0 | 68457522 |
| 1 | ARS-BFGL-NGS-94290     | 0 | 68507419 |
| 1 | Hapmap50666-BTA-34589  | 0 | 68533156 |
| 1 | ARS-BFGL-NGS-72247     | 0 | 68579776 |
| 1 | Hapmap39647-BTA-34584  | 0 | 68604562 |
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| 1 | Hapmap59979-rs29025402 | 0 | 68966218 |
| 1 | ARS-BFGL-NGS-35021     | 0 | 68997018 |
| 1 | ARS-BFGL-NGS-26771     | 0 | 69022384 |
| 1 | ARS-BFGL-NGS-100745    | 0 | 69045500 |
| 1 | BTA-120514-no-rs       | 0 | 69070681 |
| 1 | Hapmap54911-rs29023069 | 0 | 69138050 |
| 1 | ARS-BFGL-NGS-118460    | 0 | 69201417 |
| 1 | ARS-BFGL-NGS-118306    | 0 | 69244252 |
| 1 | ARS-BFGL-NGS-109126    | 0 | 69250962 |
| 1 | ARS-BFGL-NGS-114985    | 0 | 69283880 |
| 1 | BTA-104019-no-rs       | 0 | 69339563 |
| 1 | BTA-104027-no-rs       | 0 | 69359979 |
| 1 | ARS-BFGL-NGS-115898    | 0 | 69386583 |
| 1 | ARS-BFGL-NGS-59612     | 0 | 69435214 |
| 1 | Hapmap38055-BTA-120751 | 0 | 69475667 |

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| 1 | ARS-BFGL-NGS-30730     | 0        | 69520131 |
| 1 | ARS-BFGL-NGS-40924     | 0        | 69593576 |
| 1 | BTA-33563-no-rs        | 0        | 69620870 |
| 1 | ARS-BFGL-NGS-41287     | 0        | 69659023 |
| 1 | Hapmap59820-rs29019798 | 0        | 69690407 |
| 1 | BTA-33557-no-rs        | 0        | 69777125 |
| 1 | ARS-BFGL-NGS-110495    | 0        | 69803449 |
| 1 | UA-IFASA-5307          | 0        | 69835860 |
| 1 | ARS-BFGL-NGS-62687     | 0        | 69867959 |
| 1 | ARS-BFGL-NGS-111716    | 0        | 69905532 |
| 1 | ARS-BFGL-NGS-104241    | 0        | 69944271 |
| 1 | ARS-BFGL-NGS-34399     | 0        | 70074771 |
| 1 | Hapmap30498-BTA-124121 | 0        | 70100583 |
| 1 | ARS-BFGL-NGS-111271    | 0        | 70159840 |
| 1 | ARS-BFGL-NGS-111283    | 0        | 70191957 |
| 1 | Hapmap29367-BTA-159930 | 0        | 70284933 |
| 1 | BTA-32647-no-rs        | 0        | 70323229 |
| 1 | Hapmap31066-BTA-124117 | 0        | 70343369 |
| 1 | Hapmap41227-BTA-32644  | 0        | 70481556 |
| 1 | Hapmap39468-BTA-120746 | 0        | 70553668 |
| 1 | BTA-32637-no-rs        | 0        | 70595397 |
| 1 | BTB-00031796           | 0        | 70660314 |
| 1 | Hapmap59145-ss46526952 | 0        | 70840701 |
| 1 | Hapmap48672-BTA-17044  | 0        | 70852215 |
| 1 | BTA-86103-no-rs        | 0        | 70907936 |
| 1 | Hapmap50667-BTA-34616  | 0        | 70974318 |
| 1 | ARS-BFGL-NGS-80523     | 0        | 70996099 |
| 1 | ARS-BFGL-NGS-119161    | 0        | 71070958 |
| 1 | ARS-BFGL-NGS-20101     | 0        | 71109866 |
| 1 | ARS-BFGL-NGS-95516     | 0        | 71229187 |
| 1 | ARS-BFGL-NGS-51240     | 71263427 |          |
| 1 | ARS-BFGL-BAC-35332     | 0        | 71349186 |
| 1 | Hapmap53495-rs29015962 | 0        | 71370844 |
| 1 | ARS-BFGL-NGS-97095     | 0        | 71431023 |
| 1 | Hapmap43841-BTA-34601  | 0        | 71504767 |
| 1 | ARS-BFGL-NGS-49636     | 0        | 71544028 |
| 1 | Hapmap40324-BTA-34602  | 0        | 71602911 |
| 1 | BTA-34631-no-rs        | 0        | 71623173 |
| 1 | ARS-BFGL-NGS-56509     | 0        | 71742005 |
| 1 | ARS-BFGL-NGS-16910     | 0        | 71764838 |
| 1 | BTA-34638-no-rs        | 0        | 71800147 |
| 1 | BTA-120754-no-rs       | 0        | 71932575 |
| 1 | ARS-BFGL-NGS-109101    | 0        | 71952197 |
| 1 | Hapmap51826-BTA-34625  | 0        | 71990165 |
| 1 | BTA-34624-no-rs        | 0        | 72020602 |
| 1 | Hapmap60655-rs29025422 | 0        | 72052010 |
| 1 | ARS-BFGL-NGS-117761    | 0        | 72080335 |
| 1 | ARS-BFGL-NGS-37507     | 0        | 72102670 |
| 1 | ARS-BFGL-NGS-90994     | 0        | 72162062 |
| 1 | BTA-12082-rs29024046   | 0        | 72226869 |
| 1 | BTA-90633-no-rs        | 0        | 72263009 |
| 1 | Hapmap51434-BTA-34642  | 0        | 72369687 |
| 1 | ARS-BFGL-NGS-118075    | 0        | 72442882 |
| 1 | ARS-BFGL-NGS-34176     | 0        | 72573950 |

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| 1 | ARS-BFGL-NGS-78165               | 0        | 72605572 |          |
| 1 | ARS-BFGL-NGS-45476               | 0        | 72640881 |          |
| 1 | ARS-BFGL-NGS-117741              | 0        | 72689874 |          |
| 1 | Hapmap42521-BTA-35582            | 0        | 72736590 |          |
| 1 | Hapmap43559-BTA-35576            | 0        | 72801931 |          |
| 1 | ARS-BFGL-NGS-72532               | 0        | 72844496 |          |
| 1 | ARS-BFGL-NGS-103884              | 0        | 72938740 |          |
| 1 | ARS-BFGL-NGS-118725              | 0        | 72962249 |          |
| 1 | ARS-BFGL-NGS-94206               | 0        | 73048145 |          |
| 1 | ARS-BFGL-NGS-112042              | 0        | 73077982 |          |
| 1 | ARS-BFGL-NGS-100698              | 0        | 73106447 |          |
| 1 | ARS-BFGL-NGS-59448               | 0        | 73140918 |          |
| 1 | ARS-BFGL-NGS-25863               | 0        | 73182063 |          |
| 1 | Hapmap41511-BTA-34652            | 0        | 73239166 |          |
| 1 | ARS-BFGL-NGS-41620               | 73286310 |          |          |
| 1 | ARS-BFGL-NGS-40388               | 0        | 73321288 |          |
| 1 | Hapmap40716-BTA-34647            | 0        | 73404401 |          |
| 1 | Hapmap52010-BTA-34646            | 0        | 73441389 |          |
| 1 | Hapmap35151-BES4_Contig435_1199  | 0        |          | 73487973 |
| 1 | BTA-34645-no-rs                  | 0        | 73568389 |          |
| 1 | Hapmap50160-BTA-93856            | 0        | 73640200 |          |
| 1 | BTA-35604-no-rs                  | 0        | 73681836 |          |
| 1 | ARS-BFGL-NGS-39750               | 0        | 73757146 |          |
| 1 | ARS-BFGL-NGS-93288               | 0        | 73792634 |          |
| 1 | ARS-BFGL-NGS-25392               | 0        | 73821868 |          |
| 1 | ARS-BFGL-NGS-31642               | 0        | 73855946 |          |
| 1 | ARS-BFGL-BAC-73                  | 0        | 73924347 |          |
| 1 | ARS-BFGL-BAC-32073               | 0        | 73950237 |          |
| 1 | ARS-BFGL-BAC-34001               | 0        | 73984119 |          |
| 1 | ARS-BFGL-NGS-114968              | 0        | 74009574 |          |
| 1 | ARS-BFGL-NGS-53144               | 0        | 74046575 |          |
| 1 | ARS-BFGL-NGS-23062               | 0        | 74075179 |          |
| 1 | ARS-BFGL-NGS-32169               | 0        | 74197805 |          |
| 1 | ARS-BFGL-BAC-36572               | 0        | 74219065 |          |
| 1 | BTA-35627-no-rs                  | 0        | 74253662 |          |
| 1 | BTA-35628-no-rs                  | 0        | 74282462 |          |
| 1 | UA-IFASA-4774                    | 0        | 74325400 |          |
| 1 | ARS-BFGL-NGS-114627              | 0        | 74355653 |          |
| 1 | BTA-35631-no-rs                  | 0        | 74400912 |          |
| 1 | ARS-BFGL-NGS-64511               | 0        | 74435001 |          |
| 1 | ARS-BFGL-NGS-70990               | 74459840 |          |          |
| 1 | Hapmap38109-BTA-36588            | 0        | 74581903 |          |
| 1 | Hapmap33656-BTA-124230           | 0        | 74643836 |          |
| 1 | BTA-36593-no-rs                  | 0        | 74751227 |          |
| 1 | ARS-BFGL-NGS-90496               | 0        | 74889706 |          |
| 1 | ARS-BFGL-NGS-49240               | 74917513 |          |          |
| 1 | ARS-BFGL-NGS-37438               | 0        | 75146323 |          |
| 1 | ARS-BFGL-NGS-81861               | 0        | 75171303 |          |
| 1 | Hapmap39889-BTA-114934           | 0        | 75227225 |          |
| 1 | Hapmap51396-BTA-114937           | 0        | 75258338 |          |
| 1 | ARS-BFGL-NGS-37067               | 0        | 75301239 |          |
| 1 | Hapmap60658-rs29025870           | 0        | 75328281 |          |
| 1 | Hapmap51567-BTA-17154            | 0        | 75363231 |          |
| 1 | Hapmap35190-BES10_Contig762_2071 | 0        |          | 75433980 |

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| 1 | Hapmap25308-BTA-153014         | 0 | 75505402 |  |
| 1 | ARS-BFGL-NGS-34525             | 0 | 75588102 |  |
| 1 | ARS-BFGL-NGS-15456             | 0 | 75618069 |  |
| 1 | ARS-BFGL-BAC-31478             | 0 | 75691167 |  |
| 1 | Hapmap39961-BTA-100527         | 0 | 75796077 |  |
| 1 | Hapmap59172-rs29012834         | 0 | 75880996 |  |
| 1 | Hapmap26435-BTA-152318         | 0 | 75904282 |  |
| 1 | ARS-BFGL-NGS-72713             | 0 | 75958384 |  |
| 1 | ARS-BFGL-NGS-64672             | 0 | 76248393 |  |
| 1 | Hapmap42898-BTA-28764          | 0 | 76295386 |  |
| 1 | BTA-28763-no-rs                | 0 | 76331663 |  |
| 1 | ARS-BFGL-NGS-30137             | 0 | 76378436 |  |
| 1 | ARS-BFGL-NGS-41839             | 0 | 76416854 |  |
| 1 | ARS-BFGL-BAC-31487             | 0 | 76471373 |  |
| 1 | BTA-116098-no-rs               | 0 | 76505437 |  |
| 1 | Hapmap51363-BTA-97517          | 0 | 76534601 |  |
| 1 | Hapmap44063-BTA-36599          | 0 | 76622415 |  |
| 1 | ARS-BFGL-NGS-14060             | 0 | 76645192 |  |
| 1 | BTA-95639-no-rs                | 0 | 76709967 |  |
| 1 | BTA-95638-no-rs                | 0 | 76739280 |  |
| 1 | ARS-BFGL-BAC-31482             | 0 | 76792695 |  |
| 1 | BTA-95655-no-rs                | 0 | 76836634 |  |
| 1 | BTA-18708-no-rs                | 0 | 76876908 |  |
| 1 | Hapmap50334-BTA-36619          | 0 | 76938175 |  |
| 1 | ARS-BFGL-NGS-34347             | 0 | 76994474 |  |
| 1 | Hapmap44231-BTA-36623          | 0 | 77207875 |  |
| 1 | BTA-36624-no-rs                | 0 | 77248361 |  |
| 1 | Hapmap34720-BES7_Contig462_688 | 0 | 77282369 |  |
| 1 | ARS-BFGL-NGS-46610             | 0 | 77322075 |  |
| 1 | Hapmap25593-BTA-151723         | 0 | 77420174 |  |
| 1 | Hapmap42923-BTA-36604          | 0 | 77485396 |  |
| 1 | ARS-BFGL-NGS-80187             | 0 | 77606842 |  |
| 1 | BTA-36608-no-rs                | 0 | 77647196 |  |
| 1 | ARS-BFGL-NGS-76454             | 0 | 77671608 |  |
| 1 | Hapmap33573-BTA-124252         | 0 | 77714385 |  |
| 1 | Hapmap41244-BTA-36610          | 0 | 77889364 |  |
| 1 | Hapmap48729-BTA-36615          | 0 | 77983959 |  |
| 1 | Hapmap58919-rs29009958         | 0 | 78034231 |  |
| 1 | ARS-BFGL-NGS-56146             | 0 | 78088393 |  |
| 1 | Hapmap39375-BTA-112108         | 0 | 78449548 |  |
| 1 | Hapmap47180-BTA-112104         | 0 | 78511271 |  |
| 1 | ARS-BFGL-NGS-39176             | 0 | 78601007 |  |
| 1 | ARS-BFGL-NGS-13617             | 0 | 78637787 |  |
| 1 | Hapmap26500-BTA-37512          | 0 | 78763254 |  |
| 1 | ARS-BFGL-BAC-31500             | 0 | 78791994 |  |
| 1 | BTA-37493-no-rs                | 0 | 78826926 |  |
| 1 | BTB-00034904                   | 0 | 78851043 |  |
| 1 | BTA-37492-no-rs                | 0 | 78881308 |  |
| 1 | BTB-00034886                   | 0 | 78904951 |  |
| 1 | BTA-37489-no-rs                | 0 | 78930531 |  |
| 1 | ARS-BFGL-NGS-47287             | 0 | 78964672 |  |
| 1 | ARS-BFGL-NGS-119431            | 0 | 78986953 |  |
| 1 | ARS-BFGL-BAC-33415             | 0 | 79009807 |  |
| 1 | BTB-00034743                   | 0 | 79034999 |  |

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| 1 | Hapmap43564-BTA-36647  | 0 | 79058798 |
| 1 | BTB-00034692           | 0 | 79109155 |
| 1 | Hapmap40722-BTA-36642  | 0 | 79143280 |
| 1 | BTA-112299-no-rs       | 0 | 79169547 |
| 1 | BTB-00034595           | 0 | 79217648 |
| 1 | ARS-BFGL-NGS-111725    | 0 | 79274441 |
| 1 | ARS-BFGL-NGS-25522     | 0 | 79324497 |
| 1 | BTB-00034522           | 0 | 79359163 |
| 1 | Hapmap60527-rs29019904 | 0 | 79472090 |
| 1 | BTB-00034294           | 0 | 79498250 |
| 1 | Hapmap27043-BTA-36631  | 0 | 79501059 |
| 1 | BTB-00034221           | 0 | 79591551 |
| 1 | Hapmap51218-BTA-36630  | 0 | 79629427 |
| 1 | BTB-00034202           | 0 | 79671395 |
| 1 | Hapmap49586-BTA-36632  | 0 | 79700956 |
| 1 | ARS-BFGL-NGS-106728    | 0 | 79755519 |
| 1 | ARS-BFGL-NGS-24966     | 0 | 79780029 |
| 1 | ARS-BFGL-NGS-44036     | 0 | 79814427 |
| 1 | ARS-BFGL-NGS-68451     | 0 | 79841328 |
| 1 | ARS-BFGL-NGS-113198    | 0 | 79880934 |
| 1 | Hapmap51438-BTA-37566  | 0 | 79904055 |
| 1 | ARS-BFGL-NGS-111888    | 0 | 79961896 |
| 1 | BTB-00036018           | 0 | 80019442 |
| 1 | ARS-BFGL-NGS-100951    | 0 | 80063107 |
| 1 | BTA-37567-no-rs        | 0 | 80103951 |
| 1 | Hapmap41250-BTA-38429  | 0 | 80140397 |
| 1 | ARS-BFGL-NGS-13183     | 0 | 80160864 |
| 1 | ARS-BFGL-NGS-38958     | 0 | 80198903 |
| 1 | ARS-BFGL-NGS-22536     | 0 | 80269992 |
| 1 | BTB-00036138           | 0 | 80349645 |
| 1 | BTB-00036147           | 0 | 80393656 |
| 1 | Hapmap50131-BTA-85559  | 0 | 80427462 |
| 1 | ARS-BFGL-NGS-103850    | 0 | 80470951 |
| 1 | ARS-BFGL-NGS-19741     | 0 | 80548510 |
| 1 | BTB-01411638           | 0 | 80576593 |
| 1 | ARS-BFGL-NGS-15140     | 0 | 80612046 |
| 1 | ARS-BFGL-NGS-15671     | 0 | 80639065 |
| 1 | ARS-BFGL-NGS-79990     | 0 | 80661482 |
| 1 | BTA-38441-no-rs        | 0 | 80875014 |
| 1 | ARS-BFGL-NGS-44794     | 0 | 80896616 |
| 1 | BTA-38445-no-rs        | 0 | 80923799 |
| 1 | BTA-01205-rs29012172   | 0 | 80945924 |
| 1 | ARS-BFGL-NGS-26946     | 0 | 80974985 |
| 1 | Hapmap43250-BTA-37524  | 0 | 81018906 |
| 1 | BTB-00035080           | 0 | 81044806 |
| 1 | BTA-37523-no-rs        | 0 | 81072227 |
| 1 | UA-IFASA-6360          | 0 | 81118415 |
| 1 | BTA-39534-no-rs        | 0 | 81140392 |
| 1 | Hapmap47934-BTA-38431  | 0 | 81160609 |
| 1 | ARS-BFGL-NGS-96340     | 0 | 81209053 |
| 1 | BTA-39532-no-rs        | 0 | 81239683 |
| 1 | Hapmap49149-BTA-39529  | 0 | 81271586 |
| 1 | BTA-39497-no-rs        | 0 | 81324674 |
| 1 | Hapmap14994-rs29012500 | 0 | 81345283 |

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| 1 | ARS-BFGL-NGS-78633     | 0        | 81373204 |
| 1 | BTB-00037326           | 0        | 81406451 |
| 1 | ARS-BFGL-NGS-112626    | 0        | 81458625 |
| 1 | Hapmap41856-BTA-39501  | 0        | 81486839 |
| 1 | Hapmap53238-rs29021199 | 0        | 81516088 |
| 1 | BTA-39503-no-rs        | 0        | 81540249 |
| 1 | ARS-BFGL-NGS-17054     | 0        | 81561737 |
| 1 | BTA-39510-no-rs        | 0        | 81589478 |
| 1 | ARS-BFGL-NGS-106454    | 0        | 81623098 |
| 1 | ARS-BFGL-NGS-116286    | 0        | 81656974 |
| 1 | ARS-BFGL-NGS-71379     | 0        | 81702230 |
| 1 | Hapmap42929-BTA-39525  | 0        | 81735566 |
| 1 | BTA-39523-no-rs        | 0        | 81760654 |
| 1 | BTA-39521-no-rs        | 0        | 81790858 |
| 1 | BTA-39518-no-rs        | 0        | 81831778 |
| 1 | ARS-BFGL-NGS-56254     | 0        | 81859735 |
| 1 | Hapmap51440-BTA-39517  | 0        | 81894812 |
| 1 | BTB-01187540           | 0        | 82007029 |
| 1 | Hapmap55227-rs29009709 | 0        | 82032365 |
| 1 | BTB-01777594           | 0        | 82059960 |
| 1 | BTB-01187501           | 0        | 82120231 |
| 1 | Hapmap47824-BTA-107197 | 0        | 82147822 |
| 1 | Hapmap53346-ss46526210 | 0        | 82176939 |
| 1 | ARS-BFGL-NGS-61854     | 0        | 82216432 |
| 1 | BTB-01187418           | 0        | 82261456 |
| 1 | ARS-BFGL-NGS-50379     | 0        | 82292403 |
| 1 | Hapmap54984-rs29020611 | 0        | 82338088 |
| 1 | BTA-107210-no-rs       | 0        | 82413102 |
| 1 | BTB-01187109           | 0        | 82436081 |
| 1 | BTA-107196-no-rs       | 0        | 82468782 |
| 1 | BTB-00035766           | 0        | 82510970 |
| 1 | Hapmap42233-BTA-49670  | 0        | 82559884 |
| 1 | ARS-BFGL-NGS-19217     | 0        | 82680131 |
| 1 | Hapmap30916-BTA-91383  | 0        | 82702231 |
| 1 | ARS-BFGL-NGS-111849    | 0        | 82725824 |
| 1 | BTB-01059241           | 0        | 82787221 |
| 1 | Hapmap49142-BTA-38495  | 0        | 82834398 |
| 1 | Hapmap27573-BTA-124304 | 0        | 82855049 |
| 1 | BTA-38502-no-rs        | 0        | 82928948 |
| 1 | ARS-BFGL-NGS-14913     | 0        | 82951366 |
| 1 | ARS-BFGL-NGS-68869     | 0        | 83006326 |
| 1 | ARS-BFGL-NGS-98669     | 0        | 83030921 |
| 1 | ARS-BFGL-NGS-27858     | 0        | 83055464 |
| 1 | ARS-BFGL-NGS-27316     | 0        | 83081849 |
| 1 | Hapmap40421-BTA-39479  | 0        | 83110583 |
| 1 | ARS-BFGL-NGS-69661     | 0        | 83132079 |
| 1 | BTB-00037209           | 0        | 83154570 |
| 1 | BTA-39489-no-rs        | 0        | 83178207 |
| 1 | ARS-BFGL-NGS-64298     | 0        | 83212365 |
| 1 | ARS-BFGL-NGS-29500     | 83267242 |          |
| 1 | BTB-00036349           | 0        | 83316586 |
| 1 | ARS-BFGL-NGS-50440     | 83368535 |          |
| 1 | ARS-BFGL-NGS-35667     | 0        | 83402539 |
| 1 | Hapmap23583-BTA-124292 | 0        | 83547131 |

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| 1 | Hapmap41853-BTA-38436  | 0 | 83618707 |
| 1 | ARS-BFGL-NGS-25172     | 0 | 83643332 |
| 1 | BTB-01764839           | 0 | 83672872 |
| 1 | Hapmap49141-BTA-38455  | 0 | 83807479 |
| 1 | ARS-BFGL-NGS-116572    | 0 | 83838758 |
| 1 | Hapmap39022-BTA-38447  | 0 | 83859398 |
| 1 | ARS-BFGL-NGS-53869     | 0 | 83916372 |
| 1 | Hapmap40527-BTA-38457  | 0 | 84111692 |
| 1 | Hapmap52416-rs29016842 | 0 | 84175752 |
| 1 | BTB-01915967           | 0 | 84227252 |
| 1 | BTB-00036641           | 0 | 84254805 |
| 1 | Hapmap57391-rs29026905 | 0 | 84269107 |
| 1 | BTB-00036444           | 0 | 84345904 |
| 1 | Hapmap51899-BTA-38469  | 0 | 84372588 |
| 1 | BTB-01702174           | 0 | 84424501 |
| 1 | BTB-01702150           | 0 | 84446080 |
| 1 | Hapmap57884-rs29026697 | 0 | 84515050 |
| 1 | ARS-BFGL-NGS-22690     | 0 | 84559546 |
| 1 | BTB-01431374           | 0 | 84580772 |
| 1 | ARS-BFGL-NGS-40470     | 0 | 84614199 |
| 1 | ARS-BFGL-NGS-16561     | 0 | 84650093 |
| 1 | BTB-01431442           | 0 | 84679123 |
| 1 | Hapmap47779-BTA-92798  | 0 | 84705191 |
| 1 | BTB-00037801           | 0 | 84748706 |
| 1 | Hapmap38311-BTA-39536  | 0 | 84790848 |
| 1 | Hapmap44071-BTA-39540  | 0 | 84850448 |
| 1 | BTA-39546-no-rs        | 0 | 84897864 |
| 1 | ARS-BFGL-NGS-118640    | 0 | 84944278 |
| 1 | BTB-00038173           | 0 | 84991511 |
| 1 | BTB-00038184           | 0 | 85013713 |
| 1 | BTA-39548-no-rs        | 0 | 85151862 |
| 1 | BTB-00038398           | 0 | 85178385 |
| 1 | Hapmap40679-BTA-122761 | 0 | 85200157 |
| 1 | Hapmap55404-rs29024815 | 0 | 85294656 |
| 1 | BTB-00038421           | 0 | 85442472 |
| 1 | Hapmap33711-BTA-124326 | 0 | 85525315 |
| 1 | ARS-BFGL-NGS-117410    | 0 | 85671043 |
| 1 | Hapmap23258-BTA-124332 | 0 | 85704001 |
| 1 | Hapmap42933-BTA-40454  | 0 | 85731453 |
| 1 | BTA-100920-no-rs       | 0 | 85760198 |
| 1 | ARS-BFGL-NGS-54077     | 0 | 85911356 |
| 1 | BTB-00038446           | 0 | 85959409 |
| 1 | BTB-00037084           | 0 | 86029442 |
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| 1 | Hapmap44647-BTA-38494  | 0 | 86087819 |
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| 1 | Hapmap43254-BTA-38489  | 0 | 86421573 |
| 1 | BTA-38487-no-rs        | 0 | 86448644 |
| 1 | BTB-00036985           | 0 | 86476259 |
| 1 | BTB-00036965           | 0 | 86543082 |
| 1 | ARS-BFGL-NGS-115710    | 0 | 86596243 |
| 1 | Hapmap48736-BTA-38482  | 0 | 86642884 |
| 1 | BTB-00036914           | 0 | 86672185 |

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| 1 | ARS-BFGL-NGS-72201     | 0        | 86753474 |
| 1 | ARS-BFGL-NGS-82014     | 0        | 86777370 |
| 1 | BTB-00036683           | 0        | 86818418 |
| 1 | ARS-BFGL-NGS-110543    | 0        | 86867787 |
| 1 | BTB-00036784           | 0        | 86888776 |
| 1 | Hapmap45277-BTA-38474  | 0        | 86910584 |
| 1 | BTA-38473-no-rs        | 0        | 86931672 |
| 1 | BTA-38476-no-rs        | 0        | 86968922 |
| 1 | ARS-BFGL-NGS-22301     | 0        | 87017394 |
| 1 | ARS-BFGL-BAC-63630     | 87100663 |          |
| 1 | Hapmap52334-rs29027507 | 0        | 87161990 |
| 1 | BTA-40478-no-rs        | 0        | 87226006 |
| 1 | ARS-BFGL-NGS-13673     | 0        | 87402236 |
| 1 | ARS-BFGL-BAC-33122     | 0        | 87424785 |
| 1 | ARS-BFGL-NGS-20558     | 0        | 87454919 |
| 1 | ARS-BFGL-NGS-30991     | 0        | 87490723 |
| 1 | BTB-02052555           | 0        | 87539440 |
| 1 | Hapmap59015-rs29021588 | 0        | 87573900 |
| 1 | BTB-00038588           | 0        | 87615299 |
| 1 | BTB-00038586           | 0        | 87664746 |
| 1 | Hapmap49096-BTA-25573  | 0        | 87725213 |
| 1 | BTA-13139-rs29018103   | 0        | 87774971 |
| 1 | BTB-01293857           | 0        | 87802892 |
| 1 | BTB-01858021           | 0        | 87829634 |
| 1 | Hapmap44359-BTA-25574  | 0        | 87913280 |
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| 1 | BTA-25575-no-rs        | 0        | 87972118 |
| 1 | ARS-BFGL-NGS-105257    | 0        | 87992112 |
| 1 | Hapmap27233-BTA-162669 | 0        | 88022055 |
| 1 | Hapmap47477-BTA-103865 | 0        | 88050696 |
| 1 | BTA-103871-no-rs       | 0        | 88086502 |
| 1 | Hapmap54455-rs29016036 | 0        | 88117471 |
| 1 | ARS-BFGL-NGS-114428    | 0        | 88150843 |
| 1 | Hapmap57808-rs29009859 | 0        | 88167139 |
| 1 | Hapmap47817-BTA-104461 | 0        | 88205509 |
| 1 | BTB-01837777           | 0        | 88262684 |
| 1 | ARS-BFGL-NGS-82489     | 0        | 88327865 |
| 1 | BTB-00039314           | 0        | 88358715 |
| 1 | BTB-00039253           | 0        | 88462591 |
| 1 | ARS-BFGL-NGS-112470    | 0        | 88489434 |
| 1 | Hapmap54781-rs29010500 | 0        | 88539617 |
| 1 | Hapmap27046-BTA-40513  | 0        | 88580973 |
| 1 | BTA-40510-no-rs        | 0        | 88638760 |
| 1 | Hapmap23067-BTA-124363 | 0        | 88676538 |
| 1 | BTA-40495-no-rs        | 0        | 88698235 |
| 1 | Hapmap58015-rs29026448 | 0        | 88801264 |
| 1 | BTA-40481-no-rs        | 0        | 88899250 |
| 1 | BTB-01195902           | 0        | 89059581 |
| 1 | BTA-108728-no-rs       | 0        | 89091419 |
| 1 | BTA-108733-no-rs       | 0        | 89140501 |
| 1 | BTB-01195945           | 0        | 89189213 |
| 1 | Hapmap47529-BTA-122384 | 0        | 89243673 |
| 1 | BTB-01196345           | 0        | 89284818 |
| 1 | ARS-BFGL-NGS-94042     | 0        | 89325400 |



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| 1 | BTB-01196514           | 0 | 89358747 |
| 1 | Hapmap51798-BTA-108723 | 0 | 89389341 |
| 1 | Hapmap27729-BTA-108726 | 0 | 89431170 |
| 1 | ARS-BFGL-NGS-16663     | 0 | 89453518 |
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| 1 | BTB-01196519           | 0 | 89563554 |
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| 1 | BTB-00040624           | 0 | 89625133 |
| 1 | BTA-119425-no-rs       | 0 | 89671800 |
| 1 | BTB-01401158           | 0 | 89701222 |
| 1 | Hapmap51342-BTA-88730  | 0 | 89734339 |
| 1 | UA-IFASA-7467          | 0 | 89755328 |
| 1 | BTA-88734-no-rs        | 0 | 89784824 |
| 1 | BTB-01401420           | 0 | 89810818 |
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| 1 | Hapmap51446-BTA-41504  | 0 | 89877873 |
| 1 | ARS-BFGL-NGS-23253     | 0 | 89900842 |
| 1 | Hapmap27148-BTA-124406 | 0 | 89941301 |
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| 1 | BTA-41484-no-rs        | 0 | 90283892 |
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| 1 | Hapmap41534-BTA-41482  | 0 | 90377648 |
| 1 | ARS-BFGL-NGS-78317     | 0 | 90430877 |
| 1 | ARS-BFGL-NGS-29444     | 0 | 90451222 |
| 1 | BTA-41479-no-rs        | 0 | 90503071 |
| 1 | BTA-41478-no-rs        | 0 | 90561071 |
| 1 | ARS-BFGL-NGS-12933     | 0 | 90637000 |
| 1 | ARS-BFGL-BAC-36098     | 0 | 90689913 |
| 1 | Hapmap48236-BTA-17964  | 0 | 90714916 |
| 1 | Hapmap60827-rs29019866 | 0 | 90759099 |
| 1 | Hapmap49986-BTA-41525  | 0 | 90802931 |
| 1 | Hapmap30020-BTA-150228 | 0 | 90895301 |
| 1 | Hapmap46543-BTA-94613  | 0 | 90916197 |
| 1 | BTA-94619-no-rs        | 0 | 90956859 |
| 1 | Hapmap54568-rs29010311 | 0 | 91001080 |
| 1 | BTA-94612-no-rs        | 0 | 91031267 |
| 1 | Hapmap28877-BTA-24431  | 0 | 91066621 |
| 1 | BTA-24432-no-rs        | 0 | 91093330 |
| 1 | Hapmap44640-BTA-24435  | 0 | 91117527 |
| 1 | Hapmap55511-rs29010538 | 0 | 91154241 |
| 1 | BTB-01331667           | 0 | 91248261 |
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| 1 | ARS-BFGL-NGS-60701     | 0 | 91358383 |
| 1 | Hapmap27463-BTA-162240 | 0 | 91435586 |
| 1 | BTB-01846098           | 0 | 91460563 |
| 1 | BTA-24172-no-rs        | 0 | 91490680 |
| 1 | BTA-24073-no-rs        | 0 | 91533901 |
| 1 | Hapmap41804-BTA-24071  | 0 | 91554463 |

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| 1 | ARS-BFGL-NGS-67044              | 0 | 91582464 |          |
| 1 | BTB-01342372                    | 0 | 91687256 |          |
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| 1 | ARS-BFGL-NGS-20424              | 0 | 91840712 |          |
| 1 | BTB-02064590                    | 0 | 91857655 |          |
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| 1 | Hapmap34097-BES3_Contig167_336  | 0 |          | 92090517 |
| 1 | BTB-01331303                    | 0 | 92138426 |          |
| 1 | BTB-01748272                    | 0 | 92171349 |          |
| 1 | BTA-118144-no-rs                | 0 | 92204771 |          |
| 1 | BTA-112211-no-rs                | 0 | 92225849 |          |
| 1 | BTA-24325-no-rs                 | 0 | 92273799 |          |
| 1 | BTB-01331221                    | 0 | 92308130 |          |
| 1 | BTB-01331173                    | 0 | 92331878 |          |
| 1 | BTB-01211220                    | 0 | 92357722 |          |
| 1 | Hapmap47178-BTA-111157          | 0 | 92461552 |          |
| 1 | ARS-BFGL-NGS-39699              | 0 | 92581626 |          |
| 1 | Hapmap26451-BTA-156064          | 0 | 92615520 |          |
| 1 | Hapmap52705-rs29019397          | 0 | 92648727 |          |
| 1 | ARS-BFGL-NGS-23990              | 0 | 92687973 |          |
| 1 | Hapmap54865-rs29015706          | 0 | 92748968 |          |
| 1 | BTA-17925-no-rs                 | 0 | 92856829 |          |
| 1 | Hapmap34541-BES11_Contig293_887 | 0 |          | 92893684 |
| 1 | BTA-17923-no-rs                 | 0 | 92958471 |          |
| 1 | Hapmap53960-rs29016796          | 0 | 93002837 |          |
| 1 | BTA-17929-no-rs                 | 0 | 93084421 |          |
| 1 | BTA-17930-no-rs                 | 0 | 93172083 |          |
| 1 | Hapmap40307-BTA-42417           | 0 | 93252325 |          |
| 1 | BTA-07846-rs29027508            | 0 | 93279488 |          |
| 1 | Hapmap25356-BTA-42424           | 0 | 93375720 |          |
| 1 | Hapmap50358-BTA-42427           | 0 | 93403653 |          |
| 1 | ARS-BFGL-NGS-40011              | 0 | 93470466 |          |
| 1 | Hapmap42562-BTA-48245           | 0 | 93567460 |          |
| 1 | ARS-BFGL-NGS-107347             | 0 | 93601848 |          |
| 1 | BTA-48243-no-rs                 | 0 | 93639215 |          |
| 1 | Hapmap61079-rs29013410          | 0 | 93892947 |          |
| 1 | Hapmap42952-BTA-48143           | 0 | 93954887 |          |
| 1 | ARS-BFGL-BAC-36882              | 0 | 94053202 |          |
| 1 | ARS-BFGL-BAC-36880              | 0 | 94090278 |          |
| 1 | Hapmap49190-BTA-48142           | 0 | 94127480 |          |
| 1 | ARS-BFGL-BAC-36877              | 0 | 94168061 |          |
| 1 | Hapmap55432-rs29009621          | 0 | 94214604 |          |
| 1 | BTA-121233-no-rs                | 0 | 94239208 |          |
| 1 | Hapmap42235-BTA-50604           | 0 | 94335885 |          |
| 1 | BTB-00768631                    | 0 | 94367295 |          |
| 1 | Hapmap24383-BTA-158893          | 0 | 94471948 |          |
| 1 | BTB-01087150                    | 0 | 94512100 |          |
| 1 | BTA-85701-no-rs                 | 0 | 94585445 |          |
| 1 | Hapmap42095-BTA-120006          | 0 | 94623786 |          |
| 1 | ARS-BFGL-NGS-14083              | 0 | 94677356 |          |

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| 1 | ARS-BFGL-NGS-106939    | 0        | 94730717 |
| 1 | BTB-01086885           | 0        | 94776896 |
| 1 | ARS-BFGL-NGS-80214     | 0        | 94860836 |
| 1 | BTB-01086841           | 0        | 94882093 |
| 1 | BTB-01086812           | 0        | 94923462 |
| 1 | BTB-01086804           | 0        | 94952782 |
| 1 | BTB-01086791           | 0        | 94980756 |
| 1 | Hapmap40301-BTA-119986 | 0        | 95029947 |
| 1 | Hapmap27891-BTA-158889 | 0        | 95064999 |
| 1 | BTA-11416-rs29017177   | 0        | 95101691 |
| 1 | ARS-BFGL-NGS-18020     | 0        | 95133504 |
| 1 | ARS-BFGL-NGS-22239     | 0        | 95213011 |
| 1 | Hapmap41451-BTA-119981 | 0        | 95258770 |
| 1 | BTB-01086542           | 0        | 95279975 |
| 1 | BTB-01591692           | 0        | 95297194 |
| 1 | ARS-BFGL-NGS-113387    | 0        | 95343592 |
| 1 | Hapmap58800-rs29016980 | 0        | 95394906 |
| 1 | ARS-BFGL-NGS-83934     | 0        | 95423065 |
| 1 | Hapmap52675-rs29021342 | 0        | 95477262 |
| 1 | Hapmap48635-BTA-118353 | 0        | 95608009 |
| 1 | ARS-BFGL-BAC-36902     | 0        | 95684940 |
| 1 | BTA-122559-no-rs       | 0        | 95718992 |
| 1 | ARS-BFGL-NGS-104619    | 0        | 95750768 |
| 1 | ARS-BFGL-NGS-111885    | 0        | 95819377 |
| 1 | ARS-BFGL-NGS-20110     | 95847141 |          |
| 1 | Hapmap32288-BTA-124469 | 0        | 95981167 |
| 1 | Hapmap58062-rs29012621 | 0        | 96059058 |
| 1 | ARS-BFGL-NGS-87530     | 96169900 |          |
| 1 | ARS-BFGL-NGS-110016    | 0        | 96217131 |
| 1 | BTA-44237-no-rs        | 0        | 96252890 |
| 1 | Hapmap50694-BTA-44240  | 0        | 96299260 |
| 1 | Hapmap59668-rs29015093 | 0        | 96382717 |
| 1 | BTA-44249-no-rs        | 0        | 96472067 |
| 1 | ARS-BFGL-NGS-104596    | 0        | 96508341 |
| 1 | BTA-44254-no-rs        | 0        | 96553339 |
| 1 | Hapmap42941-BTA-44265  | 0        | 96582794 |
| 1 | BTA-44267-no-rs        | 0        | 96677750 |
| 1 | ARS-BFGL-NGS-14357     | 0        | 96791940 |
| 1 | Hapmap51902-BTA-44288  | 0        | 96942516 |
| 1 | Hapmap47007-BTA-43282  | 0        | 97123740 |
| 1 | ARS-BFGL-NGS-96389     | 0        | 97160730 |
| 1 | UA-IFASA-7818          | 0        | 97195480 |
| 1 | BTA-43302-no-rs        | 0        | 97276664 |
| 1 | ARS-BFGL-NGS-60021     | 0        | 97300654 |
| 1 | ARS-BFGL-BAC-31698     | 0        | 97339425 |
| 1 | Hapmap38956-BTA-43309  | 0        | 97366225 |
| 1 | Hapmap54512-rs29023726 | 0        | 97390136 |
| 1 | ARS-BFGL-NGS-19572     | 0        | 97420045 |
| 1 | Hapmap49174-BTA-43310  | 0        | 97458910 |
| 1 | ARS-BFGL-NGS-43870     | 97484342 |          |
| 1 | ARS-BFGL-NGS-96411     | 0        | 97515884 |
| 1 | ARS-BFGL-NGS-94996     | 0        | 97564276 |
| 1 | Hapmap42551-BTA-43327  | 0        | 97606601 |
| 1 | ARS-BFGL-NGS-112806    | 0        | 97642612 |

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| 1 | BTA-43335-no-rs                  | 0 | 97669242  |          |
| 1 | Hapmap27374-BTA-124435           | 0 | 97696420  |          |
| 1 | ARS-BFGL-NGS-94323               | 0 | 97746135  |          |
| 1 | Hapmap31867-BTA-43339            | 0 | 97855005  |          |
| 1 | BTA-43340-no-rs                  | 0 | 97906442  |          |
| 1 | Hapmap40001-BTA-43342            | 0 | 97931346  |          |
| 1 | BTA-43345-no-rs                  | 0 | 97955982  |          |
| 1 | Hapmap27375-BTA-124441           | 0 | 98033610  |          |
| 1 | ARS-BFGL-NGS-72769               | 0 | 98054518  |          |
| 1 | Hapmap39920-BTA-43352            | 0 | 98078072  |          |
| 1 | ARS-BFGL-NGS-34686               | 0 | 98133752  |          |
| 1 | ARS-BFGL-NGS-29866               | 0 | 98196332  |          |
| 1 | Hapmap54106-rs29011049           | 0 | 98238089  |          |
| 1 | Hapmap40109-BTA-120766           | 0 | 98274088  |          |
| 1 | BTA-43360-no-rs                  | 0 | 98343497  |          |
| 1 | Hapmap46568-BTA-43363            | 0 | 98370433  |          |
| 1 | Hapmap58135-rs29019531           | 0 | 98430806  |          |
| 1 | Hapmap31069-BTA-124454           | 0 | 98552740  |          |
| 1 | BTB-00042406                     | 0 | 98602410  |          |
| 1 | Hapmap55148-rs29025486           | 0 | 98626202  |          |
| 1 | BTB-00042454                     | 0 | 98664177  |          |
| 1 | BTB-00042539                     | 0 | 98702244  |          |
| 1 | BTB-00042515                     | 0 | 98728925  |          |
| 1 | Hapmap44463-BTA-43379            | 0 | 98750172  |          |
| 1 | BTB-00042676                     | 0 | 98779294  |          |
| 1 | Hapmap46140-BTA-43381            | 0 | 98808327  |          |
| 1 | BTB-00042694                     | 0 | 98848776  |          |
| 1 | Hapmap49178-BTA-44203            | 0 | 98873080  |          |
| 1 | Hapmap49992-BTA-44204            | 0 | 98898799  |          |
| 1 | BTA-44205-no-rs                  | 0 | 98920845  |          |
| 1 | Hapmap43268-BTA-44209            | 0 | 98986363  |          |
| 1 | Hapmap49612-BTA-44210            | 0 | 99013561  |          |
| 1 | Hapmap38957-BTA-44222            | 0 | 99114312  |          |
| 1 | Hapmap32784-BTA-124466           | 0 | 99156076  |          |
| 1 | Hapmap43856-BTA-44227            | 0 | 99193415  |          |
| 1 | Hapmap54778-rs29010369           | 0 | 99237377  |          |
| 1 | ARS-USMARC-Parent-DQ404149-no-rs | 0 |           | 99314925 |
| 1 | BTB-01469883                     | 0 | 99345463  |          |
| 1 | BTB-01469847                     | 0 | 99374603  |          |
| 1 | Hapmap57255-rs29022894           | 0 | 99438575  |          |
| 1 | BTA-95964-no-rs                  | 0 | 99469026  |          |
| 1 | ARS-BFGL-BAC-32494               | 0 | 99477567  |          |
| 1 | BTB-01832367                     | 0 | 99526306  |          |
| 1 | ARS-BFGL-BAC-33742               | 0 | 99552129  |          |
| 1 | BTA-24729-no-rs                  | 0 | 99597502  |          |
| 1 | Hapmap41389-BTA-95970            | 0 | 99642111  |          |
| 1 | Hapmap38449-BTA-95966            | 0 | 99716013  |          |
| 1 | Hapmap38145-BTA-23986            | 0 | 99769147  |          |
| 1 | BTB-01568299                     | 0 | 99857836  |          |
| 1 | BTB-01568192                     | 0 | 99905012  |          |
| 1 | BTB-01568308                     | 0 | 99961868  |          |
| 1 | BTB-00044639                     | 0 | 99997409  |          |
| 1 | BTA-45212-no-rs                  | 0 | 100021883 |          |
| 1 | Hapmap59492-rs29020368           | 0 | 100041952 |          |

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| 1 | Hapmap46219-BTA-45209  | 0 | 100094035 |
| 1 | ARS-BFGL-BAC-32921     | 0 | 100151489 |
| 1 | BTB-00044397           | 0 | 100172966 |
| 1 | Hapmap48767-BTA-45204  | 0 | 100200649 |
| 1 | BTA-45203-no-rs        | 0 | 100237544 |
| 1 | BTA-45195-no-rs        | 0 | 100297745 |
| 1 | ARS-BFGL-NGS-38583     | 0 | 100348072 |
| 1 | Hapmap48344-BTA-45183  | 0 | 100382840 |
| 1 | BTB-00043898           | 0 | 100432385 |
| 1 | ARS-BFGL-NGS-22608     | 0 | 100481800 |
| 1 | BTA-45180-no-rs        | 0 | 100513127 |
| 1 | BTB-00043787           | 0 | 100564241 |
| 1 | Hapmap47302-BTA-45176  | 0 | 100605192 |
| 1 | BTB-00043646           | 0 | 100663074 |
| 1 | BTB-00043598           | 0 | 100737627 |
| 1 | BTB-01631847           | 0 | 100760752 |
| 1 | BTB-01631727           | 0 | 100800828 |
| 1 | Hapmap49857-BTA-109064 | 0 | 100835682 |
| 1 | BTB-00043545           | 0 | 100862935 |
| 1 | Hapmap27376-BTA-124483 | 0 | 100920014 |
| 1 | ARS-BFGL-NGS-61644     | 0 | 100957801 |
| 1 | BTB-01234729           | 0 | 101033651 |
| 1 | BTB-01234598           | 0 | 101103098 |
| 1 | BTB-01234531           | 0 | 101140718 |
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| 1 | Hapmap32126-BTA-157362 | 0 | 101231777 |
| 1 | BTA-115500-no-rs       | 0 | 101308751 |
| 1 | Hapmap33240-BTA-157357 | 0 | 101330295 |
| 1 | BTB-01234321           | 0 | 101366448 |
| 1 | Hapmap41469-BTA-19461  | 0 | 101403755 |
| 1 | Hapmap43160-BTA-116211 | 0 | 101476469 |
| 1 | BTA-109808-no-rs       | 0 | 101537204 |
| 1 | Hapmap39712-BTA-109811 | 0 | 101583260 |
| 1 | BTB-01136854           | 0 | 101664632 |
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| 1 | Hapmap59854-rs29026147 | 0 | 101773849 |
| 1 | BTB-01136812           | 0 | 101816107 |
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| 1 | Hapmap27036-BTA-163250          | 0 | 106453206 |  |
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| 1 | BTB-00047642                    | 0 | 107257059 |  |
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| 1 | ARS-BFGL-NGS-235                | 0 | 108199006 |  |
| 1 | ARS-BFGL-NGS-114023             | 0 | 108249215 |  |
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| 1 | BTA-45222-no-rs        | 0 | 108352293 |
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| 1 | Hapmap38386-BTA-122729 | 0 | 108634690 |
| 1 | ARS-BFGL-NGS-110222    | 0 | 108673807 |
| 1 | Hapmap42097-BTA-120192 | 0 | 108708542 |
| 1 | BTA-120188-no-rs       | 0 | 108748198 |
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| 1 | ARS-BFGL-NGS-97925     | 0 | 112344219 |
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| 1 | BTA-104132-no-rs       | 0 | 112396926 |
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| 1 | BTB-01058465           | 0 | 113745976 |
| 1 | BTA-97864-no-rs        | 0 | 113780811 |
| 1 | BTA-122011-no-rs       | 0 | 113821052 |
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| 1 | BTA-89559-no-rs                | 0 | 114053800 |           |
| 1 | BTB-01057979                   | 0 | 114085424 |           |
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| 1 | Hapmap35306-BES9_Contig289_730 | 0 |           | 114180799 |
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| 1 | Hapmap39601-BTA-89540          | 0 | 114270026 |           |
| 1 | ARS-BFGL-NGS-119781            | 0 | 114290180 |           |
| 1 | BTB-01649757                   | 0 | 114338523 |           |
| 1 | ARS-BFGL-NGS-46265             | 0 | 114378974 |           |
| 1 | Hapmap26702-BTA-148607         | 0 | 114498544 |           |
| 1 | BTB-01057526                   | 0 | 114581555 |           |
| 1 | Hapmap47770-BTA-89520          | 0 | 114647883 |           |
| 1 | ARS-BFGL-NGS-109048            | 0 | 114737613 |           |
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| 1 | BTB-00050187                   | 0 | 114842562 |           |
| 1 | ARS-BFGL-NGS-76535             | 0 | 114868818 |           |
| 1 | BTB-01922537                   | 0 | 114907147 |           |
| 1 | ARS-BFGL-NGS-92715             | 0 | 114945541 |           |
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| 1 | Hapmap51663-BTA-94927          | 0 | 115022208 |           |
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| 1 | BTB-01744054                   | 0 | 115185215 |           |
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| 1 | BTB-00050464                   | 0 | 115499944 |           |
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| 1 | BTB-01094046                   | 0 | 115654919 |           |
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| 1 | Hapmap25235-BTA-124549         | 0 | 115810641 |           |
| 1 | BTB-00050887                   | 0 | 115882381 |           |
| 1 | BTB-01514979                   | 0 | 115917892 |           |
| 1 | Hapmap28796-BTA-112750         | 0 | 115951265 |           |
| 1 | BTB-01191390                   | 0 | 116046553 |           |
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| 1 | BTA-108007-no-rs               | 0 | 116419981 |           |
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| 1 | BTB-01575226                   | 0 | 116518604 |           |
| 1 | BTA-105039-no-rs               | 0 | 116569378 |           |
| 1 | Hapmap38720-BTA-105046         | 0 | 116582598 |           |
| 1 | Hapmap27149-BTA-124565         | 0 | 116662832 |           |
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| 1 | BTB-02083452           | 0 | 116879644 |
| 1 | Hapmap24434-BTA-48171  | 0 | 116928702 |
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| 1 | BTA-20517-no-rs        | 0 | 117585231 |
| 1 | Hapmap60528-rs29019947 | 0 | 117619160 |
| 1 | BTB-01305960           | 0 | 117722957 |
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| 1 | ARS-BFGL-NGS-25618     | 0 | 117781148 |
| 1 | BTB-01641194           | 0 | 117817906 |
| 1 | Hapmap51142-BTA-109780 | 0 | 117854060 |
| 1 | BTB-01499384           | 0 | 117894695 |
| 1 | BTA-98511-no-rs        | 0 | 117929353 |
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| 1 | Hapmap51365-BTA-98510  | 0 | 118002920 |
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| 1 | BTB-00051924           | 0 | 118374617 |
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| 1 | Hapmap46705-BTA-49345  | 0 | 118581426 |
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| 1 | BTA-99965-no-rs        | 0 | 118714300 |
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| 1 | Hapmap41567-BTA-52975  | 0 | 119226741 |
| 1 | Hapmap24824-BTA-136168 | 0 | 119266614 |
| 1 | ARS-BFGL-NGS-59470     | 0 | 119329151 |
| 1 | ARS-BFGL-NGS-31534     | 0 | 119355031 |
| 1 | Hapmap46305-BTA-53011  | 0 | 119374036 |
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| 1 | Hapmap44086-BTA-49351  | 0 | 119509629 |
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| 1 | BTB-01694682           | 0         | 123199831 |
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| 1 | BTB-01316506           | 0         | 124165667 |
| 1 | BTA-22052-no-rs        | 0         | 124196948 |
| 1 | BTA-22056-no-rs        | 0         | 124246283 |
| 1 | BTA-22045-no-rs        | 0         | 124361549 |
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| 1 | Hapmap26724-BTA-152272                | 0 | 125007936 |  |  |
| 1 | Hapmap53239-rs29021205                | 0 | 125036511 |  |  |
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| 1 | BTB-01405008                          | 0 | 125264530 |  |  |
| 1 | BTA-97832-no-rs                       | 0 | 125283942 |  |  |
| 1 | Hapmap54815-rs29020074                | 0 | 125350385 |  |  |
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| 1 | ARS-BFGL-NGS-63031                    | 0 | 125406903 |  |  |
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| 1 | BTA-29515-no-rs                       | 0 | 125977428 |  |  |
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| 1 | BTB-01369953                          | 0 | 126070556 |  |  |
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| 1 | Hapmap47487-BTA-107875                | 0 | 126199422 |  |  |
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| 1 | Hapmap41768-BTA-120174                | 0 | 126371748 |  |  |
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| 1 | ARS-BFGL-NGS-25639                    | 0 | 126651501 |  |  |
| 1 | ARS-BFGL-NGS-100109                   | 0 | 126680933 |  |  |
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| 1 | ARS-BFGL-NGS-79291                    | 0 | 126898336 |  |  |
| 1 | ARS-BFGL-BAC-72270                    | 0 | 126931293 |  |  |
| 1 | ARS-BFGL-NGS-27011                    | 0 | 127112983 |  |  |
| 1 | BTA-50361-no-rs                       | 0 | 127166834 |  |  |
| 1 | BTB-00057802                          | 0 | 127188303 |  |  |
| 1 | BTB-01935567                          | 0 | 127206157 |  |  |
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| 1 | Hapmap52333-rs29027485                | 0 | 127288890 |  |  |
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| 1 | BTA-50305-no-rs                       | 0 | 127568464 |  |  |
| 1 | BTB-00056214                          | 0 | 127591192 |  |  |
| 1 | BTB-00056233                          | 0 | 127615037 |  |  |
| 1 | BTB-00056238                          | 0 | 127649788 |  |  |
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| 1 | ARS-BFGL-NGS-115304                   | 0 | 127787580 |  |  |
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| 1 | ARS-BFGL-NGS-91090               | 127926080 |           |
| 1 | Hapmap48790-BTA-50319            | 0         | 127961597 |
| 1 | ARS-BFGL-NGS-105585              | 0         | 127998001 |
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| 1 | ARS-BFGL-BAC-16161               | 0         | 128092950 |
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| 1 | ARS-BFGL-NGS-118073              | 0         | 128471733 |
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| 1 | ARS-BFGL-NGS-42035               | 0         | 128581140 |
| 1 | ARS-BFGL-NGS-61598               | 0         | 128608115 |
| 1 | ARS-BFGL-NGS-86926               | 0         | 128637028 |
| 1 | ARS-BFGL-NGS-411                 | 0         | 128702093 |
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| 1 | Hapmap49636-BTA-50341            | 0         | 128755717 |
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| 1 | ARS-BFGL-NGS-36975               | 0         | 128799966 |
| 1 | ARS-BFGL-NGS-12240               | 128843110 |           |
| 1 | ARS-BFGL-NGS-82206               | 0         | 128864268 |
| 1 | BTA-50347-no-rs                  | 0         | 128887823 |
| 1 | ARS-BFGL-NGS-104657              | 0         | 128908587 |
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| 1 | ARS-BFGL-NGS-99827               | 0         | 129125371 |
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| 1 | BTA-49421-no-rs                  | 0         | 129230649 |
| 1 | BTB-00055174                     | 0         | 129305266 |
| 1 | ARS-BFGL-NGS-14969               | 0         | 129339868 |
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| 1 | Hapmap58543-rs29022778           | 0         | 129714829 |
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| 1 | ARS-BFGL-NGS-116159              | 0         | 129801503 |
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| 1 | Hapmap41763-BTA-117901           | 0         | 129906440 |
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| 1 | ARS-BFGL-NGS-33162               | 0         | 129974968 |
| 1 | Hapmap35473-SCAFFOLD317442_12259 | 0         | 130004188 |
| 1 | BTA-91136-no-rs                  | 0         | 130032478 |

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| 1 | ARS-BFGL-BAC-13551              | 0 | 130084788 |           |
| 1 | ARS-BFGL-NGS-35670              | 0 | 130112755 |           |
| 1 | Hapmap42453-BTA-122047          | 0 | 130168696 |           |
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| 1 | Hapmap38448-BTA-92131           | 0 | 130263640 |           |
| 1 | Hapmap35746-SCAFFOLD181011_3284 | 0 |           | 130316816 |
| 1 | Hapmap47449-BTA-96490           | 0 | 130349916 |           |
| 1 | BTB-01476933                    | 0 | 130381286 |           |
| 1 | ARS-BFGL-NGS-35567              | 0 | 130414598 |           |
| 1 | ARS-BFGL-NGS-97304              | 0 | 130461972 |           |
| 1 | ARS-BFGL-NGS-51930              |   | 130489300 |           |
| 1 | ARS-BFGL-NGS-18962              | 0 | 130517998 |           |
| 1 | ARS-BFGL-NGS-74871              | 0 | 130586554 |           |
| 1 | ARS-BFGL-NGS-112867             | 0 | 130616566 |           |
| 1 | Hapmap39275-BTA-51342           | 0 | 130684886 |           |
| 1 | ARS-BFGL-NGS-60325              | 0 | 130874607 |           |
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| 1 | ARS-BFGL-NGS-972                | 0 | 130984703 |           |
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| 1 | ARS-BFGL-NGS-44711              | 0 | 131111445 |           |
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| 1 | ARS-BFGL-NGS-56582              | 0 | 131261969 |           |
| 1 | BTB-00058404                    | 0 | 131282768 |           |
| 1 | ARS-BFGL-NGS-117553             | 0 | 131326810 |           |
| 1 | Hapmap27474-BTA-53033           | 0 | 131363073 |           |
| 1 | BTA-53036-no-rs                 | 0 | 131393055 |           |
| 1 | BTA-53040-no-rs                 | 0 | 131423039 |           |
| 1 | ARS-BFGL-BAC-59900              |   | 131463730 |           |
| 1 | ARS-BFGL-NGS-111760             | 0 | 131501278 |           |
| 1 | BTB-00058659                    | 0 | 131533041 |           |
| 1 | BTA-51376-no-rs                 | 0 | 131580342 |           |
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| 1 | ARS-BFGL-NGS-18903              | 0 | 131721599 |           |
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| 1 | ARS-BFGL-NGS-56103              | 0 | 131806595 |           |
| 1 | ARS-BFGL-NGS-26489              | 0 | 131865531 |           |
| 1 | ARS-BFGL-NGS-37759              | 0 | 131906267 |           |
| 1 | BTB-00059235                    | 0 | 131942911 |           |
| 1 | Hapmap54420-rs29021652          | 0 | 131979848 |           |
| 1 | Hapmap50014-BTA-51389           | 0 | 132011695 |           |
| 1 | ARS-BFGL-NGS-23583              | 0 | 132049236 |           |
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| 1 | ARS-BFGL-NGS-98442              | 0 | 132213890 |           |
| 1 | Hapmap51604-BTA-51399           | 0 | 132240437 |           |
| 1 | ARS-BFGL-NGS-14657              | 0 | 132312674 |           |
| 1 | Hapmap48798-BTA-51401           | 0 | 132388576 |           |
| 1 | ARS-BFGL-NGS-102045             | 0 | 132422506 |           |
| 1 | ARS-BFGL-NGS-97163              | 0 | 132444602 |           |
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| 1 | BTA-51403-no-rs                 | 0 | 132518716 |           |
| 1 | ARS-BFGL-BAC-693                | 0 | 132555764 |           |
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| 1 | BTA-53359-no-rs                 | 0 | 132647596 |           |
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| 1 | Hapmap38506-BTA-52316           | 0 | 132723503 |           |
| 1 | ARS-BFGL-NGS-79259              | 0 | 132768483 |           |
| 1 | Hapmap35028-BES2_Contig431_1271 | 0 |           | 132883951 |
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| 1 | ARS-BFGL-NGS-68753              | 0 | 133286041 |           |
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| 1 | Hapmap42863-BTA-17899           | 0 | 133707945 |           |
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| 1 | BTB-00061551                    | 0 | 133958910 |           |
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| 1 | ARS-BFGL-BAC-11057              | 0 | 134030804 |           |
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| 1 | ARS-BFGL-NGS-26880              | 0 | 134090244 |           |
| 1 | Hapmap24138-BTA-124742          | 0 | 134124559 |           |
| 1 | BTA-53322-no-rs                 | 0 | 134168204 |           |
| 1 | Hapmap29089-BTA-99541           | 0 | 134378569 |           |
| 1 | BTB-01641095                    | 0 | 134467319 |           |
| 1 | ARS-BFGL-NGS-100206             | 0 | 134500353 |           |
| 1 | Hapmap45933-BTA-53323           | 0 | 134528341 |           |
| 1 | Hapmap39319-BTA-25543           | 0 | 134593499 |           |
| 1 | BTB-01789695                    | 0 | 134641261 |           |
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| 1 | ARS-BFGL-NGS-35508              | 0 | 135028845 |           |
| 1 | ARS-BFGL-NGS-108336             | 0 | 135050488 |           |
| 1 | Hapmap35582-SCAFFOLD40562_2432  | 0 |           | 135136476 |
| 1 | ARS-BFGL-NGS-106616             | 0 | 135194234 |           |

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| 1 | ARS-BFGL-NGS-114679    | 0         | 135291628 |
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| 1 | ARS-BFGL-NGS-105305    | 0         | 135491887 |
| 1 | ARS-BFGL-NGS-101030    | 0         | 135530772 |
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| 1 | BTB-00063883           | 0         | 135909004 |
| 1 | BTB-00063876           | 0         | 135947079 |
| 1 | ARS-BFGL-NGS-13683     | 0         | 135995337 |
| 1 | ARS-BFGL-NGS-113807    | 0         | 136029972 |
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| 1 | ARS-BFGL-NGS-99025     | 0         | 136127682 |
| 1 | ARS-BFGL-NGS-24730     | 136150358 |           |
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| 1 | BTA-53368-no-rs        | 0         | 136278098 |
| 1 | BTB-00063821           | 0         | 136337997 |
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| 1 | ARS-BFGL-NGS-12806     | 0         | 136603695 |
| 1 | ARS-BFGL-NGS-107390    | 0         | 136623809 |
| 1 | ARS-BFGL-NGS-107707    | 0         | 136709558 |
| 1 | ARS-BFGL-NGS-33335     | 0         | 136745286 |
| 1 | ARS-BFGL-NGS-27844     | 0         | 136770555 |
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| 1 | ARS-BFGL-NGS-103751    | 0         | 136832697 |
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| 1 | ARS-BFGL-NGS-119153    | 0         | 136996471 |
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| 1 | ARS-BFGL-NGS-10246     | 0         | 137080380 |
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| 1 | ARS-BFGL-BAC-14873                    | 0 | 137500339 |           |  |
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| 1 | Hapmap42704-BTA-84999                 | 0 | 137648990 |           |  |
| 1 | Hapmap25857-BTA-149860                | 0 | 137741631 |           |  |
| 1 | BTB-00406913                          | 0 | 137821564 |           |  |
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| 1 | Hapmap34056-BES2_Contig421_810        | 0 |           | 138178130 |  |
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| 1 | BTB-00064766                          | 0 | 138330470 |           |  |
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| 1 | ARS-BFGL-NGS-78397                    | 0 | 138395988 |           |  |
| 1 | ARS-BFGL-NGS-42512                    | 0 | 138452988 |           |  |
| 1 | ARS-BFGL-NGS-10010                    |   | 138487358 |           |  |
| 1 | Hapmap48589-BTA-107619                | 0 | 138528244 |           |  |
| 1 | ARS-BFGL-NGS-20760                    |   | 138579674 |           |  |
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| 1 | ARS-BFGL-NGS-20387                    | 0 | 138612242 |           |  |
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| 1 | Hapmap20495-rs29024564                | 0 | 138692649 |           |  |
| 1 | BTA-39380-no-rs                       | 0 | 138713450 |           |  |
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| 1 | Hapmap52451-rs29021142                | 0 | 138784934 |           |  |
| 1 | ARS-BFGL-NGS-27857                    | 0 | 138816095 |           |  |
| 1 | ARS-BFGL-NGS-76451                    | 0 | 138927511 |           |  |
| 1 | BTB-01773077                          | 0 | 138966885 |           |  |
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| 1 | BTB-01305420                          | 0 | 139136407 |           |  |
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| 1 | BTA-122684-no-rs                      | 0 | 139231307 |           |  |
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| 1 | BTB-01305554                          | 0 | 139334259 |           |  |
| 1 | BTB-01305624                          | 0 | 139360285 |           |  |
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| 1 | ARS-BFGL-NGS-105560                   | 0 | 139450331 |           |  |
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| 1 | Hapmap47123-BTA-85678                 | 0 | 139495537 |           |  |
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| 1 | ARS-BFGL-NGS-110299                   | 0 | 139824926 |           |  |
| 1 | Hapmap54009-rs29018701                | 0 | 139894477 |           |  |
| 1 | ARS-BFGL-NGS-46370                    |   | 139979761 |           |  |
| 1 | ARS-BFGL-NGS-82122                    | 0 | 140000659 |           |  |
| 1 | ARS-BFGL-NGS-113313                   | 0 | 140031898 |           |  |
| 1 | ARS-BFGL-NGS-107473                   | 0 | 140095576 |           |  |

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| 1 | UA-IFASA-3942          | 0 | 140149026 |
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| 1 | BTB-00070861           | 0 | 140302093 |
| 1 | BTA-57342-no-rs        | 0 | 140364786 |
| 1 | BTB-00070740           | 0 | 140401992 |
| 1 | Hapmap41906-BTA-57339  | 0 | 140476945 |
| 1 | ARS-BFGL-NGS-73455     | 0 | 140524195 |
| 1 | ARS-BFGL-NGS-13638     | 0 | 140569637 |
| 1 | Hapmap40074-BTA-54364  | 0 | 140596472 |
| 1 | ARS-BFGL-NGS-14502     | 0 | 140685557 |
| 1 | ARS-BFGL-NGS-104662    | 0 | 140726958 |
| 1 | Hapmap51743-BTA-54330  | 0 | 140835240 |
| 1 | ARS-BFGL-NGS-52663     | 0 | 140870490 |
| 1 | Hapmap41748-BTA-108916 | 0 | 140920366 |
| 1 | ARS-BFGL-NGS-31585     | 0 | 140956576 |
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| 1 | ARS-BFGL-NGS-22768     | 0 | 141713896 |
| 1 | BTB-01225777           | 0 | 141738871 |
| 1 | ARS-BFGL-NGS-106484    | 0 | 141767788 |
| 1 | ARS-BFGL-NGS-44907     | 0 | 141807977 |
| 1 | ARS-BFGL-NGS-114203    | 0 | 141903958 |
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| 1 | ARS-BFGL-NGS-39171     | 0 | 142172755 |
| 1 | ARS-BFGL-NGS-40286     | 0 | 142192985 |
| 1 | ARS-BFGL-NGS-118672    | 0 | 142296642 |
| 1 | Hapmap48127-BTA-93939  | 0 | 142370512 |
| 1 | ARS-BFGL-NGS-62175     | 0 | 142401535 |
| 1 | BTB-01710763           | 0 | 142446153 |
| 1 | ARS-BFGL-NGS-39460     | 0 | 142475932 |
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| 1 | ARS-BFGL-NGS-109107    | 0 | 142547327 |
| 1 | BTB-00066611           | 0 | 142595255 |
| 1 | BTB-00066658           | 0 | 142616678 |
| 1 | Hapmap29959-BTA-124825 | 0 | 142641024 |
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| 1 | ARS-BFGL-NGS-32191     | 0 | 142711701 |
| 1 | BTA-55383-no-rs        | 0 | 142786992 |
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| 1 | ARS-BFGL-NGS-10924     | 0         | 143109768 |
| 1 | ARS-BFGL-NGS-34751     | 0         | 143136809 |
| 1 | ARS-BFGL-NGS-114130    | 0         | 143211930 |
| 1 | Hapmap42587-BTA-56345  | 0         | 143249389 |
| 1 | ARS-BFGL-NGS-31728     | 0         | 143291643 |
| 1 | UA-IFASA-2306          | 0         | 143359127 |
| 1 | ARS-BFGL-NGS-29228     | 0         | 143379850 |
| 1 | ARS-BFGL-NGS-57723     | 0         | 143413848 |
| 1 | ARS-BFGL-NGS-104426    | 0         | 143474642 |
| 1 | ARS-BFGL-NGS-26210     | 143524601 |           |
| 1 | ARS-BFGL-BAC-15516     | 0         | 143567931 |
| 1 | ARS-BFGL-NGS-105531    | 0         | 143615536 |
| 1 | Hapmap49657-BTA-55361  | 0         | 143670630 |
| 1 | ARS-BFGL-BAC-15523     | 0         | 143711195 |
| 1 | ARS-BFGL-NGS-44300     | 0         | 143741734 |
| 1 | ARS-BFGL-NGS-47000     | 143788237 |           |
| 1 | ARS-BFGL-NGS-110098    | 0         | 143831554 |
| 1 | ARS-BFGL-NGS-115887    | 0         | 143871665 |
| 1 | ARS-BFGL-NGS-52981     | 0         | 143897427 |
| 1 | ARS-BFGL-NGS-104259    | 0         | 143917657 |
| 1 | BTB-00067759           | 0         | 143988123 |
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| 1 | ARS-BFGL-NGS-20368     | 0         | 144190645 |
| 1 | ARS-BFGL-NGS-32029     | 0         | 144198500 |
| 1 | ARS-BFGL-NGS-106222    | 0         | 144217433 |
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| 1 | ARS-BFGL-NGS-13498     | 0         | 144314248 |
| 1 | ARS-BFGL-NGS-26672     | 0         | 144348682 |
| 1 | ARS-BFGL-NGS-25984     | 0         | 144386276 |
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| 1 | ARS-BFGL-NGS-68058     | 0         | 144438520 |
| 1 | BTB-00977334           | 0         | 144524860 |
| 1 | ARS-BFGL-NGS-117505    | 0         | 144551980 |
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| 1 | ARS-BFGL-NGS-20055     | 0         | 144655943 |
| 1 | BTA-64849-no-rs        | 0         | 144683245 |
| 1 | ARS-BFGL-NGS-119891    | 0         | 144704305 |
| 1 | ARS-BFGL-NGS-103161    | 0         | 144733397 |
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| 1 | ARS-BFGL-NGS-40393     | 0         | 144797574 |
| 1 | Hapmap38514-BTA-63523  | 0         | 144951932 |
| 1 | ARS-BFGL-NGS-17766     | 0         | 144972015 |
| 1 | ARS-BFGL-NGS-96151     | 0         | 145009246 |
| 1 | Hapmap57299-ss46527085 | 0         | 145059132 |
| 1 | ARS-BFGL-NGS-33058     | 0         | 145165549 |
| 1 | ARS-BFGL-NGS-112668    | 0         | 145190609 |
| 1 | ARS-BFGL-NGS-34622     | 0         | 145222792 |
| 1 | ARS-BFGL-NGS-24811     | 0         | 145258083 |
| 1 | ARS-BFGL-BAC-15514     | 0         | 145280015 |
| 1 | ARS-BFGL-NGS-105140    | 0         | 145470565 |
| 1 | ARS-BFGL-NGS-109985    | 0         | 145524894 |
| 1 | ARS-BFGL-NGS-104105    | 0         | 145573876 |

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| 1 | ARS-BFGL-NGS-91408     | 0         | 145622616 |
| 1 | ARS-BFGL-NGS-49010     | 145643805 |           |
| 1 | ARS-BFGL-NGS-100090    | 0         | 145682206 |
| 1 | ARS-BFGL-NGS-26865     | 0         | 145710047 |
| 1 | ARS-BFGL-NGS-113213    | 0         | 145777153 |
| 1 | ARS-BFGL-NGS-40732     | 0         | 145804209 |
| 1 | ARS-BFGL-NGS-22713     | 0         | 145833897 |
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| 1 | ARS-BFGL-NGS-90750     | 0         | 146033173 |
| 1 | ARS-BFGL-NGS-41123     | 0         | 146059099 |
| 1 | ARS-BFGL-NGS-48480     | 146131914 |           |
| 1 | ARS-BFGL-NGS-101482    | 0         | 146267223 |
| 1 | ARS-BFGL-NGS-111111    | 0         | 146302724 |
| 1 | ARS-BFGL-NGS-109493    | 0         | 146354654 |
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| 1 | Hapmap45294-BTA-56387  | 0         | 146407055 |
| 1 | ARS-BFGL-NGS-53898     | 0         | 146433117 |
| 1 | ARS-BFGL-NGS-108391    | 0         | 146455377 |
| 1 | ARS-BFGL-NGS-111191    | 0         | 146492260 |
| 1 | Hapmap54522-ss46526129 | 0         | 146521361 |
| 1 | Hapmap52800-ss46526105 | 0         | 146558794 |
| 1 | ARS-BFGL-NGS-97620     | 146587678 |           |
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| 1 | ARS-BFGL-NGS-103649    | 0         | 146677989 |
| 1 | ARS-BFGL-NGS-76347     | 0         | 146704618 |
| 1 | ARS-BFGL-NGS-87570     | 0         | 146790949 |
| 1 | ARS-BFGL-NGS-13121     | 0         | 146833973 |
| 1 | ARS-BFGL-NGS-31102     | 0         | 146862570 |
| 1 | BTB-01598310           | 0         | 146897615 |
| 1 | Hapmap47823-BTA-106742 | 0         | 146919708 |
| 1 | ARS-BFGL-NGS-26133     | 0         | 146940031 |
| 1 | ARS-BFGL-NGS-113680    | 0         | 146969169 |
| 1 | Hapmap30204-BTA-124882 | 0         | 147023886 |
| 1 | ARS-BFGL-NGS-17050     | 147066830 |           |
| 1 | BTA-19847-no-rs        | 0         | 147076679 |
| 1 | ARS-BFGL-NGS-50570     | 147121098 |           |
| 1 | ARS-BFGL-NGS-78784     | 0         | 147141657 |
| 1 | Hapmap46782-BTA-19874  | 0         | 147175381 |
| 1 | BTB-01301015           | 0         | 147255491 |
| 1 | Hapmap39197-BTA-23280  | 0         | 147314194 |
| 1 | ARS-BFGL-NGS-13206     | 0         | 147335277 |
| 1 | ARS-BFGL-NGS-103851    | 0         | 147358989 |
| 1 | ARS-BFGL-NGS-29750     | 0         | 147383154 |
| 1 | ARS-BFGL-NGS-65139     | 0         | 147421398 |
| 1 | ARS-BFGL-NGS-103565    | 0         | 147467962 |
| 1 | ARS-BFGL-NGS-110564    | 0         | 147484581 |
| 1 | ARS-BFGL-NGS-53680     | 147504216 |           |
| 1 | ARS-BFGL-NGS-69609     | 0         | 147527101 |
| 1 | Hapmap47854-BTA-119090 | 0         | 147550991 |

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| 1 | ARS-BFGL-NGS-25873     | 0 | 147640547 |
| 1 | ARS-BFGL-NGS-13051     | 0 | 147672973 |
| 1 | ARS-BFGL-NGS-117882    | 0 | 147737756 |
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| 1 | ARS-BFGL-BAC-12960     | 0 | 147812230 |
| 1 | Hapmap45492-BTA-44298  | 0 | 147841620 |
| 1 | BTB-00043127           | 0 | 147883938 |
| 1 | ARS-BFGL-NGS-113002    | 0 | 147920597 |
| 1 | ARS-BFGL-NGS-81400     |   | 147955914 |
| 1 | BTB-01761180           | 0 | 147978297 |
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| 1 | ARS-BFGL-NGS-21137     | 0 | 148123790 |
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| 1 | BTA-15272-no-rs        | 0 | 148236131 |
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| 1 | ARS-BFGL-NGS-33258     | 0 | 148388848 |
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| 1 | ARS-BFGL-NGS-54529     | 0 | 148684318 |
| 1 | ARS-BFGL-NGS-107257    | 0 | 148756389 |
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| 1 | ARS-BFGL-NGS-67754     | 0 | 148816004 |
| 1 | ARS-BFGL-NGS-72865     | 0 | 148841496 |
| 1 | ARS-BFGL-NGS-102593    | 0 | 148893434 |
| 1 | ARS-BFGL-NGS-1         | 0 | 148946228 |
| 1 | ARS-BFGL-NGS-97531     | 0 | 148969868 |
| 1 | ARS-BFGL-NGS-103594    | 0 | 149043397 |
| 1 | Hapmap43997-BTA-106314 | 0 | 149067642 |
| 1 | BTB-01975281           | 0 | 149101763 |
| 1 | ARS-BFGL-NGS-105884    | 0 | 149123433 |
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| 1 | ARS-BFGL-NGS-60951     | 0 | 149279017 |
| 1 | BTB-00069838           | 0 | 149305906 |
| 1 | ARS-BFGL-BAC-13595     | 0 | 149335782 |
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| 1 | ARS-BFGL-NGS-76670     |   | 149599085 |
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| 1 | Hapmap22921-BTA-124887 | 0 | 149654744 |
| 1 | ARS-BFGL-NGS-97757     | 0 | 149746651 |
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| 1 | Hapmap25017-BTA-124913 | 0 | 149969397 |
| 1 | ARS-BFGL-NGS-105124    | 0 | 150043489 |
| 1 | BTB-00073381           | 0 | 150115218 |
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| 1 | ARS-BFGL-NGS-69011     | 0 | 150168301 |

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| 1 | ARS-BFGL-NGS-110193    | 0         | 150191690 |
| 1 | ARS-BFGL-NGS-104670    | 0         | 150215815 |
| 1 | ARS-BFGL-NGS-22078     | 0         | 150253325 |
| 1 | Hapmap57645-rs29027916 | 0         | 150363389 |
| 1 | ARS-BFGL-NGS-12786     | 0         | 150397345 |
| 1 | ARS-BFGL-NGS-42159     | 0         | 150459773 |
| 1 | ARS-BFGL-NGS-71332     | 0         | 150490806 |
| 1 | Hapmap42257-BTA-57319  | 0         | 150522239 |
| 1 | ARS-BFGL-NGS-39807     | 0         | 150546427 |
| 1 | ARS-BFGL-NGS-108762    | 0         | 150574361 |
| 1 | ARS-BFGL-NGS-66662     | 0         | 150613176 |
| 1 | ARS-BFGL-NGS-110653    | 0         | 150650424 |
| 1 | Hapmap22959-BTA-57327  | 0         | 150701102 |
| 1 | ARS-BFGL-NGS-116625    | 0         | 150900517 |
| 1 | ARS-BFGL-NGS-58540     | 150924038 |           |
| 1 | ARS-BFGL-NGS-41125     | 0         | 150974434 |
| 1 | ARS-BFGL-NGS-14751     | 0         | 150998344 |
| 1 | ARS-BFGL-NGS-70523     | 0         | 151125563 |
| 1 | ARS-BFGL-NGS-57499     | 0         | 151146817 |
| 1 | ARS-BFGL-NGS-116979    | 0         | 151179972 |
| 1 | ARS-BFGL-NGS-16788     | 0         | 151218987 |
| 1 | ARS-BFGL-NGS-16536     | 0         | 151379106 |
| 1 | ARS-BFGL-NGS-43355     | 0         | 151486926 |
| 1 | Hapmap46946-BTA-116432 | 0         | 151518122 |
| 1 | ARS-BFGL-NGS-105623    | 0         | 151550746 |
| 1 | ARS-BFGL-NGS-76122     | 0         | 151590393 |
| 1 | BTB-01241144           | 0         | 151615270 |
| 1 | Hapmap49466-BTA-116411 | 0         | 151644431 |
| 1 | ARS-BFGL-NGS-112213    | 0         | 151665620 |
| 1 | ARS-BFGL-NGS-117060    | 0         | 151693959 |
| 1 | BTA-116423-no-rs       | 0         | 151736540 |
| 1 | Hapmap48626-BTA-116429 | 0         | 151770190 |
| 1 | ARS-BFGL-NGS-44348     | 0         | 151808040 |
| 1 | Hapmap53709-rs29017440 | 0         | 151835916 |
| 1 | Hapmap42082-BTA-116435 | 0         | 151858713 |
| 1 | BTB-01778303           | 0         | 151883849 |
| 1 | BTA-120479-no-rs       | 0         | 151909846 |
| 1 | Hapmap60790-rs29024220 | 0         | 151929994 |
| 1 | ARS-BFGL-NGS-106675    | 0         | 151955098 |
| 1 | BTA-16239-no-rs        | 0         | 151991418 |
| 1 | Hapmap32785-BTA-124994 | 0         | 152064500 |
| 1 | Hapmap28850-BTA-124990 | 0         | 152110607 |
| 1 | Hapmap43297-BTA-57357  | 0         | 152189521 |
| 1 | BTB-00070977           | 0         | 152225015 |
| 1 | BTA-57354-no-rs        | 0         | 152245009 |
| 1 | Hapmap53066-rs29026782 | 0         | 152345820 |
| 1 | Hapmap41028-BTA-58260  | 0         | 152377163 |
| 1 | Hapmap48211-BTA-120784 | 0         | 152412536 |
| 1 | BTB-00071736           | 0         | 152433936 |
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| 1 | BTA-58262-no-rs        | 0         | 152540010 |
| 1 | BTB-00070932           | 0         | 152571916 |
| 1 | Hapmap48261-BTA-24663  | 0         | 152592454 |
| 1 | ARS-BFGL-NGS-109294    | 0         | 152638655 |



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| 1 | BTA-58265-no-rs        | 0         | 152705187 |
| 1 | BTB-00071918           | 0         | 152740970 |
| 1 | Hapmap48393-BTA-58266  | 0         | 152772804 |
| 1 | ARS-BFGL-NGS-22321     | 0         | 152831377 |
| 1 | ARS-BFGL-NGS-16576     | 0         | 152850837 |
| 1 | Hapmap56337-ss46526524 | 0         | 152890257 |
| 1 | ARS-BFGL-NGS-102650    | 0         | 152934177 |
| 1 | ARS-BFGL-NGS-77917     | 0         | 152967323 |
| 1 | ARS-BFGL-NGS-45342     | 0         | 153017273 |
| 1 | ARS-BFGL-NGS-11586     | 0         | 153045653 |
| 1 | ARS-BFGL-NGS-100423    | 0         | 153190553 |
| 1 | Hapmap53097-rs29016261 | 0         | 153249283 |
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| 1 | ARS-BFGL-NGS-105231    | 0         | 153643695 |
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| 1 | BTB-01686439           | 0         | 153727592 |
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| 1 | Hapmap44395-BTA-64864  | 0         | 153919758 |
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| 1 | ARS-BFGL-NGS-47980     | 154109345 |           |
| 1 | ARS-BFGL-NGS-40247     | 0         | 154133697 |
| 1 | Hapmap38166-BTA-58293  | 0         | 154155071 |
| 1 | ARS-BFGL-NGS-78856     | 0         | 154185740 |
| 1 | ARS-BFGL-NGS-118315    | 0         | 154235336 |
| 1 | ARS-BFGL-NGS-73213     | 0         | 154264329 |
| 1 | ARS-BFGL-NGS-26782     | 0         | 154299737 |
| 1 | Hapmap23088-BTA-151194 | 0         | 154349918 |
| 1 | BTB-01486160           | 0         | 154377666 |
| 1 | BTB-01486242           | 0         | 154442861 |
| 1 | ARS-BFGL-NGS-29097     | 0         | 154466679 |
| 1 | ARS-BFGL-NGS-61565     | 0         | 154506866 |
| 1 | BTA-97271-no-rs        | 0         | 154529450 |
| 1 | Hapmap28036-BTA-125012 | 0         | 154567741 |
| 1 | Hapmap38969-BTA-58311  | 0         | 154602704 |
| 1 | BTA-58309-no-rs        | 0         | 154638002 |
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| 1 | BTB-00073037           | 0         | 154755981 |
| 1 | Hapmap44392-BTA-58305  | 0         | 154801969 |
| 1 | ARS-BFGL-NGS-24636     | 0         | 154835531 |
| 1 | BTB-00072962           | 0         | 154857059 |
| 1 | ARS-BFGL-NGS-12744     | 0         | 154886451 |
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| 1 | BTB-02002699           | 0         | 155153054 |
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| 1 | ARS-BFGL-NGS-31013     | 0         | 155265146 |
| 1 | ARS-BFGL-NGS-43112     | 0         | 155323212 |
| 1 | ARS-BFGL-NGS-58627     | 0         | 155345571 |
| 1 | ARS-BFGL-NGS-284       | 0         | 155367316 |
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| 1 | ARS-BFGL-NGS-93838     | 0         | 155455156 |
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| 1 | ARS-BFGL-NGS-61517     | 0         | 155597212 |
| 1 | Hapmap60257-rs29016165 | 0         | 155629802 |
| 1 | Hapmap55716-rs29015966 | 0         | 155654021 |
| 1 | Hapmap42032-BTA-100094 | 0         | 155692591 |
| 1 | BTA-100095-no-rs       | 0         | 155725361 |
| 1 | Hapmap57491-ss46526066 | 0         | 155745134 |
| 1 | Hapmap47183-BTA-113360 | 0         | 155777347 |
| 1 | ARS-BFGL-NGS-104351    | 0         | 155835816 |
| 1 | BTB-00023885           | 0         | 155866844 |
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| 1 | BTB-00023937           | 0         | 155955828 |
| 1 | BTB-00074326           | 0         | 156020891 |
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| 1 | Hapmap46776-BTA-15316  | 0         | 156070550 |
| 1 | BTB-00074258           | 0         | 156105357 |
| 1 | BTB-00024012           | 0         | 156176525 |
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| 1 | BTB-00024024           | 0         | 156294225 |
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| 1 | Hapmap54019-rs29023016 | 0         | 156538750 |
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| 1 | Hapmap59327-rs29016284 | 0         | 156598837 |
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| 1 | ARS-BFGL-NGS-114975    | 0         | 156710174 |
| 1 | ARS-BFGL-NGS-14247     | 0         | 156744637 |
| 1 | Hapmap3051-BTA-15299   | 0         | 156777075 |
| 1 | ARS-BFGL-NGS-24300     | 156854530 |           |
| 1 | BTB-00074122           | 0         | 156900139 |
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| 1 | ARS-BFGL-NGS-24919     | 0         | 157016123 |
| 1 | ARS-BFGL-NGS-32312     | 0         | 157039952 |
| 1 | ARS-BFGL-NGS-27443     | 0         | 157074580 |
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| 1 | ARS-BFGL-NGS-75385     | 0         | 157176980 |
| 1 | ARS-BFGL-NGS-39036     | 0         | 157199658 |
| 1 | Hapmap43186-BTA-15325  | 0         | 157239611 |
| 1 | BTB-00074914           | 0         | 157260458 |

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| 1 | BTB-00074935           | 0 | 157284336 |
| 1 | Hapmap40402-BTA-15329  | 0 | 157328169 |
| 1 | ARS-BFGL-NGS-54653     | 0 | 157355192 |
| 1 | ARS-BFGL-BAC-16186     | 0 | 157395805 |
| 1 | ARS-BFGL-NGS-50530     |   | 157419451 |
| 1 | BTB-01633174           | 0 | 157457269 |
| 1 | BTB-01633159           | 0 | 157496407 |
| 1 | BTB-01633151           | 0 | 157531894 |
| 1 | Hapmap52737-rs29021682 | 0 | 157579130 |
| 1 | ARS-BFGL-NGS-78277     | 0 | 157619384 |
| 1 | BTA-15333-no-rs        | 0 | 157656358 |
| 1 | BTB-00075551           | 0 | 157682341 |
| 1 | ARS-BFGL-NGS-12147     | 0 | 157723699 |
| 1 | BTB-00075380           | 0 | 157746878 |
| 1 | BTA-15354-no-rs        | 0 | 157781897 |
| 1 | ARS-BFGL-NGS-108970    | 0 | 157809496 |
| 1 | UA-IFASA-4140          | 0 | 157837373 |
| 1 | Hapmap51199-BTA-27719  | 0 | 157871181 |
| 1 | ARS-BFGL-NGS-87492     | 0 | 157924902 |
| 1 | ARS-BFGL-NGS-27660     | 0 | 157948736 |
| 1 | BTA-15355-no-rs        | 0 | 157970916 |
| 1 | ARS-BFGL-NGS-111718    | 0 | 158037465 |
| 1 | BTB-00076266           | 0 | 158088844 |
| 1 | BTB-00076308           | 0 | 158111999 |
| 1 | BTB-00076382           | 0 | 158139790 |
| 1 | BTB-00076466           | 0 | 158161585 |
| 1 | ARS-BFGL-NGS-85061     | 0 | 158229218 |
| 2 | ARS-BFGL-NGS-102158    | 0 | 35126     |
| 2 | BTB-01789851           | 0 | 189886    |
| 2 | BTB-00077301           | 0 | 238962    |
| 2 | Hapmap32829-BTA-147228 | 0 | 263273    |
| 2 | ARS-BFGL-NGS-11180     | 0 | 346673    |
| 2 | BTB-01204330           | 0 | 380971    |
| 2 | ARS-BFGL-NGS-112825    | 0 | 487391    |
| 2 | BTA-109914-no-rs       | 0 | 547782    |
| 2 | BTB-01204098           | 0 | 577898    |
| 2 | ARS-BFGL-NGS-53760     |   | 608357    |
| 2 | BTB-01204067           | 0 | 631108    |
| 2 | ARS-BFGL-NGS-101054    | 0 | 657753    |
| 2 | Hapmap23466-BTA-155656 | 0 | 695583    |
| 2 | BTB-01204033           | 0 | 718929    |
| 2 | ARS-BFGL-NGS-55528     | 0 | 747465    |
| 2 | Hapmap41152-BTA-109926 | 0 | 784712    |
| 2 | ARS-BFGL-NGS-74920     | 0 | 827626    |
| 2 | BTA-109912-no-rs       | 0 | 848423    |
| 2 | Hapmap52514-rs29024554 | 0 | 904065    |
| 2 | ARS-BFGL-BAC-44757     | 0 | 930360    |
| 2 | ARS-BFGL-NGS-16717     | 0 | 970561    |
| 2 | Hapmap55208-ss46526613 | 0 | 994302    |
| 2 | ARS-BFGL-NGS-117794    | 0 | 1039834   |
| 2 | UA-IFASA-5944          | 0 | 1066919   |
| 2 | BTA-10744-no-rs        | 0 | 1091332   |
| 2 | ARS-BFGL-NGS-118760    | 0 | 1112333   |
| 2 | BTB-00077456           | 0 | 1164256   |

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| 2 | BTB-00077399           | 0 | 1185087 |
| 2 | ARS-BFGL-NGS-60500     |   | 1216101 |
| 2 | BTB-00077286           | 0 | 1247436 |
| 2 | ARS-BFGL-NGS-55090     | 0 | 1273475 |
| 2 | ARS-BFGL-NGS-39059     | 0 | 1316010 |
| 2 | BTB-01710358           | 0 | 1341326 |
| 2 | Hapmap58923-rs29010138 | 0 | 1366643 |
| 2 | ARS-BFGL-NGS-27330     | 0 | 1406013 |
| 2 | BTB-01578175           | 0 | 1446211 |
| 2 | ARS-BFGL-NGS-118297    | 0 | 1467475 |
| 2 | BTA-105370-no-rs       | 0 | 1491388 |
| 2 | ARS-BFGL-NGS-31985     | 0 | 1524538 |
| 2 | Hapmap23447-BTA-47495  | 0 | 1643844 |
| 2 | BTB-00077049           | 0 | 1692982 |
| 2 | BTB-00077213           | 0 | 1718749 |
| 2 | BTB-00335932           | 0 | 1739640 |
| 2 | ARS-BFGL-NGS-60387     | 0 | 1795004 |
| 2 | BTA-48265-no-rs        | 0 | 1826336 |
| 2 | Hapmap41656-BTA-82957  | 0 | 1865988 |
| 2 | ARS-BFGL-NGS-18261     | 0 | 1896078 |
| 2 | ARS-BFGL-NGS-108007    | 0 | 1926143 |
| 2 | ARS-BFGL-NGS-115117    | 0 | 1982197 |
| 2 | ARS-BFGL-BAC-35148     | 0 | 2043096 |
| 2 | ARS-BFGL-NGS-104760    | 0 | 2254298 |
| 2 | ARS-BFGL-NGS-113652    | 0 | 2303356 |
| 2 | ARS-BFGL-NGS-23733     | 0 | 2333403 |
| 2 | ARS-BFGL-NGS-74769     | 0 | 2415461 |
| 2 | Hapmap31400-BTA-133561 | 0 | 2636828 |
| 2 | ARS-BFGL-NGS-110437    | 0 | 2704070 |
| 2 | Hapmap43973-BTA-93569  | 0 | 2814353 |
| 2 | ARS-BFGL-NGS-103086    | 0 | 2858436 |
| 2 | ARS-BFGL-NGS-113403    | 0 | 2944452 |
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| 2 | ARS-BFGL-NGS-118313    | 0 | 3046092 |
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| 2 | ARS-BFGL-NGS-67261     | 0 | 3172895 |
| 2 | ARS-BFGL-NGS-53839     | 0 | 3197666 |
| 2 | ARS-BFGL-NGS-60640     | 0 | 3242217 |
| 2 | ARS-BFGL-BAC-42496     | 0 | 3407803 |
| 2 | ARS-BFGL-NGS-58709     | 0 | 3435871 |
| 2 | Hapmap40838-BTA-92488  | 0 | 3528413 |
| 2 | ARS-BFGL-NGS-61983     | 0 | 3647999 |
| 2 | ARS-BFGL-NGS-46839     | 0 | 3673286 |
| 2 | ARS-BFGL-NGS-34236     | 0 | 3704202 |
| 2 | Hapmap48616-BTA-112393 | 0 | 3765778 |
| 2 | ARS-BFGL-NGS-15763     | 0 | 3793543 |
| 2 | ARS-BFGL-NGS-100540    | 0 | 3820191 |
| 2 | ARS-BFGL-NGS-22543     | 0 | 3860379 |
| 2 | ARS-BFGL-NGS-102353    | 0 | 3900181 |
| 2 | BTA-112386-no-rs       | 0 | 3924868 |
| 2 | ARS-BFGL-NGS-63030     | 0 | 3950794 |
| 2 | ARS-BFGL-NGS-59921     | 0 | 3982629 |
| 2 | Hapmap43083-BTA-86781  | 0 | 4057133 |
| 2 | ARS-BFGL-NGS-112731    | 0 | 4125005 |

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| 2 | ARS-BFGL-NGS-40630                    | 4165880 |         |         |
| 2 | ARS-BFGL-NGS-92825                    | 0       | 4201525 |         |
| 2 | Hapmap50886-BTA-121204                | 0       | 4238852 |         |
| 2 | Hapmap34854-BES4_Contig206_568        | 0       |         | 4291955 |
| 2 | BTB-00078030                          | 0       | 4421299 |         |
| 2 | BTB-00077963                          | 0       | 4460405 |         |
| 2 | Hapmap39337-BTA-46816                 | 0       | 4488303 |         |
| 2 | BTB-01790320                          | 0       | 4521411 |         |
| 2 | BTB-01790271                          | 0       | 4543996 |         |
| 2 | Hapmap53000-ss46526222                | 0       | 4565625 |         |
| 2 | BTB-00077801                          | 0       | 4587203 |         |
| 2 | BTB-00077766                          | 0       | 4619367 |         |
| 2 | BTB-01739851                          | 0       | 4650209 |         |
| 2 | BTB-01739873                          | 0       | 4680618 |         |
| 2 | Hapmap40228-BTA-88147                 | 0       | 4720583 |         |
| 2 | ARS-BFGL-NGS-43499                    | 0       | 4758063 |         |
| 2 | BTB-00078999                          | 0       | 4779103 |         |
| 2 | BTB-00079042                          | 0       | 4848753 |         |
| 2 | ARS-BFGL-NGS-17759                    | 0       | 4883261 |         |
| 2 | ARS-BFGL-NGS-12749                    | 0       | 4921527 |         |
| 2 | BTA-47785-no-rs                       | 0       | 4958110 |         |
| 2 | ARS-BFGL-NGS-61520                    |         | 4979830 |         |
| 2 | BTA-97386-no-rs                       | 0       | 5015333 |         |
| 2 | Hapmap54320-rs29012920                | 0       | 5037866 |         |
| 2 | ARS-BFGL-NGS-24135                    | 0       | 5193223 |         |
| 2 | ARS-BFGL-NGS-97012                    | 0       | 5245055 |         |
| 2 | ARS-BFGL-NGS-24537                    | 0       | 5276521 |         |
| 2 | ARS-BFGL-NGS-21306                    | 0       | 5305197 |         |
| 2 | ARS-USMARC-Parent-DQ404152-rs29022245 | 0       |         | 5306838 |
| 2 | ARS-BFGL-NGS-26580                    |         | 5370008 |         |
| 2 | ARS-BFGL-NGS-41060                    |         | 5390383 |         |
| 2 | Hapmap57611-rs29021061                | 0       | 5464367 |         |
| 2 | ARS-BFGL-NGS-101125                   | 0       | 5537379 |         |
| 2 | ARS-BFGL-NGS-106761                   | 0       | 5601419 |         |
| 2 | Hapmap44381-BTA-47399                 | 0       | 5640288 |         |
| 2 | Hapmap54109-rs29011261                | 0       | 5663889 |         |
| 2 | ARS-BFGL-NGS-39978                    | 0       | 5757355 |         |
| 2 | ARS-BFGL-BAC-26190                    |         | 5780265 |         |
| 2 | ARS-BFGL-BAC-28567                    | 0       | 5802738 |         |
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| 2 | ARS-BFGL-NGS-60330                    |         | 5844056 |         |
| 2 | ARS-BFGL-NGS-93854                    | 0       | 5877768 |         |
| 2 | Hapmap52624-rs29010906                | 0       | 6047203 |         |
| 2 | ARS-BFGL-NGS-100748                   | 0       | 6073765 |         |
| 2 | ARS-BFGL-NGS-45160                    |         | 6151365 |         |
| 2 | ARS-BFGL-NGS-17147                    | 0       | 6183129 |         |
| 2 | ARS-BFGL-NGS-15417                    | 0       | 6645590 |         |
| 2 | ARS-BFGL-NGS-112454                   | 0       | 6675045 |         |
| 2 | Hapmap49624-BTA-47893                 | 0       | 6700805 |         |
| 2 | ARS-BFGL-NGS-11319                    | 0       | 6763227 |         |
| 2 | Hapmap54028-rs29023584                | 0       | 6792631 |         |
| 2 | Hapmap47560-BTA-30470                 | 0       | 6831955 |         |
| 2 | ARS-BFGL-NGS-81865                    | 0       | 7046478 |         |
| 2 | Hapmap52728-rs29018577                | 0       | 7086105 |         |

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| 2 | BTA-47483-no-rs        | 0 | 7125831 |
| 2 | ARS-BFGL-NGS-90839     | 0 | 7169804 |
| 2 | ARS-BFGL-NGS-59102     | 0 | 7248683 |
| 2 | Hapmap53965-rs29017456 | 0 | 7270116 |
| 2 | Hapmap60397-ss46527095 | 0 | 7321910 |
| 2 | BTB-00078586           | 0 | 7427864 |
| 2 | ARS-BFGL-NGS-52961     | 0 | 7457310 |
| 2 | BTB-00078691           | 0 | 7492224 |
| 2 | BTB-01977132           | 0 | 7520210 |
| 2 | ARS-BFGL-BAC-28170     | 0 | 7562127 |
| 2 | BTA-47624-no-rs        | 0 | 7601358 |
| 2 | ARS-BFGL-NGS-110677    | 0 | 7650023 |
| 2 | BTB-00078927           | 0 | 7676702 |
| 2 | BTA-85707-no-rs        | 0 | 7720309 |
| 2 | BTA-27415-no-rs        | 0 | 7751590 |
| 2 | BTB-01717869           | 0 | 7772897 |
| 2 | UA-IFASA-9562          | 0 | 7798268 |
| 2 | Hapmap38635-BTA-85702  | 0 | 7892193 |
| 2 | ARS-BFGL-NGS-16610     | 0 | 8000159 |
| 2 | Hapmap41991-BTA-85694  | 0 | 8025628 |
| 2 | BTB-01111066           | 0 | 8118578 |
| 2 | BTB-01110991           | 0 | 8153715 |
| 2 | BTB-01929922           | 0 | 8188132 |
| 2 | BTB-01929933           | 0 | 8212407 |
| 2 | ARS-BFGL-NGS-16689     | 0 | 8238284 |
| 2 | Hapmap51331-BTA-85692  | 0 | 8272673 |
| 2 | BTB-01435656           | 0 | 8305740 |
| 2 | ARS-BFGL-NGS-37283     | 0 | 8340148 |
| 2 | BTB-01435557           | 0 | 8361295 |
| 2 | BTB-01435492           | 0 | 8407045 |
| 2 | Hapmap40313-BTA-27938  | 0 | 8430514 |
| 2 | BTB-00079213           | 0 | 8476975 |
| 2 | BTB-02073364           | 0 | 8538934 |
| 2 | ARS-BFGL-NGS-11560     | 0 | 8736092 |
| 2 | Hapmap50551-BTA-104382 | 0 | 8788219 |
| 2 | BTA-87378-no-rs        | 0 | 8833394 |
| 2 | BTB-00862033           | 0 | 8884527 |
| 2 | BTB-00862061           | 0 | 8933349 |
| 2 | BTB-02094616           | 0 | 8955989 |
| 2 | BTB-00079285           | 0 | 8979837 |
| 2 | BTB-00079297           | 0 | 9003563 |
| 2 | Hapmap43273-BTA-47993  | 0 | 9040720 |
| 2 | Hapmap25939-BTA-47983  | 0 | 9092815 |
| 2 | BTB-00079257           | 0 | 9113368 |
| 2 | BTB-00079368           | 0 | 9163293 |
| 2 | ARS-BFGL-NGS-111530    | 0 | 9202511 |
| 2 | Hapmap55212-rs29013415 | 0 | 9245063 |
| 2 | BTB-00079476           | 0 | 9311143 |
| 2 | BTB-01282688           | 0 | 9392865 |
| 2 | BTB-02016659           | 0 | 9427890 |
| 2 | BTB-00079551           | 0 | 9454144 |
| 2 | Hapmap38411-BTA-48376  | 0 | 9499870 |
| 2 | Hapmap23397-BTA-133598 | 0 | 9521997 |
| 2 | Hapmap49896-BTA-17263  | 0 | 9561693 |

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| 2 | ARS-BFGL-NGS-64273              | 0 | 9594421  |  |
| 2 | Hapmap38502-BTA-48351           | 0 | 9633324  |  |
| 2 | ARS-BFGL-NGS-114790             | 0 | 9785462  |  |
| 2 | Hapmap54204-rs29015637          | 0 | 9810493  |  |
| 2 | BTA-48147-no-rs                 | 0 | 9867063  |  |
| 2 | Hapmap44337-BTA-109205          | 0 | 10114578 |  |
| 2 | Hapmap51139-BTA-109204          | 0 | 10137375 |  |
| 2 | ARS-BFGL-BAC-33704              | 0 | 10192170 |  |
| 2 | Hapmap51202-BTA-28358           | 0 | 10216677 |  |
| 2 | ARS-BFGL-NGS-14614              | 0 | 10341507 |  |
| 2 | Hapmap46264-BTA-96369           | 0 | 10365767 |  |
| 2 | Hapmap40653-BTA-114312          | 0 | 10409064 |  |
| 2 | Hapmap25889-BTA-156942          | 0 | 10436130 |  |
| 2 | Hapmap42875-BTA-23394           | 0 | 10458021 |  |
| 2 | ARS-BFGL-NGS-69447              | 0 | 10528990 |  |
| 2 | ARS-BFGL-NGS-30075              | 0 | 10560879 |  |
| 2 | BTA-23383-no-rs                 | 0 | 10588340 |  |
| 2 | Hapmap44041-BTA-23382           | 0 | 10617894 |  |
| 2 | ARS-BFGL-NGS-53911              | 0 | 11458935 |  |
| 2 | ARS-BFGL-NGS-39506              | 0 | 11485041 |  |
| 2 | ARS-BFGL-NGS-91026              | 0 | 11605232 |  |
| 2 | Hapmap27018-BTA-158911          | 0 | 11634526 |  |
| 2 | ARS-BFGL-NGS-116628             | 0 | 11732396 |  |
| 2 | BTA-109791-no-rs                | 0 | 11755807 |  |
| 2 | BTA-48951-no-rs                 | 0 | 11798883 |  |
| 2 | Hapmap42566-BTA-48928           | 0 | 11821563 |  |
| 2 | Hapmap38897-BTA-48906           | 0 | 11877444 |  |
| 2 | ARS-BFGL-NGS-40106              | 0 | 11925246 |  |
| 2 | BTA-48863-no-rs                 | 0 | 12003118 |  |
| 2 | ARS-BFGL-BAC-29180              | 0 | 12048452 |  |
| 2 | BTA-48707-no-rs                 | 0 | 12087975 |  |
| 2 | ARS-BFGL-NGS-103955             | 0 | 12118550 |  |
| 2 | Hapmap44546-BTA-48673           | 0 | 12138830 |  |
| 2 | BTA-29193-no-rs                 | 0 | 12236359 |  |
| 2 | Hapmap46046-BTA-114001          | 0 | 12277461 |  |
| 2 | ARS-BFGL-BAC-27295              | 0 | 12326602 |  |
| 2 | BTA-110517-no-rs                | 0 | 12451708 |  |
| 2 | Hapmap34694-BES3_Contig475_1491 | 0 | 12489267 |  |
| 2 | ARS-BFGL-NGS-91327              | 0 | 12533969 |  |
| 2 | ARS-BFGL-BAC-27271              | 0 | 12632490 |  |
| 2 | BTA-110520-no-rs                | 0 | 12675913 |  |
| 2 | Hapmap32135-BTA-159962          | 0 | 12730866 |  |
| 2 | BTB-01808519                    | 0 | 12762276 |  |
| 2 | BTA-20489-no-rs                 | 0 | 12789975 |  |
| 2 | ARS-BFGL-BAC-35552              | 0 | 12823369 |  |
| 2 | Hapmap42480-BTA-23201           | 0 | 12878524 |  |
| 2 | BTA-21486-no-rs                 | 0 | 12954788 |  |
| 2 | Hapmap49523-BTA-20486           | 0 | 12986565 |  |
| 2 | BTA-117245-no-rs                | 0 | 13071091 |  |
| 2 | BTA-93171-no-rs                 | 0 | 13112798 |  |
| 2 | Hapmap49907-BTA-20483           | 0 | 13170967 |  |
| 2 | ARS-BFGL-BAC-27305              | 0 | 13202377 |  |
| 2 | Hapmap41795-BTA-20481           | 0 | 13226674 |  |
| 2 | BTA-20471-no-rs                 | 0 | 13253916 |  |

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| 2 | ARS-BFGL-BAC-32402     | 0 | 13277993 |
| 2 | ARS-BFGL-NGS-43437     | 0 | 13309591 |
| 2 | ARS-BFGL-BAC-32404     | 0 | 13343685 |
| 2 | BTA-20457-no-rs        | 0 | 13375340 |
| 2 | ARS-BFGL-NGS-88388     | 0 | 13411225 |
| 2 | Hapmap60935-rs29012413 | 0 | 13576346 |
| 2 | Hapmap54937-rs29013687 | 0 | 13597108 |
| 2 | Hapmap49193-BTA-48784  | 0 | 13617841 |
| 2 | ARS-BFGL-NGS-89201     | 0 | 13641538 |
| 2 | Hapmap39412-BTA-48779  | 0 | 13709935 |
| 2 | BTA-48736-no-rs        | 0 | 13740363 |
| 2 | ARS-BFGL-NGS-38281     | 0 | 13800470 |
| 2 | Hapmap59876-rs29018046 | 0 | 13853729 |
| 2 | Hapmap24345-BTA-151300 | 0 | 13880034 |
| 2 | ARS-BFGL-NGS-89098     | 0 | 13901492 |
| 2 | ARS-BFGL-NGS-74668     | 0 | 13941524 |
| 2 | Hapmap30285-BTA-151296 | 0 | 14027750 |
| 2 | BTA-97453-no-rs        | 0 | 14283570 |
| 2 | ARS-BFGL-NGS-112128    | 0 | 14336331 |
| 2 | Hapmap47793-BTA-97444  | 0 | 14360005 |
| 2 | ARS-BFGL-NGS-98581     | 0 | 14403663 |
| 2 | BTB-01144233           | 0 | 14428308 |
| 2 | Hapmap54766-rs29012658 | 0 | 14451633 |
| 2 | Hapmap52534-rs29010223 | 0 | 14496313 |
| 2 | Hapmap38137-BTA-112893 | 0 | 14565726 |
| 2 | Hapmap33059-BTA-158581 | 0 | 14662015 |
| 2 | BTB-01085343           | 0 | 14713525 |
| 2 | ARS-BFGL-NGS-117019    | 0 | 14717851 |
| 2 | ARS-BFGL-NGS-45446     | 0 | 14738491 |
| 2 | BTB-01085257           | 0 | 14796521 |
| 2 | ARS-BFGL-NGS-19419     | 0 | 14821988 |
| 2 | Hapmap60797-rs29023429 | 0 | 14855927 |
| 2 | Hapmap58884-rs29013431 | 0 | 14891026 |
| 2 | ARS-BFGL-NGS-108876    | 0 | 14950298 |
| 2 | Hapmap47192-BTA-119165 | 0 | 14979824 |
| 2 | BTB-01084910           | 0 | 15001586 |
| 2 | BTB-01084842           | 0 | 15021561 |
| 2 | ARS-BFGL-NGS-82028     | 0 | 15075787 |
| 2 | BTB-01084639           | 0 | 15130630 |
| 2 | ARS-BFGL-NGS-105012    | 0 | 15212100 |
| 2 | BTB-01084561           | 0 | 15250050 |
| 2 | Hapmap24210-BTA-158558 | 0 | 15303929 |
| 2 | BTB-01084484           | 0 | 15338769 |
| 2 | ARS-BFGL-NGS-104492    | 0 | 15361703 |
| 2 | BTB-01084313           | 0 | 15385210 |
| 2 | BTB-01084298           | 0 | 15430827 |
| 2 | BTB-01600567           | 0 | 15510901 |
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| 2 | BTB-01868760           | 0 | 15580709 |
| 2 | Hapmap44576-BTA-90136  | 0 | 15611339 |
| 2 | BTB-01410599           | 0 | 15652034 |
| 2 | BTB-01410575           | 0 | 15686231 |
| 2 | ARS-BFGL-NGS-36375     | 0 | 15709188 |
| 2 | BTB-01410432           | 0 | 15730233 |



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| 2 | BTA-90131-no-rs                 | 0 | 15751791 |          |
| 2 | BTA-113745-no-rs                | 0 | 15780878 |          |
| 2 | BTB-01845736                    | 0 | 15916907 |          |
| 2 | Hapmap42488-BTA-26728           | 0 | 15972368 |          |
| 2 | ARS-BFGL-NGS-118141             | 0 | 15993240 |          |
| 2 | BTB-00080812                    | 0 | 16026397 |          |
| 2 | ARS-BFGL-NGS-100666             | 0 | 16059067 |          |
| 2 | ARS-BFGL-NGS-12160              |   | 16087638 |          |
| 2 | Hapmap35360-SCAFFOLD145911_8451 | 0 |          | 16132821 |
| 2 | Hapmap58340-rs29009785          | 0 | 16177570 |          |
| 2 | BTA-109896-no-rs                | 0 | 16238330 |          |
| 2 | Hapmap33260-BTA-163723          | 0 | 16332811 |          |
| 2 | BTB-01363466                    | 0 | 16356005 |          |
| 2 | Hapmap47905-BTA-28908           | 0 | 16377340 |          |
| 2 | Hapmap41678-BTA-91191           | 0 | 16416255 |          |
| 2 | Hapmap44052-BTA-27927           | 0 | 16446876 |          |
| 2 | BTB-01952715                    | 0 | 16484729 |          |
| 2 | BTB-01792501                    | 0 | 16527366 |          |
| 2 | BTB-01853142                    | 0 | 16560591 |          |
| 2 | Hapmap58412-rs29020884          | 0 | 16598985 |          |
| 2 | BTB-00080992                    | 0 | 16625718 |          |
| 2 | BTB-00080955                    | 0 | 16658174 |          |
| 2 | BTB-00081694                    | 0 | 16686097 |          |
| 2 | Hapmap38868-BTA-97511           | 0 | 16717335 |          |
| 2 | Hapmap28148-BTA-97509           | 0 | 16747928 |          |
| 2 | BTA-49759-no-rs                 | 0 | 16893307 |          |
| 2 | ARS-BFGL-NGS-112516             | 0 | 16919889 |          |
| 2 | BTA-49719-no-rs                 | 0 | 16978001 |          |
| 2 | ARS-BFGL-NGS-38278              | 0 | 17142680 |          |
| 2 | Hapmap61050-rs29013591          | 0 | 17278352 |          |
| 2 | BTA-18292-no-rs                 | 0 | 17313967 |          |
| 2 | BTA-04435-no-rs                 | 0 | 17354061 |          |
| 2 | BTB-01290659                    | 0 | 17379799 |          |
| 2 | BTB-01290636                    | 0 | 17408424 |          |
| 2 | BTB-01290581                    | 0 | 17437006 |          |
| 2 | ARS-BFGL-NGS-71755              | 0 | 17461491 |          |
| 2 | BTB-00081745                    | 0 | 17627839 |          |
| 2 | ARS-BFGL-NGS-24246              | 0 | 17658429 |          |
| 2 | Hapmap33031-BTA-148746          | 0 | 17708882 |          |
| 2 | BTB-00082046                    | 0 | 17744595 |          |
| 2 | BTB-02054371                    | 0 | 17774569 |          |
| 2 | Hapmap25114-BTA-49906           | 0 | 17819362 |          |
| 2 | BTB-01559455                    | 0 | 17830735 |          |
| 2 | ARS-BFGL-NGS-104601             | 0 | 17857541 |          |
| 2 | BTB-01559639                    | 0 | 17894542 |          |
| 2 | BTB-01559610                    | 0 | 17930178 |          |
| 2 | Hapmap46225-BTA-49570           | 0 | 17974887 |          |
| 2 | Hapmap57556-rs29009916          | 0 | 18012486 |          |
| 2 | BTA-49599-no-rs                 | 0 | 18042962 |          |
| 2 | BTB-00081145                    | 0 | 18078290 |          |
| 2 | Hapmap41889-BTA-49622           | 0 | 18108323 |          |
| 2 | Hapmap47640-BTA-49632           | 0 | 18136876 |          |
| 2 | BTB-00081257                    | 0 | 18164650 |          |
| 2 | ARS-BFGL-NGS-113397             | 0 | 18197654 |          |

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| 2 | Hapmap47641-BTA-49646           | 0 | 18233729 |          |
| 2 | Hapmap34168-BES3_Contig310_1112 | 0 |          | 18267001 |
| 2 | BTB-00081403                    | 0 | 18292435 |          |
| 2 | Hapmap30496-BTA-123052          | 0 | 18318018 |          |
| 2 | Hapmap56313-rs29022477          | 0 | 18374321 |          |
| 2 | BTB-00081518                    | 0 | 18408562 |          |
| 2 | Hapmap26388-BTA-133627          | 0 | 18433827 |          |
| 2 | BTA-49711-no-rs                 | 0 | 18458399 |          |
| 2 | ARS-BFGL-NGS-11670              |   | 18496065 |          |
| 2 | ARS-BFGL-BAC-35137              | 0 | 18548104 |          |
| 2 | ARS-BFGL-NGS-86079              | 0 | 18570639 |          |
| 2 | Hapmap31401-BTA-133646          | 0 | 18585907 |          |
| 2 | Hapmap53232-rs29020795          | 0 | 18632651 |          |
| 2 | BTB-00065996                    | 0 | 18660276 |          |
| 2 | BTB-00066182                    | 0 | 18745691 |          |
| 2 | BTA-55303-no-rs                 | 0 | 18805875 |          |
| 2 | Hapmap38416-BTA-55305           | 0 | 18834716 |          |
| 2 | Hapmap32021-BTA-124822          | 0 | 18854886 |          |
| 2 | BTA-55307-no-rs                 | 0 | 18885419 |          |
| 2 | BTB-00066363                    | 0 | 18911546 |          |
| 2 | BTB-00082256                    | 0 | 18978322 |          |
| 2 | ARS-BFGL-NGS-101460             | 0 | 19105629 |          |
| 2 | ARS-BFGL-NGS-91042              | 0 | 19134842 |          |
| 2 | BTB-01112664                    | 0 | 19155572 |          |
| 2 | BTB-01112693                    | 0 | 19182543 |          |
| 2 | ARS-BFGL-NGS-17648              | 0 | 19228789 |          |
| 2 | BTA-86806-no-rs                 | 0 | 19259873 |          |
| 2 | BTA-11872-rs29017618            | 0 | 19287490 |          |
| 2 | BTB-01112732                    | 0 | 19310530 |          |
| 2 | BTB-01112800                    | 0 | 19338223 |          |
| 2 | BTB-01112810                    | 0 | 19365599 |          |
| 2 | Hapmap49351-BTA-86808           | 0 | 19390765 |          |
| 2 | ARS-BFGL-NGS-23300              | 0 | 19463458 |          |
| 2 | ARS-BFGL-NGS-13597              | 0 | 19536960 |          |
| 2 | ARS-BFGL-NGS-32739              | 0 | 19611904 |          |
| 2 | BTB-01112851                    | 0 | 19672383 |          |
| 2 | Hapmap59161-rs29014139          | 0 | 19695109 |          |
| 2 | BTB-01113018                    | 0 | 19727820 |          |
| 2 | BTB-01555229                    | 0 | 19807432 |          |
| 2 | BTB-01555215                    | 0 | 19827577 |          |
| 2 | ARS-BFGL-NGS-105466             | 0 | 19851161 |          |
| 2 | BTB-01112976                    | 0 | 19965497 |          |
| 2 | ARS-BFGL-NGS-39206              | 0 | 20011011 |          |
| 2 | Hapmap51079-BTA-88097           | 0 | 20023792 |          |
| 2 | Hapmap60669-rs29018484          | 0 | 20085850 |          |
| 2 | Hapmap59959-rs29020690          | 0 | 20108878 |          |
| 2 | BTB-00083220                    | 0 | 20136165 |          |
| 2 | Hapmap47636-BTA-46626           | 0 | 20169565 |          |
| 2 | BTB-00083120                    | 0 | 20212418 |          |
| 2 | BTA-46625-no-rs                 | 0 | 20247454 |          |
| 2 | BTB-00083095                    | 0 | 20278052 |          |
| 2 | BTA-14230-rs29022995            | 0 | 20377187 |          |
| 2 | ARS-BFGL-NGS-111881             | 0 | 20399423 |          |
| 2 | ARS-BFGL-NGS-116058             | 0 | 20421605 |          |

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| 2 | Hapmap39315-BTA-12536  | 0 | 20484212 |
| 2 | ARS-BFGL-BAC-35112     | 0 | 20526860 |
| 2 | BTB-00082770           | 0 | 20568089 |
| 2 | BTA-46612-no-rs        | 0 | 20640699 |
| 2 | ARS-BFGL-NGS-27536     | 0 | 20672829 |
| 2 | BTB-00082871           | 0 | 20699862 |
| 2 | ARS-BFGL-NGS-118009    | 0 | 20760409 |
| 2 | BTA-09814-rs29025970   | 0 | 20809759 |
| 2 | BTA-46844-no-rs        | 0 | 20858009 |
| 2 | BTB-00086860           | 0 | 20896601 |
| 2 | BTB-01168392           | 0 | 20946632 |
| 2 | BTB-00083524           | 0 | 21003570 |
| 2 | BTB-00083549           | 0 | 21029759 |
| 2 | Hapmap48774-BTA-46697  | 0 | 21081007 |
| 2 | Hapmap32159-BTA-46703  | 0 | 21155409 |
| 2 | BTB-01168588           | 0 | 21185174 |
| 2 | UA-IFASA-1574          | 0 | 21214256 |
| 2 | Hapmap50243-BTA-116664 | 0 | 21246316 |
| 2 | BTB-01728391           | 0 | 21267547 |
| 2 | ARS-BFGL-NGS-102509    | 0 | 21290918 |
| 2 | ARS-BFGL-NGS-119036    | 0 | 21323746 |
| 2 | BTB-01168531           | 0 | 21352903 |
| 2 | ARS-BFGL-NGS-77089     | 0 | 21378013 |
| 2 | BTB-01782721           | 0 | 21389327 |
| 2 | ARS-BFGL-NGS-115155    | 0 | 21427069 |
| 2 | ARS-BFGL-NGS-86527     | 0 | 21448855 |
| 2 | Hapmap23325-BTA-153123 | 0 | 21479582 |
| 2 | ARS-BFGL-NGS-37899     | 0 | 21512341 |
| 2 | BTA-115979-no-rs       | 0 | 21565893 |
| 2 | BTB-01718242           | 0 | 21595945 |
| 2 | Hapmap40996-BTA-46790  | 0 | 21639465 |
| 2 | BTA-46780-no-rs        | 0 | 21670549 |
| 2 | BTB-00085394           | 0 | 21696086 |
| 2 | Hapmap50971-BTA-46778  | 0 | 21733481 |
| 2 | BTB-01963348           | 0 | 21756920 |
| 2 | BTB-00085353           | 0 | 21778683 |
| 2 | BTB-00085347           | 0 | 21802428 |
| 2 | BTB-00085328           | 0 | 21826349 |
| 2 | BTB-00085286           | 0 | 21884395 |
| 2 | Hapmap60122-rs29018097 | 0 | 21904823 |
| 2 | BTA-46766-no-rs        | 0 | 21937178 |
| 2 | ARS-BFGL-NGS-32709     | 0 | 21980040 |
| 2 | Hapmap32801-BTA-133738 | 0 | 22018878 |
| 2 | Hapmap47964-BTA-46752  | 0 | 22087692 |
| 2 | ARS-BFGL-NGS-23786     | 0 | 22125320 |
| 2 | ARS-BFGL-BAC-30348     | 0 | 22151093 |
| 2 | Hapmap31538-BTA-46748  | 0 | 22234464 |
| 2 | BTB-00084907           | 0 | 22283989 |
| 2 | BTB-00084791           | 0 | 22352656 |
| 2 | BTB-00084737           | 0 | 22372855 |
| 2 | BTB-00084784           | 0 | 22395493 |
| 2 | ARS-BFGL-NGS-107680    | 0 | 22428759 |
| 2 | BTB-00084660           | 0 | 22451660 |
| 2 | BTB-00084635           | 0 | 22494452 |

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| 2 | Hapmap50365-BTA-46730  | 0        | 22569871 |
| 2 | Hapmap33359-BTA-133718 | 0        | 22604508 |
| 2 | BTB-00084343           | 0        | 22644664 |
| 2 | BTB-00084309           | 0        | 22686586 |
| 2 | ARS-BFGL-NGS-59293     | 0        | 22768217 |
| 2 | ARS-BFGL-NGS-32608     | 0        | 22946115 |
| 2 | BTB-01693574           | 0        | 23061078 |
| 2 | ARS-BFGL-NGS-118058    | 0        | 23091680 |
| 2 | ARS-BFGL-NGS-14826     | 0        | 23142668 |
| 2 | BTB-00721870           | 0        | 23180223 |
| 2 | BTB-01543286           | 0        | 23256213 |
| 2 | BTB-01543251           | 0        | 23287010 |
| 2 | BTB-01543204           | 0        | 23313156 |
| 2 | BTB-01543144           | 0        | 23334606 |
| 2 | Hapmap56915-rs29026677 | 0        | 23379654 |
| 2 | BTB-00085503           | 0        | 23405887 |
| 2 | Hapmap31402-BTA-133751 | 0        | 23477638 |
| 2 | BTB-00085538           | 0        | 23498197 |
| 2 | BTB-00085622           | 0        | 23518713 |
| 2 | Hapmap38500-BTA-46794  | 0        | 23559953 |
| 2 | BTB-00085776           | 0        | 23605919 |
| 2 | BTB-00085877           | 0        | 23628756 |
| 2 | ARS-BFGL-NGS-14141     | 0        | 23654385 |
| 2 | Hapmap59009-rs29027446 | 0        | 23686403 |
| 2 | ARS-BFGL-NGS-103110    | 0        | 23715994 |
| 2 | Hapmap30793-BTA-133756 | 0        | 23757340 |
| 2 | ARS-BFGL-NGS-81142     | 0        | 23824758 |
| 2 | ARS-BFGL-NGS-29277     | 0        | 23861940 |
| 2 | ARS-BFGL-NGS-117584    | 0        | 23904611 |
| 2 | Hapmap40436-BTA-46804  | 0        | 23936626 |
| 2 | Hapmap58163-rs29021257 | 0        | 24039833 |
| 2 | ARS-BFGL-NGS-29474     | 0        | 24147156 |
| 2 | BTA-46847-no-rs        | 0        | 24192141 |
| 2 | BTB-00086968           | 0        | 24221002 |
| 2 | BTA-46852-no-rs        | 0        | 24250783 |
| 2 | BTB-00087067           | 0        | 24285533 |
| 2 | ARS-BFGL-NGS-10872     | 0        | 24325003 |
| 2 | ARS-BFGL-NGS-99222     | 0        | 24362479 |
| 2 | ARS-BFGL-NGS-14875     | 0        | 24403108 |
| 2 | ARS-BFGL-NGS-44990     | 24441912 |          |
| 2 | Hapmap52128-rs29015710 | 0        | 24472770 |
| 2 | Hapmap57629-rs29027188 | 0        | 24487457 |
| 2 | Hapmap59917-rs29012418 | 0        | 24519348 |
| 2 | BTB-00087562           | 0        | 24543348 |
| 2 | ARS-BFGL-NGS-43595     | 0        | 24567533 |
| 2 | BTB-00087717           | 0        | 24592039 |
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| 2 | BTB-00087821           | 0        | 24695545 |
| 2 | BTA-46908-no-rs        | 0        | 24734064 |
| 2 | ARS-BFGL-NGS-30790     | 24773731 |          |
| 2 | BTB-00083874           | 0        | 24801186 |
| 2 | Hapmap44380-BTA-46707  | 0        | 24837034 |
| 2 | ARS-BFGL-NGS-113556    | 0        | 24882812 |

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| 2 | BTB-00084004                     | 0 | 24905225 |          |
| 2 | Hapmap40746-BTA-46710            | 0 | 24937393 |          |
| 2 | ARS-BFGL-NGS-28193               | 0 | 24987192 |          |
| 2 | Hapmap51237-BTA-46716            | 0 | 25018255 |          |
| 2 | Hapmap26122-BTA-133766           | 0 | 25071182 |          |
| 2 | ARS-BFGL-NGS-108909              | 0 | 25253188 |          |
| 2 | Hapmap58903-rs29012194           | 0 | 25279208 |          |
| 2 | BTB-00085949                     | 0 | 25359234 |          |
| 2 | BTB-00086044                     | 0 | 25498932 |          |
| 2 | ARS-BFGL-NGS-29280               |   | 25561880 |          |
| 2 | Hapmap43586-BTA-46818            | 0 | 25609914 |          |
| 2 | ARS-BFGL-NGS-61392               | 0 | 25658990 |          |
| 2 | Hapmap46703-BTA-46822            | 0 | 25686918 |          |
| 2 | BTA-121216-no-rs                 | 0 | 25711913 |          |
| 2 | ARS-BFGL-NGS-67669               | 0 | 25762707 |          |
| 2 | Hapmap31749-BTA-133764           | 0 | 25865352 |          |
| 2 | BTA-46928-no-rs                  | 0 | 26030645 |          |
| 2 | ARS-BFGL-NGS-61330               |   | 26108646 |          |
| 2 | BTA-25512-no-rs                  | 0 | 26140855 |          |
| 2 | ARS-BFGL-NGS-40302               | 0 | 26170096 |          |
| 2 | BTB-00088008                     | 0 | 26191728 |          |
| 2 | ARS-BFGL-NGS-38536               | 0 | 26212397 |          |
| 2 | BTA-46926-no-rs                  | 0 | 26234295 |          |
| 2 | ARS-BFGL-NGS-26680               | 0 | 26263326 |          |
| 2 | BTA-47105-no-rs                  | 0 | 26286051 |          |
| 2 | BTB-00091700                     | 0 | 26308838 |          |
| 2 | ARS-BFGL-NGS-27087               | 0 | 26333469 |          |
| 2 | BTB-00091568                     | 0 | 26362611 |          |
| 2 | Hapmap50368-BTA-47103            | 0 | 26432941 |          |
| 2 | BTB-00091527                     | 0 | 26460035 |          |
| 2 | ARS-BFGL-BAC-26180               |   | 26492839 |          |
| 2 | Hapmap35504-SCAFFOLD52046_3051   | 0 |          | 26528268 |
| 2 | Hapmap43272-BTA-47100            | 0 | 26558720 |          |
| 2 | Hapmap52660-ss46526812           | 0 | 26592749 |          |
| 2 | BTA-112971-no-rs                 | 0 | 26734422 |          |
| 2 | Hapmap39717-BTA-112973           | 0 | 26781358 |          |
| 2 | ARS-BFGL-NGS-11470               | 0 | 26861021 |          |
| 2 | BTA-123273-no-rs                 | 0 | 26883836 |          |
| 2 | BTB-00089002                     | 0 | 26904683 |          |
| 2 | BTB-00089278                     | 0 | 26942975 |          |
| 2 | BTB-00089236                     | 0 | 26972386 |          |
| 2 | ARS-BFGL-NGS-39504               | 0 | 26994889 |          |
| 2 | ARS-USMARC-Parent-AY776154-no-rs | 0 |          | 26997623 |
| 2 | ARS-BFGL-NGS-14624               | 0 | 27055328 |          |
| 2 | BTB-01724071                     | 0 | 27122705 |          |
| 2 | UA-IFASA-5527                    | 0 | 27180995 |          |
| 2 | Hapmap50367-BTA-47094            | 0 | 27244338 |          |
| 2 | BTB-00091356                     | 0 | 27266773 |          |
| 2 | BTB-00091350                     | 0 | 27323747 |          |
| 2 | BTA-47092-no-rs                  | 0 | 27374270 |          |
| 2 | BTB-00091195                     | 0 | 27412491 |          |
| 2 | Hapmap59218-rs29014793           | 0 | 27450149 |          |
| 2 | ARS-BFGL-NGS-107504              | 0 | 27505377 |          |
| 2 | BTB-00091109                     | 0 | 27535652 |          |

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| 2 | BTA-47081-no-rs        | 0 | 27635860 |
| 2 | BTB-00090936           | 0 | 27658055 |
| 2 | ARS-BFGL-NGS-16854     | 0 | 27714533 |
| 2 | BTB-00090874           | 0 | 27724930 |
| 2 | ARS-BFGL-NGS-48318     | 0 | 27756641 |
| 2 | Hapmap33265-BTA-47080  | 0 | 27804969 |
| 2 | ARS-BFGL-NGS-77438     | 0 | 27814925 |
| 2 | BTA-47074-no-rs        | 0 | 27863911 |
| 2 | BTB-00090483           | 0 | 27894603 |
| 2 | BTB-00090441           | 0 | 27950681 |
| 2 | Hapmap39657-BTA-47071  | 0 | 27983134 |
| 2 | Hapmap25643-BTA-47070  | 0 | 28012303 |
| 2 | ARS-BFGL-NGS-77240     | 0 | 28035273 |
| 2 | ARS-BFGL-NGS-40971     | 0 | 28073362 |
| 2 | ARS-BFGL-NGS-110725    | 0 | 28105529 |
| 2 | Hapmap44243-BTA-47059  | 0 | 28161110 |
| 2 | BTA-47052-no-rs        | 0 | 28195054 |
| 2 | BTB-00090163           | 0 | 28215944 |
| 2 | ARS-BFGL-NGS-110209    | 0 | 28246133 |
| 2 | Hapmap59045-rs29026016 | 0 | 28283672 |
| 2 | BTB-00090016           | 0 | 28310926 |
| 2 | Hapmap57743-rs29026473 | 0 | 28376835 |
| 2 | Hapmap48633-BTA-118034 | 0 | 28418159 |
| 2 | ARS-BFGL-NGS-60458     | 0 | 28438999 |
| 2 | BTB-01141030           | 0 | 28462521 |
| 2 | BTA-15124-rs29026489   | 0 | 28483819 |
| 2 | ARS-BFGL-NGS-13789     | 0 | 28508619 |
| 2 | BTB-01141260           | 0 | 28533076 |
| 2 | Hapmap56032-rs29022835 | 0 | 28573158 |
| 2 | ARS-BFGL-BAC-31010     | 0 | 28635618 |
| 2 | Hapmap51783-BTA-96615  | 0 | 28692603 |
| 2 | Hapmap41697-BTA-96617  | 0 | 28722493 |
| 2 | BTA-96624-no-rs        | 0 | 28758897 |
| 2 | Hapmap61063-rs29026680 | 0 | 28759185 |
| 2 | BTB-01494206           | 0 | 28803276 |
| 2 | ARS-BFGL-NGS-19813     | 0 | 28834748 |
| 2 | BTB-01494177           | 0 | 28882690 |
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| 2 | Hapmap54696-rs29024868 | 0 | 28957052 |
| 2 | Hapmap43138-BTA-107007 | 0 | 28994690 |
| 2 | Hapmap39178-BTA-96630  | 0 | 29027343 |
| 2 | ARS-BFGL-NGS-99856     | 0 | 29055572 |
| 2 | ARS-BFGL-NGS-104761    | 0 | 29092924 |
| 2 | BTA-89168-no-rs        | 0 | 29135710 |
| 2 | BTA-09540-no-rs        | 0 | 29187973 |
| 2 | BTB-01987495           | 0 | 29215002 |
| 2 | BTA-30375-no-rs        | 0 | 29240531 |
| 2 | BTA-30381-no-rs        | 0 | 29275496 |
| 2 | ARS-BFGL-NGS-31833     | 0 | 29307365 |
| 2 | ARS-BFGL-NGS-13167     | 0 | 29335326 |
| 2 | Hapmap32886-BTA-30414  | 0 | 29370591 |
| 2 | BTA-30419-no-rs        | 0 | 29405628 |
| 2 | Hapmap50650-BTA-30427  | 0 | 29485468 |
| 2 | BTB-01978664           | 0 | 29509798 |

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| 2 | Hapmap61002-rs29016992          | 0        | 29529923 |          |
| 2 | BTB-01817112                    | 0        | 29591727 |          |
| 2 | BTB-01243338                    | 0        | 29699653 |          |
| 2 | ARS-BFGL-BAC-33169              | 0        | 29812959 |          |
| 2 | BTB-01045439                    | 0        | 29839570 |          |
| 2 | ARS-BFGL-NGS-94388              | 0        | 29863589 |          |
| 2 | ARS-BFGL-NGS-118404             | 0        | 29893086 |          |
| 2 | ARS-BFGL-NGS-38622              | 0        | 29919184 |          |
| 2 | ARS-BFGL-NGS-64281              | 0        | 29948707 |          |
| 2 | BTA-47106-no-rs                 | 0        | 29983032 |          |
| 2 | ARS-BFGL-NGS-72090              | 0        | 30011666 |          |
| 2 | Hapmap25534-BTA-133814          | 0        | 30040090 |          |
| 2 | ARS-BFGL-BAC-28097              | 0        | 30068409 |          |
| 2 | Hapmap23355-BTA-133816          | 0        | 30102137 |          |
| 2 | ARS-BFGL-BAC-26830              | 30131000 |          |          |
| 2 | Hapmap52303-rs29012101          | 0        | 30157601 |          |
| 2 | ARS-BFGL-BAC-28969              | 0        | 30197027 |          |
| 2 | BTB-01386993                    | 0        | 30262141 |          |
| 2 | ARS-BFGL-BAC-29585              | 0        | 30307800 |          |
| 2 | ARS-BFGL-BAC-30773              | 0        | 30369211 |          |
| 2 | ARS-BFGL-NGS-103589             | 0        | 30402454 |          |
| 2 | Hapmap40825-BTA-87008           | 0        | 30426695 |          |
| 2 | ARS-BFGL-BAC-32548              | 0        | 30456734 |          |
| 2 | Hapmap39006-BTA-116188          | 0        | 30481073 |          |
| 2 | ARS-BFGL-BAC-31395              | 0        | 30504377 |          |
| 2 | ARS-BFGL-NGS-61127              | 0        | 30528677 |          |
| 2 | Hapmap59234-rs29019491          | 0        | 30585904 |          |
| 2 | ARS-BFGL-BAC-28436              | 0        | 30607947 |          |
| 2 | ARS-BFGL-BAC-29664              | 0        | 30635269 |          |
| 2 | ARS-BFGL-BAC-30229              | 0        | 30659411 |          |
| 2 | Hapmap27615-BTA-151650          | 0        | 30680359 |          |
| 2 | ARS-BFGL-BAC-30252              | 0        | 30704175 |          |
| 2 | ARS-BFGL-BAC-33235              | 0        | 30748673 |          |
| 2 | Hapmap51366-BTA-98577           | 0        | 30773585 |          |
| 2 | ARS-BFGL-BAC-29079              | 0        | 30800961 |          |
| 2 | Hapmap36677-SCAFFOLD324504_3277 | 0        |          | 30825772 |
| 2 | ARS-BFGL-BAC-26800              | 30863495 |          |          |
| 2 | ARS-BFGL-NGS-36416              | 0        | 30899389 |          |
| 2 | ARS-BFGL-BAC-29051              | 0        | 30930693 |          |
| 2 | ARS-BFGL-BAC-30866              | 0        | 30992555 |          |
| 2 | ARS-BFGL-BAC-33265              | 0        | 31020591 |          |
| 2 | ARS-BFGL-BAC-33842              | 0        | 31050929 |          |
| 2 | ARS-BFGL-BAC-29669              | 0        | 31080979 |          |
| 2 | ARS-BFGL-BAC-29706              | 0        | 31112142 |          |
| 2 | Hapmap40659-BTA-116165          | 0        | 31142702 |          |
| 2 | Hapmap22879-BTA-157592          | 0        | 31169820 |          |
| 2 | Hapmap27145-BTA-116154          | 0        | 31197115 |          |
| 2 | ARS-BFGL-BAC-68                 | 0        | 31242327 |          |
| 2 | ARS-BFGL-BAC-32035              | 0        | 31265623 |          |
| 2 | ARS-BFGL-NGS-119470             | 0        | 31327919 |          |
| 2 | Hapmap22739-BTA-116164          | 0        | 31359004 |          |
| 2 | Hapmap27486-BTA-90141           | 0        | 31388589 |          |
| 2 | Hapmap33662-BTA-133826          | 0        | 31441024 |          |
| 2 | Hapmap25812-BTA-133837          | 0        | 31466188 |          |

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| 2 | BTB-01944931           | 0 | 31500118 |
| 2 | BTA-47136-no-rs        | 0 | 31533028 |
| 2 | Hapmap52594-rs29026993 | 0 | 31569746 |
| 2 | BTA-47138-no-rs        | 0 | 31603809 |
| 2 | BTB-00092571           | 0 | 31647578 |
| 2 | BTB-01571963           | 0 | 31671085 |
| 2 | ARS-BFGL-NGS-80635     | 0 | 31695296 |
| 2 | BTA-104779-no-rs       | 0 | 31731639 |
| 2 | BTB-00093493           | 0 | 31870220 |
| 2 | BTB-00093483           | 0 | 31927369 |
| 2 | ARS-BFGL-NGS-36319     | 0 | 31971668 |
| 2 | BTA-47279-no-rs        | 0 | 31995926 |
| 2 | Hapmap44597-BTA-47277  | 0 | 32084326 |
| 2 | BTB-00093314           | 0 | 32108568 |
| 2 | BTB-00093291           | 0 | 32154806 |
| 2 | BTB-00093151           | 0 | 32190328 |
| 2 | ARS-BFGL-NGS-39862     | 0 | 32214197 |
| 2 | ARS-BFGL-NGS-77689     | 0 | 32266380 |
| 2 | BTB-00093074           | 0 | 32305832 |
| 2 | BTB-00093060           | 0 | 32327498 |
| 2 | ARS-BFGL-BAC-45010     |   | 32355749 |
| 2 | Hapmap42950-BTA-47265  | 0 | 32376219 |
| 2 | BTA-47262-no-rs        | 0 | 32426255 |
| 2 | BTB-00092969           | 0 | 32455179 |
| 2 | ARS-BFGL-NGS-39600     |   | 32484368 |
| 2 | BTB-00092817           | 0 | 32520300 |
| 2 | ARS-BFGL-NGS-46620     |   | 32553252 |
| 2 | BTB-01549619           | 0 | 32590554 |
| 2 | Hapmap41880-BTA-47153  | 0 | 32683000 |
| 2 | BTB-00092756           | 0 | 32703555 |
| 2 | BTA-47150-no-rs        | 0 | 32726015 |
| 2 | ARS-BFGL-NGS-113793    | 0 | 32770767 |
| 2 | Hapmap41879-BTA-47145  | 0 | 32880955 |
| 2 | BTB-00092669           | 0 | 32911623 |
| 2 | BTB-00092651           | 0 | 32939824 |
| 2 | BTB-00094591           | 0 | 32971826 |
| 2 | ARS-BFGL-NGS-23688     | 0 | 33023842 |
| 2 | BTA-47299-no-rs        | 0 | 33094229 |
| 2 | BTB-00094379           | 0 | 33121559 |
| 2 | BTB-00094296           | 0 | 33215993 |
| 2 | BTB-00094289           | 0 | 33245068 |
| 2 | BTB-00094283           | 0 | 33267739 |
| 2 | Hapmap33197-BTA-133869 | 0 | 33290041 |
| 2 | BTB-00094170           | 0 | 33336950 |
| 2 | ARS-BFGL-NGS-63780     |   | 33365058 |
| 2 | ARS-BFGL-BAC-42858     | 0 | 33401608 |
| 2 | BTB-00093853           | 0 | 33433015 |
| 2 | BTB-00093776           | 0 | 33484646 |
| 2 | BTB-00093748           | 0 | 33570231 |
| 2 | ARS-BFGL-NGS-78780     |   | 33678860 |
| 2 | ARS-BFGL-NGS-31279     | 0 | 33776171 |
| 2 | BTB-00093713           | 0 | 33798764 |
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| 2 | ARS-BFGL-NGS-44341     | 0 | 33944781 |



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| 2 | BTB-00088434           | 0        | 33966115 |
| 2 | BTB-00088458           | 0        | 33986797 |
| 2 | ARS-BFGL-NGS-65913     | 0        | 34015788 |
| 2 | Hapmap46221-BTA-46942  | 0        | 34044657 |
| 2 | BTB-00088563           | 0        | 34084746 |
| 2 | BTB-00088621           | 0        | 34118200 |
| 2 | BTB-00088679           | 0        | 34194876 |
| 2 | ARS-BFGL-BAC-30629     | 0        | 34229500 |
| 2 | BTB-00088688           | 0        | 34258157 |
| 2 | BTB-01896843           | 0        | 34329085 |
| 2 | ARS-BFGL-NGS-119116    | 0        | 34351109 |
| 2 | BTB-00092589           | 0        | 34379341 |
| 2 | BTB-00094752           | 0        | 34458464 |
| 2 | ARS-BFGL-NGS-64127     | 0        | 34500208 |
| 2 | UA-IFASA-6488          | 0        | 34537333 |
| 2 | Hapmap26123-BTA-133877 | 0        | 34572812 |
| 2 | ARS-BFGL-NGS-64022     | 0        | 34594243 |
| 2 | BTB-00969696           | 0        | 34638721 |
| 2 | BTB-00969746           | 0        | 34657974 |
| 2 | BTB-00969752           | 0        | 34679700 |
| 2 | Hapmap45885-BTA-63051  | 0        | 34709686 |
| 2 | ARS-BFGL-BAC-30745     | 0        | 34918437 |
| 2 | ARS-BFGL-NGS-100791    | 0        | 35004695 |
| 2 | BTA-95758-no-rs        | 0        | 35043749 |
| 2 | Hapmap30561-BTA-150629 | 0        | 35078302 |
| 2 | Hapmap47871-BTA-122165 | 0        | 35122342 |
| 2 | BTB-00089372           | 0        | 35186903 |
| 2 | BTB-00089384           | 0        | 35264900 |
| 2 | Hapmap49623-BTA-46979  | 0        | 35319678 |
| 2 | Hapmap61145-rs29025790 | 0        | 35386147 |
| 2 | BTB-00089403           | 0        | 35478963 |
| 2 | BTB-01798423           | 0        | 35497449 |
| 2 | Hapmap25811-BTA-133786 | 0        | 35610173 |
| 2 | BTA-26450-no-rs        | 0        | 35671347 |
| 2 | Hapmap51878-BTA-117353 | 0        | 35692083 |
| 2 | BTB-01246228           | 0        | 35727838 |
| 2 | Hapmap24346-BTA-158052 | 0        | 35761857 |
| 2 | BTB-00295753           | 0        | 35827910 |
| 2 | BTB-00295725           | 0        | 35852731 |
| 2 | ARS-BFGL-NGS-86330     | 35898373 |          |
| 2 | ARS-BFGL-BAC-36330     | 35936557 |          |
| 2 | Hapmap50820-BTA-91209  | 0        | 35993314 |
| 2 | ARS-BFGL-NGS-32446     | 0        | 36077493 |
| 2 | Hapmap26705-BTA-149119 | 0        | 36178912 |
| 2 | ARS-BFGL-NGS-85296     | 0        | 36206558 |
| 2 | ARS-BFGL-NGS-110726    | 0        | 36228793 |
| 2 | Hapmap25251-BTA-133896 | 0        | 36252633 |
| 2 | ARS-BFGL-NGS-117164    | 0        | 36393032 |
| 2 | Hapmap27039-BTA-22947  | 0        | 36570379 |
| 2 | Hapmap39151-BTA-22132  | 0        | 36603752 |
| 2 | ARS-BFGL-NGS-102089    | 0        | 36655521 |
| 2 | Hapmap33597-BTA-154241 | 0        | 36686850 |
| 2 | Hapmap42250-BTA-55589  | 0        | 36850914 |
| 2 | ARS-BFGL-BAC-30704     | 0        | 36891323 |

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| 2 | Hapmap55306-rs29018633          | 0        | 36969965 |  |
| 2 | BTA-55596-no-rs                 | 0        | 37015649 |  |
| 2 | BTA-55603-no-rs                 | 0        | 37065686 |  |
| 2 | ARS-BFGL-BAC-30703              | 0        | 37156818 |  |
| 2 | ARS-BFGL-NGS-117409             | 0        | 37256390 |  |
| 2 | Hapmap25533-BTA-133664          | 0        | 37332808 |  |
| 2 | BTA-46613-no-rs                 | 0        | 37358592 |  |
| 2 | ARS-BFGL-NGS-75                 | 0        | 37405656 |  |
| 2 | Hapmap52382-rs29019574          | 0        | 37584534 |  |
| 2 | Hapmap58509-rs29024139          | 0        | 37635484 |  |
| 2 | ARS-BFGL-NGS-117267             | 0        | 37675264 |  |
| 2 | ARS-BFGL-NGS-28859              | 0        | 37729012 |  |
| 2 | ARS-BFGL-NGS-114956             | 0        | 37769598 |  |
| 2 | ARS-BFGL-NGS-118643             | 0        | 37777606 |  |
| 2 | ARS-BFGL-NGS-57870              | 0        | 37813654 |  |
| 2 | Hapmap39595-BTA-85742           | 0        | 37879933 |  |
| 2 | Hapmap40693-BTA-23038           | 0        | 38014729 |  |
| 2 | Hapmap24585-BTA-23037           | 0        | 38034834 |  |
| 2 | Hapmap43527-BTA-24641           | 0        | 38240106 |  |
| 2 | Hapmap41189-BTA-122751          | 0        | 38312194 |  |
| 2 | ARS-BFGL-NGS-34549              | 0        | 38340255 |  |
| 2 | Hapmap40998-BTA-47401           | 0        | 38416725 |  |
| 2 | ARS-BFGL-NGS-78890              | 0        | 38436921 |  |
| 2 | Hapmap48776-BTA-47395           | 0        | 38525454 |  |
| 2 | Hapmap30225-BTA-133903          | 0        | 38566968 |  |
| 2 | ARS-BFGL-NGS-31080              | 38636687 |          |  |
| 2 | ARS-BFGL-NGS-38727              | 0        | 38670519 |  |
| 2 | ARS-BFGL-BAC-31338              | 0        | 38709480 |  |
| 2 | Hapmap42557-BTA-47352           | 0        | 38748216 |  |
| 2 | BTA-47365-no-rs                 | 0        | 38770761 |  |
| 2 | Hapmap53285-rs29015860          | 0        | 38804898 |  |
| 2 | BTB-00096057                    | 0        | 38880084 |  |
| 2 | ARS-BFGL-NGS-29623              | 0        | 38908651 |  |
| 2 | Hapmap55130-rs29021614          | 0        | 38939453 |  |
| 2 | Hapmap32300-BTA-133908          | 0        | 38980525 |  |
| 2 | Hapmap30794-BTA-133911          | 0        | 39002472 |  |
| 2 | Hapmap32557-BTA-133920          | 0        | 39031524 |  |
| 2 | ARS-BFGL-NGS-60043              | 0        | 39056934 |  |
| 2 | ARS-BFGL-BAC-28130              | 39086521 |          |  |
| 2 | ARS-BFGL-NGS-103291             | 0        | 39158935 |  |
| 2 | ARS-BFGL-NGS-30262              | 0        | 39246711 |  |
| 2 | UA-IFASA-9548                   | 0        | 39350058 |  |
| 2 | Hapmap27442-BTA-156175          | 0        | 39511079 |  |
| 2 | Hapmap23256-BTA-113482          | 0        | 39634470 |  |
| 2 | ARS-BFGL-NGS-112315             | 0        | 39654734 |  |
| 2 | BTA-114831-no-rs                | 0        | 39709004 |  |
| 2 | ARS-BFGL-NGS-104922             | 0        | 39775205 |  |
| 2 | BTB-01053800                    | 0        | 39813500 |  |
| 2 | BTB-01053796                    | 0        | 39842336 |  |
| 2 | Hapmap47839-BTA-113475          | 0        | 39903367 |  |
| 2 | Hapmap50875-BTA-113474          | 0        | 39935723 |  |
| 2 | ARS-BFGL-NGS-98401              | 0        | 39976359 |  |
| 2 | Hapmap36520-SCAFFOLD290052_3670 | 0        | 40021512 |  |
| 2 | Hapmap28052-BTA-156755          | 0        | 40069616 |  |

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| 2 | Hapmap55508-rs29010162 | 0        | 40155558 |
| 2 | BTB-01053755           | 0        | 40313359 |
| 2 | BTB-01053741           | 0        | 40337325 |
| 2 | ARS-BFGL-NGS-83225     | 0        | 40358906 |
| 2 | BTB-01053710           | 0        | 40390786 |
| 2 | Hapmap27206-BTA-156749 | 0        | 40421855 |
| 2 | ARS-BFGL-NGS-35226     | 0        | 40513966 |
| 2 | ARS-BFGL-NGS-30068     | 0        | 40540747 |
| 2 | ARS-BFGL-NGS-23722     | 0        | 40592689 |
| 2 | ARS-BFGL-BAC-41568     | 0        | 40653110 |
| 2 | BTA-08061-no-rs        | 0        | 40881032 |
| 2 | BTB-01053656           | 0        | 40907491 |
| 2 | Hapmap43158-BTA-113479 | 0        | 40939434 |
| 2 | BTB-01810212           | 0        | 41000191 |
| 2 | BTB-01592427           | 0        | 41023734 |
| 2 | BTB-01592420           | 0        | 41045923 |
| 2 | BTB-01648501           | 0        | 41124804 |
| 2 | BTB-01648482           | 0        | 41198815 |
| 2 | ARS-BFGL-NGS-28540     | 41228198 |          |
| 2 | BTB-01341306           | 0        | 41267792 |
| 2 | Hapmap59739-rs29016910 | 0        | 41304807 |
| 2 | BTB-01341365           | 0        | 41332471 |
| 2 | ARS-BFGL-NGS-99769     | 0        | 41353953 |
| 2 | Hapmap38483-BTA-25757  | 0        | 41386138 |
| 2 | BTA-25759-no-rs        | 0        | 41399057 |
| 2 | BTB-01341517           | 0        | 41428478 |
| 2 | ARS-BFGL-BAC-41557     | 0        | 41465274 |
| 2 | Hapmap22957-BTA-47431  | 0        | 41488041 |
| 2 | BTB-00096830           | 0        | 41522027 |
| 2 | ARS-BFGL-NGS-55184     | 0        | 41564195 |
| 2 | BTB-01883711           | 0        | 41592409 |
| 2 | BTB-01871274           | 0        | 41628433 |
| 2 | BTA-25760-no-rs        | 0        | 41647204 |
| 2 | ARS-BFGL-BAC-27900     | 41672298 |          |
| 2 | BTB-00096979           | 0        | 41717655 |
| 2 | Hapmap48777-BTA-47434  | 0        | 41786376 |
| 2 | BTA-47437-no-rs        | 0        | 41809670 |
| 2 | ARS-BFGL-BAC-29526     | 0        | 41829776 |
| 2 | BTA-47440-no-rs        | 0        | 41853231 |
| 2 | Hapmap57995-rs29022905 | 0        | 41912933 |
| 2 | Hapmap46653-BTA-47447  | 0        | 41938704 |
| 2 | BTB-00097114           | 0        | 41987155 |
| 2 | BTB-00097126           | 0        | 42008005 |
| 2 | Hapmap44080-BTA-47449  | 0        | 42042712 |
| 2 | BTB-01878940           | 0        | 42081873 |
| 2 | Hapmap51456-BTA-47469  | 0        | 42137116 |
| 2 | Hapmap54983-rs29020503 | 0        | 42173258 |
| 2 | BTB-00097246           | 0        | 42189311 |
| 2 | BTB-01242431           | 0        | 42243268 |
| 2 | ARS-BFGL-NGS-48471     | 0        | 42305370 |
| 2 | BTB-01242342           | 0        | 42336766 |
| 2 | BTB-01242298           | 0        | 42363937 |
| 2 | BTB-01242289           | 0        | 42397550 |
| 2 | BTB-01242236           | 0        | 42424807 |

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| 2 | BTB-01242184                          | 0 | 42454257 |          |
| 2 | ARS-BFGL-NGS-45740                    |   | 42565920 |          |
| 2 | BTB-01437762                          | 0 | 42587245 |          |
| 2 | ARS-BFGL-NGS-45548                    | 0 | 42738222 |          |
| 2 | ARS-BFGL-NGS-115659                   | 0 | 42772590 |          |
| 2 | ARS-BFGL-NGS-105507                   | 0 | 42815136 |          |
| 2 | BTB-01247298                          | 0 | 42897811 |          |
| 2 | BTA-19852-no-rs                       | 0 | 42986890 |          |
| 2 | BTB-01838972                          | 0 | 43014031 |          |
| 2 | BTB-01247268                          | 0 | 43021497 |          |
| 2 | BTB-01247241                          | 0 | 43042276 |          |
| 2 | BTA-46592-no-rs                       | 0 | 43131830 |          |
| 2 | BTA-27803-no-rs                       | 0 | 43225280 |          |
| 2 | ARS-BFGL-NGS-112050                   | 0 | 43396276 |          |
| 2 | BTA-49947-no-rs                       | 0 | 43436458 |          |
| 2 | ARS-BFGL-NGS-41803                    | 0 | 43456893 |          |
| 2 | ARS-BFGL-NGS-43758                    | 0 | 43488810 |          |
| 2 | ARS-BFGL-NGS-83090                    |   | 43513143 |          |
| 2 | Hapmap26509-BTA-47504                 | 0 | 43768268 |          |
| 2 | ARS-BFGL-NGS-79459                    | 0 | 43905458 |          |
| 2 | ARS-BFGL-NGS-81054                    | 0 | 43966884 |          |
| 2 | UA-IFASA-9607                         | 0 | 44116574 |          |
| 2 | Hapmap47965-BTA-47481                 | 0 | 44173767 |          |
| 2 | ARS-BFGL-NGS-18591                    | 0 | 44193968 |          |
| 2 | ARS-BFGL-NGS-30987                    | 0 | 44228718 |          |
| 2 | ARS-BFGL-NGS-93283                    | 0 | 44264949 |          |
| 2 | BTA-47484-no-rs                       | 0 | 44306456 |          |
| 2 | ARS-BFGL-NGS-25825                    | 0 | 44455898 |          |
| 2 | Hapmap23460-BTA-133938                | 0 | 44492207 |          |
| 2 | ARS-BFGL-NGS-27508                    | 0 | 44512075 |          |
| 2 | Hapmap55415-ss46526681                | 0 | 44754820 |          |
| 2 | ARS-BFGL-NGS-79233                    | 0 | 44819403 |          |
| 2 | Hapmap39028-BTA-49928                 | 0 | 44944975 |          |
| 2 | Hapmap59844-rs29025329                | 0 | 44947955 |          |
| 2 | Hapmap50202-BTA-106854                | 0 | 45026036 |          |
| 2 | Hapmap43136-BTA-106852                | 0 | 45085937 |          |
| 2 | ARS-BFGL-NGS-66375                    | 0 | 45144958 |          |
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| 2 | Hapmap53891-rs29021231                | 0 | 45554413 |          |
| 2 | Hapmap38896-BTA-47506                 | 0 | 45574415 |          |
| 2 | Hapmap25252-BTA-133942                | 0 | 45620386 |          |
| 2 | ARS-BFGL-NGS-67924                    | 0 | 45643391 |          |
| 2 | Hapmap34848-BES1_Contig523_1341       | 0 |          | 45718686 |
| 2 | ARS-USMARC-Parent-AY841151-rs29003466 |   | 0        | 45832887 |
| 2 | Hapmap34002-BES11_Contig450_949       | 0 |          | 46010764 |
| 2 | Hapmap29983-BTA-133945                | 0 | 46143050 |          |
| 2 | ARS-BFGL-BAC-41571                    | 0 | 46244844 |          |
| 2 | Hapmap50824-BTA-92238                 | 0 | 46268964 |          |
| 2 | ARS-BFGL-NGS-44416                    | 0 | 46498119 |          |
| 2 | Hapmap41882-BTA-47592                 | 0 | 46528687 |          |
| 2 | ARS-BFGL-NGS-16519                    | 0 | 46557061 |          |
| 2 | ARS-BFGL-NGS-36771                    | 0 | 46593620 |          |
| 2 | ARS-BFGL-NGS-29014                    | 0 | 46661883 |          |

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| 2 | Hapmap57575-rs29011345          | 0 | 46700438 |          |
| 2 | ARS-BFGL-NGS-23439              | 0 | 46732375 |          |
| 2 | Hapmap44600-BTA-47582           | 0 | 46838331 |          |
| 2 | ARS-BFGL-NGS-119305             | 0 | 46889391 |          |
| 2 | BTA-117085-no-rs                | 0 | 46964376 |          |
| 2 | ARS-BFGL-NGS-100319             | 0 | 46995644 |          |
| 2 | Hapmap48631-BTA-117251          | 0 | 47084459 |          |
| 2 | ARS-BFGL-NGS-32858              | 0 | 47115547 |          |
| 2 | Hapmap34454-BES3_Contig368_1159 | 0 |          | 47172957 |
| 2 | Hapmap41551-BTA-47567           | 0 | 47202387 |          |
| 2 | ARS-BFGL-NGS-110511             | 0 | 47238139 |          |
| 2 | ARS-BFGL-BAC-47330              | 0 | 47339483 |          |
| 2 | ARS-BFGL-NGS-83687              | 0 | 47361073 |          |
| 2 | BTA-47601-no-rs                 | 0 | 47385950 |          |
| 2 | ARS-BFGL-BAC-27930              |   | 47449015 |          |
| 2 | Hapmap55249-rs29014403          | 0 | 47652271 |          |
| 2 | BTA-47524-no-rs                 | 0 | 47760192 |          |
| 2 | ARS-BFGL-NGS-98094              | 0 | 47782292 |          |
| 2 | Hapmap48352-BTA-47529           | 0 | 47873555 |          |
| 2 | Hapmap26789-BTA-47530           | 0 | 47945351 |          |
| 2 | ARS-BFGL-NGS-103557             | 0 | 48154122 |          |
| 2 | ARS-BFGL-NGS-82865              | 0 | 48217714 |          |
| 2 | Hapmap43862-BTA-47538           | 0 | 48240577 |          |
| 2 | ARS-BFGL-BAC-35245              | 0 | 48282793 |          |
| 2 | BTA-47540-no-rs                 | 0 | 48303241 |          |
| 2 | ARS-BFGL-NGS-114697             | 0 | 48356704 |          |
| 2 | UA-IFASA-9180                   | 0 | 48394699 |          |
| 2 | Hapmap43863-BTA-47554           | 0 | 48440885 |          |
| 2 | BTA-47558-no-rs                 | 0 | 48570218 |          |
| 2 | Hapmap59340-rs29017240          | 0 | 48800719 |          |
| 2 | BTA-14682-no-rs                 | 0 | 48895479 |          |
| 2 | Hapmap47966-BTA-47563           | 0 | 48925280 |          |
| 2 | Hapmap18416-rs29019993          | 0 | 48977118 |          |
| 2 | ARS-BFGL-NGS-113042             | 0 | 49095661 |          |
| 2 | Hapmap42449-BTA-120321          | 0 | 49175458 |          |
| 2 | ARS-BFGL-NGS-104615             | 0 | 49316873 |          |
| 2 | Hapmap23703-BTA-159031          | 0 | 49449826 |          |
| 2 | Hapmap35440-SCAFFOLD43266_711   | 0 |          | 49767251 |
| 2 | ARS-BFGL-NGS-38341              | 0 | 49808137 |          |
| 2 | BTA-120308-no-rs                | 0 | 49914972 |          |
| 2 | ARS-BFGL-NGS-113925             | 0 | 49943710 |          |
| 2 | Hapmap40308-BTA-47694           | 0 | 50069820 |          |
| 2 | BTA-47682-no-rs                 | 0 | 50130815 |          |
| 2 | BTA-47677-no-rs                 | 0 | 50165771 |          |
| 2 | ARS-BFGL-NGS-46883              | 0 | 50188289 |          |
| 2 | Hapmap38756-BTA-47676           | 0 | 50223536 |          |
| 2 | BTB-00099032                    | 0 | 50262148 |          |
| 2 | BTB-00098952                    | 0 | 50327795 |          |
| 2 | Hapmap42228-BTA-47674           | 0 | 50368074 |          |
| 2 | BTB-00098919                    | 0 | 50412468 |          |
| 2 | BTB-00098912                    | 0 | 50506143 |          |
| 2 | BTB-00098901                    | 0 | 50556015 |          |
| 2 | Hapmap41883-BTA-47665           | 0 | 50595671 |          |
| 2 | ARS-BFGL-BAC-35838              | 0 | 50632840 |          |

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| 2 | Hapmap25927-BTA-17036  | 0        | 50653397 |
| 2 | ARS-BFGL-BAC-35839     | 0        | 50689222 |
| 2 | BTB-01720538           | 0        | 50744605 |
| 2 | ARS-BFGL-NGS-108848    | 0        | 50767757 |
| 2 | BTB-01741550           | 0        | 50810731 |
| 2 | BTB-00097683           | 0        | 50902073 |
| 2 | BTB-01741678           | 0        | 50916490 |
| 2 | Hapmap27390-BTA-133992 | 0        | 50987435 |
| 2 | BTB-00097813           | 0        | 51012229 |
| 2 | ARS-BFGL-NGS-53353     | 0        | 51035004 |
| 2 | Hapmap38755-BTA-47611  | 0        | 51129488 |
| 2 | BTA-47612-no-rs        | 0        | 51162276 |
| 2 | BTB-00098202           | 0        | 51200785 |
| 2 | BTB-00098220           | 0        | 51227309 |
| 2 | BTB-00098296           | 0        | 51273999 |
| 2 | BTA-47620-no-rs        | 0        | 51314167 |
| 2 | ARS-BFGL-NGS-98960     | 0        | 51385485 |
| 2 | ARS-BFGL-NGS-117857    | 0        | 51430054 |
| 2 | BTB-00098350           | 0        | 51506517 |
| 2 | ARS-BFGL-NGS-115807    | 0        | 51546568 |
| 2 | BTB-00098343           | 0        | 51621921 |
| 2 | BTA-47622-no-rs        | 0        | 51697409 |
| 2 | Hapmap27663-BTA-47633  | 0        | 51765219 |
| 2 | BTB-00098380           | 0        | 51825396 |
| 2 | ARS-BFGL-BAC-37051     | 0        | 51854482 |
| 2 | ARS-BFGL-NGS-109901    | 0        | 51895209 |
| 2 | ARS-BFGL-NGS-34526     | 0        | 51914519 |
| 2 | Hapmap52423-rs29022902 | 0        | 51940451 |
| 2 | BTB-00098528           | 0        | 51983283 |
| 2 | Hapmap42227-BTA-47643  | 0        | 52018862 |
| 2 | BTA-47646-no-rs        | 0        | 52044048 |
| 2 | BTA-47652-no-rs        | 0        | 52069973 |
| 2 | BTB-00098707           | 0        | 52109717 |
| 2 | BTB-00098730           | 0        | 52130607 |
| 2 | ARS-BFGL-NGS-33850     | 52156024 |          |
| 2 | ARS-BFGL-NGS-118744    | 0        | 52176845 |
| 2 | Hapmap43865-BTA-47654  | 0        | 52229656 |
| 2 | Hapmap45495-BTA-47659  | 0        | 52314712 |
| 2 | Hapmap44545-BTA-47658  | 0        | 52339443 |
| 2 | BTB-00098856           | 0        | 52392645 |
| 2 | BTA-47656-no-rs        | 0        | 52417495 |
| 2 | BTB-00098808           | 0        | 52449826 |
| 2 | BTB-00098799           | 0        | 52476850 |
| 2 | BTB-00098773           | 0        | 52497009 |
| 2 | Hapmap60959-rs29025559 | 0        | 52549118 |
| 2 | BTB-01266966           | 0        | 52579702 |
| 2 | Hapmap41178-BTA-120553 | 0        | 52612052 |
| 2 | BTA-120552-no-rs       | 0        | 52632330 |
| 2 | BTB-01266880           | 0        | 52692341 |
| 2 | BTB-01266858           | 0        | 52716480 |
| 2 | ARS-BFGL-NGS-65713     | 0        | 52778208 |
| 2 | BTB-01266794           | 0        | 52825949 |
| 2 | ARS-BFGL-NGS-24278     | 0        | 52872733 |
| 2 | BTB-01266707           | 0        | 52899889 |

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| 2 | BTB-01266622                   | 0 | 52929315 |          |
| 2 | Hapmap48664-BTA-16199          | 0 | 52966242 |          |
| 2 | BTB-01625704                   | 0 | 52986917 |          |
| 2 | Hapmap38282-BTA-108693         | 0 | 53016506 |          |
| 2 | Hapmap42418-BTA-108690         | 0 | 53045574 |          |
| 2 | Hapmap46778-BTA-16201          | 0 | 53079518 |          |
| 2 | Hapmap34316-BES5_Contig205_709 | 0 |          | 53113209 |
| 2 | BTB-01274050                   | 0 | 53161676 |          |
| 2 | Hapmap33246-BTA-159394         | 0 | 53200694 |          |
| 2 | Hapmap31810-BTA-155140         | 0 | 53330902 |          |
| 2 | ARS-BFGL-NGS-49789             | 0 | 53369279 |          |
| 2 | ARS-BFGL-NGS-59969             | 0 | 53389738 |          |
| 2 | BTB-01559051                   | 0 | 53431931 |          |
| 2 | BTB-01412384                   | 0 | 53452826 |          |
| 2 | Hapmap50149-BTA-90491          | 0 | 53477976 |          |
| 2 | BTB-01412526                   | 0 | 53502146 |          |
| 2 | Hapmap50816-BTA-90485          | 0 | 53580101 |          |
| 2 | BTB-01412462                   | 0 | 53614731 |          |
| 2 | BTB-01412441                   | 0 | 53646650 |          |
| 2 | BTB-01412391                   | 0 | 53699217 |          |
| 2 | BTB-02061251                   | 0 | 53743866 |          |
| 2 | BTA-01008-rs29011975           | 0 | 53749577 |          |
| 2 | BTA-46608-no-rs                | 0 | 53779266 |          |
| 2 | BTB-00082706                   | 0 | 53814015 |          |
| 2 | BTB-01390801                   | 0 | 53894600 |          |
| 2 | BTB-01390827                   | 0 | 53907394 |          |
| 2 | BTB-01390865                   | 0 | 53931759 |          |
| 2 | ARS-BFGL-NGS-118904            | 0 | 53951533 |          |
| 2 | BTA-115754-no-rs               | 0 | 53993609 |          |
| 2 | Hapmap48220-BTA-121978         | 0 | 54026476 |          |
| 2 | BTB-01390921                   | 0 | 54051242 |          |
| 2 | Hapmap58989-rs29020790         | 0 | 54078449 |          |
| 2 | Hapmap43801-BTA-18254          | 0 | 54130292 |          |
| 2 | ARS-BFGL-NGS-110491            | 0 | 54186574 |          |
| 2 | ARS-BFGL-NGS-34148             | 0 | 54237423 |          |
| 2 | Hapmap44423-BTA-90469          | 0 | 54299140 |          |
| 2 | ARS-BFGL-NGS-49830             | 0 | 54341935 |          |
| 2 | BTB-01621450                   | 0 | 54409482 |          |
| 2 | Hapmap51797-BTA-108321         | 0 | 54445075 |          |
| 2 | BTA-88865-no-rs                | 0 | 54502437 |          |
| 2 | BTB-01775964                   | 0 | 54519795 |          |
| 2 | Hapmap34718-BES7_Contig295_922 | 0 |          | 54559607 |
| 2 | ARS-BFGL-NGS-88182             | 0 | 54588834 |          |
| 2 | BTA-09659-rs29025817           | 0 | 54696204 |          |
| 2 | BTB-01391891                   | 0 | 54740773 |          |
| 2 | UA-IFASA-8123                  | 0 | 54770542 |          |
| 2 | BTB-00183404                   | 0 | 54812608 |          |
| 2 | BTB-00183384                   | 0 | 54839057 |          |
| 2 | Hapmap50447-BTA-70481          | 0 | 54901289 |          |
| 2 | BTB-01391805                   | 0 | 54936213 |          |
| 2 | Hapmap29674-BTA-160310         | 0 | 54968718 |          |
| 2 | Hapmap25908-BTA-160304         | 0 | 55002040 |          |
| 2 | BTB-01294230                   | 0 | 55038193 |          |
| 2 | BTB-01294125                   | 0 | 55067325 |          |

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| 2 | BTB-01293919                   | 0 | 55118828 |          |
| 2 | Hapmap51787-BTA-101971         | 0 | 55143544 |          |
| 2 | Hapmap38718-BTA-101966         | 0 | 55226091 |          |
| 2 | BTB-01165311                   | 0 | 55283216 |          |
| 2 | ARS-BFGL-NGS-111213            | 0 | 55308672 |          |
| 2 | Hapmap43745-BTA-101961         | 0 | 55341069 |          |
| 2 | BTB-01165248                   | 0 | 55372153 |          |
| 2 | BTB-01165238                   | 0 | 55405767 |          |
| 2 | BTB-01165225                   | 0 | 55442525 |          |
| 2 | Hapmap41404-BTA-101995         | 0 | 55475595 |          |
| 2 | BTB-01165178                   | 0 | 55502096 |          |
| 2 | Hapmap43123-BTA-101963         | 0 | 55524932 |          |
| 2 | BTB-01165150                   | 0 | 55546478 |          |
| 2 | BTB-01892981                   | 0 | 55566541 |          |
| 2 | Hapmap23257-BTA-123353         | 0 | 55614992 |          |
| 2 | Hapmap48508-BTA-88108          | 0 | 55661656 |          |
| 2 | ARS-BFGL-NGS-34732             | 0 | 55698595 |          |
| 2 | BTB-01753605                   | 0 | 55729126 |          |
| 2 | Hapmap23015-BTA-145943         | 0 | 55749250 |          |
| 2 | Hapmap33880-BES9_Contig535_933 | 0 |          | 55796401 |
| 2 | Hapmap38699-BTA-81626          | 0 | 55831708 |          |
| 2 | BTB-00353784                   | 0 | 55852340 |          |
| 2 | Hapmap44140-BTA-81617          | 0 | 55876484 |          |
| 2 | BTB-00353647                   | 0 | 55905779 |          |
| 2 | BTB-01160731                   | 0 | 55927141 |          |
| 2 | ARS-BFGL-NGS-15557             | 0 | 55947403 |          |
| 2 | BTB-01160816                   | 0 | 55976443 |          |
| 2 | Hapmap60963-rs29015781         | 0 | 55998204 |          |
| 2 | ARS-BFGL-NGS-105321            | 0 | 56040478 |          |
| 2 | Hapmap27618-BTA-152634         | 0 | 56063430 |          |
| 2 | ARS-BFGL-BAC-27497             | 0 | 56123710 |          |
| 2 | BTB-01161054                   | 0 | 56150582 |          |
| 2 | Hapmap41401-BTA-101347         | 0 | 56179714 |          |
| 2 | BTA-101352-no-rs               | 0 | 56234794 |          |
| 2 | BTB-01161211                   | 0 | 56295477 |          |
| 2 | BTA-101353-no-rs               | 0 | 56307244 |          |
| 2 | BTA-101354-no-rs               | 0 | 56356269 |          |
| 2 | Hapmap28102-BTA-152636         | 0 | 56382133 |          |
| 2 | BTA-101359-no-rs               | 0 | 56409074 |          |
| 2 | BTA-101366-no-rs               | 0 | 56456865 |          |
| 2 | BTB-01818949                   | 0 | 56479206 |          |
| 2 | BTB-01819043                   | 0 | 56504541 |          |
| 2 | BTA-106070-no-rs               | 0 | 56539467 |          |
| 2 | BTB-01588936                   | 0 | 56583793 |          |
| 2 | Hapmap39803-BTA-106074         | 0 | 56615753 |          |
| 2 | ARS-BFGL-NGS-43395             | 0 | 56636575 |          |
| 2 | BTB-01146113                   | 0 | 56694744 |          |
| 2 | BTB-01146092                   | 0 | 56775988 |          |
| 2 | BTB-01145879                   | 0 | 56825850 |          |
| 2 | Hapmap28163-BTA-151437         | 0 | 56851496 |          |
| 2 | BTB-01145846                   | 0 | 56895186 |          |
| 2 | BTB-00335888                   | 0 | 56966172 |          |
| 2 | BTA-19224-no-rs                | 0 | 57260012 |          |
| 2 | BTB-00099884                   | 0 | 57373897 |          |



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| 2 | BTB-00099725           | 0        | 57449775 |
| 2 | ARS-BFGL-NGS-43662     | 0        | 57481115 |
| 2 | Hapmap25253-BTA-134017 | 0        | 57516075 |
| 2 | Hapmap54628-rs29021692 | 0        | 57619846 |
| 2 | Hapmap44382-BTA-47704  | 0        | 57664300 |
| 2 | BTB-00099340           | 0        | 57692075 |
| 2 | Hapmap44246-BTA-47696  | 0        | 57727203 |
| 2 | BTB-00099180           | 0        | 57768704 |
| 2 | Hapmap52345-rs29024293 | 0        | 57800824 |
| 2 | ARS-BFGL-NGS-25349     | 0        | 57833417 |
| 2 | ARS-BFGL-NGS-117385    | 0        | 57980393 |
| 2 | BTB-01197362           | 0        | 58015854 |
| 2 | ARS-BFGL-NGS-28503     | 0        | 58066110 |
| 2 | ARS-BFGL-NGS-18664     | 0        | 58191921 |
| 2 | BTB-01197267           | 0        | 58220940 |
| 2 | Hapmap59763-rs29018910 | 0        | 58265805 |
| 2 | Hapmap60691-rs29012315 | 0        | 58291941 |
| 2 | BTB-01197150           | 0        | 58351712 |
| 2 | BTB-01196985           | 0        | 58393701 |
| 2 | ARS-BFGL-NGS-72562     | 0        | 58492031 |
| 2 | ARS-BFGL-NGS-33092     | 0        | 58519836 |
| 2 | ARS-BFGL-NGS-90955     | 0        | 58545892 |
| 2 | ARS-BFGL-NGS-111122    | 0        | 58580638 |
| 2 | ARS-BFGL-NGS-83275     | 0        | 58600302 |
| 2 | ARS-BFGL-NGS-43350     | 0        | 58622479 |
| 2 | ARS-BFGL-NGS-28178     | 0        | 58653662 |
| 2 | BTB-01349869           | 0        | 58687171 |
| 2 | ARS-BFGL-NGS-23883     | 0        | 58745694 |
| 2 | Hapmap39640-BTA-27073  | 0        | 58772041 |
| 2 | ARS-BFGL-NGS-57840     | 58824184 |          |
| 2 | ARS-BFGL-NGS-107609    | 0        | 58852270 |
| 2 | Hapmap47220-BTA-22362  | 0        | 58975210 |
| 2 | BTA-23960-no-rs        | 0        | 59012525 |
| 2 | BTA-23963-no-rs        | 0        | 59032002 |
| 2 | ARS-BFGL-NGS-24778     | 0        | 59059108 |
| 2 | ARS-BFGL-NGS-37839     | 0        | 59083405 |
| 2 | ARS-BFGL-NGS-117608    | 0        | 59143632 |
| 2 | Hapmap31501-BTA-158286 | 0        | 59237220 |
| 2 | BTB-01328981           | 0        | 59261715 |
| 2 | BTB-01361440           | 0        | 59318500 |
| 2 | BTA-28576-no-rs        | 0        | 59343625 |
| 2 | Hapmap27605-BTA-148285 | 0        | 59397116 |
| 2 | BTA-88935-no-rs        | 0        | 59440715 |
| 2 | BTB-01902301           | 0        | 59461527 |
| 2 | BTB-01402854           | 0        | 59488095 |
| 2 | BTA-28579-no-rs        | 0        | 59536355 |
| 2 | ARS-BFGL-NGS-44854     | 0        | 59569007 |
| 2 | ARS-BFGL-NGS-74193     | 0        | 59591867 |
| 2 | ARS-BFGL-NGS-92620     | 59614350 |          |
| 2 | Hapmap51345-BTA-88931  | 0        | 59644564 |
| 2 | BTB-01796166           | 0        | 59666280 |
| 2 | Hapmap51412-BTA-16926  | 0        | 59690093 |
| 2 | Hapmap52568-rs29017559 | 0        | 59720643 |
| 2 | BTB-01651888           | 0        | 59760905 |

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| 2 | BTB-01806590           | 0        | 59799053 |
| 2 | ARS-BFGL-NGS-16565     | 0        | 59842148 |
| 2 | ARS-BFGL-NGS-108325    | 0        | 59927024 |
| 2 | BTB-00100191           | 0        | 60087290 |
| 2 | Hapmap444466-BTA-47718 | 0        | 60121256 |
| 2 | ARS-BFGL-NGS-46590     | 60143778 |          |
| 2 | BTB-00099916           | 0        | 60179830 |
| 2 | Hapmap40271-BTA-47722  | 0        | 60223428 |
| 2 | ARS-BFGL-NGS-86934     | 0        | 60257231 |
| 2 | ARS-BFGL-NGS-38875     | 0        | 60308526 |
| 2 | ARS-BFGL-NGS-114516    | 0        | 60388375 |
| 2 | ARS-BFGL-NGS-27960     | 60451952 |          |
| 2 | ARS-BFGL-NGS-117095    | 0        | 60487160 |
| 2 | BTB-01071488           | 0        | 60592353 |
| 2 | ARS-BFGL-NGS-13806     | 0        | 60775596 |
| 2 | Hapmap38373-BTA-107037 | 0        | 60985930 |
| 2 | ARS-BFGL-NGS-36803     | 0        | 61015598 |
| 2 | ARS-BFGL-NGS-42047     | 0        | 61047858 |
| 2 | ARS-BFGL-NGS-114507    | 0        | 61080508 |
| 2 | ARS-BFGL-NGS-50482     | 0        | 61134245 |
| 2 | ARS-BFGL-NGS-43990     | 0        | 61173795 |
| 2 | ARS-BFGL-NGS-96661     | 0        | 61254762 |
| 2 | Hapmap38999-BTA-107039 | 0        | 61276598 |
| 2 | ARS-BFGL-NGS-117383    | 0        | 61300131 |
| 2 | Hapmap55796-rs29011172 | 0        | 61341898 |
| 2 | ARS-BFGL-NGS-119079    | 0        | 61365176 |
| 2 | ARS-BFGL-NGS-110203    | 0        | 61411345 |
| 2 | Hapmap58378-rs29015037 | 0        | 61487742 |
| 2 | ARS-BFGL-NGS-38310     | 61527377 |          |
| 2 | Hapmap48387-BTA-55128  | 0        | 61585039 |
| 2 | ARS-BFGL-NGS-109852    | 0        | 61611083 |
| 2 | Hapmap41674-BTA-88236  | 0        | 61632431 |
| 2 | ARS-BFGL-NGS-65334     | 0        | 61663100 |
| 2 | Hapmap25038-BTA-134021 | 0        | 61704849 |
| 2 | Hapmap50002-BTA-47754  | 0        | 61735987 |
| 2 | Hapmap39204-BTA-47760  | 0        | 61778818 |
| 2 | BTA-47765-no-rs        | 0        | 61800404 |
| 2 | ARS-BFGL-NGS-103465    | 0        | 61822538 |
| 2 | ARS-BFGL-NGS-92772     | 0        | 61893116 |
| 2 | Hapmap42558-BTA-47788  | 0        | 62008179 |
| 2 | Hapmap48778-BTA-47791  | 0        | 62038040 |
| 2 | Hapmap59807-rs29011612 | 0        | 62080553 |
| 2 | Hapmap60325-rs29019351 | 0        | 62106463 |
| 2 | Hapmap52390-rs29021802 | 0        | 62163921 |
| 2 | ARS-BFGL-NGS-60312     | 0        | 62265739 |
| 2 | Hapmap44202-BTA-115270 | 0        | 62367003 |
| 2 | Hapmap31403-BTA-134024 | 0        | 62419480 |
| 2 | ARS-BFGL-NGS-12099     | 0        | 62447051 |
| 2 | ARS-BFGL-NGS-106570    | 0        | 62470718 |
| 2 | Hapmap41553-BTA-47816  | 0        | 62708763 |
| 2 | Hapmap41276-BTA-47819  | 0        | 62791288 |
| 2 | ARS-BFGL-NGS-58238     | 0        | 62827654 |
| 2 | ARS-BFGL-NGS-102253    | 0        | 62853776 |
| 2 | ARS-BFGL-NGS-79494     | 0        | 62890977 |

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| 2 | Hapmap39338-BTA-47826                 | 0        | 62952248 |  |  |
| 2 | BTA-47828-no-rs                       | 0        | 62977592 |  |  |
| 2 | Hapmap50702-BTA-47830                 | 0        | 63065836 |  |  |
| 2 | Hapmap40999-BTA-47831                 | 0        | 63112798 |  |  |
| 2 | ARS-BFGL-NGS-30962                    | 0        | 63139750 |  |  |
| 2 | ARS-BFGL-NGS-115485                   | 0        | 63181292 |  |  |
| 2 | ARS-BFGL-NGS-101408                   | 0        | 63275355 |  |  |
| 2 | Hapmap23544-BTA-134040                | 0        | 63332645 |  |  |
| 2 | ARS-BFGL-NGS-35045                    | 0        | 63355675 |  |  |
| 2 | BTA-02913-rs29010456                  | 0        | 63411488 |  |  |
| 2 | ARS-BFGL-NGS-61102                    | 0        | 63432710 |  |  |
| 2 | ARS-BFGL-NGS-100643                   | 0        | 63460235 |  |  |
| 2 | BTA-47843-no-rs                       | 0        | 63516470 |  |  |
| 2 | ARS-BFGL-NGS-117921                   | 0        | 63551705 |  |  |
| 2 | Hapmap53388-rs29010903                | 0        | 63581955 |  |  |
| 2 | BTA-47853-no-rs                       | 0        | 63696865 |  |  |
| 2 | ARS-BFGL-NGS-107635                   | 0        | 63782428 |  |  |
| 2 | Hapmap53658-rs29027494                | 0        | 63834656 |  |  |
| 2 | Hapmap41884-BTA-47859                 | 0        | 63870312 |  |  |
| 2 | ARS-BFGL-NGS-42334                    | 0        | 63900374 |  |  |
| 2 | ARS-BFGL-NGS-118706                   | 0        | 63948276 |  |  |
| 2 | Hapmap27582-BTA-134049                | 0        | 63989724 |  |  |
| 2 | BTA-47869-no-rs                       | 0        | 64043648 |  |  |
| 2 | Hapmap51571-BTA-20582                 | 0        | 64173821 |  |  |
| 2 | ARS-BFGL-NGS-85797                    | 0        | 64198992 |  |  |
| 2 | Hapmap47221-BTA-22428                 | 0        | 64300614 |  |  |
| 2 | Hapmap45413-BTA-20418                 | 0        | 64346990 |  |  |
| 2 | ARS-BFGL-NGS-102881                   | 0        | 64375198 |  |  |
| 2 | ARS-BFGL-NGS-91754                    | 0        | 64399273 |  |  |
| 2 | Hapmap41184-BTA-121229                | 0        | 64462072 |  |  |
| 2 | ARS-BFGL-NGS-41523                    | 0        | 64485917 |  |  |
| 2 | BTA-53248-no-rs                       | 0        | 64549576 |  |  |
| 2 | Hapmap41290-BTA-53251                 | 0        | 64570902 |  |  |
| 2 | Hapmap40176-BTA-47878                 | 0        | 64944578 |  |  |
| 2 | ARS-BFGL-NGS-111934                   | 0        | 65004490 |  |  |
| 2 | ARS-BFGL-NGS-115279                   | 0        | 65017334 |  |  |
| 2 | ARS-BFGL-NGS-103410                   | 0        | 65038984 |  |  |
| 2 | ARS-BFGL-NGS-72192                    | 0        | 65044427 |  |  |
| 2 | ARS-USMARC-Parent-DQ422949-rs29011466 | 0        | 65069037 |  |  |
| 2 | UA-IFASA-3968                         | 0        | 65069112 |  |  |
| 2 | Hapmap38501-BTA-47902                 | 0        | 65129428 |  |  |
| 2 | ARS-BFGL-NGS-35984                    | 0        | 65172196 |  |  |
| 2 | ARS-BFGL-NGS-55148                    | 0        | 65249007 |  |  |
| 2 | ARS-BFGL-NGS-100756                   | 0        | 65279621 |  |  |
| 2 | Hapmap57234-rs29024553                | 0        | 65301812 |  |  |
| 2 | Hapmap47637-BTA-47889                 | 0        | 65345015 |  |  |
| 2 | ARS-BFGL-NGS-36544                    | 0        | 65415110 |  |  |
| 2 | ARS-BFGL-NGS-116582                   | 0        | 65435521 |  |  |
| 2 | ARS-BFGL-NGS-33412                    | 0        | 65469391 |  |  |
| 2 | ARS-BFGL-NGS-31800                    | 65489815 |          |  |  |
| 2 | ARS-BFGL-NGS-55238                    | 0        | 65513882 |  |  |
| 2 | ARS-BFGL-NGS-55924                    | 0        | 65551700 |  |  |
| 2 | BTA-47944-no-rs                       | 0        | 65574548 |  |  |
| 2 | ARS-BFGL-NGS-96204                    | 0        | 65600025 |  |  |

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| 2 | Hapmap51598-BTA-47943  | 0 | 65700940 |
| 2 | ARS-BFGL-NGS-102636    | 0 | 65946493 |
| 2 | ARS-BFGL-NGS-110609    | 0 | 65969723 |
| 2 | ARS-BFGL-NGS-33852     | 0 | 66070654 |
| 2 | ARS-BFGL-NGS-24410     | 0 | 66093445 |
| 2 | BTA-29589-no-rs        | 0 | 66137636 |
| 2 | Hapmap41497-BTA-29595  | 0 | 66174477 |
| 2 | ARS-BFGL-NGS-117458    | 0 | 66329113 |
| 2 | ARS-BFGL-NGS-82679     | 0 | 66414722 |
| 2 | Hapmap60552-rs29017490 | 0 | 66470939 |
| 2 | BTA-29604-no-rs        | 0 | 66525839 |
| 2 | ARS-BFGL-NGS-118876    | 0 | 66585600 |
| 2 | Hapmap39925-BTA-47947  | 0 | 66637714 |
| 2 | ARS-BFGL-NGS-71473     | 0 | 66731640 |
| 2 | ARS-BFGL-NGS-59506     | 0 | 66860284 |
| 2 | Hapmap60758-rs29010833 | 0 | 66885868 |
| 2 | BTA-47963-no-rs        | 0 | 66962526 |
| 2 | ARS-BFGL-NGS-70734     | 0 | 67055991 |
| 2 | ARS-BFGL-NGS-32707     | 0 | 67078207 |
| 2 | BTB-01332880           | 0 | 67130856 |
| 2 | BTB-01332833           | 0 | 67165879 |
| 2 | BTB-01332745           | 0 | 67213974 |
| 2 | BTA-24666-no-rs        | 0 | 67246705 |
| 2 | ARS-BFGL-NGS-118138    | 0 | 67292723 |
| 2 | BTA-24669-no-rs        | 0 | 67335802 |
| 2 | BTB-01332511           | 0 | 67361632 |
| 2 | ARS-BFGL-NGS-95329     | 0 | 67387596 |
| 2 | BTB-01332453           | 0 | 67407561 |
| 2 | BTA-113895-no-rs       | 0 | 67464330 |
| 2 | BTB-01689724           | 0 | 67484628 |
| 2 | BTB-01730432           | 0 | 67519994 |
| 2 | BTB-01730399           | 0 | 67542665 |
| 2 | ARS-BFGL-NGS-38034     | 0 | 67575238 |
| 2 | BTB-01953354           | 0 | 67604758 |
| 2 | ARS-BFGL-NGS-112281    | 0 | 67700266 |
| 2 | BTB-01601989           | 0 | 67766127 |
| 2 | BTB-01654053           | 0 | 67813507 |
| 2 | BTB-01654063           | 0 | 67847791 |
| 2 | Hapmap44529-BTA-19193  | 0 | 67894736 |
| 2 | BTB-01297078           | 0 | 67971113 |
| 2 | BTB-01297051           | 0 | 68024655 |
| 2 | Hapmap49519-BTA-19205  | 0 | 68058489 |
| 2 | ARS-BFGL-NGS-80573     | 0 | 68089041 |
| 2 | BTA-19206-no-rs        | 0 | 68117012 |
| 2 | Hapmap44054-BTA-28998  | 0 | 68119332 |
| 2 | BTB-01297138           | 0 | 68154640 |
| 2 | ARS-BFGL-NGS-115732    | 0 | 68190974 |
| 2 | Hapmap45359-BTA-47978  | 0 | 68231252 |
| 2 | Hapmap51178-BTA-18113  | 0 | 68259542 |
| 2 | Hapmap43407-BTA-93630  | 0 | 68320540 |
| 2 | Hapmap33757-BTA-152779 | 0 | 68350172 |
| 2 | Hapmap41723-BTA-101688 | 0 | 68386619 |
| 2 | BTB-01536946           | 0 | 68429456 |
| 2 | BTA-101689-no-rs       | 0 | 68508316 |

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| 2 | BTB-01536920                   | 0        | 68514758 |  |
| 2 | BTB-01352059                   | 0        | 68554311 |  |
| 2 | BTB-01941823                   | 0        | 68584610 |  |
| 2 | BTA-27370-no-rs                | 0        | 68691127 |  |
| 2 | ARS-BFGL-NGS-47229             | 0        | 68718027 |  |
| 2 | Hapmap51555-BTA-115578         | 0        | 68769557 |  |
| 2 | ARS-BFGL-BAC-40066             | 0        | 68795555 |  |
| 2 | Hapmap32866-BTA-160457         | 0        | 68821062 |  |
| 2 | BTB-01831918                   | 0        | 68849454 |  |
| 2 | Hapmap58976-rs29019573         | 0        | 68877969 |  |
| 2 | BTB-01366705                   | 0        | 68911266 |  |
| 2 | Hapmap28506-BTA-151467         | 0        | 69216844 |  |
| 2 | BTA-68746-no-rs                | 0        | 69336818 |  |
| 2 | BTB-00121016                   | 0        | 69359925 |  |
| 2 | BTB-00121025                   | 0        | 69391463 |  |
| 2 | BTB-00121035                   | 0        | 69415937 |  |
| 2 | BTA-48005-no-rs                | 0        | 69438526 |  |
| 2 | Hapmap29874-BTA-47999          | 0        | 69475918 |  |
| 2 | ARS-BFGL-NGS-12128             | 0        | 69511580 |  |
| 2 | BTA-11592-rs29017351           | 0        | 69569936 |  |
| 2 | BTB-00121383                   | 0        | 69616051 |  |
| 2 | ARS-BFGL-NGS-90287             | 0        | 69662990 |  |
| 2 | BTA-68918-no-rs                | 0        | 69702569 |  |
| 2 | ARS-BFGL-NGS-119922            | 0        | 69753620 |  |
| 2 | BTB-00121590                   | 0        | 69774359 |  |
| 2 | Hapmap47485-BTA-107591         | 0        | 69883074 |  |
| 2 | BTA-21857-no-rs                | 0        | 69917549 |  |
| 2 | Hapmap30596-BTA-161397         | 0        | 69939162 |  |
| 2 | ARS-BFGL-NGS-107266            | 0        | 70200269 |  |
| 2 | ARS-BFGL-NGS-105016            | 0        | 70299376 |  |
| 2 | Hapmap40748-BTA-47979          | 0        | 70322692 |  |
| 2 | BTB-00720132                   | 0        | 70384129 |  |
| 2 | Hapmap38837-BTA-43552          | 0        | 70442711 |  |
| 2 | ARS-BFGL-NGS-95316             | 0        | 70485741 |  |
| 2 | Hapmap49404-BTA-100549         | 0        | 70559853 |  |
| 2 | BTB-01522343                   | 0        | 70582764 |  |
| 2 | Hapmap25231-BTA-120294         | 0        | 70609758 |  |
| 2 | BTA-01132-rs29012099           | 0        | 70639437 |  |
| 2 | ARS-BFGL-NGS-118417            | 0        | 70665916 |  |
| 2 | ARS-BFGL-NGS-83221             | 0        | 70719167 |  |
| 2 | Hapmap50975-BTA-47969          | 0        | 70753898 |  |
| 2 | Hapmap35220-BES9_Contig365_495 | 0        | 70895063 |  |
| 2 | ARS-BFGL-NGS-20993             | 0        | 70957217 |  |
| 2 | ARS-BFGL-NGS-40052             | 0        | 70978502 |  |
| 2 | ARS-BFGL-NGS-26766             | 0        | 71023597 |  |
| 2 | BTA-47992-no-rs                | 0        | 71132639 |  |
| 2 | ARS-BFGL-NGS-35948             | 0        | 71161113 |  |
| 2 | Hapmap40749-BTA-47991          | 0        | 71185300 |  |
| 2 | Hapmap32375-BTA-158518         | 0        | 71209253 |  |
| 2 | ARS-BFGL-NGS-12123             | 0        | 71238486 |  |
| 2 | ARS-BFGL-NGS-16060             | 71295677 |          |  |
| 2 | ARS-BFGL-NGS-88046             | 0        | 71382630 |  |
| 2 | ARS-BFGL-NGS-61695             | 0        | 71409892 |  |
| 2 | ARS-BFGL-NGS-112141            | 0        | 71463955 |  |

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| 2 | Hapmap40177-BTA-47989  | 0 | 71518065 |
| 2 | ARS-BFGL-NGS-105719    | 0 | 71565086 |
| 2 | ARS-BFGL-NGS-103138    | 0 | 71598307 |
| 2 | ARS-BFGL-NGS-114814    | 0 | 71632662 |
| 2 | ARS-BFGL-NGS-12877     | 0 | 71657308 |
| 2 | ARS-BFGL-NGS-200       | 0 | 71710397 |
| 2 | BTB-01611164           | 0 | 71733190 |
| 2 | ARS-BFGL-NGS-58619     | 0 | 71779928 |
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| 2 | Hapmap45428-BTA-47987  | 0 | 72214554 |
| 2 | ARS-BFGL-NGS-19340     | 0 | 72324157 |
| 2 | ARS-BFGL-NGS-85372     | 0 | 72369610 |
| 2 | ARS-BFGL-NGS-48402     | 0 | 72445788 |
| 2 | ARS-BFGL-NGS-29723     | 0 | 72583890 |
| 2 | ARS-BFGL-NGS-114696    | 0 | 72609348 |
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| 2 | ARS-BFGL-NGS-22906     | 0 | 72692197 |
| 2 | Hapmap58183-rs29021995 | 0 | 72731338 |
| 2 | ARS-BFGL-NGS-85252     | 0 | 72752229 |
| 2 | ARS-BFGL-NGS-86652     | 0 | 72790595 |
| 2 | ARS-BFGL-NGS-17953     | 0 | 72814849 |
| 2 | ARS-BFGL-NGS-15738     | 0 | 72969060 |
| 2 | ARS-BFGL-NGS-108527    | 0 | 73003429 |
| 2 | ARS-BFGL-NGS-81871     | 0 | 73165500 |
| 2 | ARS-BFGL-NGS-43775     | 0 | 73209337 |
| 2 | ARS-BFGL-NGS-39860     | 0 | 73234975 |
| 2 | ARS-BFGL-NGS-80861     | 0 | 73274348 |
| 2 | ARS-BFGL-NGS-110099    | 0 | 73305257 |
| 2 | Hapmap52909-rs29011193 | 0 | 73355006 |
| 2 | ARS-BFGL-NGS-25338     | 0 | 73412080 |
| 2 | ARS-BFGL-NGS-100817    | 0 | 73436684 |
| 2 | Hapmap25319-BTA-156716 | 0 | 73509732 |
| 2 | BTA-113411-no-rs       | 0 | 73545521 |
| 2 | Hapmap38063-BTA-24769  | 0 | 73595375 |
| 2 | ARS-BFGL-NGS-69450     | 0 | 73653622 |
| 2 | ARS-BFGL-NGS-33838     | 0 | 73710328 |
| 2 | Hapmap54942-rs29012113 | 0 | 73734113 |
| 2 | Hapmap32389-BTA-162402 | 0 | 73788636 |
| 2 | Hapmap40272-BTA-48011  | 0 | 73903415 |
| 2 | Hapmap24464-BTA-134139 | 0 | 73978469 |
| 2 | ARS-BFGL-NGS-15669     | 0 | 74063186 |
| 2 | ARS-BFGL-NGS-106694    | 0 | 74101924 |
| 2 | ARS-BFGL-NGS-114498    | 0 | 74130414 |
| 2 | Hapmap23430-BTA-134149 | 0 | 74205319 |
| 2 | ARS-BFGL-NGS-38139     | 0 | 74228539 |
| 2 | ARS-BFGL-NGS-47830     | 0 | 74289327 |
| 2 | ARS-BFGL-NGS-110318    | 0 | 74332820 |
| 2 | ARS-BFGL-NGS-17788     | 0 | 74354190 |
| 2 | ARS-BFGL-NGS-38374     | 0 | 74388391 |
| 2 | Hapmap23997-BTA-145416 | 0 | 74422326 |
| 2 | ARS-BFGL-NGS-74202     | 0 | 74508160 |

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| 2 | ARS-BFGL-NGS-104166             | 0 | 74548518 |          |
| 2 | Hapmap43713-BTA-86767           | 0 | 74805654 |          |
| 2 | ARS-BFGL-NGS-51807              | 0 | 74877647 |          |
| 2 | ARS-BFGL-NGS-23847              | 0 | 75001159 |          |
| 2 | Hapmap34364-BES1_Contig549_1508 | 0 |          | 75051646 |
| 2 | Hapmap32368-BTA-157293          | 0 | 75126638 |          |
| 2 | Hapmap39129-BTA-115423          | 0 | 75315966 |          |
| 2 | Hapmap25610-BTA-157302          | 0 | 75336069 |          |
| 2 | Hapmap51098-BTA-96589           | 0 | 75484794 |          |
| 2 | Hapmap50173-BTA-96591           | 0 | 75546229 |          |
| 2 | Hapmap32607-BTA-150987          | 0 | 75682808 |          |
| 2 | ARS-BFGL-NGS-32559              | 0 | 75724252 |          |
| 2 | BTA-96598-no-rs                 | 0 | 75885774 |          |
| 2 | BTA-96609-no-rs                 | 0 | 76035542 |          |
| 2 | Hapmap24002-BTA-150995          | 0 | 76088949 |          |
| 2 | BTA-96614-no-rs                 | 0 | 76112733 |          |
| 2 | ARS-BFGL-NGS-69160              | 0 | 76136460 |          |
| 2 | Hapmap60737-rs29018861          | 0 | 76214807 |          |
| 2 | BTB-01062977                    | 0 | 76238679 |          |
| 2 | ARS-BFGL-NGS-104820             | 0 | 76270430 |          |
| 2 | UA-IFASA-4619                   | 0 | 76309053 |          |
| 2 | BTB-01063267                    | 0 | 76335841 |          |
| 2 | Hapmap43512-BTA-21374           | 0 | 76364258 |          |
| 2 | BTB-01313469                    | 0 | 76384320 |          |
| 2 | ARS-BFGL-NGS-78520              | 0 | 76400643 |          |
| 2 | BTB-01313376                    | 0 | 76422853 |          |
| 2 | ARS-BFGL-NGS-102866             | 0 | 76518493 |          |
| 2 | BTB-02066351                    | 0 | 76563133 |          |
| 2 | Hapmap50277-BTA-20931           | 0 | 76597004 |          |
| 2 | ARS-BFGL-NGS-106237             | 0 | 76637668 |          |
| 2 | Hapmap42472-BTA-21372           | 0 | 76675977 |          |
| 2 | BTB-01313103                    | 0 | 76697276 |          |
| 2 | BTB-00917603                    | 0 | 76730474 |          |
| 2 | BTB-00917506                    | 0 | 76759957 |          |
| 2 | BTA-60260-no-rs                 | 0 | 76787035 |          |
| 2 | Hapmap54422-rs29021731          | 0 | 76816294 |          |
| 2 | ARS-BFGL-NGS-83161              | 0 | 76852429 |          |
| 2 | ARS-BFGL-NGS-83348              | 0 | 76884059 |          |
| 2 | Hapmap38907-BTA-70141           | 0 | 76987725 |          |
| 2 | BTB-00425849                    | 0 | 77005501 |          |
| 2 | ARS-BFGL-NGS-109828             | 0 | 77033601 |          |
| 2 | BTB-00425912                    | 0 | 77099320 |          |
| 2 | BTA-48073-no-rs                 | 0 | 77110357 |          |
| 2 | BTB-00103234                    | 0 | 77143059 |          |
| 2 | ARS-BFGL-NGS-18407              | 0 | 77175718 |          |
| 2 | BTB-00103137                    | 0 | 77202062 |          |
| 2 | ARS-BFGL-NGS-111158             | 0 | 77226464 |          |
| 2 | BTB-00102936                    | 0 | 77289259 |          |
| 2 | BTB-00102915                    | 0 | 77317530 |          |
| 2 | Hapmap52707-rs29020755          | 0 | 77340874 |          |
| 2 | BTB-02007152                    | 0 | 77420390 |          |
| 2 | Hapmap44226-BTA-29223           | 0 | 77444377 |          |
| 2 | BTB-00102663                    | 0 | 77516653 |          |
| 2 | BTB-01745174                    | 0 | 77554557 |          |

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| 2 | ARS-BFGL-NGS-65669     | 0        | 77583642 |
| 2 | Hapmap43274-BTA-48044  | 0        | 77620108 |
| 2 | BTB-00102386           | 0        | 77668964 |
| 2 | BTA-48043-no-rs        | 0        | 77719508 |
| 2 | BTB-00102353           | 0        | 77763225 |
| 2 | BTB-00102335           | 0        | 77793201 |
| 2 | BTA-98940-no-rs        | 0        | 77832115 |
| 2 | Hapmap42752-BTA-98939  | 0        | 77864486 |
| 2 | BTA-98942-no-rs        | 0        | 77900295 |
| 2 | BTB-01516389           | 0        | 78007011 |
| 2 | ARS-BFGL-NGS-88183     | 0        | 78028191 |
| 2 | BTB-01516197           | 0        | 78059039 |
| 2 | Hapmap49399-BTA-99938  | 0        | 78091766 |
| 2 | BTB-01516039           | 0        | 78128247 |
| 2 | BTA-102943-no-rs       | 0        | 78166743 |
| 2 | Hapmap41407-BTA-102938 | 0        | 78199553 |
| 2 | BTB-01549373           | 0        | 78256366 |
| 2 | BTB-01720563           | 0        | 78280305 |
| 2 | Hapmap26185-BTA-157573 | 0        | 78302162 |
| 2 | Hapmap40841-BTA-94957  | 0        | 78332368 |
| 2 | BTB-01945480           | 0        | 78366932 |
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| 2 | Hapmap43777-BTA-115985 | 0        | 78455930 |
| 2 | BTB-01963677           | 0        | 78533652 |
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| 2 | BTB-00103489           | 0        | 78604521 |
| 2 | Hapmap25645-BTA-48106  | 0        | 78628109 |
| 2 | BTB-01860738           | 0        | 78691609 |
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| 2 | BTB-00103543           | 0        | 78749162 |
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| 2 | ARS-BFGL-NGS-51480     | 78839135 |          |
| 2 | BTB-01374180           | 0        | 78872254 |
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| 2 | Hapmap61010-rs29023283 | 0        | 78942271 |
| 2 | ARS-BFGL-NGS-116036    | 0        | 78993931 |
| 2 | Hapmap24266-BTA-29850  | 0        | 79017908 |
| 2 | BTB-01373917           | 0        | 79056259 |
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| 2 | ARS-BFGL-NGS-37942     | 0        | 79179255 |
| 2 | ARS-BFGL-NGS-31780     | 0        | 79226952 |
| 2 | ARS-BFGL-NGS-110862    | 0        | 79257749 |
| 2 | ARS-BFGL-NGS-118432    | 0        | 79295953 |
| 2 | Hapmap33049-BTA-153946 | 0        | 79320427 |
| 2 | ARS-BFGL-NGS-33744     | 0        | 79388083 |
| 2 | ARS-BFGL-NGS-65317     | 0        | 79414331 |
| 2 | Hapmap39881-BTA-105105 | 0        | 79467938 |
| 2 | ARS-BFGL-NGS-117618    | 0        | 79491364 |
| 2 | ARS-BFGL-NGS-112785    | 0        | 79527086 |
| 2 | BTA-107075-no-rs       | 0        | 79733888 |



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| 2 | Hapmap43710-BTA-86183           | 0        | 79846105 |          |
| 2 | ARS-BFGL-NGS-94630              | 0        | 79893482 |          |
| 2 | Hapmap35064-BES1_Contig468_700  | 0        | 0        | 79923716 |
| 2 | Hapmap51332-BTA-86182           | 0        | 79946595 |          |
| 2 | ARS-BFGL-NGS-38368              | 0        | 80044248 |          |
| 2 | ARS-BFGL-NGS-114651             | 0        | 80096393 |          |
| 2 | ARS-BFGL-NGS-84024              | 0        | 80133105 |          |
| 2 | BTA-86188-no-rs                 | 0        | 80201648 |          |
| 2 | BTA-86190-no-rs                 | 0        | 80247378 |          |
| 2 | Hapmap34302-BES7_Contig241_1853 | 0        | 0        | 80298164 |
| 2 | Hapmap33855-BES7_Contig421_544  | 0        | 0        | 80335082 |
| 2 | Hapmap55553-ss46526243          | 0        | 80369206 |          |
| 2 | ARS-BFGL-NGS-105974             | 0        | 80426417 |          |
| 2 | Hapmap48925-BTA-86217           | 0        | 80451862 |          |
| 2 | Hapmap51692-BTA-119034          | 0        | 80542965 |          |
| 2 | Hapmap45521-BTA-94820           | 0        | 80569319 |          |
| 2 | ARS-BFGL-NGS-41490              | 0        | 80605588 |          |
| 2 | ARS-BFGL-NGS-56800              | 80666057 |          |          |
| 2 | Hapmap50262-BTA-122131          | 0        | 80687709 |          |
| 2 | Hapmap36352-SCAFFOLD95077_3499  | 0        | 0        | 80889253 |
| 2 | ARS-BFGL-NGS-94696              | 0        | 80970515 |          |
| 2 | ARS-BFGL-NGS-102243             | 0        | 81002535 |          |
| 2 | Hapmap50978-BTA-48134           | 0        | 81053048 |          |
| 2 | Hapmap41554-BTA-48125           | 0        | 81133028 |          |
| 2 | Hapmap42104-BTA-121232          | 0        | 81159639 |          |
| 2 | Hapmap46066-BTA-25653           | 0        | 81236428 |          |
| 2 | BTA-89488-no-rs                 | 0        | 81566785 |          |
| 2 | Hapmap51700-BTA-21117           | 0        | 81721478 |          |
| 2 | Hapmap33788-BTA-154116          | 0        | 81796035 |          |
| 2 | Hapmap39613-BTA-105821          | 0        | 81960673 |          |
| 2 | Hapmap38874-BTA-105832          | 0        | 82059515 |          |
| 2 | Hapmap45703-BTA-105835          | 0        | 82083660 |          |
| 2 | ARS-BFGL-NGS-12949              | 0        | 82120303 |          |
| 2 | ARS-BFGL-NGS-71649              | 0        | 82654093 |          |
| 2 | Hapmap60088-rs29027650          | 0        | 82707674 |          |
| 2 | BTA-48254-no-rs                 | 0        | 82786614 |          |
| 2 | Hapmap42031-BTA-04949           | 0        | 82808175 |          |
| 2 | Hapmap38231-BTA-48248           | 0        | 82851585 |          |
| 2 | BTA-48291-no-rs                 | 0        | 83029887 |          |
| 2 | Hapmap26991-BTA-151076          | 0        | 83349093 |          |
| 2 | Hapmap32841-BTA-151065          | 0        | 83493191 |          |
| 2 | ARS-BFGL-NGS-55339              | 0        | 83616368 |          |
| 2 | BTA-114138-no-rs                | 0        | 83776531 |          |
| 2 | BTA-114135-no-rs                | 0        | 83814330 |          |
| 2 | BTA-114131-no-rs                | 0        | 83919557 |          |
| 2 | BTA-114129-no-rs                | 0        | 83948152 |          |
| 2 | BTA-114128-no-rs                | 0        | 83980289 |          |
| 2 | Hapmap51150-BTA-114149          | 0        | 84038555 |          |
| 2 | Hapmap35509-SCAFFOLD109829_3725 | 0        | 0        | 84119190 |
| 2 | Hapmap26980-BTA-149220          | 0        | 84170290 |          |
| 2 | BTA-19428-no-rs                 | 0        | 84235779 |          |
| 2 | ARS-BFGL-NGS-85030              | 84373550 |          |          |
| 2 | Hapmap55911-rs29026510          | 0        | 84751796 |          |
| 2 | ARS-BFGL-NGS-117030             | 0        | 84807787 |          |

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| 2 | ARS-BFGL-NGS-58310             | 84906141 |          |
| 2 | Hapmap25339-BTA-161916         | 0        | 84990606 |
| 2 | Hapmap47638-BTA-47957          | 0        | 85026752 |
| 2 | BTA-02686-no-rs                | 0        | 85059828 |
| 2 | Hapmap32559-BTA-134272         | 0        | 85362275 |
| 2 | Hapmap46704-BTA-48392          | 0        | 85427167 |
| 2 | ARS-BFGL-NGS-108914            | 0        | 85452055 |
| 2 | ARS-BFGL-NGS-114269            | 0        | 85524425 |
| 2 | Hapmap43275-BTA-48394          | 0        | 85555825 |
| 2 | ARS-BFGL-NGS-33177             | 0        | 85585849 |
| 2 | Hapmap47969-BTA-48395          | 0        | 85700057 |
| 2 | Hapmap38073-BTA-48398          | 0        | 85756053 |
| 2 | Hapmap26656-BTA-134276         | 0        | 85805369 |
| 2 | ARS-BFGL-NGS-39740             | 85918370 |          |
| 2 | ARS-BFGL-NGS-147               | 0        | 86035295 |
| 2 | ARS-BFGL-NGS-118956            | 0        | 86085303 |
| 2 | Hapmap48897-BTA-79849          | 0        | 86122073 |
| 2 | BTA-31127-no-rs                | 0        | 86180184 |
| 2 | ARS-BFGL-NGS-105950            | 0        | 86279265 |
| 2 | BTA-48332-no-rs                | 0        | 86307970 |
| 2 | BTA-45265-no-rs                | 0        | 86468840 |
| 2 | Hapmap49925-BTA-24427          | 0        | 86704498 |
| 2 | Hapmap38542-BTA-90295          | 0        | 86786146 |
| 2 | BTA-90292-no-rs                | 0        | 86831095 |
| 2 | BTA-90298-no-rs                | 0        | 86868918 |
| 2 | Hapmap38934-BTA-117244         | 0        | 86909355 |
| 2 | Hapmap41106-BTA-90288          | 0        | 86959111 |
| 2 | ARS-BFGL-NGS-55270             | 0        | 87004473 |
| 2 | Hapmap41789-BTA-18419          | 0        | 87048075 |
| 2 | ARS-BFGL-NGS-34383             | 0        | 87086641 |
| 2 | ARS-BFGL-NGS-32625             | 0        | 87108690 |
| 2 | ARS-BFGL-NGS-100636            | 0        | 87133202 |
| 2 | Hapmap33178-BTA-111773         | 0        | 87154335 |
| 2 | BTA-85504-no-rs                | 0        | 87228147 |
| 2 | BTA-85505-no-rs                | 0        | 87258372 |
| 2 | Hapmap51556-BTA-116563         | 0        | 87745840 |
| 2 | ARS-BFGL-NGS-74898             | 0        | 87780593 |
| 2 | ARS-BFGL-NGS-91673             | 0        | 87843486 |
| 2 | BTA-116567-no-rs               | 0        | 87872337 |
| 2 | Hapmap41164-BTA-116565         | 0        | 87896516 |
| 2 | ARS-BFGL-NGS-94983             | 0        | 87944722 |
| 2 | ARS-BFGL-NGS-119235            | 0        | 88162563 |
| 2 | Hapmap53419-rs29015159         | 0        | 88205436 |
| 2 | Hapmap35020-BES8_Contig415_403 | 0        | 88434967 |
| 2 | ARS-BFGL-NGS-87101             | 0        | 88462321 |
| 2 | ARS-BFGL-NGS-37296             | 0        | 88511266 |
| 2 | Hapmap33966-BES2_Contig368_774 | 0        | 88545567 |
| 2 | ARS-BFGL-NGS-115594            | 0        | 88582171 |
| 2 | ARS-BFGL-NGS-106192            | 0        | 88609199 |
| 2 | BTA-48371-no-rs                | 0        | 88698628 |
| 2 | Hapmap39700-BTA-93776          | 0        | 88925365 |
| 2 | ARS-BFGL-NGS-40189             | 0        | 89008935 |
| 2 | Hapmap40899-BTA-119486         | 0        | 89090134 |
| 2 | ARS-BFGL-NGS-87633             | 0        | 89240442 |

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| 2 | ARS-BFGL-NGS-110835             | 0 | 89374373 |          |
| 2 | Hapmap51113-BTA-100127          | 0 | 89444485 |          |
| 2 | ARS-BFGL-NGS-34371              | 0 | 89478521 |          |
| 2 | ARS-BFGL-NGS-100793             | 0 | 89632673 |          |
| 2 | ARS-BFGL-NGS-118468             | 0 | 89707126 |          |
| 2 | ARS-BFGL-NGS-26540              | 0 | 89752875 |          |
| 2 | ARS-BFGL-NGS-102616             | 0 | 89778173 |          |
| 2 | ARS-BFGL-NGS-109793             | 0 | 89801146 |          |
| 2 | ARS-BFGL-NGS-15250              | 0 | 89845085 |          |
| 2 | ARS-BFGL-NGS-116553             | 0 | 89879889 |          |
| 2 | ARS-BFGL-NGS-117117             | 0 | 89931378 |          |
| 2 | Hapmap27565-BTA-101823          | 0 | 90085321 |          |
| 2 | BTA-118857-no-rs                | 0 | 90112552 |          |
| 2 | Hapmap34613-BES4_Contig478_1334 | 0 |          | 90155450 |
| 2 | ARS-BFGL-NGS-102842             | 0 | 90257472 |          |
| 2 | ARS-BFGL-NGS-113881             | 0 | 90325351 |          |
| 2 | ARS-BFGL-NGS-116169             | 0 | 90355514 |          |
| 2 | ARS-BFGL-NGS-18347              | 0 | 90381185 |          |
| 2 | BTA-48377-no-rs                 | 0 | 90527996 |          |
| 2 | Hapmap52343-rs29017242          | 0 | 90647574 |          |
| 2 | ARS-BFGL-NGS-25165              | 0 | 90808788 |          |
| 2 | ARS-BFGL-NGS-28347              | 0 | 90897881 |          |
| 2 | ARS-BFGL-NGS-26907              | 0 | 91061862 |          |
| 2 | ARS-BFGL-NGS-43977              | 0 | 91117564 |          |
| 2 | ARS-BFGL-NGS-20350              | 0 | 91221891 |          |
| 2 | BTA-97942-no-rs                 | 0 | 91411176 |          |
| 2 | Hapmap35082-BES9_Contig524_1040 | 0 |          | 91432652 |
| 2 | Hapmap33033-BTA-149123          | 0 | 91520420 |          |
| 2 | BTA-48355-no-rs                 | 0 | 91838324 |          |
| 2 | ARS-BFGL-NGS-53141              | 0 | 91895929 |          |
| 2 | Hapmap23473-BTA-24083           | 0 | 91990619 |          |
| 2 | Hapmap43523-BTA-24093           | 0 | 92042146 |          |
| 2 | ARS-BFGL-NGS-35056              | 0 | 92080445 |          |
| 2 | Hapmap51704-BTA-24101           | 0 | 92127717 |          |
| 2 | Hapmap40056-BTA-24104           | 0 | 92176063 |          |
| 2 | BTA-48356-no-rs                 | 0 | 92211647 |          |
| 2 | Hapmap49625-BTA-48411           | 0 | 92326427 |          |
| 2 | ARS-BFGL-NGS-25774              | 0 | 92350004 |          |
| 2 | Hapmap42563-BTA-48403           | 0 | 92433589 |          |
| 2 | Hapmap39751-BTA-48401           | 0 | 92471338 |          |
| 2 | Hapmap34940-BES2_Contig197_1060 | 0 |          | 92514726 |
| 2 | BTA-24303-no-rs                 | 0 | 92610012 |          |
| 2 | BTA-98430-no-rs                 | 0 | 92694753 |          |
| 2 | ARS-BFGL-NGS-34880              |   | 92715999 |          |
| 2 | ARS-BFGL-NGS-110314             | 0 | 92756977 |          |
| 2 | ARS-BFGL-NGS-33666              | 0 | 92796573 |          |
| 2 | ARS-BFGL-NGS-92633              | 0 | 92828714 |          |
| 2 | Hapmap26718-BTA-151140          | 0 | 92891116 |          |
| 2 | ARS-BFGL-NGS-83045              | 0 | 92923678 |          |
| 2 | ARS-BFGL-NGS-25561              | 0 | 92950410 |          |
| 2 | ARS-BFGL-NGS-46633              | 0 | 93003339 |          |
| 2 | ARS-BFGL-NGS-43811              | 0 | 93038227 |          |
| 2 | ARS-BFGL-NGS-40833              | 0 | 93065483 |          |
| 2 | ARS-BFGL-NGS-47406              | 0 | 93144357 |          |

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| 2 | Hapmap49462-BTA-115124           | 0 | 93226539 |          |
| 2 | ARS-BFGL-NGS-111012              | 0 | 93255549 |          |
| 2 | BTA-115090-no-rs                 | 0 | 93288386 |          |
| 2 | ARS-BFGL-NGS-30310               |   | 93369611 |          |
| 2 | Hapmap50235-BTA-115103           | 0 | 93441283 |          |
| 2 | Hapmap48193-BTA-116132           | 0 | 93491488 |          |
| 2 | Hapmap35338-VSWAP1E1185A_scf01   | 0 |          | 93505187 |
| 2 | ARS-BFGL-NGS-55602               | 0 | 93600676 |          |
| 2 | Hapmap35872-SCAFFOLD260252_27183 | 0 |          | 93648118 |
| 2 | ARS-BFGL-NGS-29095               | 0 | 93672568 |          |
| 2 | ARS-BFGL-NGS-22760               | 0 | 93795054 |          |
| 2 | ARS-BFGL-NGS-102205              | 0 | 93885846 |          |
| 2 | ARS-BFGL-NGS-31922               | 0 | 93961513 |          |
| 2 | ARS-BFGL-NGS-117556              | 0 | 94057043 |          |
| 2 | Hapmap34795-BES5_Contig306_381   | 0 |          | 94100569 |
| 2 | Hapmap49408-BTA-101235           | 0 | 94255738 |          |
| 2 | Hapmap53672-rs29025245           | 0 | 94314937 |          |
| 2 | ARS-BFGL-NGS-29700               |   | 94407497 |          |
| 2 | ARS-BFGL-NGS-55742               | 0 | 94481602 |          |
| 2 | ARS-BFGL-NGS-21761               | 0 | 94534831 |          |
| 2 | Hapmap50705-BTA-48425            | 0 | 94574351 |          |
| 2 | Hapmap41195-BTA-17655            | 0 | 94601236 |          |
| 2 | ARS-BFGL-NGS-73869               | 0 | 94702739 |          |
| 2 | ARS-BFGL-NGS-109871              | 0 | 94761274 |          |
| 2 | ARS-BFGL-NGS-101080              | 0 | 94804682 |          |
| 2 | Hapmap53544-rs29023487           | 0 | 94865712 |          |
| 2 | Hapmap30796-BTA-134326           | 0 | 94984595 |          |
| 2 | Hapmap50979-BTA-48487            | 0 | 95069313 |          |
| 2 | Hapmap42564-BTA-48483            | 0 | 95090044 |          |
| 2 | BTA-48480-no-rs                  | 0 | 95119968 |          |
| 2 | ARS-BFGL-NGS-37050               |   | 95141342 |          |
| 2 | ARS-BFGL-NGS-23872               | 0 | 95199905 |          |
| 2 | ARS-BFGL-NGS-19042               | 0 | 95245853 |          |
| 2 | Hapmap25536-BTA-134311           | 0 | 95299621 |          |
| 2 | BTA-48582-no-rs                  | 0 | 95418050 |          |
| 2 | BTA-48579-no-rs                  | 0 | 95463866 |          |
| 2 | ARS-BFGL-NGS-98354               | 0 | 95512347 |          |
| 2 | Hapmap45109-BTA-48575            | 0 | 95542575 |          |
| 2 | BTA-48570-no-rs                  | 0 | 95577109 |          |
| 2 | Hapmap47020-BTA-48569            | 0 | 95709778 |          |
| 2 | Hapmap33198-BTA-134378           | 0 | 95752707 |          |
| 2 | ARS-BFGL-NGS-36683               | 0 | 95861435 |          |
| 2 | Hapmap30797-BTA-134377           | 0 | 95884143 |          |
| 2 | ARS-BFGL-NGS-103501              | 0 | 96021111 |          |
| 2 | ARS-BFGL-NGS-72925               | 0 | 96049233 |          |
| 2 | Hapmap43277-BTA-48796            | 0 | 96161196 |          |
| 2 | ARS-BFGL-NGS-33331               | 0 | 96388684 |          |
| 2 | ARS-BFGL-NGS-100369              | 0 | 96410491 |          |
| 2 | ARS-BFGL-NGS-29309               | 0 | 96495311 |          |
| 2 | Hapmap51953-BTA-48787            | 0 | 96570370 |          |
| 2 | ARS-BFGL-NGS-47090               |   | 96612179 |          |
| 2 | ARS-BFGL-NGS-48317               | 0 | 96698667 |          |
| 2 | ARS-BFGL-NGS-11130               |   | 96725242 |          |
| 2 | ARS-BFGL-NGS-24608               | 0 | 96857370 |          |

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| 2 | Hapmap38603-BTA-48461            | 0        | 96891951  |          |
| 2 | BTA-48456-no-rs                  | 0        | 96930005  |          |
| 2 | UA-IFASA-7039                    | 0        | 96953499  |          |
| 2 | Hapmap39155-BTA-48449            | 0        | 97003748  |          |
| 2 | UA-IFASA-5772                    | 0        | 97026818  |          |
| 2 | ARS-BFGL-NGS-99780               | 0        | 97098833  |          |
| 2 | Hapmap44082-BTA-48435            | 0        | 97133448  |          |
| 2 | ARS-BFGL-NGS-31792               | 0        | 97166703  |          |
| 2 | Hapmap26486-BTA-163878           | 0        | 97237319  |          |
| 2 | ARS-BFGL-NGS-115142              | 0        | 97368169  |          |
| 2 | ARS-BFGL-NGS-20754               | 0        | 97390598  |          |
| 2 | ARS-BFGL-NGS-26395               | 0        | 97457613  |          |
| 2 | Hapmap25089-BTA-156786           | 0        | 97568903  |          |
| 2 | Hapmap61031-rs29027609           | 0        | 97794765  |          |
| 2 | Hapmap22958-BTA-48415            | 0        | 97828486  |          |
| 2 | UA-IFASA-5660                    | 0        | 97861814  |          |
| 2 | ARS-BFGL-NGS-113475              | 0        | 97929853  |          |
| 2 | Hapmap34527-BES11_Contig435_1761 | 0        |           | 97955332 |
| 2 | Hapmap48357-BTA-48473            | 0        | 97999640  |          |
| 2 | Hapmap26193-BTA-158070           | 0        | 98112765  |          |
| 2 | Hapmap54233-rs29024025           | 0        | 98139821  |          |
| 2 | ARS-BFGL-NGS-99030               | 0        | 98160191  |          |
| 2 | Hapmap35729-SCAFFOLD86037_6323   | 0        |           | 98193994 |
| 2 | ARS-BFGL-NGS-39900               | 98217598 |           |          |
| 2 | ARS-BFGL-NGS-107381              | 0        | 98268164  |          |
| 2 | Hapmap34329-BES11_Contig247_1378 | 0        |           | 98446391 |
| 2 | ARS-BFGL-NGS-67961               | 0        | 98490521  |          |
| 2 | ARS-BFGL-NGS-12630               | 0        | 98522351  |          |
| 2 | ARS-BFGL-NGS-101219              | 0        | 98580745  |          |
| 2 | ARS-BFGL-NGS-97871               | 0        | 98666598  |          |
| 2 | ARS-BFGL-NGS-60670               | 98764258 |           |          |
| 2 | UA-IFASA-4555                    | 0        | 98822877  |          |
| 2 | ARS-BFGL-NGS-43366               | 0        | 98938838  |          |
| 2 | BTA-120616-no-rs                 | 0        | 98994528  |          |
| 2 | Hapmap26416-BTA-146953           | 0        | 99086526  |          |
| 2 | Hapmap29650-BTA-146970           | 0        | 99292729  |          |
| 2 | ARS-BFGL-NGS-10610               | 0        | 99398654  |          |
| 2 | Hapmap24312-BTA-26382            | 0        | 99542927  |          |
| 2 | Hapmap49348-BTA-85365            | 0        | 99845066  |          |
| 2 | ARS-BFGL-NGS-36958               | 0        | 99881355  |          |
| 2 | BTA-121937-no-rs                 | 0        | 99923629  |          |
| 2 | BTA-07769-no-rs                  | 0        | 100185941 |          |
| 2 | BTA-05855-no-rs                  | 0        | 100216300 |          |
| 2 | Hapmap52627-rs29014567           | 0        | 100273809 |          |
| 2 | ARS-BFGL-NGS-29467               | 0        | 100376419 |          |
| 2 | ARS-BFGL-NGS-103616              | 0        | 100407427 |          |
| 2 | Hapmap43786-BTA-120600           | 0        | 100428814 |          |
| 2 | Hapmap32080-BTA-146977           | 0        | 100923476 |          |
| 2 | Hapmap48209-BTA-120609           | 0        | 100950039 |          |
| 2 | ARS-BFGL-NGS-113504              | 0        | 101089845 |          |
| 2 | ARS-BFGL-NGS-25939               | 0        | 101255449 |          |
| 2 | ARS-BFGL-NGS-10239               | 0        | 101307425 |          |
| 2 | Hapmap39708-BTA-106258           | 0        | 101409902 |          |
| 2 | BTA-106252-no-rs                 | 0        | 101440248 |          |

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| 2 | BTA-27936-no-rs                 | 0 | 101543674 |           |
| 2 | BTA-27937-no-rs                 | 0 | 101593916 |           |
| 2 | ARS-BFGL-NGS-13829              | 0 | 101636994 |           |
| 2 | Hapmap50640-BTA-27930           | 0 | 101706946 |           |
| 2 | ARS-BFGL-NGS-100077             | 0 | 101835294 |           |
| 2 | Hapmap40933-BTA-27209           | 0 | 101949550 |           |
| 2 | Hapmap46280-BTA-114375          | 0 | 101986927 |           |
| 2 | Hapmap48190-BTA-114376          | 0 | 102019770 |           |
| 2 | ARS-BFGL-NGS-60714              | 0 | 102060979 |           |
| 2 | Hapmap36094-SCAFFOLD96944_22403 | 0 |           | 102214656 |
| 2 | Hapmap26483-BTA-163178          | 0 | 102243709 |           |
| 2 | ARS-BFGL-NGS-94750              | 0 | 102611374 |           |
| 2 | Hapmap40319-BTA-19899           | 0 | 102634206 |           |
| 2 | BTA-92857-no-rs                 | 0 | 102723466 |           |
| 2 | Hapmap41556-BTA-48495           | 0 | 102772529 |           |
| 2 | ARS-BFGL-NGS-102802             | 0 | 102825867 |           |
| 2 | BTA-48498-no-rs                 | 0 | 102906006 |           |
| 2 | BTA-27081-no-rs                 | 0 | 102947494 |           |
| 2 | BTA-48503-no-rs                 | 0 | 102981611 |           |
| 2 | Hapmap31405-BTA-134341          | 0 | 103006806 |           |
| 2 | ARS-BFGL-NGS-17875              | 0 | 103113956 |           |
| 2 | Hapmap44084-BTA-48504           | 0 | 103207828 |           |
| 2 | Hapmap50215-BTA-111911          | 0 | 103281621 |           |
| 2 | ARS-BFGL-NGS-10767              | 0 | 103349600 |           |
| 2 | BTA-48534-no-rs                 | 0 | 103470685 |           |
| 2 | Hapmap49191-BTA-48538           | 0 | 103491995 |           |
| 2 | ARS-BFGL-NGS-30720              |   | 103528661 |           |
| 2 | ARS-BFGL-BAC-57050              |   | 103707675 |           |
| 2 | ARS-BFGL-BAC-35929              | 0 | 103731623 |           |
| 2 | Hapmap26477-BTA-161779          | 0 | 103810327 |           |
| 2 | ARS-BFGL-BAC-35928              | 0 | 103890577 |           |
| 2 | UA-IFASA-6155                   | 0 | 103916046 |           |
| 2 | BTA-48084-no-rs                 | 0 | 103995601 |           |
| 2 | ARS-BFGL-NGS-23725              | 0 | 104026376 |           |
| 2 | Hapmap50004-BTA-48076           | 0 | 104083149 |           |
| 2 | Hapmap33475-BTA-134171          | 0 | 104123985 |           |
| 2 | ARS-BFGL-BAC-35925              | 0 | 104145868 |           |
| 2 | BTA-97778-no-rs                 | 0 | 104256806 |           |
| 2 | ARS-BFGL-NGS-30643              | 0 | 104297699 |           |
| 2 | ARS-BFGL-NGS-75769              | 0 | 104349734 |           |
| 2 | ARS-BFGL-NGS-103574             | 0 | 104406422 |           |
| 2 | Hapmap60280-rs29012262          | 0 | 104471715 |           |
| 2 | ARS-BFGL-NGS-113466             | 0 | 104518495 |           |
| 2 | ARS-BFGL-NGS-67929              | 0 | 104555063 |           |
| 2 | Hapmap49192-BTA-48601           | 0 | 104637671 |           |
| 2 | ARS-BFGL-NGS-110763             | 0 | 104667832 |           |
| 2 | ARS-BFGL-NGS-37100              | 0 | 104761159 |           |
| 2 | ARS-BFGL-NGS-117120             | 0 | 104800752 |           |
| 2 | BTB-01889889                    | 0 | 104905603 |           |
| 2 | BTB-01889790                    | 0 | 104927056 |           |
| 2 | ARS-BFGL-NGS-18907              | 0 | 104958751 |           |
| 2 | ARS-BFGL-NGS-21251              | 0 | 105006704 |           |
| 2 | BTA-48618-no-rs                 | 0 | 105033439 |           |
| 2 | ARS-BFGL-NGS-99972              | 0 | 105064936 |           |

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| 2 | Hapmap40546-BTA-48622  | 0         | 105072308 |
| 2 | Hapmap42565-BTA-48634  | 0         | 105133414 |
| 2 | ARS-BFGL-NGS-116538    | 0         | 105169858 |
| 2 | ARS-BFGL-NGS-35963     | 0         | 105193025 |
| 2 | ARS-BFGL-NGS-39470     | 105246554 |           |
| 2 | ARS-BFGL-NGS-115558    | 0         | 105283819 |
| 2 | BTA-48544-no-rs        | 0         | 105309359 |
| 2 | Hapmap43276-BTA-48540  | 0         | 105350965 |
| 2 | DPI-42                 | 0         | 105382162 |
| 2 | ARS-BFGL-NGS-108514    | 0         | 105521127 |
| 2 | Hapmap47971-BTA-48835  | 0         | 105563861 |
| 2 | ARS-BFGL-NGS-31901     | 0         | 105602018 |
| 2 | ARS-BFGL-NGS-100821    | 0         | 105666691 |
| 2 | ARS-BFGL-NGS-86172     | 0         | 105687751 |
| 2 | Hapmap47972-BTA-48849  | 0         | 105736858 |
| 2 | ARS-BFGL-NGS-30149     | 0         | 105813306 |
| 2 | INRA-475               | 0         | 105860790 |
| 2 | ARS-BFGL-NGS-114318    | 0         | 105900619 |
| 2 | BTA-101149-no-rs       | 0         | 105958636 |
| 2 | BTA-48808-no-rs        | 0         | 106064085 |
| 2 | Hapmap47315-BTA-48803  | 0         | 106165589 |
| 2 | Hapmap49626-BTA-48806  | 0         | 106278210 |
| 2 | ARS-BFGL-NGS-105142    | 0         | 106311320 |
| 2 | Hapmap47970-BTA-48811  | 0         | 106408159 |
| 2 | ARS-BFGL-NGS-110823    | 0         | 106465563 |
| 2 | ARS-BFGL-NGS-108614    | 0         | 106526130 |
| 2 | ARS-BFGL-NGS-83734     | 0         | 106549887 |
| 2 | ARS-BFGL-NGS-95894     | 0         | 106572790 |
| 2 | BTB-00107988           | 0         | 106604939 |
| 2 | UA-IFASA-7600          | 0         | 106630122 |
| 2 | UA-IFASA-5357          | 0         | 106663843 |
| 2 | BTA-48822-no-rs        | 0         | 106689988 |
| 2 | ARS-BFGL-NGS-36309     | 0         | 106727608 |
| 2 | ARS-BFGL-NGS-107754    | 0         | 106749769 |
| 2 | ARS-BFGL-NGS-43940     | 106771386 |           |
| 2 | BTB-00108131           | 0         | 106886571 |
| 2 | ARS-BFGL-NGS-36840     | 106924044 |           |
| 2 | BTA-48880-no-rs        | 0         | 106952479 |
| 2 | BTA-48881-no-rs        | 0         | 106984473 |
| 2 | Hapmap60413-ss46526389 | 0         | 107005982 |
| 2 | BTB-00108859           | 0         | 107075915 |
| 2 | ARS-BFGL-NGS-102918    | 0         | 107103755 |
| 2 | Hapmap31750-BTA-134395 | 0         | 107168923 |
| 2 | Hapmap33477-BTA-134394 | 0         | 107286209 |
| 2 | ARS-BFGL-NGS-116634    | 0         | 107318080 |
| 2 | ARS-BFGL-NGS-55660     | 107378666 |           |
| 2 | Hapmap38321-BTA-48884  | 0         | 107409737 |
| 2 | BTB-00108873           | 0         | 107432879 |
| 2 | BTB-00108904           | 0         | 107455392 |
| 2 | BTB-00108937           | 0         | 107478590 |
| 2 | ARS-BFGL-NGS-116461    | 0         | 107505296 |
| 2 | ARS-BFGL-NGS-41507     | 0         | 107529096 |
| 2 | ARS-BFGL-NGS-108395    | 0         | 107555316 |
| 2 | Hapmap48213-BTA-121240 | 0         | 107584640 |

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| 2 | ARS-BFGL-NGS-20052     | 0 | 107616903 |
| 2 | UA-IFASA-6288          | 0 | 107657675 |
| 2 | ARS-BFGL-NGS-50610     |   | 107681700 |
| 2 | BTA-48902-no-rs        | 0 | 107705719 |
| 2 | ARS-BFGL-NGS-19219     | 0 | 107747873 |
| 2 | ARS-BFGL-NGS-31902     | 0 | 107799001 |
| 2 | BTB-00109296           | 0 | 107820572 |
| 2 | BTB-00109355           | 0 | 107880854 |
| 2 | Hapmap23715-BTA-48904  | 0 | 107935528 |
| 2 | ARS-BFGL-NGS-53218     | 0 | 107959759 |
| 2 | ARS-BFGL-NGS-77720     |   | 108030356 |
| 2 | Hapmap50373-BTA-48875  | 0 | 108056708 |
| 2 | Hapmap56966-ss46526654 | 0 | 108120531 |
| 2 | ARS-BFGL-NGS-19550     | 0 | 108181274 |
| 2 | BTA-48867-no-rs        | 0 | 108240068 |
| 2 | ARS-BFGL-NGS-109206    | 0 | 108269454 |
| 2 | BTA-48864-no-rs        | 0 | 108311742 |
| 2 | BTB-00108243           | 0 | 108342493 |
| 2 | ARS-BFGL-NGS-60484     | 0 | 108399388 |
| 2 | ARS-BFGL-NGS-82228     | 0 | 108414809 |
| 2 | BTB-00109619           | 0 | 108437574 |
| 2 | ARS-BFGL-NGS-72876     | 0 | 108464952 |
| 2 | BTB-00109560           | 0 | 108486036 |
| 2 | ARS-BFGL-NGS-99327     | 0 | 108529237 |
| 2 | ARS-BFGL-NGS-14681     | 0 | 108549488 |
| 2 | Hapmap53684-rs29025784 | 0 | 108665467 |
| 2 | BTA-09704-no-rs        | 0 | 108770660 |
| 2 | ARS-BFGL-NGS-117879    | 0 | 108792569 |
| 2 | ARS-BFGL-NGS-113828    | 0 | 108823285 |
| 2 | Hapmap49392-BTA-97343  | 0 | 108843619 |
| 2 | ARS-BFGL-NGS-23161     | 0 | 108869015 |
| 2 | ARS-BFGL-NGS-36162     | 0 | 108892132 |
| 2 | BTB-01307548           | 0 | 108928559 |
| 2 | BTB-01307502           | 0 | 108978008 |
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| 2 | BTB-01307462           | 0 | 109020542 |
| 2 | Hapmap23773-BTA-161118 | 0 | 109050668 |
| 2 | BTB-01307387           | 0 | 109077760 |
| 2 | ARS-BFGL-NGS-10727     | 0 | 109106216 |
| 2 | BTA-48931-no-rs        | 0 | 109131224 |
| 2 | Hapmap59277-rs29027486 | 0 | 109183075 |
| 2 | BTA-48930-no-rs        | 0 | 109219004 |
| 2 | Hapmap49627-BTA-48925  | 0 | 109253408 |
| 2 | ARS-BFGL-NGS-29666     | 0 | 109295005 |
| 2 | BTB-00109720           | 0 | 109327881 |
| 2 | BTB-00109704           | 0 | 109372695 |
| 2 | BTB-00111033           | 0 | 109500850 |
| 2 | BTB-00111019           | 0 | 109560947 |
| 2 | BTB-00111010           | 0 | 109586793 |
| 2 | ARS-BFGL-NGS-78128     | 0 | 109607207 |
| 2 | BTB-00110958           | 0 | 109636110 |
| 2 | BTB-00110886           | 0 | 109660849 |
| 2 | Hapmap47913-BTA-31653  | 0 | 109704312 |
| 2 | BTA-92340-no-rs        | 0 | 109740844 |



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| 2 | Hapmap48786-BTA-49002                 | 0 | 109778246 |           |  |
| 2 | Hapmap35128-BES3_Contig428_1619       | 0 |           | 109812343 |  |
| 2 | Hapmap56897-rs29010055                | 0 | 109839219 |           |  |
| 2 | ARS-BFGL-NGS-110109                   | 0 | 109873484 |           |  |
| 2 | BTB-00110695                          | 0 | 109910398 |           |  |
| 2 | Hapmap49194-BTA-48985                 | 0 | 109945216 |           |  |
| 2 | BTB-00110654                          | 0 | 109969263 |           |  |
| 2 | Hapmap42568-BTA-48982                 | 0 | 110007375 |           |  |
| 2 | BTB-00110604                          | 0 | 110031447 |           |  |
| 2 | ARS-BFGL-NGS-116513                   | 0 | 110055346 |           |  |
| 2 | Hapmap48785-BTA-48976                 | 0 | 110098037 |           |  |
| 2 | Hapmap59378-rs29018764                | 0 | 110139283 |           |  |
| 2 | Hapmap52138-rs29018607                | 0 | 110193985 |           |  |
| 2 | Hapmap54548-rs29012261                | 0 | 110233992 |           |  |
| 2 | BTB-00110277                          | 0 | 110266419 |           |  |
| 2 | Hapmap25360-BTA-48962                 | 0 | 110287432 |           |  |
| 2 | Hapmap49628-BTA-48960                 | 0 | 110311653 |           |  |
| 2 | BTB-00110220                          | 0 | 110332434 |           |  |
| 2 | BTB-00110204                          | 0 | 110353189 |           |  |
| 2 | Hapmap30800-BTA-134508                | 0 | 110393192 |           |  |
| 2 | BTB-00110135                          | 0 | 110442758 |           |  |
| 2 | BTB-00110046                          | 0 | 110477897 |           |  |
| 2 | ARS-BFGL-NGS-45261                    | 0 | 110509975 |           |  |
| 2 | BTB-01169423                          | 0 | 110559605 |           |  |
| 2 | BTB-01169886                          | 0 | 110598183 |           |  |
| 2 | BTB-01169838                          | 0 | 110642302 |           |  |
| 2 | BTB-01169774                          | 0 | 110668292 |           |  |
| 2 | ARS-BFGL-NGS-90923                    | 0 | 110704913 |           |  |
| 2 | ARS-BFGL-NGS-58985                    | 0 | 110743602 |           |  |
| 2 | Hapmap24848-BTA-147861                | 0 | 110787287 |           |  |
| 2 | Hapmap32590-BTA-147852                | 0 | 110911406 |           |  |
| 2 | ARS-BFGL-NGS-76658                    | 0 | 111024426 |           |  |
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| 2 | BTB-00551216                          | 0 | 112100889 |           |  |
| 2 | ARS-BFGL-NGS-25868                    | 0 | 112126934 |           |  |
| 2 | BTB-00427067                          | 0 | 112147748 |           |  |
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| 2 | BTB-00111486           | 0 | 112331026 |
| 2 | ARS-BFGL-NGS-30241     | 0 | 112351426 |
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| 2 | BTB-00111799           | 0 | 112418955 |
| 2 | Hapmap39834-BTA-49029  | 0 | 112442388 |
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| 2 | ARS-BFGL-NGS-102741    | 0 | 112483071 |
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| 2 | BTB-00113177           | 0 | 113245420 |
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| 2 | BTA-115216-no-rs       | 0 | 113419747 |
| 2 | BTA-115218-no-rs       | 0 | 113442348 |
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| 2 | ARS-BFGL-NGS-33229     | 0 | 113530859 |
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| 2 | ARS-BFGL-NGS-11306     | 0 | 113749689 |
| 2 | ARS-BFGL-NGS-97763     | 0 | 113852386 |
| 2 | Hapmap54594-rs29019168 | 0 | 113899270 |
| 2 | BTB-01145402           | 0 | 113946668 |
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| 2 | Hapmap33101-BTA-97812  | 0 | 114008133 |
| 2 | ARS-BFGL-NGS-61890     |   | 114039982 |
| 2 | ARS-BFGL-NGS-43428     | 0 | 114060265 |
| 2 | Hapmap55517-rs29019665 | 0 | 114090327 |
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| 2 | BTB-01991723           | 0 | 114163920 |
| 2 | Hapmap55127-rs29027121 | 0 | 114186713 |
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| 2 | BTB-01301691           | 0 | 114262794 |
| 2 | ARS-BFGL-BAC-34939     | 0 | 114317194 |
| 2 | BTA-19993-no-rs        | 0 | 114352128 |

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| 2 | ARS-BFGL-NGS-50170     | 114380742   |
| 2 | ARS-BFGL-NGS-40251     | 0 114415455 |
| 2 | Hapmap51816-BTA-20000  | 0 114444914 |
| 2 | BTA-20032-no-rs        | 0 114477377 |
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| 2 | ARS-BFGL-NGS-12660     | 114570989   |
| 2 | Hapmap46266-BTA-98535  | 0 114639084 |
| 2 | ARS-BFGL-NGS-67309     | 0 114710664 |
| 2 | Hapmap41658-BTA-83101  | 0 114775268 |
| 2 | BTA-122435-no-rs       | 0 114797868 |
| 2 | BTA-110873-no-rs       | 0 114830722 |
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| 2 | BTB-01343496           | 0 115037726 |
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| 2 | Hapmap30864-BTA-157170 | 0 115227024 |
| 2 | Hapmap49461-BTA-115001 | 0 115264249 |
| 2 | ARS-BFGL-NGS-71980     | 0 115322601 |
| 2 | ARS-BFGL-NGS-95256     | 0 115475433 |
| 2 | Hapmap45649-BTA-29691  | 0 115550814 |
| 2 | Hapmap42778-BTA-105679 | 0 115578336 |
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| 2 | BTA-103195-no-rs       | 0 115661700 |
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| 2 | ARS-BFGL-NGS-87148     | 0 115771013 |
| 2 | ARS-BFGL-NGS-102003    | 0 115791101 |
| 2 | BTB-00478003           | 0 115865281 |
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| 2 | ARS-BFGL-NGS-21107     | 0 115973199 |
| 2 | BTB-00821810           | 0 116020436 |
| 2 | Hapmap45112-BTA-52425  | 0 116064542 |
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| 2 | ARS-BFGL-NGS-94004     | 0 116293266 |
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| 2 | Hapmap40249-BTA-49086  | 0 116347140 |
| 2 | BTB-00113683           | 0 116367423 |
| 2 | Hapmap26658-BTA-134539 | 0 116388603 |
| 2 | Hapmap23205-BTA-134541 | 0 116394794 |
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| 2 | ARS-BFGL-NGS-14276     | 0 116591724 |
| 2 | Hapmap54770-rs29009608 | 0 116686650 |
| 2 | BTA-106396-no-rs       | 0 116764893 |

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| 2 | ARS-BFGL-NGS-107330    | 0         | 116829914 |
| 2 | Hapmap38323-BTA-49132  | 0         | 116875401 |
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| 2 | Hapmap40169-BTA-20295  | 0         | 117429603 |
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| 2 | ARS-BFGL-NGS-15373     | 0         | 117575646 |
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| 2 | BTA-109703-no-rs       | 0         | 117780179 |
| 2 | BTA-109699-no-rs       | 0         | 117809766 |
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| 2 | Hapmap53196-rs29011523 | 0         | 119231790 |
| 2 | Hapmap54936-rs29013679 | 0         | 119387551 |
| 2 | BTA-49501-no-rs        | 0         | 119450394 |
| 2 | BTA-49495-no-rs        | 0         | 119465461 |
| 2 | ARS-BFGL-NGS-12170     | 0         | 119489131 |
| 2 | ARS-BFGL-NGS-90746     | 0         | 119514496 |
| 2 | ARS-BFGL-NGS-88410     | 119543056 |           |
| 2 | ARS-BFGL-NGS-15508     | 0         | 119595498 |
| 2 | Hapmap53065-rs29026778 | 0         | 119630462 |
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| 2 | ARS-BFGL-NGS-101286    | 0         | 119869465 |
| 2 | BTA-99195-no-rs        | 0         | 119934010 |

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| 2 | ARS-BFGL-NGS-118696            | 0 | 120008794 |           |
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| 2 | ARS-BFGL-NGS-61938             | 0 | 120111418 |           |
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| 2 | ARS-BFGL-NGS-27277             | 0 | 120174934 |           |
| 2 | ARS-BFGL-NGS-31836             | 0 | 120221738 |           |
| 2 | Hapmap43869-BTA-49512          | 0 | 120301651 |           |
| 2 | ARS-BFGL-NGS-112016            | 0 | 120350282 |           |
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| 2 | ARS-BFGL-NGS-100978            | 0 | 120663999 |           |
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| 2 | ARS-BFGL-NGS-83173             | 0 | 120975500 |           |
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| 2 | Hapmap40117-BTA-28672          | 0 | 121125169 |           |
| 2 | ARS-BFGL-NGS-100507            | 0 | 121197096 |           |
| 2 | Hapmap36148-SCAFFOLD76057_3389 | 0 |           | 121229824 |
| 2 | BTA-49203-no-rs                | 0 | 121262450 |           |
| 2 | BTA-49198-no-rs                | 0 | 121289591 |           |
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| 2 | ARS-BFGL-NGS-115856            | 0 | 121356910 |           |
| 2 | ARS-BFGL-NGS-108220            | 0 | 121387324 |           |
| 2 | ARS-BFGL-NGS-116850            | 0 | 121432374 |           |
| 2 | ARS-BFGL-NGS-84506             | 0 | 121476153 |           |
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| 2 | Hapmap30526-BTA-134605         | 0 | 121573506 |           |
| 2 | ARS-BFGL-NGS-72340             |   | 121649725 |           |
| 2 | ARS-BFGL-NGS-101964            | 0 | 121707643 |           |
| 2 | ARS-BFGL-NGS-46410             |   | 121731564 |           |
| 2 | ARS-BFGL-NGS-78000             |   | 121753051 |           |
| 2 | Hapmap40897-BTA-118409         | 0 | 121819764 |           |
| 2 | Hapmap29048-BTA-157271         | 0 | 121847018 |           |
| 2 | ARS-BFGL-NGS-64846             | 0 | 121992956 |           |
| 2 | BTA-18115-no-rs                | 0 | 122019234 |           |
| 2 | Hapmap47023-BTA-49508          | 0 | 122064673 |           |
| 2 | ARS-BFGL-NGS-28919             | 0 | 122146355 |           |
| 2 | ARS-BFGL-NGS-40444             | 0 | 122409628 |           |
| 2 | ARS-BFGL-NGS-58778             | 0 | 122461245 |           |
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| 2 | ARS-BFGL-NGS-101039            | 0 | 122509616 |           |
| 2 | BTA-03671-no-rs                | 0 | 122551247 |           |
| 2 | Hapmap54417-rs29027359         | 0 | 122707290 |           |
| 2 | ARS-BFGL-NGS-25329             | 0 | 122749207 |           |
| 2 | Hapmap52874-ss46526209         | 0 | 122817488 |           |
| 2 | Hapmap41278-BTA-49585          | 0 | 122911891 |           |
| 2 | ARS-BFGL-NGS-36768             | 0 | 122948056 |           |
| 2 | ARS-BFGL-NGS-66184             | 0 | 122997112 |           |
| 2 | ARS-BFGL-NGS-102874            | 0 | 123152276 |           |

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| 2 | ARS-BFGL-NGS-73087             | 0         | 123191539 |           |
| 2 | ARS-BFGL-NGS-109463            | 0         | 123226556 |           |
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| 2 | ARS-BFGL-NGS-98246             | 0         | 123274465 |           |
| 2 | ARS-BFGL-NGS-42079             | 0         | 123296159 |           |
| 2 | ARS-BFGL-NGS-100296            | 0         | 123330136 |           |
| 2 | Hapmap40752-BTA-49567          | 0         | 123362669 |           |
| 2 | ARS-BFGL-NGS-22422             | 0         | 123421577 |           |
| 2 | ARS-BFGL-NGS-33757             | 0         | 123463996 |           |
| 2 | Hapmap30527-BTA-134607         | 0         | 123530569 |           |
| 2 | ARS-BFGL-NGS-119472            | 0         | 123561620 |           |
| 2 | ARS-BFGL-NGS-108473            | 0         | 123615442 |           |
| 2 | ARS-BFGL-NGS-34396             | 0         | 123645089 |           |
| 2 | ARS-BFGL-NGS-69013             | 0         | 123717269 |           |
| 2 | ARS-BFGL-NGS-109716            | 0         | 123738751 |           |
| 2 | Hapmap41006-BTA-49551          | 0         | 123768735 |           |
| 2 | ARS-BFGL-NGS-81173             | 0         | 123795837 |           |
| 2 | ARS-BFGL-BAC-27287             | 0         | 123829949 |           |
| 2 | ARS-BFGL-NGS-83761             | 0         | 123890726 |           |
| 2 | ARS-BFGL-NGS-106374            | 0         | 123919123 |           |
| 2 | ARS-BFGL-NGS-90958             | 0         | 123947527 |           |
| 2 | ARS-BFGL-NGS-15468             | 0         | 123990664 |           |
| 2 | ARS-BFGL-NGS-54715             | 0         | 124052334 |           |
| 2 | UA-IFASA-5041                  | 0         | 124086648 |           |
| 2 | ARS-BFGL-NGS-63081             | 0         | 124108914 |           |
| 2 | ARS-BFGL-NGS-41408             | 0         | 124137395 |           |
| 2 | ARS-BFGL-NGS-58655             | 0         | 124171901 |           |
| 2 | ARS-BFGL-NGS-62504             | 0         | 124265089 |           |
| 2 | ARS-BFGL-NGS-75379             | 0         | 124495893 |           |
| 2 | ARS-BFGL-NGS-58040             | 124553759 |           |           |
| 2 | ARS-BFGL-NGS-19266             | 0         | 124651277 |           |
| 2 | Hapmap30019-BTA-150024         | 0         | 124683244 |           |
| 2 | ARS-BFGL-NGS-28354             | 0         | 124737053 |           |
| 2 | ARS-BFGL-NGS-118090            | 0         | 124821120 |           |
| 2 | ARS-BFGL-NGS-64086             | 0         | 124862319 |           |
| 2 | ARS-BFGL-NGS-39882             | 0         | 124900467 |           |
| 2 | Hapmap40494-BTA-121252         | 0         | 124922135 |           |
| 2 | BTA-121254-no-rs               | 0         | 125098723 |           |
| 2 | Hapmap23633-BTA-134648         | 0         | 125131228 |           |
| 2 | BTA-49642-no-rs                | 0         | 125153787 |           |
| 2 | ARS-BFGL-NGS-73988             | 0         | 125175094 |           |
| 2 | ARS-BFGL-NGS-15108             | 0         | 125248041 |           |
| 2 | ARS-BFGL-NGS-113668            | 0         | 125379224 |           |
| 2 | BTA-49626-no-rs                | 0         | 125404487 |           |
| 2 | ARS-BFGL-NGS-47002             | 0         | 125426036 |           |
| 2 | ARS-BFGL-BAC-27911             | 0         | 125497767 |           |
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| 2 | Hapmap53350-ss46526471         | 0         | 125653839 |           |
| 2 | ARS-BFGL-NGS-117131            | 0         | 125677712 |           |
| 2 | Hapmap54611-rs29020940         | 0         | 125716884 |           |
| 2 | ARS-BFGL-NGS-116217            | 0         | 125772675 |           |
| 2 | ARS-BFGL-NGS-35163             | 0         | 125798507 |           |
| 2 | BTA-49621-no-rs                | 0         | 125826843 |           |
| 2 | Hapmap42570-BTA-49617          | 0         | 125853355 |           |

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| 2 | Hapmap38132-BTA-09265         | 0         | 125962886 |           |
| 2 | ARS-BFGL-NGS-118068           | 0         | 126058677 |           |
| 2 | ARS-BFGL-NGS-112535           | 0         | 126089026 |           |
| 2 | ARS-BFGL-NGS-21164            | 0         | 126126854 |           |
| 2 | Hapmap42232-BTA-49615         | 0         | 126158876 |           |
| 2 | BTA-49607-no-rs               | 0         | 126192595 |           |
| 2 | ARS-BFGL-NGS-119884           | 0         | 126270358 |           |
| 2 | ARS-BFGL-NGS-15428            | 0         | 126341038 |           |
| 2 | ARS-BFGL-NGS-60545            | 0         | 126372006 |           |
| 2 | ARS-BFGL-NGS-17656            | 0         | 126380497 |           |
| 2 | BTB-00115953                  | 0         | 126420376 |           |
| 2 | Hapmap42955-BTA-49648         | 0         | 126457093 |           |
| 2 | UA-IFASA-8340                 | 0         | 126684192 |           |
| 2 | ARS-BFGL-NGS-998              | 0         | 126764887 |           |
| 2 | ARS-BFGL-NGS-20267            | 0         | 126809260 |           |
| 2 | Hapmap24430-BTA-134672        | 0         | 126833356 |           |
| 2 | ARS-BFGL-NGS-24930            | 0         | 126860673 |           |
| 2 | Hapmap32892-BTA-49676         | 0         | 126904729 |           |
| 2 | ARS-BFGL-NGS-118505           | 0         | 126957475 |           |
| 2 | ARS-BFGL-NGS-38248            | 0         | 127047563 |           |
| 2 | ARS-BFGL-BAC-32411            | 0         | 127119233 |           |
| 2 | ARS-BFGL-NGS-36936            | 0         | 127153889 |           |
| 2 | ARS-BFGL-NGS-119799           | 0         | 127192536 |           |
| 2 | Hapmap32668-BTA-49653         | 0         | 127264552 |           |
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| 2 | ARS-BFGL-NGS-104716           | 0         | 127375881 |           |
| 2 | ARS-BFGL-NGS-108804           | 0         | 127412313 |           |
| 2 | ARS-BFGL-BAC-32424            | 0         | 127473570 |           |
| 2 | ARS-BFGL-NGS-75279            | 0         | 127553417 |           |
| 2 | ARS-BFGL-NGS-34317            | 0         | 127614663 |           |
| 2 | ARS-BFGL-NGS-21994            | 0         | 127651690 |           |
| 2 | ARS-BFGL-NGS-26260            | 0         | 127758721 |           |
| 2 | ARS-BFGL-NGS-61760            | 127782861 |           |           |
| 2 | ARS-BFGL-BAC-32707            | 0         | 127814244 |           |
| 2 | ARS-BFGL-NGS-68798            | 0         | 127834529 |           |
| 2 | Hapmap34844-VSWAP1E67289A_scf | 0         |           | 127860492 |
| 2 | ARS-BFGL-NGS-979              | 0         | 127881684 |           |
| 2 | ARS-BFGL-NGS-114532           | 0         | 127922394 |           |
| 2 | ARS-BFGL-NGS-58272            | 0         | 128013805 |           |
| 2 | ARS-BFGL-NGS-80059            | 0         | 128081087 |           |
| 2 | ARS-BFGL-NGS-39630            | 128129461 |           |           |
| 2 | ARS-BFGL-NGS-98458            | 0         | 128149644 |           |
| 2 | Hapmap41279-BTA-49700         | 0         | 128216477 |           |
| 2 | BTA-49705-no-rs               | 0         | 128326425 |           |
| 2 | ARS-BFGL-NGS-104560           | 0         | 128362357 |           |
| 2 | ARS-BFGL-NGS-92765            | 0         | 128458666 |           |
| 2 | ARS-BFGL-NGS-45691            | 0         | 128484790 |           |
| 2 | ARS-BFGL-NGS-118924           | 0         | 128529102 |           |
| 2 | ARS-BFGL-NGS-116294           | 0         | 128580697 |           |
| 2 | ARS-BFGL-NGS-41994            | 0         | 128602295 |           |
| 2 | ARS-BFGL-NGS-10586            | 0         | 128636098 |           |
| 2 | ARS-BFGL-NGS-104227           | 0         | 128670186 |           |
| 2 | ARS-BFGL-NGS-17529            | 0         | 128695085 |           |
| 2 | Hapmap60596-rs29017365        | 0         | 128812635 |           |

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| 2 | ARS-BFGL-NGS-111873    | 0         | 128913476 |
| 2 | ARS-BFGL-NGS-62579     | 0         | 128947842 |
| 2 | ARS-BFGL-NGS-84330     | 128973530 |           |
| 2 | ARS-BFGL-NGS-91346     | 0         | 129024635 |
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| 2 | ARS-BFGL-NGS-63980     | 0         | 129388250 |
| 2 | ARS-BFGL-NGS-106170    | 0         | 129423599 |
| 2 | BTA-49745-no-rs        | 0         | 129486895 |
| 2 | BTA-49748-no-rs        | 0         | 129515246 |
| 2 | ARS-BFGL-NGS-40911     | 0         | 129554709 |
| 2 | ARS-BFGL-NGS-118648    | 0         | 129609082 |
| 2 | ARS-BFGL-NGS-111807    | 0         | 129651238 |
| 2 | ARS-BFGL-NGS-88498     | 0         | 129677633 |
| 2 | ARS-BFGL-NGS-116941    | 0         | 129738866 |
| 2 | ARS-BFGL-NGS-118140    | 0         | 129768904 |
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| 2 | Hapmap50985-BTA-49760  | 0         | 129882579 |
| 2 | ARS-BFGL-NGS-36151     | 0         | 129927678 |
| 2 | ARS-BFGL-NGS-23410     | 129947923 |           |
| 2 | ARS-BFGL-NGS-102007    | 0         | 130031069 |
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| 2 | ARS-BFGL-NGS-33709     | 0         | 130187033 |
| 2 | ARS-BFGL-NGS-119522    | 0         | 130219244 |
| 2 | ARS-BFGL-NGS-22750     | 0         | 130328684 |
| 2 | BTA-49776-no-rs        | 0         | 130358203 |
| 2 | Hapmap24409-BTA-49777  | 0         | 130397114 |
| 2 | ARS-BFGL-NGS-106346    | 0         | 130452409 |
| 2 | ARS-BFGL-NGS-56131     | 0         | 130511453 |
| 2 | ARS-BFGL-NGS-63923     | 0         | 130613164 |
| 2 | ARS-BFGL-NGS-39631     | 0         | 130652581 |
| 2 | Hapmap49195-BTA-49787  | 0         | 130676014 |
| 2 | ARS-BFGL-NGS-118362    | 0         | 130754721 |
| 2 | ARS-BFGL-NGS-104608    | 0         | 130786495 |
| 2 | ARS-BFGL-NGS-114524    | 0         | 130850007 |
| 2 | ARS-BFGL-NGS-65958     | 0         | 130881681 |
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| 2 | ARS-BFGL-NGS-14778     | 0         | 131089397 |
| 2 | ARS-BFGL-NGS-27535     | 0         | 131135560 |
| 2 | ARS-BFGL-NGS-39547     | 0         | 131160353 |
| 2 | ARS-BFGL-NGS-60058     | 0         | 131196339 |
| 2 | Hapmap38604-BTA-49811  | 0         | 131242404 |
| 2 | ARS-BFGL-NGS-22860     | 131269032 |           |
| 2 | ARS-BFGL-NGS-44323     | 0         | 131305612 |
| 2 | BTB-00117379           | 0         | 131325971 |



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| 2 | ARS-BFGL-NGS-30621     | 0 | 131539751 |
| 2 | BTA-114983-no-rs       | 0 | 131589276 |
| 2 | BTB-01230813           | 0 | 131663402 |
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| 2 | ARS-BFGL-NGS-18713     | 0 | 131734005 |
| 2 | BTB-01230903           | 0 | 131754525 |
| 2 | ARS-BFGL-NGS-35482     | 0 | 131780984 |
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| 2 | ARS-BFGL-NGS-105785    | 0 | 131968682 |
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| 2 | Hapmap51459-BTA-49829  | 0 | 132170155 |
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| 2 | BTA-49847-no-rs        | 0 | 132404449 |
| 2 | ARS-BFGL-NGS-110419    | 0 | 132426982 |
| 2 | BTB-00118121           | 0 | 132476872 |
| 2 | BTB-00688407           | 0 | 132517108 |
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| 2 | ARS-BFGL-NGS-10870     | 0 | 133019470 |
| 2 | BTB-01734946           | 0 | 133043817 |
| 2 | ARS-BFGL-NGS-116376    | 0 | 133075404 |
| 2 | ARS-BFGL-NGS-110442    | 0 | 133112506 |
| 2 | ARS-BFGL-NGS-89509     | 0 | 133210731 |
| 2 | ARS-BFGL-NGS-113511    | 0 | 133236851 |
| 2 | ARS-BFGL-NGS-39399     | 0 | 133258339 |
| 2 | ARS-BFGL-NGS-55823     | 0 | 133297791 |
| 2 | ARS-BFGL-NGS-22876     | 0 | 133403110 |
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| 2 | ARS-BFGL-NGS-88930     | 0 | 133568950 |
| 2 | ARS-BFGL-NGS-110390    | 0 | 133599634 |
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| 2 | ARS-BFGL-NGS-40768     | 0 | 133699531 |

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| 2 | BTB-00107514           | 0         | 133765521 |
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| 2 | ARS-BFGL-NGS-95583     | 0         | 134333230 |
| 2 | ARS-BFGL-NGS-86145     | 0         | 134355559 |
| 2 | ARS-BFGL-NGS-60573     | 0         | 134388958 |
| 2 | ARS-BFGL-NGS-73961     | 0         | 134422281 |
| 2 | ARS-BFGL-NGS-112835    | 0         | 134444007 |
| 2 | BTA-48701-no-rs        | 0         | 134465054 |
| 2 | ARS-BFGL-NGS-113378    | 0         | 134486603 |
| 2 | ARS-BFGL-NGS-33064     | 0         | 134553463 |
| 2 | Hapmap48784-BTA-48699  | 0         | 134590430 |
| 2 | ARS-BFGL-NGS-10134     | 0         | 134632287 |
| 2 | ARS-BFGL-NGS-78690     | 0         | 134666324 |
| 2 | ARS-BFGL-NGS-36536     | 0         | 134702903 |
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| 2 | ARS-BFGL-NGS-63440     | 0         | 134792816 |
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| 2 | ARS-BFGL-NGS-110388    | 0         | 134922862 |
| 2 | ARS-BFGL-NGS-17681     | 0         | 134964271 |
| 2 | ARS-BFGL-NGS-55916     | 0         | 134985418 |
| 2 | BTA-52274-no-rs        | 0         | 135011539 |
| 2 | ARS-BFGL-NGS-31609     | 0         | 135036231 |
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| 2 | ARS-BFGL-NGS-24053     | 0         | 135138292 |
| 2 | BTA-48655-no-rs        | 0         | 135167307 |
| 2 | ARS-BFGL-NGS-67260     | 0         | 135190642 |
| 2 | ARS-BFGL-NGS-17276     | 0         | 135268418 |
| 2 | ARS-BFGL-NGS-10660     | 135326169 |           |
| 2 | ARS-BFGL-NGS-102755    | 0         | 135347580 |
| 2 | ARS-BFGL-NGS-111732    | 0         | 135373581 |
| 2 | BTB-01349174           | 0         | 135378292 |
| 2 | BTA-26833-no-rs        | 0         | 135433480 |
| 2 | BTB-01349081           | 0         | 135466648 |
| 2 | ARS-BFGL-NGS-97851     | 0         | 135491609 |
| 2 | ARS-BFGL-NGS-59235     | 0         | 135642360 |
| 2 | ARS-BFGL-NGS-68682     | 0         | 135672325 |
| 2 | ARS-BFGL-NGS-22059     | 0         | 135697526 |

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| 2 | ARS-BFGL-NGS-36460               | 0 | 135723087 |           |
| 2 | ARS-BFGL-NGS-54440               |   | 135751326 |           |
| 2 | BTB-01367355                     | 0 | 135779233 |           |
| 2 | Hapmap36167-SCAFFOLD110080_39281 | 0 |           | 135858593 |
| 2 | ARS-BFGL-NGS-105413              | 0 | 135879731 |           |
| 2 | ARS-BFGL-NGS-65879               | 0 | 135903459 |           |
| 2 | ARS-BFGL-NGS-26450               |   | 135926465 |           |
| 2 | ARS-BFGL-NGS-110452              | 0 | 135946704 |           |
| 2 | ARS-BFGL-NGS-63882               | 0 | 135994305 |           |
| 2 | Hapmap49560-BTA-29329            | 0 | 136044919 |           |
| 2 | ARS-BFGL-NGS-23973               | 0 | 136065477 |           |
| 2 | ARS-BFGL-NGS-37352               | 0 | 136101696 |           |
| 2 | ARS-BFGL-NGS-108902              | 0 | 136128658 |           |
| 2 | ARS-BFGL-NGS-116288              | 0 | 136165185 |           |
| 2 | ARS-BFGL-NGS-102467              | 0 | 136188090 |           |
| 2 | Hapmap52845-rs29027154           | 0 | 136224289 |           |
| 2 | ARS-BFGL-NGS-14555               | 0 | 136248228 |           |
| 2 | ARS-BFGL-NGS-118957              | 0 | 136305920 |           |
| 2 | BTB-00116992                     | 0 | 136386853 |           |
| 2 | Hapmap30228-BTA-134737           | 0 | 136410393 |           |
| 2 | ARS-BFGL-NGS-18350               | 0 | 136437458 |           |
| 2 | BTB-00117283                     | 0 | 136461239 |           |
| 2 | ARS-BFGL-NGS-116761              | 0 | 136483623 |           |
| 2 | ARS-BFGL-NGS-74658               | 0 | 136531159 |           |
| 2 | BTA-49896-no-rs                  | 0 | 136664258 |           |
| 2 | BTB-00118945                     | 0 | 136674553 |           |
| 3 | Hapmap42163-BTA-27347            | 0 | 259213    |           |
| 3 | ARS-BFGL-NGS-21290               |   | 306322    |           |
| 3 | ARS-BFGL-NGS-102079              | 0 | 402602    |           |
| 3 | Hapmap52622-rs29010435           | 0 | 535711    |           |
| 3 | ARS-BFGL-NGS-64689               | 0 | 567542    |           |
| 3 | Hapmap51852-BTA-69630            | 0 | 628574    |           |
| 3 | Hapmap41062-BTA-68921            | 0 | 709349    |           |
| 3 | ARS-BFGL-NGS-67047               | 0 | 787371    |           |
| 3 | Hapmap42634-BTA-68567            | 0 | 883580    |           |
| 3 | ARS-BFGL-NGS-112252              | 0 | 932938    |           |
| 3 | BTA-68271-no-rs                  | 0 | 970386    |           |
| 3 | ARS-BFGL-NGS-15882               | 0 | 991777    |           |
| 3 | Hapmap47698-BTA-67920            | 0 | 1014984   |           |
| 3 | ARS-BFGL-NGS-104680              | 0 | 1079354   |           |
| 3 | BTA-67713-no-rs                  | 0 | 1103729   |           |
| 3 | ARS-BFGL-NGS-104064              | 0 | 1132726   |           |
| 3 | ARS-BFGL-NGS-100744              | 0 | 1223441   |           |
| 3 | ARS-BFGL-NGS-32185               | 0 | 1310626   |           |
| 3 | Hapmap33009-BTA-140874           | 0 | 1507502   |           |
| 3 | Hapmap36815-SCAFFOLD195739_3723  | 0 |           | 1548130   |
| 3 | BTA-67311-no-rs                  | 0 | 1582296   |           |
| 3 | ARS-BFGL-NGS-117571              | 0 | 1622548   |           |
| 3 | ARS-BFGL-NGS-81937               | 0 | 1686320   |           |
| 3 | ARS-BFGL-NGS-55261               | 0 | 1737421   |           |
| 3 | ARS-BFGL-NGS-22647               | 0 | 1779182   |           |
| 3 | ARS-BFGL-NGS-15921               | 0 | 1843353   |           |
| 3 | Hapmap42630-BTA-67480            | 0 | 1916325   |           |
| 3 | ARS-BFGL-NGS-654                 | 0 | 1937626   |           |

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| 3 | Hapmap42631-BTA-67529                 | 0       | 1979194 |   |         |
| 3 | ARS-BFGL-NGS-106194                   | 0       | 2025015 |   |         |
| 3 | ARS-BFGL-NGS-18912                    | 0       | 2079164 |   |         |
| 3 | ARS-BFGL-NGS-103585                   | 0       | 2108535 |   |         |
| 3 | ARS-BFGL-NGS-104816                   | 0       | 2142981 |   |         |
| 3 | BTA-122370-no-rs                      | 0       | 2188546 |   |         |
| 3 | Hapmap38375-BTA-108207                | 0       | 2219585 |   |         |
| 3 | Hapmap39193-BTA-108208                | 0       | 2255818 |   |         |
| 3 | Hapmap44439-BTA-108216                | 0       | 2390095 |   |         |
| 3 | Hapmap42796-BTA-108223                | 0       | 2449969 |   |         |
| 3 | ARS-BFGL-NGS-65445                    | 0       | 2509595 |   |         |
| 3 | ARS-BFGL-NGS-112097                   | 0       | 2621602 |   |         |
| 3 | ARS-BFGL-NGS-27126                    | 0       | 2736992 |   |         |
| 3 | INRA-516                              | 0       | 2758916 |   |         |
| 3 | ARS-BFGL-NGS-70807                    | 0       | 2786211 |   |         |
| 3 | ARS-BFGL-NGS-38656                    | 0       | 2848806 |   |         |
| 3 | ARS-BFGL-NGS-27655                    | 0       | 3017659 |   |         |
| 3 | ARS-BFGL-NGS-23958                    | 0       | 3050190 |   |         |
| 3 | ARS-BFGL-NGS-42460                    | 3105030 |         |   |         |
| 3 | ARS-USMARC-Parent-DQ422950-rs29012306 | 0       |         | 0 | 3129167 |
| 3 | Hapmap32813-BTA-140901                | 0       | 3231882 |   |         |
| 3 | ARS-BFGL-NGS-56798                    | 0       | 3296452 |   |         |
| 3 | ARS-BFGL-NGS-55588                    | 0       | 3320855 |   |         |
| 3 | INRA-483                              | 0       | 3397426 |   |         |
| 3 | ARS-BFGL-NGS-37900                    | 0       | 3424295 |   |         |
| 3 | ARS-BFGL-NGS-100433                   | 0       | 3471942 |   |         |
| 3 | ARS-BFGL-NGS-114557                   | 0       | 3498914 |   |         |
| 3 | ARS-BFGL-NGS-71702                    | 0       | 3537330 |   |         |
| 3 | Hapmap49267-BTA-67976                 | 0       | 3573643 |   |         |
| 3 | BTA-121571-no-rs                      | 0       | 3634590 |   |         |
| 3 | ARS-BFGL-NGS-66946                    | 0       | 3677073 |   |         |
| 3 | ARS-BFGL-NGS-35211                    | 0       | 3723881 |   |         |
| 3 | ARS-BFGL-NGS-36590                    | 0       | 3743710 |   |         |
| 3 | BTA-115986-no-rs                      | 0       | 3765987 |   |         |
| 3 | ARS-BFGL-NGS-84867                    | 0       | 3819653 |   |         |
| 3 | ARS-BFGL-NGS-11138                    | 0       | 3856300 |   |         |
| 3 | BTB-01214837                          | 0       | 3963449 |   |         |
| 3 | BTB-01214798                          | 0       | 4001307 |   |         |
| 3 | INRA-600                              | 0       | 4078744 |   |         |
| 3 | INRA-603                              | 0       | 4099239 |   |         |
| 3 | BTB-01769418                          | 0       | 4180412 |   |         |
| 3 | BTB-01214581                          | 0       | 4224017 |   |         |
| 3 | Hapmap44676-BTA-111644                | 0       | 4250870 |   |         |
| 3 | ARS-BFGL-NGS-17527                    | 0       | 4279731 |   |         |
| 3 | BTB-01214467                          | 0       | 4335766 |   |         |
| 3 | Hapmap46931-BTA-111633                | 0       | 4360180 |   |         |
| 3 | ARS-BFGL-NGS-112520                   | 0       | 4410951 |   |         |
| 3 | Hapmap1583-BTA-111660                 | 0       | 4447509 |   |         |
| 3 | ARS-BFGL-NGS-37237                    | 0       | 4475884 |   |         |
| 3 | BTB-01539152                          | 0       | 4522681 |   |         |
| 3 | BTB-01539168                          | 0       | 4573400 |   |         |
| 3 | Hapmap47843-BTA-115636                | 0       | 4632910 |   |         |
| 3 | Hapmap49464-BTA-115633                | 0       | 4668818 |   |         |
| 3 | BTB-01594939                          | 0       | 4707819 |   |         |

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| 3 | Hapmap39882-BTA-106655 | 0       | 4741110 |
| 3 | Hapmap49006-BTA-106656 | 0       | 4781277 |
| 3 | ARS-BFGL-NGS-76520     | 4828827 |         |
| 3 | ARS-BFGL-NGS-81031     | 0       | 4861761 |
| 3 | ARS-BFGL-NGS-113026    | 0       | 4924001 |
| 3 | INRA-661               | 0       | 4968828 |
| 3 | ARS-BFGL-NGS-118372    | 0       | 5056069 |
| 3 | BTA-29639-no-rs        | 0       | 5156247 |
| 3 | BTB-01891083           | 0       | 5202305 |
| 3 | BTB-01234759           | 0       | 5227519 |
| 3 | ARS-BFGL-NGS-119492    | 0       | 5262660 |
| 3 | BTB-01234863           | 0       | 5306081 |
| 3 | BTB-02093457           | 0       | 5347767 |
| 3 | BTB-01745829           | 0       | 5378650 |
| 3 | ARS-BFGL-NGS-13674     | 0       | 5421419 |
| 3 | Hapmap49710-BTA-68634  | 0       | 5467039 |
| 3 | ARS-BFGL-NGS-81166     | 0       | 5505466 |
| 3 | BTA-14976-no-rs        | 0       | 5552259 |
| 3 | Hapmap54825-rs29027025 | 0       | 5677391 |
| 3 | BTB-01338216           | 0       | 5720629 |
| 3 | BTA-30089-no-rs        | 0       | 5757132 |
| 3 | BTA-25432-no-rs        | 0       | 5804604 |
| 3 | BTA-21472-no-rs        | 0       | 5886143 |
| 3 | BTB-01862604           | 0       | 5909921 |
| 3 | BTA-68843-no-rs        | 0       | 5940341 |
| 3 | Hapmap25263-BTA-140958 | 0       | 5972716 |
| 3 | BTA-68856-no-rs        | 0       | 6022937 |
| 3 | BTB-00121290           | 0       | 6046690 |
| 3 | BTB-01333253           | 0       | 6126856 |
| 3 | BTB-01333281           | 0       | 6156825 |
| 3 | ARS-BFGL-NGS-26988     | 0       | 6183874 |
| 3 | ARS-BFGL-NGS-114131    | 0       | 6217109 |
| 3 | INRA-222               | 0       | 6365877 |
| 3 | BTB-01678000           | 0       | 6397409 |
| 3 | BTB-01678060           | 0       | 6421871 |
| 3 | BTB-00296101           | 0       | 6443358 |
| 3 | BTB-00296182           | 0       | 6480313 |
| 3 | Hapmap31813-BTA-155869 | 0       | 6510652 |
| 3 | BTA-110709-no-rs       | 0       | 6546124 |
| 3 | ARS-BFGL-NGS-116469    | 0       | 6614779 |
| 3 | BTA-68965-no-rs        | 0       | 6665135 |
| 3 | Hapmap42294-BTA-69421  | 0       | 6716282 |
| 3 | ARS-BFGL-NGS-72790     | 6745189 |         |
| 3 | ARS-BFGL-NGS-113472    | 0       | 6765932 |
| 3 | Hapmap54926-ss46526189 | 0       | 6900453 |
| 3 | Hapmap48052-BTA-69153  | 0       | 6974248 |
| 3 | Hapmap50758-BTA-69128  | 0       | 7001251 |
| 3 | BTA-69126-no-rs        | 0       | 7052779 |
| 3 | ARS-BFGL-NGS-112786    | 0       | 7147596 |
| 3 | ARS-BFGL-NGS-104594    | 0       | 7233318 |
| 3 | ARS-BFGL-NGS-101921    | 0       | 7371235 |
| 3 | BTA-88009-no-rs        | 0       | 7391544 |
| 3 | ARS-BFGL-NGS-25819     | 0       | 7416886 |
| 3 | Hapmap32868-BTA-161473 | 0       | 7446399 |

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| 3 | ARS-BFGL-NGS-21885             | 0 | 7488354  |         |
| 3 | ARS-BFGL-NGS-60242             | 0 | 7505847  |         |
| 3 | Hapmap34025-BES5_Contig212_565 | 0 |          | 7544991 |
| 3 | BTA-66930-no-rs                | 0 | 7743337  |         |
| 3 | ARS-BFGL-NGS-59560             |   | 7866803  |         |
| 3 | ARS-BFGL-NGS-112616            | 0 | 7906099  |         |
| 3 | INRA-345                       | 0 | 7928589  |         |
| 3 | Hapmap48430-BTA-66944          | 0 | 7983149  |         |
| 3 | INRA-636                       | 0 | 8021336  |         |
| 3 | ARS-BFGL-NGS-13090             | 0 | 8152513  |         |
| 3 | INRA-442                       | 0 | 8250205  |         |
| 3 | ARS-BFGL-NGS-52490             |   | 8346751  |         |
| 3 | Hapmap58601-rs29027882         | 0 | 8391057  |         |
| 3 | ARS-BFGL-NGS-86173             | 0 | 8602704  |         |
| 3 | ARS-BFGL-NGS-30351             | 0 | 8716142  |         |
| 3 | Hapmap58440-rs29021593         | 0 | 8826739  |         |
| 3 | INRA-414                       | 0 | 8855217  |         |
| 3 | Hapmap23285-BTA-163492         | 0 | 8898108  |         |
| 3 | BTA-93783-no-rs                | 0 | 8964885  |         |
| 3 | Hapmap39362-BTA-95002          | 0 | 9077425  |         |
| 3 | ARS-BFGL-NGS-97347             | 0 | 9347514  |         |
| 3 | ARS-BFGL-NGS-113990            | 0 | 9461404  |         |
| 3 | ARS-BFGL-NGS-108869            | 0 | 9528564  |         |
| 3 | INRA-304                       | 0 | 9579325  |         |
| 3 | ARS-BFGL-NGS-18442             | 0 | 9610758  |         |
| 3 | ARS-BFGL-NGS-105595            | 0 | 9658384  |         |
| 3 | ARS-BFGL-NGS-10140             |   | 9686101  |         |
| 3 | ARS-BFGL-NGS-94819             | 0 | 9722400  |         |
| 3 | ARS-BFGL-NGS-113388            | 0 | 9751086  |         |
| 3 | ARS-BFGL-NGS-85870             |   | 9788285  |         |
| 3 | ARS-BFGL-NGS-118428            | 0 | 9810337  |         |
| 3 | ARS-BFGL-NGS-55688             | 0 | 9836846  |         |
| 3 | ARS-BFGL-NGS-61631             | 0 | 9895847  |         |
| 3 | ARS-BFGL-NGS-26940             |   | 9980184  |         |
| 3 | ARS-BFGL-NGS-27948             | 0 | 10000411 |         |
| 3 | ARS-BFGL-NGS-112230            | 0 | 10020971 |         |
| 3 | ARS-BFGL-NGS-40088             | 0 | 10060380 |         |
| 3 | Hapmap31432-BTA-140949         | 0 | 10098214 |         |
| 3 | ARS-BFGL-NGS-69570             |   | 10144138 |         |
| 3 | ARS-BFGL-NGS-103878            | 0 | 10197292 |         |
| 3 | BTA-69900-no-rs                | 0 | 10241362 |         |
| 3 | ARS-BFGL-NGS-116710            | 0 | 10295669 |         |
| 3 | Hapmap38381-BTA-117032         | 0 | 10353611 |         |
| 3 | ARS-BFGL-NGS-70744             | 0 | 10422377 |         |
| 3 | ARS-BFGL-NGS-740               | 0 | 10518195 |         |
| 3 | ARS-BFGL-NGS-118684            | 0 | 10574946 |         |
| 3 | ARS-BFGL-NGS-25382             | 0 | 10619258 |         |
| 3 | Hapmap40339-BTA-117016         | 0 | 10640386 |         |
| 3 | ARS-BFGL-NGS-23174             | 0 | 10660524 |         |
| 3 | ARS-BFGL-NGS-73929             | 0 | 10713470 |         |
| 3 | ARS-BFGL-NGS-87298             | 0 | 10746542 |         |
| 3 | ARS-BFGL-NGS-78159             | 0 | 10876415 |         |
| 3 | Hapmap39956-BTA-94317          | 0 | 10956984 |         |
| 3 | ARS-BFGL-NGS-23250             | 0 | 11040167 |         |

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| 3 | ARS-BFGL-NGS-101769    | 0        | 11105182 |
| 3 | Hapmap49050-BTA-119760 | 0        | 11129475 |
| 3 | ARS-BFGL-NGS-33062     | 0        | 11230921 |
| 3 | ARS-BFGL-NGS-90596     | 0        | 11339138 |
| 3 | BTA-119329-no-rs       | 0        | 11418405 |
| 3 | Hapmap47900-BTA-26234  | 0        | 11539490 |
| 3 | BTA-26230-no-rs        | 0        | 11563040 |
| 3 | Hapmap45266-BTA-26244  | 0        | 11674665 |
| 3 | ARS-BFGL-NGS-104320    | 0        | 11696849 |
| 3 | ARS-BFGL-NGS-109482    | 0        | 11740431 |
| 3 | BTA-91502-no-rs        | 0        | 11770282 |
| 3 | ARS-BFGL-NGS-25865     | 0        | 11937022 |
| 3 | Hapmap23599-BTA-152192 | 0        | 12099224 |
| 3 | Hapmap56299-rs29010540 | 0        | 12288724 |
| 3 | ARS-BFGL-NGS-36635     | 0        | 12312362 |
| 3 | Hapmap54084-rs29012865 | 0        | 12339849 |
| 3 | ARS-BFGL-NGS-37422     | 0        | 12437424 |
| 3 | ARS-BFGL-NGS-18190     | 12475989 |          |
| 3 | ARS-BFGL-NGS-38423     | 0        | 12709854 |
| 3 | Hapmap60323-rs29014816 | 0        | 12733716 |
| 3 | Hapmap59741-rs29016987 | 0        | 12824913 |
| 3 | ARS-BFGL-NGS-20009     | 0        | 12917444 |
| 3 | ARS-BFGL-NGS-69320     | 13046630 |          |
| 3 | ARS-BFGL-NGS-103120    | 0        | 13080516 |
| 3 | ARS-BFGL-NGS-16268     | 0        | 13109132 |
| 3 | ARS-BFGL-NGS-100336    | 0        | 13148505 |
| 3 | ARS-BFGL-NGS-26099     | 0        | 13217260 |
| 3 | ARS-BFGL-NGS-106179    | 0        | 13261355 |
| 3 | ARS-BFGL-NGS-33740     | 13474988 |          |
| 3 | ARS-BFGL-NGS-106490    | 0        | 13635591 |
| 3 | ARS-BFGL-NGS-108231    | 0        | 13657562 |
| 3 | ARS-BFGL-NGS-119921    | 0        | 13704030 |
| 3 | Hapmap53387-rs29010859 | 0        | 13779538 |
| 3 | BTA-12976-rs29024920   | 0        | 13842528 |
| 3 | ARS-BFGL-NGS-13160     | 13974787 |          |
| 3 | UA-IFASA-8925          | 0        | 14084731 |
| 3 | ARS-BFGL-NGS-75039     | 0        | 14106331 |
| 3 | Hapmap53344-ss46526153 | 0        | 14139949 |
| 3 | ARS-BFGL-NGS-73625     | 0        | 14218748 |
| 3 | Hapmap43906-BTA-66658  | 0        | 14273135 |
| 3 | ARS-BFGL-NGS-26797     | 0        | 14321565 |
| 3 | ARS-BFGL-NGS-16812     | 0        | 14589894 |
| 3 | ARS-BFGL-NGS-99010     | 0        | 14627679 |
| 3 | ARS-BFGL-NGS-84180     | 0        | 14674365 |
| 3 | Hapmap54039-ss46526101 | 0        | 14695941 |
| 3 | ARS-BFGL-NGS-110659    | 0        | 14727035 |
| 3 | INRA-232               | 0        | 14763882 |
| 3 | ARS-BFGL-NGS-10423     | 0        | 14791163 |
| 3 | Hapmap44611-BTA-66646  | 0        | 14811080 |
| 3 | Hapmap60445-rs29011589 | 0        | 14884969 |
| 3 | ARS-BFGL-NGS-107249    | 0        | 14919029 |
| 3 | BTA-66651-no-rs        | 0        | 14938161 |
| 3 | ARS-BFGL-NGS-102327    | 0        | 14992057 |
| 3 | ARS-BFGL-NGS-106009    | 0        | 15145012 |

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| 3 | ARS-BFGL-NGS-13586               | 0        | 15380518 |  |
| 3 | ARS-BFGL-NGS-91310               | 0        | 15404930 |  |
| 3 | ARS-BFGL-NGS-13057               | 0        | 15425797 |  |
| 3 | ARS-BFGL-NGS-113318              | 0        | 15466136 |  |
| 3 | Hapmap42643-BTA-69885            | 0        | 15498530 |  |
| 3 | ARS-BFGL-NGS-64215               | 0        | 15525599 |  |
| 3 | ARS-BFGL-NGS-79362               | 0        | 15600100 |  |
| 3 | ARS-BFGL-NGS-112579              | 0        | 15658202 |  |
| 3 | ARS-BFGL-NGS-95132               | 0        | 15724767 |  |
| 3 | ARS-BFGL-NGS-42677               | 0        | 15791927 |  |
| 3 | ARS-BFGL-NGS-54121               | 0        | 15818013 |  |
| 3 | ARS-BFGL-NGS-18525               | 0        | 15904420 |  |
| 3 | ARS-BFGL-NGS-91059               | 0        | 15950208 |  |
| 3 | Hapmap40793-BTA-69866            | 0        | 15984265 |  |
| 3 | Hapmap26961-BTA-141000           | 0        | 16005138 |  |
| 3 | Hapmap27869-BTA-140998           | 0        | 16038595 |  |
| 3 | Hapmap39423-BTA-69854            | 0        | 16072682 |  |
| 3 | ARS-BFGL-NGS-37429               | 0        | 16097418 |  |
| 3 | ARS-BFGL-NGS-37224               | 0        | 16152133 |  |
| 3 | ARS-BFGL-NGS-10941               | 0        | 16179998 |  |
| 3 | ARS-BFGL-NGS-67760               | 16279733 |          |  |
| 3 | BTA-69738-no-rs                  | 0        | 16323013 |  |
| 3 | ARS-BFGL-NGS-18590               | 16376596 |          |  |
| 3 | ARS-BFGL-NGS-100248              | 0        | 16400127 |  |
| 3 | BTA-69696-no-rs                  | 0        | 16444546 |  |
| 3 | ARS-BFGL-NGS-41579               | 0        | 16533823 |  |
| 3 | ARS-BFGL-NGS-20167               | 0        | 16557950 |  |
| 3 | BTA-69575-no-rs                  | 0        | 16727329 |  |
| 3 | Hapmap44275-BTA-69573            | 0        | 16734445 |  |
| 3 | ARS-BFGL-NGS-17180               | 16772763 |          |  |
| 3 | Hapmap56996-rs29010816           | 0        | 16881296 |  |
| 3 | ARS-BFGL-NGS-76278               | 0        | 16983842 |  |
| 3 | Hapmap58478-rs29015763           | 0        | 17160057 |  |
| 3 | BTA-67160-no-rs                  | 0        | 17195924 |  |
| 3 | Hapmap41052-BTA-67164            | 0        | 17241980 |  |
| 3 | BTA-67276-no-rs                  | 0        | 17280333 |  |
| 3 | BTA-103528-no-rs                 | 0        | 17319185 |  |
| 3 | BTA-121572-no-rs                 | 0        | 17681439 |  |
| 3 | Hapmap34129-BES11_Contig277_1586 | 0        | 18062515 |  |
| 3 | ARS-BFGL-NGS-32868               | 0        | 18221204 |  |
| 3 | ARS-BFGL-NGS-97793               | 0        | 18299769 |  |
| 3 | ARS-BFGL-NGS-92168               | 0        | 18320912 |  |
| 3 | ARS-BFGL-NGS-82767               | 0        | 18374455 |  |
| 3 | ARS-BFGL-NGS-11615               | 0        | 18520392 |  |
| 3 | ARS-BFGL-NGS-42701               | 0        | 18549536 |  |
| 3 | BTA-66810-no-rs                  | 0        | 18575518 |  |
| 3 | ARS-BFGL-NGS-102388              | 0        | 18607477 |  |
| 3 | ARS-BFGL-NGS-17105               | 0        | 18649247 |  |
| 3 | Hapmap39500-BTA-66798            | 0        | 18707269 |  |
| 3 | ARS-BFGL-NGS-32244               | 0        | 18769778 |  |
| 3 | Hapmap54330-rs29010082           | 0        | 18819153 |  |
| 3 | ARS-BFGL-NGS-52272               | 0        | 18950151 |  |
| 3 | ARS-BFGL-NGS-81281               | 0        | 19014016 |  |
| 3 | INRA-404                         | 0        | 19048207 |  |



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| 3 | ARS-BFGL-NGS-109685                   | 0        | 19093097 |          |  |
| 3 | INRA-234                              | 0        | 19125506 |          |  |
| 3 | BTA-66824-no-rs                       | 0        | 19193451 |          |  |
| 3 | INRA-453                              | 0        | 19248260 |          |  |
| 3 | ARS-BFGL-NGS-34169                    | 0        | 19309220 |          |  |
| 3 | ARS-BFGL-NGS-13158                    | 0        | 19337220 |          |  |
| 3 | ARS-BFGL-NGS-115915                   | 0        | 19378254 |          |  |
| 3 | INRA-371                              | 0        | 19407948 |          |  |
| 3 | ARS-BFGL-NGS-59223                    | 0        | 19439806 |          |  |
| 3 | Hapmap50435-BTA-66860                 | 0        | 19536825 |          |  |
| 3 | ARS-BFGL-NGS-107446                   | 0        | 19666876 |          |  |
| 3 | Hapmap41612-BTA-66863                 | 0        | 19693073 |          |  |
| 3 | ARS-BFGL-NGS-61739                    | 0        | 19818747 |          |  |
| 3 | INRA-533                              | 0        | 19860064 |          |  |
| 3 | UA-IFASA-7892                         | 0        | 19995119 |          |  |
| 3 | Hapmap35248-BES5_Contig554_1101       | 0        |          | 20031136 |  |
| 3 | ARS-BFGL-NGS-100210                   | 0        | 20208987 |          |  |
| 3 | INRA-269                              | 0        | 20401061 |          |  |
| 3 | Hapmap38688-BTA-66886                 | 0        | 20480189 |          |  |
| 3 | ARS-BFGL-NGS-36889                    | 0        | 20501858 |          |  |
| 3 | INRA-683                              | 0        | 20575574 |          |  |
| 3 | ARS-BFGL-NGS-76744                    | 0        | 20652293 |          |  |
| 3 | Hapmap55417-ss46527060                | 0        | 20773550 |          |  |
| 3 | ARS-BFGL-NGS-108054                   | 0        | 20851197 |          |  |
| 3 | ARS-BFGL-NGS-114725                   | 0        | 20970383 |          |  |
| 3 | ARS-BFGL-NGS-97101                    | 0        | 21128533 |          |  |
| 3 | ARS-USMARC-Parent-DQ647187-rs29010510 | 0        |          | 21146877 |  |
| 3 | ARS-BFGL-NGS-100163                   | 0        | 21160365 |          |  |
| 3 | ARS-BFGL-NGS-62323                    | 0        | 21371931 |          |  |
| 3 | ARS-BFGL-NGS-82576                    | 0        | 21425525 |          |  |
| 3 | Hapmap49491-BTA-121574                | 0        | 21442043 |          |  |
| 3 | Hapmap59143-ss46526687                | 0        | 21489190 |          |  |
| 3 | INRA-274                              | 0        | 21549827 |          |  |
| 3 | ARS-BFGL-NGS-18382                    | 0        | 21587811 |          |  |
| 3 | ARS-BFGL-NGS-114746                   | 0        | 21640254 |          |  |
| 3 | ARS-BFGL-NGS-74921                    | 0        | 21683257 |          |  |
| 3 | ARS-BFGL-NGS-24326                    | 0        | 21718092 |          |  |
| 3 | INRA-584                              | 0        | 21776587 |          |  |
| 3 | Hapmap41329-BTA-66828                 | 0        | 21798101 |          |  |
| 3 | Hapmap28162-BTA-141102                | 0        | 21821749 |          |  |
| 3 | ARS-BFGL-NGS-99338                    | 0        | 21869985 |          |  |
| 3 | ARS-BFGL-NGS-34492                    | 0        | 21925238 |          |  |
| 3 | Hapmap23289-BTA-66836                 | 0        | 21963782 |          |  |
| 3 | ARS-BFGL-NGS-66750                    | 21984640 |          |          |  |
| 3 | Hapmap34896-BES2_Contig311_734        | 0        |          | 22069239 |  |
| 3 | ARS-BFGL-NGS-117867                   | 0        | 22115328 |          |  |
| 3 | INRA-565                              | 0        | 22148716 |          |  |
| 3 | ARS-BFGL-NGS-104522                   | 0        | 22175476 |          |  |
| 3 | ARS-BFGL-NGS-102139                   | 0        | 22235265 |          |  |
| 3 | Hapmap60947-rs29019824                | 0        | 22326368 |          |  |
| 3 | INRA-257                              | 0        | 22487111 |          |  |
| 3 | Hapmap48042-BTA-66967                 | 0        | 22508008 |          |  |
| 3 | ARS-BFGL-NGS-79371                    | 0        | 22550916 |          |  |
| 3 | Hapmap59299-rs29022370                | 0        | 22624014 |          |  |

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| 3 | Hapmap33860-BES7_Contig442_1439  | 0        | 22644111 |
| 3 | ARS-BFGL-NGS-41773               | 0        | 22674353 |
| 3 | ARS-BFGL-NGS-105811              | 0        | 22706379 |
| 3 | ARS-BFGL-NGS-34836               | 0        | 22921514 |
| 3 | ARS-BFGL-NGS-39443               | 0        | 22944367 |
| 3 | Hapmap26676-BTA-141146           | 0        | 22975725 |
| 3 | Hapmap45949-BTA-66899            | 0        | 23053518 |
| 3 | INRA-335                         | 0        | 23206319 |
| 3 | BTA-66912-no-rs                  | 0        | 23271534 |
| 3 | Hapmap51755-BTA-66918            | 0        | 23343692 |
| 3 | ARS-BFGL-NGS-24002               | 0        | 23479543 |
| 3 | BTA-86312-no-rs                  | 0        | 23521013 |
| 3 | Hapmap33753-BTA-141153           | 0        | 23534653 |
| 3 | Hapmap58023-ss46526193           | 0        | 23672381 |
| 3 | ARS-BFGL-NGS-14193               | 0        | 23710738 |
| 3 | BTA-66968-no-rs                  | 0        | 23737990 |
| 3 | Hapmap48431-BTA-66970            | 0        | 23764339 |
| 3 | ARS-BFGL-NGS-93677               | 0        | 23797219 |
| 3 | Hapmap26514-BTA-66981            | 0        | 23998164 |
| 3 | ARS-BFGL-NGS-28573               | 0        | 24081964 |
| 3 | INRA-289                         | 0        | 24149985 |
| 3 | INRA-630                         | 0        | 24214576 |
| 3 | ARS-BFGL-NGS-118132              | 0        | 24288407 |
| 3 | INRA-474                         | 0        | 24336036 |
| 3 | Hapmap26465-BTA-160174           | 0        | 24421734 |
| 3 | Hapmap25576-BTA-148174           | 0        | 24565910 |
| 3 | ARS-BFGL-NGS-98450               | 0        | 24612286 |
| 3 | Hapmap34737-BES11_Contig221_1196 | 0        | 24680337 |
| 3 | Hapmap53735-rs29018102           | 0        | 24745976 |
| 3 | Hapmap48174-BTA-108346           | 0        | 24799665 |
| 3 | BTA-108345-no-rs                 | 0        | 24825465 |
| 3 | ARS-BFGL-NGS-114548              | 0        | 25037858 |
| 3 | Hapmap54955-rs29010328           | 0        | 25123760 |
| 3 | Hapmap38962-BTA-49018            | 0        | 25170036 |
| 3 | Hapmap41492-BTA-26349            | 0        | 25252714 |
| 3 | Hapmap42160-BTA-26336            | 0        | 25338659 |
| 3 | Hapmap46744-BTA-03982            | 0        | 25368056 |
| 3 | ARS-BFGL-NGS-105385              | 0        | 25400391 |
| 3 | ARS-BFGL-NGS-87870               | 25458230 |          |
| 3 | ARS-BFGL-NGS-111769              | 0        | 25533765 |
| 3 | ARS-BFGL-NGS-23372               | 0        | 25569904 |
| 3 | ARS-BFGL-NGS-76525               | 0        | 25606097 |
| 3 | ARS-BFGL-NGS-118942              | 0        | 25654265 |
| 3 | ARS-BFGL-NGS-38830               | 25763148 |          |
| 3 | Hapmap48043-BTA-67009            | 0        | 25797339 |
| 3 | ARS-BFGL-NGS-45686               | 0        | 26031815 |
| 3 | ARS-BFGL-NGS-104248              | 0        | 26064913 |
| 3 | BTA-85212-no-rs                  | 0        | 26179728 |
| 3 | ARS-BFGL-NGS-112496              | 0        | 26212929 |
| 3 | INRA-287                         | 0        | 26244281 |
| 3 | UA-IFASA-699                     | 0        | 26331640 |
| 3 | Hapmap47694-BTA-67030            | 0        | 26358796 |
| 3 | ARS-BFGL-NGS-112843              | 0        | 26394698 |
| 3 | ARS-BFGL-NGS-81179               | 0        | 26417331 |

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| 3 | ARS-BFGL-NGS-115816    | 0        | 26438136 |
| 3 | ARS-BFGL-NGS-19938     | 0        | 26471814 |
| 3 | ARS-BFGL-NGS-40236     | 0        | 26496378 |
| 3 | ARS-BFGL-NGS-97373     | 0        | 26542891 |
| 3 | Hapmap53614-rs29011537 | 0        | 26589623 |
| 3 | ARS-BFGL-NGS-50540     | 26657734 |          |
| 3 | ARS-BFGL-NGS-112076    | 0        | 26684863 |
| 3 | ARS-BFGL-NGS-105342    | 0        | 26738133 |
| 3 | BTA-67015-no-rs        | 0        | 26797308 |
| 3 | ARS-BFGL-NGS-25246     | 0        | 26857944 |
| 3 | ARS-BFGL-NGS-111883    | 0        | 26914757 |
| 3 | Hapmap23648-BTA-159232 | 0        | 26949196 |
| 3 | ARS-BFGL-NGS-36823     | 0        | 26971936 |
| 3 | ARS-BFGL-NGS-18824     | 0        | 27014460 |
| 3 | ARS-BFGL-NGS-42733     | 0        | 27079121 |
| 3 | ARS-BFGL-NGS-111370    | 0        | 27115580 |
| 3 | ARS-BFGL-NGS-105333    | 0        | 27170513 |
| 3 | ARS-BFGL-NGS-15627     | 0        | 27215754 |
| 3 | Hapmap31109-BTA-141167 | 0        | 27266522 |
| 3 | ARS-BFGL-NGS-72372     | 0        | 27305129 |
| 3 | Hapmap49262-BTA-67094  | 0        | 27400611 |
| 3 | BTA-67090-no-rs        | 0        | 27461842 |
| 3 | Hapmap48432-BTA-67079  | 0        | 27501557 |
| 3 | Hapmap54189-rs29022505 | 0        | 27554640 |
| 3 | ARS-BFGL-NGS-90407     | 0        | 27600325 |
| 3 | ARS-BFGL-NGS-111848    | 0        | 27642301 |
| 3 | ARS-BFGL-NGS-26956     | 0        | 27698747 |
| 3 | ARS-BFGL-NGS-22908     | 0        | 27719287 |
| 3 | ARS-BFGL-NGS-68120     | 27775697 |          |
| 3 | ARS-BFGL-NGS-32344     | 0        | 27963904 |
| 3 | Hapmap49888-BTA-122624 | 0        | 28003019 |
| 3 | ARS-BFGL-NGS-33324     | 0        | 28061335 |
| 3 | INRA-454               | 0        | 28087347 |
| 3 | ARS-BFGL-NGS-117241    | 0        | 28144691 |
| 3 | ARS-BFGL-NGS-83702     | 0        | 28188297 |
| 3 | ARS-BFGL-NGS-28865     | 0        | 28350722 |
| 3 | Hapmap26402-BTA-141183 | 0        | 28461525 |
| 3 | ARS-BFGL-NGS-112694    | 0        | 28853229 |
| 3 | Hapmap59965-rs29021049 | 0        | 28978174 |
| 3 | ARS-BFGL-NGS-25569     | 0        | 29120058 |
| 3 | ARS-BFGL-NGS-26693     | 0        | 29155218 |
| 3 | ARS-BFGL-NGS-118212    | 0        | 29187683 |
| 3 | ARS-BFGL-NGS-12730     | 0        | 29210497 |
| 3 | BTA-67336-no-rs        | 0        | 29238010 |
| 3 | Hapmap52267-rs29027608 | 0        | 29308968 |
| 3 | ARS-BFGL-NGS-108661    | 0        | 29358344 |
| 3 | ARS-BFGL-NGS-113776    | 0        | 29405986 |
| 3 | ARS-BFGL-NGS-104159    | 0        | 29461800 |
| 3 | ARS-BFGL-NGS-78676     | 0        | 29484511 |
| 3 | ARS-BFGL-NGS-70801     | 0        | 29506260 |
| 3 | Hapmap57870-rs29020744 | 0        | 29551410 |
| 3 | INRA-658               | 0        | 29627982 |
| 3 | Hapmap51023-BTA-67162  | 0        | 29676375 |
| 3 | INRA-534               | 0        | 29739497 |

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| 3 | INRA-440                        | 0 | 29852694 |  |
| 3 | INRA-595                        | 0 | 29880508 |  |
| 3 | Hapmap46529-BTA-67163           | 0 | 29930084 |  |
| 3 | ARS-BFGL-NGS-23116              | 0 | 29972408 |  |
| 3 | ARS-BFGL-NGS-87081              | 0 | 30124307 |  |
| 3 | BTA-67261-no-rs                 | 0 | 30145106 |  |
| 3 | ARS-BFGL-NGS-37826              | 0 | 30194236 |  |
| 3 | Hapmap26232-BTA-67268           | 0 | 30264042 |  |
| 3 | UA-IFASA-9717                   | 0 | 30318611 |  |
| 3 | ARS-BFGL-NGS-28144              | 0 | 30348869 |  |
| 3 | Hapmap44422-BTA-90337           | 0 | 30385970 |  |
| 3 | BTA-90354-no-rs                 | 0 | 30409699 |  |
| 3 | Hapmap51923-BTA-90300           | 0 | 30479238 |  |
| 3 | BTA-90312-no-rs                 | 0 | 30501895 |  |
| 3 | BTA-90323-no-rs                 | 0 | 30568981 |  |
| 3 | BTA-67350-no-rs                 | 0 | 30593406 |  |
| 3 | Hapmap27668-BTA-67346           | 0 | 30629487 |  |
| 3 | ARS-BFGL-NGS-116953             | 0 | 30651178 |  |
| 3 | BTA-67345-no-rs                 | 0 | 30728145 |  |
| 3 | ARS-BFGL-NGS-86370              | 0 | 30756980 |  |
| 3 | ARS-BFGL-NGS-25438              | 0 | 30787701 |  |
| 3 | Hapmap43650-BTA-67344           | 0 | 30824422 |  |
| 3 | ARS-BFGL-NGS-113072             | 0 | 30853504 |  |
| 3 | Hapmap33584-BTA-141202          | 0 | 30922247 |  |
| 3 | BTB-00125265                    | 0 | 30963937 |  |
| 3 | INRA-641                        | 0 | 30988580 |  |
| 3 | BTA-100704-no-rs                | 0 | 31013438 |  |
| 3 | BTB-01523770                    | 0 | 31035370 |  |
| 3 | ARS-BFGL-NGS-72368              | 0 | 31063129 |  |
| 3 | ARS-BFGL-NGS-114461             | 0 | 31093495 |  |
| 3 | ARS-BFGL-NGS-119919             | 0 | 31131027 |  |
| 3 | ARS-BFGL-NGS-54540              | 0 | 31166903 |  |
| 3 | ARS-BFGL-NGS-66091              | 0 | 31187421 |  |
| 3 | ARS-BFGL-NGS-57102              | 0 | 31219298 |  |
| 3 | BTA-67383-no-rs                 | 0 | 31266482 |  |
| 3 | BTA-67382-no-rs                 | 0 | 31331920 |  |
| 3 | ARS-BFGL-NGS-108958             | 0 | 31378175 |  |
| 3 | Hapmap30073-BTA-67374           | 0 | 31401730 |  |
| 3 | ARS-BFGL-NGS-102586             | 0 | 31434239 |  |
| 3 | INRA-701                        | 0 | 31468383 |  |
| 3 | ARS-BFGL-NGS-113746             | 0 | 31496919 |  |
| 3 | ARS-BFGL-NGS-76281              | 0 | 31524593 |  |
| 3 | Hapmap51026-BTA-67362           | 0 | 31545930 |  |
| 3 | ARS-BFGL-NGS-105297             | 0 | 31607201 |  |
| 3 | Hapmap31187-BTA-160351          | 0 | 31630846 |  |
| 3 | ARS-BFGL-NGS-66677              | 0 | 31658875 |  |
| 3 | Hapmap33913-BES9_Contig264_1036 | 0 | 31680503 |  |
| 3 | ARS-BFGL-NGS-42747              | 0 | 31729269 |  |
| 3 | Hapmap57718-rs29018416          | 0 | 31750523 |  |
| 3 | ARS-BFGL-NGS-40213              | 0 | 31775531 |  |
| 3 | BTB-01420286                    | 0 | 31843839 |  |
| 3 | BTB-00125277                    | 0 | 31927022 |  |
| 3 | INRA-378                        | 0 | 31991477 |  |
| 3 | BTB-00125325                    | 0 | 32031556 |  |

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| 3 | BTB-00125348           | 0 | 32053703 |
| 3 | ARS-BFGL-NGS-111118    | 0 | 32077291 |
| 3 | BTB-02075948           | 0 | 32112753 |
| 3 | BTB-01671364           | 0 | 32186909 |
| 3 | BTB-00125979           | 0 | 32267174 |
| 3 | INRA-633               | 0 | 32289337 |
| 3 | BTB-00126026           | 0 | 32316119 |
| 3 | Hapmap58317-rs29013261 | 0 | 32338192 |
| 3 | BTB-01890822           | 0 | 32454174 |
| 3 | ARS-BFGL-NGS-59840     | 0 | 32479004 |
| 3 | BTB-01899293           | 0 | 32527488 |
| 3 | ARS-BFGL-NGS-42542     | 0 | 32607892 |
| 3 | ARS-BFGL-NGS-85942     | 0 | 32634203 |
| 3 | BTB-00126452           | 0 | 32788575 |
| 3 | BTB-02037802           | 0 | 32829586 |
| 3 | BTB-00126406           | 0 | 32860177 |
| 3 | Hapmap60497-rs29027497 | 0 | 32881816 |
| 3 | ARS-BFGL-NGS-14671     | 0 | 32922670 |
| 3 | Hapmap40909-BTA-121580 | 0 | 32944221 |
| 3 | ARS-BFGL-NGS-52849     | 0 | 32964782 |
| 3 | ARS-BFGL-NGS-38953     | 0 | 32988739 |
| 3 | ARS-BFGL-NGS-117560    | 0 | 33018175 |
| 3 | ARS-BFGL-NGS-85575     | 0 | 33070794 |
| 3 | Hapmap39503-BTA-67470  | 0 | 33154308 |
| 3 | ARS-BFGL-NGS-113982    | 0 | 33182228 |
| 3 | Hapmap50065-BTA-67274  | 0 | 33249890 |
| 3 | Hapmap58559-rs29023519 | 0 | 33276539 |
| 3 | ARS-BFGL-NGS-103874    | 0 | 33307217 |
| 3 | ARS-BFGL-NGS-117870    | 0 | 33332678 |
| 3 | ARS-BFGL-NGS-42736     | 0 | 33367402 |
| 3 | ARS-BFGL-NGS-95773     | 0 | 33403175 |
| 3 | ARS-BFGL-NGS-77834     | 0 | 33436465 |
| 3 | INRA-194               | 0 | 33483631 |
| 3 | Hapmap53351-ss46526783 | 0 | 33514564 |
| 3 | BTB-00124726           | 0 | 33559007 |
| 3 | ARS-BFGL-NGS-99357     | 0 | 33598353 |
| 3 | ARS-BFGL-NGS-119309    | 0 | 33691011 |
| 3 | ARS-BFGL-NGS-86767     | 0 | 33741850 |
| 3 | ARS-BFGL-NGS-115128    | 0 | 33895762 |
| 3 | ARS-BFGL-NGS-43118     | 0 | 33926048 |
| 3 | Hapmap42629-BTA-67307  | 0 | 33948546 |
| 3 | BTA-67308-no-rs        | 0 | 33975389 |
| 3 | Hapmap51025-BTA-67309  | 0 | 33997602 |
| 3 | Hapmap53424-rs29019267 | 0 | 34184021 |
| 3 | ARS-BFGL-NGS-114699    | 0 | 34228084 |
| 3 | ARS-BFGL-NGS-67960     | 0 | 34263481 |
| 3 | Hapmap57750-ss46526998 | 0 | 34285243 |
| 3 | Hapmap41054-BTA-67528  | 0 | 34344799 |
| 3 | BTA-88149-no-rs        | 0 | 34421834 |
| 3 | BTA-67533-no-rs        | 0 | 34439644 |
| 3 | Hapmap41457-BTA-121582 | 0 | 34494339 |
| 3 | BTA-67535-no-rs        | 0 | 34559563 |
| 3 | BTA-67536-no-rs        | 0 | 34580217 |
| 3 | ARS-BFGL-NGS-118771    | 0 | 34624789 |

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| 3 | ARS-BFGL-NGS-36405               | 0        | 34669774 |          |
| 3 | ARS-BFGL-NGS-83049               | 0        | 34817679 |          |
| 3 | ARS-BFGL-NGS-24548               | 0        | 34847957 |          |
| 3 | ARS-BFGL-NGS-19686               | 0        | 34869507 |          |
| 3 | BTA-122551-no-rs                 | 0        | 35046094 |          |
| 3 | Hapmap49798-BTA-92389            | 0        | 35113194 |          |
| 3 | ARS-BFGL-NGS-26800               | 35133372 |          |          |
| 3 | ARS-BFGL-NGS-14022               | 0        | 35255950 |          |
| 3 | BTA-01846-rs29012800             | 0        | 35287458 |          |
| 3 | Hapmap23898-BTA-92395            | 0        | 35317787 |          |
| 3 | ARS-BFGL-NGS-101762              | 0        | 35424831 |          |
| 3 | Hapmap23994-BTA-141224           | 0        | 35542916 |          |
| 3 | INRA-476                         | 0        | 35659533 |          |
| 3 | Hapmap52513-rs29024428           | 0        | 35785053 |          |
| 3 | Hapmap34568-BES10_Contig649_1524 | 0        |          | 35832852 |
| 3 | INRA-339                         | 0        | 35862406 |          |
| 3 | Hapmap43907-BTA-67629            | 0        | 35995151 |          |
| 3 | ARS-BFGL-NGS-109648              | 0        | 36035377 |          |
| 3 | Hapmap41614-BTA-67626            | 0        | 36276652 |          |
| 3 | Hapmap41055-BTA-67615            | 0        | 36359404 |          |
| 3 | ARS-BFGL-NGS-30334               | 0        | 36393531 |          |
| 3 | ARS-BFGL-NGS-100508              | 0        | 36440107 |          |
| 3 | ARS-BFGL-NGS-23295               | 0        | 36520253 |          |
| 3 | ARS-BFGL-NGS-117495              | 0        | 36531738 |          |
| 3 | Hapmap43012-BTA-67593            | 0        | 36797562 |          |
| 3 | Hapmap55463-rs29026005           | 0        | 36826828 |          |
| 3 | BTA-67581-no-rs                  | 0        | 36849233 |          |
| 3 | ARS-BFGL-NGS-15530               | 37005589 |          |          |
| 3 | INRA-110                         | 0        | 37059877 |          |
| 3 | BTA-67567-no-rs                  | 0        | 37101347 |          |
| 3 | Hapmap41412-BTA-104848           | 0        | 37177894 |          |
| 3 | ARS-BFGL-NGS-18860               | 37219384 |          |          |
| 3 | ARS-BFGL-NGS-38910               | 0        | 37288724 |          |
| 3 | Hapmap54069-rs29012123           | 0        | 37394538 |          |
| 3 | Hapmap39975-BTA-121583           | 0        | 37449443 |          |
| 3 | ARS-BFGL-NGS-27626               | 0        | 37561427 |          |
| 3 | Hapmap44183-BTA-105889           | 0        | 37602383 |          |
| 3 | BTA-105888-no-rs                 | 0        | 37624705 |          |
| 3 | Hapmap51175-BTA-17459            | 0        | 37651069 |          |
| 3 | Hapmap25898-BTA-158488           | 0        | 37733912 |          |
| 3 | Hapmap43483-BTA-117844           | 0        | 37778393 |          |
| 3 | ARS-BFGL-NGS-73422               | 0        | 38024561 |          |
| 3 | ARS-BFGL-NGS-56674               | 0        | 38179166 |          |
| 3 | BTA-91560-no-rs                  | 0        | 38507659 |          |
| 3 | ARS-BFGL-NGS-20670               | 38661143 |          |          |
| 3 | Hapmap50814-BTA-89905            | 0        | 38764361 |          |
| 3 | BTA-122016-no-rs                 | 0        | 38811314 |          |
| 3 | Hapmap58660-rs29011628           | 0        | 39097420 |          |
| 3 | Hapmap60279-rs29011976           | 0        | 39118317 |          |
| 3 | BTA-93899-no-rs                  | 0        | 39143931 |          |
| 3 | ARS-BFGL-NGS-15485               | 0        | 39251194 |          |
| 3 | INRA-465                         | 0        | 39273428 |          |
| 3 | ARS-BFGL-NGS-103488              | 0        | 39299783 |          |
| 3 | BTB-01737920                     | 0        | 39360570 |          |

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| 3 | Hapmap60829-rs29020073                | 0 | 39393293 |  |  |
| 3 | BTB-01155190                          | 0 | 39494091 |  |  |
| 3 | BTA-99693-no-rs                       | 0 | 39522643 |  |  |
| 3 | BTB-01155098                          | 0 | 39543882 |  |  |
| 3 | BTA-97380-no-rs                       | 0 | 39574744 |  |  |
| 3 | ARS-BFGL-NGS-24876                    | 0 | 39599273 |  |  |
| 3 | BTA-99686-no-rs                       | 0 | 39654642 |  |  |
| 3 | Hapmap58662-rs29014458                | 0 | 39777226 |  |  |
| 3 | Hapmap51027-BTA-67630                 | 0 | 39841272 |  |  |
| 3 | Hapmap52326-rs29020672                | 0 | 39978795 |  |  |
| 3 | BTA-86782-no-rs                       | 0 | 40046382 |  |  |
| 3 | BTB-01436085                          | 0 | 40073137 |  |  |
| 3 | BTA-114258-no-rs                      | 0 | 40126089 |  |  |
| 3 | BTB-01693800                          | 0 | 40147156 |  |  |
| 3 | BTA-93165-no-rs                       | 0 | 40208518 |  |  |
| 3 | BTB-01436290                          | 0 | 40230575 |  |  |
| 3 | BTB-01436387                          | 0 | 40263643 |  |  |
| 3 | BTB-01405574                          | 0 | 40333921 |  |  |
| 3 | BTB-01405537                          | 0 | 40364628 |  |  |
| 3 | ARS-USMARC-Parent-AY842472-rs29001941 | 0 | 40399136 |  |  |
| 3 | BTB-01405471                          | 0 | 40399244 |  |  |
| 3 | BTB-01405443                          | 0 | 40443176 |  |  |
| 3 | Hapmap31786-BTA-148388                | 0 | 40468958 |  |  |
| 3 | Hapmap43129-BTA-105623                | 0 | 40534231 |  |  |
| 3 | BTB-01582160                          | 0 | 40562790 |  |  |
| 3 | ARS-BFGL-NGS-112442                   | 0 | 40588026 |  |  |
| 3 | BTB-01582389                          | 0 | 40625026 |  |  |
| 3 | BTB-01704990                          | 0 | 40654331 |  |  |
| 3 | INRA-332                              | 0 | 40678490 |  |  |
| 3 | Hapmap55075-rs29013986                | 0 | 40758730 |  |  |
| 3 | Hapmap59377-rs29018679                | 0 | 40903270 |  |  |
| 3 | BTA-20637-no-rs                       | 0 | 40977107 |  |  |
| 3 | BTA-00128-rs29013292                  | 0 | 41079360 |  |  |
| 3 | ARS-BFGL-NGS-110776                   | 0 | 41119556 |  |  |
| 3 | ARS-BFGL-NGS-84893                    | 0 | 41190756 |  |  |
| 3 | ARS-BFGL-NGS-113447                   | 0 | 41211668 |  |  |
| 3 | BTA-119268-no-rs                      | 0 | 41288830 |  |  |
| 3 | BTA-100337-no-rs                      | 0 | 41371572 |  |  |
| 3 | Hapmap48985-BTA-100340                | 0 | 41395148 |  |  |
| 3 | Hapmap33718-BTA-152247                | 0 | 41432313 |  |  |
| 3 | BTA-119272-no-rs                      | 0 | 41572438 |  |  |
| 3 | Hapmap60335-rs29018229                | 0 | 41634074 |  |  |
| 3 | ARS-BFGL-NGS-117662                   | 0 | 41702611 |  |  |
| 3 | Hapmap39048-BTA-99764                 | 0 | 41738789 |  |  |
| 3 | ARS-BFGL-NGS-22924                    | 0 | 41816541 |  |  |
| 3 | ARS-BFGL-NGS-103300                   | 0 | 41844003 |  |  |
| 3 | INRA-645                              | 0 | 41960076 |  |  |
| 3 | ARS-BFGL-NGS-42742                    | 0 | 42047341 |  |  |
| 3 | ARS-BFGL-NGS-45264                    | 0 | 42078826 |  |  |
| 3 | ARS-BFGL-NGS-115249                   | 0 | 42102707 |  |  |
| 3 | Hapmap57990-rs29018907                | 0 | 42134780 |  |  |
| 3 | Hapmap45730-BTA-67652                 | 0 | 42181356 |  |  |
| 3 | BTA-90242-no-rs                       | 0 | 42229689 |  |  |
| 3 | Hapmap44540-BTA-37562                 | 0 | 42289451 |  |  |

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| 3 | ARS-BFGL-NGS-118748             | 0 | 42339927 |          |
| 3 | ARS-BFGL-NGS-54102              | 0 | 42378836 |          |
| 3 | Hapmap50499-BTA-90255           | 0 | 42403309 |          |
| 3 | ARS-BFGL-NGS-115461             | 0 | 42458258 |          |
| 3 | BTA-30080-no-rs                 | 0 | 42684226 |          |
| 3 | ARS-BFGL-NGS-76208              | 0 | 42791404 |          |
| 3 | Hapmap58939-rs29011360          | 0 | 42815457 |          |
| 3 | BTA-67833-no-rs                 | 0 | 42836706 |          |
| 3 | ARS-BFGL-NGS-94815              | 0 | 42893462 |          |
| 3 | ARS-BFGL-NGS-49150              |   | 42971879 |          |
| 3 | BTA-91078-no-rs                 | 0 | 43031873 |          |
| 3 | ARS-BFGL-NGS-115126             | 0 | 43129840 |          |
| 3 | INRA-196                        | 0 | 43157454 |          |
| 3 | Hapmap43400-BTA-91074           | 0 | 43197664 |          |
| 3 | ARS-BFGL-NGS-102970             | 0 | 43350303 |          |
| 3 | ARS-BFGL-NGS-110600             | 0 | 43386099 |          |
| 3 | ARS-BFGL-NGS-38388              | 0 | 43476846 |          |
| 3 | ARS-BFGL-NGS-45110              |   | 43575069 |          |
| 3 | ARS-BFGL-NGS-55110              |   | 43604150 |          |
| 3 | ARS-BFGL-NGS-56706              | 0 | 43636327 |          |
| 3 | Hapmap41056-BTA-67710           | 0 | 43693273 |          |
| 3 | ARS-BFGL-NGS-16742              | 0 | 43720374 |          |
| 3 | ARS-BFGL-NGS-102336             | 0 | 43740990 |          |
| 3 | Hapmap49704-BTA-67707           | 0 | 43797496 |          |
| 3 | ARS-BFGL-NGS-43914              | 0 | 43842172 |          |
| 3 | ARS-BFGL-NGS-113910             | 0 | 43939238 |          |
| 3 | ARS-BFGL-NGS-57417              | 0 | 43975868 |          |
| 3 | ARS-BFGL-NGS-110746             | 0 | 44028581 |          |
| 3 | Hapmap43653-BTA-67682           | 0 | 44048816 |          |
| 3 | ARS-BFGL-NGS-45130              |   | 44172303 |          |
| 3 | ARS-BFGL-NGS-57015              | 0 | 44233220 |          |
| 3 | Hapmap32070-BTA-141319          | 0 | 44297642 |          |
| 3 | Hapmap42291-BTA-67678           | 0 | 44343757 |          |
| 3 | ARS-BFGL-NGS-33061              | 0 | 44364191 |          |
| 3 | Hapmap32570-BTA-141315          | 0 | 44424682 |          |
| 3 | INRA-587                        | 0 | 44459163 |          |
| 3 | Hapmap26489-BTA-19424           | 0 | 44583561 |          |
| 3 | INRA-624                        | 0 | 44610516 |          |
| 3 | ARS-BFGL-NGS-55002              | 0 | 44645973 |          |
| 3 | BTA-67761-no-rs                 | 0 | 44816800 |          |
| 3 | Hapmap33878-BES3_Contig472_2031 | 0 |          | 44901462 |
| 3 | INRA-506                        | 0 | 44930072 |          |
| 3 | Hapmap43908-BTA-67758           | 0 | 44959256 |          |
| 3 | Hapmap58769-rs29025951          | 0 | 44980506 |          |
| 3 | ARS-BFGL-NGS-116605             | 0 | 45057762 |          |
| 3 | Hapmap44656-BTA-67751           | 0 | 45405468 |          |
| 3 | BTA-67750-no-rs                 | 0 | 45509616 |          |
| 3 | BTA-67746-no-rs                 | 0 | 45541224 |          |
| 3 | ARS-BFGL-NGS-108225             | 0 | 45572779 |          |
| 3 | ARS-BFGL-NGS-109336             | 0 | 45601393 |          |
| 3 | UA-IFASA-8370                   | 0 | 45826189 |          |
| 3 | BTA-67733-no-rs                 | 0 | 45872971 |          |
| 3 | INRA-547                        | 0 | 45958575 |          |
| 3 | UA-IFASA-5469                   | 0 | 45996935 |          |



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| 3 | Hapmap32814-BTA-141339          | 0 | 46035672 |          |
| 3 | INRA-598                        | 0 | 46086314 |          |
| 3 | ARS-BFGL-NGS-112152             | 0 | 46134907 |          |
| 3 | BTA-67712-no-rs                 | 0 | 46155505 |          |
| 3 | BTA-67763-no-rs                 | 0 | 46248565 |          |
| 3 | ARS-BFGL-NGS-26327              | 0 | 46318628 |          |
| 3 | ARS-BFGL-NGS-74304              | 0 | 46410484 |          |
| 3 | Hapmap34274-BES9_Contig508_1511 | 0 |          | 46522488 |
| 3 | BTB-01704067                    | 0 | 46619554 |          |
| 3 | BTA-95351-no-rs                 | 0 | 46676246 |          |
| 3 | Hapmap55244-rs29011654          | 0 | 46699846 |          |
| 3 | BTB-01834875                    | 0 | 46721234 |          |
| 3 | Hapmap38207-BTA-19427           | 0 | 46747787 |          |
| 3 | BTB-02008212                    | 0 | 46771130 |          |
| 3 | BTB-01463352                    | 0 | 46811548 |          |
| 3 | BTB-01463390                    | 0 | 46842537 |          |
| 3 | BTB-01608596                    | 0 | 46889594 |          |
| 3 | BTB-01608641                    | 0 | 46922624 |          |
| 3 | BTB-01898997                    | 0 | 46977886 |          |
| 3 | BTB-01800728                    | 0 | 47035496 |          |
| 3 | BTB-01851577                    | 0 | 47165828 |          |
| 3 | BTB-01537126                    | 0 | 47227363 |          |
| 3 | BTB-01537076                    | 0 | 47254544 |          |
| 3 | ARS-BFGL-NGS-34084              | 0 | 47337477 |          |
| 3 | Hapmap33936-BES2_Contig521_671  | 0 |          | 47377737 |
| 3 | Hapmap50807-BTA-86717           | 0 | 47407040 |          |
| 3 | BTB-01384383                    | 0 | 47448775 |          |
| 3 | Hapmap51073-BTA-86722           | 0 | 47476248 |          |
| 3 | BTA-18980-no-rs                 | 0 | 47519010 |          |
| 3 | Hapmap42865-BTA-18979           | 0 | 47541668 |          |
| 3 | Hapmap50494-BTA-86544           | 0 | 47612930 |          |
| 3 | BTB-00462925                    | 0 | 47639897 |          |
| 3 | Hapmap35349-BES3_Contig390_1348 | 0 |          | 47650188 |
| 3 | BTB-00462855                    | 0 | 47677836 |          |
| 3 | Hapmap44321-BTA-96862           | 0 | 47703475 |          |
| 3 | BTB-01924446                    | 0 | 47737541 |          |
| 3 | ARS-BFGL-NGS-43580              |   | 47777991 |          |
| 3 | BTB-00462798                    | 0 | 47820211 |          |
| 3 | Hapmap42708-BTA-86534           | 0 | 47849415 |          |
| 3 | Hapmap43383-BTA-86533           | 0 | 47880849 |          |
| 3 | BTB-00462671                    | 0 | 47918979 |          |
| 3 | BTB-00462657                    | 0 | 47947600 |          |
| 3 | ARS-BFGL-NGS-115493             | 0 | 47972502 |          |
| 3 | Hapmap48045-BTA-67779           | 0 | 48018521 |          |
| 3 | BTB-01649999                    | 0 | 48062099 |          |
| 3 | INRA-472                        | 0 | 48101141 |          |
| 3 | Hapmap48658-BTA-122432          | 0 | 48139147 |          |
| 3 | ARS-BFGL-NGS-20060              |   | 48168247 |          |
| 3 | BTB-00127875                    | 0 | 48207674 |          |
| 3 | BTB-00127835                    | 0 | 48232935 |          |
| 3 | Hapmap32815-BTA-141391          | 0 | 48254392 |          |
| 3 | Hapmap48847-BTA-67772           | 0 | 48281407 |          |
| 3 | INRA-492                        | 0 | 48313245 |          |
| 3 | BTB-00127618                    | 0 | 48349888 |          |

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| 3 | BTB-00127606                          | 0        | 48392443 |  |  |
| 3 | Hapmap50755-BTA-67770                 | 0        | 48418222 |  |  |
| 3 | ARS-BFGL-NGS-35566                    | 0        | 48444429 |  |  |
| 3 | Hapmap40787-BTA-67768                 | 0        | 48479727 |  |  |
| 3 | ARS-BFGL-NGS-18230                    | 0        | 48600937 |  |  |
| 3 | ARS-BFGL-NGS-114558                   | 0        | 48627062 |  |  |
| 3 | ARS-BFGL-NGS-41635                    | 0        | 48661372 |  |  |
| 3 | ARS-BFGL-NGS-79934                    | 0        | 48692833 |  |  |
| 3 | ARS-BFGL-NGS-54036                    | 0        | 48734443 |  |  |
| 3 | ARS-BFGL-NGS-100739                   | 0        | 48808060 |  |  |
| 3 | ARS-BFGL-NGS-23250                    | 48843387 |          |  |  |
| 3 | ARS-BFGL-NGS-24128                    | 0        | 48935268 |  |  |
| 3 | ARS-BFGL-NGS-112061                   | 0        | 48961484 |  |  |
| 3 | Hapmap48939-BTA-90484                 | 0        | 48981859 |  |  |
| 3 | ARS-BFGL-NGS-42373                    | 0        | 49001262 |  |  |
| 3 | Hapmap46773-BTA-121585                | 0        | 49048879 |  |  |
| 3 | Hapmap33204-BTA-141404                | 0        | 49079184 |  |  |
| 3 | ARS-BFGL-NGS-114059                   | 0        | 49099296 |  |  |
| 3 | ARS-BFGL-NGS-116978                   | 0        | 49200769 |  |  |
| 3 | Hapmap33067-BTA-160932                | 0        | 49234409 |  |  |
| 3 | Hapmap59096-rs29024776                | 0        | 49335664 |  |  |
| 3 | ARS-BFGL-NGS-60373                    | 0        | 49377491 |  |  |
| 3 | Hapmap44203-BTA-115893                | 0        | 49431468 |  |  |
| 3 | Hapmap33585-BTA-141411                | 0        | 49531950 |  |  |
| 3 | ARS-BFGL-NGS-119151                   | 0        | 49544712 |  |  |
| 3 | ARS-BFGL-NGS-103527                   | 0        | 49551407 |  |  |
| 3 | ARS-BFGL-NGS-116927                   | 0        | 49604937 |  |  |
| 3 | ARS-BFGL-NGS-40545                    | 0        | 49639691 |  |  |
| 3 | ARS-BFGL-NGS-112083                   | 0        | 49681867 |  |  |
| 3 | ARS-USMARC-Parent-AY842473-rs29001956 | 0        | 49703647 |  |  |
| 3 | ARS-BFGL-NGS-104366                   | 0        | 49704834 |  |  |
| 3 | Hapmap54122-rs29015114                | 0        | 49734521 |  |  |
| 3 | Hapmap42003-BTA-90261                 | 0        | 49766904 |  |  |
| 3 | ARS-BFGL-NGS-114827                   | 0        | 49888628 |  |  |
| 3 | Hapmap49413-BTA-102772                | 0        | 49990563 |  |  |
| 3 | ARS-BFGL-NGS-115817                   | 0        | 50056167 |  |  |
| 3 | ARS-BFGL-NGS-23466                    | 0        | 50222531 |  |  |
| 3 | Hapmap59329-rs29016370                | 0        | 50309627 |  |  |
| 3 | Hapmap55023-rs29015745                | 0        | 50341876 |  |  |
| 3 | INRA-131                              | 0        | 50509843 |  |  |
| 3 | ARS-BFGL-NGS-119852                   | 0        | 50624920 |  |  |
| 3 | ARS-BFGL-NGS-34393                    | 0        | 50673505 |  |  |
| 3 | Hapmap57732-rs29023272                | 0        | 50804085 |  |  |
| 3 | Hapmap60708-rs29011181                | 0        | 50813514 |  |  |
| 3 | BTA-100463-no-rs                      | 0        | 50835532 |  |  |
| 3 | Hapmap42034-BTA-100462                | 0        | 51172850 |  |  |
| 3 | Hapmap44021-BTA-122250                | 0        | 51245024 |  |  |
| 3 | INRA-611                              | 0        | 51399357 |  |  |
| 3 | Hapmap26166-BTA-152279                | 0        | 51446531 |  |  |
| 3 | ARS-BFGL-NGS-57280                    | 0        | 51491468 |  |  |
| 3 | Hapmap59681-rs29019879                | 0        | 51600304 |  |  |
| 3 | Hapmap38121-BTA-67952                 | 0        | 51715884 |  |  |
| 3 | ARS-BFGL-NGS-53271                    | 0        | 51812762 |  |  |
| 3 | INRA-201                              | 0        | 51867500 |  |  |

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| 3 | ARS-BFGL-NGS-85284                    | 0        | 51914272 |   |          |
| 3 | INRA-618                              | 0        | 51956243 |   |          |
| 3 | ARS-USMARC-Parent-AY842474-rs29003226 | 0        |          | 0 | 51976646 |
| 3 | ARS-BFGL-NGS-35164                    | 0        | 52000343 |   |          |
| 3 | Hapmap31706-BTA-122950                | 0        | 52065209 |   |          |
| 3 | ARS-BFGL-NGS-112017                   | 0        | 52244859 |   |          |
| 3 | Hapmap60328-rs29027404                | 0        | 52266974 |   |          |
| 3 | ARS-BFGL-NGS-111399                   | 0        | 52302576 |   |          |
| 3 | ARS-BFGL-NGS-105483                   | 0        | 52329712 |   |          |
| 3 | BTA-67983-no-rs                       | 0        | 52365157 |   |          |
| 3 | Hapmap43654-BTA-67984                 | 0        | 52402934 |   |          |
| 3 | ARS-BFGL-NGS-83439                    | 0        | 52575462 |   |          |
| 3 | BTA-99528-no-rs                       | 0        | 52665949 |   |          |
| 3 | Hapmap27807-BTA-99527                 | 0        | 52758074 |   |          |
| 3 | BTA-22647-no-rs                       | 0        | 52806252 |   |          |
| 3 | Hapmap60025-rs29013313                | 0        | 52834458 |   |          |
| 3 | INRA-170                              | 0        | 52943988 |   |          |
| 3 | INRA-510                              | 0        | 53000242 |   |          |
| 3 | Hapmap43965-BTA-89883                 | 0        | 53186248 |   |          |
| 3 | ARS-BFGL-NGS-25387                    | 0        | 53217333 |   |          |
| 3 | BTA-89881-no-rs                       | 0        | 53245222 |   |          |
| 3 | ARS-BFGL-NGS-38691                    | 0        | 53296703 |   |          |
| 3 | INRA-687                              | 0        | 53318789 |   |          |
| 3 | Hapmap49266-BTA-67908                 | 0        | 53343172 |   |          |
| 3 | BTA-67911-no-rs                       | 0        | 53363656 |   |          |
| 3 | INRA-297                              | 0        | 53384563 |   |          |
| 3 | BTA-67916-no-rs                       | 0        | 53441135 |   |          |
| 3 | ARS-BFGL-NGS-61489                    | 0        | 53495709 |   |          |
| 3 | ARS-BFGL-NGS-109932                   | 0        | 53574180 |   |          |
| 3 | ARS-BFGL-NGS-113707                   | 0        | 53598182 |   |          |
| 3 | ARS-BFGL-NGS-109989                   | 0        | 53638272 |   |          |
| 3 | ARS-BFGL-NGS-43845                    | 0        | 53661660 |   |          |
| 3 | ARS-BFGL-NGS-68522                    | 0        | 53687603 |   |          |
| 3 | ARS-BFGL-NGS-119065                   | 0        | 53730982 |   |          |
| 3 | ARS-BFGL-NGS-98515                    | 0        | 53772746 |   |          |
| 3 | Hapmap57193-rs29021598                | 0        | 53844578 |   |          |
| 3 | Hapmap48848-BTA-67904                 | 0        | 53874498 |   |          |
| 3 | ARS-BFGL-NGS-43853                    | 0        | 53923380 |   |          |
| 3 | ARS-BFGL-NGS-112952                   | 0        | 53955669 |   |          |
| 3 | Hapmap39818-BTA-29723                 | 0        | 54031042 |   |          |
| 3 | Hapmap46132-BTA-29718                 | 0        | 54082178 |   |          |
| 3 | ARS-BFGL-NGS-12447                    | 0        | 54106267 |   |          |
| 3 | BTA-92147-no-rs                       | 0        | 54151601 |   |          |
| 3 | Hapmap43098-BTA-92145                 | 0        | 54177565 |   |          |
| 3 | ARS-BFGL-NGS-117514                   | 0        | 54245577 |   |          |
| 3 | INRA-417                              | 0        | 54267761 |   |          |
| 3 | BTA-67896-no-rs                       | 0        | 55108725 |   |          |
| 3 | Hapmap51282-BTA-67903                 | 0        | 55187147 |   |          |
| 3 | ARS-BFGL-NGS-62913                    | 0        | 55218518 |   |          |
| 3 | Hapmap53284-rs29015774                | 0        | 55327770 |   |          |
| 3 | Hapmap25267-BTA-141454                | 0        | 55398408 |   |          |
| 3 | ARS-BFGL-NGS-61280                    | 55434410 |          |   |          |
| 3 | Hapmap50438-BTA-67925                 | 0        | 55537894 |   |          |
| 3 | Hapmap31179-BTA-158673                | 0        | 55626054 |   |          |

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| 3 | BTA-118287-no-rs                      | 0 | 56205436 |          |  |
| 3 | Hapmap39892-BTA-118279                | 0 | 56292899 |          |  |
| 3 | Hapmap23647-BTA-158339                | 0 | 56357743 |          |  |
| 3 | INRA-685                              | 0 | 56473625 |          |  |
| 3 | Hapmap44542-BTA-39695                 | 0 | 56494361 |          |  |
| 3 | Hapmap43782-BTA-118016                | 0 | 56602309 |          |  |
| 3 | Hapmap22861-BTA-141421                | 0 | 56669877 |          |  |
| 3 | ARS-BFGL-NGS-31407                    | 0 | 56705237 |          |  |
| 3 | INRA-176                              | 0 | 56734548 |          |  |
| 3 | ARS-BFGL-NGS-103935                   | 0 | 56884677 |          |  |
| 3 | ARS-BFGL-NGS-119366                   | 0 | 56959267 |          |  |
| 3 | ARS-BFGL-NGS-71355                    | 0 | 57005233 |          |  |
| 3 | INRA-691                              | 0 | 57092692 |          |  |
| 3 | ARS-BFGL-NGS-116677                   | 0 | 57131253 |          |  |
| 3 | Hapmap43156-BTA-112841                | 0 | 57173183 |          |  |
| 3 | ARS-BFGL-NGS-29850                    |   | 57283356 |          |  |
| 3 | ARS-BFGL-NGS-69251                    | 0 | 57515766 |          |  |
| 3 | Hapmap44119-BTA-67972                 | 0 | 57633063 |          |  |
| 3 | INRA-63                               | 0 | 57679768 |          |  |
| 3 | INRA-353                              | 0 | 57705905 |          |  |
| 3 | Hapmap30633-BTA-67965                 | 0 | 57811390 |          |  |
| 3 | ARS-BFGL-NGS-32229                    | 0 | 57858170 |          |  |
| 3 | BTA-67964-no-rs                       | 0 | 57886739 |          |  |
| 3 | Hapmap47376-BTA-67990                 | 0 | 58003570 |          |  |
| 3 | Hapmap55448-rs29020629                | 0 | 58030374 |          |  |
| 3 | ARS-USMARC-Parent-DQ435443-rs29010802 | 0 |          | 58040470 |  |
| 3 | ARS-BFGL-NGS-104818                   | 0 | 58105227 |          |  |
| 3 | BTA-16282-no-rs                       | 0 | 58175690 |          |  |
| 3 | Hapmap43441-BTA-103289                | 0 | 58238859 |          |  |
| 3 | ARS-BFGL-NGS-111614                   | 0 | 58387438 |          |  |
| 3 | ARS-BFGL-NGS-20652                    | 0 | 58434544 |          |  |
| 3 | Hapmap43014-BTA-68033                 | 0 | 58673264 |          |  |
| 3 | ARS-BFGL-NGS-109806                   | 0 | 58697049 |          |  |
| 3 | ARS-BFGL-NGS-112146                   | 0 | 58721756 |          |  |
| 3 | ARS-BFGL-NGS-34944                    | 0 | 58882992 |          |  |
| 3 | INRA-649                              | 0 | 58933414 |          |  |
| 3 | ARS-BFGL-NGS-81                       | 0 | 59022652 |          |  |
| 3 | INRA-519                              | 0 | 59080316 |          |  |
| 3 | ARS-BFGL-NGS-114017                   | 0 | 59112195 |          |  |
| 3 | ARS-BFGL-NGS-16054                    | 0 | 59354122 |          |  |
| 3 | INRA-451                              | 0 | 59411832 |          |  |
| 3 | Hapmap41059-BTA-68043                 | 0 | 59432773 |          |  |
| 3 | Hapmap40019-BTA-68045                 | 0 | 59466257 |          |  |
| 3 | ARS-BFGL-NGS-53229                    | 0 | 59537128 |          |  |
| 3 | Hapmap61026-rs29020444                | 0 | 59564433 |          |  |
| 3 | Hapmap59005-rs29027243                | 0 | 59601170 |          |  |
| 3 | BTA-68049-no-rs                       | 0 | 59664152 |          |  |
| 3 | ARS-BFGL-NGS-18095                    | 0 | 59685435 |          |  |
| 3 | Hapmap51028-BTA-68052                 | 0 | 59718856 |          |  |
| 3 | UA-IFASA-9204                         | 0 | 59809071 |          |  |
| 3 | BTB-00130211                          | 0 | 59835074 |          |  |
| 3 | ARS-BFGL-NGS-13810                    | 0 | 59889122 |          |  |
| 3 | ARS-BFGL-NGS-115664                   | 0 | 59926660 |          |  |
| 3 | BTB-02020352                          | 0 | 59955803 |          |  |

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| 3 | ARS-BFGL-NGS-24055               | 0 | 59977722 |          |
| 3 | Hapmap41331-BTA-68128            | 0 | 60072921 |          |
| 3 | BTB-00130969                     | 0 | 60147732 |          |
| 3 | Hapmap56074-rs29026779           | 0 | 60193801 |          |
| 3 | BTB-01830087                     | 0 | 60303679 |          |
| 3 | Hapmap41468-BTA-19097            | 0 | 60324610 |          |
| 3 | ARS-BFGL-NGS-68572               | 0 | 60362069 |          |
| 3 | BTB-01323076                     | 0 | 60388539 |          |
| 3 | Hapmap34680-BES10_Contig692_2496 | 0 |          | 60412931 |
| 3 | BTB-01322824                     | 0 | 60465697 |          |
| 3 | BTB-01322840                     | 0 | 60502347 |          |
| 3 | BTA-22670-no-rs                  | 0 | 60546730 |          |
| 3 | BTA-22681-no-rs                  | 0 | 60610342 |          |
| 3 | Hapmap30333-BTA-22676            | 0 | 60641563 |          |
| 3 | Hapmap50439-BTA-68100            | 0 | 60732882 |          |
| 3 | Hapmap53609-rs29011253           | 0 | 60758182 |          |
| 3 | BTB-00130588                     | 0 | 60817205 |          |
| 3 | ARS-BFGL-NGS-12004               | 0 | 60851066 |          |
| 3 | Hapmap48436-BTA-68098            | 0 | 60892186 |          |
| 3 | BTA-68096-no-rs                  | 0 | 60929295 |          |
| 3 | INRA-520                         | 0 | 60954055 |          |
| 3 | Hapmap39465-BTA-116795           | 0 | 60982148 |          |
| 3 | Hapmap32532-BTA-116798           | 0 | 61023067 |          |
| 3 | ARS-BFGL-NGS-111744              | 0 | 61052934 |          |
| 3 | BTA-19821-no-rs                  | 0 | 61088774 |          |
| 3 | ARS-BFGL-NGS-27073               | 0 | 61129959 |          |
| 3 | BTB-01660862                     | 0 | 61170525 |          |
| 3 | Hapmap55332-rs29012951           | 0 | 61193516 |          |
| 3 | BTB-01660967                     | 0 | 61213804 |          |
| 3 | BTB-00131085                     | 0 | 61239989 |          |
| 3 | Hapmap48047-BTA-68130            | 0 | 61285285 |          |
| 3 | BTA-68142-no-rs                  | 0 | 61384165 |          |
| 3 | BTA-68146-no-rs                  | 0 | 61436495 |          |
| 3 | ARS-BFGL-NGS-119733              | 0 | 61528576 |          |
| 3 | INRA-456                         | 0 | 61599520 |          |
| 3 | BTB-00131364                     | 0 | 61630774 |          |
| 3 | ARS-BFGL-NGS-10798               | 0 | 61660040 |          |
| 3 | BTB-00131540                     | 0 | 61698496 |          |
| 3 | BTB-01587097                     | 0 | 61758600 |          |
| 3 | BTB-01587043                     | 0 | 61785604 |          |
| 3 | BTA-96237-no-rs                  | 0 | 61846076 |          |
| 3 | Hapmap48535-BTA-96235            | 0 | 61894582 |          |
| 3 | ARS-BFGL-NGS-112148              | 0 | 61920582 |          |
| 3 | Hapmap48133-BTA-96243            | 0 | 61947686 |          |
| 3 | Hapmap59991-rs29016955           | 0 | 61979252 |          |
| 3 | INRA-638                         | 0 | 62004226 |          |
| 3 | BTB-02017777                     | 0 | 62035181 |          |
| 3 | BTB-01210452                     | 0 | 62124012 |          |
| 3 | BTB-01982674                     | 0 | 62174708 |          |
| 3 | ARS-BFGL-NGS-15662               | 0 | 62196445 |          |
| 3 | Hapmap51550-BTA-111095           | 0 | 62241899 |          |
| 3 | BTB-01210479                     | 0 | 62300240 |          |
| 3 | Hapmap34029-BES2_Contig454_1301  | 0 |          | 62363117 |
| 3 | Hapmap41459-BTA-122439           | 0 | 62430724 |          |

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| 3 | Hapmap48183-BTA-111096           | 0 | 62458422 |          |
| 3 | Hapmap50565-BTA-111099           | 0 | 62483581 |          |
| 3 | Hapmap33237-BTA-156042           | 0 | 62509283 |          |
| 3 | BTB-01629547                     | 0 | 62533324 |          |
| 3 | BTB-01629524                     | 0 | 62560627 |          |
| 3 | BTB-01629562                     | 0 | 62593709 |          |
| 3 | ARS-BFGL-NGS-57708               | 0 | 62615411 |          |
| 3 | UA-IFASA-9724                    | 0 | 62668669 |          |
| 3 | UA-IFASA-7751                    | 0 | 62689947 |          |
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| 3 | BTB-01359472                     | 0 | 62738616 |          |
| 3 | Hapmap60154-rs29009992           | 0 | 62772239 |          |
| 3 | BTB-01359433                     | 0 | 62809095 |          |
| 3 | BTA-88752-no-rs                  | 0 | 62887463 |          |
| 3 | BTA-28367-no-rs                  | 0 | 62926812 |          |
| 3 | BTA-111984-no-rs                 | 0 | 63060246 |          |
| 3 | BTB-01215910                     | 0 | 63094569 |          |
| 3 | BTB-01215923                     | 0 | 63136013 |          |
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| 3 | BTB-01215978                     | 0 | 63279274 |          |
| 3 | BTB-01215981                     | 0 | 63315825 |          |
| 3 | BTA-19671-no-rs                  | 0 | 63353331 |          |
| 3 | BTB-02064703                     | 0 | 63395160 |          |
| 3 | BTA-111980-no-rs                 | 0 | 63429032 |          |
| 3 | BTA-96764-no-rs                  | 0 | 63477945 |          |
| 3 | BTB-01480514                     | 0 | 63507722 |          |
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| 3 | Hapmap35277-BES11_Contig312_1237 | 0 |          | 63672814 |
| 3 | BTB-01659236                     | 0 | 63719784 |          |
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| 3 | Hapmap35621-SCAFFOLD36250_11008  | 0 |          | 63916846 |
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| 3 | BTB-00131847                     | 0 | 64097592 |          |
| 3 | Hapmap47513-BTA-114957           | 0 | 64160232 |          |
| 3 | BTB-00131742                     | 0 | 64166020 |          |
| 3 | BTB-00131667                     | 0 | 64186622 |          |
| 3 | BTB-00131640                     | 0 | 64231123 |          |
| 3 | ARS-BFGL-NGS-112978              | 0 | 64268724 |          |
| 3 | BTA-104054-no-rs                 | 0 | 64353144 |          |
| 3 | BTB-01755216                     | 0 | 64428546 |          |
| 3 | Hapmap51163-BTA-118898           | 0 | 64442549 |          |
| 3 | BTB-01755246                     | 0 | 64467919 |          |
| 3 | Hapmap34793-BES2_Contig447_1495  | 0 |          | 64493554 |
| 3 | Hapmap23441-BTA-158332           | 0 | 64559579 |          |
| 3 | BTB-01662048                     | 0 | 64599121 |          |

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| 3 | BTB-01662069                    | 0 | 64619764 |  |
| 3 | ARS-BFGL-NGS-28774              | 0 | 64687676 |  |
| 3 | BTA-118180-no-rs                | 0 | 64772318 |  |
| 3 | BTA-05965-rs29020116            | 0 | 64867827 |  |
| 3 | BTA-118190-no-rs                | 0 | 64944718 |  |
| 3 | Hapmap46271-BTA-105331          | 0 | 65089591 |  |
| 3 | Hapmap48164-BTA-105327          | 0 | 65163724 |  |
| 3 | BTA-107655-no-rs                | 0 | 65190739 |  |
| 3 | Hapmap43143-BTA-107652          | 0 | 65249829 |  |
| 3 | ARS-BFGL-NGS-24905              | 0 | 65303582 |  |
| 3 | BTB-01177941                    | 0 | 65335142 |  |
| 3 | Hapmap34153-BES4_Contig290_1439 | 0 | 65362228 |  |
| 3 | BTB-01177772                    | 0 | 65409663 |  |
| 3 | Hapmap42777-BTA-105321          | 0 | 65445867 |  |
| 3 | BTB-01177668                    | 0 | 65490853 |  |
| 3 | ARS-BFGL-NGS-43553              | 0 | 65520107 |  |
| 3 | Hapmap48578-BTA-105324          | 0 | 65542452 |  |
| 3 | ARS-BFGL-NGS-11902              | 0 | 65567581 |  |
| 3 | BTA-105510-no-rs                | 0 | 65600037 |  |
| 3 | BTB-01580535                    | 0 | 65658133 |  |
| 3 | BTB-01580562                    | 0 | 65684294 |  |
| 3 | BTB-01900082                    | 0 | 65718746 |  |
| 3 | Hapmap49033-BTA-115567          | 0 | 65743652 |  |
| 3 | Hapmap46205-BTA-18349           | 0 | 65819607 |  |
| 3 | BTB-01819775                    | 0 | 65848664 |  |
| 3 | Hapmap40266-BTA-26005           | 0 | 65878717 |  |
| 3 | Hapmap55356-rs29019303          | 0 | 65924617 |  |
| 3 | Hapmap39940-BTA-68017           | 0 | 65952377 |  |
| 3 | Hapmap56885-rs29027552          | 0 | 65985183 |  |
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| 3 | Hapmap40185-BTA-68018           | 0 | 66067599 |  |
| 3 | ARS-BFGL-NGS-19966              | 0 | 66111884 |  |
| 3 | BTB-02075090                    | 0 | 66162056 |  |
| 3 | BTA-20420-no-rs                 | 0 | 66198115 |  |
| 3 | Hapmap50882-BTA-119474          | 0 | 66296159 |  |
| 3 | Hapmap33789-BTA-158745          | 0 | 66315977 |  |
| 3 | Hapmap50576-BTA-114951          | 0 | 66341251 |  |
| 3 | INRA-439                        | 0 | 66381935 |  |
| 3 | BTA-86788-no-rs                 | 0 | 66402051 |  |
| 3 | ARS-BFGL-NGS-103136             | 0 | 66455469 |  |
| 3 | BTB-01946657                    | 0 | 66463222 |  |
| 3 | ARS-BFGL-NGS-104721             | 0 | 66486992 |  |
| 3 | Hapmap41669-BTA-87427           | 0 | 66513658 |  |
| 3 | BTA-110572-no-rs                | 0 | 66554349 |  |
| 3 | BTB-01203398                    | 0 | 66625534 |  |
| 3 | BTB-01203408                    | 0 | 66653007 |  |
| 3 | Hapmap58090-rs29011201          | 0 | 66702642 |  |
| 3 | BTB-01203471                    | 0 | 66734946 |  |
| 3 | BTB-01203529                    | 0 | 66768945 |  |
| 3 | ARS-BFGL-NGS-44279              | 0 | 66804676 |  |
| 3 | BTB-01203653                    | 0 | 66846587 |  |
| 3 | Hapmap41426-BTA-109878          | 0 | 66874474 |  |
| 3 | BTB-01203760                    | 0 | 66895562 |  |
| 3 | Hapmap32625-BTA-155642          | 0 | 66931551 |  |

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| 3 | ARS-BFGL-NGS-27770     | 66982081   |
| 3 | ARS-BFGL-NGS-84153     | 0 67096213 |
| 3 | BTA-74217-no-rs        | 0 67124807 |
| 3 | Hapmap39597-BTA-87082  | 0 67152286 |
| 3 | Hapmap51336-BTA-87078  | 0 67188601 |
| 3 | ARS-BFGL-NGS-25259     | 0 67229918 |
| 3 | BTB-01387385           | 0 67255114 |
| 3 | BTB-01805031           | 0 67303946 |
| 3 | INRA-400               | 0 67348877 |
| 3 | BTB-01387335           | 0 67386149 |
| 3 | Hapmap26754-BTA-158188 | 0 67421386 |
| 3 | ARS-BFGL-NGS-93369     | 0 67444200 |
| 3 | Hapmap43909-BTA-68300  | 0 67474440 |
| 3 | Hapmap50441-BTA-68295  | 0 67550755 |
| 3 | BTB-00133369           | 0 67594920 |
| 3 | ARS-BFGL-NGS-11705     | 0 67632435 |
| 3 | ARS-BFGL-NGS-95501     | 0 67672761 |
| 3 | BTA-101561-no-rs       | 0 67716160 |
| 3 | INRA-256               | 0 67723115 |
| 3 | Hapmap54928-ss46526596 | 0 67827369 |
| 3 | BTB-01535640           | 0 67860680 |
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| 3 | Hapmap59693-rs29021260 | 0 67989590 |
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| 3 | BTB-00133036           | 0 68034408 |
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| 3 | ARS-BFGL-NGS-33433     | 0 68207361 |
| 3 | ARS-BFGL-NGS-32201     | 0 68238543 |
| 3 | BTB-01097609           | 0 68271435 |
| 3 | BTB-01097645           | 0 68307607 |
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| 3 | ARS-BFGL-NGS-43311     | 0 68371673 |
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| 3 | ARS-BFGL-NGS-13532     | 0 68681709 |
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| 3 | BTA-94554-no-rs        | 0 68725151 |
| 3 | BTA-94549-no-rs        | 0 68757647 |
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| 3 | ARS-BFGL-NGS-116367    | 0 68854192 |
| 3 | ARS-BFGL-NGS-88177     | 0 68906613 |
| 3 | Hapmap48270-BTA-27130  | 0 68936563 |
| 3 | Hapmap44273-BTA-68311  | 0 68968701 |
| 3 | BTB-00134027           | 0 69004282 |
| 3 | INRA-99                | 0 69043305 |



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| 3 | Hapmap46316-BTA-68304           | 0 | 69084105 |          |
| 3 | BTB-00133827                    | 0 | 69123629 |          |
| 3 | Hapmap51482-BTA-68303           | 0 | 69157266 |          |
| 3 | BTB-01635025                    | 0 | 69182813 |          |
| 3 | BTB-01635015                    | 0 | 69253586 |          |
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| 3 | BTB-00133701                    | 0 | 69315385 |          |
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| 3 | ARS-USMARC-53                   | 0 | 69363070 |          |
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| 3 | ARS-BFGL-NGS-69986              | 0 | 69421920 |          |
| 3 | BTB-00134789                    | 0 | 69455528 |          |
| 3 | ARS-BFGL-NGS-103155             | 0 | 69490696 |          |
| 3 | BTB-00134823                    | 0 | 69511339 |          |
| 3 | BTB-00134876                    | 0 | 69554847 |          |
| 3 | BTB-00134893                    | 0 | 69579599 |          |
| 3 | Hapmap39504-BTA-68327           | 0 | 69610346 |          |
| 3 | BTB-00134756                    | 0 | 69640070 |          |
| 3 | BTB-00134713                    | 0 | 69665903 |          |
| 3 | BTB-00134661                    | 0 | 69716313 |          |
| 3 | BTB-00134495                    | 0 | 69752915 |          |
| 3 | Hapmap45444-BTA-68325           | 0 | 69785571 |          |
| 3 | Hapmap34313-BES4_Contig160_1015 | 0 | 69832745 | 69832745 |
| 3 | Hapmap41935-BTA-68323           | 0 | 69870365 |          |
| 3 | BTA-68322-no-rs                 | 0 | 69905106 |          |
| 3 | Hapmap54534-rs29013555          | 0 | 69940346 |          |
| 3 | Hapmap51849-BTA-68314           | 0 | 69968011 |          |
| 3 | ARS-BFGL-NGS-14073              | 0 | 70077512 |          |
| 3 | BTB-00134949                    | 0 | 70120751 |          |
| 3 | BTB-00134979                    | 0 | 70167658 |          |
| 3 | BTB-00135076                    | 0 | 70218036 |          |
| 3 | ARS-BFGL-NGS-102662             | 0 | 70238678 |          |
| 3 | BTB-00135094                    | 0 | 70265808 |          |
| 3 | UA-IFASA-8522                   | 0 | 70276912 |          |
| 3 | BTA-10440-no-rs                 | 0 | 70313793 |          |
| 3 | Hapmap48259-BTA-24407           | 0 | 70355587 |          |
| 3 | BTB-01472286                    | 0 | 70399891 |          |
| 3 | BTB-01887376                    | 0 | 70438351 |          |
| 3 | BTB-00096666                    | 0 | 70496274 |          |
| 3 | BTA-47411-no-rs                 | 0 | 70536352 |          |
| 3 | BTB-00096498                    | 0 | 70567716 |          |
| 3 | BTB-00096447                    | 0 | 70592505 |          |
| 3 | BTA-19340-no-rs                 | 0 | 70676743 |          |
| 3 | BTB-01093811                    | 0 | 70704122 |          |
| 3 | ARS-BFGL-NGS-72031              | 0 | 70724287 |          |
| 3 | BTB-01093766                    | 0 | 70748977 |          |
| 3 | Hapmap27902-BTA-47391           | 0 | 70889923 |          |
| 3 | BTB-01293453                    | 0 | 70931186 |          |
| 3 | BTB-01817097                    | 0 | 71038159 |          |
| 3 | Hapmap54082-rs29012776          | 0 | 71077825 |          |
| 3 | BTB-01293745                    | 0 | 71141852 |          |
| 3 | BTB-01293485                    | 0 | 71167977 |          |
| 3 | ARS-BFGL-NGS-83030              | 0 | 71190672 |          |
| 3 | BTB-01293614                    | 0 | 71238926 |          |

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| 3 | BTB-01293817           | 0 | 71270454 |
| 3 | BTB-01393342           | 0 | 71304167 |
| 3 | Hapmap51921-BTA-87964  | 0 | 71331734 |
| 3 | BTA-87963-no-rs        | 0 | 71383017 |
| 3 | BTA-87962-no-rs        | 0 | 71516276 |
| 3 | BTB-01282002           | 0 | 71563255 |
| 3 | BTB-01392993           | 0 | 71596348 |
| 3 | BTB-01702238           | 0 | 71672549 |
| 3 | BTB-01281916           | 0 | 71760025 |
| 3 | ARS-BFGL-NGS-115928    | 0 | 71836680 |
| 3 | Hapmap27208-BTA-157501 | 0 | 71860062 |
| 3 | BTB-01905862           | 0 | 71882823 |
| 3 | BTB-01230096           | 0 | 71906864 |
| 3 | BTB-00135233           | 0 | 71929079 |
| 3 | BTB-01281817           | 0 | 72000950 |
| 3 | ARS-BFGL-NGS-105925    | 0 | 72040284 |
| 3 | BTB-01281718           | 0 | 72067475 |
| 3 | BTB-01281672           | 0 | 72094019 |
| 3 | Hapmap51082-BTA-89468  | 0 | 72122900 |
| 3 | BTB-01229999           | 0 | 72155223 |
| 3 | BTA-114873-no-rs       | 0 | 72183926 |
| 3 | Hapmap54050-rs29013285 | 0 | 72296340 |
| 3 | ARS-BFGL-NGS-67327     | 0 | 72519744 |
| 3 | ARS-BFGL-NGS-49057     | 0 | 72604524 |
| 3 | BTB-00135284           | 0 | 72743814 |
| 3 | BTB-01863309           | 0 | 73007386 |
| 3 | Hapmap40508-BTA-21513  | 0 | 73035441 |
| 3 | ARS-BFGL-NGS-13928     | 0 | 73081911 |
| 3 | Hapmap42603-BTA-61004  | 0 | 73178234 |
| 3 | ARS-BFGL-NGS-48139     | 0 | 73229266 |
| 3 | Hapmap25809-BTA-132460 | 0 | 73465083 |
| 3 | Hapmap27987-BTA-43649  | 0 | 73503118 |
| 3 | BTB-00722506           | 0 | 73526172 |
| 3 | Hapmap32799-BTA-132450 | 0 | 73549770 |
| 3 | BTB-01072128           | 0 | 73652370 |
| 3 | Hapmap48592-BTA-107734 | 0 | 73687938 |
| 3 | ARS-BFGL-NGS-108605    | 0 | 73868215 |
| 3 | BTB-01071906           | 0 | 73895121 |
| 3 | BTA-107777-no-rs       | 0 | 73921609 |
| 3 | BTA-107776-no-rs       | 0 | 73942398 |
| 3 | ARS-BFGL-NGS-119369    | 0 | 73999306 |
| 3 | BTA-107775-no-rs       | 0 | 74083294 |
| 3 | Hapmap57979-rs29017982 | 0 | 74179845 |
| 3 | Hapmap43144-BTA-107773 | 0 | 74204900 |
| 3 | ARS-BFGL-NGS-18931     | 0 | 74234478 |
| 3 | BTA-107738-no-rs       | 0 | 74315105 |
| 3 | Hapmap39078-BTA-107737 | 0 | 74385782 |
| 3 | Hapmap60223-rs29010020 | 0 | 74525857 |
| 3 | ARS-BFGL-NGS-67585     | 0 | 74566488 |
| 3 | BTB-01071609           | 0 | 74601506 |
| 3 | BTB-00135542           | 0 | 74636373 |
| 3 | Hapmap55103-rs29011390 | 0 | 74744528 |
| 3 | BTA-68360-no-rs        | 0 | 74836184 |
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| 3 | ARS-BFGL-NGS-25040             | 0 | 74919850 |          |
| 3 | Hapmap40459-BTA-68361          | 0 | 74946979 |          |
| 3 | Hapmap42002-BTA-89609          | 0 | 75023173 |          |
| 3 | BTB-01850782                   | 0 | 75047802 |          |
| 3 | BTA-68347-no-rs                | 0 | 75196565 |          |
| 3 | ARS-BFGL-NGS-16740             | 0 | 75364755 |          |
| 3 | Hapmap38244-BTA-68351          | 0 | 75388417 |          |
| 3 | Hapmap56783-rs29013974         | 0 | 75413638 |          |
| 3 | Hapmap43910-BTA-68352          | 0 | 75443336 |          |
| 3 | Hapmap49707-BTA-68355          | 0 | 75543048 |          |
| 3 | ARS-BFGL-NGS-32439             | 0 | 75567932 |          |
| 3 | ARS-BFGL-NGS-86120             |   | 75596061 |          |
| 3 | BTB-00135420                   | 0 | 75690381 |          |
| 3 | ARS-BFGL-NGS-34068             | 0 | 75737505 |          |
| 3 | ARS-BFGL-NGS-37007             | 0 | 75826743 |          |
| 3 | BTB-01933332                   | 0 | 75856447 |          |
| 3 | BTA-102327-no-rs               | 0 | 75896085 |          |
| 3 | BTB-01542662                   | 0 | 75947681 |          |
| 3 | BTB-01542625                   | 0 | 75972207 |          |
| 3 | ARS-BFGL-NGS-40979             | 0 | 76035716 |          |
| 3 | Hapmap49435-BTA-108951         | 0 | 76091197 |          |
| 3 | ARS-BFGL-NGS-26551             | 0 | 76118883 |          |
| 3 | BTB-00136493                   | 0 | 76153900 |          |
| 3 | ARS-BFGL-NGS-79186             | 0 | 76179843 |          |
| 3 | BTB-00135877                   | 0 | 76205196 |          |
| 3 | BTB-02080963                   | 0 | 76225293 |          |
| 3 | BTB-00136380                   | 0 | 76297775 |          |
| 3 | BTB-00136366                   | 0 | 76327590 |          |
| 3 | BTB-02041459                   | 0 | 76367708 |          |
| 3 | BTA-94162-no-rs                | 0 | 76406790 |          |
| 3 | BTB-00136311                   | 0 | 76429465 |          |
| 3 | BTB-00136233                   | 0 | 76454069 |          |
| 3 | Hapmap53126-rs29022865         | 0 | 76481717 |          |
| 3 | BTB-01834732                   | 0 | 76544780 |          |
| 3 | UA-IFASA-5864                  | 0 | 76566650 |          |
| 3 | BTB-00136082                   | 0 | 76618845 |          |
| 3 | ARS-BFGL-NGS-57421             | 0 | 76647833 |          |
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| 3 | INRA-142                       | 0 | 76775439 |          |
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| 3 | BTB-01789933                   | 0 | 76870934 |          |
| 3 | BTB-01810345                   | 0 | 76958680 |          |
| 3 | Hapmap27270-BTA-92143          | 0 | 77129465 |          |
| 3 | Hapmap35132-BES4_Contig245_660 | 0 |          | 77160399 |
| 3 | BTB-00136736                   | 0 | 77262487 |          |
| 3 | Hapmap45138-BTA-87857          | 0 | 77282550 |          |
| 3 | BTB-01923614                   | 0 | 77312933 |          |
| 3 | BTB-01060056                   | 0 | 77355587 |          |
| 3 | ARS-BFGL-NGS-66643             | 0 | 77404750 |          |
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| 3 | ARS-BFGL-NGS-39184     | 0 | 77487187 |
| 3 | INRA-259               | 0 | 77511061 |
| 3 | BTB-01946683           | 0 | 77579714 |
| 3 | BTA-68406-no-rs        | 0 | 77666001 |
| 3 | BTB-00137106           | 0 | 77712209 |
| 3 | Hapmap44396-BTA-68407  | 0 | 77734314 |
| 3 | BTB-01869177           | 0 | 77846465 |
| 3 | BTB-00137261           | 0 | 77923168 |
| 3 | BTB-00137231           | 0 | 77959050 |
| 3 | BTB-00137287           | 0 | 77975986 |
| 3 | BTB-01917890           | 0 | 78018190 |
| 3 | BTA-115703-no-rs       | 0 | 78043300 |
| 3 | ARS-BFGL-NGS-33377     | 0 | 78108702 |
| 3 | ARS-BFGL-NGS-34260     | 0 | 78170557 |
| 3 | Hapmap48092-BTA-82679  | 0 | 78201865 |
| 3 | BTB-00373687           | 0 | 78242632 |
| 3 | BTA-82678-no-rs        | 0 | 78265433 |
| 3 | ARS-BFGL-NGS-114340    | 0 | 78323155 |
| 3 | BTB-02039975           | 0 | 78361887 |
| 3 | ARS-BFGL-NGS-67919     | 0 | 78383390 |
| 3 | BTB-01375201           | 0 | 78416963 |
| 3 | Hapmap42166-BTA-28554  | 0 | 78564953 |
| 3 | ARS-BFGL-NGS-115005    | 0 | 78617992 |
| 3 | ARS-BFGL-NGS-111499    | 0 | 78644818 |
| 3 | Hapmap48514-BTA-89077  | 0 | 78690704 |
| 3 | BTB-01168168           | 0 | 78728684 |
| 3 | BTA-102712-no-rs       | 0 | 78777587 |
| 3 | Hapmap48656-BTA-122282 | 0 | 78912967 |
| 3 | Hapmap33503-BTA-153060 | 0 | 78944480 |
| 3 | Hapmap38558-BTA-102711 | 0 | 78971559 |
| 3 | BTB-01168089           | 0 | 78998337 |
| 3 | BTB-01168059           | 0 | 79025375 |
| 3 | UA-IFASA-2622          | 0 | 79069350 |
| 3 | BTB-01167901           | 0 | 79181003 |
| 3 | Hapmap48157-BTA-102710 | 0 | 79223535 |
| 3 | BTB-01155381           | 0 | 79282515 |
| 3 | Hapmap33276-BTA-99846  | 0 | 79312407 |
| 3 | Hapmap39300-BTA-99855  | 0 | 79333053 |
| 3 | BTB-01155479           | 0 | 79378528 |
| 3 | ARS-BFGL-NGS-60582     | 0 | 79402892 |
| 3 | ARS-BFGL-NGS-40730     | 0 | 79447498 |
| 3 | ARS-BFGL-NGS-31953     | 0 | 79480234 |
| 3 | BTA-99819-no-rs        | 0 | 79508402 |
| 3 | Hapmap50178-BTA-99822  | 0 | 79548542 |
| 3 | BTB-01155798           | 0 | 79581142 |
| 3 | Hapmap41709-BTA-99825  | 0 | 79606410 |
| 3 | Hapmap61146-rs29010867 | 0 | 79674161 |
| 3 | Hapmap39877-BTA-99831  | 0 | 79698786 |
| 3 | BTB-01155932           | 0 | 79726444 |
| 3 | Hapmap28134-BTA-152098 | 0 | 79753931 |
| 3 | BTB-01155969           | 0 | 79777779 |
| 3 | ARS-BFGL-NGS-34527     | 0 | 79800652 |
| 3 | BTB-00597108           | 0 | 79997340 |
| 3 | Hapmap26677-BTA-141535 | 0 | 80099276 |

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| 3 | BTB-00137697                     | 0 | 80168356 |  |
| 3 | ARS-BFGL-NGS-74572               | 0 | 80193703 |  |
| 3 | BTB-00137646                     | 0 | 80236042 |  |
| 3 | UA-IFASA-6589                    | 0 | 80265751 |  |
| 3 | ARS-BFGL-NGS-118303              | 0 | 80304501 |  |
| 3 | Hapmap49708-BTA-68421            | 0 | 80387976 |  |
| 3 | ARS-BFGL-NGS-118634              | 0 | 80437270 |  |
| 3 | BTA-91587-no-rs                  | 0 | 80517326 |  |
| 3 | ARS-BFGL-NGS-34570               | 0 | 80562496 |  |
| 3 | ARS-BFGL-NGS-63410               | 0 | 80686312 |  |
| 3 | Hapmap41129-BTA-102412           | 0 | 80739070 |  |
| 3 | BTA-102407-no-rs                 | 0 | 80767668 |  |
| 3 | BTB-01543508                     | 0 | 80798088 |  |
| 3 | Hapmap58391-rs29019654           | 0 | 80822661 |  |
| 3 | BTB-00138938                     | 0 | 80860593 |  |
| 3 | ARS-BFGL-NGS-114072              | 0 | 80889108 |  |
| 3 | Hapmap51621-BTA-68487            | 0 | 81002922 |  |
| 3 | BTB-00139181                     | 0 | 81047780 |  |
| 3 | ARS-BFGL-NGS-33471               | 0 | 81094906 |  |
| 3 | INRA-321                         | 0 | 81120497 |  |
| 3 | ARS-BFGL-NGS-31628               | 0 | 81172014 |  |
| 3 | ARS-BFGL-NGS-106180              | 0 | 81217180 |  |
| 3 | BTB-00139667                     | 0 | 81243127 |  |
| 3 | BTB-00139621                     | 0 | 81264483 |  |
| 3 | BTB-00139586                     | 0 | 81285806 |  |
| 3 | Hapmap43912-BTA-68491            | 0 | 81311774 |  |
| 3 | ARS-BFGL-NGS-112987              | 0 | 81355108 |  |
| 3 | BTB-01832443                     | 0 | 81379707 |  |
| 3 | BTB-00138441                     | 0 | 81428130 |  |
| 3 | ARS-BFGL-NGS-103424              | 0 | 81444356 |  |
| 3 | ARS-BFGL-NGS-31952               | 0 | 81472159 |  |
| 3 | Hapmap55763-rs29012939           | 0 | 81506020 |  |
| 3 | BTB-01876776                     | 0 | 81550138 |  |
| 3 | BTA-22557-no-rs                  | 0 | 81575667 |  |
| 3 | Hapmap33205-BTA-141538           | 0 | 81615240 |  |
| 3 | BTA-68453-no-rs                  | 0 | 81630254 |  |
| 3 | BTB-00138041                     | 0 | 81673140 |  |
| 3 | Hapmap34665-BES10_Contig789_3212 | 0 | 81693260 |  |
| 3 | ARS-BFGL-NGS-108208              | 0 | 81745268 |  |
| 3 | BTB-00137937                     | 0 | 81774972 |  |
| 3 | BTB-00137929                     | 0 | 81800637 |  |
| 3 | BTA-68508-no-rs                  | 0 | 81842704 |  |
| 3 | ARS-BFGL-NGS-77911               | 0 | 81881084 |  |
| 3 | BTB-01771876                     | 0 | 81906693 |  |
| 3 | BTA-68507-no-rs                  | 0 | 81945861 |  |
| 3 | ARS-BFGL-NGS-117782              | 0 | 81972876 |  |
| 3 | BTB-00139874                     | 0 | 81993242 |  |
| 3 | ARS-BFGL-NGS-83572               | 0 | 82014166 |  |
| 3 | BTB-00139825                     | 0 | 82037605 |  |
| 3 | BTA-68497-no-rs                  | 0 | 82067836 |  |
| 3 | BTA-68496-no-rs                  | 0 | 82113195 |  |
| 3 | INRA-137                         | 0 | 82160715 |  |
| 3 | BTB-00139691                     | 0 | 82187624 |  |
| 3 | Hapmap58865-ss46526158           | 0 | 82250730 |  |

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| 3 | BTB-01528637           | 0 | 82570996 |
| 3 | ARS-BFGL-NGS-34027     | 0 | 82623974 |
| 3 | Hapmap47805-BTA-101148 | 0 | 82653990 |
| 3 | Hapmap41719-BTA-101147 | 0 | 82677195 |
| 3 | BTB-00139963           | 0 | 82984186 |
| 3 | BTB-00139975           | 0 | 83014252 |
| 3 | BTB-00140027           | 0 | 83041113 |
| 3 | Hapmap41060-BTA-68516  | 0 | 83093150 |
| 3 | BTA-68532-no-rs        | 0 | 83122993 |
| 3 | ARS-BFGL-NGS-89351     | 0 | 83242603 |
| 3 | BTB-00140314           | 0 | 83281702 |
| 3 | BTA-68535-no-rs        | 0 | 83306806 |
| 3 | BTB-00140409           | 0 | 83347742 |
| 3 | BTB-00140470           | 0 | 83410090 |
| 3 | Hapmap49268-BTA-68367  | 0 | 83500066 |
| 3 | BTB-00140947           | 0 | 83534093 |
| 3 | Hapmap40290-BTA-68546  | 0 | 83574052 |
| 3 | UA-IFASA-8398          | 0 | 83599565 |
| 3 | BTA-68565-no-rs        | 0 | 83644705 |
| 3 | Hapmap47699-BTA-68564  | 0 | 83692702 |
| 3 | Hapmap49271-BTA-68562  | 0 | 83770233 |
| 3 | ARS-BFGL-NGS-17040     | 0 | 83806574 |
| 3 | BTB-00140750           | 0 | 83833594 |
| 3 | ARS-BFGL-NGS-65863     | 0 | 83856945 |
| 3 | ARS-BFGL-NGS-13238     | 0 | 83893310 |
| 3 | Hapmap49270-BTA-68543  | 0 | 83952776 |
| 3 | BTA-19745-no-rs        | 0 | 84029825 |
| 3 | ARS-BFGL-NGS-15670     | 0 | 84094824 |
| 3 | BTA-29968-no-rs        | 0 | 84123491 |
| 3 | ARS-BFGL-NGS-96076     | 0 | 84150653 |
| 3 | ARS-BFGL-NGS-44176     | 0 | 84195302 |
| 3 | BTB-01466399           | 0 | 84295666 |
| 3 | BTB-01466258           | 0 | 84336502 |
| 3 | BTB-01466252           | 0 | 84343122 |
| 3 | ARS-BFGL-NGS-109293    | 0 | 84365910 |
| 3 | Hapmap28679-BTA-150602 | 0 | 84395415 |
| 3 | BTB-01466122           | 0 | 84416536 |
| 3 | Hapmap54744-rs29013475 | 0 | 84455380 |
| 3 | BTB-00140587           | 0 | 84487946 |
| 3 | BTB-00146339           | 0 | 84542984 |
| 3 | BTB-02040570           | 0 | 84606113 |
| 3 | BTA-118308-no-rs       | 0 | 84627858 |
| 3 | ARS-BFGL-NGS-99481     | 0 | 84669155 |
| 3 | ARS-BFGL-NGS-22150     | 0 | 84693517 |
| 3 | ARS-BFGL-NGS-14549     | 0 | 84764797 |
| 3 | ARS-BFGL-NGS-107651    | 0 | 84825930 |
| 3 | ARS-BFGL-NGS-119074    | 0 | 84857706 |
| 3 | BTB-00141133           | 0 | 84888306 |
| 3 | BTB-00141142           | 0 | 84910227 |
| 3 | BTB-00141153           | 0 | 84938304 |
| 3 | BTA-68573-no-rs        | 0 | 84966080 |
| 3 | BTA-68574-no-rs        | 0 | 85043515 |
| 3 | BTA-68578-no-rs        | 0 | 85069871 |

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| 3 | ARS-BFGL-NGS-23096            | 0 | 85100892 |          |
| 3 | ARS-BFGL-NGS-73607            | 0 | 85126311 |          |
| 3 | ARS-BFGL-NGS-119769           | 0 | 85194375 |          |
| 3 | ARS-BFGL-NGS-26530            | 0 | 85232050 |          |
| 3 | ARS-BFGL-NGS-103524           | 0 | 85253155 |          |
| 3 | BTA-95406-no-rs               | 0 | 85275613 |          |
| 3 | ARS-BFGL-NGS-38551            | 0 | 85299919 |          |
| 3 | BTB-01577228                  | 0 | 85324936 |          |
| 3 | BTA-105192-no-rs              | 0 | 85355582 |          |
| 3 | BTA-105204-no-rs              | 0 | 85388059 |          |
| 3 | ARS-BFGL-NGS-36351            | 0 | 85409230 |          |
| 3 | BTB-01463885                  | 0 | 85429665 |          |
| 3 | BTB-00057954                  | 0 | 85450050 |          |
| 3 | Hapmap34100-BES3_Contig74_659 | 0 |          | 85498963 |
| 3 | ARS-BFGL-NGS-20008            | 0 | 85520539 |          |
| 3 | ARS-BFGL-NGS-32615            | 0 | 85552726 |          |
| 3 | ARS-BFGL-NGS-114856           | 0 | 85590312 |          |
| 3 | Hapmap41493-BTA-28649         | 0 | 85629524 |          |
| 3 | BTB-01389905                  | 0 | 85744437 |          |
| 3 | BTB-01389843                  | 0 | 85764516 |          |
| 3 | BTB-01389777                  | 0 | 85777031 |          |
| 3 | ARS-BFGL-NGS-11694            | 0 | 85838310 |          |
| 3 | BTB-01389756                  | 0 | 85860004 |          |
| 3 | BTB-01389725                  | 0 | 85901731 |          |
| 3 | ARS-BFGL-NGS-66463            | 0 | 85944553 |          |
| 3 | Hapmap51689-BTA-116275        | 0 | 86047228 |          |
| 3 | Hapmap39464-BTA-116273        | 0 | 86081214 |          |
| 3 | BTB-01240416                  | 0 | 86121373 |          |
| 3 | Hapmap43161-BTA-116272        | 0 | 86160189 |          |
| 3 | BTB-01240408                  | 0 | 86180854 |          |
| 3 | BTB-01240396                  | 0 | 86203369 |          |
| 3 | BTB-01240403                  | 0 | 86242539 |          |
| 3 | ARS-BFGL-NGS-67595            | 0 | 86270064 |          |
| 3 | Hapmap43465-BTA-111846        | 0 | 86310536 |          |
| 3 | BTB-01240360                  | 0 | 86353035 |          |
| 3 | Hapmap27778-BTA-157634        | 0 | 86399235 |          |
| 3 | Hapmap48852-BTA-68859         | 0 | 86467404 |          |
| 3 | BTA-68864-no-rs               | 0 | 86513188 |          |
| 3 | BTB-00146483                  | 0 | 86551027 |          |
| 3 | BTB-00141391                  | 0 | 86715849 |          |
| 3 | Hapmap58361-rs29011460        | 0 | 86762502 |          |
| 3 | BTB-00141486                  | 0 | 86784110 |          |
| 3 | ARS-BFGL-NGS-101320           | 0 | 86806376 |          |
| 3 | ARS-BFGL-NGS-29278            | 0 | 86865326 |          |
| 3 | BTA-68603-no-rs               | 0 | 86886379 |          |
| 3 | ARS-BFGL-NGS-117463           | 0 | 86907103 |          |
| 3 | BTB-01794313                  | 0 | 86941966 |          |
| 3 | ARS-BFGL-NGS-15341            | 0 | 87002768 |          |
| 3 | BTA-95419-no-rs               | 0 | 87030979 |          |
| 3 | ARS-BFGL-NGS-44070            | 0 | 87068034 |          |
| 3 | Hapmap38643-BTA-95454         | 0 | 87098494 |          |
| 3 | ARS-BFGL-NGS-53706            | 0 | 87122038 |          |
| 3 | Hapmap47785-BTA-95420         | 0 | 87161153 |          |
| 3 | ARS-BFGL-NGS-109435           | 0 | 87237528 |          |

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| 3 | ARS-BFGL-NGS-119952    | 0        | 87293789 |
| 3 | Hapmap45966-BTA-95438  | 0        | 87330742 |
| 3 | BTA-95441-no-rs        | 0        | 87351393 |
| 3 | ARS-BFGL-NGS-112185    | 0        | 87409431 |
| 3 | Hapmap57348-rs29011302 | 0        | 87451543 |
| 3 | Hapmap53568-rs29013441 | 0        | 87477115 |
| 3 | ARS-BFGL-NGS-26741     | 0        | 87486573 |
| 3 | BTA-95444-no-rs        | 0        | 87590836 |
| 3 | ARS-BFGL-NGS-113889    | 0        | 87632354 |
| 3 | ARS-BFGL-NGS-22159     | 0        | 87669013 |
| 3 | ARS-BFGL-NGS-46900     | 87702825 |          |
| 3 | ARS-BFGL-NGS-102929    | 0        | 87758663 |
| 3 | ARS-BFGL-NGS-110127    | 0        | 87809919 |
| 3 | Hapmap50442-BTA-68886  | 0        | 87834931 |
| 3 | Hapmap54157-rs29026707 | 0        | 87861675 |
| 3 | ARS-BFGL-NGS-11603     | 0        | 87904203 |
| 3 | BTA-68885-no-rs        | 0        | 87954648 |
| 3 | ARS-BFGL-NGS-40956     | 0        | 87993018 |
| 3 | ARS-BFGL-NGS-20299     | 0        | 88033447 |
| 3 | ARS-BFGL-NGS-104209    | 0        | 88054073 |
| 3 | ARS-BFGL-NGS-102902    | 0        | 88136761 |
| 3 | Hapmap32684-BTA-89476  | 0        | 88170287 |
| 3 | BTA-89470-no-rs        | 0        | 88206911 |
| 3 | BTA-68872-no-rs        | 0        | 88279862 |
| 3 | Hapmap58247-rs29024002 | 0        | 88366108 |
| 3 | BTA-68609-no-rs        | 0        | 88456810 |
| 3 | BTA-68610-no-rs        | 0        | 88506442 |
| 3 | ARS-BFGL-NGS-57959     | 0        | 88579850 |
| 3 | BTA-68613-no-rs        | 0        | 88652002 |
| 3 | BTB-00141992           | 0        | 88683457 |
| 3 | ARS-BFGL-NGS-104839    | 0        | 88712390 |
| 3 | ARS-BFGL-NGS-35210     | 88741652 |          |
| 3 | BTB-00141857           | 0        | 88766772 |
| 3 | ARS-BFGL-NGS-80560     | 0        | 88796539 |
| 3 | BTB-00141843           | 0        | 88842253 |
| 3 | ARS-BFGL-NGS-100159    | 0        | 88864456 |
| 3 | BTB-01893977           | 0        | 88899431 |
| 3 | Hapmap41488-BTA-24106  | 0        | 88923355 |
| 3 | BTB-00143361           | 0        | 88950716 |
| 3 | ARS-BFGL-NGS-74207     | 0        | 88976331 |
| 3 | ARS-BFGL-NGS-10080     | 0        | 89035862 |
| 3 | BTA-11699-no-rs        | 0        | 89151787 |
| 3 | ARS-BFGL-NGS-18659     | 0        | 89193591 |
| 3 | BTB-00143286           | 0        | 89233653 |
| 3 | BTB-00143272           | 0        | 89257029 |
| 3 | ARS-BFGL-NGS-67624     | 0        | 89281678 |
| 3 | ARS-BFGL-NGS-100813    | 0        | 89320961 |
| 3 | BTA-68663-no-rs        | 0        | 89327246 |
| 3 | BTB-00143051           | 0        | 89347495 |
| 3 | ARS-BFGL-NGS-70437     | 0        | 89373222 |
| 3 | BTB-00142919           | 0        | 89398993 |
| 3 | BTB-00142904           | 0        | 89422763 |
| 3 | ARS-BFGL-NGS-100400    | 0        | 89457353 |
| 3 | ARS-BFGL-NGS-87511     | 0        | 89489290 |



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| 3 | BTB-00142718                    | 0 | 89516613 |          |
| 3 | ARS-BFGL-NGS-112680             | 0 | 89543254 |          |
| 3 | ARS-BFGL-NGS-44564              | 0 | 89579376 |          |
| 3 | ARS-BFGL-NGS-71626              | 0 | 89621378 |          |
| 3 | BTB-00142582                    | 0 | 89649212 |          |
| 3 | Hapmap41332-BTA-68635           | 0 | 89675602 |          |
| 3 | BTB-00142550                    | 0 | 89718673 |          |
| 3 | BTB-00142497                    | 0 | 89738009 |          |
| 3 | ARS-BFGL-NGS-33677              | 0 | 89758961 |          |
| 3 | INRA-342                        | 0 | 89797436 |          |
| 3 | Hapmap43328-BTA-68633           | 0 | 89865870 |          |
| 3 | ARS-BFGL-NGS-33630              | 0 | 89897661 |          |
| 3 | BTB-00142187                    | 0 | 89918282 |          |
| 3 | BTB-00142159                    | 0 | 89942617 |          |
| 3 | BTB-00142145                    | 0 | 89966651 |          |
| 3 | ARS-BFGL-NGS-44533              | 0 | 89988580 |          |
| 3 | BTB-00141705                    | 0 | 90043898 |          |
| 3 | BTB-01755444                    | 0 | 90139402 |          |
| 3 | BTA-79026-no-rs                 | 0 | 90202355 |          |
| 3 | Hapmap57748-ss46526142          | 0 | 90229884 |          |
| 3 | ARS-BFGL-NGS-27852              | 0 | 90258405 |          |
| 3 | ARS-BFGL-NGS-61705              | 0 | 90300101 |          |
| 3 | Hapmap34238-BES1_Contig417_1330 | 0 |          | 90330060 |
| 3 | ARS-BFGL-NGS-16595              | 0 | 90353180 |          |
| 3 | BTB-01295488                    | 0 | 90367814 |          |
| 3 | ARS-BFGL-NGS-44660              |   | 90394566 |          |
| 3 | BTB-01865796                    | 0 | 90415921 |          |
| 3 | Hapmap30329-BTA-163245          | 0 | 90436784 |          |
| 3 | ARS-BFGL-NGS-102021             | 0 | 90467664 |          |
| 3 | Hapmap38204-BTA-17242           | 0 | 90495998 |          |
| 3 | BTB-01295576                    | 0 | 90523019 |          |
| 3 | ARS-BFGL-NGS-104009             | 0 | 90548782 |          |
| 3 | BTB-00143455                    | 0 | 90616193 |          |
| 3 | BTB-00143468                    | 0 | 90639047 |          |
| 3 | ARS-BFGL-NGS-21298              | 0 | 90669666 |          |
| 3 | BTA-19061-no-rs                 | 0 | 90692920 |          |
| 3 | BTB-00546619                    | 0 | 90715864 |          |
| 3 | Hapmap40504-BTA-18839           | 0 | 90770539 |          |
| 3 | BTB-01294629                    | 0 | 90801682 |          |
| 3 | BTB-01294562                    | 0 | 90836963 |          |
| 3 | BTB-01294529                    | 0 | 90870255 |          |
| 3 | Hapmap27186-BTA-151189          | 0 | 90912199 |          |
| 3 | BTB-01143243                    | 0 | 90944982 |          |
| 3 | BTB-01143192                    | 0 | 91023826 |          |
| 3 | BTB-01143158                    | 0 | 91051943 |          |
| 3 | BTB-02093517                    | 0 | 91068865 |          |
| 3 | Hapmap42056-BTA-108680          | 0 | 91136875 |          |
| 3 | Hapmap26177-BTA-155133          | 0 | 91159045 |          |
| 3 | BTB-01195774                    | 0 | 91207629 |          |
| 3 | ARS-BFGL-NGS-13119              | 0 | 91237656 |          |
| 3 | Hapmap32622-BTA-155129          | 0 | 91259493 |          |
| 3 | ARS-BFGL-NGS-40591              | 0 | 91304468 |          |
| 3 | ARS-BFGL-NGS-117695             | 0 | 91352963 |          |
| 3 | BTB-02058084                    | 0 | 91379427 |          |

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| 3 | BTA-108673-no-rs       | 0 | 91402252 |
| 3 | BTB-01195588           | 0 | 91433659 |
| 3 | BTA-108672-no-rs       | 0 | 91456663 |
| 3 | ARS-BFGL-NGS-116962    | 0 | 91486052 |
| 3 | BTB-01195369           | 0 | 91524310 |
| 3 | ARS-BFGL-NGS-73518     | 0 | 91557958 |
| 3 | Hapmap47494-BTA-108688 | 0 | 91583640 |
| 3 | ARS-BFGL-NGS-29953     | 0 | 91615073 |
| 3 | BTB-01195129           | 0 | 91644794 |
| 3 | BTB-01899527           | 0 | 91660272 |
| 3 | Hapmap52783-rs29016053 | 0 | 91703200 |
| 3 | BTA-68624-no-rs        | 0 | 91734831 |
| 3 | ARS-BFGL-NGS-54080     | 0 | 91757984 |
| 3 | BTA-68622-no-rs        | 0 | 91801217 |
| 3 | BTB-00142063           | 0 | 91840020 |
| 3 | ARS-BFGL-NGS-58887     | 0 | 91877739 |
| 3 | ARS-BFGL-NGS-87220     | 0 | 91910014 |
| 3 | ARS-BFGL-NGS-100838    | 0 | 91930742 |
| 3 | BTB-00143481           | 0 | 92015484 |
| 3 | ARS-BFGL-NGS-10620     | 0 | 92082212 |
| 3 | ARS-BFGL-NGS-118592    | 0 | 92144760 |
| 3 | ARS-BFGL-NGS-95066     | 0 | 92168493 |
| 3 | ARS-BFGL-NGS-40486     | 0 | 92190368 |
| 3 | ARS-BFGL-NGS-31520     | 0 | 92229630 |
| 3 | ARS-BFGL-NGS-12795     | 0 | 92282547 |
| 3 | ARS-BFGL-NGS-29595     | 0 | 92304109 |
| 3 | ARS-BFGL-NGS-36607     | 0 | 92327315 |
| 3 | ARS-BFGL-NGS-111526    | 0 | 92382200 |
| 3 | ARS-BFGL-NGS-20205     | 0 | 92427474 |
| 3 | BTB-00143793           | 0 | 92447724 |
| 3 | Hapmap45127-BTA-68693  | 0 | 92471742 |
| 3 | ARS-BFGL-NGS-60657     | 0 | 92499770 |
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| 3 | ARS-BFGL-NGS-55546     | 0 | 92692201 |
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| 3 | ARS-BFGL-NGS-37368     | 0 | 93047215 |
| 3 | ARS-BFGL-NGS-116828    | 0 | 93116911 |
| 3 | ARS-BFGL-NGS-24090     | 0 | 93163180 |
| 3 | ARS-BFGL-NGS-65964     | 0 | 93184806 |
| 3 | ARS-BFGL-NGS-40934     | 0 | 93206341 |
| 3 | ARS-BFGL-NGS-111451    | 0 | 93229360 |
| 3 | Hapmap42636-BTA-68725  | 0 | 93306873 |
| 3 | Hapmap52902-rs29010266 | 0 | 93330506 |

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| 3 | BTB-00144361                   | 0 | 93370268 |          |
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| 3 | ARS-BFGL-NGS-91142             | 0 | 93523689 |          |
| 3 | ARS-BFGL-NGS-27702             | 0 | 93543745 |          |
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| 3 | Hapmap23711-BTA-31541          | 0 | 93682810 |          |
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| 3 | ARS-BFGL-NGS-80689             | 0 | 93744226 |          |
| 3 | BTB-01600271                   | 0 | 93804369 |          |
| 3 | INRA-178                       | 0 | 93847303 |          |
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| 3 | BTB-01604193                   | 0 | 93966574 |          |
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| 3 | INRA-431                       | 0 | 94250186 |          |
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| 3 | ARS-BFGL-NGS-119104            | 0 | 94582292 |          |
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| 3 | BTB-00147091                   | 0 | 96258986 |          |

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| 3 | Hapmap25832-BTA-141681 | 0 | 96323465 |
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| 3 | Hapmap51483-BTA-68908  | 0 | 96391710 |
| 3 | BTB-00146940           | 0 | 96417242 |
| 3 | Hapmap47075-BTA-68904  | 0 | 96439085 |
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| 3 | ARS-BFGL-NGS-111677    | 0 | 96517844 |
| 3 | BTB-01991408           | 0 | 96545620 |
| 3 | Hapmap58012-rs29023729 | 0 | 96599741 |
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| 3 | BTB-01546439                          | 0        | 98632548  |
| 3 | BTA-102722-no-rs                      | 0        | 98745196  |
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| 3 | ARS-BFGL-NGS-63710                    | 0        | 98797599  |
| 3 | ARS-BFGL-NGS-105312                   | 0        | 98819518  |
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| 3 | BTB-00150213                          | 0        | 98889151  |
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| 3 | ARS-BFGL-NGS-25489                    | 0        | 98978974  |
| 3 | ARS-BFGL-NGS-117068                   | 0        | 99004471  |
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| 3 | Hapmap48025-BTA-62581                 | 0        | 99387696  |
| 3 | Hapmap58086-rs29011003                | 0        | 99436894  |
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| 3 | ARS-BFGL-NGS-115184                   | 0        | 99644517  |
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| 3 | Hapmap32626-BTA-155816                | 0        | 100126720 |
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| 3 | ARS-BFGL-NGS-81928                    | 0        | 100207423 |
| 3 | Hapmap44755-BTA-110608                | 0        | 100228712 |
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| 3 | ARS-BFGL-NGS-16203                    | 0        | 100442675 |
| 3 | ARS-BFGL-NGS-91400                    | 0        | 100493684 |

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| 3 | Hapmap31545-BTA-68938  | 0 | 100533447 |
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| 3 | BTA-20822-no-rs        | 0 | 100584312 |
| 3 | BTA-69039-no-rs        | 0 | 100635895 |
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| 3 | BTB-01461761           | 0 | 100736591 |
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| 3 | BTB-01461869           | 0 | 100811809 |
| 3 | Hapmap25572-BTA-147682 | 0 | 100877361 |
| 3 | ARS-BFGL-NGS-109837    | 0 | 100901542 |
| 3 | BTB-01461921           | 0 | 100936726 |
| 3 | BTB-01551546           | 0 | 100982336 |
| 3 | Hapmap51790-BTA-103080 | 0 | 101076596 |
| 3 | BTB-01874931           | 0 | 101138019 |
| 3 | Hapmap50443-BTA-69040  | 0 | 101165189 |
| 3 | BTA-69044-no-rs        | 0 | 101253585 |
| 3 | Hapmap48051-BTA-69046  | 0 | 101280610 |
| 3 | UA-IFASA-7459          | 0 | 101319929 |
| 3 | Hapmap50757-BTA-69058  | 0 | 101353522 |
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| 3 | Hapmap57408-rs29021851 | 0 | 101636723 |
| 3 | Hapmap40575-BTA-68961  | 0 | 101669577 |
| 3 | Hapmap48439-BTA-68959  | 0 | 101713668 |
| 3 | BTB-00149135           | 0 | 101736746 |
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| 3 | BTB-00148969           | 0 | 101854732 |
| 3 | BTA-120086-no-rs       | 0 | 101879077 |
| 3 | ARS-BFGL-NGS-57030     |   | 101914613 |
| 3 | BTB-00152595           | 0 | 101942771 |
| 3 | BTA-69065-no-rs        | 0 | 101995252 |
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| 3 | ARS-BFGL-NGS-117992    | 0 | 102056606 |
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| 3 | ARS-BFGL-NGS-29730     |   | 102289610 |
| 3 | ARS-BFGL-NGS-83009     | 0 | 102310742 |
| 3 | ARS-BFGL-NGS-104136    | 0 | 102352899 |
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| 3 | BTA-28274-no-rs        | 0 | 102421833 |
| 3 | Hapmap43224-BTA-28273  | 0 | 102443107 |
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| 3 | ARS-BFGL-NGS-32606     | 0 | 102630338 |
| 3 | ARS-BFGL-NGS-67676     | 0 | 102651971 |
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| 3 | Hapmap51484-BTA-69114  | 0 | 102849379 |
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| 3 | ARS-BFGL-NGS-102138    | 0 | 103021431 |
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| 3 | ARS-BFGL-NGS-80197             | 0 | 103103844 |           |
| 3 | ARS-BFGL-NGS-116824            | 0 | 103190088 |           |
| 3 | ARS-BFGL-NGS-20122             | 0 | 103214562 |           |
| 3 | ARS-BFGL-NGS-38370             | 0 | 103238207 |           |
| 3 | ARS-BFGL-NGS-118597            | 0 | 103268281 |           |
| 3 | ARS-BFGL-NGS-25854             | 0 | 103290903 |           |
| 3 | Hapmap48854-BTA-69129          | 0 | 103358134 |           |
| 3 | Hapmap49274-BTA-69134          | 0 | 103411214 |           |
| 3 | BTA-69143-no-rs                | 0 | 103448870 |           |
| 3 | BTA-90843-no-rs                | 0 | 103469177 |           |
| 3 | ARS-BFGL-NGS-30263             | 0 | 103650423 |           |
| 3 | ARS-BFGL-NGS-29420             | 0 | 103728246 |           |
| 3 | ARS-BFGL-NGS-13927             | 0 | 103800305 |           |
| 3 | Hapmap34299-BES7_Contig426_708 | 0 |           | 103936692 |
| 3 | BTA-123020-no-rs               | 0 | 103963937 |           |
| 3 | Hapmap31146-BTA-151624         | 0 | 103985945 |           |
| 3 | BTA-98478-no-rs                | 0 | 104011692 |           |
| 3 | ARS-BFGL-NGS-35125             | 0 | 104093652 |           |
| 3 | Hapmap54172-rs29027626         | 0 | 104163830 |           |
| 3 | Hapmap48279-BTA-29512          | 0 | 104189623 |           |
| 3 | BTA-88328-no-rs                | 0 | 104199279 |           |
| 3 | ARS-BFGL-NGS-107015            | 0 | 104249570 |           |
| 3 | INRA-346                       | 0 | 104311603 |           |
| 3 | Hapmap48983-BTA-100103         | 0 | 104371879 |           |
| 3 | ARS-BFGL-NGS-99629             | 0 | 104413367 |           |
| 3 | Hapmap30857-BTA-155398         | 0 | 104442857 |           |
| 3 | Hapmap23328-BTA-155401         | 0 | 104507586 |           |
| 3 | Hapmap50204-BTA-107668         | 0 | 104541905 |           |
| 3 | Hapmap48864-BTA-70759          | 0 | 104716951 |           |
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| 3 | ARS-BFGL-NGS-116751            | 0 | 104850567 |           |
| 3 | Hapmap58721-rs29026738         | 0 | 104874970 |           |
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| 3 | ARS-BFGL-NGS-10380             |   | 104971166 |           |
| 3 | ARS-BFGL-NGS-115055            | 0 | 104999360 |           |
| 3 | BTB-00154062                   | 0 | 105020596 |           |
| 3 | ARS-BFGL-NGS-119590            | 0 | 105043063 |           |
| 3 | BTB-00154000                   | 0 | 105064402 |           |
| 3 | ARS-BFGL-NGS-110816            | 0 | 105090990 |           |
| 3 | BTB-00153992                   | 0 | 105114210 |           |
| 3 | ARS-BFGL-NGS-119168            | 0 | 105140384 |           |
| 3 | ARS-BFGL-NGS-114028            | 0 | 105173273 |           |
| 3 | ARS-BFGL-NGS-59886             | 0 | 105209697 |           |
| 3 | ARS-BFGL-NGS-109983            | 0 | 105240515 |           |
| 3 | ARS-BFGL-NGS-54531             | 0 | 105277008 |           |
| 3 | ARS-BFGL-NGS-11573             | 0 | 105303500 |           |
| 3 | ARS-BFGL-NGS-113303            | 0 | 105336520 |           |
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| 3 | BTA-69340-no-rs                | 0 | 105467351 |           |
| 3 | ARS-BFGL-NGS-52588             | 0 | 105507423 |           |
| 3 | ARS-BFGL-NGS-25455             | 0 | 105536719 |           |
| 3 | ARS-BFGL-NGS-116561            | 0 | 105576161 |           |

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| 3 | Hapmap60034-rs29012205 | 0 | 105613230 |
| 3 | ARS-BFGL-NGS-19484     | 0 | 105654383 |
| 3 | ARS-BFGL-NGS-64377     | 0 | 105691395 |
| 3 | ARS-BFGL-NGS-98850     | 0 | 105739637 |
| 3 | Hapmap52612-rs29022803 | 0 | 105762348 |
| 3 | ARS-BFGL-NGS-117787    | 0 | 105787535 |
| 3 | ARS-BFGL-NGS-81463     | 0 | 105819329 |
| 3 | Hapmap51868-BTA-98973  | 0 | 105857594 |
| 3 | ARS-BFGL-NGS-18305     | 0 | 105994898 |
| 3 | ARS-BFGL-NGS-110121    | 0 | 106096905 |
| 3 | ARS-BFGL-NGS-83285     | 0 | 106124027 |
| 3 | ARS-BFGL-NGS-111314    | 0 | 106168691 |
| 3 | ARS-BFGL-NGS-30583     | 0 | 106189454 |
| 3 | Hapmap22746-BTA-141712 | 0 | 106235104 |
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| 3 | INRA-111               | 0 | 106347242 |
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| 3 | ARS-BFGL-NGS-38199     | 0 | 106833383 |
| 3 | ARS-BFGL-NGS-40609     | 0 | 106963577 |
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| 3 | ARS-BFGL-NGS-103337    | 0 | 107181167 |
| 3 | ARS-BFGL-NGS-43577     | 0 | 107203195 |
| 3 | BTA-69346-no-rs        | 0 | 107223273 |
| 3 | BTB-00154601           | 0 | 107300195 |
| 3 | BTB-00154673           | 0 | 107362756 |
| 3 | BTB-00154795           | 0 | 107386284 |
| 3 | BTB-00154774           | 0 | 107469621 |
| 3 | ARS-BFGL-NGS-14748     | 0 | 107501420 |
| 3 | Hapmap48053-BTA-69359  | 0 | 107542688 |
| 3 | BTA-69352-no-rs        | 0 | 107576120 |
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| 3 | BTB-00154716           | 0 | 107635333 |
| 3 | BTB-00154681           | 0 | 107698286 |
| 3 | ARS-BFGL-NGS-45850     | 0 | 107748322 |
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| 3 | ARS-BFGL-NGS-107219    | 0 | 107807020 |
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| 3 | BTA-69365-no-rs        | 0 | 107909891 |
| 3 | BTB-00154950           | 0 | 107941915 |
| 3 | ARS-BFGL-NGS-114139    | 0 | 107963026 |
| 3 | ARS-BFGL-NGS-31442     | 0 | 108000672 |



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| 3 | ARS-BFGL-NGS-37288              | 0 | 108103203 |           |
| 3 | ARS-BFGL-NGS-34880              | 0 | 108129497 |           |
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| 3 | ARS-BFGL-NGS-107731             | 0 | 108189998 |           |
| 3 | ARS-BFGL-NGS-70647              | 0 | 108283132 |           |
| 3 | ARS-BFGL-NGS-30729              | 0 | 108311829 |           |
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| 3 | ARS-BFGL-NGS-23576              | 0 | 108427681 |           |
| 3 | ARS-BFGL-NGS-17719              | 0 | 108449043 |           |
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| 3 | ARS-BFGL-NGS-116391             | 0 | 108528219 |           |
| 3 | ARS-BFGL-NGS-11215              | 0 | 108560061 |           |
| 3 | ARS-BFGL-NGS-14687              | 0 | 108594928 |           |
| 3 | ARS-BFGL-NGS-117810             | 0 | 108630391 |           |
| 3 | ARS-BFGL-NGS-30850              |   | 108675022 |           |
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| 3 | ARS-BFGL-NGS-60487              | 0 | 108867640 |           |
| 3 | ARS-BFGL-NGS-91446              | 0 | 109015666 |           |
| 3 | ARS-BFGL-NGS-118037             | 0 | 109036828 |           |
| 3 | ARS-BFGL-NGS-87394              | 0 | 109111375 |           |
| 3 | ARS-BFGL-NGS-43630              |   | 109195618 |           |
| 3 | BTA-69456-no-rs                 | 0 | 109256429 |           |
| 3 | ARS-BFGL-NGS-39799              | 0 | 109303922 |           |
| 3 | ARS-BFGL-NGS-16026              | 0 | 109346833 |           |
| 3 | Hapmap42295-BTA-69468           | 0 | 109372623 |           |
| 3 | ARS-BFGL-NGS-32541              | 0 | 109417883 |           |
| 3 | Hapmap52816-rs29014115          | 0 | 109459957 |           |
| 3 | ARS-BFGL-NGS-113490             | 0 | 109493541 |           |
| 3 | ARS-BFGL-NGS-66281              | 0 | 109515633 |           |
| 3 | ARS-BFGL-NGS-83416              | 0 | 109542930 |           |
| 3 | ARS-BFGL-NGS-111293             | 0 | 109565152 |           |
| 3 | ARS-BFGL-NGS-35757              | 0 | 109594150 |           |
| 3 | ARS-BFGL-NGS-114817             | 0 | 109619527 |           |
| 3 | Hapmap47526-BTA-121607          | 0 | 109656894 |           |
| 3 | ARS-BFGL-NGS-103191             | 0 | 109702946 |           |
| 3 | ARS-BFGL-NGS-54892              | 0 | 109757416 |           |
| 3 | Hapmap53978-rs29024239          | 0 | 109858507 |           |
| 3 | ARS-BFGL-NGS-34881              | 0 | 109979312 |           |
| 3 | ARS-BFGL-NGS-22796              | 0 | 110014389 |           |
| 3 | ARS-BFGL-NGS-106737             | 0 | 110043222 |           |
| 3 | ARS-BFGL-NGS-102149             | 0 | 110078547 |           |
| 3 | Hapmap34322-BES8_Contig446_1023 | 0 |           | 110104792 |
| 3 | INRA-329                        | 0 | 110137012 |           |
| 3 | ARS-BFGL-NGS-41945              | 0 | 110192840 |           |
| 3 | BTB-00156159                    | 0 | 110242807 |           |
| 3 | ARS-BFGL-NGS-105427             | 0 | 110272602 |           |
| 3 | ARS-BFGL-NGS-29124              | 0 | 110293079 |           |
| 3 | BTB-00156237                    | 0 | 110377614 |           |

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| 3 | BTB-00156248                    | 0 | 110422692 |  |
| 3 | BTB-00156263                    | 0 | 110463546 |  |
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| 3 | ARS-BFGL-NGS-26847              | 0 | 110558160 |  |
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| 3 | ARS-BFGL-NGS-34890              |   | 110902013 |  |
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| 3 | BTB-00390861                    | 0 | 111001826 |  |
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| 3 | Hapmap58315-ss46527116          | 0 | 111153856 |  |
| 3 | BTB-00156916                    | 0 | 111191101 |  |
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| 3 | ARS-BFGL-NGS-15623              | 0 | 111276607 |  |
| 3 | Hapmap57496-ss46526163          | 0 | 111430815 |  |
| 3 | ARS-BFGL-NGS-118207             | 0 | 111458159 |  |
| 3 | ARS-BFGL-NGS-25919              | 0 | 111525119 |  |
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| 3 | ARS-BFGL-NGS-13753              | 0 | 111598515 |  |
| 3 | BTB-00157181                    | 0 | 111639312 |  |
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| 3 | Hapmap38079-BTA-69532           | 0 | 111782696 |  |
| 3 | ARS-BFGL-NGS-72900              | 0 | 111816968 |  |
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| 3 | ARS-BFGL-NGS-82373              | 0 | 111887731 |  |
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| 3 | ARS-BFGL-NGS-30708              | 0 | 111962731 |  |
| 3 | ARS-BFGL-NGS-32314              | 0 | 112024623 |  |
| 3 | Hapmap53696-rs29016125          | 0 | 112062155 |  |
| 3 | BTA-69557-no-rs                 | 0 | 112073191 |  |
| 3 | ARS-BFGL-NGS-74948              | 0 | 112135228 |  |
| 3 | Hapmap30841-BTA-147966          | 0 | 112160436 |  |
| 3 | BTA-69565-no-rs                 | 0 | 112203165 |  |
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| 3 | Hapmap35643-SCAFFOLD318144_4314 | 0 | 112260715 |  |
| 3 | BTB-01948148                    | 0 | 112286655 |  |
| 3 | Hapmap42062-BTA-109789          | 0 | 112317727 |  |
| 3 | BTB-01641394                    | 0 | 112340357 |  |
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| 3 | ARS-BFGL-NGS-44131              | 0 | 112416215 |  |
| 3 | ARS-BFGL-NGS-62020              |   | 112443572 |  |

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| 3 | ARS-BFGL-NGS-85333             | 0 | 112542497 |           |
| 3 | ARS-BFGL-NGS-97849             | 0 | 112574733 |           |
| 3 | ARS-BFGL-NGS-71345             | 0 | 112600644 |           |
| 3 | ARS-BFGL-NGS-110683            | 0 | 112673479 |           |
| 3 | ARS-BFGL-NGS-11580             |   | 112749121 |           |
| 3 | BTA-87451-no-rs                | 0 | 112802295 |           |
| 3 | ARS-BFGL-NGS-18163             | 0 | 112830526 |           |
| 3 | ARS-BFGL-NGS-115246            | 0 | 112866890 |           |
| 3 | ARS-BFGL-NGS-19581             | 0 | 112922761 |           |
| 3 | ARS-BFGL-NGS-55894             | 0 | 112955526 |           |
| 3 | ARS-BFGL-NGS-65128             | 0 | 113037175 |           |
| 3 | Hapmap33076-BTA-163309         | 0 | 113072560 |           |
| 3 | BTA-117752-no-rs               | 0 | 113271662 |           |
| 3 | ARS-BFGL-NGS-104342            | 0 | 113306427 |           |
| 3 | BTB-00159161                   | 0 | 113354214 |           |
| 3 | ARS-BFGL-NGS-41860             | 0 | 113404503 |           |
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| 3 | Hapmap36506-SCAFFOLD66564_4543 | 0 |           | 113499501 |
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| 3 | BTA-69614-no-rs                | 0 | 113606642 |           |
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| 3 | ARS-BFGL-NGS-13370             |   | 113666410 |           |
| 3 | BTB-00158861                   | 0 | 113701688 |           |
| 3 | ARS-BFGL-NGS-115970            | 0 | 113736435 |           |
| 3 | ARS-BFGL-NGS-41721             | 0 | 113762874 |           |
| 3 | Hapmap56950-ss46526304         | 0 | 113786118 |           |
| 3 | ARS-BFGL-NGS-43320             | 0 | 113845303 |           |
| 3 | Hapmap49278-BTA-69609          | 0 | 113887154 |           |
| 3 | BTB-01626709                   | 0 | 113907407 |           |
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| 3 | Hapmap41420-BTA-108706         | 0 | 113937410 |           |
| 3 | BTB-01648149                   | 0 | 113991679 |           |
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| 3 | ARS-BFGL-NGS-101499            | 0 | 114129558 |           |
| 3 | ARS-BFGL-NGS-32060             | 0 | 114149464 |           |
| 3 | ARS-BFGL-NGS-43764             | 0 | 114170005 |           |
| 3 | ARS-BFGL-NGS-22015             | 0 | 114191841 |           |
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| 3 | ARS-BFGL-NGS-116451            | 0 | 114252911 |           |
| 3 | ARS-BFGL-NGS-447               | 0 | 114283698 |           |
| 3 | BTB-01567028                   | 0 | 114312708 |           |
| 3 | Hapmap46912-BTA-104565         | 0 | 114340937 |           |
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| 3 | ARS-BFGL-NGS-17285             | 0 | 114485022 |           |
| 3 | ARS-BFGL-NGS-106280            | 0 | 114505164 |           |
| 3 | ARS-BFGL-NGS-65126             | 0 | 114526324 |           |
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| 3 | ARS-BFGL-NGS-62557             | 0 | 114583055 |           |
| 3 | ARS-BFGL-NGS-100462            | 0 | 114616030 |           |
| 3 | BTA-28412-no-rs                | 0 | 114645229 |           |
| 3 | BTB-00157794                   | 0 | 114672300 |           |
| 3 | ARS-BFGL-NGS-59537             | 0 | 114703617 |           |
| 3 | Hapmap55088-rs29012399         | 0 | 114730114 |           |
| 3 | ARS-BFGL-NGS-10529             | 0 | 114766179 |           |

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| 3 | BTB-00160155                          | 0 | 114797789 |           |  |
| 3 | ARS-BFGL-NGS-25543                    | 0 | 114819228 |           |  |
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| 3 | ARS-BFGL-NGS-108947                   | 0 | 114873116 |           |  |
| 3 | BTB-00160067                          | 0 | 114911444 |           |  |
| 3 | ARS-BFGL-NGS-22100                    |   | 114940539 |           |  |
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| 3 | ARS-BFGL-NGS-22290                    |   | 114995892 |           |  |
| 3 | ARS-BFGL-NGS-115035                   | 0 | 115036354 |           |  |
| 3 | ARS-BFGL-NGS-85967                    | 0 | 115072265 |           |  |
| 3 | BTB-00159970                          | 0 | 115093403 |           |  |
| 3 | BTB-00159950                          | 0 | 115140743 |           |  |
| 3 | Hapmap39235-BTA-69641                 | 0 | 115210793 |           |  |
| 3 | ARS-BFGL-NGS-39960                    | 0 | 115236331 |           |  |
| 3 | ARS-BFGL-NGS-43561                    | 0 | 115301282 |           |  |
| 3 | ARS-BFGL-NGS-58196                    | 0 | 115369820 |           |  |
| 3 | BTB-02088155                          | 0 | 115395556 |           |  |
| 3 | BTB-01326963                          | 0 | 115439388 |           |  |
| 3 | ARS-BFGL-NGS-115542                   | 0 | 115472137 |           |  |
| 3 | Hapmap58504-rs29017745                | 0 | 115504268 |           |  |
| 3 | ARS-BFGL-NGS-113768                   | 0 | 115537299 |           |  |
| 3 | Hapmap46691-BTA-122744                | 0 | 115572233 |           |  |
| 3 | ARS-BFGL-NGS-64994                    | 0 | 115600635 |           |  |
| 3 | ARS-BFGL-NGS-29544                    | 0 | 115630359 |           |  |
| 3 | Hapmap47380-BTA-69661                 | 0 | 115659306 |           |  |
| 3 | ARS-BFGL-NGS-29880                    |   | 115699810 |           |  |
| 3 | ARS-BFGL-NGS-116794                   | 0 | 115730569 |           |  |
| 3 | Hapmap39506-BTA-69666                 | 0 | 115790125 |           |  |
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| 3 | BTB-00160644                          | 0 | 115984091 |           |  |
| 3 | ARS-BFGL-NGS-83233                    | 0 | 116012143 |           |  |
| 3 | BTB-00160676                          | 0 | 116035968 |           |  |
| 3 | ARS-BFGL-NGS-119955                   | 0 | 116061795 |           |  |
| 3 | ARS-BFGL-NGS-85459                    | 0 | 116110288 |           |  |
| 3 | ARS-BFGL-NGS-114175                   | 0 | 116131960 |           |  |
| 3 | ARS-BFGL-NGS-38891                    | 0 | 116193622 |           |  |
| 3 | ARS-BFGL-NGS-41558                    | 0 | 116233438 |           |  |
| 3 | ARS-BFGL-NGS-104411                   | 0 | 116268161 |           |  |
| 3 | BTB-00160996                          | 0 | 116304940 |           |  |
| 3 | ARS-BFGL-NGS-57301                    | 0 | 116378417 |           |  |
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| 3 | ARS-BFGL-NGS-44462                    | 0 | 116425456 |           |  |
| 3 | ARS-USMARC-Parent-DQ839235-rs29012691 | 0 |           | 116448759 |  |
| 3 | ARS-BFGL-NGS-41297                    | 0 | 116527252 |           |  |
| 3 | BTB-00719521                          | 0 | 116551733 |           |  |
| 3 | ARS-BFGL-NGS-23162                    | 0 | 116574964 |           |  |
| 3 | ARS-BFGL-NGS-20649                    | 0 | 116618823 |           |  |
| 3 | ARS-BFGL-NGS-80276                    | 0 | 116654687 |           |  |
| 3 | ARS-BFGL-NGS-31690                    |   | 116694369 |           |  |
| 3 | BTA-43482-no-rs                       | 0 | 116728007 |           |  |
| 3 | ARS-BFGL-NGS-78981                    | 0 | 116749367 |           |  |
| 3 | BTB-00719198                          | 0 | 116781408 |           |  |
| 3 | Hapmap48857-BTA-69699                 | 0 | 116801749 |           |  |

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| 3 | ARS-BFGL-NGS-32677     | 0         | 116943803 |
| 3 | ARS-BFGL-NGS-35462     | 0         | 116968644 |
| 3 | ARS-BFGL-NGS-26479     | 0         | 116990141 |
| 3 | ARS-BFGL-NGS-95951     | 0         | 117023378 |
| 3 | ARS-BFGL-NGS-34496     | 0         | 117061271 |
| 3 | ARS-BFGL-NGS-88370     | 117086409 |           |
| 3 | Hapmap52099-rs29024307 | 0         | 117116249 |
| 3 | ARS-BFGL-NGS-74380     | 117155645 |           |
| 3 | ARS-BFGL-NGS-105543    | 0         | 117232908 |
| 3 | ARS-BFGL-NGS-60900     | 0         | 117294073 |
| 3 | BTB-00162978           | 0         | 117327426 |
| 3 | Hapmap27478-BTA-69755  | 0         | 117378957 |
| 3 | Hapmap58580-ss46526434 | 0         | 117409488 |
| 3 | ARS-BFGL-NGS-69961     | 0         | 117463394 |
| 3 | ARS-BFGL-NGS-116445    | 0         | 117502262 |
| 3 | ARS-BFGL-NGS-91769     | 0         | 117532269 |
| 3 | BTB-00163323           | 0         | 117557450 |
| 3 | ARS-BFGL-NGS-102745    | 0         | 117575562 |
| 3 | ARS-BFGL-NGS-74100     | 117607230 |           |
| 3 | BTB-00163570           | 0         | 117652189 |
| 3 | ARS-BFGL-NGS-27579     | 0         | 117712313 |
| 3 | BTA-69789-no-rs        | 0         | 117760734 |
| 3 | BTA-69790-no-rs        | 0         | 117779073 |
| 3 | Hapmap48056-BTA-69793  | 0         | 117812890 |
| 3 | ARS-BFGL-NGS-60556     | 0         | 117834069 |
| 3 | ARS-BFGL-NGS-37142     | 0         | 117878022 |
| 3 | Hapmap25268-BTA-141858 | 0         | 117929861 |
| 3 | ARS-BFGL-NGS-10379     | 0         | 117960375 |
| 3 | ARS-BFGL-NGS-26624     | 0         | 117985787 |
| 3 | ARS-BFGL-NGS-111207    | 0         | 118016542 |
| 3 | ARS-BFGL-NGS-101315    | 0         | 118037523 |
| 3 | ARS-BFGL-NGS-75987     | 0         | 118061120 |
| 3 | ARS-BFGL-NGS-90439     | 0         | 118098722 |
| 3 | ARS-BFGL-NGS-35269     | 0         | 118124014 |
| 3 | BTB-00163972           | 0         | 118145216 |
| 3 | Hapmap46717-BTA-69803  | 0         | 118167062 |
| 3 | ARS-BFGL-NGS-39448     | 0         | 118214045 |
| 3 | BTB-01453884           | 0         | 118239031 |
| 3 | ARS-BFGL-NGS-19387     | 0         | 118321289 |
| 3 | ARS-BFGL-NGS-105174    | 0         | 118346051 |
| 3 | ARS-BFGL-NGS-72055     | 0         | 118397556 |
| 3 | ARS-BFGL-NGS-30038     | 0         | 118518956 |
| 3 | ARS-BFGL-NGS-98739     | 0         | 118567045 |
| 3 | BTA-69827-no-rs        | 0         | 118592298 |
| 3 | ARS-BFGL-NGS-116145    | 0         | 118671665 |
| 3 | ARS-BFGL-NGS-35013     | 0         | 118715700 |
| 3 | ARS-BFGL-NGS-107739    | 0         | 118813014 |
| 3 | ARS-BFGL-NGS-115757    | 0         | 118859918 |
| 3 | ARS-BFGL-NGS-19655     | 0         | 118934229 |
| 3 | ARS-BFGL-NGS-75420     | 118963574 |           |
| 3 | ARS-BFGL-NGS-20403     | 0         | 119000177 |
| 3 | Hapmap57429-rs29016151 | 0         | 119048887 |
| 3 | BTA-101305-no-rs       | 0         | 119077206 |
| 3 | ARS-BFGL-NGS-26427     | 0         | 119113936 |

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| 3 | ARS-BFGL-NGS-115637    | 0 | 119150674 |
| 3 | ARS-BFGL-NGS-111815    | 0 | 119179649 |
| 3 | ARS-BFGL-NGS-87709     | 0 | 119285990 |
| 3 | ARS-BFGL-NGS-38098     | 0 | 119501959 |
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| 3 | UA-IFASA-2146          | 0 | 119620251 |
| 3 | ARS-BFGL-NGS-10050     | 0 | 119686073 |
| 3 | Hapmap30252-BTA-141872 | 0 | 119782510 |
| 3 | ARS-BFGL-NGS-111770    | 0 | 119812392 |
| 3 | BTB-01991141           | 0 | 119874398 |
| 3 | BTB-01800967           | 0 | 119973567 |
| 3 | ARS-BFGL-NGS-112959    | 0 | 120122176 |
| 3 | ARS-BFGL-NGS-93112     | 0 | 120170034 |
| 3 | ARS-BFGL-NGS-22190     | 0 | 120191150 |
| 3 | ARS-BFGL-NGS-35805     | 0 | 120220712 |
| 3 | BTB-01730472           | 0 | 120283544 |
| 3 | ARS-BFGL-NGS-36015     | 0 | 120325736 |
| 3 | ARS-BFGL-NGS-76298     | 0 | 120446774 |
| 3 | ARS-BFGL-NGS-223       | 0 | 120501439 |
| 3 | ARS-BFGL-NGS-103152    | 0 | 120547501 |
| 3 | BTB-00161805           | 0 | 120573628 |
| 3 | Hapmap52849-rs29021928 | 0 | 120622998 |
| 3 | ARS-BFGL-NGS-110914    | 0 | 120689753 |
| 3 | ARS-BFGL-NGS-92456     | 0 | 120737342 |
| 3 | ARS-BFGL-NGS-104799    | 0 | 120772981 |
| 3 | ARS-BFGL-NGS-10340     | 0 | 120793177 |
| 3 | ARS-BFGL-NGS-115266    | 0 | 120860510 |
| 3 | BTB-00161751           | 0 | 120891162 |
| 3 | BTB-01784003           | 0 | 121025205 |
| 3 | ARS-BFGL-NGS-69170     | 0 | 121087285 |
| 3 | ARS-BFGL-NGS-57543     | 0 | 121098536 |
| 3 | ARS-BFGL-NGS-109754    | 0 | 121128372 |
| 3 | ARS-BFGL-NGS-108682    | 0 | 121179950 |
| 3 | ARS-BFGL-NGS-68307     | 0 | 121203750 |
| 3 | ARS-BFGL-NGS-101343    | 0 | 121228888 |
| 3 | ARS-BFGL-NGS-30905     | 0 | 121251149 |
| 3 | ARS-BFGL-NGS-74724     | 0 | 121275236 |
| 3 | ARS-BFGL-NGS-103345    | 0 | 121310309 |
| 3 | ARS-BFGL-NGS-109106    | 0 | 121332868 |
| 3 | ARS-BFGL-NGS-12670     | 0 | 121374825 |
| 3 | Hapmap47115-BTA-84071  | 0 | 121403393 |
| 4 | ARS-BFGL-NGS-115803    | 0 | 17112     |
| 4 | ARS-BFGL-NGS-114472    | 0 | 253919    |
| 4 | ARS-BFGL-NGS-102812    | 0 | 360794    |
| 4 | Hapmap52120-rs29014886 | 0 | 565142    |
| 4 | Hapmap55620-rs29024432 | 0 | 631320    |
| 4 | ARS-BFGL-NGS-84351     | 0 | 770565    |
| 4 | Hapmap33679-BTA-161724 | 0 | 822209    |
| 4 | ARS-BFGL-NGS-18108     | 0 | 870437    |
| 4 | BTB-00281544           | 0 | 993285    |
| 4 | ARS-BFGL-NGS-36492     | 0 | 1120424   |
| 4 | Hapmap25614-BTA-160019 | 0 | 1308349   |
| 4 | Hapmap44528-BTA-17816  | 0 | 1343568   |

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| 4 | ARS-BFGL-NGS-40647              | 0 | 1376938 |  |
| 4 | ARS-BFGL-NGS-102687             | 0 | 1414719 |  |
| 4 | ARS-BFGL-NGS-42949              | 0 | 1435275 |  |
| 4 | Hapmap51526-BTA-96769           | 0 | 1476489 |  |
| 4 | ARS-BFGL-NGS-22697              | 0 | 1521968 |  |
| 4 | BTA-90535-no-rs                 | 0 | 1845942 |  |
| 4 | BTA-90533-no-rs                 | 0 | 1888198 |  |
| 4 | ARS-BFGL-NGS-114514             | 0 | 1944399 |  |
| 4 | Hapmap49842-BTA-105986          | 0 | 2025185 |  |
| 4 | Hapmap46397-BTA-105989          | 0 | 2070739 |  |
| 4 | Hapmap40886-BTA-111629          | 0 | 2132412 |  |
| 4 | Hapmap33046-BTA-153710          | 0 | 2184931 |  |
| 4 | Hapmap36019-SCAFFOLD146556_5946 | 0 | 2205618 |  |
| 4 | ARS-BFGL-NGS-108486             | 0 | 2239242 |  |
| 4 | ARS-BFGL-NGS-949                | 0 | 2375330 |  |
| 4 | Hapmap42088-BTA-118523          | 0 | 2520240 |  |
| 4 | Hapmap45542-BTA-118525          | 0 | 2548604 |  |
| 4 | BTA-118538-no-rs                | 0 | 2568666 |  |
| 4 | ARS-BFGL-NGS-88070              | 0 | 2676685 |  |
| 4 | ARS-BFGL-NGS-10160              | 0 | 2817401 |  |
| 4 | Hapmap33179-BTA-118558          | 0 | 2923814 |  |
| 4 | ARS-BFGL-NGS-42453              | 0 | 3061149 |  |
| 4 | Hapmap39541-BTA-118502          | 0 | 3219644 |  |
| 4 | ARS-BFGL-NGS-57926              | 0 | 3344403 |  |
| 4 | ARS-BFGL-NGS-71592              | 0 | 3516845 |  |
| 4 | ARS-BFGL-NGS-24888              | 0 | 3583133 |  |
| 4 | ARS-BFGL-NGS-117422             | 0 | 3755210 |  |
| 4 | BTA-91693-no-rs                 | 0 | 3839615 |  |
| 4 | Hapmap23596-BTA-149292          | 0 | 3876031 |  |
| 4 | BTA-29384-no-rs                 | 0 | 3914939 |  |
| 4 | ARS-BFGL-NGS-115291             | 0 | 4090824 |  |
| 4 | Hapmap52491-rs29011086          | 0 | 4138532 |  |
| 4 | Hapmap38139-BTA-116454          | 0 | 4186564 |  |
| 4 | ARS-BFGL-NGS-100374             | 0 | 4258236 |  |
| 4 | ARS-BFGL-NGS-81557              | 0 | 4282334 |  |
| 4 | UA-IFASA-6828                   | 0 | 4302472 |  |
| 4 | ARS-BFGL-NGS-113798             | 0 | 4340312 |  |
| 4 | ARS-BFGL-NGS-66210              | 0 | 4508164 |  |
| 4 | Hapmap38452-BTA-98747           | 0 | 4564219 |  |
| 4 | ARS-BFGL-NGS-104060             | 0 | 4593967 |  |
| 4 | BTA-98753-no-rs                 | 0 | 4645352 |  |
| 4 | ARS-BFGL-NGS-19875              | 0 | 4699190 |  |
| 4 | ARS-BFGL-NGS-57716              | 0 | 4728423 |  |
| 4 | ARS-BFGL-NGS-17279              | 0 | 4767650 |  |
| 4 | ARS-BFGL-NGS-22774              | 0 | 4790444 |  |
| 4 | ARS-BFGL-NGS-75685              | 0 | 4840652 |  |
| 4 | Hapmap31372-BTA-116014          | 0 | 4893829 |  |
| 4 | ARS-BFGL-NGS-118723             | 0 | 4931375 |  |
| 4 | ARS-BFGL-NGS-95980              | 0 | 4954043 |  |
| 4 | ARS-BFGL-NGS-41865              | 0 | 4988616 |  |
| 4 | ARS-BFGL-NGS-91047              | 0 | 5032584 |  |
| 4 | ARS-BFGL-NGS-112260             | 0 | 5061724 |  |
| 4 | ARS-BFGL-NGS-60734              | 0 | 5090934 |  |
| 4 | Hapmap27594-BTA-141889          | 0 | 5129484 |  |

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| 4 | ARS-BFGL-NGS-36821              | 0       | 5221637 |         |
| 4 | ARS-BFGL-NGS-26036              | 0       | 5262797 |         |
| 4 | ARS-BFGL-NGS-23776              | 0       | 5312990 |         |
| 4 | ARS-BFGL-NGS-96185              | 0       | 5340220 |         |
| 4 | ARS-BFGL-NGS-13280              | 0       | 5401116 |         |
| 4 | ARS-BFGL-NGS-57010              | 5424181 |         |         |
| 4 | ARS-BFGL-NGS-55059              | 0       | 5463939 |         |
| 4 | BTA-101845-no-rs                | 0       | 5492606 |         |
| 4 | Hapmap40914-BTA-122270          | 0       | 5522104 |         |
| 4 | Hapmap34855-BES3_Contig373_1182 | 0       |         | 5549277 |
| 4 | Hapmap31698-BTA-101848          | 0       | 5577931 |         |
| 4 | ARS-BFGL-NGS-40270              | 0       | 5639667 |         |
| 4 | ARS-BFGL-NGS-111891             | 0       | 5676538 |         |
| 4 | Hapmap54675-rs29016879          | 0       | 5712778 |         |
| 4 | ARS-BFGL-NGS-20734              | 0       | 6049251 |         |
| 4 | ARS-BFGL-NGS-104086             | 0       | 6248795 |         |
| 4 | ARS-BFGL-NGS-66869              | 0       | 6337362 |         |
| 4 | ARS-BFGL-NGS-82018              | 0       | 6470892 |         |
| 4 | BTB-01902057                    | 0       | 6604523 |         |
| 4 | BTA-104999-no-rs                | 0       | 6696030 |         |
| 4 | BTB-01574552                    | 0       | 6728367 |         |
| 4 | BTA-104998-no-rs                | 0       | 6747140 |         |
| 4 | ARS-BFGL-NGS-46206              | 0       | 6797677 |         |
| 4 | BTA-72294-no-rs                 | 0       | 6822285 |         |
| 4 | BTB-00165156                    | 0       | 6842949 |         |
| 4 | BTB-00165088                    | 0       | 6866807 |         |
| 4 | ARS-BFGL-NGS-89749              | 0       | 6902207 |         |
| 4 | ARS-BFGL-NGS-82239              | 0       | 6928118 |         |
| 4 | ARS-BFGL-NGS-103761             | 0       | 6968786 |         |
| 4 | BTA-13505-rs29018464            | 0       | 6992991 |         |
| 4 | ARS-BFGL-NGS-118155             | 0       | 7025908 |         |
| 4 | BTB-01511967                    | 0       | 7083533 |         |
| 4 | ARS-BFGL-NGS-64240              |         | 7116629 |         |
| 4 | BTB-01580567                    | 0       | 7186971 |         |
| 4 | BTB-02078736                    | 0       | 7212576 |         |
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| 4 | ARS-BFGL-NGS-57919              | 0       | 7313536 |         |
| 4 | BTB-00685072                    | 0       | 7338370 |         |
| 4 | ARS-BFGL-NGS-71657              | 0       | 7366793 |         |
| 4 | Hapmap29841-BTA-150778          | 0       | 7473284 |         |
| 4 | ARS-BFGL-NGS-34749              | 0       | 7508951 |         |
| 4 | ARS-BFGL-NGS-79631              | 0       | 7530876 |         |
| 4 | ARS-BFGL-NGS-88802              | 0       | 7567292 |         |
| 4 | ARS-BFGL-NGS-48368              | 0       | 7594520 |         |
| 4 | Hapmap49928-BTA-24568           | 0       | 7624594 |         |
| 4 | ARS-BFGL-NGS-106704             | 0       | 7681542 |         |
| 4 | BTB-01951988                    | 0       | 7708368 |         |
| 4 | BTB-01952103                    | 0       | 7736057 |         |
| 4 | ARS-BFGL-NGS-109936             | 0       | 7823707 |         |
| 4 | ARS-BFGL-NGS-61702              | 0       | 7870863 |         |
| 4 | Hapmap49078-BTA-19830           | 0       | 7908555 |         |
| 4 | ARS-BFGL-NGS-114611             | 0       | 7942727 |         |
| 4 | BTA-19844-no-rs                 | 0       | 7967241 |         |
| 4 | Hapmap38808-BTA-110530          | 0       | 8048909 |         |



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| 4 | Hapmap32119-BTA-155791          | 0 | 8069394  |          |
| 4 | ARS-BFGL-NGS-33308              | 0 | 8100693  |          |
| 4 | BTB-01643687                    | 0 | 8200949  |          |
| 4 | ARS-BFGL-NGS-31713              | 0 | 8251640  |          |
| 4 | Hapmap55363-rs29026788          | 0 | 8311870  |          |
| 4 | BTA-117204-no-rs                | 0 | 8347493  |          |
| 4 | BTA-117177-no-rs                | 0 | 8383404  |          |
| 4 | ARS-BFGL-NGS-34128              | 0 | 8403456  |          |
| 4 | BTA-117183-no-rs                | 0 | 8466191  |          |
| 4 | BTB-01244791                    | 0 | 8495236  |          |
| 4 | Hapmap49472-BTA-117185          | 0 | 8518458  |          |
| 4 | ARS-BFGL-NGS-93391              | 0 | 8625321  |          |
| 4 | ARS-BFGL-NGS-10858              | 0 | 8665331  |          |
| 4 | BTA-117194-no-rs                | 0 | 8718266  |          |
| 4 | ARS-BFGL-NGS-110061             | 0 | 8779979  |          |
| 4 | BTB-02022097                    | 0 | 8825757  |          |
| 4 | Hapmap27790-BTA-163267          | 0 | 8849817  |          |
| 4 | ARS-BFGL-NGS-70391              | 0 | 8943433  |          |
| 4 | BTB-01652367                    | 0 | 8991180  |          |
| 4 | ARS-BFGL-NGS-106409             | 0 | 9048776  |          |
| 4 | Hapmap52665-rs29012059          | 0 | 9101496  |          |
| 4 | BTA-96426-no-rs                 | 0 | 9152279  |          |
| 4 | Hapmap39581-BTA-70101           | 0 | 9203380  |          |
| 4 | BTB-00165658                    | 0 | 9249035  |          |
| 4 | BTA-72721-no-rs                 | 0 | 9286234  |          |
| 4 | ARS-BFGL-NGS-10539              | 0 | 9324270  |          |
| 4 | BTB-00165398                    | 0 | 9404614  |          |
| 4 | BTB-00165406                    | 0 | 9448498  |          |
| 4 | BTB-01476402                    | 0 | 9471143  |          |
| 4 | BTB-01476421                    | 0 | 9513258  |          |
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| 4 | ARS-BFGL-NGS-109843             | 0 | 9615916  |          |
| 4 | BTB-00165617                    | 0 | 9671376  |          |
| 4 | ARS-BFGL-NGS-79026              | 0 | 9702686  |          |
| 4 | ARS-BFGL-NGS-27931              | 0 | 9726535  |          |
| 4 | ARS-BFGL-NGS-112143             | 0 | 9748719  |          |
| 4 | ARS-BFGL-NGS-26731              | 0 | 9802046  |          |
| 4 | ARS-BFGL-NGS-112129             | 0 | 9837443  |          |
| 4 | ARS-BFGL-NGS-74533              | 0 | 9867778  |          |
| 4 | Hapmap47436-BTA-88975           | 0 | 9934426  |          |
| 4 | ARS-BFGL-NGS-78920              | 0 | 9968578  |          |
| 4 | BTA-00702-no-rs                 | 0 | 10000800 |          |
| 4 | Hapmap26701-BTA-148307          | 0 | 10036040 |          |
| 4 | Hapmap35652-SCAFFOLD151622_1051 | 0 |          | 10148342 |
| 4 | BTA-02892-no-rs                 | 0 | 10172043 |          |
| 4 | ARS-BFGL-NGS-64636              | 0 | 10235907 |          |
| 4 | BTA-109138-no-rs                | 0 | 10261371 |          |
| 4 | BTA-109124-no-rs                | 0 | 10324170 |          |
| 4 | Hapmap24260-BTA-155392          | 0 | 10450547 |          |
| 4 | Hapmap40298-BTA-109122          | 0 | 10499057 |          |
| 4 | Hapmap47828-BTA-109121          | 0 | 10528978 |          |
| 4 | BTB-01200056                    | 0 | 10608965 |          |
| 4 | BTB-01831345                    | 0 | 10648384 |          |
| 4 | ARS-BFGL-NGS-68586              | 0 | 10689062 |          |

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| 4 | BTB-00166030                     | 0 | 10715105 |          |
| 4 | Hapmap39425-BTA-70290            | 0 | 10737673 |          |
| 4 | BTA-114356-no-rs                 | 0 | 10764478 |          |
| 4 | BTB-01695573                     | 0 | 10794285 |          |
| 4 | ARS-BFGL-NGS-60306               | 0 | 10841109 |          |
| 4 | ARS-BFGL-NGS-102120              | 0 | 10883984 |          |
| 4 | BTB-01891488                     | 0 | 10909614 |          |
| 4 | Hapmap53031-rs29011318           | 0 | 10933419 |          |
| 4 | BTB-01841922                     | 0 | 10967124 |          |
| 4 | BTB-01873064                     | 0 | 10994381 |          |
| 4 | BTA-104863-no-rs                 | 0 | 11022349 |          |
| 4 | ARS-BFGL-NGS-39533               | 0 | 11098039 |          |
| 4 | Hapmap53581-rs29012683           | 0 | 11118054 |          |
| 4 | ARS-BFGL-NGS-74263               | 0 | 11176127 |          |
| 4 | ARS-BFGL-NGS-118059              | 0 | 11215149 |          |
| 4 | Hapmap41216-BTA-27440            | 0 | 11245877 |          |
| 4 | Hapmap36194-SCAFFOLD221336_1415  | 0 |          | 11283149 |
| 4 | Hapmap41577-BTA-54943            | 0 | 11333624 |          |
| 4 | ARS-BFGL-NGS-105052              | 0 | 11355642 |          |
| 4 | ARS-BFGL-NGS-44390               | 0 | 11386081 |          |
| 4 | BTA-54952-no-rs                  | 0 | 11439974 |          |
| 4 | Hapmap41902-BTA-54954            | 0 | 11500911 |          |
| 4 | Hapmap52040-rs29011076           | 0 | 11520676 |          |
| 4 | BTB-00166174                     | 0 | 11560877 |          |
| 4 | Hapmap52420-rs29024866           | 0 | 11622493 |          |
| 4 | ARS-BFGL-NGS-63490               |   | 11649948 |          |
| 4 | BTA-70039-no-rs                  | 0 | 11743261 |          |
| 4 | BTA-88792-no-rs                  | 0 | 11811405 |          |
| 4 | ARS-BFGL-NGS-31916               | 0 | 11840270 |          |
| 4 | BTA-70340-no-rs                  | 0 | 11880596 |          |
| 4 | Hapmap49924-BTA-24223            | 0 | 11948629 |          |
| 4 | BTA-70386-no-rs                  | 0 | 11998326 |          |
| 4 | Hapmap26137-BTA-141904           | 0 | 12044639 |          |
| 4 | ARS-BFGL-NGS-48662               | 0 | 12068919 |          |
| 4 | ARS-BFGL-NGS-78129               | 0 | 12144709 |          |
| 4 | BTA-70495-no-rs                  | 0 | 12227322 |          |
| 4 | ARS-BFGL-NGS-12804               | 0 | 12342333 |          |
| 4 | ARS-BFGL-NGS-48351               | 0 | 12526900 |          |
| 4 | ARS-BFGL-NGS-94150               | 0 | 12560933 |          |
| 4 | Hapmap31185-BTA-159806           | 0 | 12654239 |          |
| 4 | Hapmap61153-rs29019276           | 0 | 12678906 |          |
| 4 | Hapmap43433-BTA-100837           | 0 | 12733255 |          |
| 4 | ARS-BFGL-NGS-33824               | 0 | 12760440 |          |
| 4 | Hapmap34780-BES10_Contig790_1642 | 0 |          | 12791861 |
| 4 | BTA-123019-no-rs                 | 0 | 12868626 |          |
| 4 | ARS-BFGL-NGS-68531               | 0 | 13061952 |          |
| 4 | Hapmap50844-BTA-100855           | 0 | 13085827 |          |
| 4 | ARS-BFGL-NGS-15904               | 0 | 13148484 |          |
| 4 | Hapmap40647-BTA-110965           | 0 | 13235237 |          |
| 4 | ARS-BFGL-NGS-100502              | 0 | 13316709 |          |
| 4 | ARS-BFGL-NGS-60358               | 0 | 13384707 |          |
| 4 | ARS-BFGL-NGS-97190               |   | 13418972 |          |
| 4 | ARS-BFGL-NGS-116638              | 0 | 13462136 |          |
| 4 | ARS-BFGL-NGS-63842               | 0 | 13519803 |          |

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| 4 | Hapmap38652-BTA-111852 | 0        | 13551388 |
| 4 | ARS-BFGL-NGS-108871    | 0        | 13577398 |
| 4 | Hapmap31510-BTA-160139 | 0        | 13737029 |
| 4 | Hapmap58672-rs29015213 | 0        | 13863435 |
| 4 | Hapmap43542-BTA-27796  | 0        | 13903560 |
| 4 | BTA-27791-no-rs        | 0        | 13946508 |
| 4 | ARS-BFGL-NGS-89632     | 0        | 13968183 |
| 4 | Hapmap59633-rs29013953 | 0        | 14021218 |
| 4 | Hapmap45207-BTA-71975  | 0        | 14104597 |
| 4 | ARS-BFGL-NGS-74427     | 0        | 14162806 |
| 4 | BTA-70786-no-rs        | 0        | 14246928 |
| 4 | ARS-BFGL-NGS-113152    | 0        | 14271420 |
| 4 | ARS-BFGL-NGS-117720    | 0        | 14349978 |
| 4 | BTA-120817-no-rs       | 0        | 14436326 |
| 4 | BTA-77279-no-rs        | 0        | 14565634 |
| 4 | BTA-77280-no-rs        | 0        | 14594779 |
| 4 | BTA-105634-no-rs       | 0        | 14678414 |
| 4 | ARS-BFGL-NGS-76578     | 0        | 14767817 |
| 4 | Hapmap43169-BTA-119396 | 0        | 14807579 |
| 4 | BTA-12681-no-rs        | 0        | 14889540 |
| 4 | Hapmap39584-BTA-71323  | 0        | 15029333 |
| 4 | Hapmap50265-BTA-13206  | 0        | 15110552 |
| 4 | ARS-BFGL-NGS-15769     | 0        | 15160644 |
| 4 | Hapmap55272-rs29026835 | 0        | 15208171 |
| 4 | ARS-BFGL-NGS-119147    | 0        | 15279059 |
| 4 | Hapmap31111-BTA-141921 | 0        | 15341331 |
| 4 | ARS-BFGL-NGS-72370     | 15377028 |          |
| 4 | ARS-BFGL-NGS-35546     | 0        | 15468000 |
| 4 | BTA-70966-no-rs        | 0        | 15514217 |
| 4 | ARS-BFGL-NGS-116209    | 0        | 15537254 |
| 4 | BTA-70896-no-rs        | 0        | 15601237 |
| 4 | ARS-BFGL-NGS-89237     | 0        | 15645122 |
| 4 | Hapmap52270-rs29022033 | 0        | 15710884 |
| 4 | ARS-BFGL-NGS-38976     | 0        | 15749339 |
| 4 | BTA-85383-no-rs        | 0        | 15790583 |
| 4 | BTA-85377-no-rs        | 0        | 15840497 |
| 4 | ARS-BFGL-NGS-37517     | 0        | 15947178 |
| 4 | Hapmap33770-BTA-104911 | 0        | 16011192 |
| 4 | BTA-104909-no-rs       | 0        | 16056989 |
| 4 | Hapmap40099-BTA-104903 | 0        | 16117236 |
| 4 | BTA-104895-no-rs       | 0        | 16174334 |
| 4 | ARS-BFGL-NGS-84310     | 0        | 16244555 |
| 4 | ARS-BFGL-NGS-107551    | 0        | 16356283 |
| 4 | Hapmap38872-BTA-104883 | 0        | 16393988 |
| 4 | UA-IFASA-6068          | 0        | 16428953 |
| 4 | BTB-01176772           | 0        | 16452962 |
| 4 | BTB-00035461           | 0        | 16477632 |
| 4 | BTA-68470-no-rs        | 0        | 16514414 |
| 4 | BTB-00138822           | 0        | 16581509 |
| 4 | Hapmap48049-BTA-68465  | 0        | 16608619 |
| 4 | BTB-01980891           | 0        | 16639773 |
| 4 | BTA-109990-no-rs       | 0        | 16674831 |
| 4 | Hapmap60624-rs29010248 | 0        | 16714670 |
| 4 | ARS-BFGL-NGS-40975     | 0        | 16748166 |

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| 4 | BTB-01659956                          | 0 | 16776642 |   |          |
| 4 | BTA-111286-no-rs                      | 0 | 16800525 |   |          |
| 4 | BTB-01821537                          | 0 | 16829473 |   |          |
| 4 | BTB-01986609                          | 0 | 16868217 |   |          |
| 4 | Hapmap51512-BTA-88181                 | 0 | 16899410 |   |          |
| 4 | BTA-85374-no-rs                       | 0 | 16946642 |   |          |
| 4 | Hapmap60832-rs29020531                | 0 | 16991369 |   |          |
| 4 | Hapmap33025-BTA-147009                | 0 | 17030139 |   |          |
| 4 | Hapmap61065-rs29026870                | 0 | 17109984 |   |          |
| 4 | BTA-85367-no-rs                       | 0 | 17147542 |   |          |
| 4 | BTA-57136-no-rs                       | 0 | 17168852 |   |          |
| 4 | ARS-USMARC-Parent-DQ647186-rs29014143 | 0 |          | 0 | 17200594 |
| 4 | ARS-BFGL-NGS-106938                   | 0 | 17230513 |   |          |
| 4 | ARS-BFGL-NGS-20771                    | 0 | 17284846 |   |          |
| 4 | Hapmap51610-BTA-57120                 | 0 | 17323577 |   |          |
| 4 | ARS-BFGL-NGS-52712                    | 0 | 17358346 |   |          |
| 4 | ARS-BFGL-NGS-14103                    | 0 | 17389083 |   |          |
| 4 | ARS-BFGL-NGS-92535                    | 0 | 17458943 |   |          |
| 4 | ARS-BFGL-NGS-117256                   | 0 | 17482624 |   |          |
| 4 | BTA-85407-no-rs                       | 0 | 17516087 |   |          |
| 4 | Hapmap38534-BTA-85405                 | 0 | 17556319 |   |          |
| 4 | ARS-BFGL-NGS-31254                    | 0 | 17598500 |   |          |
| 4 | ARS-BFGL-NGS-109228                   | 0 | 17657399 |   |          |
| 4 | Hapmap50489-BTA-85396                 | 0 | 17701677 |   |          |
| 4 | Hapmap50800-BTA-85394                 | 0 | 17766260 |   |          |
| 4 | ARS-BFGL-NGS-56542                    | 0 | 17807404 |   |          |
| 4 | Hapmap40227-BTA-85393                 | 0 | 17902915 |   |          |
| 4 | UA-IFASA-7278                         | 0 | 17978432 |   |          |
| 4 | BTA-85395-no-rs                       | 0 | 18029408 |   |          |
| 4 | Hapmap51543-BTA-108077                | 0 | 18113477 |   |          |
| 4 | ARS-BFGL-NGS-78286                    | 0 | 18173214 |   |          |
| 4 | Hapmap48706-BTA-28292                 | 0 | 18194926 |   |          |
| 4 | Hapmap27037-BTA-163497                | 0 | 18236464 |   |          |
| 4 | ARS-BFGL-NGS-102518                   | 0 | 18315058 |   |          |
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| 4 | Hapmap51036-BTA-71487                 | 0 | 18491563 |   |          |
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| 4 | Hapmap31768-BTA-141947                | 0 | 18926575 |   |          |
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| 4 | BTB-00167380                          | 0 | 19280446 |   |          |
| 4 | BTB-00167408                          | 0 | 19314002 |   |          |

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| 4 | Hapmap43831-BTA-29394                 | 0 | 19338364 |          |  |
| 4 | Hapmap47236-BTA-29404                 | 0 | 19401500 |          |  |
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| 4 | ARS-BFGL-NGS-47930                    |   | 19643696 |          |  |
| 4 | ARS-BFGL-NGS-108298                   | 0 | 19715038 |          |  |
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| 4 | Hapmap51522-BTA-93536                 | 0 | 19855620 |          |  |
| 4 | ARS-BFGL-NGS-110874                   | 0 | 19899410 |          |  |
| 4 | ARS-BFGL-NGS-97488                    | 0 | 19932293 |          |  |
| 4 | BTA-93538-no-rs                       | 0 | 19957153 |          |  |
| 4 | ARS-BFGL-NGS-25363                    | 0 | 20004627 |          |  |
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| 4 | BTA-72072-no-rs                       | 0 | 20080544 |          |  |
| 4 | BTA-72059-no-rs                       | 0 | 20103064 |          |  |
| 4 | BTB-00167579                          | 0 | 20136412 |          |  |
| 4 | UA-IFASA-5600                         | 0 | 20166130 |          |  |
| 4 | ARS-USMARC-Parent-AY842475-rs29002127 | 0 |          | 20181749 |  |
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| 4 | BTB-00167820                          | 0 | 20285461 |          |  |
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| 4 | Hapmap39092-BTA-72158                 | 0 | 20359184 |          |  |
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| 4 | BTA-72259-no-rs                       | 0 | 20510260 |          |  |
| 4 | BTB-00168404                          | 0 | 20532763 |          |  |
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| 4 | BTB-01672879                          | 0 | 21160109 |          |  |
| 4 | BTB-01672972                          | 0 | 21194199 |          |  |
| 4 | BTA-38554-no-rs                       | 0 | 21248954 |          |  |
| 4 | BTA-38557-no-rs                       | 0 | 21276210 |          |  |
| 4 | BTA-93539-no-rs                       | 0 | 21374651 |          |  |
| 4 | BTB-01054325                          | 0 | 21413167 |          |  |

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| 4 | BTB-01054403           | 0 | 21516258 |
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| 4 | Hapmap27025-BTA-159880 | 0 | 22093546 |
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| 4 | Hapmap61072-rs29024053 | 0 | 23915993 |
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| 4 | BTB-00169573           | 0 | 24209956 |

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| 4 | BTA-72691-no-rs        | 0 | 24257473 |
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| 4 | BTA-72712-no-rs        | 0 | 24482650 |
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| 4 | BTA-93303-no-rs        | 0 | 24724544 |
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| 4 | BTA-65897-no-rs        | 0 | 24793043 |
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| 4 | BTB-00169916           | 0 | 25048072 |
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| 4 | Hapmap49725-BTA-72716  | 0 | 25155275 |
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| 4 | BTA-107059-no-rs       | 0 | 25524245 |
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| 4 | Hapmap57101-rs29013539 | 0        | 26770285 |
| 4 | Hapmap43028-BTA-72757  | 0        | 26799625 |
| 4 | Hapmap45628-BTA-72755  | 0        | 26828108 |
| 4 | Hapmap53225-rs29020561 | 0        | 26875008 |
| 4 | BTA-72752-no-rs        | 0        | 26908012 |
| 4 | BTB-00170935           | 0        | 26955066 |
| 4 | Hapmap59743-rs29017061 | 0        | 26995149 |
| 4 | BTB-00170854           | 0        | 27019177 |
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| 4 | BTA-72744-no-rs        | 0        | 27203687 |
| 4 | ARS-BFGL-NGS-117044    | 0        | 27256320 |
| 4 | Hapmap32816-BTA-142006 | 0        | 27292592 |
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| 4 | ARS-BFGL-NGS-72533     | 0        | 27414604 |
| 4 | BTB-00170362           | 0        | 27437103 |
| 4 | Hapmap50133-BTA-86017  | 0        | 27509584 |
| 4 | BTB-01114756           | 0        | 27560851 |
| 4 | UA-IFASA-4775          | 0        | 27604132 |
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| 4 | BTA-87383-no-rs        | 0        | 28117205 |
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| 4 | BTA-23043-no-rs        | 0        | 28227229 |
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| 4 | Hapmap33048-BTA-153800 | 0        | 29270307 |
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| 4 | BTB-01202801           | 0        | 29485912 |
| 4 | Hapmap51800-BTA-109764 | 0        | 29528497 |
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| 4 | BTB-01202987           | 0        | 29677476 |
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| 4 | Hapmap44276-BTA-69937  | 0        | 30068687 |
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| 4 | ARS-BFGL-NGS-48336     | 0        | 30308043 |
| 4 | BTA-28670-no-rs        | 0        | 30343285 |
| 4 | BTB-01538902           | 0        | 30393170 |
| 4 | BTB-01538878           | 0        | 30427937 |
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| 4 | Hapmap38265-BTA-96973  | 0        | 30526269 |
| 4 | ARS-BFGL-NGS-63028     | 0        | 30552306 |
| 4 | ARS-BFGL-NGS-35880     | 30606899 |          |
| 4 | BTB-01482562           | 0        | 30660900 |
| 4 | BTB-01482585           | 0        | 30688131 |
| 4 | BTB-00172924           | 0        | 30732178 |
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| 4 | BTB-00172204           | 0        | 31172819 |
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| 4 | BTB-00172973           | 0        | 31573521 |
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| 4 | ARS-BFGL-NGS-117872    | 0        | 31838723 |
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| 4 | ARS-BFGL-NGS-105499    | 0        | 31988357 |
| 4 | ARS-BFGL-NGS-15527     | 0        | 32013318 |
| 4 | BTB-00173673           | 0        | 32117700 |
| 4 | ARS-BFGL-NGS-18278     | 0        | 32144930 |
| 4 | BTA-69986-no-rs        | 0        | 32205395 |
| 4 | Hapmap60347-rs29020617 | 0        | 32398545 |
| 4 | BTA-96367-no-rs        | 0        | 32508042 |
| 4 | BTB-01476057           | 0        | 32794426 |
| 4 | ARS-BFGL-NGS-35937     | 0        | 32831585 |
| 4 | BTB-01437296           | 0        | 32917833 |
| 4 | BTB-00174283           | 0        | 33031489 |
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| 4 | BTB-00174705           | 0        | 33173102 |
| 4 | BTB-00174696           | 0        | 33202318 |
| 4 | Hapmap55409-rs29022997 | 0        | 33236485 |

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| 4 | BTA-89083-no-rs        | 0 | 33293953 |
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| 4 | ARS-BFGL-NGS-12244     | 0 | 33363236 |
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| 4 | BTB-00174357           | 0 | 33496136 |
| 4 | BTA-122225-no-rs       | 0 | 33599874 |
| 4 | BTB-01513833           | 0 | 33607603 |
| 4 | BTA-99714-no-rs        | 0 | 33632992 |
| 4 | BTB-01513732           | 0 | 33659806 |
| 4 | Hapmap60901-rs29025219 | 0 | 33697821 |
| 4 | BTB-01306265           | 0 | 33731379 |
| 4 | Hapmap41481-BTA-20794  | 0 | 33769233 |
| 4 | Hapmap49080-BTA-20801  | 0 | 33808311 |
| 4 | BTB-01306593           | 0 | 33855422 |
| 4 | BTA-44996-no-rs        | 0 | 33938703 |
| 4 | Hapmap59001-rs29026882 | 0 | 33966904 |
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| 4 | BTA-97585-no-rs        | 0 | 34132924 |
| 4 | BTA-97586-no-rs        | 0 | 34164810 |
| 4 | BTB-01793118           | 0 | 34309918 |
| 4 | ARS-BFGL-NGS-30948     | 0 | 34437532 |
| 4 | BTB-01269449           | 0 | 34469271 |
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| 4 | BTB-01269715           | 0 | 34610081 |
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| 4 | Hapmap27019-BTA-159279 | 0 | 34669189 |
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| 4 | BTB-01269835           | 0 | 34733147 |
| 4 | BTB-01269980           | 0 | 34828892 |
| 4 | BTB-00174824           | 0 | 34856797 |
| 4 | ARS-BFGL-NGS-115810    | 0 | 34884786 |
| 4 | BTB-01956014           | 0 | 34921557 |
| 4 | BTA-122414-no-rs       | 0 | 34967013 |
| 4 | BTB-00174859           | 0 | 35085729 |
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| 4 | BTB-00174922           | 0 | 35142339 |
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| 4 | ARS-BFGL-NGS-31424     | 0 | 35416336 |
| 4 | BTB-01204607           | 0 | 35447660 |
| 4 | BTA-06276-rs29020640   | 0 | 35486655 |
| 4 | BTB-00175065           | 0 | 35521313 |
| 4 | ARS-BFGL-NGS-30000     | 0 | 35555124 |
| 4 | Hapmap46017-BTA-70007  | 0 | 35580482 |
| 4 | BTA-70016-no-rs        | 0 | 35605434 |
| 4 | BTB-00175289           | 0 | 35631723 |
| 4 | ARS-BFGL-NGS-71927     | 0 | 35661435 |
| 4 | Hapmap44123-BTA-70017  | 0 | 35705474 |
| 4 | BTB-00175429           | 0 | 35742210 |

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| 4 | ARS-BFGL-NGS-102878             | 0 | 35763942 |          |
| 4 | BTB-01377921                    | 0 | 35871209 |          |
| 4 | ARS-BFGL-NGS-71177              | 0 | 35903023 |          |
| 4 | Hapmap59221-rs29014908          | 0 | 35939871 |          |
| 4 | BTB-01378225                    | 0 | 35964068 |          |
| 4 | BTB-01812636                    | 0 | 35989091 |          |
| 4 | BTB-01812529                    | 0 | 36015624 |          |
| 4 | Hapmap51645-BTA-85793           | 0 | 36041751 |          |
| 4 | BTB-01378315                    | 0 | 36066056 |          |
| 4 | BTA-102832-no-rs                | 0 | 36095751 |          |
| 4 | ARS-BFGL-NGS-86219              | 0 | 36148430 |          |
| 4 | BTB-01547771                    | 0 | 36172960 |          |
| 4 | Hapmap43100-BTA-92592           | 0 | 36216397 |          |
| 4 | ARS-BFGL-NGS-114191             | 0 | 36265776 |          |
| 4 | Hapmap28441-BTA-162110          | 0 | 36345271 |          |
| 4 | ARS-BFGL-NGS-45761              | 0 | 36372630 |          |
| 4 | Hapmap34763-BES8_Contig497_586  | 0 |          | 36408463 |
| 4 | BTB-01330413                    | 0 | 36468716 |          |
| 4 | ARS-BFGL-NGS-108340             | 0 | 36495218 |          |
| 4 | Hapmap33884-BES3_Contig263_765  | 0 |          | 36533621 |
| 4 | Hapmap24419-BTA-162106          | 0 | 36558317 |          |
| 4 | BTB-01330347                    | 0 | 36597279 |          |
| 4 | BTB-01228397                    | 0 | 36616352 |          |
| 4 | BTB-01228342                    | 0 | 36656495 |          |
| 4 | Hapmap34749-BES4_Contig461_1146 | 0 |          | 36761860 |
| 4 | BTB-01228256                    | 0 | 36801780 |          |
| 4 | Hapmap44201-BTA-114510          | 0 | 36842170 |          |
| 4 | Hapmap42448-BTA-119409          | 0 | 36896740 |          |
| 4 | BTB-01762953                    | 0 | 36928225 |          |
| 4 | Hapmap54385-rs29020436          | 0 | 36966070 |          |
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| 4 | Hapmap47073-BTA-66626           | 0 | 37021317 |          |
| 4 | BTB-01007607                    | 0 | 37077005 |          |
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| 4 | BTB-01007462                    | 0 | 37122228 |          |
| 4 | BTB-01007411                    | 0 | 37145925 |          |
| 4 | ARS-BFGL-NGS-39071              | 0 | 37169907 |          |
| 4 | BTA-121623-no-rs                | 0 | 37262694 |          |
| 4 | ARS-BFGL-NGS-89253              | 0 | 37312244 |          |
| 4 | Hapmap33483-BTA-142021          | 0 | 37341832 |          |
| 4 | Hapmap60225-rs29010786          | 0 | 37385962 |          |
| 4 | BTB-00175546                    | 0 | 37409461 |          |
| 4 | BTA-70020-no-rs                 | 0 | 37440961 |          |
| 4 | BTA-70088-no-rs                 | 0 | 37489913 |          |
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| 4 | BTB-00177408                    | 0 | 37595676 |          |
| 4 | Hapmap60522-rs29015286          | 0 | 37631099 |          |
| 4 | Hapmap26138-BTA-142043          | 0 | 37704589 |          |
| 4 | Hapmap61001-rs29016986          | 0 | 37736210 |          |
| 4 | BTA-70113-no-rs                 | 0 | 37877098 |          |
| 4 | BTA-70122-no-rs                 | 0 | 37916175 |          |
| 4 | Hapmap44397-BTA-70124           | 0 | 37961721 |          |
| 4 | Hapmap46157-BTA-70132           | 0 | 38015655 |          |

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| 4 | Hapmap38661-BTA-18849          | 0        | 38072465 |          |
| 4 | Hapmap51853-BTA-70134          | 0        | 38137153 |          |
| 4 | ARS-BFGL-NGS-21786             | 0        | 38166835 |          |
| 4 | BTB-00178002                   | 0        | 38189188 |          |
| 4 | Hapmap38426-BTA-70226          | 0        | 38213706 |          |
| 4 | BTB-00178249                   | 0        | 38235868 |          |
| 4 | BTB-00178261                   | 0        | 38257758 |          |
| 4 | Hapmap58943-rs29011657         | 0        | 38297560 |          |
| 4 | BTB-00178304                   | 0        | 38335417 |          |
| 4 | Hapmap24355-BTA-70234          | 0        | 38463233 |          |
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| 4 | BTA-70243-no-rs                | 0        | 38548833 |          |
| 4 | ARS-BFGL-NGS-119322            | 0        | 38573157 |          |
| 4 | BTA-70244-no-rs                | 0        | 38653121 |          |
| 4 | Hapmap33665-BTA-142069         | 0        | 38680360 |          |
| 4 | Hapmap46435-BTA-70245          | 0        | 38762924 |          |
| 4 | BTB-00178575                   | 0        | 38793655 |          |
| 4 | UA-IFASA-6877                  | 0        | 38819398 |          |
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| 4 | BTB-00484017                   | 0        | 38908495 |          |
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| 4 | BTB-01885061                   | 0        | 39041063 |          |
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| 4 | BTB-01308655                   | 0        | 39283065 |          |
| 4 | BTA-21017-no-rs                | 0        | 39351027 |          |
| 4 | BTB-01308598                   | 0        | 39399544 |          |
| 4 | BTB-01780414                   | 0        | 39435115 |          |
| 4 | BTB-01780264                   | 0        | 39498957 |          |
| 4 | Hapmap43331-BTA-70083          | 0        | 39545464 |          |
| 4 | BTB-00177026                   | 0        | 39594302 |          |
| 4 | Hapmap50762-BTA-70080          | 0        | 39634823 |          |
| 4 | ARS-BFGL-NGS-41445             | 0        | 39686205 |          |
| 4 | Hapmap53600-rs29010856         | 0        | 39719917 |          |
| 4 | BTB-00176906                   | 0        | 39763972 |          |
| 4 | BTB-01629661                   | 0        | 39790321 |          |
| 4 | Hapmap31165-BTA-155258         | 0        | 39815410 |          |
| 4 | Hapmap43454-BTA-108936         | 0        | 39848390 |          |
| 4 | ARS-BFGL-NGS-113933            | 0        | 39889039 |          |
| 4 | ARS-BFGL-NGS-54830             | 39919542 |          |          |
| 4 | BTB-01930921                   | 0        | 39987629 |          |
| 4 | ARS-BFGL-NGS-80648             | 0        | 40066281 |          |
| 4 | BTA-121625-no-rs               | 0        | 40101410 |          |
| 4 | ARS-BFGL-NGS-116298            | 0        | 40137954 |          |
| 4 | Hapmap32165-BTA-70044          | 0        | 40173197 |          |
| 4 | BTB-00176697                   | 0        | 40227717 |          |
| 4 | BTB-00176654                   | 0        | 40264741 |          |
| 4 | BTB-00176602                   | 0        | 40305345 |          |
| 4 | Hapmap50070-BTA-70041          | 0        | 40358616 |          |
| 4 | BTB-00176574                   | 0        | 40409928 |          |
| 4 | Hapmap43212-BTA-23629          | 0        | 40438857 |          |
| 4 | BTB-00176543                   | 0        | 40540963 |          |

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| 4 | BTB-00176460           | 0 | 40678896 |
| 4 | ARS-BFGL-NGS-113104    | 0 | 40703642 |
| 4 | BTB-00176269           | 0 | 40746706 |
| 4 | BTB-00176227           | 0 | 40777514 |
| 4 | ARS-BFGL-NGS-12780     | 0 | 40806862 |
| 4 | BTB-00176150           | 0 | 40890784 |
| 4 | Hapmap43659-BTA-70032  | 0 | 40924111 |
| 4 | Hapmap41203-BTA-20852  | 0 | 40978563 |
| 4 | ARS-BFGL-NGS-27598     | 0 | 41018622 |
| 4 | ARS-BFGL-NGS-110306    | 0 | 41052453 |
| 4 | BTB-00890646           | 0 | 41150639 |
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| 4 | BTB-01769627           | 0 | 41217800 |
| 4 | BTA-119980-no-rs       | 0 | 41229374 |
| 4 | BTB-01119935           | 0 | 41263137 |
| 4 | BTB-01120104           | 0 | 41302649 |
| 4 | BTB-01119916           | 0 | 41376527 |
| 4 | Hapmap38735-BTA-22307  | 0 | 41407058 |
| 4 | BTB-01922107           | 0 | 41444423 |
| 4 | Hapmap27871-BTA-142084 | 0 | 41535687 |
| 4 | Hapmap40021-BTA-70278  | 0 | 41556810 |
| 4 | BTB-00178966           | 0 | 41583591 |
| 4 | Hapmap38341-BTA-70281  | 0 | 41610894 |
| 4 | BTB-00179171           | 0 | 41634367 |
| 4 | BTB-00179180           | 0 | 41657868 |
| 4 | BTA-70282-no-rs        | 0 | 41708556 |
| 4 | BTB-00179305           | 0 | 41822559 |
| 4 | BTB-00179309           | 0 | 41858753 |
| 4 | BTA-70284-no-rs        | 0 | 41895490 |
| 4 | Hapmap48859-BTA-70287  | 0 | 41919165 |
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| 4 | ARS-BFGL-NGS-100360    | 0 | 42049315 |
| 4 | BTB-01478115           | 0 | 42103377 |
| 4 | BTB-01927917           | 0 | 42137347 |
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| 4 | BTB-01771861           | 0 | 42257334 |
| 4 | Hapmap25108-BTA-18447  | 0 | 42372381 |
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| 4 | Hapmap38691-BTA-70276  | 0 | 42493214 |
| 4 | BTB-00178810           | 0 | 42523038 |
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| 4 | BTB-00179490           | 0 | 42671822 |
| 4 | BTB-00179514           | 0 | 42694771 |
| 4 | BTA-70293-no-rs        | 0 | 42733341 |
| 4 | ARS-BFGL-NGS-63223     | 0 | 42818215 |
| 4 | BTB-00178642           | 0 | 43085183 |
| 4 | Hapmap55510-rs29010454 | 0 | 43175304 |
| 4 | BTA-70272-no-rs        | 0 | 43214988 |
| 4 | Hapmap47167-BTA-107276 | 0 | 43292197 |
| 4 | ARS-BFGL-NGS-112363    | 0 | 43355786 |

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| 4 | ARS-BFGL-NGS-112234    | 0 | 43439437 |
| 4 | ARS-BFGL-NGS-13663     | 0 | 43507266 |
| 4 | ARS-BFGL-NGS-113663    | 0 | 43527371 |
| 4 | Hapmap42789-BTA-107266 | 0 | 43556172 |
| 4 | Hapmap29687-BTA-154733 | 0 | 43600871 |
| 4 | ARS-BFGL-NGS-90974     | 0 | 43710013 |
| 4 | Hapmap55018-rs29025758 | 0 | 43763107 |
| 4 | Hapmap60804-rs29027881 | 0 | 43860090 |
| 4 | Hapmap28059-BTA-161846 | 0 | 43916820 |
| 4 | ARS-BFGL-NGS-64346     | 0 | 44142921 |
| 4 | ARS-BFGL-NGS-15203     | 0 | 44177870 |
| 4 | ARS-BFGL-NGS-115790    | 0 | 44224161 |
| 4 | ARS-BFGL-NGS-13400     | 0 | 44293015 |
| 4 | Hapmap51913-BTA-70389  | 0 | 44359029 |
| 4 | Hapmap31113-BTA-142103 | 0 | 44387787 |
| 4 | ARS-BFGL-NGS-12941     | 0 | 44469848 |
| 4 | BTB-00181826           | 0 | 44505761 |
| 4 | BTB-01652821           | 0 | 44542142 |
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| 4 | ARS-BFGL-NGS-97941     | 0 | 44612810 |
| 4 | BTB-01721967           | 0 | 44671762 |
| 4 | BTB-01721944           | 0 | 44694369 |
| 4 | ARS-BFGL-NGS-110957    | 0 | 44792807 |
| 4 | BTB-00182380           | 0 | 44836559 |
| 4 | ARS-BFGL-NGS-33573     | 0 | 44884299 |
| 4 | BTA-70407-no-rs        | 0 | 44927776 |
| 4 | Hapmap38427-BTA-70434  | 0 | 44952454 |
| 4 | Hapmap49715-BTA-70437  | 0 | 44967890 |
| 4 | ARS-BFGL-NGS-38841     | 0 | 44992767 |
| 4 | BTB-00181882           | 0 | 45021369 |
| 4 | ARS-BFGL-NGS-40525     | 0 | 45079239 |
| 4 | BTB-01330323           | 0 | 45103652 |
| 4 | ARS-BFGL-NGS-11339     | 0 | 45128142 |
| 4 | BTB-01330302           | 0 | 45149895 |
| 4 | BTA-24137-no-rs        | 0 | 45173410 |
| 4 | BTA-24135-no-rs        | 0 | 45202155 |
| 4 | DIAS-222               | 0 | 45283780 |
| 4 | BTA-37625-no-rs        | 0 | 45313054 |
| 4 | BTB-00614426           | 0 | 45338985 |
| 4 | Hapmap59465-rs29011243 | 0 | 45360108 |
| 4 | ARS-BFGL-NGS-29867     | 0 | 45426146 |
| 4 | BTA-113800-no-rs       | 0 | 45473258 |
| 4 | BTB-00182993           | 0 | 45513003 |
| 4 | ARS-BFGL-NGS-90711     | 0 | 45577225 |
| 4 | BTA-70441-no-rs        | 0 | 45602047 |
| 4 | BTB-01562667           | 0 | 45664659 |
| 4 | BTA-11650-rs29017408   | 0 | 45710677 |
| 4 | Hapmap55111-rs29019556 | 0 | 45743508 |
| 4 | BTB-01351245           | 0 | 45835326 |
| 4 | BTA-27223-no-rs        | 0 | 45904319 |
| 4 | ARS-BFGL-NGS-38285     | 0 | 45945762 |
| 4 | ARS-BFGL-NGS-108242    | 0 | 45972263 |
| 4 | ARS-BFGL-NGS-79746     | 0 | 46008319 |
| 4 | ARS-BFGL-NGS-23878     | 0 | 46043537 |

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| 4 | ARS-BFGL-NGS-835                 | 0 | 46084089 |          |
| 4 | Hapmap47168-BTA-107289           | 0 | 46138975 |          |
| 4 | ARS-BFGL-NGS-101418              | 0 | 46205276 |          |
| 4 | ARS-BFGL-NGS-14155               | 0 | 46299099 |          |
| 4 | Hapmap48862-BTA-70431            | 0 | 46334762 |          |
| 4 | ARS-BFGL-NGS-117740              | 0 | 46358600 |          |
| 4 | BTA-70433-no-rs                  | 0 | 46381877 |          |
| 4 | BTB-00182719                     | 0 | 46424885 |          |
| 4 | BTB-00182731                     | 0 | 46462919 |          |
| 4 | BTB-00182742                     | 0 | 46484672 |          |
| 4 | BTB-00182760                     | 0 | 46514849 |          |
| 4 | BTB-00182813                     | 0 | 46583566 |          |
| 4 | BTB-00183295                     | 0 | 46661436 |          |
| 4 | Hapmap50446-BTA-70460            | 0 | 46835269 |          |
| 4 | Hapmap51033-BTA-70457            | 0 | 46890706 |          |
| 4 | BTA-70459-no-rs                  | 0 | 46912998 |          |
| 4 | ARS-BFGL-NGS-25083               | 0 | 46939032 |          |
| 4 | ARS-BFGL-NGS-104842              | 0 | 46981956 |          |
| 4 | ARS-BFGL-NGS-35394               | 0 | 47011259 |          |
| 4 | ARS-BFGL-NGS-100769              | 0 | 47137606 |          |
| 4 | Hapmap36497-SCAFFOLD317908_23531 | 0 |          | 47168160 |
| 4 | ARS-BFGL-NGS-105598              | 0 | 47195467 |          |
| 4 | ARS-BFGL-NGS-30059               | 0 | 47216521 |          |
| 4 | BTB-00183944                     | 0 | 47262921 |          |
| 4 | ARS-BFGL-NGS-98878               | 0 | 47329385 |          |
| 4 | ARS-BFGL-NGS-102463              | 0 | 47358350 |          |
| 4 | ARS-BFGL-NGS-20161               | 0 | 47396270 |          |
| 4 | BTA-70508-no-rs                  | 0 | 47428767 |          |
| 4 | BTB-00183730                     | 0 | 47463674 |          |
| 4 | BTA-70505-no-rs                  | 0 | 47501491 |          |
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| 4 | Hapmap43660-BTA-70498            | 0 | 47619682 |          |
| 4 | ARS-BFGL-NGS-25928               | 0 | 47697368 |          |
| 4 | ARS-BFGL-NGS-95937               | 0 | 47737653 |          |
| 4 | BTA-70487-no-rs                  | 0 | 47762763 |          |
| 4 | BTA-110861-no-rs                 | 0 | 47788307 |          |
| 4 | BTB-01651634                     | 0 | 47821591 |          |
| 4 | Hapmap40337-BTA-110858           | 0 | 47844667 |          |
| 4 | ARS-BFGL-NGS-40546               | 0 | 47869938 |          |
| 4 | BTB-00183304                     | 0 | 47909532 |          |
| 4 | ARS-BFGL-NGS-86664               | 0 | 47949379 |          |
| 4 | ARS-BFGL-NGS-25314               | 0 | 47971872 |          |
| 4 | BTB-01637746                     | 0 | 48028619 |          |
| 4 | Hapmap26447-BTA-155502           | 0 | 48058440 |          |
| 4 | ARS-USMARC-349                   | 0 | 48280680 |          |
| 4 | Hapmap39284-BTA-70361            | 0 | 48408626 |          |
| 4 | BTB-00180546                     | 0 | 48431383 |          |
| 4 | BTA-120528-no-rs                 | 0 | 48460437 |          |
| 4 | BTB-00180592                     | 0 | 48524508 |          |
| 4 | ARS-BFGL-NGS-112622              | 0 | 48586647 |          |
| 4 | Hapmap28169-BTA-70367            | 0 | 48615363 |          |
| 4 | Hapmap46158-BTA-70371            | 0 | 48649499 |          |
| 4 | BTB-00180945                     | 0 | 48688283 |          |
| 4 | Hapmap41338-BTA-70373            | 0 | 48775246 |          |

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| 4 | BTB-00181018                    | 0 | 48819329 |  |
| 4 | ARS-BFGL-NGS-80947              | 0 | 48870790 |  |
| 4 | ARS-BFGL-NGS-27837              | 0 | 48914247 |  |
| 4 | BTB-00181232                    | 0 | 48945677 |  |
| 4 | BTA-70379-no-rs                 | 0 | 48976782 |  |
| 4 | ARS-BFGL-NGS-78873              | 0 | 49010877 |  |
| 4 | Hapmap50445-BTA-70383           | 0 | 49036289 |  |
| 4 | ARS-BFGL-NGS-78389              | 0 | 49074467 |  |
| 4 | ARS-BFGL-NGS-26033              | 0 | 49105752 |  |
| 4 | BTB-00181387                    | 0 | 49129204 |  |
| 4 | Hapmap48860-BTA-70350           | 0 | 49229954 |  |
| 4 | Hapmap40186-BTA-70345           | 0 | 49273818 |  |
| 4 | BTB-00180381                    | 0 | 49318278 |  |
| 4 | Hapmap53745-rs29022883          | 0 | 49371108 |  |
| 4 | BTA-94736-no-rs                 | 0 | 49414060 |  |
| 4 | BTB-00179771                    | 0 | 49446088 |  |
| 4 | ARS-BFGL-NGS-61023              | 0 | 49494267 |  |
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| 4 | ARS-BFGL-NGS-103863             | 0 | 49616352 |  |
| 4 | BTA-70313-no-rs                 | 0 | 49641651 |  |
| 4 | Hapmap35076-BES8_Contig223_1291 | 0 | 49662153 |  |
| 4 | BTA-70317-no-rs                 | 0 | 49692660 |  |
| 4 | BTA-70321-no-rs                 | 0 | 49717334 |  |
| 4 | Hapmap43020-BTA-70327           | 0 | 49738691 |  |
| 4 | ARS-BFGL-NGS-14039              | 0 | 49800685 |  |
| 4 | BTB-01669008                    | 0 | 49824079 |  |
| 4 | Hapmap44583-BTA-111987          | 0 | 49857470 |  |
| 4 | UA-IFASA-7498                   | 0 | 49907346 |  |
| 4 | BTB-00180208                    | 0 | 50001287 |  |
| 4 | BTA-01291-no-rs                 | 0 | 50029913 |  |
| 4 | ARS-BFGL-NGS-110245             | 0 | 50093060 |  |
| 4 | ARS-BFGL-NGS-27553              | 0 | 50122088 |  |
| 4 | ARS-BFGL-NGS-110001             | 0 | 50168417 |  |
| 4 | ARS-BFGL-NGS-114035             | 0 | 50300237 |  |
| 4 | BTA-16657-no-rs                 | 0 | 50322082 |  |
| 4 | Hapmap54533-rs29013481          | 0 | 50412884 |  |
| 4 | BTB-01287474                    | 0 | 50417818 |  |
| 4 | ARS-BFGL-NGS-90280              | 0 | 50516693 |  |
| 4 | BTA-101318-no-rs                | 0 | 50547931 |  |
| 4 | ARS-BFGL-NGS-104846             | 0 | 50773705 |  |
| 4 | BTA-25507-no-rs                 | 0 | 50926486 |  |
| 4 | Hapmap54947-rs29009770          | 0 | 51146972 |  |
| 4 | BTA-91631-no-rs                 | 0 | 51330208 |  |
| 4 | Hapmap55648-rs29025355          | 0 | 51370504 |  |
| 4 | BTB-00184775                    | 0 | 51406099 |  |
| 4 | ARS-BFGL-NGS-117196             | 0 | 51441328 |  |
| 4 | ARS-BFGL-NGS-113150             | 0 | 51471353 |  |
| 4 | Hapmap33797-BTA-70610           | 0 | 51544844 |  |
| 4 | BTB-00185536                    | 0 | 51655250 |  |
| 4 | BTB-00184816                    | 0 | 51699759 |  |
| 4 | Hapmap51289-BTA-70566           | 0 | 51726432 |  |
| 4 | BTB-00184917                    | 0 | 51792757 |  |
| 4 | ARS-BFGL-NGS-29401              | 0 | 51833896 |  |



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| 4 | BTB-00185584                   | 0 | 51866668 |          |
| 4 | UA-IFASA-6226                  | 0 | 51927595 |          |
| 4 | BTB-00185792                   | 0 | 51973703 |          |
| 4 | BTB-00185806                   | 0 | 52014692 |          |
| 4 | Hapmap43914-BTA-70640          | 0 | 52037442 |          |
| 4 | BTA-82217-no-rs                | 0 | 52112557 |          |
| 4 | Hapmap58409-rs29020726         | 0 | 52138962 |          |
| 4 | BTB-00185894                   | 0 | 52186807 |          |
| 4 | ARS-BFGL-NGS-66729             | 0 | 52221711 |          |
| 4 | BTB-00366265                   | 0 | 52265400 |          |
| 4 | BTA-82216-no-rs                | 0 | 52308430 |          |
| 4 | BTA-82215-no-rs                | 0 | 52337891 |          |
| 4 | Hapmap23228-BTA-161804         | 0 | 52381388 |          |
| 4 | Hapmap41484-BTA-22365          | 0 | 52419444 |          |
| 4 | ARS-BFGL-NGS-77960             | 0 | 52533927 |          |
| 4 | BTB-01592886                   | 0 | 52589260 |          |
| 4 | BTB-01592826                   | 0 | 52624584 |          |
| 4 | BTB-01592646                   | 0 | 52669435 |          |
| 4 | BTA-28293-no-rs                | 0 | 52690928 |          |
| 4 | Hapmap36743-SCAFFOLD20938_6775 | 0 |          | 52801852 |
| 4 | ARS-BFGL-NGS-25383             | 0 | 52823821 |          |
| 4 | UA-IFASA-1746                  | 0 | 52849283 |          |
| 4 | BTB-01065803                   | 0 | 52974459 |          |
| 4 | BTB-01065788                   | 0 | 53007008 |          |
| 4 | ARS-BFGL-NGS-114296            | 0 | 53143855 |          |
| 4 | BTB-01065960                   | 0 | 53176385 |          |
| 4 | BTB-01065966                   | 0 | 53240815 |          |
| 4 | ARS-BFGL-NGS-29790             |   | 53267467 |          |
| 4 | BTB-01066119                   | 0 | 53316893 |          |
| 4 | ARS-BFGL-NGS-30090             | 0 | 53359316 |          |
| 4 | BTB-01066167                   | 0 | 53400639 |          |
| 4 | ARS-BFGL-NGS-38893             | 0 | 53434639 |          |
| 4 | BTA-99754-no-rs                | 0 | 53498959 |          |
| 4 | ARS-BFGL-NGS-38480             | 0 | 53560330 |          |
| 4 | Hapmap45967-BTA-99756          | 0 | 53606420 |          |
| 4 | Hapmap50535-BTA-99757          | 0 | 53680460 |          |
| 4 | BTA-123199-no-rs               | 0 | 53730713 |          |
| 4 | BTB-01066381                   | 0 | 53777012 |          |
| 4 | Hapmap26164-BTA-152081         | 0 | 53807121 |          |
| 4 | ARS-BFGL-NGS-113702            | 0 | 53829866 |          |
| 4 | BTB-01066453                   | 0 | 53857273 |          |
| 4 | BTA-120046-no-rs               | 0 | 53896224 |          |
| 4 | BTB-00188504                   | 0 | 53929767 |          |
| 4 | BTB-00188617                   | 0 | 53974870 |          |
| 4 | BTB-00188660                   | 0 | 54001910 |          |
| 4 | Hapmap33484-BTA-142221         | 0 | 54028906 |          |
| 4 | Hapmap48445-BTA-70755          | 0 | 54063010 |          |
| 4 | Hapmap35290-BES8_Contig586_984 | 0 |          | 54083960 |
| 4 | BTB-00188992                   | 0 | 54115002 |          |
| 4 | ARS-BFGL-NGS-115783            | 0 | 54145659 |          |
| 4 | BTB-00189082                   | 0 | 54203153 |          |
| 4 | Hapmap32662-BTA-30330          | 0 | 54321018 |          |
| 4 | BTB-00940872                   | 0 | 54384650 |          |
| 4 | BTB-00940868                   | 0 | 54414487 |          |

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| 4 | Hapmap40772-BTA-61438           | 0 | 54446327 |          |
| 4 | BTB-00940849                    | 0 | 54474827 |          |
| 4 | BTB-01418162                    | 0 | 54514612 |          |
| 4 | BTB-01418150                    | 0 | 54547111 |          |
| 4 | ARS-BFGL-NGS-34001              | 0 | 54578893 |          |
| 4 | BTB-01298839                    | 0 | 54705552 |          |
| 4 | BTB-01298917                    | 0 | 54781445 |          |
| 4 | ARS-BFGL-NGS-39795              | 0 | 54872595 |          |
| 4 | BTB-01298928                    | 0 | 54903404 |          |
| 4 | BTB-01298953                    | 0 | 54930726 |          |
| 4 | BTA-19471-no-rs                 | 0 | 54962144 |          |
| 4 | Hapmap27403-BTA-142195          | 0 | 55005864 |          |
| 4 | Hapmap34965-BES8_Contig580_3561 | 0 |          | 55050570 |
| 4 | BTB-00186521                    | 0 | 55081785 |          |
| 4 | ARS-BFGL-NGS-32285              | 0 | 55129325 |          |
| 4 | BTA-110705-no-rs                | 0 | 55313701 |          |
| 4 | BTB-01263701                    | 0 | 55351773 |          |
| 4 | BTB-00555748                    | 0 | 55384794 |          |
| 4 | ARS-BFGL-NGS-67230              |   | 55439598 |          |
| 4 | BTB-01263779                    | 0 | 55481910 |          |
| 4 | BTB-01738708                    | 0 | 55566787 |          |
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| 4 | ARS-BFGL-NGS-35354              | 0 | 55746256 |          |
| 4 | BTB-00186413                    | 0 | 56031281 |          |
| 4 | BTB-00186432                    | 0 | 56068600 |          |
| 4 | Hapmap54543-rs29011993          | 0 | 56100964 |          |
| 4 | BTB-00186634                    | 0 | 56128581 |          |
| 4 | Hapmap23995-BTA-142201          | 0 | 56162662 |          |
| 4 | BTA-70675-no-rs                 | 0 | 56199292 |          |
| 4 | ARS-BFGL-NGS-111478             | 0 | 56222505 |          |
| 4 | BTB-00186736                    | 0 | 56248103 |          |
| 4 | Hapmap42660-BTA-75089           | 0 | 56329704 |          |
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| 4 | BTB-00186038                    | 0 | 56479030 |          |
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| 4 | ARS-BFGL-NGS-33150              | 0 | 56614093 |          |
| 4 | BTB-00186757                    | 0 | 56640673 |          |
| 4 | ARS-BFGL-NGS-25356              | 0 | 56668225 |          |
| 4 | BTA-06202-rs29020566            | 0 | 56691893 |          |
| 4 | BTB-00186856                    | 0 | 56727118 |          |
| 4 | BTB-00186866                    | 0 | 56761233 |          |
| 4 | Hapmap48652-BTA-121634          | 0 | 56813503 |          |
| 4 | BTB-00186895                    | 0 | 56850569 |          |
| 4 | BTA-70690-no-rs                 | 0 | 56875012 |          |
| 4 | Hapmap55341-rs29010064          | 0 | 57038837 |          |
| 4 | ARS-BFGL-NGS-58469              | 0 | 57055211 |          |
| 4 | ARS-BFGL-NGS-84791              | 0 | 57085138 |          |
| 4 | BTB-02035389                    | 0 | 57112422 |          |
| 4 | Hapmap39521-BTA-89033           | 0 | 57139727 |          |
| 4 | BTB-01403737                    | 0 | 57165802 |          |
| 4 | Hapmap47769-BTA-89036           | 0 | 57204062 |          |

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| 4 | Hapmap25577-BTA-148332 | 0 | 57230916 |
| 4 | Hapmap54988-rs29020907 | 0 | 57259091 |
| 4 | BTA-70707-no-rs        | 0 | 57333234 |
| 4 | ARS-BFGL-NGS-99336     | 0 | 57375930 |
| 4 | BTA-70715-no-rs        | 0 | 57460820 |
| 4 | BTB-00187927           | 0 | 57492983 |
| 4 | Hapmap27260-BTA-70716  | 0 | 57531310 |
| 4 | BTB-00187975           | 0 | 57553315 |
| 4 | BTB-00187988           | 0 | 57576898 |
| 4 | BTB-00188028           | 0 | 57630023 |
| 4 | Hapmap38342-BTA-70722  | 0 | 57673965 |
| 4 | BTB-00188098           | 0 | 57712027 |
| 4 | BTA-70724-no-rs        | 0 | 57744446 |
| 4 | BTB-00188171           | 0 | 57787437 |
| 4 | BTA-70725-no-rs        | 0 | 57809364 |
| 4 | Hapmap60125-rs29018949 | 0 | 57829798 |
| 4 | Hapmap33364-BTA-142214 | 0 | 57896067 |
| 4 | BTA-70744-no-rs        | 0 | 57936156 |
| 4 | Hapmap60763-rs29014471 | 0 | 57984488 |
| 4 | Hapmap53694-rs29015972 | 0 | 58023230 |
| 4 | ARS-BFGL-NGS-105821    | 0 | 58072287 |
| 4 | Hapmap57810-rs29009951 | 0 | 58115832 |
| 4 | ARS-BFGL-NGS-110097    | 0 | 58136462 |
| 4 | BTB-01640588           | 0 | 58171808 |
| 4 | Hapmap55561-rs29010357 | 0 | 58203233 |
| 4 | Hapmap44705-BTA-120271 | 0 | 58305087 |
| 4 | BTB-01264154           | 0 | 58349221 |
| 4 | Hapmap58879-rs29013265 | 0 | 58395811 |
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| 4 | ARS-BFGL-NGS-23272     | 0 | 58468024 |
| 4 | ARS-BFGL-NGS-28532     | 0 | 58512174 |
| 4 | Hapmap49880-BTA-120276 | 0 | 58563766 |
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| 4 | Hapmap43783-BTA-119428 | 0 | 58670242 |
| 4 | BTA-119434-no-rs       | 0 | 58691410 |
| 4 | BTB-01752000           | 0 | 58757127 |
| 4 | ARS-BFGL-NGS-33426     | 0 | 58803864 |
| 4 | BTB-00188425           | 0 | 58846700 |
| 4 | BTA-70752-no-rs        | 0 | 58883457 |
| 4 | Hapmap52199-rs29020557 | 0 | 58920558 |
| 4 | ARS-BFGL-NGS-115676    | 0 | 58942130 |
| 4 | BTB-00189289           | 0 | 58975234 |
| 4 | UA-IFASA-1608          | 0 | 58998553 |
| 4 | BTB-00189357           | 0 | 59021265 |
| 4 | BTA-70765-no-rs        | 0 | 59089119 |
| 4 | BTA-70767-no-rs        | 0 | 59100328 |
| 4 | Hapmap43661-BTA-70769  | 0 | 59145247 |
| 4 | Hapmap39679-BTA-70777  | 0 | 59216486 |
| 4 | ARS-BFGL-NGS-31095     | 0 | 59252442 |
| 4 | BTB-00189889           | 0 | 59291348 |
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| 4 | BTB-00190417           | 0 | 59466125 |
| 4 | BTB-00190444           | 0 | 59509462 |
| 4 | ARS-BFGL-NGS-118588    | 0 | 59539393 |
| 4 | BTB-00190485           | 0 | 59580367 |
| 4 | Hapmap41620-BTA-70804  | 0 | 59606204 |
| 4 | BTA-70794-no-rs        | 0 | 59667735 |
| 4 | BTA-70802-no-rs        | 0 | 59710881 |
| 4 | ARS-BFGL-NGS-114455    | 0 | 59744707 |
| 4 | BTB-02042206           | 0 | 59791354 |
| 4 | ARS-BFGL-NGS-83120     |   | 59855665 |
| 4 | BTB-00190917           | 0 | 59890861 |
| 4 | BTA-70806-no-rs        | 0 | 59914642 |
| 4 | ARS-BFGL-NGS-54820     |   | 59999976 |
| 4 | ARS-BFGL-NGS-116115    | 0 | 60054713 |
| 4 | ARS-BFGL-NGS-102202    | 0 | 60094523 |
| 4 | Hapmap51420-BTA-20855  | 0 | 60118562 |
| 4 | ARS-BFGL-NGS-119775    | 0 | 60149181 |
| 4 | ARS-BFGL-NGS-42679     | 0 | 60157977 |
| 4 | ARS-BFGL-NGS-109556    | 0 | 60185352 |
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| 4 | Hapmap47381-BTA-70830  | 0 | 60432800 |
| 4 | ARS-BFGL-NGS-42618     | 0 | 60473007 |
| 4 | Hapmap49717-BTA-70840  | 0 | 60521073 |
| 4 | Hapmap27404-BTA-142249 | 0 | 60552628 |
| 4 | Hapmap39680-BTA-70826  | 0 | 60635433 |
| 4 | ARS-BFGL-NGS-24133     | 0 | 60677181 |
| 4 | ARS-BFGL-NGS-56156     | 0 | 60759757 |
| 4 | ARS-BFGL-NGS-115377    | 0 | 60781458 |
| 4 | ARS-BFGL-NGS-46170     | 0 | 60809733 |
| 4 | ARS-BFGL-NGS-98675     | 0 | 60917347 |
| 4 | BTB-00187477           | 0 | 60967050 |
| 4 | ARS-BFGL-NGS-115237    | 0 | 61015911 |
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| 4 | ARS-BFGL-NGS-27033     | 0 | 61124293 |
| 4 | BTA-02000-rs29012953   | 0 | 61153837 |
| 4 | BTA-70697-no-rs        | 0 | 61203879 |
| 4 | BTB-00187008           | 0 | 61234542 |
| 4 | Hapmap42645-BTA-70875  | 0 | 61274297 |
| 4 | Hapmap53007-rs29013223 | 0 | 61324109 |
| 4 | ARS-BFGL-NGS-24321     | 0 | 61350391 |
| 4 | ARS-BFGL-NGS-101883    | 0 | 61376132 |
| 4 | ARS-BFGL-NGS-100947    | 0 | 61444963 |
| 4 | Hapmap54734-rs29026555 | 0 | 61472382 |
| 4 | ARS-BFGL-NGS-110519    | 0 | 61505994 |
| 4 | BTB-00192005           | 0 | 61542387 |
| 4 | Hapmap48865-BTA-70864  | 0 | 61581941 |
| 4 | Hapmap26405-BTA-142255 | 0 | 61629099 |
| 4 | BTB-00191792           | 0 | 61654907 |
| 4 | ARS-BFGL-NGS-34380     |   | 61678239 |

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| 4 | BTB-02003236                    | 0 | 61702691 |          |
| 4 | BTB-00191572                    | 0 | 61729628 |          |
| 4 | BTB-00191555                    | 0 | 61778638 |          |
| 4 | BTA-70855-no-rs                 | 0 | 61818594 |          |
| 4 | BTB-00191519                    | 0 | 61847422 |          |
| 4 | BTA-14805-rs29023564            | 0 | 61871789 |          |
| 4 | ARS-BFGL-NGS-92793              | 0 | 61897880 |          |
| 4 | Hapmap50451-BTA-70851           | 0 | 61934892 |          |
| 4 | BTB-00191341                    | 0 | 61972879 |          |
| 4 | BTB-00191279                    | 0 | 62019561 |          |
| 4 | BTB-00191251                    | 0 | 62063099 |          |
| 4 | Hapmap47080-BTA-70846           | 0 | 62089794 |          |
| 4 | BTA-70845-no-rs                 | 0 | 62122533 |          |
| 4 | ARS-BFGL-NGS-118506             | 0 | 62189085 |          |
| 4 | BTB-00191081                    | 0 | 62221016 |          |
| 4 | BTB-00191050                    | 0 | 62258986 |          |
| 4 | BTA-89152-no-rs                 | 0 | 62348465 |          |
| 4 | ARS-BFGL-NGS-99082              | 0 | 62376334 |          |
| 4 | ARS-BFGL-NGS-12397              | 0 | 62416138 |          |
| 4 | BTB-00193035                    | 0 | 62448627 |          |
| 4 | BTA-70899-no-rs                 | 0 | 62478888 |          |
| 4 | ARS-BFGL-NGS-76682              | 0 | 62549908 |          |
| 4 | ARS-BFGL-NGS-19036              | 0 | 62570795 |          |
| 4 | BTB-00193327                    | 0 | 62606492 |          |
| 4 | BTB-00193368                    | 0 | 62661085 |          |
| 4 | BTB-00193392                    | 0 | 62685650 |          |
| 4 | Hapmap43154-BTA-11252           | 0 | 62742887 |          |
| 4 | BTB-00193466                    | 0 | 62766260 |          |
| 4 | BTA-121635-no-rs                | 0 | 62795271 |          |
| 4 | BTB-00193651                    | 0 | 62876037 |          |
| 4 | ARS-BFGL-NGS-117482             | 0 | 62906331 |          |
| 4 | Hapmap46159-BTA-70956           | 0 | 62960701 |          |
| 4 | Hapmap53492-rs29026148          | 0 | 62981078 |          |
| 4 | BTA-70947-no-rs                 | 0 | 63022352 |          |
| 4 | Hapmap39583-BTA-70939           | 0 | 63058223 |          |
| 4 | BTA-70929-no-rs                 | 0 | 63091475 |          |
| 4 | ARS-BFGL-NGS-17120              | 0 | 63120929 |          |
| 4 | ARS-BFGL-NGS-39957              | 0 | 63139098 |          |
| 4 | Hapmap52603-rs29015892          | 0 | 63185445 |          |
| 4 | Hapmap48446-BTA-70928           | 0 | 63273237 |          |
| 4 | Hapmap50452-BTA-70921           | 0 | 63315888 |          |
| 4 | Hapmap36742-SCAFFOLD70177_16088 | 0 |          | 63349293 |
| 4 | ARS-BFGL-NGS-37873              | 0 | 63420711 |          |
| 4 | ARS-BFGL-NGS-43016              | 0 | 63454908 |          |
| 4 | BTA-99279-no-rs                 | 0 | 63483642 |          |
| 4 | Hapmap55086-rs29012211          | 0 | 63518623 |          |
| 4 | BTA-56392-no-rs                 | 0 | 63617795 |          |
| 4 | ARS-BFGL-NGS-49200              | 0 | 63654530 |          |
| 4 | ARS-BFGL-NGS-113815             | 0 | 63674872 |          |
| 4 | ARS-BFGL-NGS-115492             | 0 | 63710575 |          |
| 4 | Hapmap59433-rs29012129          | 0 | 63739671 |          |
| 4 | ARS-BFGL-NGS-31114              | 0 | 63838909 |          |
| 4 | Hapmap40025-BTA-79683           | 0 | 63862278 |          |
| 4 | Hapmap39072-BTA-79684           | 0 | 63906905 |          |

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| 4 | Hapmap43916-BTA-70890          | 0 | 64053148 |          |
| 4 | BTA-70887-no-rs                | 0 | 64183132 |          |
| 4 | BTA-70882-no-rs                | 0 | 64223665 |          |
| 4 | Hapmap43334-BTA-70880          | 0 | 64287547 |          |
| 4 | ARS-BFGL-NGS-458               | 0 | 64351574 |          |
| 4 | Hapmap39941-BTA-70878          | 0 | 64386271 |          |
| 4 | ARS-BFGL-NGS-39740             | 0 | 64417319 |          |
| 4 | ARS-BFGL-NGS-68143             | 0 | 64492908 |          |
| 4 | BTA-106266-no-rs               | 0 | 64533408 |          |
| 4 | BTA-120546-no-rs               | 0 | 64553507 |          |
| 4 | ARS-BFGL-NGS-32516             | 0 | 64580076 |          |
| 4 | BTA-70965-no-rs                | 0 | 64719458 |          |
| 4 | Hapmap55516-rs29015265         | 0 | 64780881 |          |
| 4 | Hapmap55079-rs29012053         | 0 | 64854333 |          |
| 4 | Hapmap36353-SCAFFOLD29708_3468 | 0 |          | 64923141 |
| 4 | ARS-BFGL-NGS-42921             | 0 | 64992462 |          |
| 4 | Hapmap26478-BTA-161959         | 0 | 65046623 |          |
| 4 | ARS-BFGL-NGS-15489             | 0 | 65073924 |          |
| 4 | BTB-01327575                   | 0 | 65172247 |          |
| 4 | ARS-BFGL-NGS-118587            | 0 | 65220395 |          |
| 4 | BTA-09121-no-rs                | 0 | 65261249 |          |
| 4 | BTB-01392193                   | 0 | 65299999 |          |
| 4 | ARS-BFGL-NGS-91573             | 0 | 65346870 |          |
| 4 | BTB-01392143                   | 0 | 65375544 |          |
| 4 | BTB-01392113                   | 0 | 65400608 |          |
| 4 | BTB-01392065                   | 0 | 65458091 |          |
| 4 | Hapmap30641-BTA-87844          | 0 | 65480915 |          |
| 4 | Hapmap43717-BTA-87854          | 0 | 65567461 |          |
| 4 | BTB-00193817                   | 0 | 65609188 |          |
| 4 | ARS-BFGL-NGS-61465             | 0 | 65703804 |          |
| 4 | ARS-BFGL-NGS-33310             | 0 | 65798873 |          |
| 4 | ARS-BFGL-NGS-40376             | 0 | 65846954 |          |
| 4 | Hapmap30253-BTA-142277         | 0 | 65870311 |          |
| 4 | ARS-BFGL-NGS-20949             | 0 | 65984649 |          |
| 4 | ARS-BFGL-NGS-45911             | 0 | 66013568 |          |
| 4 | ARS-BFGL-NGS-26541             | 0 | 66038939 |          |
| 4 | ARS-BFGL-NGS-36762             | 0 | 66077417 |          |
| 4 | BTB-01411318                   | 0 | 66110869 |          |
| 4 | BTB-01411209                   | 0 | 66155273 |          |
| 4 | ARS-BFGL-NGS-13878             | 0 | 66178170 |          |
| 4 | Hapmap48240-BTA-18657          | 0 | 66287747 |          |
| 4 | ARS-BFGL-NGS-107905            | 0 | 66322307 |          |
| 4 | BTB-00194057                   | 0 | 66346549 |          |
| 4 | Hapmap42296-BTA-70995          | 0 | 66368850 |          |
| 4 | BTA-70992-no-rs                | 0 | 66398178 |          |
| 4 | BTB-00194018                   | 0 | 66421522 |          |
| 4 | BTA-70990-no-rs                | 0 | 66447893 |          |
| 4 | ARS-BFGL-NGS-37173             | 0 | 66482908 |          |
| 4 | ARS-BFGL-NGS-23789             | 0 | 66504063 |          |
| 4 | BTA-13086-rs29018051           | 0 | 66559453 |          |
| 4 | BTB-00194107                   | 0 | 66583105 |          |
| 4 | BTB-00194223                   | 0 | 66649741 |          |
| 4 | BTA-70997-no-rs                | 0 | 66695747 |          |
| 4 | ARS-BFGL-NGS-41130             | 0 | 66731649 |          |

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| 4 | BTA-70999-no-rs        | 0        | 66781385 |
| 4 | ARS-BFGL-NGS-36591     | 0        | 66830563 |
| 4 | Hapmap57289-ss46526668 | 0        | 66854427 |
| 4 | Hapmap38810-BTA-112510 | 0        | 66934444 |
| 4 | ARS-BFGL-NGS-44674     | 0        | 66978951 |
| 4 | ARS-BFGL-NGS-39056     | 0        | 67007235 |
| 4 | Hapmap51035-BTA-71047  | 0        | 67078172 |
| 4 | Hapmap47704-BTA-71045  | 0        | 67115048 |
| 4 | BTA-71030-no-rs        | 0        | 67145895 |
| 4 | BTB-00194614           | 0        | 67183757 |
| 4 | Hapmap40188-BTA-71028  | 0        | 67222038 |
| 4 | ARS-BFGL-NGS-12934     | 0        | 67313016 |
| 4 | ARS-BFGL-NGS-116611    | 0        | 67378804 |
| 4 | Hapmap26406-BTA-142298 | 0        | 67462808 |
| 4 | ARS-BFGL-NGS-27521     | 0        | 67489709 |
| 4 | BTB-00195350           | 0        | 67546405 |
| 4 | Hapmap41071-BTA-71070  | 0        | 67615775 |
| 4 | Hapmap48059-BTA-71067  | 0        | 67654471 |
| 4 | Hapmap51293-BTA-71066  | 0        | 67701182 |
| 4 | BTA-71063-no-rs        | 0        | 67772757 |
| 4 | BTA-71062-no-rs        | 0        | 67797930 |
| 4 | ARS-BFGL-NGS-44314     | 0        | 67822341 |
| 4 | ARS-BFGL-NGS-79224     | 0        | 67880668 |
| 4 | BTA-71054-no-rs        | 0        | 68035522 |
| 4 | BTB-00195098           | 0        | 68062301 |
| 4 | BTA-71052-no-rs        | 0        | 68085627 |
| 4 | BTB-00195004           | 0        | 68140952 |
| 4 | BTB-00194991           | 0        | 68169557 |
| 4 | Hapmap51854-BTA-71049  | 0        | 68192268 |
| 4 | ARS-BFGL-NGS-85701     | 0        | 68253462 |
| 4 | ARS-BFGL-NGS-111515    | 0        | 68275669 |
| 4 | Hapmap30912-BTA-71048  | 0        | 68313751 |
| 4 | BTA-106667-no-rs       | 0        | 68431204 |
| 4 | BTA-106668-no-rs       | 0        | 68452656 |
| 4 | Hapmap39010-BTA-121642 | 0        | 68528799 |
| 4 | Hapmap38730-BTA-121643 | 0        | 68579054 |
| 4 | ARS-BFGL-NGS-57945     | 0        | 68599650 |
| 4 | Hapmap46862-BTA-71103  | 0        | 68771118 |
| 4 | Hapmap58944-rs29011673 | 0        | 68821397 |
| 4 | BTA-71107-no-rs        | 0        | 68882831 |
| 4 | BTA-71112-no-rs        | 0        | 68942061 |
| 4 | Hapmap46863-BTA-71117  | 0        | 69009351 |
| 4 | Hapmap49719-BTA-71119  | 0        | 69038555 |
| 4 | ARS-BFGL-NGS-26905     | 0        | 69122638 |
| 4 | ARS-BFGL-NGS-68509     | 0        | 69158293 |
| 4 | Hapmap38430-BTA-71131  | 0        | 69220543 |
| 4 | ARS-BFGL-NGS-37048     | 0        | 69262899 |
| 4 | ARS-BFGL-NGS-74070     | 69391131 |          |
| 4 | ARS-BFGL-NGS-38191     | 0        | 69431904 |
| 4 | ARS-BFGL-NGS-41100     | 69500860 |          |
| 4 | ARS-BFGL-NGS-67967     | 0        | 69539994 |
| 4 | Hapmap33251-BTA-160264 | 0        | 69693905 |
| 4 | ARS-BFGL-NGS-49410     | 69723900 |          |
| 4 | Hapmap44212-BTA-122090 | 0        | 69782727 |

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| 4 | ARS-BFGL-NGS-21631         | 0        | 69831612 |
| 4 | ARS-BFGL-NGS-97522         | 0        | 69926730 |
| 4 | Hapmap32854-BTA-155083     | 0        | 69955754 |
| 4 | Hapmap30302-BTA-155091     | 0        | 69994454 |
| 4 | Hapmap42647-BTA-71143      | 0        | 70068854 |
| 4 | ARS-BFGL-NGS-88361         | 0        | 70089160 |
| 4 | ARS-BFGL-NGS-105661        | 0        | 70197479 |
| 4 | ARS-BFGL-NGS-105263        | 0        | 70276669 |
| 4 | Hapmap47172-BTA-109521     | 0        | 70305010 |
| 4 | ARS-BFGL-NGS-119675        | 0        | 70351186 |
| 4 | ARS-BFGL-NGS-115217        | 0        | 70399494 |
| 4 | ARS-BFGL-NGS-51759         | 0        | 70419951 |
| 4 | Hapmap41750-BTA-109512     | 0        | 70452369 |
| 4 | ARS-BFGL-NGS-70032         | 0        | 70482602 |
| 4 | BTA-116026-no-rs           | 0        | 70508946 |
| 4 | ARS-BFGL-NGS-116468        | 0        | 70537648 |
| 4 | Hapmap49439-BTA-109526     | 0        | 70643370 |
| 4 | BTA-71180-no-rs            | 0        | 70680040 |
| 4 | ARS-BFGL-NGS-36876         | 0        | 70700960 |
| 4 | ARS-BFGL-NGS-51159         | 0        | 70729858 |
| 4 | ARS-BFGL-NGS-115010        | 0        | 70839756 |
| 4 | ARS-BFGL-NGS-102713        | 0        | 70867015 |
| 4 | ARS-BFGL-NGS-80470         | 70893038 |          |
| 4 | ARS-BFGL-NGS-29940         | 70990705 |          |
| 4 | Hapmap39351-BTA-71190      | 0        | 71031890 |
| 4 | Hapmap42648-BTA-71195      | 0        | 71061224 |
| 4 | ARS-BFGL-NGS-67540         | 71089406 |          |
| 4 | Hapmap50453-BTA-71205      | 0        | 71114254 |
| 4 | ARS-BFGL-NGS-64170         | 0        | 71191782 |
| 4 | BTA-88376-no-rs            | 0        | 71356324 |
| 4 | BTA-88378-no-rs            | 0        | 71413010 |
| 4 | Hapmap28362-BTA-148086     | 0        | 71433452 |
| 4 | ARS-BFGL-NGS-14100         | 71457286 |          |
| 4 | ARS-BFGL-NGS-39510         | 0        | 71484912 |
| 4 | ARS-BFGL-NGS-42794         | 0        | 71529187 |
| 4 | ARS-BFGL-NGS-103685        | 0        | 71553598 |
| 4 | ARS-BFGL-NGS-53167         | 0        | 71603530 |
| 4 | BTA-109199-no-rs           | 0        | 71625158 |
| 4 | ARS-BFGL-NGS-14935         | 0        | 71750660 |
| 4 | ARS-BFGL-NGS-41489         | 0        | 71899176 |
| 4 | ARS-BFGL-NGS-20921         | 0        | 71949013 |
| 4 | BTA-97670-no-rs            | 0        | 71978141 |
| 4 | Hapmap36554-NPY_499F3-SNP1 | 0        | 72071212 |
| 4 | Hapmap43336-BTA-71316      | 0        | 72165333 |
| 4 | ARS-BFGL-NGS-11190         | 0        | 72275120 |
| 4 | ARS-BFGL-NGS-42898         | 0        | 72328272 |
| 4 | BTA-71318-no-rs            | 0        | 72539230 |
| 4 | ARS-BFGL-NGS-42007         | 0        | 72575811 |
| 4 | BTA-71331-no-rs            | 0        | 72612152 |
| 4 | Hapmap43662-BTA-71333      | 0        | 72702535 |
| 4 | Hapmap43917-BTA-71319      | 0        | 72779945 |
| 4 | Hapmap32089-BTA-148976     | 0        | 72830739 |
| 4 | Hapmap42065-BTA-111154     | 0        | 72920828 |
| 4 | Hapmap49452-BTA-112834     | 0        | 72987997 |



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| 4 | BTB-01595589           | 0 | 73023785 |
| 4 | BTA-106677-no-rs       | 0 | 73045690 |
| 4 | BTB-01595788           | 0 | 73085109 |
| 4 | BTB-01708864           | 0 | 73131030 |
| 4 | BTB-00196354           | 0 | 73270175 |
| 4 | BTB-00196559           | 0 | 73329137 |
| 4 | BTB-00196579           | 0 | 73367338 |
| 4 | BTA-71334-no-rs        | 0 | 73390009 |
| 4 | ARS-BFGL-NGS-21842     | 0 | 73531264 |
| 4 | BTA-71353-no-rs        | 0 | 73564171 |
| 4 | BTA-71361-no-rs        | 0 | 73597885 |
| 4 | BTB-00196774           | 0 | 73635712 |
| 4 | BTB-00196827           | 0 | 73669041 |
| 4 | BTB-00196932           | 0 | 73699663 |
| 4 | ARS-BFGL-NGS-31033     | 0 | 73730122 |
| 4 | Hapmap44399-BTA-71366  | 0 | 73758088 |
| 4 | BTB-00197052           | 0 | 73791282 |
| 4 | BTA-71368-no-rs        | 0 | 73837632 |
| 4 | BTB-00197128           | 0 | 73861517 |
| 4 | BTB-00197149           | 0 | 73894130 |
| 4 | ARS-BFGL-NGS-44382     | 0 | 73933795 |
| 4 | BTB-01965166           | 0 | 73963975 |
| 4 | BTB-01709170           | 0 | 74006260 |
| 4 | Hapmap42080-BTA-115228 | 0 | 74042008 |
| 4 | ARS-BFGL-NGS-38740     | 0 | 74076693 |
| 4 | BTB-02044451           | 0 | 74124684 |
| 4 | BTB-01955910           | 0 | 74148361 |
| 4 | BTB-01327945           | 0 | 74183860 |
| 4 | BTB-01328019           | 0 | 74234970 |
| 4 | BTA-18524-no-rs        | 0 | 74266771 |
| 4 | BTB-01664105           | 0 | 74302903 |
| 4 | ARS-BFGL-NGS-86255     | 0 | 74350995 |
| 4 | Hapmap31842-BTA-161975 | 0 | 74497834 |
| 4 | Hapmap54648-rs29025386 | 0 | 74531125 |
| 4 | BTB-00197584           | 0 | 74579013 |
| 4 | BTB-00197593           | 0 | 74590523 |
| 4 | BTB-01555035           | 0 | 74672227 |
| 4 | ARS-BFGL-NGS-55672     | 0 | 74706240 |
| 4 | ARS-BFGL-NGS-67968     | 0 | 74780951 |
| 4 | Hapmap43771-BTA-114609 | 0 | 74823667 |
| 4 | BTB-01657329           | 0 | 74911699 |
| 4 | ARS-BFGL-NGS-110471    | 0 | 74934998 |
| 4 | BTB-00198166           | 0 | 74975523 |
| 4 | BTB-01835623           | 0 | 75104623 |
| 4 | Hapmap49284-BTA-71431  | 0 | 75153935 |
| 4 | BTA-71430-no-rs        | 0 | 75201210 |
| 4 | ARS-BFGL-NGS-61452     | 0 | 75250982 |
| 4 | ARS-BFGL-NGS-106987    | 0 | 75272338 |
| 4 | ARS-BFGL-NGS-21411     | 0 | 75293134 |
| 4 | BTB-00198412           | 0 | 75379515 |
| 4 | ARS-BFGL-NGS-71500     | 0 | 75406763 |
| 4 | BTA-71456-no-rs        | 0 | 75450759 |
| 4 | ARS-BFGL-NGS-15231     | 0 | 75487622 |
| 4 | BTB-00198560           | 0 | 75514419 |

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| 4 | Hapmap50073-BTA-71460          | 0 | 75559460 |          |
| 4 | ARS-BFGL-NGS-110647            | 0 | 75579874 |          |
| 4 | BTA-71464-no-rs                | 0 | 75602323 |          |
| 4 | BTB-00198758                   | 0 | 75640795 |          |
| 4 | BTA-71466-no-rs                | 0 | 75666435 |          |
| 4 | ARS-BFGL-NGS-60615             | 0 | 75741220 |          |
| 4 | ARS-BFGL-NGS-76647             | 0 | 75780515 |          |
| 4 | BTB-00198956                   | 0 | 75890428 |          |
| 4 | BTB-00199012                   | 0 | 75951231 |          |
| 4 | Hapmap51296-BTA-71488          | 0 | 75986692 |          |
| 4 | BTB-02088809                   | 0 | 76019347 |          |
| 4 | Hapmap51855-BTA-71491          | 0 | 76049285 |          |
| 4 | ARS-BFGL-NGS-75548             | 0 | 76072824 |          |
| 4 | ARS-BFGL-NGS-13161             | 0 | 76100007 |          |
| 4 | ARS-BFGL-NGS-113427            | 0 | 76123840 |          |
| 4 | ARS-BFGL-NGS-24310             |   | 76149109 |          |
| 4 | ARS-BFGL-NGS-102407            | 0 | 76185033 |          |
| 4 | BTB-00199492                   | 0 | 76227768 |          |
| 4 | BTB-00199499                   | 0 | 76252648 |          |
| 4 | BTB-02034959                   | 0 | 76286055 |          |
| 4 | ARS-BFGL-NGS-87527             | 0 | 76344023 |          |
| 4 | BTA-71510-no-rs                | 0 | 76371304 |          |
| 4 | BTA-71511-no-rs                | 0 | 76395838 |          |
| 4 | BTA-71520-no-rs                | 0 | 76463064 |          |
| 4 | ARS-BFGL-NGS-36071             | 0 | 76482235 |          |
| 4 | ARS-BFGL-NGS-83904             | 0 | 76524685 |          |
| 4 | ARS-BFGL-NGS-117534            | 0 | 76545016 |          |
| 4 | ARS-BFGL-NGS-112329            | 0 | 76583547 |          |
| 4 | BTB-00200025                   | 0 | 76616650 |          |
| 4 | Hapmap23010-BTA-142347         | 0 | 76657995 |          |
| 4 | ARS-BFGL-NGS-24039             | 0 | 76739601 |          |
| 4 | BTB-00307908                   | 0 | 76768665 |          |
| 4 | ARS-BFGL-NGS-31715             | 0 | 76897822 |          |
| 4 | ARS-BFGL-NGS-110085            | 0 | 76943551 |          |
| 4 | ARS-BFGL-NGS-37807             | 0 | 77009788 |          |
| 4 | ARS-BFGL-NGS-22118             | 0 | 77074551 |          |
| 4 | ARS-BFGL-NGS-16805             | 0 | 77150031 |          |
| 4 | Hapmap46240-BTA-71397          | 0 | 77221374 |          |
| 4 | Hapmap35361-SCAFFOLD86356_3447 | 0 |          | 77249037 |
| 4 | ARS-BFGL-NGS-13086             | 0 | 77281511 |          |
| 4 | Hapmap47081-BTA-71390          | 0 | 77353953 |          |
| 4 | ARS-BFGL-NGS-47530             |   | 77460068 |          |
| 4 | Hapmap53144-ss46525999         | 0 | 77555681 |          |
| 4 | ARS-BFGL-NGS-33546             | 0 | 77614815 |          |
| 4 | ARS-BFGL-NGS-116590            | 0 | 77635835 |          |
| 4 | ARS-BFGL-NGS-105631            | 0 | 77697936 |          |
| 4 | ARS-BFGL-NGS-43041             | 0 | 77762822 |          |
| 4 | BTA-71093-no-rs                | 0 | 77796085 |          |
| 4 | ARS-BFGL-NGS-31880             |   | 77868789 |          |
| 4 | ARS-BFGL-NGS-113581            | 0 | 77894301 |          |
| 4 | BTB-00195629                   | 0 | 77954275 |          |
| 4 | BTB-00195600                   | 0 | 77995683 |          |
| 4 | BTB-00195550                   | 0 | 78039128 |          |
| 4 | BTB-00197240                   | 0 | 78063188 |          |

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| 4 | BTB-01562478                   | 0 | 78114069 |          |
| 4 | BTB-01562462                   | 0 | 78143883 |          |
| 4 | ARS-BFGL-NGS-112549            | 0 | 78227607 |          |
| 4 | ARS-BFGL-NGS-28378             | 0 | 78247625 |          |
| 4 | Hapmap39800-BTA-102932         | 0 | 78319582 |          |
| 4 | ARS-BFGL-NGS-112268            | 0 | 78361004 |          |
| 4 | BTB-02051812                   | 0 | 78391303 |          |
| 4 | BTB-01096725                   | 0 | 78440044 |          |
| 4 | Hapmap54517-rs29026587         | 0 | 78476506 |          |
| 4 | Hapmap58518-rs29024716         | 0 | 78523846 |          |
| 4 | BTB-01096875                   | 0 | 78554747 |          |
| 4 | BTA-22393-no-rs                | 0 | 78586933 |          |
| 4 | ARS-BFGL-NGS-58613             | 0 | 78609385 |          |
| 4 | ARS-BFGL-NGS-29800             |   | 78671609 |          |
| 4 | Hapmap51399-BTA-116973         | 0 | 78740705 |          |
| 4 | BTA-116976-no-rs               | 0 | 78765530 |          |
| 4 | Hapmap38208-BTA-22377          | 0 | 78814850 |          |
| 4 | ARS-BFGL-NGS-116200            | 0 | 78842925 |          |
| 4 | ARS-BFGL-NGS-112048            | 0 | 78876832 |          |
| 4 | ARS-BFGL-NGS-11194             | 0 | 78976354 |          |
| 4 | Hapmap42140-BTA-22375          | 0 | 79215287 |          |
| 4 | BTB-01096614                   | 0 | 79254806 |          |
| 4 | Hapmap25056-BTA-142365         | 0 | 79358782 |          |
| 4 | ARS-BFGL-NGS-117732            | 0 | 79456300 |          |
| 4 | Hapmap31114-BTA-142349         | 0 | 79521307 |          |
| 4 | Hapmap34214-BES4_Contig204_631 | 0 |          | 79680986 |
| 4 | ARS-BFGL-NGS-92811             | 0 | 79737033 |          |
| 4 | ARS-BFGL-NGS-114694            | 0 | 79785116 |          |
| 4 | BTB-00200089                   | 0 | 79836019 |          |
| 4 | BTB-00200143                   | 0 | 79904993 |          |
| 4 | ARS-BFGL-NGS-98435             | 0 | 79929392 |          |
| 4 | ARS-BFGL-NGS-112996            | 0 | 79996650 |          |
| 4 | BTB-01425165                   | 0 | 80067104 |          |
| 4 | ARS-BFGL-NGS-79180             |   | 80110313 |          |
| 4 | ARS-BFGL-NGS-104278            | 0 | 80174530 |          |
| 4 | Hapmap48945-BTA-92136          | 0 | 80209833 |          |
| 4 | BTB-01425393                   | 0 | 80261995 |          |
| 4 | BTB-01928726                   | 0 | 80280325 |          |
| 4 | Hapmap26212-BTA-163017         | 0 | 80303139 |          |
| 4 | BTB-00200199                   | 0 | 80326425 |          |
| 4 | ARS-BFGL-NGS-81609             | 0 | 80350223 |          |
| 4 | Hapmap42298-BTA-71527          | 0 | 80394088 |          |
| 4 | BTB-00200250                   | 0 | 80407501 |          |
| 4 | BTB-00200262                   | 0 | 80442521 |          |
| 4 | BTB-02028475                   | 0 | 80471377 |          |
| 4 | BTB-01687798                   | 0 | 80494273 |          |
| 4 | BTB-01687779                   | 0 | 80545103 |          |
| 4 | BTA-101497-no-rs               | 0 | 80588016 |          |
| 4 | Hapmap46191-BTA-101479         | 0 | 80611779 |          |
| 4 | BTA-101496-no-rs               | 0 | 80633744 |          |
| 4 | BTB-01162037                   | 0 | 80682403 |          |
| 4 | BTB-01162076                   | 0 | 80706119 |          |
| 4 | BTA-101472-no-rs               | 0 | 80782235 |          |
| 4 | BTA-89872-no-rs                | 0 | 80814309 |          |

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| 4 | Hapmap41721-BTA-101476          | 0 | 80836727 |  |
| 4 | BTB-01162263                    | 0 | 80858604 |  |
| 4 | BTA-101478-no-rs                | 0 | 80881001 |  |
| 4 | ARS-BFGL-NGS-24833              | 0 | 80932460 |  |
| 4 | BTB-01162427                    | 0 | 81021023 |  |
| 4 | BTA-101495-no-rs                | 0 | 81055851 |  |
| 4 | BTB-01162643                    | 0 | 81132286 |  |
| 4 | BTA-71551-no-rs                 | 0 | 81170529 |  |
| 4 | Hapmap53753-rs29023393          | 0 | 81205652 |  |
| 4 | BTA-71558-no-rs                 | 0 | 81231390 |  |
| 4 | BTA-71564-no-rs                 | 0 | 81255320 |  |
| 4 | Hapmap54007-rs29018645          | 0 | 81378100 |  |
| 4 | Hapmap40292-BTA-71565           | 0 | 81400732 |  |
| 4 | BTB-00201173                    | 0 | 81433898 |  |
| 4 | BTA-71570-no-rs                 | 0 | 81497187 |  |
| 4 | Hapmap41792-BTA-18792           | 0 | 81624828 |  |
| 4 | BTA-71575-no-rs                 | 0 | 81678235 |  |
| 4 | Hapmap60835-rs29021024          | 0 | 81733900 |  |
| 4 | ARS-BFGL-NGS-90094              | 0 | 81789767 |  |
| 4 | BTA-87133-no-rs                 | 0 | 81830858 |  |
| 4 | Hapmap48502-BTA-87135           | 0 | 81916729 |  |
| 4 | Hapmap53503-rs29017140          | 0 | 82002903 |  |
| 4 | Hapmap38069-BTA-34757           | 0 | 82037383 |  |
| 4 | BTB-00567011                    | 0 | 82049617 |  |
| 4 | BTB-00567063                    | 0 | 82073777 |  |
| 4 | BTB-01497193                    | 0 | 82138809 |  |
| 4 | ARS-BFGL-NGS-108354             | 0 | 82167575 |  |
| 4 | BTB-01497290                    | 0 | 82234696 |  |
| 4 | BTB-00566951                    | 0 | 82313107 |  |
| 4 | BTB-00566808                    | 0 | 82335779 |  |
| 4 | BTB-00566778                    | 0 | 82370403 |  |
| 4 | BTB-00566744                    | 0 | 82386574 |  |
| 4 | ARS-BFGL-NGS-100651             | 0 | 82409522 |  |
| 4 | BTB-00566688                    | 0 | 82445297 |  |
| 4 | UA-IFASA-6097                   | 0 | 82496288 |  |
| 4 | BTB-00566662                    | 0 | 82522220 |  |
| 4 | BTB-00922140                    | 0 | 82550244 |  |
| 4 | ARS-BFGL-NGS-116146             | 0 | 82615365 |  |
| 4 | BTB-00200609                    | 0 | 82643040 |  |
| 4 | ARS-BFGL-NGS-19836              | 0 | 82671406 |  |
| 4 | BTA-121647-no-rs                | 0 | 82704716 |  |
| 4 | ARS-BFGL-NGS-86056              | 0 | 82796269 |  |
| 4 | Hapmap34732-BES2_Contig215_1234 | 0 | 82835706 |  |
| 4 | BTB-01260470                    | 0 | 82861308 |  |
| 4 | BTB-01260511                    | 0 | 82884593 |  |
| 4 | Hapmap42094-BTA-119925          | 0 | 82923306 |  |
| 4 | BTA-122586-no-rs                | 0 | 82968248 |  |
| 4 | ARS-BFGL-NGS-21207              | 0 | 82992816 |  |
| 4 | ARS-BFGL-NGS-117077             | 0 | 83040542 |  |
| 4 | Hapmap30589-BTA-158871          | 0 | 83087738 |  |
| 4 | BTB-01261028                    | 0 | 83121400 |  |
| 4 | Hapmap40666-BTA-119930          | 0 | 83154538 |  |
| 4 | Hapmap59506-rs29021284          | 0 | 83216453 |  |
| 4 | BTB-01261088                    | 0 | 83238386 |  |

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| 4 | ARS-BFGL-NGS-25242               | 0 | 83381269 |          |
| 4 | ARS-BFGL-NGS-13575               | 0 | 83445914 |          |
| 4 | Hapmap41486-BTA-23276            | 0 | 83555683 |          |
| 4 | BTB-01379210                     | 0 | 83591827 |          |
| 4 | BTB-01379114                     | 0 | 83622751 |          |
| 4 | BTA-23277-no-rs                  | 0 | 83668226 |          |
| 4 | BTA-85995-no-rs                  | 0 | 83708251 |          |
| 4 | ARS-BFGL-NGS-84090               | 0 | 83737394 |          |
| 4 | BTB-01857387                     | 0 | 83779701 |          |
| 4 | Hapmap42743-BTA-96829            | 0 | 83802875 |          |
| 4 | Hapmap55541-rs29024319           | 0 | 83840022 |          |
| 4 | BTB-01142755                     | 0 | 83897939 |          |
| 4 | BTA-96831-no-rs                  | 0 | 83929310 |          |
| 4 | BTA-96837-no-rs                  | 0 | 83958615 |          |
| 4 | Hapmap60682-rs29013346           | 0 | 83996686 |          |
| 4 | BTA-96843-no-rs                  | 0 | 84017983 |          |
| 4 | ARS-BFGL-NGS-43812               | 0 | 84080999 |          |
| 4 | BTB-01142924                     | 0 | 84118706 |          |
| 4 | Hapmap48138-BTA-96848            | 0 | 84153557 |          |
| 4 | BTB-01744249                     | 0 | 84307106 |          |
| 4 | BTB-01943785                     | 0 | 84339298 |          |
| 4 | ARS-BFGL-NGS-111033              | 0 | 84388639 |          |
| 4 | ARS-BFGL-NGS-117737              | 0 | 84411772 |          |
| 4 | Hapmap27885-BTA-154750           | 0 | 84541030 |          |
| 4 | Hapmap50213-BTA-110976           | 0 | 84648999 |          |
| 4 | ARS-BFGL-NGS-16338               | 0 | 84819672 |          |
| 4 | BTA-16834-no-rs                  | 0 | 84872989 |          |
| 4 | BTB-02023591                     | 0 | 84920100 |          |
| 4 | BTB-01278441                     | 0 | 84963191 |          |
| 4 | BTB-01278461                     | 0 | 84989314 |          |
| 4 | ARS-BFGL-NGS-107560              | 0 | 85029248 |          |
| 4 | BTB-01278734                     | 0 | 85092977 |          |
| 4 | BTB-01278887                     | 0 | 85165600 |          |
| 4 | ARS-BFGL-NGS-110046              | 0 | 85188654 |          |
| 4 | BTB-01443627                     | 0 | 85247179 |          |
| 4 | BTB-01443527                     | 0 | 85275928 |          |
| 4 | BTB-01443471                     | 0 | 85328669 |          |
| 4 | ARS-BFGL-NGS-92104               | 0 | 85357946 |          |
| 4 | Hapmap51093-BTA-93609            | 0 | 85384769 |          |
| 4 | BTB-01739497                     | 0 | 85404095 |          |
| 4 | Hapmap33511-BTA-158096           | 0 | 85458623 |          |
| 4 | Hapmap34293-BES10_Contig535_1147 | 0 |          | 85484814 |
| 4 | BTB-01816187                     | 0 | 85514666 |          |
| 4 | Hapmap43022-BTA-71548            | 0 | 85540665 |          |
| 4 | BTB-00200867                     | 0 | 85577545 |          |
| 4 | Hapmap35157-BES8_Contig505_1669  | 0 |          | 85605410 |
| 4 | UA-IFASA-181                     | 0 | 85635270 |          |
| 4 | ARS-BFGL-NGS-44363               | 0 | 85664528 |          |
| 4 | Hapmap41943-BTA-71550            | 0 | 85711706 |          |
| 4 | BTA-104491-no-rs                 | 0 | 85759993 |          |
| 4 | BTB-01565771                     | 0 | 85785489 |          |
| 4 | Hapmap43446-BTA-104493           | 0 | 85818170 |          |
| 4 | BTB-01045403                     | 0 | 85861620 |          |
| 4 | Hapmap39905-BTA-27381            | 0 | 85904999 |          |

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| 4 | BTB-01257559           | 0 | 85932751 |
| 4 | BTB-01257567           | 0 | 85983005 |
| 4 | ARS-BFGL-NGS-90168     | 0 | 86008404 |
| 4 | BTB-01257685           | 0 | 86058682 |
| 4 | BTB-01031947           | 0 | 86090465 |
| 4 | Hapmap58175-rs29027322 | 0 | 86115273 |
| 4 | Hapmap39674-BTA-65901  | 0 | 86144034 |
| 4 | Hapmap38052-BTA-110922 | 0 | 86228872 |
| 4 | BTB-01652664           | 0 | 86259448 |
| 4 | ARS-BFGL-NGS-17043     | 0 | 86324014 |
| 4 | ARS-BFGL-NGS-118088    | 0 | 86354358 |
| 4 | BTB-01774413           | 0 | 86446125 |
| 4 | Hapmap39421-BTA-65907  | 0 | 86480802 |
| 4 | BTB-01032336           | 0 | 86540790 |
| 4 | BTB-01032368           | 0 | 86591502 |
| 4 | ARS-BFGL-NGS-114143    | 0 | 86644090 |
| 4 | Hapmap58407-rs29020619 | 0 | 86690771 |
| 4 | BTA-65916-no-rs        | 0 | 86725350 |
| 4 | ARS-BFGL-NGS-112480    | 0 | 86775968 |
| 4 | BTB-01032530           | 0 | 86811243 |
| 4 | BTA-65924-no-rs        | 0 | 86853464 |
| 4 | BTA-65926-no-rs        | 0 | 86883071 |
| 4 | ARS-BFGL-NGS-33395     | 0 | 86925976 |
| 4 | BTA-44040-no-rs        | 0 | 86948025 |
| 4 | BTB-00733266           | 0 | 87004472 |
| 4 | ARS-BFGL-NGS-54357     | 0 | 87027941 |
| 4 | BTB-00367018           | 0 | 87059911 |
| 4 | ARS-BFGL-NGS-27980     | 0 | 87086801 |
| 4 | Hapmap50629-BTA-25069  | 0 | 87154009 |
| 4 | Hapmap53958-rs29016492 | 0 | 87191167 |
| 4 | BTA-25084-no-rs        | 0 | 87217878 |
| 4 | BTB-00201350           | 0 | 87262525 |
| 4 | ARS-BFGL-NGS-77569     | 0 | 87306937 |
| 4 | BTB-01100536           | 0 | 87340898 |
| 4 | BTB-01100556           | 0 | 87392282 |
| 4 | ARS-BFGL-NGS-54384     | 0 | 87437547 |
| 4 | ARS-BFGL-NGS-76930     | 0 | 87501173 |
| 4 | Hapmap55029-rs29016123 | 0 | 87542170 |
| 4 | BTA-25095-no-rs        | 0 | 87565171 |
| 4 | Hapmap26494-BTA-25104  | 0 | 87607633 |
| 4 | ARS-BFGL-NGS-77970     | 0 | 87643015 |
| 4 | BTB-01100773           | 0 | 87676440 |
| 4 | Hapmap56427-rs29018180 | 0 | 87715917 |
| 4 | BTB-01290330           | 0 | 87744523 |
| 4 | BTB-01290382           | 0 | 87770622 |
| 4 | Hapmap38817-BTA-18244  | 0 | 87820253 |
| 4 | Hapmap44030-BTA-18247  | 0 | 87944727 |
| 4 | Hapmap51697-BTA-18251  | 0 | 87984576 |
| 4 | Hapmap40678-BTA-122051 | 0 | 88115535 |
| 4 | Hapmap58408-rs29020693 | 0 | 88153350 |
| 4 | ARS-BFGL-NGS-103506    | 0 | 88248004 |
| 4 | Hapmap47782-BTA-94386  | 0 | 88285035 |
| 4 | ARS-BFGL-NGS-118105    | 0 | 88387484 |
| 4 | ARS-BFGL-NGS-23270     | 0 | 88434622 |

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| 4 | BTA-94377-no-rs                  | 0 | 88455770 |          |
| 4 | BTA-58912-no-rs                  | 0 | 88741839 |          |
| 4 | Hapmap55855-rs29017652           | 0 | 88782951 |          |
| 4 | Hapmap43626-BTA-58917            | 0 | 88834366 |          |
| 4 | ARS-BFGL-NGS-78641               | 0 | 88906864 |          |
| 4 | UA-IFASA-2769                    | 0 | 88973247 |          |
| 4 | ARS-BFGL-NGS-32488               | 0 | 89096390 |          |
| 4 | BTB-00879812                     | 0 | 89243529 |          |
| 4 | BTA-58931-no-rs                  | 0 | 89266056 |          |
| 4 | BTB-00880226                     | 0 | 89299743 |          |
| 4 | ARS-BFGL-NGS-26218               | 0 | 89343321 |          |
| 4 | BTA-22993-no-rs                  | 0 | 89380482 |          |
| 4 | ARS-BFGL-NGS-26522               | 0 | 89403027 |          |
| 4 | BTA-22996-no-rs                  | 0 | 89436482 |          |
| 4 | BTB-01323560                     | 0 | 89470738 |          |
| 4 | Hapmap51964-BTA-100658           | 0 | 89568067 |          |
| 4 | Hapmap56169-rs29017544           | 0 | 89628134 |          |
| 4 | BTA-100657-no-rs                 | 0 | 89648770 |          |
| 4 | BTB-01323835                     | 0 | 89708810 |          |
| 4 | ARS-BFGL-NGS-55428               | 0 | 89744688 |          |
| 4 | BTB-01323946                     | 0 | 89793880 |          |
| 4 | BTB-01323949                     | 0 | 89816176 |          |
| 4 | BTA-119205-no-rs                 | 0 | 89879613 |          |
| 4 | BTA-122943-no-rs                 | 0 | 89921990 |          |
| 4 | BTB-01591267                     | 0 | 89969381 |          |
| 4 | Hapmap34047-BES11_Contig337_1158 | 0 |          | 90104123 |
| 4 | Hapmap25897-BTA-158225           | 0 | 90192806 |          |
| 4 | BTA-117837-no-rs                 | 0 | 90228869 |          |
| 4 | Hapmap50910-BTA-18270            | 0 | 90275283 |          |
| 4 | ARS-BFGL-NGS-95211               | 0 | 90314494 |          |
| 4 | BTA-95761-no-rs                  | 0 | 90339928 |          |
| 4 | BTB-01836036                     | 0 | 90370464 |          |
| 4 | BTB-01843171                     | 0 | 90418009 |          |
| 4 | BTB-01313094                     | 0 | 90473489 |          |
| 4 | BTB-01312850                     | 0 | 90502505 |          |
| 4 | BTB-01312780                     | 0 | 90593176 |          |
| 4 | Hapmap48685-BTA-21347            | 0 | 90673284 |          |
| 4 | BTB-01312713                     | 0 | 90703088 |          |
| 4 | Hapmap32385-BTA-161252           | 0 | 90729174 |          |
| 4 | BTB-01312690                     | 0 | 90776710 |          |
| 4 | Hapmap61073-rs29024400           | 0 | 90801523 |          |
| 4 | BTB-01312667                     | 0 | 90808106 |          |
| 4 | Hapmap50622-BTA-21349            | 0 | 90820722 |          |
| 4 | BTB-02085810                     | 0 | 90847252 |          |
| 4 | BTA-16491-no-rs                  | 0 | 90919168 |          |
| 4 | BTB-00201541                     | 0 | 90949942 |          |
| 4 | BTA-71585-no-rs                  | 0 | 90992280 |          |
| 4 | BTA-109007-no-rs                 | 0 | 91051469 |          |
| 4 | ARS-BFGL-NGS-114354              | 0 | 91080419 |          |
| 4 | BTB-01450748                     | 0 | 91127591 |          |
| 4 | Hapmap54863-rs29015630           | 0 | 91153339 |          |
| 4 | BTB-01845975                     | 0 | 91190158 |          |
| 4 | Hapmap54638-rs29022155           | 0 | 91227550 |          |
| 4 | BTB-01707050                     | 0 | 91352584 |          |

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| 4 | BTB-01707017                   | 0 | 91381987 |          |
| 4 | BTA-11696-no-rs                | 0 | 91417417 |          |
| 4 | ARS-BFGL-NGS-40883             | 0 | 91457379 |          |
| 4 | ARS-BFGL-NGS-24090             |   | 91498875 |          |
| 4 | BTB-00202348                   | 0 | 91558419 |          |
| 4 | BTB-00202376                   | 0 | 91597847 |          |
| 4 | Hapmap23939-BTA-142377         | 0 | 91630220 |          |
| 4 | ARS-BFGL-NGS-11480             | 0 | 91770132 |          |
| 4 | ARS-BFGL-NGS-109045            | 0 | 91874324 |          |
| 4 | BTB-02013962                   | 0 | 91899978 |          |
| 4 | Hapmap44010-BTA-115749         | 0 | 91951169 |          |
| 4 | Hapmap42822-BTA-115746         | 0 | 92006297 |          |
| 4 | BTB-02000619                   | 0 | 92027885 |          |
| 4 | ARS-BFGL-NGS-113124            | 0 | 92054359 |          |
| 4 | ARS-BFGL-NGS-12375             | 0 | 92099005 |          |
| 4 | ARS-BFGL-NGS-118100            | 0 | 92141993 |          |
| 4 | BTB-00201719                   | 0 | 92176712 |          |
| 4 | BTB-00201722                   | 0 | 92201419 |          |
| 4 | Hapmap58049-rs29013711         | 0 | 92235197 |          |
| 4 | BTB-00201779                   | 0 | 92261682 |          |
| 4 | ARS-BFGL-NGS-37705             | 0 | 92289023 |          |
| 4 | Hapmap47201-BTA-121648         | 0 | 92331760 |          |
| 4 | BTB-00202149                   | 0 | 92364428 |          |
| 4 | BTB-00202195                   | 0 | 92479695 |          |
| 4 | BTB-00202224                   | 0 | 92518922 |          |
| 4 | BTB-01295144                   | 0 | 92557035 |          |
| 4 | ARS-BFGL-NGS-94823             | 0 | 92588608 |          |
| 4 | ARS-BFGL-NGS-114724            | 0 | 92629602 |          |
| 4 | BTB-01295203                   | 0 | 92678128 |          |
| 4 | Hapmap32136-BTA-160383         | 0 | 92705191 |          |
| 4 | Hapmap49518-BTA-19021          | 0 | 92742789 |          |
| 4 | ARS-BFGL-NGS-74821             | 0 | 92765126 |          |
| 4 | BTB-01295275                   | 0 | 92795803 |          |
| 4 | BTB-01295280                   | 0 | 92822666 |          |
| 4 | Hapmap34400-BES9_Contig569_627 | 0 |          | 92960306 |
| 4 | Hapmap41207-BTA-22424          | 0 | 93016725 |          |
| 4 | ARS-BFGL-NGS-30397             | 0 | 93058106 |          |
| 4 | ARS-BFGL-NGS-73330             |   | 93099582 |          |
| 4 | BTA-22421-no-rs                | 0 | 93164307 |          |
| 4 | ARS-BFGL-NGS-101028            | 0 | 93211337 |          |
| 4 | ARS-BFGL-NGS-59298             | 0 | 93257549 |          |
| 4 | ARS-BFGL-NGS-34894             | 0 | 93287422 |          |
| 4 | ARS-BFGL-NGS-22270             | 0 | 93313430 |          |
| 4 | ARS-BFGL-NGS-89108             | 0 | 93398396 |          |
| 4 | BTB-00203359                   | 0 | 93489894 |          |
| 4 | Hapmap40190-BTA-71658          | 0 | 93516494 |          |
| 4 | ARS-BFGL-NGS-75789             | 0 | 93562599 |          |
| 4 | Hapmap46719-BTA-71648          | 0 | 93622892 |          |
| 4 | ARS-BFGL-NGS-29534             | 0 | 93644011 |          |
| 4 | ARS-BFGL-NGS-110883            | 0 | 93685544 |          |
| 4 | ARS-BFGL-NGS-55655             | 0 | 93709495 |          |
| 4 | Hapmap31548-BTA-71641          | 0 | 93739544 |          |
| 4 | ARS-BFGL-NGS-23095             | 0 | 93769513 |          |
| 4 | BTB-00202937                   | 0 | 93828702 |          |



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| 4 | ARS-BFGL-NGS-95926               | 0 | 93872285 |          |
| 4 | BTB-00202925                     | 0 | 93897814 |          |
| 4 | ARS-BFGL-NGS-102642              | 0 | 94065239 |          |
| 4 | BTA-71636-no-rs                  | 0 | 94085456 |          |
| 4 | BTA-71635-no-rs                  | 0 | 94115101 |          |
| 4 | Hapmap40578-BTA-71629            | 0 | 94153292 |          |
| 4 | ARS-USMARC-Parent-DQ485413-no-rs | 0 |          | 94176209 |
| 4 | Hapmap25269-BTA-142380           | 0 | 94207945 |          |
| 4 | ARS-BFGL-NGS-110997              | 0 | 94226966 |          |
| 4 | ARS-BFGL-NGS-98418               | 0 | 94273917 |          |
| 4 | BTB-00202623                     | 0 | 94305981 |          |
| 4 | BTB-00202516                     | 0 | 94332426 |          |
| 4 | BTB-00202549                     | 0 | 94355557 |          |
| 4 | ARS-BFGL-NGS-17810               |   | 94379469 |          |
| 4 | ARS-BFGL-NGS-66456               | 0 | 94403013 |          |
| 4 | ARS-BFGL-NGS-115061              | 0 | 94468924 |          |
| 4 | Hapmap57853-rs29019570           | 0 | 94499928 |          |
| 4 | ARS-BFGL-NGS-61449               | 0 | 94569814 |          |
| 4 | Hapmap47708-BTA-71597            | 0 | 94613106 |          |
| 4 | BTB-00202476                     | 0 | 94683429 |          |
| 4 | BTB-01685681                     | 0 | 94760042 |          |
| 4 | BTB-01700995                     | 0 | 94843636 |          |
| 4 | BTA-71660-no-rs                  | 0 | 94902406 |          |
| 4 | BTA-71659-no-rs                  | 0 | 94924747 |          |
| 4 | BTB-00203399                     | 0 | 94949328 |          |
| 4 | BTB-00203384                     | 0 | 94973039 |          |
| 4 | BTB-00203494                     | 0 | 95043917 |          |
| 4 | UA-IFASA-7564                    | 0 | 95069722 |          |
| 4 | ARS-BFGL-NGS-17969               | 0 | 95140408 |          |
| 4 | Hapmap49884-BTA-121649           | 0 | 95163344 |          |
| 4 | BTB-01502164                     | 0 | 95309262 |          |
| 4 | ARS-BFGL-NGS-18171               | 0 | 95336471 |          |
| 4 | ARS-BFGL-NGS-16539               | 0 | 95359641 |          |
| 4 | BTB-00203567                     | 0 | 95388890 |          |
| 4 | BTB-00203584                     | 0 | 95415564 |          |
| 4 | BTA-71665-no-rs                  | 0 | 95444050 |          |
| 4 | BTA-71670-no-rs                  | 0 | 95465677 |          |
| 4 | Hapmap31115-BTA-142396           | 0 | 95506576 |          |
| 4 | ARS-BFGL-NGS-32192               | 0 | 95528274 |          |
| 4 | ARS-BFGL-NGS-115390              | 0 | 95601434 |          |
| 4 | Hapmap48060-BTA-71676            | 0 | 95645699 |          |
| 4 | ARS-BFGL-NGS-101101              | 0 | 95673375 |          |
| 4 | ARS-BFGL-NGS-95268               | 0 | 95700526 |          |
| 4 | BTB-02090805                     | 0 | 95923766 |          |
| 4 | BTB-01298816                     | 0 | 95969034 |          |
| 4 | UA-IFASA-8046                    | 0 | 96034920 |          |
| 4 | ARS-BFGL-NGS-93211               | 0 | 96100801 |          |
| 4 | ARS-BFGL-NGS-104016              | 0 | 96138289 |          |
| 4 | ARS-BFGL-NGS-31992               | 0 | 96186264 |          |
| 4 | ARS-BFGL-NGS-116643              | 0 | 96258114 |          |
| 4 | ARS-BFGL-NGS-25615               | 0 | 96282870 |          |
| 4 | Hapmap41073-BTA-71719            | 0 | 96308638 |          |
| 4 | BTA-71718-no-rs                  | 0 | 96329187 |          |
| 4 | BTA-71716-no-rs                  | 0 | 96410729 |          |

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| 4 | Hapmap58854-rs29023486 | 0 | 96436124 |
| 4 | BTB-00204531           | 0 | 96486926 |
| 4 | BTA-71714-no-rs        | 0 | 96529890 |
| 4 | Hapmap52502-rs29022385 | 0 | 96551087 |
| 4 | ARS-BFGL-NGS-104149    | 0 | 96581019 |
| 4 | Hapmap47385-BTA-71710  | 0 | 96605156 |
| 4 | ARS-BFGL-NGS-112856    | 0 | 96631679 |
| 4 | UA-IFASA-9287          | 0 | 96661114 |
| 4 | ARS-BFGL-NGS-100061    | 0 | 96694659 |
| 4 | ARS-BFGL-NGS-22905     | 0 | 96728719 |
| 4 | ARS-BFGL-NGS-95780     | 0 | 96754893 |
| 4 | ARS-BFGL-NGS-32704     | 0 | 96770424 |
| 4 | BTB-02015886           | 0 | 96825993 |
| 4 | Hapmap28499-BTA-142459 | 0 | 96861591 |
| 4 | ARS-BFGL-NGS-101094    | 0 | 96889652 |
| 4 | ARS-BFGL-NGS-37346     | 0 | 96934320 |
| 4 | ARS-BFGL-NGS-38881     | 0 | 96970225 |
| 4 | Hapmap25270-BTA-142450 | 0 | 97015274 |
| 4 | ARS-BFGL-NGS-103036    | 0 | 97052195 |
| 4 | ARS-BFGL-NGS-13008     | 0 | 97107254 |
| 4 | ARS-BFGL-NGS-23026     | 0 | 97128968 |
| 4 | ARS-BFGL-NGS-29465     | 0 | 97185364 |
| 4 | ARS-BFGL-NGS-115771    | 0 | 97279294 |
| 4 | ARS-BFGL-NGS-58689     | 0 | 97349722 |
| 4 | Hapmap50765-BTA-71773  | 0 | 97392045 |
| 4 | Hapmap25948-BTA-71764  | 0 | 97448237 |
| 4 | Hapmap50564-BTA-110789 | 0 | 97507836 |
| 4 | ARS-BFGL-NGS-66558     | 0 | 97657010 |
| 4 | ARS-BFGL-NGS-109511    | 0 | 97765429 |
| 4 | Hapmap30599-BTA-162355 | 0 | 97792149 |
| 4 | ARS-BFGL-NGS-12738     | 0 | 97832127 |
| 4 | BTA-71816-no-rs        | 0 | 97936747 |
| 4 | BTA-71813-no-rs        | 0 | 98016975 |
| 4 | ARS-BFGL-NGS-27902     | 0 | 98061156 |
| 4 | Hapmap50074-BTA-71803  | 0 | 98216413 |
| 4 | ARS-BFGL-NGS-26750     | 0 | 98272153 |
| 4 | ARS-BFGL-NGS-101689    | 0 | 98338655 |
| 4 | Hapmap52549-rs29027276 | 0 | 98406580 |
| 4 | ARS-BFGL-NGS-112658    | 0 | 98486908 |
| 4 | Hapmap41736-BTA-104096 | 0 | 98518846 |
| 4 | ARS-BFGL-NGS-23661     | 0 | 98574422 |
| 4 | ARS-BFGL-NGS-27951     | 0 | 98706215 |
| 4 | ARS-BFGL-NGS-38990     | 0 | 98938593 |
| 4 | ARS-BFGL-NGS-77010     | 0 | 99082349 |
| 4 | ARS-BFGL-NGS-112013    | 0 | 99110090 |
| 4 | Hapmap22943-BTA-153575 | 0 | 99174508 |
| 4 | ARS-BFGL-NGS-91439     | 0 | 99381115 |
| 4 | BTA-19530-no-rs        | 0 | 99401589 |
| 4 | Hapmap60639-rs29020598 | 0 | 99436702 |
| 4 | Hapmap58149-rs29020595 | 0 | 99465816 |
| 4 | BTA-22976-no-rs        | 0 | 99503031 |
| 4 | BTA-22968-no-rs        | 0 | 99542142 |
| 4 | ARS-BFGL-NGS-16140     | 0 | 99574406 |
| 4 | Hapmap43664-BTA-71842  | 0 | 99635737 |

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| 4 | BTA-71843-no-rs                 | 0 | 99662527  |           |
| 4 | ARS-BFGL-NGS-23540              |   | 99691481  |           |
| 4 | ARS-BFGL-NGS-100449             | 0 | 99729470  |           |
| 4 | Hapmap38979-BTA-71851           | 0 | 99757044  |           |
| 4 | BTA-99928-no-rs                 | 0 | 99970944  |           |
| 4 | ARS-BFGL-NGS-14075              | 0 | 99992606  |           |
| 4 | Hapmap41710-BTA-99927           | 0 | 100069848 |           |
| 4 | Hapmap47083-BTA-71984           | 0 | 100183472 |           |
| 4 | ARS-BFGL-NGS-95671              | 0 | 100289958 |           |
| 4 | ARS-BFGL-NGS-12793              | 0 | 100325209 |           |
| 4 | ARS-BFGL-NGS-99093              | 0 | 100378457 |           |
| 4 | ARS-BFGL-NGS-27298              | 0 | 100436744 |           |
| 4 | ARS-BFGL-NGS-22530              |   | 100474163 |           |
| 4 | Hapmap36297-SCAFFOLD20555_14349 | 0 |           | 100497231 |
| 4 | BTA-109842-no-rs                | 0 | 100553565 |           |
| 4 | ARS-BFGL-NGS-15146              | 0 | 100590141 |           |
| 4 | BTA-71817-no-rs                 | 0 | 100615221 |           |
| 4 | Hapmap48448-BTA-71823           | 0 | 100663967 |           |
| 4 | ARS-BFGL-NGS-118823             | 0 | 100706047 |           |
| 4 | BTA-71832-no-rs                 | 0 | 100746987 |           |
| 4 | ARS-BFGL-NGS-111916             | 0 | 100809275 |           |
| 4 | ARS-BFGL-NGS-110051             | 0 | 100847049 |           |
| 4 | BTA-71976-no-rs                 | 0 | 100881943 |           |
| 4 | BTA-71972-no-rs                 | 0 | 100926620 |           |
| 4 | ARS-BFGL-NGS-51016              | 0 | 100950237 |           |
| 4 | Hapmap26775-BTA-163348          | 0 | 100976927 |           |
| 4 | Hapmap23844-BTA-71970           | 0 | 100997498 |           |
| 4 | Hapmap59107-rs29018244          | 0 | 101072503 |           |
| 4 | BTA-03464-rs29011228            | 0 | 101173402 |           |
| 4 | ARS-BFGL-NGS-94541              | 0 | 101294744 |           |
| 4 | BTA-71953-no-rs                 | 0 | 101353476 |           |
| 4 | ARS-BFGL-NGS-107258             | 0 | 101448766 |           |
| 4 | BTA-71952-no-rs                 | 0 | 101520452 |           |
| 4 | ARS-BFGL-NGS-84112              | 0 | 101561940 |           |
| 4 | BTA-71941-no-rs                 | 0 | 101584678 |           |
| 4 | Hapmap39285-BTA-71932           | 0 | 101677815 |           |
| 4 | ARS-BFGL-NGS-17060              | 0 | 101710919 |           |
| 4 | ARS-BFGL-NGS-75970              |   | 101758469 |           |
| 4 | ARS-BFGL-NGS-107748             | 0 | 101790675 |           |
| 4 | Hapmap41623-BTA-71924           | 0 | 101855159 |           |
| 4 | Hapmap50076-BTA-71917           | 0 | 101904386 |           |
| 4 | ARS-BFGL-NGS-77360              |   | 101990180 |           |
| 4 | Hapmap49721-BTA-71904           | 0 | 102031649 |           |
| 4 | Hapmap38246-BTA-71900           | 0 | 102083448 |           |
| 4 | Hapmap52823-rs29010271          | 0 | 102128919 |           |
| 4 | ARS-BFGL-NGS-41399              | 0 | 102159647 |           |
| 4 | ARS-BFGL-NGS-36185              | 0 | 102185505 |           |
| 4 | Hapmap39860-BTA-71869           | 0 | 102361407 |           |
| 4 | ARS-BFGL-NGS-31561              | 0 | 102433510 |           |
| 4 | ARS-BFGL-NGS-28579              | 0 | 102489625 |           |
| 4 | ARS-BFGL-NGS-25648              | 0 | 102520286 |           |
| 4 | Hapmap51374-BTA-104594          | 0 | 102570116 |           |
| 4 | Hapmap49935-BTA-25519           | 0 | 102877319 |           |
| 4 | BTA-25518-no-rs                 | 0 | 102914493 |           |

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| 4 | BTA-25515-no-rs        | 0         | 102972671 |
| 4 | BTA-25514-no-rs        | 0         | 103030945 |
| 4 | ARS-BFGL-NGS-92785     | 0         | 103051975 |
| 4 | ARS-BFGL-NGS-116722    | 0         | 103100577 |
| 4 | ARS-BFGL-NGS-40500     | 103154723 |           |
| 4 | ARS-BFGL-NGS-115811    | 0         | 103194290 |
| 4 | ARS-BFGL-NGS-113196    | 0         | 103231866 |
| 4 | ARS-BFGL-NGS-42985     | 0         | 103252542 |
| 4 | BTA-72175-no-rs        | 0         | 103287645 |
| 4 | ARS-BFGL-NGS-73232     | 0         | 103335380 |
| 4 | ARS-BFGL-NGS-70987     | 0         | 103371033 |
| 4 | ARS-BFGL-NGS-119820    | 0         | 103396245 |
| 4 | ARS-BFGL-NGS-81546     | 0         | 103417042 |
| 4 | BTA-85913-no-rs        | 0         | 103484220 |
| 4 | BTA-72155-no-rs        | 0         | 103584901 |
| 4 | BTA-72153-no-rs        | 0         | 103687583 |
| 4 | Hapmap46021-BTA-72146  | 0         | 103779073 |
| 4 | Hapmap60483-rs29010048 | 0         | 103852324 |
| 4 | ARS-BFGL-NGS-109036    | 0         | 103884199 |
| 4 | ARS-BFGL-NGS-32175     | 0         | 103918869 |
| 4 | ARS-BFGL-NGS-117579    | 0         | 103955958 |
| 4 | Hapmap51625-BTA-71992  | 0         | 103980363 |
| 4 | ARS-BFGL-NGS-105153    | 0         | 104037612 |
| 4 | Hapmap32072-BTA-142491 | 0         | 104117505 |
| 4 | Hapmap49722-BTA-72000  | 0         | 104197508 |
| 4 | ARS-BFGL-NGS-115725    | 0         | 104226807 |
| 4 | ARS-BFGL-NGS-110903    | 0         | 104248050 |
| 4 | ARS-BFGL-NGS-58851     | 0         | 104281982 |
| 4 | Hapmap60027-rs29013402 | 0         | 104310808 |
| 4 | ARS-BFGL-NGS-109861    | 0         | 104405667 |
| 4 | ARS-BFGL-NGS-24686     | 0         | 104427527 |
| 4 | ARS-BFGL-NGS-111427    | 0         | 104521487 |
| 4 | BTA-72028-no-rs        | 0         | 104544071 |
| 4 | ARS-BFGL-NGS-32907     | 0         | 104577143 |
| 4 | ARS-BFGL-NGS-106683    | 0         | 104783041 |
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| 4 | ARS-BFGL-NGS-21106     | 0         | 104990000 |
| 4 | ARS-BFGL-NGS-40249     | 0         | 105169576 |
| 4 | ARS-BFGL-NGS-42804     | 0         | 105197809 |
| 4 | ARS-BFGL-NGS-111574    | 0         | 105240129 |
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| 4 | ARS-BFGL-NGS-118330    | 0         | 105324609 |
| 4 | ARS-BFGL-NGS-15480     | 0         | 105392433 |
| 4 | ARS-BFGL-NGS-36520     | 0         | 105502544 |
| 4 | BTA-72114-no-rs        | 0         | 105537521 |
| 4 | Hapmap23591-BTA-142567 | 0         | 105557665 |
| 4 | BTA-72125-no-rs        | 0         | 105579786 |
| 4 | ARS-BFGL-NGS-38295     | 0         | 105604904 |
| 4 | ARS-BFGL-NGS-74635     | 0         | 105738302 |
| 4 | Hapmap31080-BTA-128722 | 0         | 105794912 |
| 4 | ARS-BFGL-NGS-58990     | 105978930 |           |
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| 4 | ARS-BFGL-NGS-103970             | 0         | 106193024 |           |
| 4 | ARS-BFGL-NGS-72134              | 0         | 106253833 |           |
| 4 | ARS-BFGL-NGS-34790              | 106276208 |           |           |
| 4 | Hapmap52792-rs29022854          | 0         | 106321900 |           |
| 4 | Hapmap30256-BTA-142517          | 0         | 106344888 |           |
| 4 | Hapmap43665-BTA-72047           | 0         | 106383456 |           |
| 4 | ARS-BFGL-NGS-104647             | 0         | 106404042 |           |
| 4 | ARS-BFGL-NGS-70832              | 0         | 106553940 |           |
| 4 | ARS-BFGL-NGS-100278             | 0         | 106590504 |           |
| 4 | ARS-BFGL-NGS-54107              | 0         | 106633751 |           |
| 4 | ARS-BFGL-NGS-69855              | 0         | 106831111 |           |
| 4 | ARS-BFGL-NGS-35219              | 0         | 106885171 |           |
| 4 | Hapmap35759-SCAFFOLD161053_2988 | 0         |           | 106925296 |
| 4 | Hapmap47387-BTA-72195           | 0         | 106960073 |           |
| 4 | ARS-BFGL-NGS-46080              | 107007048 |           |           |
| 4 | Hapmap51932-BTA-119886          | 0         | 107033297 |           |
| 4 | ARS-BFGL-NGS-35727              | 0         | 107060437 |           |
| 4 | Hapmap49723-BTA-72140           | 0         | 107124617 |           |
| 4 | ARS-BFGL-NGS-100841             | 0         | 107253901 |           |
| 4 | ARS-BFGL-NGS-28655              | 0         | 107353929 |           |
| 4 | BTA-72136-no-rs                 | 0         | 107375437 |           |
| 4 | ARS-BFGL-NGS-114935             | 0         | 107416505 |           |
| 4 | BTA-72073-no-rs                 | 0         | 107478425 |           |
| 4 | ARS-BFGL-NGS-112115             | 0         | 107510845 |           |
| 4 | ARS-BFGL-NGS-115890             | 0         | 107540967 |           |
| 4 | ARS-BFGL-NGS-113040             | 0         | 107622906 |           |
| 4 | Hapmap48869-BTA-72045           | 0         | 107668131 |           |
| 4 | ARS-BFGL-NGS-11642              | 0         | 107700920 |           |
| 4 | ARS-BFGL-NGS-87361              | 0         | 107732347 |           |
| 4 | ARS-BFGL-NGS-40926              | 0         | 107806828 |           |
| 4 | ARS-BFGL-NGS-86901              | 0         | 107836355 |           |
| 4 | BTA-72091-no-rs                 | 0         | 107857857 |           |
| 4 | BTA-90241-no-rs                 | 0         | 107985246 |           |
| 4 | ARS-BFGL-NGS-39879              | 0         | 108008548 |           |
| 4 | Hapmap34662-BES8_Contig470_1089 | 0         |           | 108052528 |
| 4 | ARS-BFGL-NGS-91867              | 0         | 108076254 |           |
| 4 | ARS-BFGL-NGS-35619              | 0         | 108120633 |           |
| 4 | BTA-72108-no-rs                 | 0         | 108168742 |           |
| 4 | BTA-72199-no-rs                 | 0         | 108313356 |           |
| 4 | ARS-BFGL-NGS-95772              | 0         | 108398755 |           |
| 4 | ARS-BFGL-NGS-51989              | 0         | 108446002 |           |
| 4 | Hapmap54943-rs29012215          | 0         | 108486695 |           |
| 4 | ARS-BFGL-NGS-106898             | 0         | 108570183 |           |
| 4 | ARS-BFGL-NGS-45265              | 0         | 108608248 |           |
| 4 | ARS-BFGL-NGS-48530              | 108686236 |           |           |
| 4 | ARS-BFGL-NGS-68370              | 108709290 |           |           |
| 4 | BTA-72227-no-rs                 | 0         | 108754288 |           |
| 4 | ARS-BFGL-NGS-73118              | 0         | 108786955 |           |
| 4 | ARS-BFGL-NGS-30190              | 0         | 108834886 |           |
| 4 | ARS-BFGL-NGS-119262             | 0         | 108867683 |           |
| 4 | ARS-BFGL-NGS-27142              | 0         | 108904498 |           |
| 4 | BTA-72244-no-rs                 | 0         | 108928668 |           |
| 4 | BTA-72255-no-rs                 | 0         | 108974924 |           |
| 4 | ARS-BFGL-NGS-119186             | 0         | 109130345 |           |

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| 4 | Hapmap39964-BTA-104515           | 0 | 109292250 |           |
| 4 | BTA-104512-no-rs                 | 0 | 109317580 |           |
| 4 | ARS-BFGL-NGS-38080               | 0 | 109342669 |           |
| 4 | ARS-BFGL-NGS-22840               | 0 | 109456341 |           |
| 4 | BTA-72509-no-rs                  | 0 | 109579509 |           |
| 4 | BTA-72277-no-rs                  | 0 | 109652133 |           |
| 4 | ARS-BFGL-NGS-19720               | 0 | 109887827 |           |
| 4 | ARS-BFGL-NGS-16951               | 0 | 110176402 |           |
| 4 | BTB-00207638                     | 0 | 110317802 |           |
| 4 | Hapmap48062-BTA-72409            | 0 | 110354858 |           |
| 4 | ARS-BFGL-NGS-40910               | 0 | 110420705 |           |
| 4 | BTA-72413-no-rs                  | 0 | 110539305 |           |
| 4 | Hapmap60331-rs29025506           | 0 | 110627141 |           |
| 4 | Hapmap41345-BTA-72417            | 0 | 110668558 |           |
| 4 | BTA-05074-no-rs                  | 0 | 110706937 |           |
| 4 | BTB-00208066                     | 0 | 110740163 |           |
| 4 | Hapmap54547-rs29012198           | 0 | 110776624 |           |
| 4 | BTB-00208231                     | 0 | 110806820 |           |
| 4 | UA-IFASA-2147                    | 0 | 110839255 |           |
| 4 | Hapmap60610-rs29026521           | 0 | 110884207 |           |
| 4 | BTB-00208407                     | 0 | 110906681 |           |
| 4 | BTB-00208358                     | 0 | 110928698 |           |
| 4 | ARS-BFGL-NGS-63988               | 0 | 111047303 |           |
| 4 | Hapmap34657-BES3_Contig465_3267  | 0 |           | 111094913 |
| 4 | Hapmap41946-BTA-72562            | 0 | 111140851 |           |
| 4 | ARS-BFGL-NGS-20570               | 0 | 111183448 |           |
| 4 | BTB-00211171                     | 0 | 111245497 |           |
| 4 | Hapmap60085-rs29027425           | 0 | 111277799 |           |
| 4 | Hapmap42301-BTA-72566            | 0 | 111368926 |           |
| 4 | Hapmap33207-BTA-142657           | 0 | 111413395 |           |
| 4 | BTA-96211-no-rs                  | 0 | 111521130 |           |
| 4 | Hapmap50170-BTA-96224            | 0 | 111549504 |           |
| 4 | Hapmap52487-rs29009830           | 0 | 111590159 |           |
| 4 | Hapmap33223-BTA-150780           | 0 | 111652767 |           |
| 4 | BTB-01472713                     | 0 | 111692622 |           |
| 4 | Hapmap34480-BES11_Contig223_1325 | 0 |           | 111744558 |
| 4 | BTB-01644763                     | 0 | 111788712 |           |
| 4 | ARS-BFGL-NGS-59440               | 0 | 111827935 |           |
| 4 | BTB-01367046                     | 0 | 111863574 |           |
| 4 | BTB-01367029                     | 0 | 111886747 |           |
| 4 | BTB-01366974                     | 0 | 111916386 |           |
| 4 | Hapmap34027-BES1_Contig459_655   | 0 |           | 111938821 |
| 4 | BTB-01366960                     | 0 | 111964621 |           |
| 4 | Hapmap55493-rs29026602           | 0 | 111990062 |           |
| 4 | Hapmap34326-BES3_Contig393_647   | 0 |           | 112047900 |
| 4 | BTB-01163345                     | 0 | 112080616 |           |
| 4 | Hapmap50184-BTA-101607           | 0 | 112113561 |           |
| 4 | Hapmap31474-BTA-152740           | 0 | 112164314 |           |
| 4 | ARS-BFGL-NGS-33889               | 0 | 112184024 |           |
| 4 | ARS-BFGL-NGS-42786               | 0 | 112206671 |           |
| 4 | BTB-01162852                     | 0 | 112231752 |           |
| 4 | ARS-BFGL-NGS-24470               | 0 | 112257305 |           |
| 4 | BTB-01755781                     | 0 | 112317788 |           |
| 4 | ARS-BFGL-NGS-87419               | 0 | 112382782 |           |

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| 4 | BTA-08354-no-rs                 | 0 | 112407963 |  |
| 4 | ARS-BFGL-NGS-111592             | 0 | 112433116 |  |
| 4 | ARS-BFGL-NGS-61198              | 0 | 112474006 |  |
| 4 | Hapmap24643-BTA-123363          | 0 | 112529847 |  |
| 4 | ARS-BFGL-NGS-38659              | 0 | 112594246 |  |
| 4 | ARS-BFGL-NGS-74516              | 0 | 112626112 |  |
| 4 | Hapmap59891-rs29026543          | 0 | 112647052 |  |
| 4 | Hapmap28310-BTA-149519          | 0 | 112681102 |  |
| 4 | ARS-BFGL-NGS-19306              | 0 | 112701154 |  |
| 4 | Hapmap25272-BTA-142660          | 0 | 112756381 |  |
| 4 | ARS-BFGL-NGS-33589              | 0 | 112815065 |  |
| 4 | BTA-72569-no-rs                 | 0 | 112934990 |  |
| 4 | ARS-BFGL-NGS-46354              | 0 | 112944762 |  |
| 4 | ARS-BFGL-NGS-118333             | 0 | 112985362 |  |
| 4 | Hapmap57291-ss46526771          | 0 | 113021942 |  |
| 4 | BTA-72550-no-rs                 | 0 | 113053683 |  |
| 4 | Hapmap49724-BTA-72549           | 0 | 113079474 |  |
| 4 | ARS-BFGL-NGS-97171              | 0 | 113112933 |  |
| 4 | ARS-BFGL-NGS-83962              | 0 | 113146722 |  |
| 4 | ARS-BFGL-NGS-43056              | 0 | 113185416 |  |
| 4 | ARS-BFGL-NGS-41071              | 0 | 113257564 |  |
| 4 | Hapmap39428-BTA-72555           | 0 | 113303894 |  |
| 4 | ARS-BFGL-NGS-103059             | 0 | 113370783 |  |
| 4 | ARS-BFGL-NGS-19833              | 0 | 113416523 |  |
| 4 | ARS-BFGL-NGS-60533              | 0 | 113459011 |  |
| 4 | ARS-BFGL-NGS-115174             | 0 | 113481158 |  |
| 4 | ARS-BFGL-NGS-39080              |   | 113506092 |  |
| 4 | ARS-BFGL-NGS-113048             | 0 | 113532717 |  |
| 4 | ARS-BFGL-NGS-80140              | 0 | 113555764 |  |
| 4 | Hapmap47085-BTA-72511           | 0 | 113584923 |  |
| 4 | ARS-BFGL-NGS-112056             | 0 | 113614764 |  |
| 4 | Hapmap33896-BES4_Contig479_1391 | 0 | 113642470 |  |
| 4 | Hapmap59459-rs29011115          | 0 | 114081367 |  |
| 4 | Hapmap51569-BTA-17751           | 0 | 114193481 |  |
| 4 | BTA-17747-no-rs                 | 0 | 114211077 |  |
| 4 | ARS-BFGL-NGS-103689             | 0 | 114280862 |  |
| 4 | ARS-BFGL-NGS-119857             | 0 | 114302482 |  |
| 4 | ARS-BFGL-NGS-29581              | 0 | 114326665 |  |
| 4 | ARS-BFGL-NGS-43533              | 0 | 114350936 |  |
| 4 | ARS-BFGL-NGS-25593              | 0 | 114374609 |  |
| 4 | ARS-BFGL-NGS-116908             | 0 | 114396713 |  |
| 4 | ARS-BFGL-NGS-100288             | 0 | 114431179 |  |
| 4 | ARS-BFGL-NGS-107181             | 0 | 114464406 |  |
| 4 | ARS-BFGL-NGS-15477              | 0 | 114485312 |  |
| 4 | ARS-BFGL-NGS-113492             | 0 | 114518137 |  |
| 4 | ARS-BFGL-NGS-30260              |   | 114540598 |  |
| 4 | ARS-BFGL-NGS-31139              | 0 | 114565961 |  |
| 4 | Hapmap38123-BTA-72477           | 0 | 114603252 |  |
| 4 | ARS-BFGL-NGS-16030              | 0 | 114640077 |  |
| 4 | BTB-00213370                    | 0 | 114688732 |  |
| 4 | BTB-00213426                    | 0 | 114713614 |  |
| 4 | ARS-BFGL-NGS-100194             | 0 | 114744308 |  |
| 4 | ARS-BFGL-NGS-21084              | 0 | 114771017 |  |
| 4 | BTB-00208601                    | 0 | 114821172 |  |

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| 4 | ARS-BFGL-NGS-119660              | 0 | 114850060 |           |
| 4 | Hapmap56914-rs29020849           | 0 | 114902164 |           |
| 4 | ARS-BFGL-NGS-53034               | 0 | 114975718 |           |
| 4 | Hapmap41624-BTA-72459            | 0 | 115011249 |           |
| 4 | ARS-BFGL-NGS-30343               | 0 | 115048190 |           |
| 4 | ARS-BFGL-NGS-52807               | 0 | 115082589 |           |
| 4 | ARS-BFGL-NGS-107790              | 0 | 115112032 |           |
| 4 | ARS-BFGL-NGS-10207               | 0 | 115138746 |           |
| 4 | ARS-BFGL-NGS-22851               | 0 | 115170139 |           |
| 4 | ARS-BFGL-NGS-35564               | 0 | 115203840 |           |
| 4 | BTB-00210179                     | 0 | 115371486 |           |
| 4 | Hapmap29532-BTA-142672           | 0 | 115437794 |           |
| 4 | Hapmap47710-BTA-72578            | 0 | 115479592 |           |
| 4 | Hapmap40223-BTA-72576            | 0 | 115508391 |           |
| 4 | Hapmap47177-BTA-111089           | 0 | 115556748 |           |
| 4 | ARS-BFGL-NGS-23036               | 0 | 115581055 |           |
| 4 | BTB-00692290                     | 0 | 115628672 |           |
| 4 | BTA-42720-no-rs                  | 0 | 115686106 |           |
| 4 | ARS-BFGL-NGS-108296              | 0 | 115713661 |           |
| 4 | ARS-BFGL-NGS-70849               | 0 | 115741073 |           |
| 4 | ARS-BFGL-NGS-95252               | 0 | 115747463 |           |
| 4 | BTB-00691811                     | 0 | 115775029 |           |
| 4 | ARS-BFGL-NGS-15767               | 0 | 115895057 |           |
| 4 | BTB-01618208                     | 0 | 115921716 |           |
| 4 | Hapmap31803-BTA-153726           | 0 | 115974016 |           |
| 4 | ARS-BFGL-NGS-51250               |   | 116013931 |           |
| 4 | Hapmap38667-BTA-28216            | 0 | 116041596 |           |
| 4 | Hapmap57046-rs29017141           | 0 | 116083500 |           |
| 4 | Hapmap40650-BTA-112268           | 0 | 116130179 |           |
| 4 | ARS-BFGL-NGS-119744              | 0 | 116181827 |           |
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| 4 | BTB-01493550                     | 0 | 116316199 |           |
| 4 | ARS-BFGL-NGS-106446              | 0 | 116355356 |           |
| 4 | Hapmap28815-BTA-155553           | 0 | 116390964 |           |
| 4 | Hapmap52979-rs29022837           | 0 | 116416982 |           |
| 4 | BTA-109747-no-rs                 | 0 | 116437584 |           |
| 4 | Hapmap60162-rs29015028           | 0 | 116485311 |           |
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| 4 | ARS-BFGL-NGS-26072               | 0 | 116565875 |           |
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| 4 | Hapmap30010-BTA-147554           | 0 | 116745560 |           |
| 4 | BTB-01386463                     | 0 | 116801284 |           |
| 4 | ARS-BFGL-NGS-106832              | 0 | 116840328 |           |
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| 4 | Hapmap47156-BTA-102488           | 0 | 116996524 |           |
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| 4 | ARS-BFGL-NGS-27759               | 0 | 117058812 |           |
| 4 | BTB-01544170                     | 0 | 117086858 |           |
| 4 | ARS-BFGL-NGS-30174               | 0 | 117100753 |           |
| 4 | ARS-BFGL-NGS-30342               | 0 | 117141918 |           |



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| 4 | ARS-BFGL-NGS-80182                    | 0         | 117170573 |  |  |
| 4 | ARS-BFGL-NGS-20970                    | 0         | 117197768 |  |  |
| 4 | BTB-01706569                          | 0         | 117223111 |  |  |
| 4 | ARS-BFGL-NGS-22183                    | 0         | 117245533 |  |  |
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| 4 | Hapmap54131-rs29019697                | 0         | 117523938 |  |  |
| 4 | ARS-BFGL-NGS-27061                    | 0         | 117545292 |  |  |
| 4 | ARS-BFGL-NGS-118564                   | 0         | 117571480 |  |  |
| 4 | BTB-00212554                          | 0         | 117601612 |  |  |
| 4 | Hapmap57921-rs29025578                | 0         | 117630906 |  |  |
| 4 | ARS-BFGL-NGS-20980                    | 0         | 117716299 |  |  |
| 4 | Hapmap41947-BTA-72630                 | 0         | 117758136 |  |  |
| 4 | Hapmap31880-BTA-72627                 | 0         | 117779900 |  |  |
| 4 | ARS-BFGL-NGS-83291                    | 0         | 117831202 |  |  |
| 4 | BTA-98250-no-rs                       | 0         | 117913533 |  |  |
| 4 | ARS-BFGL-NGS-112113                   | 0         | 117934757 |  |  |
| 4 | ARS-BFGL-NGS-101246                   | 0         | 118015333 |  |  |
| 4 | BTB-01147791                          | 0         | 118044840 |  |  |
| 4 | BTA-98220-no-rs                       | 0         | 118074075 |  |  |
| 4 | ARS-BFGL-NGS-83683                    | 0         | 118095592 |  |  |
| 4 | ARS-BFGL-NGS-38960                    | 0         | 118127054 |  |  |
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| 4 | BTB-01148141                          | 0         | 118247074 |  |  |
| 4 | ARS-BFGL-NGS-67251                    | 0         | 118281321 |  |  |
| 4 | Hapmap46738-BTA-98261                 | 0         | 118321346 |  |  |
| 4 | UA-IFASA-6990                         | 0         | 118351287 |  |  |
| 4 | ARS-BFGL-NGS-36393                    | 0         | 118376145 |  |  |
| 4 | ARS-BFGL-NGS-32891                    | 0         | 118399391 |  |  |
| 4 | ARS-BFGL-NGS-68153                    | 0         | 118465153 |  |  |
| 4 | ARS-BFGL-NGS-14405                    | 0         | 118517158 |  |  |
| 4 | ARS-BFGL-NGS-75679                    | 0         | 118549162 |  |  |
| 4 | Hapmap35657-SCAFFOLD15929_9264        | 0         | 118608842 |  |  |
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| 4 | ARS-BFGL-NGS-105018                   | 0         | 118655986 |  |  |
| 4 | Hapmap52573-rs29023352                | 0         | 118676822 |  |  |
| 4 | ARS-BFGL-NGS-118785                   | 0         | 118717994 |  |  |
| 4 | ARS-BFGL-NGS-17799                    | 0         | 118873541 |  |  |
| 4 | ARS-BFGL-NGS-107119                   | 0         | 118934474 |  |  |
| 4 | BTB-01418542                          | 0         | 118972436 |  |  |
| 4 | BTB-01418405                          | 0         | 119041474 |  |  |
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| 4 | Hapmap57317-rs29012231                | 0         | 119103719 |  |  |
| 4 | ARS-BFGL-NGS-79475                    | 0         | 119128469 |  |  |
| 4 | ARS-BFGL-NGS-38992                    | 0         | 119154746 |  |  |
| 4 | ARS-BFGL-NGS-15678                    | 0         | 119178973 |  |  |
| 4 | ARS-BFGL-NGS-34474                    | 0         | 119215447 |  |  |
| 4 | ARS-BFGL-NGS-114119                   | 0         | 119268300 |  |  |
| 4 | ARS-BFGL-NGS-102091                   | 0         | 119294331 |  |  |
| 4 | ARS-BFGL-NGS-111133                   | 0         | 119341142 |  |  |
| 4 | ARS-BFGL-NGS-88460                    | 119365573 |           |  |  |

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| 4 | ARS-BFGL-NGS-89379     | 0 | 119407450 |
| 4 | BTB-00213455           | 0 | 119437182 |
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| 4 | ARS-BFGL-NGS-163       | 0 | 119649355 |
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| 4 | ARS-BFGL-NGS-85925     | 0 | 120227878 |
| 4 | BTA-122318-no-rs       | 0 | 120250887 |
| 4 | ARS-BFGL-NGS-14567     | 0 | 120307114 |
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| 5 | BTA-88485-no-rs        | 0 | 617243    |
| 5 | BTA-16278-no-rs        | 0 | 651607    |
| 5 | Hapmap39548-BTA-16277  | 0 | 671883    |
| 5 | BTA-109707-no-rs       | 0 | 738426    |
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| 5 | ARS-BFGL-NGS-40261     | 0 | 864491    |
| 5 | BTB-01659413           | 0 | 885829    |
| 5 | BTA-111224-no-rs       | 0 | 918129    |
| 5 | Hapmap42421-BTA-109705 | 0 | 945850    |
| 5 | ARS-BFGL-NGS-39170     | 0 | 968910    |
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| 5 | BTB-01089304                    | 0 | 1279065 |  |
| 5 | BTA-16821-no-rs                 | 0 | 1302323 |  |
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| 5 | BTB-02090415                    | 0 | 1372579 |  |
| 5 | BTB-01089169                    | 0 | 1415615 |  |
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| 5 | ARS-BFGL-NGS-20138              | 0 | 1573200 |  |
| 5 | Hapmap31183-BTA-159592          | 0 | 1600827 |  |
| 5 | ARS-BFGL-NGS-109950             | 0 | 1635118 |  |
| 5 | ARS-BFGL-NGS-104371             | 0 | 1676890 |  |
| 5 | BTA-118327-no-rs                | 0 | 1702505 |  |
| 5 | BTB-01252613                    | 0 | 1736633 |  |
| 5 | ARS-BFGL-NGS-22578              | 0 | 1764955 |  |
| 5 | BTB-01252633                    | 0 | 1790415 |  |
| 5 | BTB-01630143                    | 0 | 1821290 |  |
| 5 | Hapmap34360-BES2_Contig202_1418 | 0 | 1854424 |  |
| 5 | BTB-01927911                    | 0 | 1912730 |  |
| 5 | Hapmap39806-BTA-114315          | 0 | 1941317 |  |
| 5 | Hapmap31056-BTA-114319          | 0 | 1964556 |  |
| 5 | Hapmap59394-rs29023442          | 0 | 1985730 |  |
| 5 | ARS-BFGL-NGS-64100              | 0 | 2027232 |  |
| 5 | BTB-01539669                    | 0 | 2038856 |  |
| 5 | Hapmap39301-BTA-101948          | 0 | 2073705 |  |
| 5 | BTA-101936-no-rs                | 0 | 2098613 |  |
| 5 | BTB-01539464                    | 0 | 2129114 |  |
| 5 | BTB-01539416                    | 0 | 2157706 |  |
| 5 | BTB-02075308                    | 0 | 2193788 |  |
| 5 | BTB-00214224                    | 0 | 2236004 |  |
| 5 | ARS-BFGL-NGS-111829             | 0 | 2279211 |  |
| 5 | BTB-01421314                    | 0 | 2307902 |  |
| 5 | BTB-01421204                    | 0 | 2355951 |  |
| 5 | Hapmap30277-BTA-149264          | 0 | 2405661 |  |
| 5 | BTA-91681-no-rs                 | 0 | 2425567 |  |
| 5 | Hapmap43095-BTA-91680           | 0 | 2463897 |  |
| 5 | BTB-02053074                    | 0 | 2517249 |  |
| 5 | BTA-74225-no-rs                 | 0 | 2586338 |  |
| 5 | BTB-01817768                    | 0 | 2641792 |  |
| 5 | BTB-00214261                    | 0 | 2673240 |  |
| 5 | BTB-00214293                    | 0 | 2695774 |  |
| 5 | BTB-00214502                    | 0 | 2720366 |  |
| 5 | BTB-00214536                    | 0 | 2755263 |  |
| 5 | BTA-75194-no-rs                 | 0 | 2808142 |  |
| 5 | BTA-75452-no-rs                 | 0 | 2845072 |  |
| 5 | BTB-00214824                    | 0 | 2925015 |  |
| 5 | BTB-00214881                    | 0 | 2968571 |  |
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| 5 | ARS-BFGL-NGS-15330              | 0 | 3073140 |  |
| 5 | BTA-29578-no-rs                 | 0 | 3180610 |  |
| 5 | ARS-BFGL-NGS-22097              | 0 | 3193766 |  |
| 5 | Hapmap44365-BTA-28169           | 0 | 3260057 |  |
| 5 | BTB-01357382                    | 0 | 3281086 |  |
| 5 | BTB-01357389                    | 0 | 3303955 |  |

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| 5 | Hapmap43826-BTA-28176           | 0 | 3336704 |         |
| 5 | BTB-02041628                    | 0 | 3370056 |         |
| 5 | BTA-26682-no-rs                 | 0 | 3405730 |         |
| 5 | Hapmap51564-BTA-122844          | 0 | 3434356 |         |
| 5 | BTB-01357570                    | 0 | 3473832 |         |
| 5 | Hapmap53447-rs29026845          | 0 | 3531860 |         |
| 5 | BTB-00909851                    | 0 | 3591811 |         |
| 5 | Hapmap55203-rs29023737          | 0 | 3645270 |         |
| 5 | BTB-00909994                    | 0 | 3665810 |         |
| 5 | BTA-60006-no-rs                 | 0 | 3702594 |         |
| 5 | BTB-00910022                    | 0 | 3783948 |         |
| 5 | Hapmap48402-BTA-60008           | 0 | 3823446 |         |
| 5 | Hapmap36248-SCAFFOLD285252_6607 | 0 |         | 3900964 |
| 5 | BTB-00214944                    | 0 | 3928512 |         |
| 5 | BTB-00214965                    | 0 | 3951565 |         |
| 5 | BTB-00910118                    | 0 | 3981504 |         |
| 5 | Hapmap61058-rs29019196          | 0 | 4036881 |         |
| 5 | ARS-BFGL-NGS-19171              | 0 | 4078195 |         |
| 5 | BTB-00910380                    | 0 | 4101269 |         |
| 5 | ARS-BFGL-NGS-116227             | 0 | 4156726 |         |
| 5 | ARS-BFGL-NGS-73970              |   | 4211243 |         |
| 5 | BTB-00215702                    | 0 | 4244330 |         |
| 5 | Hapmap39974-BTA-119920          | 0 | 4309575 |         |
| 5 | BTB-00215584                    | 0 | 4334771 |         |
| 5 | Hapmap34419-BES4_Contig182_1285 | 0 |         | 4356757 |
| 5 | ARS-BFGL-NGS-35030              |   | 4378140 |         |
| 5 | BTB-00215286                    | 0 | 4409637 |         |
| 5 | BTA-72900-no-rs                 | 0 | 4441759 |         |
| 5 | BTB-00215105                    | 0 | 4472786 |         |
| 5 | Hapmap44984-BTA-72893           | 0 | 4501932 |         |
| 5 | ARS-BFGL-NGS-41385              | 0 | 4544521 |         |
| 5 | ARS-BFGL-NGS-107356             | 0 | 4597824 |         |
| 5 | BTA-29483-no-rs                 | 0 | 4651940 |         |
| 5 | BTB-01486719                    | 0 | 4698476 |         |
| 5 | BTB-01486771                    | 0 | 4774743 |         |
| 5 | BTB-01486812                    | 0 | 4824708 |         |
| 5 | BTA-85749-no-rs                 | 0 | 4875167 |         |
| 5 | BTA-21047-no-rs                 | 0 | 4929181 |         |
| 5 | BTB-00215711                    | 0 | 4975616 |         |
| 5 | ARS-BFGL-NGS-29560              |   | 5012505 |         |
| 5 | Hapmap42304-BTA-73062           | 0 | 5049476 |         |
| 5 | Hapmap44197-BTA-113898          | 0 | 5086215 |         |
| 5 | ARS-BFGL-NGS-104695             | 0 | 5120813 |         |
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| 5 | BTB-00216386                    | 0 | 5214146 |         |
| 5 | BTB-00216290                    | 0 | 5240327 |         |
| 5 | BTA-73275-no-rs                 | 0 | 5275732 |         |
| 5 | BTB-00216140                    | 0 | 5319191 |         |
| 5 | ARS-BFGL-NGS-106198             | 0 | 5345488 |         |
| 5 | BTB-00216115                    | 0 | 5375156 |         |
| 5 | Hapmap50082-BTA-73223           | 0 | 5400651 |         |
| 5 | BTA-73200-no-rs                 | 0 | 5477307 |         |
| 5 | ARS-BFGL-NGS-35940              |   | 5500808 |         |
| 5 | BTB-00215816                    | 0 | 5550983 |         |

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| 5 | BTB-00215874                     | 0 | 5577631 |         |
| 5 | BTA-73127-no-rs                  | 0 | 5605366 |         |
| 5 | BTB-01200617                     | 0 | 5644397 |         |
| 5 | Hapmap40881-BTA-109195           | 0 | 5668143 |         |
| 5 | ARS-BFGL-NGS-35982               | 0 | 5693439 |         |
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| 5 | BTB-01793309                     | 0 | 5766030 |         |
| 5 | Hapmap40041-BTA-109192           | 0 | 5856833 |         |
| 5 | BTB-01200493                     | 0 | 5883594 |         |
| 5 | BTA-109189-no-rs                 | 0 | 5923591 |         |
| 5 | BTB-01610675                     | 0 | 6001881 |         |
| 5 | BTB-01200402                     | 0 | 6066421 |         |
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| 5 | Hapmap27170-BTA-142780           | 0 | 6220159 |         |
| 5 | BTA-73940-no-rs                  | 0 | 6242179 |         |
| 5 | Hapmap59616-ss46526976           | 0 | 6266261 |         |
| 5 | BTA-73915-no-rs                  | 0 | 6285184 |         |
| 5 | ARS-BFGL-NGS-86710               | 0 | 6357367 |         |
| 5 | BTB-00218118                     | 0 | 6421602 |         |
| 5 | Hapmap38248-BTA-73843            | 0 | 6462823 |         |
| 5 | BTB-00218064                     | 0 | 6495010 |         |
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| 5 | BTB-00217980                     | 0 | 6550831 |         |
| 5 | Hapmap40368-BTA-73779            | 0 | 6618844 |         |
| 5 | BTB-00217895                     | 0 | 6656617 |         |
| 5 | BTA-73757-no-rs                  | 0 | 6689497 |         |
| 5 | Hapmap38523-BTA-73755            | 0 | 6711577 |         |
| 5 | BTB-00217740                     | 0 | 6735328 |         |
| 5 | Hapmap22799-BTA-142770           | 0 | 6762240 |         |
| 5 | ARS-BFGL-NGS-36420               | 0 | 6786633 |         |
| 5 | Hapmap34651-BES8_Contig410_960   | 0 |         | 6813328 |
| 5 | BTA-73686-no-rs                  | 0 | 6835640 |         |
| 5 | BTB-00217507                     | 0 | 6859970 |         |
| 5 | BTA-73641-no-rs                  | 0 | 6913492 |         |
| 5 | ARS-BFGL-NGS-97510               | 0 | 6942103 |         |
| 5 | ARS-BFGL-NGS-39595               | 0 | 6976839 |         |
| 5 | BTB-00217260                     | 0 | 7002633 |         |
| 5 | ARS-BFGL-NGS-118379              | 0 | 7022191 |         |
| 5 | Hapmap40084-BTA-73602            | 0 | 7053234 |         |
| 5 | BTA-74090-no-rs                  | 0 | 7117436 |         |
| 5 | BTB-00218444                     | 0 | 7145497 |         |
| 5 | ARS-BFGL-NGS-102015              | 0 | 7175086 |         |
| 5 | BTB-01858904                     | 0 | 7227616 |         |
| 5 | BTB-00216913                     | 0 | 7271212 |         |
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| 5 | BTA-73513-no-rs                  | 0 | 7338536 |         |
| 5 | BTB-00216795                     | 0 | 7403599 |         |
| 5 | ARS-BFGL-NGS-55743               | 0 | 7472621 |         |
| 5 | ARS-BFGL-NGS-39989               | 0 | 7525986 |         |
| 5 | ARS-BFGL-NGS-67208               | 0 | 7580480 |         |
| 5 | Hapmap54570-rs29010908           | 0 | 7625577 |         |
| 5 | ARS-USMARC-Parent-DQ470475-no-rs | 0 |         | 7651053 |
| 5 | BTA-74954-no-rs                  | 0 | 7665047 |         |
| 5 | BTB-01657584                     | 0 | 7674802 |         |

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| 5 | BTA-111136-no-rs       | 0 | 7705831 |
| 5 | Hapmap54917-rs29023586 | 0 | 7733715 |
| 5 | BTB-01359804           | 0 | 7808480 |
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| 5 | Hapmap44331-BTA-99326  | 0 | 8063248 |
| 5 | BTA-99332-no-rs        | 0 | 8083464 |
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| 5 | BTA-00140-rs29013304   | 0 | 8142075 |
| 5 | BTB-00220600           | 0 | 8204073 |
| 5 | ARS-BFGL-NGS-32245     | 0 | 8232512 |
| 5 | Hapmap47722-BTA-75026  | 0 | 8296128 |
| 5 | BTA-75037-no-rs        | 0 | 8323427 |
| 5 | ARS-BFGL-NGS-114785    | 0 | 8371379 |
| 5 | BTB-01752331           | 0 | 8399818 |
| 5 | BTB-00220941           | 0 | 8435987 |
| 5 | BTB-00220966           | 0 | 8476871 |
| 5 | BTB-00218546           | 0 | 8518671 |
| 5 | UA-IFASA-4572          | 0 | 8562667 |
| 5 | BTA-74150-no-rs        | 0 | 8583306 |
| 5 | ARS-BFGL-NGS-69702     | 0 | 8621147 |
| 5 | ARS-BFGL-NGS-78236     | 0 | 8646040 |
| 5 | ARS-BFGL-NGS-11736     | 0 | 8683607 |
| 5 | ARS-BFGL-NGS-109524    | 0 | 8751248 |
| 5 | Hapmap50771-BTA-74233  | 0 | 8772796 |
| 5 | BTB-00218821           | 0 | 8807063 |
| 5 | UA-IFASA-7270          | 0 | 8849111 |
| 5 | BTB-00218987           | 0 | 8893080 |
| 5 | ARS-BFGL-NGS-28269     | 0 | 8926782 |
| 5 | BTB-00219084           | 0 | 8949076 |
| 5 | BTB-00219231           | 0 | 8978484 |
| 5 | BTB-00219093           | 0 | 9015235 |
| 5 | ARS-BFGL-NGS-10677     | 0 | 9126222 |
| 5 | Hapmap48875-BTA-74500  | 0 | 9157214 |
| 5 | Hapmap23011-BTA-142804 | 0 | 9220940 |
| 5 | BTB-00219569           | 0 | 9263262 |
| 5 | ARS-BFGL-NGS-73619     | 0 | 9317851 |
| 5 | BTB-00219600           | 0 | 9344250 |
| 5 | BTB-00219662           | 0 | 9371522 |
| 5 | BTB-00219664           | 0 | 9394294 |
| 5 | Hapmap44617-BTA-74592  | 0 | 9416212 |
| 5 | BTA-74670-no-rs        | 0 | 9437669 |
| 5 | Hapmap42658-BTA-74674  | 0 | 9472727 |
| 5 | BTA-74684-no-rs        | 0 | 9501290 |
| 5 | ARS-BFGL-NGS-13940     | 0 | 9547185 |
| 5 | Hapmap58252-rs29024363 | 0 | 9652848 |
| 5 | BTA-121674-no-rs       | 0 | 9708718 |
| 5 | BTA-118745-no-rs       | 0 | 9806599 |
| 5 | Hapmap32860-BTA-158424 | 0 | 9837147 |

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| 5 | ARS-BFGL-NGS-25358     | 0 | 9899160  |
| 5 | BTB-01253890           | 0 | 9922225  |
| 5 | BTB-01253754           | 0 | 9950705  |
| 5 | ARS-BFGL-NGS-16627     | 0 | 10027908 |
| 5 | BTB-00221620           | 0 | 10066097 |
| 5 | BTA-75232-no-rs        | 0 | 10104621 |
| 5 | BTB-00221495           | 0 | 10138236 |
| 5 | BTB-00221373           | 0 | 10198995 |
| 5 | ARS-BFGL-NGS-69509     | 0 | 10236503 |
| 5 | BTB-00221286           | 0 | 10256208 |
| 5 | BTB-00222372           | 0 | 10278129 |
| 5 | Hapmap49738-BTA-75486  | 0 | 10335741 |
| 5 | ARS-BFGL-NGS-36790     | 0 | 10381017 |
| 5 | BTA-75479-no-rs        | 0 | 10423634 |
| 5 | Hapmap54948-rs29009927 | 0 | 10482135 |
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| 5 | BTA-119598-no-rs       | 0 | 10626452 |
| 5 | Hapmap60358-rs29018681 | 0 | 10660785 |
| 5 | BTA-23621-no-rs        | 0 | 10735432 |
| 5 | ARS-BFGL-NGS-117548    | 0 | 10788597 |
| 5 | ARS-BFGL-NGS-72006     | 0 | 10839782 |
| 5 | ARS-BFGL-NGS-117126    | 0 | 10862100 |
| 5 | BTA-22405-no-rs        | 0 | 10940707 |
| 5 | Hapmap27228-BTA-161652 | 0 | 10969920 |
| 5 | Hapmap43207-BTA-22406  | 0 | 10999214 |
| 5 | BTB-01320246           | 0 | 11025282 |
| 5 | BTB-01320261           | 0 | 11058587 |
| 5 | BTA-75531-no-rs        | 0 | 11100123 |
| 5 | BTA-75515-no-rs        | 0 | 11122965 |
| 5 | Hapmap55297-rs29017245 | 0 | 11158112 |
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| 5 | BTB-00223023           | 0 | 11314799 |
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| 5 | Hapmap51781-BTA-94983  | 0 | 11439750 |
| 5 | BTB-00223109           | 0 | 11464705 |
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| 5 | Hapmap60169-rs29019788 | 0 | 11647027 |
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| 5 | BTA-75554-no-rs        | 0 | 11745167 |
| 5 | ARS-BFGL-NGS-40481     | 0 | 11800467 |
| 5 | ARS-BFGL-NGS-26310     | 0 | 12123561 |
| 5 | ARS-BFGL-NGS-29426     | 0 | 12174285 |
| 5 | ARS-BFGL-NGS-31399     | 0 | 12213478 |
| 5 | BTA-75563-no-rs        | 0 | 12271405 |
| 5 | ARS-BFGL-NGS-58588     | 0 | 12338455 |
| 5 | Hapmap46581-BTA-75566  | 0 | 12379777 |
| 5 | ARS-BFGL-NGS-73207     | 0 | 12408591 |
| 5 | Hapmap23168-BTA-75567  | 0 | 12443146 |
| 5 | ARS-BFGL-NGS-11610     | 0 | 12463666 |
| 5 | BTA-75576-no-rs        | 0 | 12601297 |

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| 5 | ARS-BFGL-NGS-68260               | 12725994 |          |
| 5 | Hapmap33970-BES11_Contig478_2145 | 0        | 12759904 |
| 5 | BTA-75591-no-rs                  | 0        | 12791449 |
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| 5 | Hapmap38799-BTA-101880           | 0        | 12877996 |
| 5 | ARS-BFGL-NGS-21381               | 0        | 12971317 |
| 5 | Hapmap49501-BTA-15676            | 0        | 13007538 |
| 5 | ARS-BFGL-NGS-116924              | 0        | 13064372 |
| 5 | Hapmap46515-BTA-15679            | 0        | 13110436 |
| 5 | ARS-BFGL-NGS-111940              | 0        | 13142317 |
| 5 | ARS-BFGL-NGS-22061               | 0        | 13230398 |
| 5 | ARS-BFGL-NGS-81155               | 0        | 13271489 |
| 5 | Hapmap39895-BTA-15668            | 0        | 13311842 |
| 5 | ARS-BFGL-NGS-15419               | 0        | 13362021 |
| 5 | Hapmap59589-rs29018532           | 0        | 13632142 |
| 5 | BTA-72768-no-rs                  | 0        | 13659330 |
| 5 | Hapmap36482-SCAFFOLD163485_1458  | 0        | 14000800 |
| 5 | Hapmap52967-rs29017027           | 0        | 14044364 |
| 5 | Hapmap32870-BTA-162083           | 0        | 14189730 |
| 5 | Hapmap58403-rs29020530           | 0        | 14305819 |
| 5 | BTA-87043-no-rs                  | 0        | 14349001 |
| 5 | ARS-BFGL-NGS-84009               | 0        | 14481898 |
| 5 | ARS-BFGL-NGS-41475               | 0        | 14556289 |
| 5 | Hapmap58532-rs29018522           | 0        | 14674886 |
| 5 | Hapmap28307-BTA-147588           | 0        | 14707823 |
| 5 | BTA-87036-no-rs                  | 0        | 14741492 |
| 5 | BTA-87039-no-rs                  | 0        | 14770370 |
| 5 | BTB-01113127                     | 0        | 14802322 |
| 5 | BTB-01113145                     | 0        | 14838419 |
| 5 | BTA-02257-rs29009814             | 0        | 14864337 |
| 5 | Hapmap55633-rs29023979           | 0        | 14894403 |
| 5 | Hapmap44154-BTA-87046            | 0        | 14953446 |
| 5 | BTA-87049-no-rs                  | 0        | 14975598 |
| 5 | ARS-BFGL-NGS-102679              | 0        | 15024272 |
| 5 | BTA-05007-rs29019174             | 0        | 15061346 |
| 5 | Hapmap55237-rs29010308           | 0        | 15083929 |
| 5 | BTA-92020-no-rs                  | 0        | 15105474 |
| 5 | BTB-01508845                     | 0        | 15149224 |
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| 5 | ARS-BFGL-NGS-110395              | 0        | 15203201 |
| 5 | Hapmap33479-BTA-137049           | 0        | 15224660 |
| 5 | BTB-00862015                     | 0        | 15258458 |
| 5 | Hapmap39032-BTA-59802            | 0        | 15296605 |
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| 5 | Hapmap48014-BTA-59805            | 0        | 15369811 |
| 5 | Hapmap56721-rs29021198           | 0        | 15424038 |
| 5 | Hapmap41949-BTA-72796            | 0        | 15514245 |
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| 5 | ARS-BFGL-NGS-35320               | 15673486 |          |
| 5 | Hapmap44400-BTA-72792            | 0        | 15696963 |
| 5 | Hapmap42369-BTA-93920            | 0        | 15780939 |
| 5 | Hapmap40277-BTA-72811            | 0        | 15939304 |
| 5 | ARS-BFGL-NGS-20187               | 0        | 16024346 |
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| 5 | BTA-12588-rs29024540   | 0        | 16222106 |
| 5 | ARS-BFGL-NGS-111202    | 0        | 16268894 |
| 5 | Hapmap44593-BTA-20421  | 0        | 16302376 |
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| 5 | ARS-BFGL-NGS-51490     | 0        | 16522966 |
| 5 | Hapmap33068-BTA-160954 | 0        | 16545450 |
| 5 | ARS-BFGL-NGS-66695     | 0        | 16605412 |
| 5 | BTA-89424-no-rs        | 0        | 16666769 |
| 5 | BTA-109169-no-rs       | 0        | 16712032 |
| 5 | BTA-103542-no-rs       | 0        | 16795347 |
| 5 | ARS-BFGL-NGS-115109    | 0        | 16882025 |
| 5 | ARS-BFGL-NGS-44205     | 0        | 16952114 |
| 5 | ARS-BFGL-NGS-114062    | 0        | 16982383 |
| 5 | ARS-BFGL-NGS-104042    | 0        | 17016269 |
| 5 | ARS-BFGL-NGS-115501    | 0        | 17215443 |
| 5 | BTB-01384461           | 0        | 17296345 |
| 5 | ARS-BFGL-NGS-25323     | 0        | 17338669 |
| 5 | ARS-BFGL-NGS-10032     | 0        | 17362801 |
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| 5 | Hapmap45956-BTA-74297  | 0        | 17995212 |
| 5 | BTA-74300-no-rs        | 0        | 18022416 |
| 5 | BTA-74302-no-rs        | 0        | 18047140 |
| 5 | BTA-74304-no-rs        | 0        | 18075032 |
| 5 | Hapmap25789-BTA-123396 | 0        | 18294913 |
| 5 | BTA-123395-no-rs       | 0        | 18298823 |
| 5 | Hapmap26418-BTA-147132 | 0        | 18321966 |
| 5 | BTA-72821-no-rs        | 0        | 18434417 |
| 5 | BTA-72820-no-rs        | 0        | 18456049 |
| 5 | ARS-BFGL-NGS-29626     | 0        | 18586765 |
| 5 | UA-IFASA-5221          | 0        | 18739471 |
| 5 | Hapmap41762-BTA-117570 | 0        | 18943987 |
| 5 | ARS-BFGL-NGS-110624    | 0        | 19128124 |
| 5 | ARS-BFGL-NGS-114668    | 0        | 19157753 |
| 5 | ARS-BFGL-NGS-58860     | 0        | 19281986 |
| 5 | Hapmap51040-BTA-72857  | 0        | 19358355 |
| 5 | Hapmap28068-BTA-72847  | 0        | 19438508 |
| 5 | Hapmap42303-BTA-72846  | 0        | 19458651 |
| 5 | ARS-BFGL-NGS-116388    | 0        | 19494122 |
| 5 | ARS-BFGL-NGS-36350     | 0        | 19531689 |
| 5 | ARS-BFGL-NGS-110925    | 0        | 19594448 |
| 5 | BTA-27242-no-rs        | 0        | 19931600 |
| 5 | Hapmap41812-BTA-27269  | 0        | 19983794 |
| 5 | ARS-BFGL-NGS-58630     | 20174640 |          |
| 5 | ARS-BFGL-NGS-114197    | 0        | 20218000 |
| 5 | ARS-BFGL-NGS-119271    | 0        | 20373701 |
| 5 | BTA-06872-rs29021228   | 0        | 20512172 |
| 5 | Hapmap26407-BTA-142865 | 0        | 20609872 |
| 5 | ARS-BFGL-NGS-106792    | 0        | 20903150 |
| 5 | Hapmap43960-BTA-85875  | 0        | 20976423 |
| 5 | BTA-72805-no-rs        | 0        | 21056843 |
| 5 | Hapmap44614-BTA-72802  | 0        | 21114508 |
| 5 | BTA-121676-no-rs       | 0        | 21181621 |
| 5 | ARS-BFGL-NGS-54735     | 0        | 21319989 |
| 5 | BTA-94760-no-rs        | 0        | 21369408 |

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| 5 | Hapmap60266-rs29024423          | 0 | 21389684 |  |
| 5 | Hapmap42402-BTA-103350          | 0 | 21484201 |  |
| 5 | ARS-BFGL-NGS-15746              | 0 | 21523820 |  |
| 5 | ARS-BFGL-NGS-117294             | 0 | 21561793 |  |
| 5 | ARS-BFGL-NGS-32842              | 0 | 21645179 |  |
| 5 | ARS-BFGL-NGS-35869              | 0 | 21707809 |  |
| 5 | Hapmap42731-BTA-92931           | 0 | 21768260 |  |
| 5 | Hapmap57583-rs29014779          | 0 | 21876606 |  |
| 5 | BTA-103859-no-rs                | 0 | 21897708 |  |
| 5 | BTA-103857-no-rs                | 0 | 21922004 |  |
| 5 | ARS-BFGL-NGS-115647             | 0 | 21947260 |  |
| 5 | ARS-BFGL-NGS-73823              | 0 | 21994945 |  |
| 5 | BTA-72912-no-rs                 | 0 | 22020313 |  |
| 5 | ARS-BFGL-NGS-12094              | 0 | 22053661 |  |
| 5 | Hapmap45700-BTA-72915           | 0 | 22076793 |  |
| 5 | BTA-72919-no-rs                 | 0 | 22097844 |  |
| 5 | Hapmap41346-BTA-72920           | 0 | 22196364 |  |
| 5 | BTA-01717-no-rs                 | 0 | 22225486 |  |
| 5 | ARS-BFGL-NGS-40167              | 0 | 22327983 |  |
| 5 | ARS-BFGL-NGS-44305              | 0 | 22350178 |  |
| 5 | ARS-BFGL-NGS-118274             | 0 | 22470718 |  |
| 5 | ARS-BFGL-NGS-114594             | 0 | 22599252 |  |
| 5 | ARS-BFGL-NGS-35234              | 0 | 22685406 |  |
| 5 | ARS-BFGL-NGS-93953              | 0 | 22737219 |  |
| 5 | ARS-BFGL-NGS-90895              | 0 | 22777192 |  |
| 5 | Hapmap23146-BTA-123179          | 0 | 22847985 |  |
| 5 | Hapmap55454-rs29027427          | 0 | 22881974 |  |
| 5 | Hapmap51041-BTA-72970           | 0 | 22943453 |  |
| 5 | BTA-72966-no-rs                 | 0 | 22987941 |  |
| 5 | ARS-BFGL-NGS-110971             | 0 | 23031571 |  |
| 5 | ARS-BFGL-NGS-97448              | 0 | 23055154 |  |
| 5 | Hapmap28359-BTA-142912          | 0 | 23147391 |  |
| 5 | Hapmap36616-SCAFFOLD310212_1822 | 0 | 23171537 |  |
| 5 | ARS-USMARC-217                  | 0 | 23358457 |  |
| 5 | Hapmap41628-BTA-72959           | 0 | 23378977 |  |
| 5 | BTA-72957-no-rs                 | 0 | 23408962 |  |
| 5 | BTA-72955-no-rs                 | 0 | 23461203 |  |
| 5 | Hapmap47711-BTA-72953           | 0 | 23483262 |  |
| 5 | BTA-72947-no-rs                 | 0 | 23568941 |  |
| 5 | ARS-BFGL-NGS-34975              | 0 | 23825621 |  |
| 5 | ARS-BFGL-NGS-12640              | 0 | 23861315 |  |
| 5 | Hapmap32320-BTA-142894          | 0 | 23924800 |  |
| 5 | ARS-BFGL-NGS-111109             | 0 | 24064770 |  |
| 5 | Hapmap31771-BTA-142898          | 0 | 24111835 |  |
| 5 | ARS-BFGL-NGS-116514             | 0 | 24168373 |  |
| 5 | Hapmap30819-BTA-142899          | 0 | 24214641 |  |
| 5 | ARS-BFGL-NGS-100276             | 0 | 24401937 |  |
| 5 | BTA-105595-no-rs                | 0 | 24426434 |  |
| 5 | ARS-BFGL-NGS-112212             | 0 | 24451576 |  |
| 5 | ARS-BFGL-NGS-10291              | 0 | 24512405 |  |
| 5 | ARS-BFGL-NGS-77906              | 0 | 24533402 |  |
| 5 | Hapmap51042-BTA-73045           | 0 | 24579644 |  |
| 5 | ARS-BFGL-NGS-72504              | 0 | 24605672 |  |
| 5 | ARS-BFGL-NGS-101539             | 0 | 24628072 |  |

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| 5 | BTA-73025-no-rs                  | 0 | 24722041 |          |
| 5 | Hapmap49729-BTA-73022            | 0 | 24778836 |          |
| 5 | Hapmap39810-BTA-121683           | 0 | 24826095 |          |
| 5 | Hapmap53250-rs29027200           | 0 | 24934918 |          |
| 5 | Hapmap56557-rs29010804           | 0 | 24960637 |          |
| 5 | Hapmap43343-BTA-73011            | 0 | 25027658 |          |
| 5 | Hapmap43920-BTA-73006            | 0 | 25067030 |          |
| 5 | Hapmap55554-ss46526312           | 0 | 25102148 |          |
| 5 | Hapmap30257-BTA-142970           | 0 | 25358659 |          |
| 5 | Hapmap30820-BTA-142968           | 0 | 25379378 |          |
| 5 | Hapmap31455-BTA-148845           | 0 | 25436255 |          |
| 5 | ARS-BFGL-NGS-14910               | 0 | 25518483 |          |
| 5 | Hapmap60677-ss46526967           | 0 | 25597342 |          |
| 5 | ARS-USMARC-666                   | 0 | 25643874 |          |
| 5 | ARS-USMARC-623                   | 0 | 25670284 |          |
| 5 | BTA-72978-no-rs                  | 0 | 25699752 |          |
| 5 | ARS-USMARC-629                   | 0 | 25738874 |          |
| 5 | BTA-72980-no-rs                  | 0 | 25775985 |          |
| 5 | ARS-USMARC-646                   | 0 | 25800581 |          |
| 5 | ARS-BFGL-NGS-82550               |   | 25915161 |          |
| 5 | ARS-BFGL-NGS-23961               | 0 | 25995476 |          |
| 5 | ARS-BFGL-NGS-32724               | 0 | 26056742 |          |
| 5 | Hapmap41950-BTA-72999            | 0 | 26082666 |          |
| 5 | ARS-BFGL-NGS-82224               | 0 | 26153069 |          |
| 5 | ARS-BFGL-NGS-50553               | 0 | 26181410 |          |
| 5 | ARS-BFGL-NGS-21191               | 0 | 26263552 |          |
| 5 | BTA-73004-no-rs                  | 0 | 26371774 |          |
| 5 | ARS-BFGL-NGS-32476               | 0 | 26459925 |          |
| 5 | Hapmap44687-BTA-73295            | 0 | 26507844 |          |
| 5 | BTA-73296-no-rs                  | 0 | 26526934 |          |
| 5 | ARS-USMARC-622                   | 0 | 26539525 |          |
| 5 | ARS-BFGL-NGS-12229               | 0 | 26561662 |          |
| 5 | BTA-73098-no-rs                  | 0 | 26621180 |          |
| 5 | ARS-BFGL-NGS-34382               | 0 | 26661043 |          |
| 5 | ARS-BFGL-NGS-37524               | 0 | 26809399 |          |
| 5 | Hapmap30002-BTA-142983           | 0 | 26876852 |          |
| 5 | ARS-BFGL-NGS-43120               |   | 26911621 |          |
| 5 | ARS-BFGL-NGS-57900               |   | 26986116 |          |
| 5 | ARS-BFGL-NGS-59755               | 0 | 27086960 |          |
| 5 | ARS-BFGL-NGS-115922              | 0 | 27130695 |          |
| 5 | ARS-BFGL-NGS-34153               | 0 | 27214378 |          |
| 5 | ARS-BFGL-NGS-87170               | 0 | 27235668 |          |
| 5 | ARS-BFGL-NGS-34254               | 0 | 27287454 |          |
| 5 | ARS-BFGL-NGS-72551               | 0 | 27498349 |          |
| 5 | UA-IFASA-9230                    | 0 | 27542987 |          |
| 5 | Hapmap50081-BTA-73122            | 0 | 27601323 |          |
| 5 | ARS-BFGL-NGS-113311              | 0 | 27633265 |          |
| 5 | ARS-BFGL-NGS-103490              | 0 | 27715589 |          |
| 5 | Hapmap39353-BTA-73120            | 0 | 27777281 |          |
| 5 | ARS-USMARC-Parent-DQ500958-no-rs | 0 |          | 27825118 |
| 5 | ARS-BFGL-NGS-77250               |   | 27839649 |          |
| 5 | ARS-BFGL-NGS-98156               | 0 | 27869236 |          |
| 5 | Hapmap47087-BTA-73116            | 0 | 27898166 |          |
| 5 | ARS-BFGL-NGS-86670               |   | 27927409 |          |

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| 5 | ARS-BFGL-NGS-38038               | 0        | 27992179 |  |
| 5 | ARS-BFGL-NGS-15960               | 0        | 28024945 |  |
| 5 | ARS-BFGL-NGS-53370               | 28054954 |          |  |
| 5 | ARS-BFGL-NGS-100971              | 0        | 28153566 |  |
| 5 | ARS-BFGL-NGS-44455               | 0        | 28304831 |  |
| 5 | ARS-BFGL-NGS-75670               | 28331294 |          |  |
| 5 | Hapmap41951-BTA-73168            | 0        | 28442563 |  |
| 5 | ARS-BFGL-NGS-70496               | 0        | 28476361 |  |
| 5 | ARS-BFGL-NGS-91751               | 0        | 28573792 |  |
| 5 | ARS-BFGL-NGS-110943              | 0        | 28602448 |  |
| 5 | ARS-BFGL-NGS-117977              | 0        | 28640245 |  |
| 5 | ARS-BFGL-NGS-107085              | 0        | 28660813 |  |
| 5 | ARS-BFGL-NGS-90297               | 0        | 28695066 |  |
| 5 | Hapmap43922-BTA-73158            | 0        | 28736911 |  |
| 5 | ARS-BFGL-NGS-115973              | 0        | 28757093 |  |
| 5 | ARS-USMARC-624                   | 0        | 28859701 |  |
| 5 | ARS-BFGL-NGS-28836               | 0        | 28895850 |  |
| 5 | Hapmap43031-BTA-73175            | 0        | 29019138 |  |
| 5 | BTA-73178-no-rs                  | 0        | 29043711 |  |
| 5 | ARS-BFGL-NGS-87960               | 29095603 |          |  |
| 5 | BTA-73077-no-rs                  | 0        | 29157172 |  |
| 5 | Hapmap38548-BTA-97184            | 0        | 29240752 |  |
| 5 | ARS-BFGL-NGS-38020               | 0        | 29264678 |  |
| 5 | UA-IFASA-2691                    | 0        | 29388592 |  |
| 5 | Hapmap54777-rs29010208           | 0        | 29417971 |  |
| 5 | BTA-73209-no-rs                  | 0        | 29496625 |  |
| 5 | BTA-73210-no-rs                  | 0        | 29544481 |  |
| 5 | Hapmap23826-BTA-154980           | 0        | 29744744 |  |
| 5 | ARS-BFGL-NGS-20135               | 0        | 29839619 |  |
| 5 | Hapmap51983-BTA-73224            | 0        | 29930077 |  |
| 5 | ARS-BFGL-NGS-28317               | 0        | 29961242 |  |
| 5 | UA-IFASA-2781                    | 0        | 29989860 |  |
| 5 | ARS-BFGL-NGS-49972               | 0        | 30012017 |  |
| 5 | Hapmap34759-BES10_Contig780_1565 | 0        | 30061770 |  |
| 5 | BTA-06718-no-rs                  | 0        | 30085168 |  |
| 5 | Hapmap47089-BTA-73292            | 0        | 30114907 |  |
| 5 | ARS-BFGL-NGS-112542              | 0        | 30159843 |  |
| 5 | ARS-BFGL-NGS-119788              | 0        | 30185840 |  |
| 5 | Hapmap39286-BTA-73191            | 0        | 30275164 |  |
| 5 | ARS-USMARC-635                   | 0        | 30353509 |  |
| 5 | ARS-USMARC-633                   | 0        | 30374517 |  |
| 5 | Hapmap52787-rs29024515           | 0        | 30417623 |  |
| 5 | ARS-BFGL-NGS-15492               | 0        | 30476984 |  |
| 5 | Hapmap38536-BTA-85959            | 0        | 30562466 |  |
| 5 | ARS-BFGL-NGS-12510               | 30639518 |          |  |
| 5 | ARS-BFGL-NGS-53461               | 0        | 30659497 |  |
| 5 | Hapmap59321-rs29015703           | 0        | 30838906 |  |
| 5 | ARS-BFGL-NGS-43909               | 0        | 30879776 |  |
| 5 | ARS-BFGL-NGS-35577               | 0        | 30912029 |  |
| 5 | ARS-BFGL-NGS-23612               | 0        | 30960699 |  |
| 5 | ARS-BFGL-NGS-112163              | 0        | 31074760 |  |
| 5 | ARS-USMARC-701                   | 0        | 31120420 |  |
| 5 | ARS-USMARC-675                   | 0        | 31164990 |  |
| 5 | UA-IFASA-5621                    | 0        | 31246762 |  |

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| 5 | BTA-73398-no-rs        | 0 | 31305687 |
| 5 | Hapmap23022-BTA-161235 | 0 | 31613026 |
| 5 | ARS-BFGL-NGS-118817    | 0 | 31739928 |
| 5 | BTA-73392-no-rs        | 0 | 32104484 |
| 5 | ARS-BFGL-NGS-28024     | 0 | 32220261 |
| 5 | Hapmap23940-BTA-143067 | 0 | 32242664 |
| 5 | ARS-BFGL-NGS-12166     | 0 | 32310418 |
| 5 | ARS-BFGL-NGS-14419     | 0 | 32502917 |
| 5 | ARS-USMARC-637         | 0 | 32596644 |
| 5 | Hapmap27479-BTA-73301  | 0 | 32627250 |
| 5 | ARS-BFGL-NGS-101679    | 0 | 32688182 |
| 5 | Hapmap47390-BTA-73284  | 0 | 32773068 |
| 5 | Hapmap42150-BTA-25138  | 0 | 32819286 |
| 5 | ARS-BFGL-NGS-717       | 0 | 32861996 |
| 5 | BTB-01733013           | 0 | 32900374 |
| 5 | UA-IFASA-3684          | 0 | 32928151 |
| 5 | ARS-BFGL-NGS-12553     | 0 | 32983741 |
| 5 | ARS-BFGL-NGS-110548    | 0 | 33013488 |
| 5 | ARS-BFGL-NGS-112730    | 0 | 33054266 |
| 5 | ARS-BFGL-NGS-92420     | 0 | 33078266 |
| 5 | ARS-BFGL-NGS-57266     | 0 | 33136086 |
| 5 | Hapmap47184-BTA-114107 | 0 | 33173961 |
| 5 | BTA-105159-no-rs       | 0 | 33195704 |
| 5 | Hapmap46916-BTA-105154 | 0 | 33246646 |
| 5 | BTB-01226666           | 0 | 33308772 |
| 5 | Hapmap27009-BTA-156880 | 0 | 33334061 |
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| 5 | BTB-01226603           | 0 | 33436079 |
| 5 | BTB-01226567           | 0 | 33457988 |
| 5 | ARS-BFGL-NGS-53694     | 0 | 33481261 |
| 5 | BTA-117471-no-rs       | 0 | 33508142 |
| 5 | Hapmap38881-BTA-117477 | 0 | 33550213 |
| 5 | BTB-01205655           | 0 | 33586136 |
| 5 | BTA-110108-no-rs       | 0 | 33611572 |
| 5 | BTB-01978398           | 0 | 33637178 |
| 5 | Hapmap1392-BTA-110107  | 0 | 33664289 |
| 5 | BTA-110105-no-rs       | 0 | 33687195 |
| 5 | BTB-01953426           | 0 | 33709003 |
| 5 | BTA-87984-no-rs        | 0 | 33732100 |
| 5 | BTB-01205531           | 0 | 33762720 |
| 5 | BTB-01205481           | 0 | 33808700 |
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| 5 | BTA-110099-no-rs       | 0 | 33861705 |
| 5 | Hapmap39213-BTA-98187  | 0 | 33953799 |
| 5 | BTB-01495858           | 0 | 33981125 |
| 5 | ARS-BFGL-NGS-127       | 0 | 34002538 |
| 5 | ARS-BFGL-NGS-25635     | 0 | 34082902 |
| 5 | BTB-01495784           | 0 | 34101843 |
| 5 | ARS-BFGL-NGS-117517    | 0 | 34142015 |
| 5 | BTB-01740719           | 0 | 34180584 |
| 5 | Hapmap30868-BTA-158132 | 0 | 34220929 |
| 5 | ARS-BFGL-NGS-35179     | 0 | 34325053 |
| 5 | BTB-01591477           | 0 | 34371932 |
| 5 | BTA-27700-no-rs        | 0 | 34419894 |

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| 5 | BTB-01354509           | 0        | 34446901 |
| 5 | BTB-01354536           | 0        | 34471037 |
| 5 | BTA-27697-no-rs        | 0        | 34524391 |
| 5 | BTB-01513906           | 0        | 34704722 |
| 5 | BTB-01794441           | 0        | 34859881 |
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| 5 | BTB-00572772           | 0        | 34937478 |
| 5 | ARS-BFGL-NGS-119357    | 0        | 34989903 |
| 5 | BTB-00572731           | 0        | 35023805 |
| 5 | ARS-BFGL-NGS-119673    | 0        | 35076006 |
| 5 | ARS-BFGL-NGS-16490     | 35186437 |          |
| 5 | Hapmap56154-rs29018650 | 0        | 35234997 |
| 5 | UA-IFASA-9489          | 0        | 35300909 |
| 5 | BTA-21377-no-rs        | 0        | 35657214 |
| 5 | BTA-40574-no-rs        | 0        | 35689570 |
| 5 | Hapmap27156-BTA-131317 | 0        | 35713917 |
| 5 | Hapmap42995-BTA-60519  | 0        | 35958264 |
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| 5 | ARS-BFGL-NGS-66566     | 0        | 36122701 |
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| 5 | BTB-00225371           | 0        | 36578127 |
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| 5 | BTB-00225319           | 0        | 36653300 |
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| 5 | ARS-BFGL-NGS-68492     | 0        | 37109231 |
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| 5 | ARS-BFGL-NGS-16895     | 0        | 37369462 |
| 5 | BTB-01248439           | 0        | 37403771 |
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| 5 | Hapmap28755-BTA-148390 | 0        | 37473650 |
| 5 | BTA-118501-no-rs       | 0        | 37516502 |
| 5 | ARS-BFGL-NGS-92169     | 0        | 37573018 |
| 5 | Hapmap50248-BTA-117719 | 0        | 37607773 |
| 5 | Hapmap54173-rs29021717 | 0        | 37668761 |
| 5 | Hapmap58596-rs29013530 | 0        | 37804312 |
| 5 | BTA-73413-no-rs        | 0        | 37892017 |
| 5 | BTA-28787-no-rs        | 0        | 37925443 |
| 5 | Hapmap43550-BTA-28784  | 0        | 37964220 |
| 5 | ARS-BFGL-NGS-77437     | 0        | 38037796 |

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| 5 | ARS-BFGL-NGS-53488     | 0 | 38106808 |
| 5 | Hapmap23837-BTA-163643 | 0 | 38131225 |
| 5 | Hapmap57437-rs29017167 | 0 | 38248775 |
| 5 | Hapmap25560-BTA-143081 | 0 | 38304069 |
| 5 | ARS-BFGL-NGS-108990    | 0 | 38329881 |
| 5 | BTA-73418-no-rs        | 0 | 38351858 |
| 5 | Hapmap38042-BTA-73420  | 0 | 38390645 |
| 5 | Hapmap41953-BTA-73422  | 0 | 38466360 |
| 5 | BTA-73433-no-rs        | 0 | 38516646 |
| 5 | BTA-73439-no-rs        | 0 | 38701654 |
| 5 | Hapmap44125-BTA-73440  | 0 | 38749540 |
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| 5 | ARS-BFGL-NGS-54580     | 0 | 38862744 |
| 5 | Hapmap58789-rs29016364 | 0 | 38963818 |
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| 5 | ARS-BFGL-NGS-53475     | 0 | 39482132 |
| 5 | ARS-BFGL-NGS-55630     | 0 | 39553560 |
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| 5 | Hapmap27016-BTA-158722 | 0 | 39670854 |
| 5 | BTA-119378-no-rs       | 0 | 39694609 |
| 5 | ARS-BFGL-NGS-49659     | 0 | 39720278 |
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| 5 | Hapmap55164-rs29016423 | 0 | 40058566 |
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| 5 | Hapmap52717-rs29026394 | 0 | 40144186 |
| 5 | Hapmap43741-BTA-100726 | 0 | 40170383 |
| 5 | BTB-01524285           | 0 | 40192584 |
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| 5 | Hapmap50570-BTA-112943 | 0 | 40366855 |
| 5 | Hapmap38094-BTA-112941 | 0 | 40402061 |
| 5 | Hapmap33077-BTA-163333 | 0 | 40445940 |
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| 5 | Hapmap48064-BTA-73407  | 0 | 40554369 |
| 5 | UA-IFASA-8207          | 0 | 40580237 |
| 5 | Hapmap53246-rs29026986 | 0 | 40605553 |
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| 5 | BTA-107940-no-rs       | 0 | 40720679 |
| 5 | ARS-BFGL-NGS-104287    | 0 | 40762830 |
| 5 | Hapmap44326-BTA-97746  | 0 | 40868010 |
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| 5 | ARS-BFGL-NGS-19252     | 0 | 41025310 |
| 5 | BTB-01145301           | 0 | 41119351 |
| 5 | Hapmap49813-BTA-97737  | 0 | 41143539 |
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| 5 | BTB-01854902           | 0 | 41241364 |
| 5 | BTA-122207-no-rs       | 0 | 41264443 |

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| 5 | BTA-118386-no-rs       | 0 | 41476949 |
| 5 | Hapmap58641-rs29010249 | 0 | 41521945 |
| 5 | BTB-01342721           | 0 | 41565285 |
| 5 | Hapmap26211-BTA-162829 | 0 | 41637547 |
| 5 | BTB-01812364           | 0 | 41666974 |
| 5 | ARS-BFGL-NGS-22065     | 0 | 41695035 |
| 5 | BTA-26132-no-rs        | 0 | 41799777 |
| 5 | ARS-BFGL-NGS-28318     | 0 | 41913821 |
| 5 | Hapmap27968-BTA-154024 | 0 | 42063044 |
| 5 | BTA-105507-no-rs       | 0 | 42085647 |
| 5 | ARS-BFGL-NGS-41080     | 0 | 42166749 |
| 5 | ARS-BFGL-NGS-18989     | 0 | 42188101 |
| 5 | Hapmap52463-rs29025831 | 0 | 42212768 |
| 5 | BTA-91090-no-rs        | 0 | 42241538 |
| 5 | ARS-BFGL-NGS-69056     | 0 | 42285835 |
| 5 | ARS-BFGL-NGS-98588     | 0 | 42436216 |
| 5 | BTA-119068-no-rs       | 0 | 42605932 |
| 5 | BTA-119080-no-rs       | 0 | 42656382 |
| 5 | BTB-01255930           | 0 | 42680103 |
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| 5 | ARS-BFGL-NGS-78500     | 0 | 42775818 |
| 5 | ARS-BFGL-NGS-73955     | 0 | 42837081 |
| 5 | Hapmap52150-rs29012326 | 0 | 42868612 |
| 5 | BTB-01256193           | 0 | 42889932 |
| 5 | BTA-73464-no-rs        | 0 | 42918584 |
| 5 | Hapmap58370-rs29014396 | 0 | 43003607 |
| 5 | BTB-00226490           | 0 | 43034529 |
| 5 | BTB-00226457           | 0 | 43102083 |
| 5 | BTB-00226439           | 0 | 43125599 |
| 5 | ARS-BFGL-NGS-65121     | 0 | 43209929 |
| 5 | ARS-BFGL-NGS-62008     | 0 | 43253141 |
| 5 | BTB-00226702           | 0 | 43275588 |
| 5 | BTB-01968129           | 0 | 43315469 |
| 5 | BTB-01477513           | 0 | 43365207 |
| 5 | BTB-01477536           | 0 | 43417275 |
| 5 | BTA-96544-no-rs        | 0 | 43448332 |
| 5 | BTB-01477571           | 0 | 43481128 |
| 5 | BTA-96545-no-rs        | 0 | 43513714 |
| 5 | Hapmap42018-BTA-96546  | 0 | 43540910 |
| 5 | ARS-BFGL-NGS-30677     | 0 | 43565856 |
| 5 | BTA-112529-no-rs       | 0 | 43629951 |
| 5 | BTB-00227046           | 0 | 43703975 |
| 5 | BTB-00227037           | 0 | 43736571 |
| 5 | Hapmap51299-BTA-73473  | 0 | 43799282 |
| 5 | Hapmap38177-BTA-73472  | 0 | 43852761 |
| 5 | ARS-BFGL-NGS-38733     | 0 | 43940765 |
| 5 | BTB-00226603           | 0 | 43977904 |
| 5 | BTB-00226565           | 0 | 44009723 |
| 5 | Hapmap26479-BTA-162312 | 0 | 44059505 |
| 5 | Hapmap24837-BTA-143084 | 0 | 44080148 |
| 5 | ARS-USMARC-609         | 0 | 44107145 |
| 5 | ARS-USMARC-610         | 0 | 44129994 |
| 5 | ARS-USMARC-674         | 0 | 44187145 |
| 5 | BTB-00226316           | 0 | 44216453 |



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| 5 | BTB-00226386           | 0 | 44268500 |
| 5 | BTA-27077-no-rs        | 0 | 44395286 |
| 5 | ARS-BFGL-NGS-46958     | 0 | 44552514 |
| 5 | BTB-01752230           | 0 | 44578979 |
| 5 | BTB-00226634           | 0 | 44695924 |
| 5 | ARS-BFGL-NGS-105217    | 0 | 44851029 |
| 5 | ARS-BFGL-NGS-74330     | 0 | 44885503 |
| 5 | ARS-BFGL-NGS-77990     | 0 | 44936099 |
| 5 | Hapmap49848-BTA-106779 | 0 | 45089737 |
| 5 | BTA-106792-no-rs       | 0 | 45109963 |
| 5 | ARS-BFGL-NGS-86348     | 0 | 45134007 |
| 5 | Hapmap41954-BTA-73479  | 0 | 45159766 |
| 5 | ARS-BFGL-NGS-92039     | 0 | 45203164 |
| 5 | Hapmap43728-BTA-94000  | 0 | 45306060 |
| 5 | Hapmap25585-BTA-150007 | 0 | 45420592 |
| 5 | ARS-BFGL-NGS-42961     | 0 | 45525436 |
| 5 | ARS-BFGL-NGS-57104     | 0 | 45580386 |
| 5 | ARS-USMARC-614         | 0 | 45722126 |
| 5 | ARS-USMARC-636         | 0 | 45774499 |
| 5 | ARS-USMARC-652         | 0 | 45807839 |
| 5 | ARS-USMARC-657         | 0 | 45834943 |
| 5 | ARS-BFGL-NGS-32710     | 0 | 45891564 |
| 5 | Hapmap38983-BTA-73489  | 0 | 45926002 |
| 5 | ARS-BFGL-NGS-43575     | 0 | 45971062 |
| 5 | Hapmap39118-BTA-73484  | 0 | 46090794 |
| 5 | ARS-BFGL-NGS-22009     | 0 | 46279541 |
| 5 | Hapmap24085-BTA-143102 | 0 | 46364432 |
| 5 | ARS-BFGL-NGS-98210     | 0 | 46454015 |
| 5 | ARS-BFGL-NGS-114616    | 0 | 46497410 |
| 5 | ARS-BFGL-NGS-76882     | 0 | 46526409 |
| 5 | Hapmap50523-BTA-98407  | 0 | 46741275 |
| 5 | ARS-BFGL-NGS-49813     | 0 | 46819790 |
| 5 | ARS-BFGL-NGS-73392     | 0 | 46895290 |
| 5 | ARS-BFGL-NGS-116781    | 0 | 46944182 |
| 5 | BTA-98399-no-rs        | 0 | 46968644 |
| 5 | Hapmap50837-BTA-98392  | 0 | 46995137 |
| 5 | Hapmap58456-rs29022391 | 0 | 47101818 |
| 5 | BTA-98387-no-rs        | 0 | 47141525 |
| 5 | ARS-BFGL-NGS-10812     | 0 | 47211302 |
| 5 | ARS-BFGL-NGS-31328     | 0 | 47446050 |
| 5 | ARS-BFGL-NGS-58394     | 0 | 47539203 |
| 5 | ARS-BFGL-NGS-52174     | 0 | 47752157 |
| 5 | ARS-BFGL-NGS-37989     | 0 | 47906844 |
| 5 | BTA-11044-rs29016809   | 0 | 48080259 |
| 5 | BTA-73523-no-rs        | 0 | 48131956 |
| 5 | Hapmap42655-BTA-73526  | 0 | 48157147 |
| 5 | ARS-BFGL-NGS-113888    | 0 | 48315330 |
| 5 | Hapmap41074-BTA-73520  | 0 | 48351526 |
| 5 | ARS-BFGL-NGS-40753     | 0 | 48460111 |
| 5 | ARS-BFGL-NGS-26724     | 0 | 48514266 |
| 5 | ARS-BFGL-NGS-37845     | 0 | 48633731 |
| 5 | BTA-73516-no-rs        | 0 | 48752237 |
| 5 | Hapmap51626-BTA-73514  | 0 | 48834486 |
| 5 | ARS-BFGL-NGS-23564     | 0 | 48964228 |

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| 5 | Hapmap31863-BTA-27454            | 0        | 48993294 |          |
| 5 | Hapmap41813-BTA-27442            | 0        | 49044380 |          |
| 5 | BTA-27449-no-rs                  | 0        | 49103647 |          |
| 5 | ARS-BFGL-NGS-106186              | 0        | 49154699 |          |
| 5 | ARS-BFGL-NGS-17506               | 0        | 49264012 |          |
| 5 | ARS-BFGL-NGS-69333               | 0        | 49350626 |          |
| 5 | Hapmap26495-BTA-27453            | 0        | 49399070 |          |
| 5 | Hapmap23955-BTA-163276           | 0        | 49485954 |          |
| 5 | Hapmap55277-rs29021741           | 0        | 49553247 |          |
| 5 | ARS-BFGL-NGS-42510               | 0        | 49576905 |          |
| 5 | ARS-BFGL-NGS-43694               | 0        | 49650207 |          |
| 5 | BTA-27472-no-rs                  | 0        | 49688460 |          |
| 5 | ARS-BFGL-NGS-58429               | 0        | 49727902 |          |
| 5 | ARS-BFGL-NGS-34352               | 0        | 49842685 |          |
| 5 | ARS-BFGL-NGS-116292              | 0        | 49977047 |          |
| 5 | BTA-95484-no-rs                  | 0        | 49999826 |          |
| 5 | ARS-BFGL-NGS-112937              | 0        | 50079810 |          |
| 5 | ARS-BFGL-NGS-89539               | 0        | 50175236 |          |
| 5 | BTA-27444-no-rs                  | 0        | 50229041 |          |
| 5 | Hapmap39014-BTA-27446            | 0        | 50255359 |          |
| 5 | ARS-BFGL-NGS-20825               | 0        | 50335416 |          |
| 5 | Hapmap26745-BTA-157111           | 0        | 50382265 |          |
| 5 | ARS-BFGL-NGS-101569              | 0        | 50456512 |          |
| 5 | BTA-89331-no-rs                  | 0        | 50479815 |          |
| 5 | BTA-17628-no-rs                  | 0        | 50688501 |          |
| 5 | Hapmap44526-BTA-17619            | 0        | 50731517 |          |
| 5 | Hapmap28821-BTA-159936           | 0        | 50806660 |          |
| 5 | ARS-BFGL-NGS-92172               | 0        | 50843762 |          |
| 5 | Hapmap29845-BTA-152324           | 0        | 50870187 |          |
| 5 | Hapmap27137-BTA-100569           | 0        | 50918096 |          |
| 5 | ARS-BFGL-NGS-114918              | 0        | 51029985 |          |
| 5 | ARS-BFGL-NGS-33745               | 0        | 51064864 |          |
| 5 | ARS-BFGL-NGS-80084               | 0        | 51113065 |          |
| 5 | ARS-BFGL-NGS-96600               | 0        | 51141012 |          |
| 5 | ARS-BFGL-NGS-111500              | 0        | 51182567 |          |
| 5 | Hapmap42656-BTA-73551            | 0        | 51213449 |          |
| 5 | BTA-73549-no-rs                  | 0        | 51252309 |          |
| 5 | ARS-BFGL-NGS-111906              | 0        | 51276764 |          |
| 5 | Hapmap34504-BES10_Contig662_1293 | 0        |          | 51392175 |
| 5 | Hapmap49938-BTA-26588            | 0        | 51569462 |          |
| 5 | Hapmap50633-BTA-26590            | 0        | 51604559 |          |
| 5 | ARS-BFGL-NGS-111969              | 0        | 51662116 |          |
| 5 | Hapmap30892-BTA-162988           | 0        | 51700241 |          |
| 5 | ARS-BFGL-NGS-119432              | 0        | 51732343 |          |
| 5 | ARS-BFGL-NGS-56648               | 0        | 51762857 |          |
| 5 | Hapmap42734-BTA-93390            | 0        | 51787600 |          |
| 5 | Hapmap43924-BTA-73528            | 0        | 51860369 |          |
| 5 | Hapmap35518-SCAFFOLD310378_3418  | 0        |          | 51901594 |
| 5 | ARS-BFGL-NGS-116994              | 0        | 51967497 |          |
| 5 | ARS-BFGL-NGS-52586               | 0        | 52249541 |          |
| 5 | Hapmap39507-BTA-73544            | 0        | 52300318 |          |
| 5 | Hapmap43667-BTA-73533            | 0        | 52600701 |          |
| 5 | ARS-BFGL-NGS-87410               | 53263967 |          |          |
| 5 | ARS-BFGL-NGS-20950               | 0        | 53514921 |          |

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| 5 | BTA-99758-no-rs                | 0 | 53576870 |          |
| 5 | ARS-BFGL-NGS-114150            | 0 | 53610334 |          |
| 5 | Hapmap51300-BTA-73606          | 0 | 53668065 |          |
| 5 | BTA-85538-no-rs                | 0 | 53704130 |          |
| 5 | Hapmap26971-BTA-147163         | 0 | 53734114 |          |
| 5 | Hapmap48266-BTA-25355          | 0 | 53927959 |          |
| 5 | Hapmap43887-BTA-58386          | 0 | 54045462 |          |
| 5 | Hapmap48395-BTA-58382          | 0 | 54120342 |          |
| 5 | BTA-58378-no-rs                | 0 | 54171859 |          |
| 5 | Hapmap57581-rs29014628         | 0 | 54209940 |          |
| 5 | ARS-BFGL-NGS-55886             | 0 | 54231399 |          |
| 5 | Hapmap41994-BTA-86487          | 0 | 54310578 |          |
| 5 | ARS-BFGL-NGS-103359            | 0 | 54333458 |          |
| 5 | Hapmap60074-rs29020121         | 0 | 54369185 |          |
| 5 | Hapmap42984-BTA-58358          | 0 | 54449817 |          |
| 5 | ARS-BFGL-NGS-16937             | 0 | 54477274 |          |
| 5 | ARS-BFGL-NGS-30772             | 0 | 54613068 |          |
| 5 | Hapmap32781-BTA-123131         | 0 | 54651297 |          |
| 5 | ARS-BFGL-NGS-67203             | 0 | 54711045 |          |
| 5 | ARS-BFGL-NGS-70030             |   | 54745039 |          |
| 5 | Hapmap57248-rs29018609         | 0 | 54933394 |          |
| 5 | ARS-BFGL-NGS-39210             |   | 54964499 |          |
| 5 | Hapmap48560-BTA-101652         | 0 | 55015181 |          |
| 5 | Hapmap38648-BTA-101665         | 0 | 55083679 |          |
| 5 | BTA-88188-no-rs                | 0 | 55193544 |          |
| 5 | BTA-54940-no-rs                | 0 | 55263796 |          |
| 5 | BTA-54938-no-rs                | 0 | 55314257 |          |
| 5 | Hapmap41576-BTA-54925          | 0 | 55378288 |          |
| 5 | ARS-BFGL-NGS-92026             | 0 | 55407180 |          |
| 5 | Hapmap38165-BTA-54923          | 0 | 55510650 |          |
| 5 | ARS-BFGL-NGS-115403            | 0 | 55590501 |          |
| 5 | ARS-BFGL-NGS-81838             | 0 | 55616571 |          |
| 5 | Hapmap60308-rs29026607         | 0 | 55652161 |          |
| 5 | Hapmap26409-BTA-143127         | 0 | 55803789 |          |
| 5 | ARS-BFGL-NGS-14970             | 0 | 55865567 |          |
| 5 | BTA-73609-no-rs                | 0 | 55945273 |          |
| 5 | ARS-BFGL-NGS-84483             | 0 | 55967255 |          |
| 5 | ARS-BFGL-NGS-109796            | 0 | 55989100 |          |
| 5 | ARS-BFGL-NGS-39709             | 0 | 56213959 |          |
| 5 | BTA-73613-no-rs                | 0 | 56237069 |          |
| 5 | BTA-73617-no-rs                | 0 | 56375185 |          |
| 5 | Hapmap44616-BTA-73618          | 0 | 56410718 |          |
| 5 | ARS-BFGL-NGS-12528             | 0 | 56515069 |          |
| 5 | ARS-BFGL-NGS-47630             |   | 56585423 |          |
| 5 | ARS-BFGL-NGS-104746            | 0 | 56618321 |          |
| 5 | Hapmap30258-BTA-143119         | 0 | 56661587 |          |
| 5 | ARS-BFGL-NGS-14781             | 0 | 56766165 |          |
| 5 | ARS-BFGL-NGS-108437            | 0 | 57008880 |          |
| 5 | Hapmap34062-BES2_Contig371_690 | 0 |          | 57051002 |
| 5 | BTA-73563-no-rs                | 0 | 57087530 |          |
| 5 | Hapmap47090-BTA-73564          | 0 | 57165320 |          |
| 5 | BTA-122999-no-rs               | 0 | 57196542 |          |
| 5 | ARS-BFGL-NGS-21434             | 0 | 57305230 |          |
| 5 | ARS-BFGL-NGS-100634            | 0 | 57335801 |          |

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| 5 | UA-IFASA-6196                   | 0 | 57383719 |          |
| 5 | Hapmap33935-BES11_Contig132_791 | 0 |          | 57404217 |
| 5 | Hapmap46721-BTA-73566           | 0 | 57424855 |          |
| 5 | Hapmap34521-BES10_Contig695_990 | 0 |          | 57470387 |
| 5 | Hapmap34864-BES11_Contig325_836 | 0 |          | 57557646 |
| 5 | ARS-BFGL-NGS-44271              | 0 | 57606624 |          |
| 5 | Hapmap60668-rs29018280          | 0 | 57681031 |          |
| 5 | Hapmap26410-BTA-143139          | 0 | 57780232 |          |
| 5 | ARS-BFGL-NGS-12487              | 0 | 57953405 |          |
| 5 | ARS-BFGL-NGS-103394             | 0 | 57977594 |          |
| 5 | Hapmap57440-rs29017368          | 0 | 58003271 |          |
| 5 | Hapmap27035-BTA-162841          | 0 | 58282365 |          |
| 5 | ARS-BFGL-NGS-56672              | 0 | 58583012 |          |
| 5 | ARS-BFGL-NGS-35956              | 0 | 58638702 |          |
| 5 | Hapmap38085-BTA-87616           | 0 | 58676713 |          |
| 5 | Hapmap26488-BTA-164056          | 0 | 59598727 |          |
| 5 | Hapmap40158-BTA-104729          | 0 | 59665562 |          |
| 5 | ARS-BFGL-NGS-44413              | 0 | 59840330 |          |
| 5 | ARS-BFGL-NGS-54880              | 0 | 60192709 |          |
| 5 | Hapmap27767-BTA-154179          | 0 | 60263049 |          |
| 5 | BTA-106033-no-rs                | 0 | 60293911 |          |
| 5 | Hapmap53993-rs29024740          | 0 | 60373086 |          |
| 5 | ARS-BFGL-NGS-55084              | 0 | 60513092 |          |
| 5 | ARS-BFGL-NGS-55040              |   | 60556520 |          |
| 5 | ARS-BFGL-NGS-77410              |   | 60583869 |          |
| 5 | ARS-BFGL-NGS-24154              | 0 | 60604166 |          |
| 5 | ARS-BFGL-NGS-110018             | 0 | 60642347 |          |
| 5 | Hapmap60306-rs29023088          | 0 | 60665676 |          |
| 5 | ARS-BFGL-NGS-35987              | 0 | 60711494 |          |
| 5 | ARS-BFGL-NGS-105635             | 0 | 60853160 |          |
| 5 | ARS-BFGL-NGS-31460              |   | 60886560 |          |
| 5 | BTA-73685-no-rs                 | 0 | 60929878 |          |
| 5 | Hapmap33053-BTA-155011          | 0 | 60985883 |          |
| 5 | ARS-BFGL-NGS-27070              |   | 61040367 |          |
| 5 | Hapmap59591-rs29018854          | 0 | 61096824 |          |
| 5 | Hapmap48872-BTA-73734           | 0 | 61133643 |          |
| 5 | ARS-BFGL-NGS-76136              | 0 | 61160278 |          |
| 5 | BTA-73733-no-rs                 | 0 | 61183506 |          |
| 5 | UA-IFASA-2202                   | 0 | 61232643 |          |
| 5 | ARS-BFGL-NGS-104182             | 0 | 61286713 |          |
| 5 | ARS-BFGL-NGS-44773              | 0 | 61325606 |          |
| 5 | ARS-BFGL-NGS-30685              | 0 | 61363211 |          |
| 5 | Hapmap39777-BTA-73723           | 0 | 61400176 |          |
| 5 | ARS-BFGL-NGS-105299             | 0 | 61517987 |          |
| 5 | Hapmap48066-BTA-73690           | 0 | 61561987 |          |
| 5 | Hapmap38984-BTA-73694           | 0 | 61598840 |          |
| 5 | ARS-BFGL-NGS-11981              | 0 | 61626556 |          |
| 5 | Hapmap43344-BTA-73719           | 0 | 61728506 |          |
| 5 | BTA-73718-no-rs                 | 0 | 61790994 |          |
| 5 | ARS-BFGL-NGS-70200              |   | 61861737 |          |
| 5 | ARS-BFGL-NGS-23104              | 0 | 61959204 |          |
| 5 | BTA-101909-no-rs                | 0 | 61990458 |          |
| 5 | BTA-73667-no-rs                 | 0 | 62049737 |          |
| 5 | BTA-73669-no-rs                 | 0 | 62180846 |          |

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| 5 | ARS-BFGL-NGS-115187                   | 0        | 62248841 |  |  |
| 5 | Hapmap49730-BTA-73676                 | 0        | 62276336 |  |  |
| 5 | BTA-73677-no-rs                       | 0        | 62360769 |  |  |
| 5 | BTA-97422-no-rs                       | 0        | 62394447 |  |  |
| 5 | Hapmap54087-rs29009717                | 0        | 62435307 |  |  |
| 5 | ARS-BFGL-NGS-100699                   | 0        | 62469899 |  |  |
| 5 | Hapmap24838-BTA-143176                | 0        | 62493151 |  |  |
| 5 | ARS-BFGL-NGS-72638                    | 0        | 62633912 |  |  |
| 5 | ARS-BFGL-NGS-16004                    | 0        | 62687768 |  |  |
| 5 | ARS-BFGL-NGS-99269                    | 0        | 62832681 |  |  |
| 5 | ARS-BFGL-NGS-72491                    | 0        | 62882624 |  |  |
| 5 | ARS-BFGL-NGS-20969                    | 0        | 62920850 |  |  |
| 5 | ARS-BFGL-NGS-57382                    | 0        | 63013343 |  |  |
| 5 | ARS-BFGL-NGS-113203                   | 0        | 63167316 |  |  |
| 5 | ARS-BFGL-NGS-98279                    | 0        | 63226065 |  |  |
| 5 | Hapmap52242-rs29012227                | 0        | 63273238 |  |  |
| 5 | ARS-USMARC-Parent-DQ647189-rs29012226 | 0        | 63273386 |  |  |
| 5 | Hapmap27761-BTA-151316                | 0        | 63452696 |  |  |
| 5 | ARS-BFGL-NGS-115708                   | 0        | 63501248 |  |  |
| 5 | ARS-BFGL-NGS-44991                    | 0        | 63527807 |  |  |
| 5 | ARS-BFGL-NGS-114987                   | 0        | 63555403 |  |  |
| 5 | ARS-BFGL-NGS-21330                    | 63604786 |          |  |  |
| 5 | ARS-BFGL-NGS-79978                    | 0        | 63713695 |  |  |
| 5 | BTA-20508-no-rs                       | 0        | 63812430 |  |  |
| 5 | ARS-BFGL-NGS-71801                    | 0        | 63870367 |  |  |
| 5 | ARS-BFGL-NGS-45045                    | 0        | 63899453 |  |  |
| 5 | Hapmap49515-BTA-18233                 | 0        | 63983082 |  |  |
| 5 | ARS-BFGL-NGS-101136                   | 0        | 64003845 |  |  |
| 5 | ARS-BFGL-NGS-60284                    | 0        | 64125159 |  |  |
| 5 | BTA-73797-no-rs                       | 0        | 64190317 |  |  |
| 5 | Hapmap51479-BTA-66720                 | 0        | 64330943 |  |  |
| 5 | Hapmap55537-rs29016129                | 0        | 64380551 |  |  |
| 5 | Hapmap52663-rs29003804                | 0        | 64503182 |  |  |
| 5 | Hapmap49418-BTA-103327                | 0        | 64565816 |  |  |
| 5 | ARS-BFGL-NGS-119490                   | 0        | 64687608 |  |  |
| 5 | Hapmap60525-rs29019791                | 0        | 64797468 |  |  |
| 5 | ARS-BFGL-NGS-60473                    | 0        | 64933958 |  |  |
| 5 | Hapmap43010-BTA-66698                 | 0        | 64973223 |  |  |
| 5 | Hapmap25652-BTA-73867                 | 0        | 65074617 |  |  |
| 5 | Hapmap27803-BTA-66694                 | 0        | 65095289 |  |  |
| 5 | ARS-BFGL-NGS-101258                   | 0        | 65184723 |  |  |
| 5 | ARS-BFGL-NGS-24122                    | 0        | 65228699 |  |  |
| 5 | Hapmap54116-rs29011749                | 0        | 65261569 |  |  |
| 5 | Hapmap43927-BTA-73874                 | 0        | 65301359 |  |  |
| 5 | ARS-BFGL-NGS-34435                    | 0        | 65365377 |  |  |
| 5 | ARS-BFGL-NGS-15795                    | 0        | 65553318 |  |  |
| 5 | Hapmap47716-BTA-73866                 | 0        | 65597776 |  |  |
| 5 | Hapmap41077-BTA-73865                 | 0        | 65657906 |  |  |
| 5 | Hapmap52265-rs29027362                | 0        | 65693887 |  |  |
| 5 | ARS-BFGL-NGS-20849                    | 0        | 65743920 |  |  |
| 5 | Hapmap50179-BTA-02418                 | 0        | 65777889 |  |  |
| 5 | ARS-BFGL-NGS-21991                    | 0        | 65851825 |  |  |
| 5 | ARS-BFGL-NGS-113480                   | 0        | 65877074 |  |  |
| 5 | ARS-BFGL-NGS-62748                    | 0        | 65922088 |  |  |

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| 5 | ARS-BFGL-NGS-15520             | 0        | 65986618 |  |
| 5 | Hapmap47760-BTA-85576          | 0        | 65998778 |  |
| 5 | BTA-85566-no-rs                | 0        | 66040455 |  |
| 5 | BTA-85562-no-rs                | 0        | 66083568 |  |
| 5 | ARS-BFGL-NGS-15787             | 0        | 66157408 |  |
| 5 | ARS-BFGL-NGS-118135            | 0        | 66386971 |  |
| 5 | ARS-BFGL-NGS-104108            | 0        | 66480185 |  |
| 5 | ARS-BFGL-NGS-62891             | 0        | 66527346 |  |
| 5 | ARS-BFGL-NGS-116459            | 0        | 66577741 |  |
| 5 | ARS-BFGL-NGS-100547            | 0        | 66784879 |  |
| 5 | Hapmap59828-rs29027014         | 0        | 66830677 |  |
| 5 | BTA-73767-no-rs                | 0        | 66869513 |  |
| 5 | Hapmap41724-BTA-101837         | 0        | 66940077 |  |
| 5 | ARS-BFGL-NGS-23025             | 0        | 66976106 |  |
| 5 | BTA-73768-no-rs                | 0        | 67031023 |  |
| 5 | Hapmap40581-BTA-73771          | 0        | 67153683 |  |
| 5 | ARS-BFGL-NGS-54507             | 0        | 67344893 |  |
| 5 | ARS-BFGL-NGS-108589            | 0        | 67408071 |  |
| 5 | Hapmap45512-BTA-73822          | 0        | 67498131 |  |
| 5 | ARS-BFGL-NGS-28026             | 0        | 67586221 |  |
| 5 | ARS-BFGL-NGS-53578             | 0        | 67780167 |  |
| 5 | ARS-BFGL-NGS-82410             | 67824220 |          |  |
| 5 | ARS-BFGL-NGS-32909             | 0        | 67846632 |  |
| 5 | Hapmap54136-rs29019962         | 0        | 67902804 |  |
| 5 | Hapmap50493-BTA-86473          | 0        | 67948150 |  |
| 5 | Hapmap31838-BTA-161607         | 0        | 67992565 |  |
| 5 | Hapmap41155-BTA-112870         | 0        | 68039989 |  |
| 5 | BTA-46975-no-rs                | 0        | 68220538 |  |
| 5 | ARS-BFGL-NGS-71447             | 0        | 68265188 |  |
| 5 | Hapmap49622-BTA-46973          | 0        | 68294607 |  |
| 5 | ARS-BFGL-NGS-119231            | 0        | 68335096 |  |
| 5 | ARS-BFGL-NGS-39060             | 68363301 |          |  |
| 5 | ARS-BFGL-NGS-24738             | 0        | 68386932 |  |
| 5 | ARS-BFGL-NGS-61694             | 0        | 68433351 |  |
| 5 | ARS-BFGL-NGS-25684             | 0        | 68461765 |  |
| 5 | ARS-BFGL-NGS-111469            | 0        | 68525492 |  |
| 5 | Hapmap41274-BTA-46964          | 0        | 68548817 |  |
| 5 | ARS-BFGL-NGS-118628            | 0        | 68586846 |  |
| 5 | Hapmap50366-BTA-46960          | 0        | 68610818 |  |
| 5 | ARS-BFGL-NGS-33119             | 0        | 68632534 |  |
| 5 | Hapmap27171-BTA-143541         | 0        | 68821433 |  |
| 5 | Hapmap54640-rs29022240         | 0        | 68880383 |  |
| 5 | Hapmap27802-BTA-49707          | 0        | 68946279 |  |
| 5 | Hapmap26947-BTA-133787         | 0        | 69205786 |  |
| 5 | Hapmap41008-BTA-49717          | 0        | 69240672 |  |
| 5 | ARS-BFGL-NGS-26837             | 0        | 69276358 |  |
| 5 | Hapmap53566-rs29013289         | 0        | 69351812 |  |
| 5 | Hapmap52961-rs29016208         | 0        | 69453205 |  |
| 5 | ARS-BFGL-NGS-71718             | 0        | 69483211 |  |
| 5 | Hapmap34577-BES3_Contig412_886 | 0        | 69512930 |  |
| 5 | Hapmap57626-rs29027086         | 0        | 69548960 |  |
| 5 | ARS-BFGL-NGS-81622             | 0        | 69571158 |  |
| 5 | BTA-49720-no-rs                | 0        | 69658153 |  |
| 5 | Hapmap40437-BTA-49726          | 0        | 69686900 |  |

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| 5 | ARS-BFGL-NGS-31540     | 0        | 69719605 |
| 5 | ARS-BFGL-NGS-62645     | 0        | 69821407 |
| 5 | ARS-BFGL-NGS-92816     | 0        | 69886816 |
| 5 | ARS-BFGL-NGS-36257     | 0        | 69935577 |
| 5 | ARS-BFGL-NGS-100875    | 0        | 69956249 |
| 5 | ARS-BFGL-NGS-54671     | 0        | 69978115 |
| 5 | Hapmap32574-BTA-143217 | 0        | 70020344 |
| 5 | Hapmap51487-BTA-73847  | 0        | 70075232 |
| 5 | BTA-73842-no-rs        | 0        | 70175036 |
| 5 | ARS-BFGL-NGS-106520    | 0        | 70199843 |
| 5 | Hapmap52789-rs29018750 | 0        | 70258225 |
| 5 | ARS-BFGL-NGS-41363     | 0        | 70305631 |
| 5 | Hapmap28985-BTA-73836  | 0        | 70338965 |
| 5 | ARS-BFGL-NGS-25193     | 0        | 70445471 |
| 5 | BTA-73832-no-rs        | 0        | 70471512 |
| 5 | Hapmap23032-BTA-73828  | 0        | 70762660 |
| 5 | ARS-BFGL-NGS-43470     | 0        | 70867535 |
| 5 | ARS-BFGL-NGS-35060     | 70897603 |          |
| 5 | BTA-109744-no-rs       | 0        | 70969212 |
| 5 | ARS-BFGL-NGS-19442     | 0        | 70997483 |
| 5 | ARS-BFGL-NGS-12711     | 0        | 71045870 |
| 5 | ARS-BFGL-NGS-82844     | 0        | 71097173 |
| 5 | BTA-109739-no-rs       | 0        | 71120972 |
| 5 | ARS-BFGL-NGS-111066    | 0        | 71144630 |
| 5 | ARS-BFGL-NGS-62562     | 0        | 71176757 |
| 5 | ARS-BFGL-NGS-80634     | 0        | 71272297 |
| 5 | ARS-BFGL-NGS-76692     | 0        | 71475195 |
| 5 | ARS-BFGL-NGS-113273    | 0        | 71499453 |
| 5 | BTA-73902-no-rs        | 0        | 71526049 |
| 5 | ARS-BFGL-NGS-25941     | 0        | 71587478 |
| 5 | ARS-BFGL-NGS-58020     | 0        | 71726467 |
| 5 | ARS-BFGL-NGS-106229    | 0        | 71749375 |
| 5 | ARS-BFGL-NGS-12807     | 0        | 71778071 |
| 5 | Hapmap57762-ss46526764 | 0        | 71810896 |
| 5 | ARS-BFGL-NGS-111008    | 0        | 71884473 |
| 5 | BTA-73923-no-rs        | 0        | 71954328 |
| 5 | Hapmap40191-BTA-73919  | 0        | 71978791 |
| 5 | BTA-73913-no-rs        | 0        | 72023321 |
| 5 | BTA-73912-no-rs        | 0        | 72044945 |
| 5 | ARS-BFGL-NGS-25351     | 0        | 72082602 |
| 5 | ARS-BFGL-NGS-24506     | 0        | 72142911 |
| 5 | ARS-BFGL-NGS-97470     | 72185576 |          |
| 5 | ARS-BFGL-NGS-70198     | 0        | 72243381 |
| 5 | ARS-BFGL-NGS-111053    | 0        | 72264603 |
| 5 | ARS-BFGL-NGS-38863     | 0        | 72300259 |
| 5 | Hapmap39452-BTA-94180  | 0        | 72345409 |
| 5 | ARS-BFGL-NGS-18105     | 0        | 72390588 |
| 5 | ARS-BFGL-NGS-18273     | 0        | 72414582 |
| 5 | BTB-01449199           | 0        | 72443833 |
| 5 | ARS-BFGL-NGS-113861    | 0        | 72464363 |
| 5 | ARS-BFGL-NGS-113321    | 0        | 72592835 |
| 5 | ARS-BFGL-NGS-79121     | 0        | 72618051 |
| 5 | BTB-00229458           | 0        | 72669617 |
| 5 | ARS-BFGL-NGS-88709     | 0        | 72691446 |

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| 5 | ARS-BFGL-NGS-38275     | 0        | 72771241 |
| 5 | ARS-BFGL-NGS-98654     | 0        | 72818557 |
| 5 | BTA-121690-no-rs       | 0        | 72938296 |
| 5 | ARS-BFGL-NGS-26139     | 0        | 72982750 |
| 5 | Hapmap26680-BTA-143238 | 0        | 73075516 |
| 5 | ARS-BFGL-NGS-25929     | 0        | 73142338 |
| 5 | ARS-BFGL-NGS-90377     | 0        | 73187595 |
| 5 | ARS-BFGL-NGS-119129    | 0        | 73214162 |
| 5 | ARS-BFGL-NGS-29546     | 0        | 73258507 |
| 5 | ARS-BFGL-NGS-101650    | 0        | 73334655 |
| 5 | BTA-119247-no-rs       | 0        | 73419142 |
| 5 | UA-IFASA-2027          | 0        | 73446207 |
| 5 | ARS-BFGL-NGS-29114     | 0        | 73555022 |
| 5 | ARS-BFGL-NGS-119766    | 0        | 73632210 |
| 5 | BTA-74009-no-rs        | 0        | 73664348 |
| 5 | ARS-BFGL-NGS-11770     | 0        | 73713772 |
| 5 | ARS-BFGL-NGS-87789     | 0        | 73799375 |
| 5 | ARS-BFGL-NGS-42349     | 0        | 73841338 |
| 5 | Hapmap32575-BTA-143242 | 0        | 73871386 |
| 5 | Hapmap39288-BTA-73961  | 0        | 73898858 |
| 5 | ARS-BFGL-NGS-100454    | 0        | 73939508 |
| 5 | ARS-BFGL-NGS-105011    | 0        | 73976636 |
| 5 | Hapmap46320-BTA-74099  | 0        | 74010148 |
| 5 | ARS-BFGL-NGS-103941    | 0        | 74062827 |
| 5 | ARS-BFGL-NGS-113371    | 0        | 74087300 |
| 5 | ARS-BFGL-NGS-44429     | 0        | 74112235 |
| 5 | ARS-BFGL-NGS-48741     | 0        | 74170131 |
| 5 | ARS-BFGL-NGS-101748    | 0        | 74191590 |
| 5 | ARS-BFGL-NGS-91626     | 0        | 74221369 |
| 5 | ARS-BFGL-NGS-42948     | 0        | 74275630 |
| 5 | ARS-BFGL-NGS-118185    | 0        | 74348477 |
| 5 | BTB-00230297           | 0        | 74382150 |
| 5 | BTB-00230300           | 0        | 74406599 |
| 5 | BTA-73985-no-rs        | 0        | 74435895 |
| 5 | ARS-BFGL-NGS-103091    | 0        | 74518588 |
| 5 | ARS-BFGL-NGS-42926     | 0        | 74551645 |
| 5 | ARS-BFGL-NGS-68881     | 0        | 74593114 |
| 5 | ARS-BFGL-NGS-25373     | 0        | 74764992 |
| 5 | ARS-BFGL-NGS-114209    | 0        | 74808483 |
| 5 | ARS-BFGL-NGS-107956    | 0        | 74886585 |
| 5 | Hapmap40583-BTA-74092  | 0        | 74921819 |
| 5 | ARS-BFGL-NGS-118891    | 0        | 75114559 |
| 5 | ARS-BFGL-NGS-10699     | 0        | 75137820 |
| 5 | ARS-BFGL-NGS-21953     | 0        | 75164239 |
| 5 | Hapmap46673-BTA-74066  | 0        | 75205122 |
| 5 | ARS-BFGL-NGS-32644     | 0        | 75227241 |
| 5 | ARS-BFGL-NGS-103088    | 0        | 75265831 |
| 5 | ARS-BFGL-NGS-60502     | 0        | 75319473 |
| 5 | ARS-BFGL-NGS-44080     | 0        | 75361846 |
| 5 | Hapmap50084-BTA-74042  | 0        | 75417666 |
| 5 | Hapmap40676-BTA-121691 | 0        | 75461246 |
| 5 | ARS-BFGL-NGS-80785     | 0        | 75518275 |
| 5 | ARS-BFGL-NGS-48750     | 75548821 |          |
| 5 | ARS-BFGL-NGS-117321    | 0        | 75599879 |



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| 5 | ARS-BFGL-NGS-112184    | 0 | 75627333 |
| 5 | Hapmap48524-BTA-92140  | 0 | 75684520 |
| 5 | ARS-BFGL-NGS-21133     | 0 | 75722589 |
| 5 | BTA-74036-no-rs        | 0 | 75794378 |
| 5 | ARS-BFGL-NGS-111568    | 0 | 75933509 |
| 5 | ARS-BFGL-NGS-102150    | 0 | 75987477 |
| 5 | BTA-74076-no-rs        | 0 | 76019053 |
| 5 | ARS-BFGL-NGS-73201     | 0 | 76049319 |
| 5 | ARS-BFGL-NGS-74886     | 0 | 76091862 |
| 5 | ARS-BFGL-NGS-116435    | 0 | 76157488 |
| 5 | ARS-BFGL-NGS-11770     | 0 | 76177675 |
| 5 | ARS-BFGL-NGS-11281     | 0 | 76200813 |
| 5 | ARS-BFGL-NGS-110374    | 0 | 76227370 |
| 5 | ARS-BFGL-NGS-101822    | 0 | 76286670 |
| 5 | ARS-BFGL-NGS-80555     | 0 | 76317361 |
| 5 | Hapmap46399-BTA-109621 | 0 | 76339294 |
| 5 | ARS-BFGL-NGS-77016     | 0 | 76385743 |
| 5 | BTB-01837085           | 0 | 76432283 |
| 5 | ARS-BFGL-NGS-17195     | 0 | 76457030 |
| 5 | BTB-01830189           | 0 | 76479355 |
| 5 | Hapmap24162-BTA-160429 | 0 | 76501658 |
| 5 | BTB-01700719           | 0 | 76533399 |
| 5 | BTB-01947877           | 0 | 76599679 |
| 5 | BTA-86447-no-rs        | 0 | 76634186 |
| 5 | BTB-01456615           | 0 | 76659850 |
| 5 | BTB-01456593           | 0 | 76691828 |
| 5 | Hapmap54557-rs29012924 | 0 | 76724602 |
| 5 | BTB-01738032           | 0 | 76755076 |
| 5 | BTB-01456504           | 0 | 76778020 |
| 5 | Hapmap50896-BTA-122135 | 0 | 76811165 |
| 5 | Hapmap38822-BTA-25276  | 0 | 76845196 |
| 5 | BTB-01908691           | 0 | 76870778 |
| 5 | BTB-01445615           | 0 | 76891368 |
| 5 | BTB-01445567           | 0 | 76919992 |
| 5 | BTB-01930671           | 0 | 76956329 |
| 5 | Hapmap57426-rs29015767 | 0 | 76991652 |
| 5 | BTB-01445745           | 0 | 77030659 |
| 5 | BTB-01445778           | 0 | 77056825 |
| 5 | BTB-00231742           | 0 | 77095345 |
| 5 | Hapmap43928-BTA-74110  | 0 | 77116302 |
| 5 | BTB-00232106           | 0 | 77177828 |
| 5 | Hapmap25561-BTA-143277 | 0 | 77287989 |
| 5 | BTB-00232546           | 0 | 77311671 |
| 5 | BTA-32792-no-rs        | 0 | 77371444 |
| 5 | Hapmap38950-BTA-32795  | 0 | 77413005 |
| 5 | BTB-00525741           | 0 | 77475950 |
| 5 | Hapmap46723-BTA-74145  | 0 | 77503023 |
| 5 | ARS-BFGL-NGS-101198    | 0 | 77563893 |
| 5 | BTB-00232612           | 0 | 77679706 |
| 5 | BTB-00232615           | 0 | 77702287 |
| 5 | BTA-74148-no-rs        | 0 | 77733009 |
| 5 | ARS-BFGL-NGS-106744    | 0 | 77780682 |
| 5 | BTB-00232627           | 0 | 77825478 |
| 5 | Hapmap27904-BTA-74152  | 0 | 77873830 |

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| 5 | ARS-BFGL-NGS-118366             | 0 | 77988054 |          |
| 5 | BTA-74159-no-rs                 | 0 | 78115795 |          |
| 5 | ARS-BFGL-NGS-99356              | 0 | 78158838 |          |
| 5 | Hapmap41630-BTA-74182           | 0 | 78206091 |          |
| 5 | BTA-74185-no-rs                 | 0 | 78485764 |          |
| 5 | ARS-BFGL-NGS-99969              | 0 | 78566150 |          |
| 5 | ARS-BFGL-NGS-18089              | 0 | 78711065 |          |
| 5 | ARS-BFGL-NGS-11787              | 0 | 78714231 |          |
| 5 | Hapmap33871-BES7_Contig480_1179 | 0 |          | 78776781 |
| 5 | Hapmap57435-rs29016994          | 0 | 78886080 |          |
| 5 | ARS-BFGL-NGS-91550              | 0 | 78909424 |          |
| 5 | ARS-BFGL-NGS-77510              |   | 78936196 |          |
| 5 | BTA-74084-no-rs                 | 0 | 78956945 |          |
| 5 | ARS-BFGL-NGS-111766             | 0 | 78992431 |          |
| 5 | BTA-74078-no-rs                 | 0 | 79034452 |          |
| 5 | BTA-123420-no-rs                | 0 | 79134555 |          |
| 5 | BTA-15927-no-rs                 | 0 | 79165498 |          |
| 5 | ARS-BFGL-NGS-83318              | 0 | 79277155 |          |
| 5 | ARS-BFGL-NGS-21874              | 0 | 79314115 |          |
| 5 | ARS-BFGL-NGS-27002              | 0 | 79357868 |          |
| 5 | ARS-BFGL-NGS-65287              | 0 | 79436094 |          |
| 5 | Hapmap42812-BTA-112891          | 0 | 79459120 |          |
| 5 | Hapmap39311-BTA-120041          | 0 | 79516307 |          |
| 5 | ARS-BFGL-NGS-110145             | 0 | 79545564 |          |
| 5 | ARS-BFGL-NGS-25670              |   | 79585561 |          |
| 5 | Hapmap48948-BTA-93308           | 0 | 79640097 |          |
| 5 | Hapmap50590-BTA-120045          | 0 | 79695650 |          |
| 5 | Hapmap60039-rs29012617          | 0 | 79722978 |          |
| 5 | BTA-120044-no-rs                | 0 | 79743240 |          |
| 5 | ARS-BFGL-NGS-19985              | 0 | 79770759 |          |
| 5 | ARS-BFGL-NGS-110035             | 0 | 79799455 |          |
| 5 | ARS-BFGL-NGS-104557             | 0 | 79860058 |          |
| 5 | ARS-BFGL-NGS-27436              | 0 | 79921213 |          |
| 5 | Hapmap50458-BTA-74360           | 0 | 80162233 |          |
| 5 | ARS-BFGL-NGS-92011              | 0 | 80194437 |          |
| 5 | BTA-74351-no-rs                 | 0 | 80256799 |          |
| 5 | Hapmap32902-BTA-74350           | 0 | 80277740 |          |
| 5 | ARS-BFGL-NGS-66096              | 0 | 80378776 |          |
| 5 | Hapmap33017-BTA-143301          | 0 | 80424421 |          |
| 5 | ARS-BFGL-NGS-11620              | 0 | 80504904 |          |
| 5 | ARS-BFGL-NGS-70834              | 0 | 80573246 |          |
| 5 | Hapmap45312-BTA-74347           | 0 | 80619649 |          |
| 5 | ARS-BFGL-NGS-37859              | 0 | 80664902 |          |
| 5 | Hapmap39431-BTA-74343           | 0 | 80695234 |          |
| 5 | BTA-74341-no-rs                 | 0 | 80717401 |          |
| 5 | Hapmap44127-BTA-74234           | 0 | 80751783 |          |
| 5 | BTA-74232-no-rs                 | 0 | 80809640 |          |
| 5 | Hapmap34319-BES3_Contig341_801  | 0 |          | 80872690 |
| 5 | Hapmap44403-BTA-74223           | 0 | 80946701 |          |
| 5 | ARS-BFGL-NGS-98512              | 0 | 81007340 |          |
| 5 | Hapmap43345-BTA-74211           | 0 | 81048336 |          |
| 5 | Hapmap60902-rs29025361          | 0 | 81288507 |          |
| 5 | Hapmap52357-rs29023629          | 0 | 81342964 |          |
| 5 | Hapmap42855-BTA-16144           | 0 | 81379017 |          |

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| 5 | Hapmap25632-BTA-23506         | 0        | 81423037 |          |
| 5 | ARS-BFGL-NGS-44344            | 0        | 81520284 |          |
| 5 | Hapmap54968-rs29014852        | 0        | 81554485 |          |
| 5 | Hapmap28489-BTA-123075        | 0        | 81588451 |          |
| 5 | ARS-BFGL-NGS-29557            | 0        | 81612132 |          |
| 5 | Hapmap24405-BTA-159892        | 0        | 81678672 |          |
| 5 | ARS-BFGL-NGS-12222            | 0        | 81828636 |          |
| 5 | Hapmap60532-rs29020408        | 0        | 81880522 |          |
| 5 | Hapmap50271-BTA-17442         | 0        | 81903458 |          |
| 5 | Hapmap32863-BTA-159887        | 0        | 81994880 |          |
| 5 | Hapmap41784-BTA-17439         | 0        | 82036800 |          |
| 5 | ARS-BFGL-NGS-22660            | 0        | 82106921 |          |
| 5 | ARS-BFGL-NGS-85328            | 0        | 82169774 |          |
| 5 | Hapmap43500-BTA-17435         | 0        | 82217101 |          |
| 5 | ARS-BFGL-NGS-32369            | 0        | 82335857 |          |
| 5 | Hapmap56123-rs29018202        | 0        | 82424524 |          |
| 5 | ARS-BFGL-NGS-115597           | 0        | 82445649 |          |
| 5 | ARS-BFGL-NGS-72413            | 0        | 82466920 |          |
| 5 | ARS-BFGL-NGS-33004            | 0        | 82513431 |          |
| 5 | ARS-BFGL-NGS-117881           | 0        | 82631679 |          |
| 5 | Hapmap49859-BTA-109537        | 0        | 82738732 |          |
| 5 | Hapmap32282-BTA-109535        | 0        | 82786530 |          |
| 5 | ARS-BFGL-NGS-67878            | 0        | 82818374 |          |
| 5 | ARS-BFGL-NGS-117278           | 0        | 82853115 |          |
| 5 | Hapmap43491-BTA-122155        | 0        | 82878525 |          |
| 5 | ARS-BFGL-NGS-30361            | 0        | 82905656 |          |
| 5 | Hapmap44167-BTA-95489         | 0        | 82944314 |          |
| 5 | BTA-95491-no-rs               | 0        | 82980387 |          |
| 5 | ARS-BFGL-NGS-92176            | 0        | 83013004 |          |
| 5 | BTA-23154-no-rs               | 0        | 83047635 |          |
| 5 | Hapmap44697-BTA-119062        | 0        | 83099970 |          |
| 5 | ARS-BFGL-NGS-110407           | 0        | 83195714 |          |
| 5 | ARS-BFGL-NGS-98171            | 0        | 83249059 |          |
| 5 | Hapmap24017-BTA-163332        | 0        | 83367898 |          |
| 5 | BTA-27682-no-rs               | 0        | 83402906 |          |
| 5 | Hapmap36127-SCAFFOLD59715_196 | 0        |          | 83445048 |
| 5 | UA-IFASA-7801                 | 0        | 83492863 |          |
| 5 | BTA-74391-no-rs               | 0        | 83547814 |          |
| 5 | UA-IFASA-6601                 | 0        | 83585669 |          |
| 5 | UA-IFASA-6811                 | 0        | 83699791 |          |
| 5 | Hapmap24341-BTA-143319        | 0        | 83712456 |          |
| 5 | Hapmap51303-BTA-74377         | 0        | 83790390 |          |
| 5 | Hapmap40584-BTA-74375         | 0        | 83833575 |          |
| 5 | ARS-BFGL-NGS-46830            | 83926146 |          |          |
| 5 | ARS-BFGL-NGS-16666            | 0        | 84011309 |          |
| 5 | ARS-BFGL-NGS-820              | 0        | 84058638 |          |
| 5 | Hapmap49290-BTA-74411         | 0        | 84086946 |          |
| 5 | ARS-BFGL-NGS-73495            | 0        | 84191490 |          |
| 5 | ARS-BFGL-NGS-62100            | 84229576 |          |          |
| 5 | Hapmap39359-BTA-89420         | 0        | 84374008 |          |
| 5 | ARS-BFGL-NGS-103280           | 0        | 84523411 |          |
| 5 | BTA-74480-no-rs               | 0        | 84578337 |          |
| 5 | BTA-74479-no-rs               | 0        | 84613929 |          |
| 5 | Hapmap54538-rs29013879        | 0        | 84702280 |          |

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| 5 | Hapmap39328-BTA-40431           | 0 | 84742302 |          |
| 5 | Hapmap49153-BTA-40430           | 0 | 84744746 |          |
| 5 | BTA-45691-no-rs                 | 0 | 84822082 |          |
| 5 | BTA-45695-no-rs                 | 0 | 84844630 |          |
| 5 | ARS-BFGL-NGS-61587              | 0 | 84941287 |          |
| 5 | Hapmap43976-BTA-95999           | 0 | 84964936 |          |
| 5 | Hapmap23836-BTA-163157          | 0 | 85028612 |          |
| 5 | ARS-BFGL-NGS-17920              | 0 | 85056054 |          |
| 5 | ARS-BFGL-NGS-72008              | 0 | 85160180 |          |
| 5 | ARS-BFGL-NGS-71971              | 0 | 85216331 |          |
| 5 | BTA-74438-no-rs                 | 0 | 85242380 |          |
| 5 | ARS-BFGL-NGS-39308              | 0 | 85288739 |          |
| 5 | ARS-BFGL-NGS-110708             | 0 | 85354353 |          |
| 5 | Hapmap24375-BTA-143350          | 0 | 85418307 |          |
| 5 | Hapmap49291-BTA-74445           | 0 | 85478402 |          |
| 5 | ARS-BFGL-NGS-39913              | 0 | 85535871 |          |
| 5 | Hapmap44404-BTA-74461           | 0 | 85574578 |          |
| 5 | Hapmap48069-BTA-74468           | 0 | 85614972 |          |
| 5 | BTA-74470-no-rs                 | 0 | 85645222 |          |
| 5 | Hapmap39862-BTA-74478           | 0 | 85672503 |          |
| 5 | ARS-BFGL-NGS-20288              | 0 | 85727536 |          |
| 5 | Hapmap24213-BTA-161079          | 0 | 85817422 |          |
| 5 | Hapmap33018-BTA-143352          | 0 | 85837850 |          |
| 5 | BTB-00233539                    | 0 | 85864983 |          |
| 5 | BTB-00233516                    | 0 | 85886632 |          |
| 5 | Hapmap48070-BTA-74497           | 0 | 85933490 |          |
| 5 | BTA-74498-no-rs                 | 0 | 85980094 |          |
| 5 | Hapmap40212-BTA-28744           | 0 | 86105025 |          |
| 5 | BTA-74501-no-rs                 | 0 | 86142655 |          |
| 5 | ARS-BFGL-NGS-115024             | 0 | 86172885 |          |
| 5 | BTA-123014-no-rs                | 0 | 86258545 |          |
| 5 | Hapmap44405-BTA-74506           | 0 | 86333887 |          |
| 5 | BTB-00233916                    | 0 | 86392238 |          |
| 5 | BTA-74507-no-rs                 | 0 | 86464634 |          |
| 5 | ARS-BFGL-NGS-111850             | 0 | 86502735 |          |
| 5 | ARS-BFGL-NGS-54669              | 0 | 86583204 |          |
| 5 | ARS-BFGL-NGS-30476              | 0 | 86630470 |          |
| 5 | BTB-01042205                    | 0 | 86671893 |          |
| 5 | BTA-12098-rs29024062            | 0 | 86713205 |          |
| 5 | ARS-BFGL-NGS-100028             | 0 | 86753605 |          |
| 5 | BTB-01042302                    | 0 | 86781601 |          |
| 5 | Hapmap36729-SCAFFOLD106566_3245 | 0 |          | 86805850 |
| 5 | BTB-01497979                    | 0 | 86881651 |          |
| 5 | Hapmap26433-BTA-151604          | 0 | 86918783 |          |
| 5 | ARS-BFGL-NGS-44567              | 0 | 86944659 |          |
| 5 | BTA-98442-no-rs                 | 0 | 86997963 |          |
| 5 | BTB-01042489                    | 0 | 87023231 |          |
| 5 | BTA-30092-no-rs                 | 0 | 87051322 |          |
| 5 | ARS-BFGL-NGS-73390              | 0 | 87104035 |          |
| 5 | Hapmap48709-BTA-30108           | 0 | 87167295 |          |
| 5 | Hapmap28443-BTA-164160          | 0 | 87187990 |          |
| 5 | BTA-123417-no-rs                | 0 | 87225487 |          |
| 5 | Hapmap59791-rs29012671          | 0 | 87293000 |          |
| 5 | ARS-BFGL-NGS-85748              | 0 | 87389613 |          |

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| 5 | BTB-02020184           | 0 | 87426979 |
| 5 | ARS-BFGL-NGS-11173     | 0 | 87539543 |
| 5 | BTB-00143422           | 0 | 87598690 |
| 5 | Hapmap59202-rs29011704 | 0 | 87843519 |
| 5 | ARS-BFGL-NGS-55067     | 0 | 87867531 |
| 5 | BTB-00232920           | 0 | 87904220 |
| 5 | Hapmap38347-BTA-74361  | 0 | 87926197 |
| 5 | BTB-00232943           | 0 | 87966409 |
| 5 | Hapmap51627-BTA-74367  | 0 | 88015029 |
| 5 | Hapmap41929-BTA-66620  | 0 | 88105584 |
| 5 | BTA-74371-no-rs        | 0 | 88188462 |
| 5 | BTB-01858480           | 0 | 88249394 |
| 5 | BTB-00234784           | 0 | 88311948 |
| 5 | ARS-BFGL-NGS-15506     | 0 | 88334676 |
| 5 | BTB-00234759           | 0 | 88359142 |
| 5 | BTB-00234755           | 0 | 88397699 |
| 5 | BTA-98453-no-rs        | 0 | 88436433 |
| 5 | BTB-00234696           | 0 | 88527947 |
| 5 | Hapmap60250-rs29021751 | 0 | 88555824 |
| 5 | BTB-00234287           | 0 | 88571326 |
| 5 | BTA-74527-no-rs        | 0 | 88593787 |
| 5 | BTB-01602960           | 0 | 88626757 |
| 5 | BTA-107103-no-rs       | 0 | 88659509 |
| 5 | ARS-BFGL-NGS-102831    | 0 | 88747918 |
| 5 | BTB-01278164           | 0 | 88776643 |
| 5 | Hapmap47877-BTA-16771  | 0 | 88807061 |
| 5 | ARS-BFGL-NGS-43980     | 0 | 88878999 |
| 5 | BTB-01278055           | 0 | 88909270 |
| 5 | Hapmap58253-rs29024365 | 0 | 88945532 |
| 5 | Hapmap59389-rs29023212 | 0 | 88978964 |
| 5 | BTB-01278001           | 0 | 89003240 |
| 5 | BTB-01277986           | 0 | 89042286 |
| 5 | ARS-BFGL-NGS-103973    | 0 | 89065689 |
| 5 | ARS-BFGL-NGS-14937     | 0 | 89098980 |
| 5 | BTB-01277849           | 0 | 89141967 |
| 5 | BTB-01277835           | 0 | 89163506 |
| 5 | BTA-10187-rs29015749   | 0 | 89288565 |
| 5 | BTB-01467314           | 0 | 89323759 |
| 5 | BTB-01467496           | 0 | 89349781 |
| 5 | BTB-01790876           | 0 | 89376970 |
| 5 | BTB-01267305           | 0 | 89425557 |
| 5 | Hapmap47861-BTA-120563 | 0 | 89472174 |
| 5 | BTB-01267080           | 0 | 89512928 |
| 5 | BTB-01267098           | 0 | 89545151 |
| 5 | BTB-01267042           | 0 | 89568937 |
| 5 | ARS-BFGL-NGS-111627    | 0 | 89682685 |
| 5 | ARS-BFGL-NGS-45551     | 0 | 89793252 |
| 5 | ARS-BFGL-NGS-35776     | 0 | 89853080 |
| 5 | ARS-BFGL-NGS-31236     | 0 | 89953588 |
| 5 | ARS-BFGL-NGS-32643     | 0 | 90003842 |
| 5 | ARS-BFGL-NGS-60648     | 0 | 90047789 |
| 5 | ARS-BFGL-NGS-113558    | 0 | 90088313 |
| 5 | Hapmap42147-BTA-23954  | 0 | 90185045 |
| 5 | Hapmap49801-BTA-93284  | 0 | 90228217 |

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| 5 | BTA-74541-no-rs                  | 0 | 90255244 |          |
| 5 | Hapmap50772-BTA-74551            | 0 | 90271919 |          |
| 5 | BTA-61857-no-rs                  | 0 | 90322318 |          |
| 5 | Hapmap53828-rs29010421           | 0 | 90346816 |          |
| 5 | Hapmap42271-BTA-61859            | 0 | 90376600 |          |
| 5 | Hapmap50055-BTA-61862            | 0 | 90408687 |          |
| 5 | ARS-BFGL-NGS-58101               | 0 | 90445432 |          |
| 5 | ARS-BFGL-NGS-118221              | 0 | 90684739 |          |
| 5 | BTA-25368-no-rs                  | 0 | 90715554 |          |
| 5 | ARS-BFGL-NGS-111077              | 0 | 90752558 |          |
| 5 | ARS-BFGL-NGS-116711              | 0 | 90806866 |          |
| 5 | BTA-05125-rs29019289             | 0 | 90866134 |          |
| 5 | ARS-BFGL-NGS-365                 | 0 | 90972920 |          |
| 5 | BTA-111859-no-rs                 | 0 | 91044792 |          |
| 5 | Hapmap23365-BTA-156277           | 0 | 91118692 |          |
| 5 | ARS-BFGL-NGS-19390               |   | 91235111 |          |
| 5 | BTA-111865-no-rs                 | 0 | 91262694 |          |
| 5 | Hapmap60862-rs29018508           | 0 | 91320953 |          |
| 5 | Hapmap39103-BTA-111886           | 0 | 91346899 |          |
| 5 | ARS-BFGL-NGS-100808              | 0 | 91408594 |          |
| 5 | ARS-BFGL-NGS-64874               | 0 | 91436307 |          |
| 5 | Hapmap41431-BTA-111895           | 0 | 91471989 |          |
| 5 | BTA-111858-no-rs                 | 0 | 91494429 |          |
| 5 | ARS-BFGL-NGS-103415              | 0 | 91553607 |          |
| 5 | Hapmap51546-BTA-109428           | 0 | 91631114 |          |
| 5 | BTA-109425-no-rs                 | 0 | 91678519 |          |
| 5 | Hapmap31851-BTA-164018           | 0 | 91715649 |          |
| 5 | Hapmap48620-BTA-113306           | 0 | 91799509 |          |
| 5 | ARS-BFGL-NGS-108617              | 0 | 91829138 |          |
| 5 | ARS-BFGL-NGS-111260              | 0 | 91947526 |          |
| 5 | Hapmap38581-BTA-15564            | 0 | 91956694 |          |
| 5 | Hapmap42839-BTA-120583           | 0 | 92036955 |          |
| 5 | BTA-15558-no-rs                  | 0 | 92074297 |          |
| 5 | BTA-15560-no-rs                  | 0 | 92115327 |          |
| 5 | UA-IFASA-4080                    | 0 | 92191685 |          |
| 5 | Hapmap33512-BTA-158274           | 0 | 92283403 |          |
| 5 | Hapmap43797-BTA-17694            | 0 | 92527538 |          |
| 5 | Hapmap49071-BTA-17699            | 0 | 92618397 |          |
| 5 | Hapmap43798-BTA-17697            | 0 | 92686353 |          |
| 5 | BTA-23603-no-rs                  | 0 | 92808388 |          |
| 5 | BTA-23605-no-rs                  | 0 | 92844631 |          |
| 5 | Hapmap34380-BES4_Contig293_1272  | 0 |          | 92955993 |
| 5 | Hapmap27190-BTA-152454           | 0 | 93023230 |          |
| 5 | Hapmap29299-BTA-100895           | 0 | 93093486 |          |
| 5 | BTA-37834-no-rs                  | 0 | 93187014 |          |
| 5 | ARS-BFGL-NGS-116999              | 0 | 93225456 |          |
| 5 | Hapmap24159-BTA-155375           | 0 | 93293318 |          |
| 5 | Hapmap23220-BTA-155380           | 0 | 93349796 |          |
| 5 | Hapmap36414-SCAFFOLD150043_20489 | 0 |          | 93567346 |
| 5 | Hapmap51304-BTA-74559            | 0 | 93718582 |          |
| 5 | Hapmap32415-BTA-74556            | 0 | 93871154 |          |
| 5 | ARS-BFGL-NGS-95906               | 0 | 93920010 |          |
| 5 | BTA-94299-no-rs                  | 0 | 93940507 |          |
| 5 | ARS-BFGL-NGS-119672              | 0 | 94015986 |          |

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| 5 | Hapmap39388-BTA-18316          | 0 | 94216856 |          |
| 5 | ARS-BFGL-NGS-111443            | 0 | 94269370 |          |
| 5 | ARS-BFGL-NGS-27620             |   | 94381154 |          |
| 5 | BTA-74586-no-rs                | 0 | 94473586 |          |
| 5 | BTA-74585-no-rs                | 0 | 94496854 |          |
| 5 | BTA-74583-no-rs                | 0 | 94517415 |          |
| 5 | BTA-74580-no-rs                | 0 | 94539573 |          |
| 5 | Hapmap49734-BTA-74577          | 0 | 94570828 |          |
| 5 | Hapmap41349-BTA-74576          | 0 | 94597691 |          |
| 5 | Hapmap53294-rs29016908         | 0 | 94645698 |          |
| 5 | BTA-30497-no-rs                | 0 | 94753942 |          |
| 5 | ARS-BFGL-NGS-20806             | 0 | 94774194 |          |
| 5 | Hapmap40635-BTA-104832         | 0 | 94858411 |          |
| 5 | Hapmap55636-rs29018542         | 0 | 94909330 |          |
| 5 | Hapmap45270-BTA-30512          | 0 | 95006068 |          |
| 5 | ARS-BFGL-NGS-103226            | 0 | 95127795 |          |
| 5 | Hapmap48071-BTA-74589          | 0 | 95149822 |          |
| 5 | Hapmap60021-ss46526426         | 0 | 95459836 |          |
| 5 | ARS-BFGL-NGS-35158             | 0 | 95491399 |          |
| 5 | BTA-02708-no-rs                | 0 | 95516387 |          |
| 5 | UA-IFASA-6009                  | 0 | 95645754 |          |
| 5 | UA-IFASA-6544                  | 0 | 95666368 |          |
| 5 | ARS-BFGL-NGS-116897            | 0 | 95743746 |          |
| 5 | BTA-28410-no-rs                | 0 | 95827321 |          |
| 5 | BTA-74596-no-rs                | 0 | 96166308 |          |
| 5 | Hapmap47720-BTA-74597          | 0 | 96190402 |          |
| 5 | Hapmap36106-SCAFFOLD22038_1672 | 0 |          | 96266781 |
| 5 | Hapmap33786-BTA-143386         | 0 | 96378276 |          |
| 5 | ARS-BFGL-NGS-40927             | 0 | 96422792 |          |
| 5 | Hapmap51915-BTA-74618          | 0 | 96479969 |          |
| 5 | BTA-74620-no-rs                | 0 | 96545000 |          |
| 5 | ARS-BFGL-NGS-55001             | 0 | 96567714 |          |
| 5 | ARS-BFGL-NGS-104787            | 0 | 96581874 |          |
| 5 | ARS-BFGL-NGS-26708             | 0 | 96623157 |          |
| 5 | ARS-BFGL-NGS-117040            | 0 | 96676301 |          |
| 5 | ARS-BFGL-NGS-119645            | 0 | 96710090 |          |
| 5 | ARS-BFGL-NGS-27184             | 0 | 96732914 |          |
| 5 | ARS-BFGL-NGS-29237             | 0 | 96761879 |          |
| 5 | ARS-BFGL-NGS-29517             | 0 | 96881813 |          |
| 5 | ARS-BFGL-NGS-61040             | 0 | 96905414 |          |
| 5 | ARS-BFGL-NGS-31148             | 0 | 96963752 |          |
| 5 | Hapmap28380-BTA-74649          | 0 | 97011384 |          |
| 5 | ARS-BFGL-NGS-28381             | 0 | 97069860 |          |
| 5 | ARS-BFGL-NGS-15498             | 0 | 97115280 |          |
| 5 | ARS-BFGL-NGS-12289             | 0 | 97223172 |          |
| 5 | ARS-BFGL-NGS-114001            | 0 | 97316071 |          |
| 5 | ARS-BFGL-NGS-115294            | 0 | 97378661 |          |
| 5 | ARS-BFGL-NGS-44153             | 0 | 97430973 |          |
| 5 | ARS-BFGL-NGS-57200             |   | 97468792 |          |
| 5 | ARS-BFGL-NGS-57610             |   | 97490658 |          |
| 5 | ARS-BFGL-NGS-114591            | 0 | 97530532 |          |
| 5 | Hapmap52734-rs29013367         | 0 | 97553145 |          |
| 5 | ARS-BFGL-NGS-52423             | 0 | 97593586 |          |
| 5 | UA-IFASA-8685                  | 0 | 97756059 |          |

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| 5 | Hapmap58633-rs29009713                | 0 | 97828652  |   |          |
| 5 | ARS-BFGL-NGS-118551                   | 0 | 97862816  |   |          |
| 5 | ARS-BFGL-NGS-101806                   | 0 | 97884594  |   |          |
| 5 | ARS-BFGL-NGS-73099                    | 0 | 97905449  |   |          |
| 5 | Hapmap53773-ss46526912                | 0 | 97948752  |   |          |
| 5 | ARS-BFGL-NGS-24187                    | 0 | 97972722  |   |          |
| 5 | ARS-USMARC-Parent-AY844963-rs17871338 | 0 |           | 0 | 98102349 |
| 5 | Hapmap43671-BTA-74719                 | 0 | 98107528  |   |          |
| 5 | ARS-BFGL-NGS-107423                   | 0 | 98293768  |   |          |
| 5 | Hapmap59520-rs29021624                | 0 | 98317683  |   |          |
| 5 | ARS-BFGL-NGS-110933                   | 0 | 98338510  |   |          |
| 5 | Hapmap46939-BTA-114206                | 0 | 98465145  |   |          |
| 5 | ARS-BFGL-NGS-27838                    | 0 | 98515360  |   |          |
| 5 | Hapmap47511-BTA-114200                | 0 | 98579869  |   |          |
| 5 | ARS-BFGL-NGS-88309                    | 0 | 98618390  |   |          |
| 5 | UA-IFASA-1849                         | 0 | 98664573  |   |          |
| 5 | Hapmap42391-BTA-04861                 | 0 | 98693360  |   |          |
| 5 | ARS-BFGL-NGS-103839                   | 0 | 98753414  |   |          |
| 5 | ARS-BFGL-NGS-116729                   | 0 | 98802828  |   |          |
| 5 | Hapmap50230-BTA-114181                | 0 | 98837246  |   |          |
| 5 | ARS-BFGL-NGS-174                      | 0 | 98973086  |   |          |
| 5 | Hapmap47185-BTA-114173                | 0 | 99044605  |   |          |
| 5 | ARS-BFGL-NGS-100563                   | 0 | 99077991  |   |          |
| 5 | BTA-114209-no-rs                      | 0 | 99099385  |   |          |
| 5 | Hapmap49867-BTA-114191                | 0 | 99128798  |   |          |
| 5 | ARS-BFGL-NGS-115275                   | 0 | 99154068  |   |          |
| 5 | Hapmap28060-BTA-162691                | 0 | 99259443  |   |          |
| 5 | BTA-87637-no-rs                       | 0 | 99300296  |   |          |
| 5 | BTA-95292-no-rs                       | 0 | 99331579  |   |          |
| 5 | Hapmap33376-BTA-150433                | 0 | 99384838  |   |          |
| 5 | BTA-110472-no-rs                      | 0 | 99436717  |   |          |
| 5 | ARS-BFGL-NGS-46783                    | 0 | 99476251  |   |          |
| 5 | ARS-BFGL-NGS-108996                   | 0 | 99527745  |   |          |
| 5 | Hapmap52014-BTA-90653                 | 0 | 99569438  |   |          |
| 5 | Hapmap32821-BTA-143421                | 0 | 99985909  |   |          |
| 5 | UA-IFASA-6587                         | 0 | 100033129 |   |          |
| 5 | Hapmap41958-BTA-74707                 | 0 | 100139180 |   |          |
| 5 | UA-IFASA-6670                         | 0 | 100206147 |   |          |
| 5 | ARS-BFGL-NGS-80085                    | 0 | 100215381 |   |          |
| 5 | ARS-USMARC-172                        | 0 | 100244820 |   |          |
| 5 | Hapmap49837-BTA-104960                | 0 | 100355147 |   |          |
| 5 | Hapmap41959-BTA-74725                 | 0 | 100390932 |   |          |
| 5 | ARS-BFGL-NGS-111323                   | 0 | 100452647 |   |          |
| 5 | ARS-BFGL-NGS-114092                   | 0 | 100493514 |   |          |
| 5 | Hapmap55098-rs29011152                | 0 | 100650026 |   |          |
| 5 | ARS-BFGL-NGS-37981                    | 0 | 100800335 |   |          |
| 5 | BTA-116856-no-rs                      | 0 | 100826813 |   |          |
| 5 | Hapmap48257-BTA-24329                 | 0 | 100887354 |   |          |
| 5 | BTA-74733-no-rs                       | 0 | 101124171 |   |          |
| 5 | BTA-74798-no-rs                       | 0 | 101271357 |   |          |
| 5 | ARS-USMARC-244                        | 0 | 101309988 |   |          |
| 5 | ARS-USMARC-226                        | 0 | 101345410 |   |          |
| 5 | BTA-74811-no-rs                       | 0 | 101373334 |   |          |
| 5 | ARS-BFGL-NGS-16242                    | 0 | 101395566 |   |          |



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| 5 | BTA-74737-no-rs                 | 0 | 101423415 |           |
| 5 | Hapmap25949-BTA-74741           | 0 | 101449625 |           |
| 5 | ARS-BFGL-NGS-118033             | 0 | 101518663 |           |
| 5 | Hapmap31710-BTA-123218          | 0 | 101548165 |           |
| 5 | ARS-BFGL-NGS-81143              | 0 | 101644908 |           |
| 5 | ARS-BFGL-NGS-75847              | 0 | 101721892 |           |
| 5 | ARS-BFGL-NGS-14939              | 0 | 101788321 |           |
| 5 | Hapmap36373-SCAFFOLD248777_1273 | 0 |           | 101813991 |
| 5 | ARS-BFGL-NGS-57509              | 0 | 101880447 |           |
| 5 | Hapmap48229-BTA-15460           | 0 | 101974400 |           |
| 5 | ARS-BFGL-NGS-25950              | 0 | 102050795 |           |
| 5 | BTA-15449-no-rs                 | 0 | 102084969 |           |
| 5 | ARS-BFGL-NGS-90522              | 0 | 102174236 |           |
| 5 | BTA-15444-no-rs                 | 0 | 102253486 |           |
| 5 | Hapmap3063-BTA-15439            | 0 | 102308562 |           |
| 5 | ARS-BFGL-NGS-116218             | 0 | 102723706 |           |
| 5 | ARS-BFGL-NGS-29206              | 0 | 102779831 |           |
| 5 | ARS-BFGL-NGS-40945              | 0 | 102855072 |           |
| 5 | Hapmap40294-BTA-89295           | 0 | 102954266 |           |
| 5 | BTA-74753-no-rs                 | 0 | 103472289 |           |
| 5 | ARS-BFGL-NGS-27890              | 0 | 103509207 |           |
| 5 | ARS-BFGL-NGS-14220              |   | 103539042 |           |
| 5 | ARS-BFGL-NGS-101402             | 0 | 103583249 |           |
| 5 | ARS-BFGL-NGS-30033              | 0 | 103659884 |           |
| 5 | Hapmap26140-BTA-143447          | 0 | 103777500 |           |
| 5 | Hapmap49735-BTA-74776           | 0 | 103821233 |           |
| 5 | ARS-BFGL-NGS-678                | 0 | 103860658 |           |
| 5 | ARS-BFGL-NGS-18320              | 0 | 103911258 |           |
| 5 | Hapmap23759-BTA-143449          | 0 | 103957794 |           |
| 5 | ARS-BFGL-NGS-118997             | 0 | 104038847 |           |
| 5 | ARS-BFGL-NGS-52457              | 0 | 104116518 |           |
| 5 | Hapmap47396-BTA-74821           | 0 | 104140809 |           |
| 5 | ARS-BFGL-NGS-26592              | 0 | 104188186 |           |
| 5 | ARS-USMARC-201                  | 0 | 104230386 |           |
| 5 | ARS-BFGL-NGS-43407              | 0 | 104426051 |           |
| 5 | BTB-00236217                    | 0 | 104502658 |           |
| 5 | UA-IFASA-8960                   | 0 | 104536158 |           |
| 5 | ARS-BFGL-NGS-67983              | 0 | 104585591 |           |
| 5 | UA-IFASA-8535                   | 0 | 104659347 |           |
| 5 | ARS-BFGL-NGS-21168              | 0 | 104682238 |           |
| 5 | ARS-BFGL-NGS-99256              | 0 | 104714350 |           |
| 5 | Hapmap54700-rs29018234          | 0 | 104771913 |           |
| 5 | Hapmap31228-BTA-74842           | 0 | 104796659 |           |
| 5 | BTA-74836-no-rs                 | 0 | 104822373 |           |
| 5 | ARS-BFGL-NGS-68670              | 0 | 104843055 |           |
| 5 | BTB-02050304                    | 0 | 104923011 |           |
| 5 | ARS-BFGL-NGS-30557              | 0 | 104972270 |           |
| 5 | ARS-BFGL-NGS-93819              | 0 | 105018618 |           |
| 5 | Hapmap27853-BTA-101914          | 0 | 105045500 |           |
| 5 | ARS-BFGL-NGS-66991              | 0 | 105082846 |           |
| 5 | Hapmap48155-BTA-101916          | 0 | 105105448 |           |
| 5 | ARS-BFGL-NGS-54841              | 0 | 105128091 |           |
| 5 | ARS-BFGL-NGS-110506             | 0 | 105152085 |           |
| 5 | Hapmap47721-BTA-74871           | 0 | 105189569 |           |

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| 5 | Hapmap46867-BTA-74870  | 0         | 105275043 |
| 5 | ARS-BFGL-NGS-42687     | 0         | 105288314 |
| 5 | ARS-BFGL-NGS-102312    | 0         | 105337527 |
| 5 | Hapmap40496-BTA-121703 | 0         | 105368208 |
| 5 | ARS-BFGL-NGS-32818     | 0         | 105387546 |
| 5 | ARS-BFGL-NGS-115862    | 0         | 105424266 |
| 5 | ARS-BFGL-NGS-87300     | 105449703 |           |
| 5 | Hapmap47398-BTA-74932  | 0         | 105493019 |
| 5 | ARS-BFGL-NGS-37546     | 0         | 105566298 |
| 5 | BTB-00237474           | 0         | 105601377 |
| 5 | BTB-00237470           | 0         | 105621447 |
| 5 | ARS-BFGL-NGS-98808     | 0         | 105664687 |
| 5 | ARS-BFGL-NGS-39330     | 105695909 |           |
| 5 | Hapmap60480-ss46526970 | 0         | 105870613 |
| 5 | ARS-BFGL-NGS-10549     | 0         | 105931545 |
| 5 | ARS-BFGL-NGS-34503     | 0         | 105994337 |
| 5 | ARS-BFGL-NGS-118977    | 0         | 106156728 |
| 5 | ARS-BFGL-NGS-54496     | 0         | 106178425 |
| 5 | BTA-74881-no-rs        | 0         | 106230591 |
| 5 | ARS-BFGL-NGS-39379     | 0         | 106269362 |
| 5 | ARS-BFGL-NGS-98420     | 0         | 106375105 |
| 5 | Hapmap48072-BTA-74891  | 0         | 106405677 |
| 5 | BTA-74897-no-rs        | 0         | 106495211 |
| 5 | ARS-BFGL-NGS-116906    | 0         | 106538208 |
| 5 | ARS-BFGL-NGS-111020    | 0         | 106558376 |
| 5 | ARS-BFGL-NGS-22683     | 0         | 106642264 |
| 5 | ARS-BFGL-NGS-28247     | 0         | 106681257 |
| 5 | ARS-BFGL-NGS-44754     | 0         | 106713645 |
| 5 | ARS-BFGL-NGS-70240     | 106734118 |           |
| 5 | ARS-BFGL-NGS-52400     | 106813133 |           |
| 5 | ARS-BFGL-NGS-118796    | 0         | 106895411 |
| 5 | ARS-BFGL-NGS-112727    | 0         | 106930295 |
| 5 | ARS-BFGL-NGS-106171    | 0         | 106951601 |
| 5 | ARS-BFGL-NGS-24650     | 106977557 |           |
| 5 | ARS-BFGL-NGS-33993     | 0         | 107031270 |
| 5 | ARS-BFGL-NGS-23990     | 107065695 |           |
| 5 | ARS-BFGL-NGS-110183    | 0         | 107105116 |
| 5 | ARS-BFGL-NGS-93667     | 0         | 107141795 |
| 5 | ARS-BFGL-NGS-37722     | 0         | 107167760 |
| 5 | ARS-BFGL-NGS-40451     | 0         | 107190274 |
| 5 | ARS-BFGL-NGS-56864     | 0         | 107220093 |
| 5 | ARS-BFGL-NGS-112741    | 0         | 107242527 |
| 5 | ARS-BFGL-NGS-60840     | 0         | 107270049 |
| 5 | ARS-BFGL-NGS-25555     | 0         | 107302660 |
| 5 | ARS-BFGL-NGS-114373    | 0         | 107337573 |
| 5 | Hapmap57466-rs29018274 | 0         | 107362671 |
| 5 | ARS-BFGL-NGS-99459     | 0         | 107403824 |
| 5 | ARS-BFGL-NGS-36738     | 0         | 107426006 |
| 5 | Hapmap38434-BTA-74956  | 0         | 107451881 |
| 5 | ARS-BFGL-NGS-30836     | 0         | 107489920 |
| 5 | ARS-BFGL-NGS-96140     | 0         | 107527186 |
| 5 | ARS-BFGL-NGS-51381     | 0         | 107553915 |
| 5 | ARS-BFGL-NGS-16163     | 0         | 107590490 |
| 5 | ARS-BFGL-NGS-14881     | 0         | 107651793 |

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| 5 | ARS-BFGL-NGS-57495              | 0 | 107674191 |           |
| 5 | ARS-BFGL-NGS-41499              | 0 | 107704991 |           |
| 5 | Hapmap59652-rs29010247          | 0 | 107771913 |           |
| 5 | ARS-BFGL-NGS-101738             | 0 | 107792082 |           |
| 5 | ARS-BFGL-NGS-117102             | 0 | 107883149 |           |
| 5 | ARS-BFGL-NGS-118406             | 0 | 107923893 |           |
| 5 | ARS-BFGL-NGS-27066              | 0 | 107946258 |           |
| 5 | ARS-BFGL-NGS-17216              | 0 | 107984945 |           |
| 5 | Hapmap53295-rs29016976          | 0 | 108020379 |           |
| 5 | BTA-112651-no-rs                | 0 | 108053565 |           |
| 5 | Hapmap36643-SCAFFOLD192091_9031 | 0 |           | 108107405 |
| 5 | Hapmap26794-BTA-74957           | 0 | 108120416 |           |
| 5 | ARS-BFGL-NGS-110363             | 0 | 108172899 |           |
| 5 | Hapmap54047-ss46526768          | 0 | 108208913 |           |
| 5 | ARS-BFGL-NGS-75998              | 0 | 108257925 |           |
| 5 | ARS-BFGL-NGS-57681              | 0 | 108301599 |           |
| 5 | Hapmap34169-BES10_Contig488_621 | 0 |           | 108361582 |
| 5 | BTA-74965-no-rs                 | 0 | 108388961 |           |
| 5 | Hapmap54903-rs29018564          | 0 | 108417126 |           |
| 5 | ARS-BFGL-NGS-10010              | 0 | 108450743 |           |
| 5 | Hapmap43033-BTA-74963           | 0 | 108501660 |           |
| 5 | Hapmap51306-BTA-74962           | 0 | 108524147 |           |
| 5 | BTA-05249-no-rs                 | 0 | 108551135 |           |
| 5 | ARS-BFGL-NGS-101848             | 0 | 108579427 |           |
| 5 | Hapmap42310-BTA-74959           | 0 | 108599456 |           |
| 5 | ARS-BFGL-NGS-63745              | 0 | 108637621 |           |
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| 5 | ARS-BFGL-NGS-18294              | 0 | 108746845 |           |
| 5 | ARS-BFGL-NGS-111064             | 0 | 108811739 |           |
| 5 | ARS-BFGL-NGS-20998              | 0 | 108853226 |           |
| 5 | ARS-BFGL-NGS-78994              | 0 | 108878216 |           |
| 5 | ARS-BFGL-NGS-109072             | 0 | 108900624 |           |
| 5 | BTA-74976-no-rs                 | 0 | 108933497 |           |
| 5 | ARS-BFGL-NGS-40280              | 0 | 108987909 |           |
| 5 | ARS-BFGL-NGS-118038             | 0 | 109024613 |           |
| 5 | ARS-BFGL-NGS-38292              | 0 | 109084970 |           |
| 5 | ARS-BFGL-NGS-62390              | 0 | 109109992 |           |
| 5 | ARS-BFGL-NGS-100053             | 0 | 109167093 |           |
| 5 | ARS-BFGL-NGS-33782              | 0 | 109208650 |           |
| 5 | ARS-BFGL-NGS-14293              | 0 | 109229225 |           |
| 5 | ARS-BFGL-NGS-28067              | 0 | 109252813 |           |
| 5 | ARS-BFGL-NGS-69000              | 0 | 109274268 |           |
| 5 | ARS-BFGL-NGS-85311              | 0 | 109300257 |           |
| 5 | ARS-BFGL-NGS-29150              | 0 | 109333059 |           |
| 5 | ARS-BFGL-NGS-85264              | 0 | 109382111 |           |
| 5 | Hapmap32166-BTA-75006           | 0 | 109478057 |           |
| 5 | UA-IFASA-6163                   | 0 | 109499140 |           |
| 5 | ARS-BFGL-NGS-63306              | 0 | 109560984 |           |
| 5 | ARS-BFGL-NGS-103912             | 0 | 109593060 |           |
| 5 | Hapmap52801-ss46526219          | 0 | 109634728 |           |
| 5 | ARS-BFGL-NGS-16738              | 0 | 109655733 |           |
| 5 | ARS-BFGL-NGS-627                | 0 | 109734406 |           |
| 5 | ARS-BFGL-NGS-10118              | 0 | 109774563 |           |
| 5 | ARS-BFGL-NGS-106105             | 0 | 109843848 |           |

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| 5 | ARS-BFGL-NGS-17479               | 0 | 109912860 |           |
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| 5 | ARS-BFGL-NGS-75342               | 0 | 110118040 |           |
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| 5 | ARS-BFGL-NGS-68290               |   | 110237957 |           |
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| 5 | ARS-BFGL-NGS-101279              | 0 | 110399710 |           |
| 5 | ARS-BFGL-NGS-82930               |   | 110435582 |           |
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| 5 | ARS-BFGL-NGS-67358               | 0 | 110507617 |           |
| 5 | Hapmap39945-BTA-75021            | 0 | 110566595 |           |
| 5 | ARS-BFGL-NGS-44260               | 0 | 110608351 |           |
| 5 | ARS-BFGL-NGS-32612               | 0 | 110671789 |           |
| 5 | ARS-BFGL-NGS-13748               | 0 | 110704158 |           |
| 5 | Hapmap50089-BTA-75090            | 0 | 110736757 |           |
| 5 | ARS-BFGL-NGS-40954               | 0 | 110777659 |           |
| 5 | ARS-BFGL-NGS-115967              | 0 | 110812880 |           |
| 5 | ARS-BFGL-NGS-106749              | 0 | 110864795 |           |
| 5 | ARS-BFGL-NGS-24956               | 0 | 110886859 |           |
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| 5 | ARS-BFGL-NGS-29741               | 0 | 110936150 |           |
| 5 | ARS-BFGL-NGS-43800               | 0 | 110982640 |           |
| 5 | ARS-BFGL-NGS-35689               | 0 | 111079258 |           |
| 5 | ARS-BFGL-NGS-15778               | 0 | 111227019 |           |
| 5 | ARS-BFGL-NGS-27090               | 0 | 111267142 |           |
| 5 | ARS-BFGL-NGS-30168               | 0 | 111313740 |           |
| 5 | ARS-BFGL-NGS-68582               | 0 | 111380409 |           |
| 5 | ARS-BFGL-NGS-86565               | 0 | 111420622 |           |
| 5 | Hapmap36585-SCAFFOLD135556_32619 | 0 |           | 111475526 |
| 5 | Hapmap30029-BTA-153521           | 0 | 111511137 |           |
| 5 | ARS-BFGL-NGS-81456               | 0 | 111547059 |           |
| 5 | ARS-BFGL-NGS-13341               | 0 | 111581087 |           |
| 5 | ARS-BFGL-NGS-104808              | 0 | 111635921 |           |
| 5 | ARS-BFGL-NGS-48090               |   | 111682678 |           |
| 5 | ARS-BFGL-NGS-39240               |   | 111709914 |           |
| 5 | ARS-BFGL-NGS-43376               | 0 | 111790193 |           |
| 5 | BTA-75067-no-rs                  | 0 | 111836264 |           |
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| 5 | ARS-BFGL-NGS-112482              | 0 | 111884371 |           |
| 5 | ARS-BFGL-NGS-100816              | 0 | 111909943 |           |
| 5 | ARS-BFGL-NGS-62190               | 0 | 111930616 |           |
| 5 | Hapmap52934-rs29020811           | 0 | 112009186 |           |
| 5 | Hapmap60420-rs29010136           | 0 | 112045991 |           |
| 5 | ARS-BFGL-NGS-117254              | 0 | 112083946 |           |
| 5 | ARS-BFGL-NGS-105727              | 0 | 112119760 |           |
| 5 | ARS-BFGL-NGS-58949               | 0 | 112256580 |           |
| 5 | BTA-75110-no-rs                  | 0 | 112328104 |           |
| 5 | Hapmap23876-BTA-143610           | 0 | 112374372 |           |
| 5 | ARS-BFGL-NGS-21778               | 0 | 112472630 |           |
| 5 | ARS-BFGL-NGS-10616               | 0 | 112494968 |           |

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| 5 | ARS-BFGL-NGS-45453                    | 0 | 112521878 |   |           |
| 5 | Hapmap33270-BTA-75139                 | 0 | 112559317 |   |           |
| 5 | ARS-BFGL-NGS-102035                   | 0 | 112591306 |   |           |
| 5 | BTA-75143-no-rs                       | 0 | 112647134 |   |           |
| 5 | Hapmap43184-BTA-13767                 | 0 | 112686649 |   |           |
| 5 | Hapmap51629-BTA-75152                 | 0 | 112729130 |   |           |
| 5 | ARS-BFGL-NGS-116417                   | 0 | 112775479 |   |           |
| 5 | ARS-BFGL-NGS-29387                    | 0 | 112879541 |   |           |
| 5 | ARS-BFGL-NGS-78714                    | 0 | 112912918 |   |           |
| 5 | ARS-BFGL-NGS-80020                    | 0 | 112945811 |   |           |
| 5 | Hapmap58690-rs29019746                | 0 | 112978999 |   |           |
| 5 | ARS-BFGL-NGS-58126                    | 0 | 113040432 |   |           |
| 5 | BTA-75165-no-rs                       | 0 | 113074715 |   |           |
| 5 | Hapmap25014-BTA-123017                | 0 | 113100000 |   |           |
| 5 | ARS-USMARC-Parent-DQ468384-rs29003967 | 0 |           | 0 | 113137320 |
| 5 | Hapmap31151-BTA-152589                | 0 | 113226952 |   |           |
| 5 | ARS-BFGL-NGS-48990                    |   | 113250833 |   |           |
| 5 | ARS-BFGL-NGS-15123                    | 0 | 113321212 |   |           |
| 5 | ARS-BFGL-NGS-36745                    | 0 | 113411233 |   |           |
| 5 | BTA-75130-no-rs                       | 0 | 113435256 |   |           |
| 5 | ARS-BFGL-NGS-71946                    | 0 | 113468743 |   |           |
| 5 | ARS-BFGL-NGS-73800                    |   | 113499150 |   |           |
| 5 | ARS-BFGL-NGS-31332                    | 0 | 113737833 |   |           |
| 5 | ARS-BFGL-NGS-113238                   | 0 | 113761140 |   |           |
| 5 | ARS-BFGL-NGS-33155                    | 0 | 113787757 |   |           |
| 5 | ARS-BFGL-NGS-43084                    | 0 | 113817271 |   |           |
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| 5 | ARS-BFGL-NGS-15922                    | 0 | 113874131 |   |           |
| 5 | ARS-BFGL-NGS-104465                   | 0 | 113914967 |   |           |
| 5 | ARS-BFGL-NGS-117719                   | 0 | 114010785 |   |           |
| 5 | ARS-BFGL-NGS-109212                   | 0 | 114042655 |   |           |
| 5 | Hapmap61094-rs29022020                | 0 | 114085555 |   |           |
| 5 | Hapmap57211-rs29026125                | 0 | 114290454 |   |           |
| 5 | ARS-BFGL-NGS-48940                    |   | 114355659 |   |           |
| 5 | Hapmap41631-BTA-75177                 | 0 | 114405063 |   |           |
| 5 | ARS-BFGL-NGS-39390                    |   | 114440233 |   |           |
| 5 | Hapmap49920-BTA-23327                 | 0 | 114473220 |   |           |
| 5 | ARS-BFGL-NGS-25270                    | 0 | 114499520 |   |           |
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| 5 | ARS-BFGL-NGS-106826                   | 0 | 114621971 |   |           |
| 5 | ARS-BFGL-NGS-14492                    | 0 | 114675956 |   |           |
| 5 | ARS-BFGL-NGS-61091                    | 0 | 114698428 |   |           |
| 5 | ARS-BFGL-NGS-14040                    |   | 114727723 |   |           |
| 5 | ARS-BFGL-NGS-38459                    | 0 | 114764090 |   |           |
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| 5 | ARS-BFGL-NGS-119109                   | 0 | 114859696 |   |           |
| 5 | ARS-BFGL-NGS-10101                    | 0 | 115010779 |   |           |
| 5 | ARS-BFGL-NGS-116732                   | 0 | 115101414 |   |           |
| 5 | ARS-BFGL-NGS-111201                   | 0 | 115146217 |   |           |
| 5 | ARS-BFGL-NGS-93481                    | 0 | 115223183 |   |           |
| 5 | ARS-BFGL-NGS-22069                    | 0 | 115255985 |   |           |
| 5 | BTA-75208-no-rs                       | 0 | 115279103 |   |           |
| 5 | ARS-BFGL-NGS-37234                    | 0 | 115333478 |   |           |

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| 5 | ARS-BFGL-NGS-36425     | 0         | 115369024 |
| 5 | ARS-BFGL-NGS-82062     | 0         | 115399602 |
| 5 | ARS-BFGL-NGS-13150     | 115423180 |           |
| 5 | ARS-BFGL-NGS-85355     | 0         | 115456438 |
| 5 | ARS-BFGL-NGS-56171     | 0         | 115473272 |
| 5 | ARS-BFGL-NGS-38686     | 0         | 115507553 |
| 5 | ARS-BFGL-NGS-10690     | 115534495 |           |
| 5 | ARS-BFGL-NGS-100195    | 0         | 115561004 |
| 5 | ARS-BFGL-NGS-90520     | 0         | 115603974 |
| 5 | ARS-BFGL-NGS-34420     | 0         | 115633531 |
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| 5 | ARS-BFGL-NGS-28790     | 115767786 |           |
| 5 | ARS-BFGL-NGS-109145    | 0         | 115793651 |
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| 5 | ARS-BFGL-NGS-37000     | 0         | 115848256 |
| 5 | ARS-BFGL-NGS-39268     | 0         | 115878450 |
| 5 | ARS-BFGL-NGS-72724     | 0         | 116005043 |
| 5 | ARS-BFGL-NGS-11640     | 0         | 116073984 |
| 5 | ARS-BFGL-NGS-35980     | 0         | 116109703 |
| 5 | ARS-BFGL-NGS-77110     | 116167919 |           |
| 5 | ARS-BFGL-NGS-24567     | 0         | 116207981 |
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| 5 | ARS-BFGL-NGS-89627     | 0         | 116303883 |
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| 5 | ARS-BFGL-NGS-66583     | 0         | 116446816 |
| 5 | ARS-BFGL-NGS-27282     | 0         | 116577511 |
| 5 | ARS-BFGL-NGS-69589     | 0         | 116618305 |
| 5 | ARS-BFGL-NGS-84950     | 116644790 |           |
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| 5 | Hapmap41080-BTA-75395  | 0         | 116716495 |
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| 5 | ARS-BFGL-NGS-52236     | 0         | 116805792 |
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| 5 | ARS-BFGL-NGS-98565     | 0         | 116861955 |
| 5 | ARS-BFGL-NGS-54524     | 0         | 116915398 |
| 5 | Hapmap46725-BTA-75375  | 0         | 116958538 |
| 5 | ARS-BFGL-NGS-116103    | 0         | 116998195 |
| 5 | ARS-BFGL-NGS-21717     | 0         | 117102295 |
| 5 | ARS-BFGL-NGS-96175     | 0         | 117133270 |
| 5 | ARS-BFGL-NGS-57700     | 0         | 117159857 |
| 5 | ARS-BFGL-NGS-89264     | 0         | 117194638 |
| 5 | ARS-BFGL-NGS-18620     | 0         | 117247824 |
| 5 | ARS-BFGL-NGS-22655     | 0         | 117738204 |
| 5 | ARS-BFGL-NGS-36365     | 0         | 117769309 |
| 5 | ARS-BFGL-NGS-21635     | 0         | 117795427 |
| 5 | ARS-BFGL-NGS-16699     | 0         | 117823521 |
| 5 | ARS-BFGL-NGS-26321     | 0         | 117851270 |
| 5 | ARS-BFGL-NGS-16090     | 0         | 117898969 |
| 5 | ARS-BFGL-NGS-14660     | 117909120 |           |
| 5 | ARS-BFGL-NGS-37762     | 0         | 117938671 |

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| 5 | ARS-BFGL-NGS-112849                   | 0         | 117956078 |  |
| 5 | ARS-BFGL-NGS-10890                    | 118014757 |           |  |
| 5 | Hapmap59748-rs29024200                | 0         | 118065604 |  |
| 5 | ARS-BFGL-NGS-29924                    | 0         | 118089275 |  |
| 5 | ARS-BFGL-NGS-80676                    | 0         | 118120746 |  |
| 5 | ARS-BFGL-NGS-107617                   | 0         | 118148263 |  |
| 5 | ARS-BFGL-NGS-62450                    | 118184826 |           |  |
| 5 | ARS-BFGL-NGS-52600                    | 118227089 |           |  |
| 5 | ARS-BFGL-NGS-112641                   | 0         | 118269408 |  |
| 5 | ARS-BFGL-NGS-29034                    | 0         | 118307910 |  |
| 5 | ARS-BFGL-NGS-16943                    | 0         | 118329917 |  |
| 5 | ARS-BFGL-NGS-116048                   | 0         | 118353758 |  |
| 5 | ARS-BFGL-NGS-64979                    | 0         | 118392147 |  |
| 5 | ARS-BFGL-NGS-16019                    | 0         | 118430785 |  |
| 5 | ARS-BFGL-NGS-69830                    | 118475383 |           |  |
| 5 | ARS-BFGL-NGS-14632                    | 0         | 118501191 |  |
| 5 | ARS-BFGL-NGS-107534                   | 0         | 118567533 |  |
| 5 | Hapmap33948-BES10_Contig601_1003      | 0         | 118605844 |  |
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| 5 | ARS-BFGL-NGS-111313                   | 0         | 118661288 |  |
| 5 | ARS-BFGL-NGS-13728                    | 0         | 118708739 |  |
| 5 | Hapmap40476-BTA-103234                | 0         | 118733210 |  |
| 5 | ARS-BFGL-NGS-116759                   | 0         | 118757624 |  |
| 5 | ARS-BFGL-NGS-113177                   | 0         | 118820845 |  |
| 5 | ARS-BFGL-NGS-44026                    | 0         | 118848392 |  |
| 5 | ARS-BFGL-NGS-100690                   | 0         | 118882023 |  |
| 5 | BTA-32202-no-rs                       | 0         | 118906453 |  |
| 5 | Hapmap42757-BTA-99810                 | 0         | 118960375 |  |
| 5 | ARS-BFGL-NGS-17943                    | 0         | 118982815 |  |
| 5 | BTA-04955-rs29015305                  | 0         | 119011233 |  |
| 5 | Hapmap40623-BTA-99811                 | 0         | 119041422 |  |
| 5 | ARS-BFGL-NGS-13216                    | 0         | 119071205 |  |
| 5 | ARS-BFGL-NGS-82989                    | 0         | 119139076 |  |
| 5 | ARS-BFGL-NGS-44514                    | 0         | 119164344 |  |
| 5 | ARS-BFGL-NGS-34063                    | 0         | 119221776 |  |
| 5 | ARS-BFGL-NGS-115195                   | 0         | 119235517 |  |
| 5 | ARS-BFGL-NGS-109805                   | 0         | 119256124 |  |
| 5 | ARS-USMARC-Parent-DQ846688-rs29023691 | 0         | 119261609 |  |
| 5 | Hapmap47809-BTA-102708                | 0         | 119325698 |  |
| 5 | ARS-BFGL-NGS-70459                    | 0         | 119366309 |  |
| 5 | ARS-BFGL-NGS-100177                   | 0         | 119445577 |  |
| 5 | ARS-BFGL-NGS-104914                   | 0         | 119512385 |  |
| 5 | ARS-BFGL-NGS-28967                    | 0         | 119567333 |  |
| 5 | ARS-BFGL-NGS-99892                    | 0         | 119626879 |  |
| 5 | ARS-BFGL-NGS-75120                    | 0         | 119654147 |  |
| 5 | ARS-BFGL-NGS-106502                   | 0         | 119680682 |  |
| 5 | ARS-BFGL-NGS-100728                   | 0         | 119729902 |  |
| 5 | ARS-BFGL-NGS-19950                    | 119795140 |           |  |
| 5 | ARS-BFGL-NGS-26994                    | 0         | 119820680 |  |
| 5 | ARS-BFGL-NGS-56909                    | 0         | 119853322 |  |
| 5 | BTA-24320-no-rs                       | 0         | 119880599 |  |
| 5 | ARS-BFGL-NGS-35550                    | 119949553 |           |  |
| 5 | ARS-BFGL-NGS-115632                   | 0         | 120016258 |  |
| 5 | BTA-75458-no-rs                       | 0         | 120037175 |  |

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| 5 | ARS-BFGL-NGS-66942              | 0         | 120155373 |           |
| 5 | ARS-BFGL-NGS-55120              | 0         | 120238450 |           |
| 5 | ARS-BFGL-NGS-116970             | 0         | 120264251 |           |
| 5 | ARS-BFGL-NGS-98018              | 0         | 120295070 |           |
| 5 | ARS-BFGL-NGS-104946             | 0         | 120329153 |           |
| 5 | Hapmap48075-BTA-75442           | 0         | 120351223 |           |
| 5 | ARS-BFGL-NGS-14121              | 0         | 120378417 |           |
| 5 | ARS-BFGL-NGS-104504             | 0         | 120420253 |           |
| 5 | ARS-BFGL-NGS-45489              | 0         | 120455642 |           |
| 5 | ARS-BFGL-NGS-48260              | 120488313 |           |           |
| 5 | Hapmap47097-BTA-75439           | 0         | 120520736 |           |
| 5 | ARS-BFGL-NGS-114643             | 0         | 120553341 |           |
| 5 | ARS-BFGL-NGS-101645             | 0         | 120581133 |           |
| 5 | ARS-BFGL-NGS-110517             | 0         | 120611631 |           |
| 5 | BTB-02005118                    | 0         | 120627506 |           |
| 5 | Hapmap35727-SCAFFOLD10136_11838 | 0         |           | 120669291 |
| 5 | ARS-BFGL-NGS-86033              | 0         | 120718722 |           |
| 5 | ARS-BFGL-NGS-17222              | 0         | 120741788 |           |
| 5 | ARS-BFGL-NGS-109490             | 0         | 120783915 |           |
| 5 | ARS-BFGL-NGS-39320              | 121028451 |           |           |
| 5 | ARS-BFGL-NGS-38440              | 0         | 121062420 |           |
| 5 | Hapmap46870-BTA-75461           | 0         | 121084838 |           |
| 5 | BTB-00239812                    | 0         | 121135969 |           |
| 5 | ARS-BFGL-NGS-104960             | 0         | 121175859 |           |
| 6 | BTB-01518631                    | 0         | 138563    |           |
| 6 | BTB-01518538                    | 0         | 202769    |           |
| 6 | BTB-01518507                    | 0         | 231013    |           |
| 6 | Hapmap33176-BTA-104879          | 0         | 327345    |           |
| 6 | BTB-01573053                    | 0         | 363111    |           |
| 6 | BTA-22026-no-rs                 | 0         | 400821    |           |
| 6 | BTB-02047078                    | 0         | 440021    |           |
| 6 | BTA-94560-no-rs                 | 0         | 469898    |           |
| 6 | ARS-BFGL-NGS-20690              | 526736    |           |           |
| 6 | BTB-01812945                    | 0         | 551383    |           |
| 6 | ARS-BFGL-NGS-87800              | 0         | 615089    |           |
| 6 | BTA-88049-no-rs                 | 0         | 643965    |           |
| 6 | Hapmap43391-BTA-88040           | 0         | 730937    |           |
| 6 | Hapmap43104-BTA-94049           | 0         | 782857    |           |
| 6 | BTB-01645778                    | 0         | 842324    |           |
| 6 | Hapmap41427-BTA-110169          | 0         | 874205    |           |
| 6 | Hapmap46959-BTA-16945           | 0         | 905736    |           |
| 6 | BTB-01796690                    | 0         | 939016    |           |
| 6 | BTA-119334-no-rs                | 0         | 972590    |           |
| 6 | BTB-01384704                    | 0         | 1014246   |           |
| 6 | BTB-01384667                    | 0         | 1040062   |           |
| 6 | BTA-100484-no-rs                | 0         | 1065522   |           |
| 6 | Hapmap46514-BTA-122322          | 0         | 1091047   |           |
| 6 | ARS-BFGL-NGS-68855              | 0         | 1125213   |           |
| 6 | Hapmap39802-BTA-105908          | 0         | 1149647   |           |
| 6 | ARS-BFGL-NGS-74563              | 0         | 1183792   |           |
| 6 | ARS-BFGL-NGS-16502              | 0         | 1258166   |           |
| 6 | BTB-01486995                    | 0         | 1305535   |           |
| 6 | BTB-01461517                    | 0         | 1332167   |           |
| 6 | BTB-01461522                    | 0         | 1374866   |           |



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| 6 | BTB-01486917           | 0 | 1431432 |
| 6 | BTB-01486861           | 0 | 1471923 |
| 6 | ARS-BFGL-NGS-16844     | 0 | 1512576 |
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| 6 | BTB-01788119           | 0 | 1603850 |
| 6 | Hapmap23834-BTA-160874 | 0 | 1641898 |
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| 6 | BTB-01744697           | 0 | 1929729 |
| 6 | BTB-00240372           | 0 | 1950128 |
| 6 | BTB-00240394           | 0 | 1973781 |
| 6 | Hapmap42078-BTA-115052 | 0 | 2084530 |
| 6 | UA-IFASA-2005          | 0 | 2164733 |
| 6 | BTA-05054-no-rs        | 0 | 2217430 |
| 6 | ARS-BFGL-NGS-107695    | 0 | 2245446 |
| 6 | Hapmap53691-rs29015797 | 0 | 2296875 |
| 6 | BTB-01692201           | 0 | 2327244 |
| 6 | BTB-01692181           | 0 | 2343794 |
| 6 | Hapmap50164-BTA-94741  | 0 | 2373486 |
| 6 | BTB-01454593           | 0 | 2398142 |
| 6 | BTB-01710018           | 0 | 2477044 |
| 6 | BTA-94737-no-rs        | 0 | 2584893 |
| 6 | Hapmap59720-rs29025265 | 0 | 2642053 |
| 6 | Hapmap45579-BTA-77250  | 0 | 2858449 |
| 6 | Hapmap53068-rs29026861 | 0 | 2940803 |
| 6 | Hapmap51857-BTA-76766  | 0 | 2989638 |
| 6 | Hapmap30828-BTA-143720 | 0 | 3011115 |
| 6 | BTB-00240524           | 0 | 3032658 |
| 6 | ARS-BFGL-NGS-82805     | 0 | 3056780 |
| 6 | BTB-00240453           | 0 | 3093621 |
| 6 | Hapmap52832-rs29014980 | 0 | 3149732 |
| 6 | ARS-BFGL-NGS-40020     | 0 | 3257311 |
| 6 | Hapmap53408-rs29014449 | 0 | 3316210 |
| 6 | Hapmap39586-BTA-78225  | 0 | 3383011 |
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| 6 | BTB-01718787           | 0 | 3665381 |
| 6 | BTB-01790614           | 0 | 3726761 |
| 6 | BTA-16306-no-rs        | 0 | 3755618 |
| 6 | BTA-20584-no-rs        | 0 | 3780334 |
| 6 | BTB-01850027           | 0 | 3804960 |
| 6 | Hapmap59227-rs29015185 | 0 | 3854279 |
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| 6 | ARS-BFGL-NGS-87162     | 0 | 3961860 |
| 6 | Hapmap30881-BTA-159706 | 0 | 3994395 |
| 6 | ARS-BFGL-NGS-56212     | 0 | 4049985 |
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| 6 | ARS-BFGL-NGS-80855             | 0 | 4084466 |         |
| 6 | BTB-01770968                   | 0 | 4123642 |         |
| 6 | ARS-BFGL-NGS-62243             | 0 | 4156416 |         |
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| 6 | BTB-01281130                   | 0 | 4255214 |         |
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| 6 | ARS-BFGL-NGS-77840             | 0 | 4310838 |         |
| 6 | Hapmap46779-BTA-17103          | 0 | 4334044 |         |
| 6 | ARS-BFGL-NGS-16613             | 0 | 4368614 |         |
| 6 | ARS-BFGL-NGS-53485             | 0 | 4386362 |         |
| 6 | BTB-00241714                   | 0 | 4409404 |         |
| 6 | BTB-00241732                   | 0 | 4448316 |         |
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| 6 | BTB-00241906                   | 0 | 4548788 |         |
| 6 | ARS-BFGL-NGS-64902             | 0 | 4580393 |         |
| 6 | BTB-02041372                   | 0 | 4636950 |         |
| 6 | BTB-01767757                   | 0 | 4670459 |         |
| 6 | ARS-BFGL-NGS-37880             |   | 4697903 |         |
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| 6 | ARS-BFGL-NGS-26338             | 0 | 4916036 |         |
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| 6 | BTA-116762-no-rs               | 0 | 5086136 |         |
| 6 | ARS-BFGL-NGS-107589            | 0 | 5129787 |         |
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| 6 | Hapmap35597-SCAFFOLD359101_527 | 0 |         | 5205468 |
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| 6 | BTB-00243309                   | 0 | 7258668 |         |
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| 6 | ARS-BFGL-NGS-52934             | 0 | 7363787 |         |
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| 6 | ARS-BFGL-NGS-40701             | 0 | 7474138 |         |
| 6 | Hapmap58359-rs29011329         | 0 | 7514029 |         |
| 6 | ARS-BFGL-NGS-23052             | 0 | 7555102 |         |
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| 6 | BTB-01819118                   | 0 | 7639790 |         |
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| 6 | BTB-00242939                   | 0 | 7786578 |         |
| 6 | BTB-00242823                   | 0 | 7812039 |         |
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| 6 | BTB-00242660           | 0 | 7969025  |
| 6 | BTB-00242610           | 0 | 8011267  |
| 6 | Hapmap41082-BTA-76030  | 0 | 8035543  |
| 6 | Hapmap25835-BTA-143733 | 0 | 8077548  |
| 6 | ARS-BFGL-NGS-105221    | 0 | 8104004  |
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| 6 | BTB-00242529           | 0 | 8213084  |
| 6 | Hapmap40803-BTA-75929  | 0 | 8244670  |
| 6 | Hapmap41634-BTA-75897  | 0 | 8312328  |
| 6 | BTB-00242396           | 0 | 8344354  |
| 6 | BTB-00242361           | 0 | 8376759  |
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| 6 | Hapmap32986-BTA-123124 | 0 | 8422067  |
| 6 | ARS-BFGL-NGS-38234     | 0 | 8446444  |
| 6 | Hapmap50460-BTA-75791  | 0 | 8478503  |
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| 6 | BTA-75732-no-rs        | 0 | 8654534  |
| 6 | BTA-111585-no-rs       | 0 | 8691255  |
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| 6 | BTB-02022899           | 0 | 9105841  |
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| 6 | BTB-01322092           | 0 | 10609153 |
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| 6 | BTA-22613-no-rs        | 0 | 10716501 |
| 6 | Hapmap32397-BTA-18899  | 0 | 10760779 |
| 6 | BTB-01827197           | 0 | 10786656 |
| 6 | Hapmap42479-BTA-22862  | 0 | 10815795 |
| 6 | BTB-01879337           | 0 | 10838635 |
| 6 | Hapmap52732-rs29023384 | 0 | 10874111 |
| 6 | ARS-BFGL-NGS-99273     | 0 | 10956342 |
| 6 | BTB-02002084           | 0 | 10984220 |
| 6 | BTA-88441-no-rs        | 0 | 11024427 |
| 6 | BTA-27165-no-rs        | 0 | 11053007 |
| 6 | BTB-00244030           | 0 | 11123540 |
| 6 | ARS-BFGL-NGS-40615     | 0 | 11150974 |
| 6 | BTB-00243966           | 0 | 11210868 |
| 6 | BTA-76730-no-rs        | 0 | 11231957 |
| 6 | BTA-05080-no-rs        | 0 | 11301952 |
| 6 | BTB-00243897           | 0 | 11331047 |
| 6 | BTB-01932115           | 0 | 11363207 |
| 6 | BTB-01896447           | 0 | 11398621 |
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| 6 | BTB-01447507           | 0 | 11537824 |
| 6 | Hapmap42010-BTA-93975  | 0 | 11570944 |
| 6 | BTB-01447775           | 0 | 11595816 |
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| 6 | Hapmap40034-BTA-93974  | 0 | 11746541 |
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| 6 | Hapmap31788-BTA-149223 | 0 | 11893872 |
| 6 | Hapmap49749-BTA-76609  | 0 | 11941895 |
| 6 | Hapmap44566-BTA-76618  | 0 | 11998522 |
| 6 | ARS-BFGL-NGS-101775    | 0 | 12044622 |
| 6 | BTB-00883514           | 0 | 12080255 |
| 6 | Hapmap54432-rs29022442 | 0 | 12119048 |
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| 6 | Hapmap28104-BTA-156698 | 0 | 12261839 |
| 6 | BTB-01685239           | 0 | 12282881 |
| 6 | Hapmap44339-BTA-110812 | 0 | 12354195 |
| 6 | Hapmap23501-BTA-155913 | 0 | 12383455 |
| 6 | Hapmap50219-BTA-112693 | 0 | 12412107 |
| 6 | BTA-112689-no-rs       | 0 | 12447020 |
| 6 | BTB-01711686           | 0 | 12521271 |
| 6 | BTA-88018-no-rs        | 0 | 12558447 |
| 6 | Hapmap26355-BTA-123034 | 0 | 12602914 |
| 6 | Hapmap42836-BTA-120227 | 0 | 12627595 |
| 6 | BTB-01968603           | 0 | 12648459 |
| 6 | Hapmap50605-BTA-16738  | 0 | 12669044 |
| 6 | Hapmap59328-rs29016355 | 0 | 12703601 |
| 6 | ARS-BFGL-NGS-83765     | 0 | 12741496 |
| 6 | ARS-BFGL-NGS-34846     | 0 | 12772767 |
| 6 | BTB-00103730           | 0 | 12804438 |
| 6 | ARS-BFGL-NGS-16236     | 0 | 12846571 |

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| 6 | Hapmap46194-BTA-103835                | 0 | 12880292 |  |  |
| 6 | ARS-BFGL-NGS-110757                   | 0 | 12942582 |  |  |
| 6 | BTB-01317228                          | 0 | 13012206 |  |  |
| 6 | BTA-22128-no-rs                       | 0 | 13040713 |  |  |
| 6 | ARS-BFGL-NGS-83035                    | 0 | 13085315 |  |  |
| 6 | BTB-00244545                          | 0 | 13116417 |  |  |
| 6 | Hapmap47406-BTA-77006                 | 0 | 13145751 |  |  |
| 6 | ARS-BFGL-NGS-33992                    | 0 | 13185892 |  |  |
| 6 | BTB-00244322                          | 0 | 13211945 |  |  |
| 6 | BTB-00244330                          | 0 | 13237367 |  |  |
| 6 | Hapmap40587-BTA-76947                 | 0 | 13274749 |  |  |
| 6 | BTB-01204634                          | 0 | 13295514 |  |  |
| 6 | ARS-BFGL-NGS-17079                    | 0 | 13318510 |  |  |
| 6 | Hapmap46928-BTA-110019                | 0 | 13356187 |  |  |
| 6 | BTA-110014-no-rs                      | 0 | 13381944 |  |  |
| 6 | BTB-01204750                          | 0 | 13417489 |  |  |
| 6 | ARS-BFGL-NGS-109646                   | 0 | 13475512 |  |  |
| 6 | BTB-00244579                          | 0 | 13502824 |  |  |
| 6 | BTA-77020-no-rs                       | 0 | 13527435 |  |  |
| 6 | BTA-12871-rs29024817                  | 0 | 13569263 |  |  |
| 6 | Hapmap51544-BTA-108501                | 0 | 13610388 |  |  |
| 6 | BTA-108507-no-rs                      | 0 | 13641062 |  |  |
| 6 | BTB-01205002                          | 0 | 13661570 |  |  |
| 6 | ARS-BFGL-NGS-114476                   | 0 | 13686546 |  |  |
| 6 | ARS-BFGL-NGS-42109                    | 0 | 13713385 |  |  |
| 6 | BTB-01791576                          | 0 | 13745976 |  |  |
| 6 | ARS-BFGL-NGS-54418                    | 0 | 13821353 |  |  |
| 6 | BTB-00245337                          | 0 | 13861673 |  |  |
| 6 | ARS-BFGL-NGS-92177                    | 0 | 13894408 |  |  |
| 6 | ARS-USMARC-Parent-DQ647190-rs29013632 | 0 | 13897068 |  |  |
| 6 | Hapmap23888-BTA-155071                | 0 | 13918445 |  |  |
| 6 | BTA-77361-no-rs                       | 0 | 13973477 |  |  |
| 6 | Hapmap24840-BTA-143762                | 0 | 14010885 |  |  |
| 6 | ARS-BFGL-NGS-116085                   | 0 | 14038332 |  |  |
| 6 | ARS-BFGL-NGS-112760                   | 0 | 14065611 |  |  |
| 6 | Hapmap58993-rs29021212                | 0 | 14094866 |  |  |
| 6 | BTA-77120-no-rs                       | 0 | 14120051 |  |  |
| 6 | ARS-BFGL-NGS-113393                   | 0 | 14179168 |  |  |
| 6 | BTB-00245001                          | 0 | 14209617 |  |  |
| 6 | ARS-BFGL-NGS-62110                    | 0 | 14254604 |  |  |
| 6 | ARS-BFGL-NGS-106305                   | 0 | 14290917 |  |  |
| 6 | Hapmap25274-BTA-143756                | 0 | 14314482 |  |  |
| 6 | BTB-00244883                          | 0 | 14341377 |  |  |
| 6 | ARS-BFGL-NGS-34357                    | 0 | 14377471 |  |  |
| 6 | ARS-BFGL-NGS-19872                    | 0 | 14419369 |  |  |
| 6 | BTB-00244629                          | 0 | 14449728 |  |  |
| 6 | BTA-111520-no-rs                      | 0 | 14508481 |  |  |
| 6 | Hapmap53442-rs29021218                | 0 | 14674345 |  |  |
| 6 | BTA-106763-no-rs                      | 0 | 14783252 |  |  |
| 6 | Hapmap56771-rs29024201                | 0 | 14814828 |  |  |
| 6 | BTB-01598793                          | 0 | 14851230 |  |  |
| 6 | BTA-90783-no-rs                       | 0 | 14889808 |  |  |
| 6 | Hapmap42721-BTA-90776                 | 0 | 14911170 |  |  |
| 6 | Hapmap27184-BTA-149565                | 0 | 14930138 |  |  |

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| 6 | ARS-BFGL-NGS-111448    | 0 | 15003546 |
| 6 | ARS-BFGL-NGS-36776     | 0 | 15068460 |
| 6 | Hapmap48120-BTA-90771  | 0 | 15090079 |
| 6 | BTB-01123173           | 0 | 15138307 |
| 6 | Hapmap27487-BTA-90787  | 0 | 15214233 |
| 6 | ARS-BFGL-NGS-119888    | 0 | 15252879 |
| 6 | BTA-90789-no-rs        | 0 | 15294694 |
| 6 | BTA-90790-no-rs        | 0 | 15329526 |
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| 6 | BTB-01123443           | 0 | 15391410 |
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| 6 | Hapmap51807-BTA-116458 | 0 | 15747169 |
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| 6 | Hapmap33021-BTA-143811 | 0 | 15848217 |
| 6 | Hapmap49756-BTA-78187  | 0 | 15891103 |
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| 6 | Hapmap38696-BTA-78192  | 0 | 15978059 |
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| 6 | BTA-78200-no-rs        | 0 | 16120969 |
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| 6 | BTB-01367308           | 0 | 16440309 |
| 6 | BTB-01242650           | 0 | 16489680 |
| 6 | Hapmap49468-BTA-116730 | 0 | 16514919 |
| 6 | BTB-01919072           | 0 | 16541679 |
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| 6 | Hapmap57201-rs29025372 | 0 | 16636355 |
| 6 | ARS-BFGL-NGS-25334     | 0 | 16661341 |
| 6 | BTB-00105321           | 0 | 16725243 |
| 6 | BTA-121237-no-rs       | 0 | 16781782 |
| 6 | BTB-00243845           | 0 | 16850753 |
| 6 | ARS-BFGL-NGS-105634    | 0 | 16877946 |
| 6 | BTA-63198-no-rs        | 0 | 16898895 |
| 6 | BTA-63194-no-rs        | 0 | 16922089 |
| 6 | ARS-BFGL-NGS-65823     | 0 | 16948256 |
| 6 | ARS-BFGL-NGS-89778     | 0 | 16972963 |
| 6 | BTB-01547754           | 0 | 17010510 |
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| 6 | BTA-110589-no-rs       | 0 | 17156620 |
| 6 | BTA-110591-no-rs       | 0 | 17179693 |
| 6 | ARS-BFGL-NGS-110317    | 0 | 17202722 |
| 6 | BTB-00247326           | 0 | 17224897 |
| 6 | Hapmap60340-rs29012212 | 0 | 17247862 |
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| 6 | BTB-00247385                    | 0 | 17328796 |  |
| 6 | BTB-00247449                    | 0 | 17378057 |  |
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| 6 | BTA-78204-no-rs                 | 0 | 17456425 |  |
| 6 | ARS-BFGL-NGS-107549             | 0 | 17490257 |  |
| 6 | BTB-00247622                    | 0 | 17522751 |  |
| 6 | BTB-00245693                    | 0 | 17543380 |  |
| 6 | Hapmap44568-BTA-77505           | 0 | 17563402 |  |
| 6 | BTB-00245761                    | 0 | 17585416 |  |
| 6 | BTA-77526-no-rs                 | 0 | 17606774 |  |
| 6 | BTB-00245802                    | 0 | 17637738 |  |
| 6 | BTA-77555-no-rs                 | 0 | 17668442 |  |
| 6 | UA-IFASA-6793                   | 0 | 17711711 |  |
| 6 | ARS-BFGL-NGS-41348              | 0 | 17770346 |  |
| 6 | Hapmap48464-BTA-77646           | 0 | 17862924 |  |
| 6 | Hapmap54435-rs29022514          | 0 | 17904646 |  |
| 6 | ARS-BFGL-NGS-40548              | 0 | 18033876 |  |
| 6 | ARS-BFGL-NGS-32713              | 0 | 18104527 |  |
| 6 | ARS-BFGL-NGS-50393              | 0 | 18130964 |  |
| 6 | ARS-BFGL-NGS-88477              | 0 | 18168879 |  |
| 6 | Hapmap50491-BTA-85929           | 0 | 18213934 |  |
| 6 | BTB-01365807                    | 0 | 18234064 |  |
| 6 | BTB-01365869                    | 0 | 18286930 |  |
| 6 | ARS-BFGL-NGS-80568              | 0 | 18307093 |  |
| 6 | BTB-01365922                    | 0 | 18332881 |  |
| 6 | ARS-BFGL-NGS-16257              | 0 | 18358501 |  |
| 6 | Hapmap40237-BTA-122861          | 0 | 18399373 |  |
| 6 | BTB-01365995                    | 0 | 18425159 |  |
| 6 | Hapmap34233-BES5_Contig600_1072 | 0 | 18450433 |  |
| 6 | ARS-BFGL-NGS-94258              | 0 | 18488052 |  |
| 6 | BTA-29168-no-rs                 | 0 | 18512310 |  |
| 6 | Hapmap49007-BTA-106999          | 0 | 18592851 |  |
| 6 | ARS-BFGL-NGS-21524              | 0 | 18623696 |  |
| 6 | ARS-BFGL-NGS-25804              | 0 | 18653222 |  |
| 6 | BTA-110130-no-rs                | 0 | 18697064 |  |
| 6 | Hapmap53612-rs29011400          | 0 | 18723072 |  |
| 6 | ARS-BFGL-NGS-45046              | 0 | 18750621 |  |
| 6 | ARS-BFGL-NGS-41699              | 0 | 18866879 |  |
| 6 | BTA-77968-no-rs                 | 0 | 18898455 |  |
| 6 | BTB-00246400                    | 0 | 18985315 |  |
| 6 | BTB-01038669                    | 0 | 19035074 |  |
| 6 | Hapmap60777-rs29027003          | 0 | 19058647 |  |
| 6 | Hapmap43552-BTA-31207           | 0 | 19176059 |  |
| 6 | BTA-31201-no-rs                 | 0 | 19196925 |  |
| 6 | BTA-31193-no-rs                 | 0 | 19217749 |  |
| 6 | ARS-BFGL-NGS-112191             | 0 | 19245812 |  |
| 6 | Hapmap57362-rs29014889          | 0 | 19279917 |  |
| 6 | Hapmap54751-rs29013947          | 0 | 19307772 |  |
| 6 | Hapmap24166-BTA-66360           | 0 | 19361293 |  |
| 6 | BTB-01038817                    | 0 | 19390619 |  |
| 6 | ARS-BFGL-NGS-19374              | 0 | 19426158 |  |
| 6 | ARS-BFGL-NGS-91848              | 0 | 19451737 |  |
| 6 | Hapmap51390-BTA-111807          | 0 | 19484533 |  |
| 6 | ARS-BFGL-NGS-111408             | 0 | 19518197 |  |

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| 6 | BTB-02031673           | 0 | 19576414 |
| 6 | BTA-114709-no-rs       | 0 | 19627480 |
| 6 | Hapmap43772-BTA-114710 | 0 | 19669809 |
| 6 | ARS-BFGL-NGS-11814     | 0 | 19769454 |
| 6 | Hapmap38814-BTA-115768 | 0 | 19870314 |
| 6 | BTB-01235703           | 0 | 19897267 |
| 6 | Hapmap41757-BTA-115774 | 0 | 19918122 |
| 6 | ARS-BFGL-NGS-110083    | 0 | 20161016 |
| 6 | Hapmap49035-BTA-115769 | 0 | 20191910 |
| 6 | Hapmap50239-BTA-115771 | 0 | 20229434 |
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| 6 | BTB-01785636           | 0 | 20297397 |
| 6 | Hapmap50753-BTA-66069  | 0 | 20330227 |
| 6 | BTB-01034664           | 0 | 20350438 |
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| 6 | ARS-BFGL-NGS-113831    | 0 | 20430846 |
| 6 | BTB-01034634           | 0 | 20475948 |
| 6 | ARS-BFGL-NGS-59175     | 0 | 20507429 |
| 6 | BTB-01034609           | 0 | 20568920 |
| 6 | BTB-01680436           | 0 | 20693665 |
| 6 | Hapmap39903-BTA-24345  | 0 | 20730690 |
| 6 | BTA-66060-no-rs        | 0 | 20811900 |
| 6 | Hapmap41636-BTA-77903  | 0 | 20854658 |
| 6 | BTA-77886-no-rs        | 0 | 20904380 |
| 6 | BTB-00246256           | 0 | 20924952 |
| 6 | ARS-BFGL-NGS-38200     | 0 | 20946932 |
| 6 | BTB-00246150           | 0 | 20993424 |
| 6 | ARS-BFGL-NGS-69156     | 0 | 21034521 |
| 6 | BTB-00246097           | 0 | 21067822 |
| 6 | BTB-00245990           | 0 | 21126480 |
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| 6 | Hapmap49304-BTA-77734  | 0 | 21293951 |
| 6 | BTB-01951920           | 0 | 21332376 |
| 6 | UA-IFASA-1756          | 0 | 21414895 |
| 6 | Hapmap26681-BTA-143845 | 0 | 21473715 |
| 6 | ARS-BFGL-NGS-40968     | 0 | 21494288 |
| 6 | Hapmap41356-BTA-78236  | 0 | 21528332 |
| 6 | BTA-78232-no-rs        | 0 | 21553155 |
| 6 | Hapmap54577-rs29011449 | 0 | 21588640 |
| 6 | BTB-00247795           | 0 | 21641633 |
| 6 | ARS-BFGL-NGS-118535    | 0 | 21683266 |
| 6 | BTB-00247744           | 0 | 21731679 |
| 6 | Hapmap45671-BTA-122516 | 0 | 21796191 |
| 6 | ARS-BFGL-NGS-118959    | 0 | 21829670 |
| 6 | BTB-01640656           | 0 | 21859572 |
| 6 | BTB-01640698           | 0 | 21884446 |
| 6 | ARS-BFGL-NGS-114695    | 0 | 21909290 |
| 6 | BTB-01430084           | 0 | 21955391 |
| 6 | Hapmap32615-BTA-153007 | 0 | 22063744 |
| 6 | Hapmap40629-BTA-102563 | 0 | 22105777 |
| 6 | ARS-BFGL-NGS-41837     | 0 | 22129886 |
| 6 | BTB-01545174           | 0 | 22152910 |
| 6 | Hapmap50898-BTA-15822  | 0 | 22206086 |
| 6 | Hapmap50136-BTA-87153  | 0 | 22246204 |



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| 6 | ARS-BFGL-NGS-23532                    | 0 | 22273911 |   |          |
| 6 | BTB-01530236                          | 0 | 22302502 |   |          |
| 6 | BTA-101236-no-rs                      | 0 | 22363715 |   |          |
| 6 | BTB-00254696                          | 0 | 22444954 |   |          |
| 6 | BTB-00254654                          | 0 | 22473313 |   |          |
| 6 | ARS-BFGL-NGS-119394                   | 0 | 22538426 |   |          |
| 6 | Hapmap27235-BTA-163445                | 0 | 22576164 |   |          |
| 6 | BTB-01313885                          | 0 | 22613578 |   |          |
| 6 | BTB-01313904                          | 0 | 22650675 |   |          |
| 6 | BTB-01568091                          | 0 | 22672648 |   |          |
| 6 | BTB-01568097                          | 0 | 22695313 |   |          |
| 6 | ARS-BFGL-NGS-44167                    | 0 | 22745431 |   |          |
| 6 | BTB-01663497                          | 0 | 22898994 |   |          |
| 6 | Hapmap1572-BTA-111558                 | 0 | 22967387 |   |          |
| 6 | UA-IFASA-4431                         | 0 | 23017006 |   |          |
| 6 | ARS-BFGL-NGS-100050                   | 0 | 23148412 |   |          |
| 6 | Hapmap33491-BTA-147298                | 0 | 23183379 |   |          |
| 6 | BTB-00246639                          | 0 | 23217855 |   |          |
| 6 | BTB-00246642                          | 0 | 23267958 |   |          |
| 6 | BTB-00246767                          | 0 | 23352794 |   |          |
| 6 | ARS-BFGL-NGS-96978                    | 0 | 23408172 |   |          |
| 6 | BTB-00246860                          | 0 | 23436503 |   |          |
| 6 | Hapmap50782-BTA-78177                 | 0 | 23460345 |   |          |
| 6 | ARS-BFGL-NGS-103398                   | 0 | 23521131 |   |          |
| 6 | ARS-USMARC-Parent-AY849381-rs29003287 | 0 |          | 0 | 23562312 |
| 6 | Hapmap39780-BTA-78179                 | 0 | 23565493 |   |          |
| 6 | ARS-BFGL-NGS-114096                   | 0 | 23617252 |   |          |
| 6 | BTA-78185-no-rs                       | 0 | 23657220 |   |          |
| 6 | ARS-BFGL-NGS-92891                    | 0 | 23700430 |   |          |
| 6 | Hapmap49541-BTA-24412                 | 0 | 23738304 |   |          |
| 6 | BTB-00247050                          | 0 | 23778095 |   |          |
| 6 | Hapmap43543-BTA-27974                 | 0 | 23929036 |   |          |
| 6 | ARS-BFGL-NGS-55441                    | 0 | 23968814 |   |          |
| 6 | ARS-BFGL-NGS-63778                    | 0 | 24006805 |   |          |
| 6 | ARS-BFGL-NGS-18384                    | 0 | 24039470 |   |          |
| 6 | ARS-BFGL-NGS-30459                    | 0 | 24154002 |   |          |
| 6 | ARS-BFGL-NGS-15282                    | 0 | 24184712 |   |          |
| 6 | BTA-94473-no-rs                       | 0 | 24228907 |   |          |
| 6 | BTB-01451601                          | 0 | 24265802 |   |          |
| 6 | BTB-01451452                          | 0 | 24356039 |   |          |
| 6 | BTB-01965723                          | 0 | 24429085 |   |          |
| 6 | BTB-01673061                          | 0 | 24466543 |   |          |
| 6 | BTB-01673078                          | 0 | 24495145 |   |          |
| 6 | Hapmap47837-BTA-112300                | 0 | 24526624 |   |          |
| 6 | BTB-01715840                          | 0 | 24543832 |   |          |
| 6 | Hapmap42467-BTA-19217                 | 0 | 24611359 |   |          |
| 6 | Hapmap38942-BTA-19216                 | 0 | 24634158 |   |          |
| 6 | ARS-BFGL-NGS-19080                    | 0 | 24664967 |   |          |
| 6 | Hapmap52578-rs29012386                | 0 | 24707355 |   |          |
| 6 | Hapmap44314-BTA-92383                 | 0 | 24764626 |   |          |
| 6 | BTB-01427403                          | 0 | 24827452 |   |          |
| 6 | BTB-01427408                          | 0 | 24870792 |   |          |
| 6 | BTA-92371-no-rs                       | 0 | 24900639 |   |          |
| 6 | Hapmap51350-BTA-92379                 | 0 | 24931575 |   |          |

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| 6 | BTA-37417-no-rs        | 0        | 24975034 |
| 6 | UA-IFASA-9429          | 0        | 25065821 |
| 6 | BTA-37416-no-rs        | 0        | 25175118 |
| 6 | ARS-BFGL-NGS-12688     | 0        | 25203804 |
| 6 | ARS-BFGL-NGS-82212     | 0        | 25253472 |
| 6 | Hapmap50545-BTA-102653 | 0        | 25289211 |
| 6 | ARS-BFGL-NGS-18583     | 0        | 25356965 |
| 6 | ARS-BFGL-NGS-63190     | 25474941 |          |
| 6 | Hapmap44510-BTA-106807 | 0        | 25524615 |
| 6 | Hapmap38539-BTA-86703  | 0        | 25556469 |
| 6 | Hapmap31781-BTA-147487 | 0        | 25593943 |
| 6 | Hapmap12085-BTA-86700  | 0        | 25620564 |
| 6 | ARS-BFGL-NGS-37559     | 0        | 25641795 |
| 6 | BTA-24425-no-rs        | 0        | 25669053 |
| 6 | BTA-78240-no-rs        | 0        | 25713466 |
| 6 | ARS-BFGL-NGS-33069     | 0        | 25867247 |
| 6 | ARS-BFGL-NGS-106762    | 0        | 25925916 |
| 6 | Hapmap40492-BTA-117825 | 0        | 26043633 |
| 6 | BTA-78257-no-rs        | 0        | 26129285 |
| 6 | BTA-78261-no-rs        | 0        | 26164290 |
| 6 | Hapmap27407-BTA-143867 | 0        | 26205206 |
| 6 | ARS-BFGL-NGS-59728     | 0        | 26377975 |
| 6 | Hapmap28262-BTA-143868 | 0        | 26484904 |
| 6 | ARS-BFGL-NGS-23452     | 0        | 26537473 |
| 6 | ARS-BFGL-NGS-22019     | 0        | 26559101 |
| 6 | Hapmap50018-BTA-52623  | 0        | 26706330 |
| 6 | BTA-102968-no-rs       | 0        | 26799276 |
| 6 | Hapmap56325-rs29017678 | 0        | 26925931 |
| 6 | ARS-BFGL-NGS-52330     | 27042548 |          |
| 6 | BTA-122286-no-rs       | 0        | 27070611 |
| 6 | ARS-BFGL-NGS-113577    | 0        | 27158687 |
| 6 | BTA-102951-no-rs       | 0        | 27183822 |
| 6 | ARS-BFGL-NGS-97990     | 0        | 27219218 |
| 6 | ARS-BFGL-NGS-115202    | 0        | 27241217 |
| 6 | ARS-BFGL-NGS-10082     | 0        | 27284785 |
| 6 | ARS-BFGL-NGS-105341    | 0        | 27360392 |
| 6 | ARS-BFGL-NGS-108417    | 0        | 27389222 |
| 6 | Hapmap50091-BTA-75608  | 0        | 27433375 |
| 6 | ARS-BFGL-NGS-118927    | 0        | 27488938 |
| 6 | Hapmap43674-BTA-75605  | 0        | 27568399 |
| 6 | Hapmap28561-BTA-143875 | 0        | 27647533 |
| 6 | ARS-BFGL-NGS-113703    | 0        | 27744179 |
| 6 | BTA-00645-rs29013799   | 0        | 27772023 |
| 6 | ARS-BFGL-NGS-12917     | 0        | 27802888 |
| 6 | BTA-75599-no-rs        | 0        | 27886125 |
| 6 | Hapmap25075-BTA-150348 | 0        | 27916603 |
| 6 | ARS-BFGL-NGS-44791     | 0        | 27970286 |
| 6 | BTA-95006-no-rs        | 0        | 28099293 |
| 6 | BTA-86166-no-rs        | 0        | 28148937 |
| 6 | Hapmap49794-BTA-91444  | 0        | 28181355 |
| 6 | BTA-117462-no-rs       | 0        | 28213461 |
| 6 | ARS-BFGL-NGS-86958     | 0        | 28236619 |
| 6 | ARS-BFGL-NGS-62732     | 0        | 28462736 |
| 6 | Hapmap23832-BTA-157854 | 0        | 28538461 |

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| 6 | Hapmap34437-BES1_Contig321_585  | 0 | 28576090 |
| 6 | BTA-106866-no-rs                | 0 | 28730349 |
| 6 | UA-IFASA-4152                   | 0 | 28754184 |
| 6 | ARS-BFGL-NGS-88344              | 0 | 28777165 |
| 6 | ARS-BFGL-NGS-102813             | 0 | 28827723 |
| 6 | ARS-BFGL-NGS-99477              | 0 | 28867782 |
| 6 | ARS-BFGL-NGS-102930             | 0 | 29082583 |
| 6 | BTA-75645-no-rs                 | 0 | 29229430 |
| 6 | Hapmap52018-BTA-75646           | 0 | 29355660 |
| 6 | ARS-BFGL-NGS-106583             | 0 | 29389022 |
| 6 | ARS-BFGL-NGS-52160              | 0 | 29473260 |
| 6 | Hapmap43142-BTA-107561          | 0 | 29556343 |
| 6 | ARS-BFGL-NGS-40881              | 0 | 29594599 |
| 6 | ARS-BFGL-NGS-53343              | 0 | 29709875 |
| 6 | Hapmap49852-BTA-107572          | 0 | 29790005 |
| 6 | ARS-BFGL-NGS-72490              | 0 | 30050205 |
| 6 | Hapmap43931-BTA-75650           | 0 | 30239801 |
| 6 | Hapmap38909-BTA-75651           | 0 | 30262006 |
| 6 | Hapmap58595-rs29013454          | 0 | 30298419 |
| 6 | Hapmap53749-rs29023061          | 0 | 30365819 |
| 6 | BTA-106596-no-rs                | 0 | 30403794 |
| 6 | BTA-75660-no-rs                 | 0 | 30447028 |
| 6 | Hapmap43456-BTA-110215          | 0 | 30488025 |
| 6 | Hapmap55575-rs29016266          | 0 | 30553830 |
| 6 | ARS-BFGL-NGS-66862              | 0 | 30585871 |
| 6 | Hapmap50644-BTA-28820           | 0 | 30613226 |
| 6 | BTA-75665-no-rs                 | 0 | 30694723 |
| 6 | Hapmap33099-BTA-75675           | 0 | 30724488 |
| 6 | ARS-BFGL-NGS-11156              | 0 | 30757924 |
| 6 | ARS-BFGL-NGS-117147             | 0 | 30782962 |
| 6 | ARS-BFGL-NGS-103412             | 0 | 30812012 |
| 6 | ARS-BFGL-NGS-105606             | 0 | 30832561 |
| 6 | BTA-24561-no-rs                 | 0 | 30990436 |
| 6 | BTA-75680-no-rs                 | 0 | 31016787 |
| 6 | UA-IFASA-2072                   | 0 | 31067604 |
| 6 | Hapmap54442-rs29025673          | 0 | 31126062 |
| 6 | Hapmap43180-BTA-121726          | 0 | 31210404 |
| 6 | ARS-BFGL-NGS-11498              | 0 | 31241066 |
| 6 | BTA-121729-no-rs                | 0 | 31275687 |
| 6 | Hapmap49740-BTA-75691           | 0 | 31353827 |
| 6 | Hapmap42761-BTA-05111           | 0 | 31442288 |
| 6 | BTA-121735-no-rs                | 0 | 31462484 |
| 6 | Hapmap59443-rs29009843          | 0 | 31484656 |
| 6 | Hapmap49292-BTA-75698           | 0 | 31570212 |
| 6 | Hapmap49741-BTA-75700           | 0 | 31611312 |
| 6 | BTA-120439-no-rs                | 0 | 31677506 |
| 6 | BTA-12156-rs29024115            | 0 | 31701568 |
| 6 | Hapmap34281-BES3_Contig343_1116 | 0 | 31753703 |
| 6 | Hapmap25371-BTA-75703           | 0 | 31814284 |
| 6 | ARS-BFGL-NGS-89359              | 0 | 31849726 |
| 6 | Hapmap30757-BTA-115734          | 0 | 32016569 |
| 6 | ARS-BFGL-NGS-118995             | 0 | 32128224 |
| 6 | ARS-BFGL-NGS-28684              | 0 | 32241952 |
| 6 | BTA-119035-no-rs                | 0 | 32293744 |

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| 6 | ARS-BFGL-NGS-84321             | 0 | 32437212 |          |
| 6 | Hapmap42776-BTA-105028         | 0 | 32489075 |          |
| 6 | Hapmap49839-BTA-105037         | 0 | 32548500 |          |
| 6 | ARS-BFGL-NGS-84257             | 0 | 32682527 |          |
| 6 | Hapmap39094-BTA-75706          | 0 | 32732676 |          |
| 6 | Hapmap50092-BTA-75710          | 0 | 32761748 |          |
| 6 | ARS-BFGL-NGS-98932             | 0 | 32805721 |          |
| 6 | Hapmap27294-BTC-032117         | 0 | 32850666 |          |
| 6 | Hapmap41633-BTA-75713          | 0 | 32904847 |          |
| 6 | Hapmap27136-BTC-073585         | 0 | 32927979 |          |
| 6 | Hapmap33174-BTC-073543         | 0 | 32948525 |          |
| 6 | Hapmap33286-BTC-032290         | 0 | 33002421 |          |
| 6 | Hapmap33287-BTC-032371         | 0 | 33026144 |          |
| 6 | Hapmap27817-BTC-032401         | 0 | 33059996 |          |
| 6 | Hapmap27945-BTC-073459         | 0 | 33128133 |          |
| 6 | Hapmap33117-BTC-032493         | 0 | 33165747 |          |
| 6 | Hapmap30962-BTC-032558         | 0 | 33189478 |          |
| 6 | Hapmap27069-BTC-032712         | 0 | 33229876 |          |
| 6 | Hapmap25997-BTC-032754         | 0 | 33251452 |          |
| 6 | Hapmap32709-BTC-032803         | 0 | 33284794 |          |
| 6 | Hapmap27500-BTC-032985         | 0 | 33353299 |          |
| 6 | BTA-07565-rs29027230           | 0 | 33374574 |          |
| 6 | Hapmap59369-rs29018333         | 0 | 33396376 |          |
| 6 | Hapmap33121-BTC-033043         | 0 | 33441527 |          |
| 6 | Hapmap32205-BTC-033063         | 0 | 33468196 |          |
| 6 | Hapmap38985-BTA-75752          | 0 | 33509143 |          |
| 6 | Hapmap46243-BTA-75753          | 0 | 33542318 |          |
| 6 | Hapmap38852-BTA-75755          | 0 | 33581983 |          |
| 6 | Hapmap32447-BTC-033214         | 0 | 33685443 |          |
| 6 | Hapmap25168-BTC-033275         | 0 | 33713818 |          |
| 6 | Hapmap36813-SCAFFOLD50174_9004 | 0 |          | 33768128 |
| 6 | ARS-BFGL-NGS-105249            | 0 | 34324052 |          |
| 6 | BTA-21392-no-rs                | 0 | 34686041 |          |
| 6 | ARS-BFGL-NGS-103009            | 0 | 34889220 |          |
| 6 | Hapmap40585-BTA-75775          | 0 | 34967750 |          |
| 6 | BTA-75774-no-rs                | 0 | 34992275 |          |
| 6 | BTA-75768-no-rs                | 0 | 35147153 |          |
| 6 | ARS-BFGL-NGS-43857             | 0 | 35211888 |          |
| 6 | Hapmap42314-BTA-75757          | 0 | 35241752 |          |
| 6 | Hapmap60855-rs29024248         | 0 | 35360248 |          |
| 6 | Hapmap27887-BTA-156628         | 0 | 35456685 |          |
| 6 | Hapmap43447-BTA-105138         | 0 | 35524123 |          |
| 6 | Hapmap32110-BTA-153952         | 0 | 35555247 |          |
| 6 | Hapmap50194-BTA-105136         | 0 | 35577199 |          |
| 6 | BTA-18965-no-rs                | 0 | 35611267 |          |
| 6 | Hapmap56615-rs29012836         | 0 | 35648890 |          |
| 6 | ARS-BFGL-NGS-642               | 0 | 35676944 |          |
| 6 | ARS-BFGL-NGS-36652             | 0 | 35728464 |          |
| 6 | Hapmap59902-rs29013268         | 0 | 35788711 |          |
| 6 | ARS-BFGL-NGS-114855            | 0 | 35922378 |          |
| 6 | ARS-BFGL-NGS-49600             | 0 | 36062803 |          |
| 6 | BTA-97637-no-rs                | 0 | 36277967 |          |
| 6 | BTA-97638-no-rs                | 0 | 36316624 |          |
| 6 | Hapmap26613-BTC-069953         | 0 | 36580568 |          |

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| 6 | ARS-BFGL-NGS-57515     | 0 | 36606686 |
| 6 | Hapmap27329-BTC-055310 | 0 | 36655249 |
| 6 | ARS-BFGL-NGS-103240    | 0 | 36685733 |
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| 6 | Hapmap23877-BTA-143906 | 0 | 36829725 |
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| 6 | Hapmap31921-BTC-033863 | 0 | 37019972 |
| 6 | Hapmap26838-BTC-033907 | 0 | 37066212 |
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| 6 | ARS-BFGL-NGS-119145    | 0 | 37156907 |
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| 6 | ARS-BFGL-NGS-110738    | 0 | 37252345 |
| 6 | Hapmap23183-BTC-033967 | 0 | 37323779 |
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| 6 | BTA-121739-no-rs       | 0 | 38063313 |
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| 6 | Hapmap23413-BTC-041058 | 0 | 38892842 |
| 6 | Hapmap33630-BTC-041044 | 0 | 38914175 |

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| 6 | Hapmap23117-BTC-034857 | 0        | 39147750 |
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| 6 | Hapmap53940-rs29026121 | 0        | 39216868 |
| 6 | Hapmap27537-BTC-060891 | 0        | 39257620 |
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| 6 | Hapmap33170-BTC-071249 | 0        | 39371150 |
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| 6 | Hapmap60113-rs29017603 | 0        | 40983913 |

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| 6 | Hapmap57625-rs29027071 | 0 | 41253845 |
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| 6 | BTB-00251573           | 0 | 42687766 |
| 6 | BTA-75940-no-rs        | 0 | 42714287 |
| 6 | ARS-BFGL-NGS-67509     | 0 | 42758833 |
| 6 | Hapmap43676-BTA-75936  | 0 | 42782178 |
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| 6 | BTA-75926-no-rs                | 0 | 42866573 |          |
| 6 | BTA-95818-no-rs                | 0 | 43037439 |          |
| 6 | Hapmap59666-rs29014966         | 0 | 43061619 |          |
| 6 | BTB-01468498                   | 0 | 43089739 |          |
| 6 | BTB-01468535                   | 0 | 43122985 |          |
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| 6 | Hapmap59861-rs29027897         | 0 | 43175657 |          |
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| 6 | Hapmap47224-BTA-24614          | 0 | 43303952 |          |
| 6 | BTB-00252970                   | 0 | 43330106 |          |
| 6 | Hapmap23033-BTA-75996          | 0 | 43363746 |          |
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| 6 | ARS-BFGL-NGS-107577            | 0 | 43456453 |          |
| 6 | ARS-BFGL-NGS-16110             |   | 43489216 |          |
| 6 | BTB-00825210                   | 0 | 43531610 |          |
| 6 | Hapmap47037-BTA-52688          | 0 | 43569171 |          |
| 6 | ARS-BFGL-NGS-23937             | 0 | 43614199 |          |
| 6 | Hapmap34048-BES8_Contig582_862 | 0 |          | 43658399 |
| 6 | ARS-BFGL-NGS-58762             | 0 | 43713187 |          |
| 6 | Hapmap43677-BTA-76003          | 0 | 43772388 |          |
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| 6 | BTB-00253070                   | 0 | 43818336 |          |
| 6 | ARS-BFGL-NGS-15713             | 0 | 43865032 |          |
| 6 | BTB-02093016                   | 0 | 43872606 |          |
| 6 | ARS-BFGL-NGS-42501             | 0 | 43920160 |          |
| 6 | BTB-01893222                   | 0 | 43947204 |          |
| 6 | BTB-00253016                   | 0 | 44020250 |          |
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| 6 | Hapmap28019-BTC-054809         | 0 | 44305092 |          |
| 6 | Hapmap26882-BTC-054869         | 0 | 44337791 |          |
| 6 | Hapmap26587-BTC-054901         | 0 | 44363683 |          |
| 6 | Hapmap33640-BTC-055193         | 0 | 44418493 |          |
| 6 | Hapmap26883-BTC-055211         | 0 | 44441744 |          |
| 6 | Hapmap51527-BTA-97415          | 0 | 44461834 |          |
| 6 | Hapmap54823-rs29021261         | 0 | 44545708 |          |
| 6 | Hapmap28005-BTC-037769         | 0 | 44622597 |          |
| 6 | ARS-BFGL-NGS-117009            | 0 | 44649549 |          |
| 6 | BTA-76027-no-rs                | 0 | 44672692 |          |
| 6 | Hapmap27690-BTC-037987         | 0 | 44698534 |          |
| 6 | Hapmap27691-BTC-038108         | 0 | 44730596 |          |
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| 6 | Hapmap31927-BTC-038306         | 0 | 44789933 |          |
| 6 | Hapmap26848-BTC-038527         | 0 | 44819589 |          |
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| 6 | Hapmap32932-BTC-038619         | 0 | 44894050 |          |
| 6 | Hapmap26001-BTC-038813         | 0 | 44926243 |          |
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| 6 | BTB-00254199                   | 0 | 45017700 |          |
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| 6 | Hapmap31284-BTC-039204                | 0        | 45096462 |          |
| 6 | Hapmap47403-BTA-76048                 | 0        | 45153190 |          |
| 6 | Hapmap30420-BTC-039335                | 0        | 45175137 |          |
| 6 | Hapmap32456-BTC-038385                | 0        | 45216251 |          |
| 6 | Hapmap26267-BTC-039886                | 0        | 45253378 |          |
| 6 | Hapmap32217-BTC-039812                | 0        | 45300844 |          |
| 6 | Hapmap47098-BTA-76051                 | 0        | 45324435 |          |
| 6 | Hapmap31607-BTC-039637                | 0        | 45381777 |          |
| 6 | ARS-BFGL-NGS-10707                    | 0        | 45412181 |          |
| 6 | ARS-BFGL-NGS-112073                   | 0        | 45440921 |          |
| 6 | ARS-BFGL-NGS-112781                   | 0        | 45479538 |          |
| 6 | Hapmap44618-BTA-76049                 | 0        | 45499848 |          |
| 6 | Hapmap27078-BTC-039516                | 0        | 45522677 |          |
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| 6 | Hapmap44850-BTA-76107                 | 0        | 45602259 |          |
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| 6 | ARS-BFGL-NGS-25250                    | 45813845 |          |          |
| 6 | ARS-BFGL-NGS-97136                    | 0        | 45909053 |          |
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| 6 | Hapmap55150-rs29025709                | 0        | 46260375 |          |
| 6 | Hapmap34991-BES10_Contig387_829       | 0        |          | 46481458 |
| 6 | ARS-BFGL-NGS-39570                    | 0        | 46512131 |          |
| 6 | ARS-BFGL-NGS-113185                   | 0        | 46533015 |          |
| 6 | ARS-BFGL-NGS-31525                    | 0        | 46556246 |          |
| 6 | Hapmap23226-BTA-159656                | 0        | 46599570 |          |
| 6 | ARS-BFGL-NGS-21774                    | 0        | 46680701 |          |
| 6 | Hapmap44131-BTA-76099                 | 0        | 46702267 |          |
| 6 | Hapmap52362-ss46526804                | 0        | 46750945 |          |
| 6 | ARS-BFGL-NGS-95035                    | 0        | 46788536 |          |
| 6 | ARS-BFGL-NGS-67206                    | 0        | 46820055 |          |
| 6 | Hapmap34686-BES10_Contig763_1215      | 0        |          | 46867937 |
| 6 | ARS-USMARC-Parent-DQ789028-rs29017713 | 0        |          | 46936182 |
| 6 | ARS-BFGL-NGS-53753                    | 0        | 46970861 |          |
| 6 | ARS-BFGL-NGS-24332                    | 0        | 47032183 |          |
| 6 | BTA-76116-no-rs                       | 0        | 47140778 |          |
| 6 | ARS-BFGL-NGS-39508                    | 0        | 47188068 |          |
| 6 | BTA-121749-no-rs                      | 0        | 47306228 |          |
| 6 | Hapmap41353-BTA-76120                 | 0        | 47482983 |          |
| 6 | BTA-22339-no-rs                       | 0        | 47663382 |          |
| 6 | ARS-BFGL-NGS-30034                    | 0        | 47791866 |          |
| 6 | ARS-BFGL-NGS-98747                    | 0        | 47838726 |          |
| 6 | ARS-BFGL-NGS-64239                    | 0        | 47862005 |          |
| 6 | ARS-BFGL-NGS-31387                    | 0        | 47916741 |          |
| 6 | Hapmap52342-rs29016265                | 0        | 47983800 |          |
| 6 | BTB-00254839                          | 0        | 48025306 |          |
| 6 | ARS-BFGL-NGS-12288                    | 0        | 48065624 |          |
| 6 | Hapmap39432-BTA-76145                 | 0        | 48190681 |          |
| 6 | ARS-BFGL-NGS-101567                   | 0        | 48216479 |          |
| 6 | Hapmap34506-BES8_Contig430_959        | 0        |          | 48256937 |
| 6 | ARS-BFGL-NGS-116163                   | 0        | 48303392 |          |
| 6 | Hapmap43679-BTA-76147                 | 0        | 48423262 |          |

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| 6 | ARS-BFGL-NGS-58287     | 0 | 48478840 |
| 6 | BTB-01417044           | 0 | 48507066 |
| 6 | Hapmap44495-BTA-91063  | 0 | 48541257 |
| 6 | Hapmap54702-rs29018489 | 0 | 48578627 |
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| 6 | BTB-00255537           | 0 | 48671908 |
| 6 | ARS-BFGL-NGS-75897     | 0 | 48705890 |
| 6 | BTB-00255207           | 0 | 48752176 |
| 6 | ARS-BFGL-NGS-41037     | 0 | 48776662 |
| 6 | Hapmap60756-rs29010402 | 0 | 48815917 |
| 6 | ARS-BFGL-NGS-79906     | 0 | 48854792 |
| 6 | BTB-01402033           | 0 | 48877739 |
| 6 | ARS-BFGL-NGS-78057     | 0 | 48913327 |
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| 6 | BTB-01854916           | 0 | 48958279 |
| 6 | BTB-01688071           | 0 | 49048876 |
| 6 | Hapmap43091-BTA-88750  | 0 | 49099925 |
| 6 | BTB-02002785           | 0 | 49130874 |
| 6 | BTB-01527594           | 0 | 49166985 |
| 6 | BTB-01527489           | 0 | 49205249 |
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| 6 | BTB-01527355           | 0 | 49265344 |
| 6 | BTB-01846733           | 0 | 49299798 |
| 6 | BTB-01870633           | 0 | 49340171 |
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| 6 | BTB-00255966           | 0 | 49504164 |
| 6 | BTA-76196-no-rs        | 0 | 49553975 |
| 6 | BTB-00256073           | 0 | 49580604 |
| 6 | BTB-02022847           | 0 | 49602059 |
| 6 | BTB-00256297           | 0 | 49668745 |
| 6 | ARS-BFGL-NGS-46273     | 0 | 49695302 |
| 6 | BTB-00256366           | 0 | 49724627 |
| 6 | BTB-01642941           | 0 | 49818590 |
| 6 | Hapmap23279-BTA-158875 | 0 | 49873569 |
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| 6 | Hapmap51152-BTA-115003 | 0 | 50046827 |
| 6 | BTA-18813-no-rs        | 0 | 50171421 |
| 6 | BTA-18812-no-rs        | 0 | 50204450 |
| 6 | Hapmap55410-rs29023010 | 0 | 50255777 |
| 6 | Hapmap43038-BTA-76203  | 0 | 50316616 |
| 6 | BTB-00256594           | 0 | 50351709 |
| 6 | BTA-76317-no-rs        | 0 | 50391701 |
| 6 | BTB-00256842           | 0 | 50442769 |
| 6 | Hapmap44302-BTA-86279  | 0 | 50483279 |
| 6 | ARS-BFGL-NGS-43044     | 0 | 50537368 |
| 6 | BTB-01819682           | 0 | 50593861 |
| 6 | Hapmap24252-BTA-147305 | 0 | 50627149 |
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| 6 | BTB-01382552           | 0 | 50717954 |
| 6 | BTB-01201456           | 0 | 50776023 |
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| 6 | BTB-02001974           | 0 | 50860823 |
| 6 | BTB-00257072           | 0 | 50887205 |
| 6 | Hapmap29605-BTA-27618  | 0 | 50981312 |
| 6 | BTB-01354053           | 0 | 51007189 |
| 6 | BTB-02077165           | 0 | 51076225 |
| 6 | BTB-01518295           | 0 | 51102728 |
| 6 | BTB-01518251           | 0 | 51161365 |
| 6 | Hapmap55412-rs29023256 | 0 | 51215544 |
| 6 | BTA-93891-no-rs        | 0 | 51303950 |
| 6 | Hapmap52628-rs29014687 | 0 | 51335608 |
| 6 | ARS-BFGL-NGS-106177    | 0 | 51361032 |
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| 6 | Hapmap26268-BTC-040324 | 0 | 52900773 |
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| 6 | BTA-108543-no-rs                | 0 | 53056512 |
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| 6 | Hapmap27851-BTC-071689          | 0 | 53159092 |
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| 6 | Hapmap26814-BTC-014764          | 0 | 54063716 |
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| 6 | ARS-BFGL-NGS-114099             | 0 | 57139728 |  |
| 6 | Hapmap54176-rs29021880          | 0 | 57213558 |  |
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| 6 | ARS-BFGL-NGS-116526             | 0 | 57306636 |  |
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| 6 | Hapmap53964-rs29017197          | 0 | 58342338 |  |
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| 6 | ARS-BFGL-NGS-39812              | 0 | 58415803 |  |
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| 6 | Hapmap42666-BTA-76393  | 0        | 58536432 |
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| 6 | Hapmap58166-rs29026792 | 0        | 59100491 |
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| 6 | Hapmap27752-BTA-144121 | 0        | 59267778 |
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| 6 | Hapmap54653-rs29025767 | 0        | 59928049 |
| 6 | BTA-97854-no-rs        | 0        | 59977609 |
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| 6 | ARS-BFGL-NGS-62682     | 0        | 60518194 |
| 6 | Hapmap39910-BTA-30685  | 0        | 60654151 |
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| 6 | Hapmap26967-BTA-144130 | 0        | 60728804 |
| 6 | ARS-BFGL-NGS-82384     | 0        | 60776542 |
| 6 | Hapmap51312-BTA-76569  | 0        | 60802076 |
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| 6 | Hapmap49294-BTA-76541  | 0        | 60984644 |
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| 6 | BTA-05152-no-rs        | 0        | 61132085 |
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| 6 | Hapmap39208-BTA-68393  | 0        | 61492196 |
| 6 | BTA-68404-no-rs        | 0        | 61523195 |
| 6 | ARS-BFGL-NGS-10224     | 0        | 61555559 |
| 6 | Hapmap38694-BTA-76566  | 0        | 61591415 |
| 6 | BTB-00259313           | 0        | 61614443 |

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| 6 | ARS-BFGL-NGS-26173     | 0 | 61663496 |
| 6 | BTB-01574784           | 0 | 61702884 |
| 6 | ARS-BFGL-NGS-112982    | 0 | 61733479 |
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| 6 | Hapmap38350-BTA-75806  | 0 | 61878283 |
| 6 | BTB-00248845           | 0 | 61905913 |
| 6 | Hapmap42315-BTA-75808  | 0 | 61950119 |
| 6 | BTA-76499-no-rs        | 0 | 62018146 |
| 6 | Hapmap41354-BTA-76501  | 0 | 62048830 |
| 6 | BTB-00258644           | 0 | 62085065 |
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| 6 | ARS-BFGL-NGS-51140     |   | 62296566 |
| 6 | BTA-76588-no-rs        | 0 | 62341922 |
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| 6 | ARS-BFGL-NGS-35835     | 0 | 62788712 |
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| 6 | Hapmap26181-BTA-156071 | 0 | 63347756 |
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| 6 | BTA-111193-no-rs       | 0 | 63440877 |
| 6 | ARS-BFGL-NGS-78719     | 0 | 63532785 |
| 6 | Hapmap31190-BTA-161167 | 0 | 63893575 |
| 6 | BTA-111059-no-rs       | 0 | 63996365 |
| 6 | Hapmap49442-BTA-111073 | 0 | 64037334 |
| 6 | BTA-111072-no-rs       | 0 | 64059795 |
| 6 | Hapmap32421-BTA-90170  | 0 | 64109882 |
| 6 | Hapmap43353-BTA-76584  | 0 | 64179687 |
| 6 | Hapmap39040-BTA-76581  | 0 | 64247306 |
| 6 | Hapmap44565-BTA-76573  | 0 | 64280973 |
| 6 | Hapmap50621-BTA-21320  | 0 | 64425164 |
| 6 | BTB-01312521           | 0 | 64466274 |
| 6 | BTA-21313-no-rs        | 0 | 64514509 |
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| 6 | Hapmap39131-BTA-21297  | 0 | 64610241 |
| 6 | BTB-01311952           | 0 | 64641399 |
| 6 | BTB-01311939           | 0 | 64663665 |
| 6 | Hapmap42870-BTA-21323  | 0 | 64705051 |
| 6 | BTA-76599-no-rs        | 0 | 64733603 |
| 6 | BTB-00259941           | 0 | 64776129 |
| 6 | BTA-76600-no-rs        | 0 | 64810123 |
| 6 | BTB-00260196           | 0 | 64853128 |
| 6 | BTB-00260242           | 0 | 64888552 |
| 6 | Hapmap28178-BTA-144142 | 0 | 64963475 |
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| 6 | BTB-01534149           | 0 | 65025424 |
| 6 | ARS-BFGL-NGS-110072    | 0 | 65075381 |
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| 6 | BTB-00260471           | 0 | 65217698 |
| 6 | BTB-00260473           | 0 | 65238368 |
| 6 | ARS-BFGL-NGS-85054     | 0 | 65344756 |
| 6 | BTB-00260513           | 0 | 65380200 |
| 6 | BTB-01686849           | 0 | 65395403 |
| 6 | Hapmap25571-BTA-147549 | 0 | 65478043 |
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| 6 | BTB-01667396           | 0 | 65889482 |
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| 6 | BTA-28751-no-rs        | 0 | 66594604 |
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| 6 | BTB-01941442           | 0 | 67024345 |



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| 6 | BTA-110747-no-rs       | 0 | 67170035 |
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| 6 | ARS-BFGL-NGS-116808    | 0 | 68616066 |
| 6 | Hapmap25900-BTA-159071 | 0 | 68681708 |
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| 6 | Hapmap38628-BTA-76690  | 0 | 69639884 |
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| 6 | Hapmap44512-BTA-107928 | 0        | 70376204 |
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| 6 | ARS-BFGL-NGS-40712     | 0        | 70704748 |
| 6 | ARS-BFGL-NGS-118128    | 0        | 70728247 |
| 6 | Hapmap38352-BTA-76628  | 0        | 70865694 |
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| 6 | BTA-76626-no-rs        | 0        | 70959812 |
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| 6 | ARS-BFGL-NGS-30652     | 0        | 71073768 |
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| 6 | Hapmap27516-BTC-042465 | 0        | 71910076 |
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| 6 | BTA-111809-no-rs       | 0 | 77186116 |
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| 6 | BTB-00265222           | 0 | 81169373 |
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| 6 | ARS-BFGL-NGS-108246    | 0 | 81368675 |
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| 6 | Hapmap27224-BTA-161106 | 0 | 81551479 |
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| 6 | BTA-77034-no-rs        | 0 | 82540280 |
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| 6 | Hapmap27307-BTC-043200 | 0 | 82605943 |
| 6 | Hapmap26856-BTC-043085 | 0 | 82659262 |
| 6 | Hapmap25425-BTC-043042 | 0 | 82679646 |
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| 6 | BTA-77011-no-rs        | 0 | 82773692 |
| 6 | ARS-BFGL-NGS-63312     | 0 | 82965163 |
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| 6 | Hapmap49297-BTA-76961  | 0 | 83147633 |
| 6 | BTA-76960-no-rs        | 0 | 83229855 |
| 6 | BTA-121766-no-rs       | 0 | 83256899 |
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| 6 | BTA-86049-no-rs        | 0 | 83919789 |
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| 6 | Hapmap29851-BTA-154970 | 0 | 84058948 |
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| 6 | ARS-BFGL-NGS-70112     | 0 | 84448550 |
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| 6 | Hapmap31479-BTA-153462 | 0 | 84996399 |
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| 6 | ARS-BFGL-NGS-86825     | 0 | 86794730 |
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| 6 | Hapmap54803-rs29015041 | 0 | 87022091 |
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| 6 | BTA-77057-no-rs        | 0 | 87365840 |
| 6 | Hapmap52348-rs29024684 | 0 | 87396306 |
| 6 | Hapmap24197-BTA-144228 | 0 | 87489912 |
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| 6 | Hapmap44452-BTA-22099  | 0 | 89399736 |
| 6 | Hapmap60852-rs29024026 | 0 | 89479553 |
| 6 | Hapmap50881-BTA-119376 | 0 | 89505004 |
| 6 | BTB-01025945           | 0 | 89528071 |
| 6 | BTB-01946639           | 0 | 89550253 |
| 6 | BTB-01946648           | 0 | 89572513 |
| 6 | Hapmap33367-BTA-144261 | 0 | 89593899 |
| 6 | BTA-77205-no-rs        | 0 | 89637828 |
| 6 | BTB-01820719           | 0 | 89772651 |
| 6 | Hapmap39947-BTA-77207  | 0 | 89823313 |
| 6 | Hapmap25279-BTA-144276 | 0 | 89882766 |
| 6 | BTA-121769-no-rs       | 0 | 89912196 |

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| 6 | BTA-77210-no-rs                  | 0 | 89933451 |          |
| 6 | BTB-00707438                     | 0 | 89962889 |          |
| 6 | Hapmap33406-BTA-42962            | 0 | 90006708 |          |
| 6 | BTB-00707484                     | 0 | 90049755 |          |
| 6 | BTB-00987135                     | 0 | 90160155 |          |
| 6 | BTB-00987116                     | 0 | 90188972 |          |
| 6 | Hapmap42616-BTA-64032            | 0 | 90217183 |          |
| 6 | BTB-00987114                     | 0 | 90247718 |          |
| 6 | BTA-64031-no-rs                  | 0 | 90325414 |          |
| 6 | BTA-77009-no-rs                  | 0 | 90486780 |          |
| 6 | Hapmap23433-BTA-144223           | 0 | 90495403 |          |
| 6 | ARS-USMARC-Parent-AY849380-no-rs | 0 |          | 90562665 |
| 6 | ARS-BFGL-NGS-32004               | 0 | 90594758 |          |
| 6 | BTB-00265951                     | 0 | 90642682 |          |
| 6 | BTB-00265923                     | 0 | 90665860 |          |
| 6 | ARS-BFGL-NGS-105651              | 0 | 90686870 |          |
| 6 | Hapmap43045-BTA-76998            | 0 | 90730485 |          |
| 6 | BTB-00265871                     | 0 | 90752830 |          |
| 6 | ARS-BFGL-NGS-80814               | 0 | 90783153 |          |
| 6 | BTA-76988-no-rs                  | 0 | 90876389 |          |
| 6 | Hapmap42318-BTA-76987            | 0 | 90902316 |          |
| 6 | ARS-BFGL-NGS-113032              | 0 | 90931190 |          |
| 6 | ARS-BFGL-NGS-116877              | 0 | 90966250 |          |
| 6 | Hapmap57216-rs29016177           | 0 | 90989420 |          |
| 6 | BTB-01849217                     | 0 | 91023863 |          |
| 6 | Hapmap41084-BTA-77215            | 0 | 91056681 |          |
| 6 | BTA-12570-no-rs                  | 0 | 91066150 |          |
| 6 | BTB-01458572                     | 0 | 91106000 |          |
| 6 | Hapmap38927-BTA-94993            | 0 | 91144565 |          |
| 6 | ARS-BFGL-NGS-23910               |   | 91187144 |          |
| 6 | ARS-BFGL-NGS-13074               | 0 | 91313177 |          |
| 6 | ARS-BFGL-NGS-115014              | 0 | 91411581 |          |
| 6 | Hapmap40845-BTA-97263            | 0 | 91433227 |          |
| 6 | ARS-BFGL-NGS-29350               |   | 91480536 |          |
| 6 | BTB-01657893                     | 0 | 91485845 |          |
| 6 | ARS-BFGL-NGS-102760              | 0 | 91518537 |          |
| 6 | BTB-01658095                     | 0 | 91543840 |          |
| 6 | Hapmap48129-BTA-95633            | 0 | 91578337 |          |
| 6 | BTB-01466630                     | 0 | 91631355 |          |
| 6 | BTB-01466661                     | 0 | 91660390 |          |
| 6 | ARS-BFGL-NGS-83505               | 0 | 91684741 |          |
| 6 | BTB-01466878                     | 0 | 91785150 |          |
| 6 | BTB-01381901                     | 0 | 91801862 |          |
| 6 | BTA-86242-no-rs                  | 0 | 91840239 |          |
| 6 | Hapmap51334-BTA-86245            | 0 | 91872204 |          |
| 6 | Hapmap49816-BTA-98191            | 0 | 91906227 |          |
| 6 | BTB-01496144                     | 0 | 91951608 |          |
| 6 | BTB-01496160                     | 0 | 91997279 |          |
| 6 | ARS-BFGL-NGS-23066               | 0 | 92153394 |          |
| 6 | BTB-01428718                     | 0 | 92195532 |          |
| 6 | BTB-01428731                     | 0 | 92217233 |          |
| 6 | BTA-92518-no-rs                  | 0 | 92242383 |          |
| 6 | BTB-01885835                     | 0 | 92279760 |          |
| 6 | BTB-01428873                     | 0 | 92309468 |          |



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| 6 | BTB-01428914                    | 0 | 92363326 |          |
| 6 | ARS-BFGL-NGS-105032             | 0 | 92398354 |          |
| 6 | BTB-01428761                    | 0 | 92422088 |          |
| 6 | ARS-BFGL-NGS-60568              | 0 | 92465869 |          |
| 6 | ARS-BFGL-NGS-108278             | 0 | 92497641 |          |
| 6 | BTB-01995503                    | 0 | 92527885 |          |
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| 6 | Hapmap60022-ss46526536          | 0 | 92623916 |          |
| 6 | ARS-BFGL-NGS-40151              | 0 | 92690455 |          |
| 6 | BTB-01834863                    | 0 | 92757120 |          |
| 6 | ARS-BFGL-NGS-63919              | 0 | 92830946 |          |
| 6 | ARS-BFGL-NGS-119068             | 0 | 92855916 |          |
| 6 | BTB-00267167                    | 0 | 92922752 |          |
| 6 | ARS-BFGL-NGS-83066              | 0 | 92972074 |          |
| 6 | BTA-77123-no-rs                 | 0 | 93039499 |          |
| 6 | Hapmap48462-BTA-77136           | 0 | 93080797 |          |
| 6 | BTB-00267652                    | 0 | 93108769 |          |
| 6 | ARS-BFGL-NGS-115937             | 0 | 93137474 |          |
| 6 | ARS-BFGL-NGS-92582              | 0 | 93175994 |          |
| 6 | BTB-00267864                    | 0 | 93243643 |          |
| 6 | ARS-BFGL-NGS-112355             | 0 | 93271051 |          |
| 6 | ARS-BFGL-NGS-115085             | 0 | 93297733 |          |
| 6 | UA-IFASA-6709                   | 0 | 93381472 |          |
| 6 | BTB-00268174                    | 0 | 93438613 |          |
| 6 | ARS-BFGL-NGS-103781             | 0 | 93486356 |          |
| 6 | ARS-BFGL-NGS-59295              | 0 | 93506645 |          |
| 6 | BTA-77154-no-rs                 | 0 | 93551941 |          |
| 6 | BTB-00268267                    | 0 | 93589032 |          |
| 6 | BTB-00268287                    | 0 | 93646389 |          |
| 6 | BTB-00268308                    | 0 | 93670062 |          |
| 6 | BTA-109075-no-rs                | 0 | 93737302 |          |
| 6 | ARS-BFGL-NGS-24779              | 0 | 93747923 |          |
| 6 | Hapmap43810-BTA-22040           | 0 | 93935328 |          |
| 6 | ARS-BFGL-NGS-100802             | 0 | 93961099 |          |
| 6 | Hapmap36639-SCAFFOLD206090_3335 | 0 |          | 94036712 |
| 6 | ARS-BFGL-NGS-34326              | 0 | 94106949 |          |
| 6 | Hapmap52160-rs29020798          | 0 | 94141326 |          |
| 6 | BTB-00270281                    | 0 | 94158559 |          |
| 6 | BTB-00270310                    | 0 | 94189136 |          |
| 6 | Hapmap49058-BTA-121772          | 0 | 94228599 |          |
| 6 | Hapmap51048-BTA-77224           | 0 | 94262697 |          |
| 6 | BTA-77228-no-rs                 | 0 | 94300826 |          |
| 6 | Hapmap50778-BTA-77229           | 0 | 94334151 |          |
| 6 | BTB-01687386                    | 0 | 94360125 |          |
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| 6 | ARS-BFGL-NGS-119791             | 0 | 94439594 |          |
| 6 | BTB-01884158                    | 0 | 94463760 |          |
| 6 | ARS-BFGL-NGS-32227              | 0 | 94562464 |          |
| 6 | ARS-BFGL-NGS-41209              | 0 | 94589635 |          |
| 6 | Hapmap40589-BTA-77348           | 0 | 94627787 |          |
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| 6 | BTB-00271326                    | 0 | 94712856 |          |

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| 6 | Hapmap33485-BTA-144281 | 0 | 94744842 |
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| 6 | ARS-BFGL-NGS-56334     | 0 | 94817151 |
| 6 | BTB-00271049           | 0 | 94864234 |
| 6 | BTB-00270878           | 0 | 94890117 |
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| 6 | ARS-BFGL-NGS-119331    | 0 | 94948275 |
| 6 | Hapmap53128-rs29022916 | 0 | 94985940 |
| 6 | BTA-01561-rs29012522   | 0 | 95037527 |
| 6 | BTB-00270696           | 0 | 95060260 |
| 6 | Hapmap58150-rs29020620 | 0 | 95080255 |
| 6 | ARS-BFGL-NGS-49632     | 0 | 95103588 |
| 6 | BTB-00270662           | 0 | 95137441 |
| 6 | Hapmap23162-BTA-27371  | 0 | 95169963 |
| 6 | BTB-01677314           | 0 | 95200808 |
| 6 | BTA-112746-no-rs       | 0 | 95240012 |
| 6 | Hapmap32999-BTA-133175 | 0 | 95262964 |
| 6 | BTB-00753223           | 0 | 95360863 |
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| 6 | BTB-00753045           | 0 | 95414597 |
| 6 | ARS-BFGL-NGS-45355     | 0 | 95443904 |
| 6 | BTA-77373-no-rs        | 0 | 95469835 |
| 6 | BTB-00271752           | 0 | 95572055 |
| 6 | Hapmap40305-BTA-19049  | 0 | 95597776 |
| 6 | BTA-77371-no-rs        | 0 | 95634253 |
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| 6 | BTA-00906-rs29014057   | 0 | 96260709 |
| 6 | Hapmap33530-BTA-77395  | 0 | 96332260 |
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| 6 | Hapmap51315-BTA-77397  | 0 | 96547461 |
| 6 | Hapmap30829-BTA-144300 | 0 | 96577558 |
| 6 | BTB-00272510           | 0 | 96654485 |
| 6 | BTA-29651-no-rs        | 0 | 96716649 |
| 6 | Hapmap47908-BTA-29649  | 0 | 96821209 |
| 6 | ARS-BFGL-NGS-108245    | 0 | 96841919 |
| 6 | BTB-01371380           | 0 | 96877217 |
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| 6 | Hapmap40143-BTA-77449  | 0 | 97091396 |
| 6 | BTA-77454-no-rs        | 0 | 97113378 |
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| 6 | Hapmap58323-rs29013689         | 0 | 97174252 |          |
| 6 | BTB-00273062                   | 0 | 97208312 |          |
| 6 | BTB-00273052                   | 0 | 97241852 |          |
| 6 | BTB-01781038                   | 0 | 97323457 |          |
| 6 | Hapmap30045-BTA-159149         | 0 | 97343686 |          |
| 6 | BTA-21726-no-rs                | 0 | 97374303 |          |
| 6 | BTB-01965912                   | 0 | 97426302 |          |
| 6 | BTB-01700063                   | 0 | 97475077 |          |
| 6 | BTA-77418-no-rs                | 0 | 97538647 |          |
| 6 | ARS-BFGL-NGS-106834            | 0 | 97583093 |          |
| 6 | BTA-77420-no-rs                | 0 | 97608564 |          |
| 6 | BTB-00272793                   | 0 | 97637251 |          |
| 6 | BTB-00272812                   | 0 | 97666752 |          |
| 6 | BTB-00272829                   | 0 | 97702735 |          |
| 6 | ARS-BFGL-NGS-74695             | 0 | 97747161 |          |
| 6 | BTA-77421-no-rs                | 0 | 97781688 |          |
| 6 | BTB-00272865                   | 0 | 97804578 |          |
| 6 | BTB-00272881                   | 0 | 97826840 |          |
| 6 | Hapmap43937-BTA-77423          | 0 | 97874422 |          |
| 6 | Hapmap36567-SCAFFOLD30438_8760 | 0 |          | 97937238 |
| 6 | Hapmap53916-rs29021982         | 0 | 97952413 |          |
| 6 | ARS-BFGL-NGS-84855             | 0 | 97970607 |          |
| 6 | BTB-00273958                   | 0 | 97991558 |          |
| 6 | BTA-77484-no-rs                | 0 | 98011766 |          |
| 6 | BTB-00274080                   | 0 | 98033602 |          |
| 6 | Hapmap48889-BTA-77486          | 0 | 98054956 |          |
| 6 | Hapmap48078-BTA-77495          | 0 | 98198721 |          |
| 6 | BTB-00274330                   | 0 | 98230507 |          |
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| 6 | ARS-BFGL-NGS-34097             | 0 | 98363600 |          |
| 6 | BTB-00274608                   | 0 | 98437170 |          |
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| 6 | ARS-BFGL-NGS-76212             | 0 | 98576371 |          |
| 6 | Hapmap25280-BTA-144335         | 0 | 98788966 |          |
| 6 | BTA-77472-no-rs                | 0 | 98810035 |          |
| 6 | Hapmap10869-BTA-77464          | 0 | 98843203 |          |
| 6 | BTB-00273261                   | 0 | 98879044 |          |
| 6 | Hapmap26682-BTA-144311         | 0 | 98908197 |          |
| 6 | BTB-00273221                   | 0 | 98929697 |          |
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| 6 | Hapmap54521-ss46526011         | 0 | 99028913 |          |
| 6 | Hapmap44619-BTA-77481          | 0 | 99094456 |          |
| 6 | BTB-00273855                   | 0 | 99128925 |          |
| 6 | BTA-21909-no-rs                | 0 | 99150246 |          |
| 6 | BTB-01096469                   | 0 | 99187864 |          |
| 6 | Hapmap52395-rs29022306         | 0 | 99203562 |          |
| 6 | BTB-01096249                   | 0 | 99291165 |          |
| 6 | BTB-01096206                   | 0 | 99320306 |          |
| 6 | ARS-BFGL-NGS-37199             | 0 | 99341521 |          |
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| 6 | Hapmap49915-BTA-21903          | 0 | 99445414 |          |
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| 6 | BTB-01096020                    | 0 | 99531916  |  |
| 6 | Hapmap58251-rs29024344          | 0 | 99559664  |  |
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| 6 | Hapmap30053-BTA-161410          | 0 | 99677512  |  |
| 6 | Hapmap52436-rs29009653          | 0 | 99732094  |  |
| 6 | ARS-BFGL-NGS-110932             | 0 | 99784531  |  |
| 6 | Hapmap31859-BTA-21893           | 0 | 99813207  |  |
| 6 | BTB-01929831                    | 0 | 99925889  |  |
| 6 | ARS-BFGL-NGS-36016              | 0 | 99952283  |  |
| 6 | ARS-BFGL-NGS-95457              | 0 | 99992455  |  |
| 6 | BTB-01446572                    | 0 | 100018664 |  |
| 6 | BTB-01446610                    | 0 | 100039099 |  |
| 6 | Hapmap54490-rs29018486          | 0 | 100054492 |  |
| 6 | BTA-93910-no-rs                 | 0 | 100119868 |  |
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| 6 | Hapmap50505-BTA-93909           | 0 | 100186246 |  |
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| 6 | ARS-BFGL-NGS-63987              | 0 | 100293854 |  |
| 6 | BTA-101385-no-rs                | 0 | 100328689 |  |
| 6 | BTB-01532057                    | 0 | 100377409 |  |
| 6 | BTB-01532060                    | 0 | 100391052 |  |
| 6 | BTA-121434-no-rs                | 0 | 100428424 |  |
| 6 | ARS-BFGL-NGS-113160             | 0 | 100455140 |  |
| 6 | BTB-01791499                    | 0 | 100522886 |  |
| 6 | BTB-01791461                    | 0 | 100546567 |  |
| 6 | BTB-00275374                    | 0 | 100565163 |  |
| 6 | BTB-00275309                    | 0 | 100709082 |  |
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| 6 | ARS-BFGL-NGS-117108             | 0 | 100903198 |  |
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| 6 | Hapmap50779-BTA-77533           | 0 | 100971248 |  |
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| 6 | ARS-BFGL-NGS-26389              | 0 | 101096589 |  |
| 6 | BTB-00274746                    | 0 | 101134254 |  |
| 6 | Hapmap39434-BTA-77640           | 0 | 101176530 |  |
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| 6 | Hapmap27089-BTC-045849          | 0 | 101297489 |  |
| 6 | Hapmap33633-BTC-045832          | 0 | 101320661 |  |
| 6 | Hapmap27088-BTC-045808          | 0 | 101357896 |  |
| 6 | BTA-77629-no-rs                 | 0 | 101399909 |  |
| 6 | Hapmap35054-BES7_Contig354_1224 | 0 | 101414694 |  |
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| 6 | Hapmap54452-rs29015928          | 0 | 101464142 |  |
| 6 | Hapmap33696-BTC-045745          | 0 | 101510171 |  |
| 6 | Hapmap26280-BTC-045738          | 0 | 101539763 |  |
| 6 | ARS-BFGL-NGS-115828             | 0 | 101565330 |  |
| 6 | Hapmap51049-BTA-77619           | 0 | 101605230 |  |

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| 6 | ARS-BFGL-NGS-32544     | 0 | 101624307 |
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| 6 | Hapmap23305-BTC-071388 | 0 | 101870226 |
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| 6 | Hapmap47766-BTA-87827  | 0 | 101921411 |
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| 6 | Hapmap27173-BTA-144401 | 0 | 101983370 |
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| 6 | Hapmap32223-BTC-044639 | 0 | 102215038 |
| 6 | Hapmap26278-BTC-044471 | 0 | 102286424 |
| 6 | ARS-BFGL-NGS-117296    | 0 | 102321627 |
| 6 | Hapmap22686-BTC-044345 | 0 | 102367174 |
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| 6 | ARS-BFGL-NGS-117824    | 0 | 102573993 |
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| 6 | Hapmap33551-BTC-044260 | 0 | 102635446 |
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| 6 | ARS-BFGL-NGS-25127     | 0 | 102859342 |
| 6 | Hapmap41967-BTA-77556  | 0 | 102898674 |
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| 6 | Hapmap23916-BTC-057994 | 0 | 102963502 |
| 6 | Hapmap26312-BTC-058001 | 0 | 102995977 |
| 6 | BTA-14100-rs29022867   | 0 | 103056415 |
| 6 | BTB-00275668           | 0 | 103079093 |
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| 6 | ARS-BFGL-NGS-105730    | 0 | 103133828 |
| 6 | Hapmap60824-rs29019638 | 0 | 103229339 |
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| 6 | BTA-75053-no-rs                 | 0 | 104017487 |           |
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| 6 | Hapmap49302-BTA-77659           | 0 | 104245701 |           |
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| 6 | BTB-00278016                    | 0 | 104371743 |           |
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| 6 | Hapmap44204-BTA-117480 | 0 | 110799891 |
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| 6 | ARS-BFGL-NGS-70490             | 0 | 112598370 |           |
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| 6 | BTA-20913-no-rs                | 0 | 112789071 |           |
| 6 | BTB-01429126                   | 0 | 112845135 |           |
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| 6 | BTB-01650338                   | 0 | 112946370 |           |
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| 6 | BTB-01692953                   | 0 | 113054422 |           |
| 6 | BTB-01692933                   | 0 | 113101714 |           |
| 6 | BTA-122629-no-rs               | 0 | 113121868 |           |
| 6 | BTB-01079454                   | 0 | 113157379 |           |
| 6 | BTA-115675-no-rs               | 0 | 113194494 |           |
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| 6 | BTB-01079501                   | 0 | 113272786 |           |
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| 6 | ARS-BFGL-NGS-117704            | 0 | 113410905 |           |
| 6 | ARS-BFGL-NGS-103502            | 0 | 113466625 |           |
| 6 | BTB-01079659                   | 0 | 113497567 |           |
| 6 | Hapmap47844-BTA-115673         | 0 | 113538490 |           |
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| 6 | BTB-01079764                   | 0 | 113642772 |           |
| 6 | ARS-BFGL-NGS-117310            | 0 | 113673073 |           |
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| 6 | Hapmap48263-BTA-24692          | 0 | 114192827 |           |
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| 6 | BTA-110056-no-rs               | 0 | 114386575 |           |
| 6 | BTB-01644528                   | 0 | 114406073 |           |
| 6 | ARS-BFGL-NGS-24944             | 0 | 114426181 |           |
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| 6 | BTB-01306168           | 0         | 116257857 |
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| 6 | BTA-78066-no-rs        | 0         | 116443441 |
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| 6 | BTA-22989-no-rs        | 0         | 116573039 |
| 6 | ARS-BFGL-NGS-114177    | 0         | 116593341 |
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| 6 | Hapmap32132-BTA-159060 | 0         | 116744816 |
| 6 | BTB-01265106           | 0         | 116779750 |

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| 6 | ARS-BFGL-NGS-27311              | 0 | 116821583 |  |
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| 6 | Hapmap31504-BTA-159055          | 0 | 116931851 |  |
| 6 | ARS-BFGL-NGS-105997             | 0 | 117013231 |  |
| 6 | ARS-BFGL-NGS-15933              | 0 | 117055190 |  |
| 6 | UA-IFASA-3742                   | 0 | 117106304 |  |
| 6 | BTB-01539914                    | 0 | 117133365 |  |
| 6 | Hapmap56871-rs29009955          | 0 | 117148273 |  |
| 6 | ARS-BFGL-NGS-106139             | 0 | 117207346 |  |
| 6 | ARS-BFGL-NGS-29105              | 0 | 117270421 |  |
| 6 | Hapmap55397-rs29017692          | 0 | 117294940 |  |
| 6 | ARS-BFGL-NGS-85696              | 0 | 117344311 |  |
| 6 | ARS-BFGL-NGS-77377              | 0 | 117384629 |  |
| 6 | BTA-78048-no-rs                 | 0 | 117409606 |  |
| 6 | BTB-00286336                    | 0 | 117454218 |  |
| 6 | BTB-02025831                    | 0 | 117491658 |  |
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| 6 | ARS-BFGL-NGS-94381              | 0 | 117574832 |  |
| 6 | Hapmap41968-BTA-78106           | 0 | 117712436 |  |
| 6 | Hapmap23681-BTA-108516          | 0 | 117743386 |  |
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| 6 | ARS-BFGL-NGS-17985              | 0 | 118004635 |  |
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| 6 | ARS-BFGL-NGS-65062              | 0 | 118090300 |  |
| 6 | ARS-BFGL-NGS-99486              | 0 | 118182364 |  |
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| 6 | ARS-BFGL-NGS-38240              |   | 118358537 |  |
| 6 | ARS-BFGL-NGS-119881             | 0 | 118394088 |  |
| 6 | ARS-BFGL-NGS-53471              | 0 | 118436689 |  |
| 6 | ARS-BFGL-NGS-27150              | 0 | 118458675 |  |
| 6 | ARS-BFGL-NGS-29927              | 0 | 118481842 |  |
| 6 | Hapmap47409-BTA-78156           | 0 | 118517254 |  |
| 6 | ARS-BFGL-NGS-103184             | 0 | 118546237 |  |
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| 6 | ARS-BFGL-NGS-23251              | 0 | 118787809 |  |
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| 6 | ARS-BFGL-NGS-112771             | 0 | 118879271 |  |
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| 6 | ARS-BFGL-NGS-90043              | 0 | 119057557 |  |
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| 6 | ARS-BFGL-NGS-29384              | 0 | 119146067 |  |
| 6 | ARS-BFGL-NGS-41730              | 0 | 119181201 |  |
| 7 | BTB-01218897                    | 0 | 271717    |  |
| 7 | BTB-01218761                    | 0 | 354904    |  |

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| 7 | ARS-BFGL-NGS-19919     | 0       | 428335  |
| 7 | ARS-BFGL-NGS-42840     | 0       | 594486  |
| 7 | ARS-BFGL-NGS-96769     | 0       | 681878  |
| 7 | ARS-BFGL-NGS-111791    | 0       | 716475  |
| 7 | ARS-BFGL-NGS-62294     | 0       | 740581  |
| 7 | BTB-00292345           | 0       | 765687  |
| 7 | Hapmap43050-BTA-79121  | 0       | 792902  |
| 7 | BTB-01632886           | 0       | 863880  |
| 7 | ARS-BFGL-NGS-12453     | 0       | 919878  |
| 7 | ARS-BFGL-NGS-110962    | 0       | 1009369 |
| 7 | ARS-BFGL-NGS-78053     | 0       | 1043714 |
| 7 | BTB-00986847           | 0       | 1071389 |
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| 7 | BTB-00987018           | 0       | 1127439 |
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| 7 | ARS-BFGL-NGS-30829     | 0       | 1293067 |
| 7 | ARS-BFGL-NGS-30475     | 0       | 1332547 |
| 7 | BTB-00289557           | 0       | 1353317 |
| 7 | UA-IFASA-7511          | 0       | 1388695 |
| 7 | ARS-BFGL-NGS-62046     | 0       | 1416276 |
| 7 | ARS-BFGL-NGS-117798    | 0       | 1604637 |
| 7 | ARS-BFGL-NGS-61223     | 0       | 1635703 |
| 7 | BTB-00289389           | 0       | 1656983 |
| 7 | ARS-BFGL-NGS-14294     | 0       | 1703768 |
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| 7 | BTB-00080498           | 0       | 1817682 |
| 7 | ARS-BFGL-NGS-113696    | 0       | 1838926 |
| 7 | ARS-BFGL-NGS-83344     | 0       | 1887948 |
| 7 | ARS-BFGL-NGS-875       | 0       | 1914858 |
| 7 | ARS-BFGL-NGS-42468     | 0       | 1933038 |
| 7 | ARS-BFGL-NGS-87170     | 1983458 |         |
| 7 | ARS-BFGL-NGS-28272     | 0       | 2008771 |
| 7 | ARS-BFGL-NGS-82181     | 0       | 2054076 |
| 7 | ARS-BFGL-NGS-113121    | 0       | 2069225 |
| 7 | ARS-BFGL-NGS-102160    | 0       | 2090393 |
| 7 | ARS-BFGL-NGS-37045     | 0       | 2119559 |
| 7 | BTB-01500061           | 0       | 2174260 |
| 7 | Hapmap60811-rs29009679 | 0       | 2227013 |
| 7 | ARS-BFGL-NGS-72360     | 0       | 2291333 |
| 7 | ARS-BFGL-NGS-76000     | 2323494 |         |
| 7 | BTB-01632466           | 0       | 2346546 |
| 7 | BTB-02004898           | 0       | 2391922 |
| 7 | ARS-BFGL-NGS-89847     | 0       | 2457750 |
| 7 | BTB-00291825           | 0       | 2486342 |
| 7 | BTB-00290071           | 0       | 2503561 |
| 7 | Hapmap60952-rs29020997 | 0       | 2525964 |
| 7 | Hapmap38986-BTA-80731  | 0       | 2565484 |
| 7 | ARS-BFGL-NGS-81727     | 0       | 2597655 |
| 7 | ARS-BFGL-NGS-34666     | 0       | 2636459 |
| 7 | ARS-BFGL-NGS-119873    | 0       | 2657581 |
| 7 | ARS-BFGL-NGS-102410    | 0       | 2680354 |
| 7 | Hapmap41392-BTA-96538  | 0       | 2714979 |
| 7 | ARS-BFGL-NGS-14297     | 0       | 2771486 |

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| 7 | ARS-BFGL-NGS-81715     | 0 | 2817908 |
| 7 | BTB-00290676           | 0 | 2869042 |
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| 7 | ARS-BFGL-NGS-83460     |   | 3069070 |
| 7 | ARS-BFGL-NGS-86941     | 0 | 3102587 |
| 7 | BTB-00290565           | 0 | 3132713 |
| 7 | ARS-BFGL-NGS-88100     | 0 | 3161049 |
| 7 | BTB-00290525           | 0 | 3196206 |
| 7 | ARS-BFGL-NGS-115333    | 0 | 3248028 |
| 7 | ARS-BFGL-NGS-113101    | 0 | 3269338 |
| 7 | BTB-00290489           | 0 | 3292002 |
| 7 | ARS-BFGL-NGS-38379     | 0 | 3312035 |
| 7 | ARS-BFGL-NGS-41388     | 0 | 3337765 |
| 7 | ARS-BFGL-NGS-115826    | 0 | 3388020 |
| 7 | BTB-00290188           | 0 | 3446561 |
| 7 | ARS-BFGL-NGS-28575     | 0 | 3488080 |
| 7 | BTA-78359-no-rs        | 0 | 3530805 |
| 7 | ARS-BFGL-NGS-89905     | 0 | 3570752 |
| 7 | ARS-BFGL-NGS-104759    | 0 | 3596652 |
| 7 | ARS-BFGL-NGS-54330     | 0 | 3661458 |
| 7 | ARS-BFGL-NGS-31160     |   | 3697022 |
| 7 | ARS-BFGL-NGS-32050     |   | 3741787 |
| 7 | Hapmap29832-BTA-144648 | 0 | 3775890 |
| 7 | ARS-BFGL-NGS-38213     | 0 | 3807279 |
| 7 | ARS-BFGL-NGS-66040     |   | 3834871 |
| 7 | ARS-BFGL-NGS-32148     | 0 | 3873859 |
| 7 | ARS-BFGL-NGS-14610     | 0 | 3904780 |
| 7 | ARS-BFGL-NGS-25974     | 0 | 3924854 |
| 7 | ARS-BFGL-NGS-11983     | 0 | 3961507 |
| 7 | ARS-BFGL-NGS-10769     | 0 | 3999834 |
| 7 | ARS-BFGL-NGS-22268     | 0 | 4058780 |
| 7 | ARS-BFGL-NGS-115303    | 0 | 4075322 |
| 7 | ARS-BFGL-NGS-71570     |   | 4096495 |
| 7 | ARS-BFGL-NGS-28660     | 0 | 4133334 |
| 7 | ARS-BFGL-NGS-43534     | 0 | 4226753 |
| 7 | ARS-BFGL-NGS-40742     | 0 | 4247661 |
| 7 | ARS-BFGL-NGS-117421    | 0 | 4286714 |
| 7 | ARS-BFGL-NGS-19660     |   | 4363617 |
| 7 | ARS-BFGL-NGS-114060    | 0 | 4389311 |
| 7 | ARS-BFGL-NGS-94063     | 0 | 4436640 |
| 7 | BTA-78612-no-rs        | 0 | 4469746 |
| 7 | BTB-00291093           | 0 | 4501997 |
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| 7 | ARS-BFGL-NGS-76260     |   | 4592227 |
| 7 | ARS-BFGL-NGS-41534     | 0 | 4633434 |
| 7 | BTB-00291042           | 0 | 4655753 |
| 7 | BTB-00290974           | 0 | 4729265 |
| 7 | ARS-BFGL-NGS-107429    | 0 | 4835132 |
| 7 | ARS-BFGL-NGS-58779     | 0 | 4916633 |
| 7 | BTB-00292673           | 0 | 4953801 |

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| 7 | Hapmap57767-ss46527024 | 0       | 5001007 |
| 7 | ARS-BFGL-NGS-110900    | 0       | 5027447 |
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| 7 | ARS-BFGL-NGS-62214     | 0       | 5082735 |
| 7 | ARS-BFGL-NGS-41611     | 0       | 5108304 |
| 7 | ARS-BFGL-NGS-38504     | 0       | 5129755 |
| 7 | ARS-BFGL-NGS-117520    | 0       | 5155049 |
| 7 | Hapmap41360-BTA-79669  | 0       | 5195945 |
| 7 | ARS-BFGL-NGS-87958     | 0       | 5303928 |
| 7 | ARS-BFGL-NGS-69290     | 0       | 5352670 |
| 7 | ARS-BFGL-NGS-39029     | 0       | 5400415 |
| 7 | Hapmap30831-BTA-144664 | 0       | 5426178 |
| 7 | ARS-BFGL-NGS-38000     | 0       | 5462534 |
| 7 | ARS-BFGL-NGS-115137    | 0       | 5492483 |
| 7 | ARS-BFGL-NGS-20600     | 0       | 5514300 |
| 7 | ARS-BFGL-NGS-84756     | 0       | 5567621 |
| 7 | ARS-BFGL-NGS-102106    | 0       | 5604181 |
| 7 | ARS-BFGL-NGS-29273     | 0       | 5639104 |
| 7 | ARS-BFGL-NGS-113941    | 0       | 5675621 |
| 7 | ARS-BFGL-NGS-88030     | 5698248 |         |
| 7 | ARS-BFGL-NGS-84565     | 0       | 5751910 |
| 7 | BTB-00291698           | 0       | 5774810 |
| 7 | ARS-BFGL-NGS-104477    | 0       | 5797304 |
| 7 | BTB-00291733           | 0       | 5834817 |
| 7 | ARS-BFGL-NGS-39011     | 0       | 5866943 |
| 7 | BTB-01746209           | 0       | 5903128 |
| 7 | ARS-BFGL-NGS-32423     | 0       | 5955666 |
| 7 | Hapmap49762-BTA-80425  | 0       | 6010779 |
| 7 | ARS-BFGL-NGS-55814     | 0       | 6036526 |
| 7 | ARS-BFGL-NGS-87888     | 0       | 6068869 |
| 7 | ARS-BFGL-NGS-67299     | 0       | 6097996 |
| 7 | ARS-BFGL-NGS-101854    | 0       | 6134663 |
| 7 | ARS-BFGL-NGS-117791    | 0       | 6206051 |
| 7 | ARS-BFGL-NGS-27424     | 0       | 6248226 |
| 7 | BTA-94679-no-rs        | 0       | 6276053 |
| 7 | ARS-BFGL-NGS-109521    | 0       | 6303258 |
| 7 | Hapmap59964-rs29021041 | 0       | 6324097 |
| 7 | ARS-BFGL-NGS-105826    | 0       | 6353800 |
| 7 | ARS-BFGL-NGS-33364     | 0       | 6391481 |
| 7 | ARS-BFGL-NGS-103385    | 0       | 6413319 |
| 7 | ARS-BFGL-NGS-80548     | 0       | 6434821 |
| 7 | BTB-00293895           | 0       | 6475003 |
| 7 | ARS-BFGL-NGS-91225     | 0       | 6499403 |
| 7 | ARS-BFGL-NGS-34785     | 0       | 6548107 |
| 7 | ARS-BFGL-NGS-118707    | 0       | 6582758 |
| 7 | ARS-BFGL-NGS-118326    | 0       | 6608007 |
| 7 | ARS-BFGL-NGS-35623     | 0       | 6646809 |
| 7 | Hapmap59438-rs29012637 | 0       | 6669157 |
| 7 | ARS-BFGL-NGS-10823     | 0       | 6698584 |
| 7 | ARS-BFGL-NGS-25179     | 0       | 7822111 |
| 7 | ARS-BFGL-NGS-100448    | 0       | 7875612 |
| 7 | BTA-89901-no-rs        | 0       | 7986664 |
| 7 | BTB-01172167           | 0       | 8078251 |
| 7 | ARS-BFGL-NGS-110939    | 0       | 8137476 |

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| 7 | ARS-BFGL-NGS-26495                    | 0        | 8189811  |   |          |
| 7 | ARS-BFGL-NGS-109847                   | 0        | 8248698  |   |          |
| 7 | ARS-USMARC-Parent-DQ888309-rs29013741 | 0        |          | 0 | 8272794  |
| 7 | ARS-BFGL-NGS-110671                   | 0        | 8276425  |   |          |
| 7 | ARS-BFGL-NGS-43805                    | 0        | 8376994  |   |          |
| 7 | ARS-BFGL-NGS-79649                    | 0        | 8401856  |   |          |
| 7 | ARS-BFGL-NGS-106506                   | 0        | 8491850  |   |          |
| 7 | ARS-BFGL-NGS-116764                   | 0        | 8741497  |   |          |
| 7 | Hapmap47746-BTA-80658                 | 0        | 8764468  |   |          |
| 7 | Hapmap50113-BTA-80661                 | 0        | 8860921  |   |          |
| 7 | BTA-06312-no-rs                       | 0        | 8957328  |   |          |
| 7 | ARS-BFGL-NGS-28362                    | 0        | 8999721  |   |          |
| 7 | ARS-BFGL-NGS-19382                    | 0        | 9170772  |   |          |
| 7 | Hapmap33378-BTA-153539                | 0        | 9982310  |   |          |
| 7 | ARS-BFGL-NGS-110476                   | 0        | 10398215 |   |          |
| 7 | BTA-122542-no-rs                      | 0        | 10685223 |   |          |
| 7 | BTA-28930-no-rs                       | 0        | 11486814 |   |          |
| 7 | ARS-BFGL-NGS-111321                   | 0        | 12234576 |   |          |
| 7 | ARS-BFGL-NGS-101398                   | 0        | 12331895 |   |          |
| 7 | ARS-BFGL-NGS-62597                    | 0        | 12404210 |   |          |
| 7 | ARS-BFGL-NGS-95757                    | 0        | 12429691 |   |          |
| 7 | Hapmap30832-BTA-144704                | 0        | 12492323 |   |          |
| 7 | ARS-BFGL-NGS-16656                    | 0        | 12501165 |   |          |
| 7 | BTA-80687-no-rs                       | 0        | 12527905 |   |          |
| 7 | ARS-BFGL-NGS-113762                   | 0        | 12560545 |   |          |
| 7 | ARS-BFGL-NGS-23871                    | 0        | 12617924 |   |          |
| 7 | ARS-BFGL-NGS-22525                    | 0        | 12752376 |   |          |
| 7 | ARS-BFGL-NGS-102773                   | 0        | 12833745 |   |          |
| 7 | ARS-BFGL-NGS-112671                   | 0        | 12889689 |   |          |
| 7 | ARS-BFGL-NGS-93802                    | 0        | 13002006 |   |          |
| 7 | ARS-BFGL-NGS-98379                    | 0        | 13146547 |   |          |
| 7 | Hapmap43057-BTA-80741                 | 0        | 13279972 |   |          |
| 7 | Hapmap31438-BTA-144746                | 0        | 13307009 |   |          |
| 7 | ARS-BFGL-NGS-112679                   | 0        | 13336301 |   |          |
| 7 | Hapmap34784-BES2_Contig524_2530       | 0        |          |   | 13366744 |
| 7 | ARS-BFGL-NGS-111257                   | 0        | 13426119 |   |          |
| 7 | ARS-BFGL-NGS-110916                   | 0        | 13468083 |   |          |
| 7 | UA-IFASA-1667                         | 0        | 13489100 |   |          |
| 7 | Hapmap48480-BTA-80747                 | 0        | 13526016 |   |          |
| 7 | ARS-BFGL-NGS-34312                    | 0        | 13558429 |   |          |
| 7 | ARS-BFGL-NGS-111315                   | 0        | 13584721 |   |          |
| 7 | ARS-BFGL-NGS-109534                   | 0        | 13608935 |   |          |
| 7 | ARS-BFGL-NGS-119066                   | 0        | 13632174 |   |          |
| 7 | ARS-BFGL-NGS-28374                    | 0        | 13663743 |   |          |
| 7 | ARS-BFGL-NGS-110780                   | 0        | 13686977 |   |          |
| 7 | Hapmap38043-BTA-80713                 | 0        | 13725243 |   |          |
| 7 | ARS-BFGL-NGS-37497                    | 0        | 13745889 |   |          |
| 7 | ARS-BFGL-NGS-29980                    | 0        | 13788371 |   |          |
| 7 | ARS-BFGL-NGS-33720                    | 13823591 |          |   |          |
| 7 | ARS-BFGL-NGS-119232                   | 0        | 13886904 |   |          |
| 7 | ARS-BFGL-NGS-16584                    | 0        | 13912342 |   |          |
| 7 | Hapmap57279-ss46526160                | 0        | 13934893 |   |          |
| 7 | BTA-80705-no-rs                       | 0        | 14019153 |   |          |
| 7 | BTA-80703-no-rs                       | 0        | 14039322 |   |          |



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| 7 | BTA-80694-no-rs        | 0        | 14060098 |
| 7 | ARS-BFGL-NGS-54629     | 0        | 14142752 |
| 7 | UA-IFASA-8194          | 0        | 14304280 |
| 7 | ARS-BFGL-NGS-106403    | 0        | 14330447 |
| 7 | Hapmap55135-rs29021864 | 0        | 14372254 |
| 7 | Hapmap48895-BTA-79049  | 0        | 14402009 |
| 7 | ARS-BFGL-NGS-110189    | 0        | 14434623 |
| 7 | ARS-BFGL-NGS-113841    | 0        | 14496108 |
| 7 | ARS-BFGL-NGS-42437     | 0        | 14533892 |
| 7 | Hapmap27028-BTA-160900 | 0        | 14678931 |
| 7 | ARS-BFGL-NGS-17520     | 14768778 |          |
| 7 | ARS-BFGL-NGS-103378    | 0        | 14814959 |
| 7 | ARS-BFGL-NGS-86836     | 0        | 14889952 |
| 7 | ARS-BFGL-NGS-34694     | 0        | 14928953 |
| 7 | ARS-BFGL-NGS-64087     | 0        | 15067652 |
| 7 | BTA-44943-no-rs        | 0        | 15312214 |
| 7 | ARS-BFGL-NGS-103840    | 0        | 15382521 |
| 7 | ARS-BFGL-NGS-31479     | 0        | 15421110 |
| 7 | ARS-BFGL-NGS-27367     | 0        | 15473841 |
| 7 | ARS-BFGL-NGS-45049     | 0        | 15549201 |
| 7 | BTA-78353-no-rs        | 0        | 15572659 |
| 7 | ARS-BFGL-NGS-95528     | 0        | 15600863 |
| 7 | ARS-BFGL-NGS-105346    | 0        | 15624067 |
| 7 | Hapmap25839-BTA-144755 | 0        | 15745258 |
| 7 | ARS-BFGL-NGS-110361    | 0        | 15782979 |
| 7 | ARS-BFGL-NGS-117086    | 0        | 15804730 |
| 7 | Hapmap41976-BTA-80749  | 0        | 15869064 |
| 7 | ARS-BFGL-NGS-16633     | 0        | 15893312 |
| 7 | ARS-BFGL-NGS-114934    | 0        | 15921536 |
| 7 | Hapmap42329-BTA-80748  | 0        | 16048028 |
| 7 | ARS-BFGL-NGS-80477     | 0        | 16111861 |
| 7 | ARS-BFGL-NGS-10921     | 0        | 16201489 |
| 7 | BTA-78357-no-rs        | 0        | 16277606 |
| 7 | UA-IFASA-7060          | 0        | 16298320 |
| 7 | ARS-BFGL-NGS-17498     | 0        | 16340125 |
| 7 | ARS-BFGL-NGS-21410     | 16371434 |          |
| 7 | Hapmap23865-BTA-111820 | 0        | 16397706 |
| 7 | ARS-BFGL-NGS-92758     | 0        | 16452033 |
| 7 | ARS-BFGL-NGS-36034     | 0        | 16491638 |
| 7 | ARS-BFGL-NGS-11011     | 0        | 16520957 |
| 7 | Hapmap47101-BTA-78263  | 0        | 16564424 |
| 7 | Hapmap58032-ss46526644 | 0        | 16588162 |
| 7 | ARS-BFGL-NGS-57208     | 0        | 16611621 |
| 7 | Hapmap46728-BTA-78268  | 0        | 16634828 |
| 7 | ARS-BFGL-NGS-102000    | 0        | 16675279 |
| 7 | ARS-BFGL-NGS-109627    | 0        | 16699971 |
| 7 | ARS-BFGL-NGS-115326    | 0        | 16724418 |
| 7 | ARS-BFGL-NGS-118225    | 0        | 16805920 |
| 7 | ARS-BFGL-NGS-44079     | 0        | 16826153 |
| 7 | ARS-BFGL-NGS-72083     | 0        | 16852008 |
| 7 | ARS-BFGL-NGS-22940     | 0        | 16882597 |
| 7 | ARS-BFGL-NGS-26351     | 0        | 16977078 |
| 7 | BTA-78376-no-rs        | 0        | 17258586 |
| 7 | ARS-BFGL-NGS-47740     | 17403976 |          |

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| 7 | ARS-BFGL-NGS-35463                    | 0        | 17490481 |          |  |
| 7 | Hapmap32323-BTA-144804                | 0        | 17567301 |          |  |
| 7 | ARS-BFGL-NGS-118411                   | 0        | 17629851 |          |  |
| 7 | ARS-BFGL-NGS-112031                   | 0        | 17686752 |          |  |
| 7 | ARS-BFGL-NGS-66143                    | 0        | 17754418 |          |  |
| 7 | ARS-BFGL-NGS-32467                    | 0        | 17777622 |          |  |
| 7 | Hapmap48467-BTA-78386                 | 0        | 17798064 |          |  |
| 7 | ARS-BFGL-NGS-108057                   | 0        | 17834876 |          |  |
| 7 | ARS-BFGL-NGS-21104                    | 0        | 17871862 |          |  |
| 7 | ARS-BFGL-NGS-70183                    | 0        | 17913294 |          |  |
| 7 | ARS-BFGL-NGS-25970                    | 0        | 17945352 |          |  |
| 7 | ARS-BFGL-NGS-117416                   | 0        | 17979808 |          |  |
| 7 | ARS-BFGL-NGS-119737                   | 0        | 18022614 |          |  |
| 7 | ARS-BFGL-NGS-106875                   | 0        | 18048182 |          |  |
| 7 | ARS-BFGL-NGS-105928                   | 0        | 18158398 |          |  |
| 7 | Hapmap53193-rs29010998                | 0        | 18199979 |          |  |
| 7 | Hapmap60436-ss46526689                | 0        | 18283528 |          |  |
| 7 | Hapmap31439-BTA-144800                | 0        | 18303700 |          |  |
| 7 | ARS-BFGL-NGS-74423                    | 0        | 18329426 |          |  |
| 7 | ARS-BFGL-NGS-34826                    | 0        | 18356430 |          |  |
| 7 | Hapmap35741-SCAFFOLD181588_9953       | 0        |          | 18379589 |  |
| 7 | ARS-BFGL-NGS-111581                   | 0        | 18419552 |          |  |
| 7 | ARS-USMARC-Parent-DQ786758-rs29024430 | 0        |          | 18454636 |  |
| 7 | Hapmap49757-BTA-78451                 | 0        | 18476120 |          |  |
| 7 | ARS-BFGL-NGS-54028                    | 0        | 18707985 |          |  |
| 7 | ARS-BFGL-NGS-62491                    | 0        | 18794373 |          |  |
| 7 | BTA-78459-no-rs                       | 0        | 18817678 |          |  |
| 7 | ARS-BFGL-NGS-14460                    | 0        | 18845261 |          |  |
| 7 | ARS-BFGL-NGS-13680                    | 0        | 18910887 |          |  |
| 7 | UA-IFASA-9557                         | 0        | 18965540 |          |  |
| 7 | BTA-28773-no-rs                       | 0        | 19084659 |          |  |
| 7 | ARS-BFGL-NGS-33970                    | 0        | 19163934 |          |  |
| 7 | ARS-BFGL-NGS-12159                    | 0        | 19220954 |          |  |
| 7 | ARS-BFGL-NGS-72794                    | 0        | 19286649 |          |  |
| 7 | ARS-BFGL-NGS-107510                   | 0        | 19352717 |          |  |
| 7 | ARS-BFGL-NGS-108609                   | 0        | 19425341 |          |  |
| 7 | ARS-BFGL-NGS-59838                    | 0        | 19461567 |          |  |
| 7 | ARS-BFGL-NGS-114267                   | 0        | 19500218 |          |  |
| 7 | ARS-BFGL-NGS-115219                   | 0        | 19528939 |          |  |
| 7 | Hapmap43047-BTA-78404                 | 0        | 19589227 |          |  |
| 7 | ARS-BFGL-NGS-16463                    | 0        | 19615487 |          |  |
| 7 | BTA-78408-no-rs                       | 0        | 19643726 |          |  |
| 7 | ARS-BFGL-NGS-103909                   | 0        | 19676040 |          |  |
| 7 | Hapmap43686-BTA-78412                 | 0        | 19715242 |          |  |
| 7 | ARS-BFGL-NGS-66797                    | 0        | 19761728 |          |  |
| 7 | BTB-00295891                          | 0        | 19795330 |          |  |
| 7 | UA-IFASA-8172                         | 0        | 19827852 |          |  |
| 7 | ARS-BFGL-NGS-114610                   | 0        | 19860339 |          |  |
| 7 | ARS-BFGL-NGS-95196                    | 0        | 19933529 |          |  |
| 7 | BTB-00407083                          | 0        | 19979786 |          |  |
| 7 | Hapmap47119-BTA-85019                 | 0        | 20011626 |          |  |
| 7 | ARS-BFGL-NGS-83052                    | 0        | 20040279 |          |  |
| 7 | ARS-BFGL-NGS-66030                    | 20080475 |          |          |  |
| 7 | ARS-BFGL-NGS-71949                    | 0        | 20205533 |          |  |

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| 7 | Hapmap24556-BTA-144857         | 0 | 20242041 |          |
| 7 | ARS-BFGL-NGS-50600             |   | 20278759 |          |
| 7 | ARS-BFGL-NGS-107038            | 0 | 20304019 |          |
| 7 | ARS-BFGL-NGS-20360             |   | 20325702 |          |
| 7 | ARS-BFGL-NGS-58717             | 0 | 20352577 |          |
| 7 | ARS-BFGL-NGS-46950             |   | 20379979 |          |
| 7 | ARS-BFGL-NGS-103790            | 0 | 20423138 |          |
| 7 | ARS-BFGL-NGS-61129             | 0 | 20466139 |          |
| 7 | ARS-BFGL-NGS-14531             | 0 | 20500709 |          |
| 7 | ARS-BFGL-NGS-104684            | 0 | 20551821 |          |
| 7 | BTA-78475-no-rs                | 0 | 20577372 |          |
| 7 | Hapmap46871-BTA-78474          | 0 | 20604836 |          |
| 7 | BTB-00296762                   | 0 | 20631252 |          |
| 7 | ARS-BFGL-NGS-115944            | 0 | 20662867 |          |
| 7 | ARS-BFGL-NGS-37888             | 0 | 20771979 |          |
| 7 | ARS-BFGL-NGS-113384            | 0 | 20820255 |          |
| 7 | ARS-BFGL-NGS-116229            | 0 | 20935921 |          |
| 7 | BTB-00296617                   | 0 | 20993918 |          |
| 7 | BTB-00297004                   | 0 | 21022281 |          |
| 7 | ARS-BFGL-NGS-17203             | 0 | 21048791 |          |
| 7 | ARS-BFGL-NGS-101536            | 0 | 21146198 |          |
| 7 | BTA-78494-no-rs                | 0 | 21222125 |          |
| 7 | ARS-BFGL-NGS-464               | 0 | 21249976 |          |
| 7 | ARS-BFGL-NGS-76601             | 0 | 21298998 |          |
| 7 | ARS-BFGL-NGS-87814             | 0 | 21321599 |          |
| 7 | Hapmap50468-BTA-78490          | 0 | 21347602 |          |
| 7 | ARS-BFGL-NGS-17196             | 0 | 21462645 |          |
| 7 | ARS-BFGL-NGS-105027            | 0 | 21490449 |          |
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| 7 | ARS-BFGL-NGS-39540             | 0 | 21550561 |          |
| 7 | Hapmap33901-BES9_Contig395_449 | 0 |          | 21574886 |
| 7 | ARS-BFGL-NGS-60790             |   | 21595908 |          |
| 7 | ARS-BFGL-NGS-87095             | 0 | 21610660 |          |
| 7 | ARS-BFGL-NGS-115830            | 0 | 21646458 |          |
| 7 | ARS-BFGL-NGS-11731             | 0 | 21677064 |          |
| 7 | UA-IFASA-8256                  | 0 | 21704630 |          |
| 7 | ARS-BFGL-NGS-17289             | 0 | 21743995 |          |
| 7 | Hapmap57628-rs29027155         | 0 | 21845280 |          |
| 7 | ARS-BFGL-NGS-20774             | 0 | 21918349 |          |
| 7 | ARS-BFGL-NGS-25855             | 0 | 21972429 |          |
| 7 | ARS-BFGL-NGS-10194             | 0 | 22114622 |          |
| 7 | Hapmap47105-BTA-78550          | 0 | 22145136 |          |
| 7 | BTB-00298341                   | 0 | 22203625 |          |
| 7 | Hapmap38253-BTA-78537          | 0 | 22236584 |          |
| 7 | ARS-BFGL-NGS-26903             | 0 | 22270286 |          |
| 7 | UA-IFASA-1699                  | 0 | 22305419 |          |
| 7 | Hapmap27905-BTA-78545          | 0 | 22348840 |          |
| 7 | ARS-BFGL-NGS-115712            | 0 | 22490555 |          |
| 7 | ARS-BFGL-NGS-29084             | 0 | 22524899 |          |
| 7 | ARS-BFGL-NGS-81120             |   | 22578202 |          |
| 7 | BTA-78547-no-rs                | 0 | 22653770 |          |
| 7 | ARS-BFGL-NGS-117268            | 0 | 22681472 |          |
| 7 | ARS-BFGL-NGS-101734            | 0 | 22710707 |          |
| 7 | ARS-BFGL-NGS-18413             | 0 | 22807803 |          |

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| 7 | ARS-BFGL-NGS-114928             | 0 | 22874513 |          |
| 7 | BTB-01966013                    | 0 | 22920391 |          |
| 7 | BTB-01398723                    | 0 | 22942353 |          |
| 7 | BTB-01398686                    | 0 | 22996615 |          |
| 7 | ARS-BFGL-NGS-53334              | 0 | 23016916 |          |
| 7 | ARS-BFGL-NGS-38296              | 0 | 23053268 |          |
| 7 | Hapmap51514-BTA-88337           | 0 | 23074262 |          |
| 7 | ARS-BFGL-NGS-112444             | 0 | 23275178 |          |
| 7 | ARS-BFGL-NGS-118596             | 0 | 23315210 |          |
| 7 | ARS-BFGL-NGS-112246             | 0 | 23336356 |          |
| 7 | BTA-78609-no-rs                 | 0 | 23377738 |          |
| 7 | Hapmap57528-rs29013765          | 0 | 23403749 |          |
| 7 | BTB-00301021                    | 0 | 23426104 |          |
| 7 | Hapmap57260-rs29023390          | 0 | 23498152 |          |
| 7 | ARS-BFGL-NGS-67859              | 0 | 23519206 |          |
| 7 | ARS-BFGL-NGS-76969              | 0 | 23568940 |          |
| 7 | BTB-00300946                    | 0 | 23613386 |          |
| 7 | ARS-BFGL-NGS-115315             | 0 | 23697106 |          |
| 7 | ARS-BFGL-NGS-15459              | 0 | 23756162 |          |
| 7 | ARS-BFGL-NGS-61080              |   | 23789971 |          |
| 7 | Hapmap34949-BES9_Contig501_1378 | 0 |          | 23885782 |
| 7 | BTB-00300821                    | 0 | 23908392 |          |
| 7 | ARS-BFGL-NGS-12110              | 0 | 23937259 |          |
| 7 | BTB-00299019                    | 0 | 24055607 |          |
| 7 | BTB-00298967                    | 0 | 24233634 |          |
| 7 | BTB-00298940                    | 0 | 24268801 |          |
| 7 | BTB-01777791                    | 0 | 24330857 |          |
| 7 | BTB-00298866                    | 0 | 24387132 |          |
| 7 | ARS-BFGL-NGS-102506             | 0 | 24463533 |          |
| 7 | Hapmap47411-BTA-78553           | 0 | 24490069 |          |
| 7 | Hapmap27975-BTA-156653          | 0 | 24516927 |          |
| 7 | BTB-01683325                    | 0 | 24571599 |          |
| 7 | BTB-02031452                    | 0 | 24594731 |          |
| 7 | BTB-00300671                    | 0 | 24599167 |          |
| 7 | ARS-BFGL-NGS-41588              | 0 | 24625377 |          |
| 7 | Hapmap49309-BTA-78604           | 0 | 24655689 |          |
| 7 | BTB-00300220                    | 0 | 24677021 |          |
| 7 | ARS-BFGL-NGS-55096              | 0 | 24735381 |          |
| 7 | BTB-00299866                    | 0 | 24756018 |          |
| 7 | ARS-BFGL-NGS-24565              | 0 | 24778430 |          |
| 7 | Hapmap59260-rs29021148          | 0 | 24821289 |          |
| 7 | ARS-BFGL-NGS-68296              | 0 | 24888680 |          |
| 7 | BTA-78589-no-rs                 | 0 | 24920904 |          |
| 7 | Hapmap36017-SCAFFOLD177572_90   | 0 |          | 24946051 |
| 7 | Hapmap51318-BTA-78584           | 0 | 24982024 |          |
| 7 | BTB-00299459                    | 0 | 25025890 |          |
| 7 | BTA-78583-no-rs                 | 0 | 25046403 |          |
| 7 | Hapmap40225-BTA-78581           | 0 | 25070227 |          |
| 7 | ARS-BFGL-NGS-59916              | 0 | 25093755 |          |
| 7 | ARS-BFGL-NGS-104648             | 0 | 25120220 |          |
| 7 | ARS-BFGL-NGS-13684              | 0 | 25154484 |          |
| 7 | ARS-BFGL-NGS-85196              | 0 | 25174975 |          |
| 7 | Hapmap43941-BTA-78574           | 0 | 25210041 |          |
| 7 | ARS-BFGL-NGS-89544              | 0 | 25383927 |          |

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| 7 | Hapmap44990-BTA-78563  | 0        | 25420525 |
| 7 | BTB-00299070           | 0        | 25511561 |
| 7 | Hapmap42675-BTA-78561  | 0        | 25577569 |
| 7 | BTA-78558-no-rs        | 0        | 25599801 |
| 7 | Hapmap45780-BTA-78557  | 0        | 25626694 |
| 7 | ARS-BFGL-NGS-115929    | 0        | 25670297 |
| 7 | ARS-BFGL-NGS-250       | 0        | 25907429 |
| 7 | Hapmap59434-rs29012267 | 0        | 25987797 |
| 7 | ARS-BFGL-NGS-27577     | 0        | 26066004 |
| 7 | Hapmap60339-rs29013901 | 0        | 26092041 |
| 7 | Hapmap51633-BTA-78653  | 0        | 26110506 |
| 7 | ARS-BFGL-NGS-112272    | 0        | 26131684 |
| 7 | ARS-BFGL-NGS-78228     | 0        | 26155472 |
| 7 | BTA-20553-no-rs        | 0        | 26286219 |
| 7 | Hapmap47885-BTA-20554  | 0        | 26309154 |
| 7 | BTA-78660-no-rs        | 0        | 26360833 |
| 7 | ARS-BFGL-NGS-117830    | 0        | 26381561 |
| 7 | BTB-00301811           | 0        | 26450220 |
| 7 | BTA-78663-no-rs        | 0        | 26530611 |
| 7 | ARS-BFGL-NGS-26930     | 0        | 26561056 |
| 7 | BTA-78683-no-rs        | 0        | 26592392 |
| 7 | BTA-78680-no-rs        | 0        | 26618374 |
| 7 | Hapmap48082-BTA-78679  | 0        | 26659653 |
| 7 | BTA-78674-no-rs        | 0        | 26694122 |
| 7 | Hapmap42676-BTA-78673  | 0        | 26720606 |
| 7 | Hapmap43942-BTA-78671  | 0        | 26782485 |
| 7 | ARS-BFGL-NGS-104332    | 0        | 26829547 |
| 7 | ARS-BFGL-NGS-30757     | 0        | 26855417 |
| 7 | Hapmap54212-rs29016161 | 0        | 26893086 |
| 7 | ARS-BFGL-NGS-33569     | 0        | 26937690 |
| 7 | BTB-00264202           | 0        | 26984291 |
| 7 | Hapmap25837-BTA-144200 | 0        | 27062948 |
| 7 | BTB-00264267           | 0        | 27097343 |
| 7 | BTB-00264279           | 0        | 27124647 |
| 7 | BTB-01956476           | 0        | 27148653 |
| 7 | ARS-BFGL-NGS-65308     | 0        | 27178801 |
| 7 | BTB-01216761           | 0        | 27213604 |
| 7 | ARS-BFGL-NGS-110438    | 0        | 27258897 |
| 7 | ARS-BFGL-NGS-36880     | 27300328 |          |
| 7 | Hapmap27732-BTA-123008 | 0        | 27345551 |
| 7 | Hapmap28436-BTA-158107 | 0        | 27385326 |
| 7 | BTB-01740034           | 0        | 27413672 |
| 7 | ARS-BFGL-NGS-24478     | 0        | 27439081 |
| 7 | ARS-BFGL-NGS-63017     | 0        | 27497043 |
| 7 | BTB-01073161           | 0        | 27580444 |
| 7 | BTB-01073327           | 0        | 27607539 |
| 7 | ARS-BFGL-NGS-109381    | 0        | 27661808 |
| 7 | Hapmap58727-rs29027380 | 0        | 27694291 |
| 7 | BTA-110073-no-rs       | 0        | 27732801 |
| 7 | Hapmap41675-BTA-88579  | 0        | 27763430 |
| 7 | BTB-01073880           | 0        | 27809201 |
| 7 | Hapmap49015-BTA-110076 | 0        | 27846451 |
| 7 | Hapmap38285-BTA-110077 | 0        | 27891275 |
| 7 | ARS-BFGL-NGS-87286     | 0        | 27936814 |

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| 7 | BTB-01074080                    | 0        | 27973088 |  |
| 7 | ARS-BFGL-NGS-34250              | 0        | 28006905 |  |
| 7 | Hapmap1389-BTA-110081           | 0        | 28032016 |  |
| 7 | BTB-01074252                    | 0        | 28061362 |  |
| 7 | ARS-BFGL-NGS-38771              | 0        | 28088313 |  |
| 7 | ARS-BFGL-NGS-102004             | 0        | 28127119 |  |
| 7 | ARS-BFGL-NGS-80008              | 0        | 28182762 |  |
| 7 | BTB-01074446                    | 0        | 28203117 |  |
| 7 | BTB-01074469                    | 0        | 28258117 |  |
| 7 | BTB-01074531                    | 0        | 28286645 |  |
| 7 | Hapmap44193-BTA-110083          | 0        | 28308107 |  |
| 7 | BTB-01074586                    | 0        | 28337398 |  |
| 7 | ARS-BFGL-NGS-11310              | 0        | 28363259 |  |
| 7 | ARS-BFGL-NGS-40565              | 0        | 28394640 |  |
| 7 | Hapmap59644-rs29012735          | 0        | 28416847 |  |
| 7 | ARS-BFGL-NGS-40913              | 0        | 28454058 |  |
| 7 | ARS-BFGL-NGS-108396             | 0        | 28488687 |  |
| 7 | Hapmap23838-BTA-163815          | 0        | 28529552 |  |
| 7 | BTB-00302034                    | 0        | 28567404 |  |
| 7 | BTA-78695-no-rs                 | 0        | 28605347 |  |
| 7 | UA-IFASA-5669                   | 0        | 28657444 |  |
| 7 | ARS-BFGL-NGS-18240              | 0        | 28682875 |  |
| 7 | ARS-BFGL-NGS-44139              | 0        | 28739203 |  |
| 7 | Hapmap40296-BTA-99486           | 0        | 28840924 |  |
| 7 | Hapmap42029-BTA-99514           | 0        | 28873506 |  |
| 7 | BTB-01153707                    | 0        | 28897553 |  |
| 7 | BTA-99520-no-rs                 | 0        | 28920128 |  |
| 7 | Hapmap23217-BTA-152007          | 0        | 28940286 |  |
| 7 | Hapmap42389-BTA-99482           | 0        | 28969287 |  |
| 7 | Hapmap42028-BTA-99484           | 0        | 29003485 |  |
| 7 | BTB-01153956                    | 0        | 29030036 |  |
| 7 | Hapmap60467-rs29016353          | 0        | 29058158 |  |
| 7 | Hapmap49820-BTA-99491           | 0        | 29082004 |  |
| 7 | BTB-01154003                    | 0        | 29102864 |  |
| 7 | Hapmap43984-BTA-99493           | 0        | 29124010 |  |
| 7 | BTA-99495-no-rs                 | 0        | 29146312 |  |
| 7 | ARS-BFGL-NGS-86041              | 0        | 29172325 |  |
| 7 | BTA-99500-no-rs                 | 0        | 29210838 |  |
| 7 | BTB-01154160                    | 0        | 29239026 |  |
| 7 | Hapmap33975-BES10_Contig464_714 | 0        | 29259489 |  |
| 7 | ARS-BFGL-NGS-88212              | 0        | 29305473 |  |
| 7 | ARS-BFGL-NGS-29250              | 0        | 29354775 |  |
| 7 | BTB-01154348                    | 0        | 29389662 |  |
| 7 | BTB-01529671                    | 0        | 29579813 |  |
| 7 | BTB-01529616                    | 0        | 29631728 |  |
| 7 | ARS-BFGL-NGS-86542              | 0        | 29728711 |  |
| 7 | BTA-26849-no-rs                 | 0        | 29775999 |  |
| 7 | ARS-BFGL-NGS-66965              | 0        | 29816068 |  |
| 7 | ARS-BFGL-NGS-17590              | 29901239 |          |  |
| 7 | ARS-BFGL-NGS-79444              | 0        | 29964723 |  |
| 7 | Hapmap58691-rs29019771          | 0        | 30091626 |  |
| 7 | ARS-BFGL-NGS-30480              | 0        | 30206770 |  |
| 7 | Hapmap50617-BTA-21053           | 0        | 30227179 |  |
| 7 | ARS-BFGL-NGS-90328              | 0        | 30261470 |  |

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| 7 | Hapmap48682-BTA-21048  | 0 | 30293550 |
| 7 | BTB-01309833           | 0 | 30333047 |
| 7 | ARS-BFGL-NGS-38179     | 0 | 30370816 |
| 7 | BTB-01309967           | 0 | 30506622 |
| 7 | ARS-BFGL-NGS-118150    | 0 | 30638795 |
| 7 | ARS-BFGL-NGS-12750     | 0 | 30672350 |
| 7 | ARS-BFGL-NGS-118602    | 0 | 30749709 |
| 7 | ARS-BFGL-NGS-61723     | 0 | 30816843 |
| 7 | BTB-00302581           | 0 | 30865901 |
| 7 | BTB-00302535           | 0 | 30920355 |
| 7 | ARS-BFGL-NGS-114456    | 0 | 30964539 |
| 7 | BTB-00032316           | 0 | 30998305 |
| 7 | Hapmap50931-BTA-31235  | 0 | 31136178 |
| 7 | ARS-BFGL-NGS-111972    | 0 | 31164207 |
| 7 | Hapmap47242-BTA-31230  | 0 | 31189486 |
| 7 | Hapmap41223-BTA-31228  | 0 | 31278372 |
| 7 | BTB-01782587           | 0 | 31378070 |
| 7 | ARS-BFGL-NGS-109867    | 0 | 31435921 |
| 7 | ARS-BFGL-NGS-86780     | 0 | 31471496 |
| 7 | BTB-01041631           | 0 | 31516513 |
| 7 | BTB-01041605           | 0 | 31558578 |
| 7 | ARS-BFGL-NGS-66668     | 0 | 31601869 |
| 7 | BTB-00301284           | 0 | 31655835 |
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| 7 | Hapmap57685-rs29016545 | 0 | 32677080 |
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| 7 | ARS-BFGL-NGS-96276     | 0 | 33017653 |
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| 7 | ARS-BFGL-NGS-21597     | 0 | 33452602 |
| 7 | BTB-00548953           | 0 | 33494379 |
| 7 | Hapmap59229-rs29015308 | 0 | 33529740 |
| 7 | ARS-BFGL-NGS-84651     | 0 | 33572841 |
| 7 | BTB-01671825           | 0 | 33595868 |
| 7 | Hapmap49023-BTA-112194 | 0 | 33630107 |
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| 7 | BTA-86510-no-rs        | 0 | 33746267 |
| 7 | BTA-92602-no-rs        | 0 | 33819177 |
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| 7 | ARS-BFGL-NGS-29286     | 0 | 33908205 |
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| 7 | Hapmap42755-BTA-99683  | 0 | 35433379 |
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| 7 | Hapmap51819-BTA-24746  | 0 | 35716438 |
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| 7 | Hapmap49931-BTA-24741  | 0 | 35841692 |
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| 7 | BTA-104005-no-rs       | 0 | 36105942 |



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| 7 | BTA-116198-no-rs       | 0 | 36859724 |
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| 7 | Hapmap41111-BTA-94756  | 0 | 38413207 |
| 7 | Hapmap48654-BTA-121800 | 0 | 38458456 |
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| 7 | ARS-BFGL-NGS-116368    | 0 | 38723948 |
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| 7 | BTA-78815-no-rs        | 0 | 38780609 |

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| 7 | ARS-BFGL-NGS-97125              | 0 | 38836622 |          |
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| 7 | ARS-BFGL-NGS-83710              |   | 38932174 |          |
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| 7 | Hapmap43828-BTA-28993           | 0 | 39060855 |          |
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| 7 | BTB-01364448                    | 0 | 39110034 |          |
| 7 | ARS-BFGL-NGS-33913              | 0 | 39172213 |          |
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| 7 | ARS-BFGL-NGS-40181              | 0 | 39267202 |          |
| 7 | ARS-BFGL-NGS-26917              | 0 | 39327370 |          |
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| 7 | ARS-BFGL-NGS-35666              | 0 | 39392834 |          |
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| 7 | ARS-BFGL-NGS-81749              | 0 | 39658828 |          |
| 7 | ARS-BFGL-NGS-88753              | 0 | 39679687 |          |
| 7 | Hapmap42405-BTA-104111          | 0 | 39706989 |          |
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| 7 | ARS-BFGL-NGS-12006              | 0 | 40337451 |          |
| 7 | BTB-00301503                    | 0 | 40485825 |          |
| 7 | ARS-BFGL-NGS-76638              | 0 | 40513886 |          |
| 7 | BTA-78636-no-rs                 | 0 | 40552365 |          |
| 7 | ARS-BFGL-NGS-12230              |   | 40577258 |          |
| 7 | BTA-78638-no-rs                 | 0 | 40598898 |          |
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| 7 | ARS-BFGL-NGS-101559             | 0 | 40723430 |          |
| 7 | BTB-01849321                    | 0 | 40752293 |          |
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| 7 | BTB-01558306                    | 0 | 40827112 |          |
| 7 | ARS-BFGL-NGS-108870             | 0 | 40857968 |          |
| 7 | Hapmap47162-BTA-103817          | 0 | 40891124 |          |
| 7 | BTB-01651805                    | 0 | 40944243 |          |
| 7 | BTB-01651778                    | 0 | 40986230 |          |

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| 7 | ARS-BFGL-NGS-76661     | 0 | 41030244 |
| 7 | BTB-01683822           | 0 | 41052904 |
| 7 | Hapmap41157-BTA-113254 | 0 | 41079124 |
| 7 | UA-IFASA-9367          | 0 | 41114885 |
| 7 | BTB-00631103           | 0 | 41163996 |
| 7 | BTB-02073790           | 0 | 41207144 |
| 7 | BTB-01560842           | 0 | 41257488 |
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| 7 | ARS-BFGL-NGS-10375     | 0 | 41565963 |
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| 7 | ARS-BFGL-NGS-88233     | 0 | 41718041 |
| 7 | ARS-BFGL-NGS-69727     | 0 | 41742027 |
| 7 | Hapmap42677-BTA-78866  | 0 | 41779152 |
| 7 | ARS-BFGL-NGS-30468     | 0 | 41805531 |
| 7 | BTA-78877-no-rs        | 0 | 41836404 |
| 7 | BTA-78883-no-rs        | 0 | 41875877 |
| 7 | ARS-BFGL-NGS-69831     | 0 | 41956061 |
| 7 | Hapmap51062-BTA-82323  | 0 | 42028226 |
| 7 | ARS-BFGL-NGS-101154    | 0 | 42052923 |
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| 7 | ARS-BFGL-NGS-12532     | 0 | 42136341 |
| 7 | BTB-00368665           | 0 | 42214450 |
| 7 | ARS-BFGL-NGS-33401     | 0 | 42262165 |
| 7 | BTB-01597787           | 0 | 42293409 |
| 7 | UA-IFASA-6047          | 0 | 42324539 |
| 7 | BTB-01957176           | 0 | 42440064 |
| 7 | ARS-BFGL-NGS-100845    | 0 | 42460306 |
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| 7 | BTB-00307738           | 0 | 42609605 |
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| 7 | ARS-BFGL-NGS-101873    | 0 | 43097791 |
| 7 | BTB-01207822           | 0 | 43132401 |
| 7 | ARS-BFGL-NGS-104485    | 0 | 43156587 |
| 7 | ARS-BFGL-NGS-76328     | 0 | 43224755 |
| 7 | ARS-BFGL-NGS-11889     | 0 | 43292715 |
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| 7 | ARS-BFGL-NGS-23491     | 0 | 43592173 |
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| 7 | Hapmap25929-BTA-19369  | 0 | 43858595 |
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| 7 | ARS-BFGL-NGS-119127    | 0 | 43908308 |
| 7 | ARS-BFGL-NGS-94413     | 0 | 43941988 |
| 7 | ARS-BFGL-NGS-35596     | 0 | 43966998 |
| 7 | BTB-00308656           | 0 | 43999546 |
| 7 | BTB-00308737           | 0 | 44035288 |
| 7 | BTB-01713009           | 0 | 44136041 |
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| 7 | ARS-BFGL-NGS-104510    | 0 | 44590954 |
| 7 | ARS-BFGL-NGS-112360    | 0 | 44620188 |
| 7 | Hapmap46695-BTA-26440  | 0 | 44658442 |
| 7 | ARS-BFGL-NGS-74330     | 0 | 44720216 |
| 7 | UA-IFASA-5544          | 0 | 44778539 |
| 7 | ARS-BFGL-NGS-75099     | 0 | 44806018 |
| 7 | ARS-BFGL-NGS-64546     | 0 | 44835016 |
| 7 | ARS-BFGL-NGS-15268     | 0 | 44879216 |
| 7 | ARS-BFGL-NGS-51360     |   | 44901489 |
| 7 | ARS-BFGL-NGS-100100    | 0 | 45135080 |
| 7 | ARS-BFGL-NGS-54341     | 0 | 45162340 |
| 7 | Hapmap47202-BTA-121802 | 0 | 45196738 |
| 7 | ARS-BFGL-NGS-24413     | 0 | 45327282 |
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| 7 | ARS-BFGL-NGS-109750    | 0 | 45412030 |
| 7 | ARS-BFGL-NGS-37158     | 0 | 45439468 |
| 7 | ARS-BFGL-NGS-87868     | 0 | 45497213 |
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| 7 | ARS-BFGL-NGS-107073    | 0 | 45638520 |
| 7 | ARS-BFGL-NGS-69700     |   | 45745709 |
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| 7 | Hapmap49311-BTA-78907  | 0 | 45948544 |
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| 7 | ARS-BFGL-NGS-31234     | 0 | 46109256 |
| 7 | Hapmap42327-BTA-78943  | 0 | 46190019 |
| 7 | BTB-00309359           | 0 | 46241469 |
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| 7 | BTB-00309317           | 0 | 46453487 |
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| 7 | ARS-BFGL-NGS-21638     | 0 | 46537357 |
| 7 | BTB-00309040           | 0 | 46553716 |
| 7 | ARS-BFGL-NGS-45683     | 0 | 46574843 |
| 7 | ARS-BFGL-NGS-106936    | 0 | 46626888 |
| 7 | Hapmap27055-BTA-99423  | 0 | 46700828 |
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| 7 | BTB-01401147           | 0 | 46835388 |
| 7 | ARS-BFGL-NGS-10710     | 0 | 46856706 |
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| 7 | BTB-01400946                    | 0 | 46981340 |          |
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| 7 | ARS-BFGL-NGS-24225              | 0 | 47136122 |          |
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| 7 | ARS-BFGL-NGS-119069             | 0 | 47192742 |          |
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| 7 | BTA-78954-no-rs                 | 0 | 47384327 |          |
| 7 | Hapmap50586-BTA-118480          | 0 | 47617783 |          |
| 7 | Hapmap42133-BTA-21378           | 0 | 47652106 |          |
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| 7 | BTB-00310554                    | 0 | 47984663 |          |
| 7 | Hapmap43181-BTA-121808          | 0 | 48013516 |          |
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| 7 | ARS-BFGL-NGS-26034              | 0 | 48089488 |          |
| 7 | ARS-BFGL-NGS-43053              | 0 | 48130720 |          |
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| 7 | ARS-BFGL-NGS-11634              | 0 | 48312113 |          |
| 7 | BTA-79002-no-rs                 | 0 | 48352338 |          |
| 7 | ARS-BFGL-NGS-105438             | 0 | 48376442 |          |
| 7 | ARS-BFGL-NGS-79199              | 0 | 48441476 |          |
| 7 | BTB-00310975                    | 0 | 48470968 |          |
| 7 | ARS-BFGL-NGS-18762              | 0 | 48496273 |          |
| 7 | ARS-BFGL-NGS-81015              | 0 | 48531566 |          |
| 7 | ARS-BFGL-NGS-110899             | 0 | 48564608 |          |
| 7 | ARS-BFGL-NGS-53552              | 0 | 48589737 |          |
| 7 | Hapmap46747-BTA-100049          | 0 | 48623866 |          |
| 7 | BTB-00022719                    | 0 | 48654064 |          |
| 7 | ARS-BFGL-NGS-52872              | 0 | 48709232 |          |
| 7 | BTB-01473879                    | 0 | 48744789 |          |
| 7 | ARS-BFGL-NGS-102270             | 0 | 48812901 |          |
| 7 | ARS-BFGL-NGS-63186              | 0 | 48848965 |          |
| 7 | ARS-BFGL-NGS-89563              | 0 | 48881790 |          |
| 7 | BTB-01473837                    | 0 | 48908617 |          |
| 7 | ARS-BFGL-NGS-56190              |   | 48947232 |          |

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| 7 | Hapmap52786-rs29024076 | 0        | 48977889 |
| 7 | BTB-00310271           | 0        | 48999205 |
| 7 | ARS-BFGL-NGS-19979     | 0        | 49084339 |
| 7 | Hapmap48469-BTA-78982  | 0        | 49104721 |
| 7 | Hapmap48894-BTA-78978  | 0        | 49145480 |
| 7 | ARS-BFGL-NGS-111709    | 0        | 49242955 |
| 7 | Hapmap30022-BTA-150646 | 0        | 49276680 |
| 7 | BTA-95797-no-rs        | 0        | 49333804 |
| 7 | ARS-BFGL-NGS-34658     | 0        | 49465390 |
| 7 | Hapmap25381-BTA-95792  | 0        | 49510021 |
| 7 | Hapmap26428-BTA-150640 | 0        | 49640896 |
| 7 | ARS-BFGL-NGS-99261     | 0        | 49715020 |
| 7 | ARS-BFGL-NGS-14570     | 49794088 |          |
| 7 | BTA-72600-no-rs        | 0        | 49811968 |
| 7 | ARS-BFGL-NGS-21658     | 0        | 49894987 |
| 7 | ARS-BFGL-NGS-41109     | 0        | 49920600 |
| 7 | ARS-BFGL-NGS-33600     | 0        | 49999470 |
| 7 | ARS-BFGL-NGS-37513     | 0        | 50056139 |
| 7 | ARS-BFGL-NGS-80736     | 0        | 50096086 |
| 7 | ARS-BFGL-NGS-108768    | 0        | 50137774 |
| 7 | ARS-BFGL-NGS-44221     | 0        | 50162984 |
| 7 | ARS-BFGL-NGS-72600     | 0        | 50205517 |
| 7 | ARS-BFGL-NGS-57250     | 0        | 50227210 |
| 7 | ARS-BFGL-NGS-41092     | 0        | 50276051 |
| 7 | ARS-BFGL-NGS-12518     | 0        | 50350967 |
| 7 | ARS-BFGL-NGS-118568    | 0        | 50384079 |
| 7 | ARS-BFGL-NGS-43186     | 0        | 50448202 |
| 7 | BTA-79057-no-rs        | 0        | 50488296 |
| 7 | ARS-BFGL-NGS-71772     | 0        | 50508931 |
| 7 | ARS-BFGL-NGS-106241    | 0        | 50541246 |
| 7 | ARS-BFGL-NGS-27736     | 0        | 50577792 |
| 7 | ARS-BFGL-NGS-19514     | 0        | 50677409 |
| 7 | BTA-79071-no-rs        | 0        | 50741324 |
| 7 | Hapmap26240-BTA-86641  | 0        | 50828600 |
| 7 | Hapmap41971-BTA-79077  | 0        | 51021369 |
| 7 | BTA-79078-no-rs        | 0        | 51127488 |
| 7 | Hapmap44135-BTA-79079  | 0        | 51157314 |
| 7 | ARS-BFGL-NGS-23933     | 0        | 51574295 |
| 7 | Hapmap24150-BTA-145103 | 0        | 52224595 |
| 7 | BTA-79139-no-rs        | 0        | 52256260 |
| 7 | ARS-BFGL-NGS-64072     | 0        | 52288861 |
| 7 | Hapmap41088-BTA-78936  | 0        | 52419683 |
| 7 | ARS-BFGL-NGS-49512     | 0        | 52489226 |
| 7 | ARS-BFGL-NGS-96103     | 0        | 52548541 |
| 7 | ARS-BFGL-NGS-113873    | 0        | 52572307 |
| 7 | ARS-BFGL-NGS-118289    | 0        | 52601941 |
| 7 | ARS-BFGL-NGS-111444    | 0        | 52682240 |
| 7 | ARS-BFGL-NGS-43299     | 0        | 52720797 |
| 7 | Hapmap43049-BTA-78931  | 0        | 52788724 |
| 7 | Hapmap44410-BTA-78928  | 0        | 52861252 |
| 7 | Hapmap50471-BTA-78923  | 0        | 52902976 |
| 7 | ARS-BFGL-NGS-37891     | 0        | 52977921 |
| 7 | ARS-BFGL-NGS-96012     | 0        | 53101552 |
| 7 | Hapmap49313-BTA-78953  | 0        | 53200271 |

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| 7 | ARS-BFGL-NGS-12471                    | 0        | 53335971 |  |  |
| 7 | Hapmap48468-BTA-78949                 | 0        | 53468463 |  |  |
| 7 | Hapmap49312-BTA-78944                 | 0        | 53510176 |  |  |
| 7 | Hapmap42803-BTA-110000                | 0        | 53664924 |  |  |
| 7 | ARS-BFGL-NGS-33637                    | 0        | 53859609 |  |  |
| 7 | Hapmap43981-BTA-98707                 | 0        | 53907954 |  |  |
| 7 | ARS-BFGL-NGS-20197                    | 0        | 53932886 |  |  |
| 7 | BTB-01216571                          | 0        | 53989891 |  |  |
| 7 | BTA-112367-no-rs                      | 0        | 54051562 |  |  |
| 7 | Hapmap59144-ss46526752                | 0        | 54081460 |  |  |
| 7 | ARS-BFGL-NGS-49427                    | 0        | 54101652 |  |  |
| 7 | ARS-BFGL-NGS-15368                    | 0        | 54147690 |  |  |
| 7 | ARS-BFGL-NGS-105324                   | 0        | 54210151 |  |  |
| 7 | ARS-BFGL-NGS-38390                    | 54455147 |          |  |  |
| 7 | Hapmap25124-BTA-79090                 | 0        | 54475437 |  |  |
| 7 | ARS-BFGL-NGS-114525                   | 0        | 54492812 |  |  |
| 7 | ARS-BFGL-NGS-105148                   | 0        | 54567919 |  |  |
| 7 | ARS-BFGL-NGS-25352                    | 0        | 54632239 |  |  |
| 7 | Hapmap41358-BTA-79117                 | 0        | 54664575 |  |  |
| 7 | ARS-BFGL-NGS-118731                   | 0        | 54701646 |  |  |
| 7 | UA-IFASA-9712                         | 0        | 54735242 |  |  |
| 7 | BTA-79101-no-rs                       | 0        | 54773892 |  |  |
| 7 | ARS-USMARC-Parent-DQ650635-rs29012174 | 0        | 55116289 |  |  |
| 7 | Hapmap35191-BES11_Contig367_1030      | 0        | 55144387 |  |  |
| 7 | ARS-BFGL-NGS-25586                    | 0        | 55175470 |  |  |
| 7 | ARS-BFGL-NGS-97323                    | 0        | 55209306 |  |  |
| 7 | Hapmap58878-rs29013232                | 0        | 55237703 |  |  |
| 7 | BTB-01800052                          | 0        | 55304964 |  |  |
| 7 | ARS-BFGL-NGS-84202                    | 0        | 55345542 |  |  |
| 7 | ARS-BFGL-NGS-111377                   | 0        | 55434939 |  |  |
| 7 | ARS-BFGL-NGS-18096                    | 0        | 55453345 |  |  |
| 7 | BTA-66896-no-rs                       | 0        | 55478917 |  |  |
| 7 | Hapmap45958-BTA-79125                 | 0        | 55547398 |  |  |
| 7 | ARS-BFGL-NGS-110246                   | 0        | 55655916 |  |  |
| 7 | ARS-BFGL-NGS-65354                    | 0        | 55721201 |  |  |
| 7 | ARS-BFGL-NGS-39670                    | 55792363 |          |  |  |
| 7 | Hapmap58262-rs29024901                | 0        | 55813851 |  |  |
| 7 | Hapmap49791-BTA-90282                 | 0        | 55866222 |  |  |
| 7 | Hapmap42241-BTA-52719                 | 0        | 55994876 |  |  |
| 7 | Hapmap51384-BTA-108597                | 0        | 56022790 |  |  |
| 7 | ARS-BFGL-NGS-118213                   | 0        | 56055399 |  |  |
| 7 | ARS-BFGL-NGS-117242                   | 0        | 56081309 |  |  |
| 7 | Hapmap52400-rs29025316                | 0        | 56130546 |  |  |
| 7 | ARS-BFGL-NGS-14880                    | 0        | 56152302 |  |  |
| 7 | Hapmap41418-BTA-108601                | 0        | 56249061 |  |  |
| 7 | BTA-108606-no-rs                      | 0        | 56290162 |  |  |
| 7 | ARS-BFGL-NGS-19455                    | 0        | 56374904 |  |  |
| 7 | BTB-01195060                          | 0        | 56399266 |  |  |
| 7 | BTB-01195069                          | 0        | 56419168 |  |  |
| 7 | ARS-BFGL-NGS-62351                    | 0        | 56471412 |  |  |
| 7 | Hapmap26444-BTA-153939                | 0        | 56655089 |  |  |
| 7 | ARS-BFGL-NGS-116933                   | 0        | 56766754 |  |  |
| 7 | ARS-BFGL-NGS-59630                    | 0        | 56791479 |  |  |
| 7 | BTA-104715-no-rs                      | 0        | 56910268 |  |  |

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| 7 | BTB-01176025           | 0 | 56943610 |
| 7 | BTB-01176013           | 0 | 56989949 |
| 7 | BTA-104712-no-rs       | 0 | 57011212 |
| 7 | BTB-01175813           | 0 | 57045632 |
| 7 | BTB-01175783           | 0 | 57074129 |
| 7 | BTB-01175761           | 0 | 57125713 |
| 7 | BTB-00311362           | 0 | 57175519 |
| 7 | ARS-BFGL-NGS-55477     | 0 | 57268891 |
| 7 | Hapmap54976-rs29019286 | 0 | 57334500 |
| 7 | ARS-BFGL-NGS-22197     | 0 | 57357439 |
| 7 | ARS-BFGL-NGS-118076    | 0 | 57435223 |
| 7 | Hapmap47768-BTA-88477  | 0 | 57449993 |
| 7 | BTA-88472-no-rs        | 0 | 57482519 |
| 7 | ARS-BFGL-NGS-65670     | 0 | 57508556 |
| 7 | ARS-BFGL-NGS-107103    | 0 | 57554684 |
| 7 | BTB-01641665           | 0 | 57575330 |
| 7 | BTA-28975-no-rs        | 0 | 57584246 |
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| 7 | Hapmap54597-rs29019273 | 0 | 57641183 |
| 7 | Hapmap59042-rs29025710 | 0 | 57703177 |
| 7 | Hapmap51169-BTA-122103 | 0 | 57748551 |
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| 7 | Hapmap50825-BTA-93321  | 0 | 57844905 |
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| 7 | BTB-01990240           | 0 | 57976208 |
| 7 | Hapmap58545-rs29022947 | 0 | 58033649 |
| 7 | Hapmap25956-BTA-93340  | 0 | 58157746 |
| 7 | BTB-01130043           | 0 | 58213582 |
| 7 | Hapmap28133-BTA-149820 | 0 | 58294551 |
| 7 | BTB-01130157           | 0 | 58333017 |
| 7 | ARS-BFGL-NGS-17929     | 0 | 58381975 |
| 7 | BTB-02035532           | 0 | 58436123 |
| 7 | ARS-BFGL-NGS-25861     | 0 | 58495617 |
| 7 | ARS-BFGL-NGS-103845    | 0 | 58565900 |
| 7 | ARS-BFGL-NGS-33130     | 0 | 58667344 |
| 7 | ARS-BFGL-NGS-36058     | 0 | 58685318 |
| 7 | ARS-BFGL-NGS-16214     | 0 | 58706549 |
| 7 | BTB-00312468           | 0 | 58732575 |
| 7 | Hapmap58968-rs29015334 | 0 | 58781492 |
| 7 | BTB-00312421           | 0 | 58809602 |
| 7 | Hapmap50784-BTA-79418  | 0 | 58844914 |
| 7 | ARS-BFGL-NGS-113351    | 0 | 58902375 |
| 7 | BTB-01564416           | 0 | 58923345 |
| 7 | Hapmap52252-rs29011665 | 0 | 58954836 |
| 7 | Hapmap48553-BTA-10000  | 0 | 59019641 |
| 7 | BTB-01950618           | 0 | 59040719 |
| 7 | BTB-00311573           | 0 | 59077322 |
| 7 | BTA-79372-no-rs        | 0 | 59118816 |
| 7 | BTB-00311603           | 0 | 59142743 |
| 7 | ARS-BFGL-NGS-40831     | 0 | 59190662 |
| 7 | Hapmap43053-BTA-79375  | 0 | 59251466 |
| 7 | ARS-BFGL-NGS-37263     | 0 | 59272012 |
| 7 | BTB-00311684           | 0 | 59320896 |



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| 7 | Hapmap30362-BTA-79378          | 0 | 59353807 |          |
| 7 | ARS-BFGL-NGS-108501            | 0 | 59405737 |          |
| 7 | ARS-BFGL-NGS-47680             |   | 59447780 |          |
| 7 | ARS-BFGL-NGS-103251            | 0 | 59517061 |          |
| 7 | ARS-BFGL-NGS-113745            | 0 | 59558037 |          |
| 7 | ARS-BFGL-NGS-33432             | 0 | 59590759 |          |
| 7 | BTA-79384-no-rs                | 0 | 59624695 |          |
| 7 | BTB-00311926                   | 0 | 59651740 |          |
| 7 | BTB-00311957                   | 0 | 59686629 |          |
| 7 | BTA-87610-no-rs                | 0 | 59700374 |          |
| 7 | BTB-00313076                   | 0 | 59731620 |          |
| 7 | BTB-00313140                   | 0 | 59766632 |          |
| 7 | ARS-BFGL-NGS-10904             | 0 | 59829599 |          |
| 7 | ARS-BFGL-NGS-108586            | 0 | 59862113 |          |
| 7 | BTA-79459-no-rs                | 0 | 59883811 |          |
| 7 | BTA-79469-no-rs                | 0 | 59910601 |          |
| 7 | Hapmap23996-BTA-145153         | 0 | 59974127 |          |
| 7 | BTB-00313206                   | 0 | 60055026 |          |
| 7 | BTB-00313229                   | 0 | 60088037 |          |
| 7 | BTB-00313327                   | 0 | 60219706 |          |
| 7 | BTB-00313304                   | 0 | 60256771 |          |
| 7 | ARS-BFGL-NGS-56647             | 0 | 60323501 |          |
| 7 | ARS-BFGL-NGS-70733             | 0 | 60350025 |          |
| 7 | ARS-BFGL-NGS-10633             | 0 | 60393420 |          |
| 7 | BTA-79451-no-rs                | 0 | 60414842 |          |
| 7 | BTB-01960423                   | 0 | 60436313 |          |
| 7 | Hapmap32167-BTA-79430          | 0 | 60475602 |          |
| 7 | Hapmap32417-BTA-79435          | 0 | 60533815 |          |
| 7 | BTB-00312832                   | 0 | 60562576 |          |
| 7 | ARS-BFGL-NGS-29389             | 0 | 60585197 |          |
| 7 | ARS-BFGL-NGS-24866             | 0 | 60628965 |          |
| 7 | BTA-79449-no-rs                | 0 | 60688029 |          |
| 7 | BTB-01652036                   | 0 | 60814124 |          |
| 7 | Hapmap35301-BES4_Contig133_337 | 0 |          | 60848519 |
| 7 | BTA-45436-no-rs                | 0 | 60884458 |          |
| 7 | BTA-79476-no-rs                | 0 | 60933059 |          |
| 7 | Hapmap22864-BTA-145165         | 0 | 60969176 |          |
| 7 | ARS-BFGL-NGS-54377             | 0 | 61016285 |          |
| 7 | Hapmap54646-rs29025261         | 0 | 61040300 |          |
| 7 | BTA-79479-no-rs                | 0 | 61064593 |          |
| 7 | ARS-BFGL-NGS-106846            | 0 | 61093739 |          |
| 7 | ARS-BFGL-NGS-18460             | 0 | 61118860 |          |
| 7 | BTA-79494-no-rs                | 0 | 61142271 |          |
| 7 | Hapmap40209-BTA-21871          | 0 | 61174151 |          |
| 7 | ARS-BFGL-NGS-51340             |   | 61196630 |          |
| 7 | ARS-BFGL-NGS-70932             | 0 | 61228269 |          |
| 7 | BTA-79497-no-rs                | 0 | 61255597 |          |
| 7 | BTB-00314287                   | 0 | 61367014 |          |
| 7 | BTB-01771905                   | 0 | 61518815 |          |
| 7 | BTB-01771953                   | 0 | 61543123 |          |
| 7 | BTB-00709083                   | 0 | 61645991 |          |
| 7 | Hapmap31211-BTA-29377          | 0 | 61657613 |          |
| 7 | ARS-BFGL-NGS-26691             | 0 | 61683533 |          |
| 7 | ARS-BFGL-NGS-110765            | 0 | 61707355 |          |

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| 7 | BTA-06829-rs29021186   | 0 | 61844595 |
| 7 | BTA-46482-no-rs        | 0 | 61879960 |
| 7 | Hapmap42103-BTA-121165 | 0 | 61932056 |
| 7 | BTB-00737899           | 0 | 61956669 |
| 7 | BTB-00737840           | 0 | 61992242 |
| 7 | BTB-01700292           | 0 | 62020599 |
| 7 | ARS-BFGL-NGS-113598    | 0 | 62050021 |
| 7 | ARS-BFGL-NGS-29738     | 0 | 62118773 |
| 7 | ARS-BFGL-NGS-23282     | 0 | 62145130 |
| 7 | BTB-01599221           | 0 | 62171732 |
| 7 | BTB-01599309           | 0 | 62196985 |
| 7 | UA-IFASA-2             | 0 | 62230328 |
| 7 | BTB-00315489           | 0 | 62266710 |
| 7 | Hapmap31774-BTA-145190 | 0 | 62431361 |
| 7 | Hapmap58038-rs29013244 | 0 | 62508803 |
| 7 | ARS-BFGL-NGS-201       | 0 | 62532817 |
| 7 | ARS-BFGL-NGS-114056    | 0 | 62565078 |
| 7 | BTB-00315300           | 0 | 62632650 |
| 7 | ARS-BFGL-NGS-11392     | 0 | 62664915 |
| 7 | ARS-BFGL-NGS-65476     | 0 | 62708301 |
| 7 | ARS-BFGL-NGS-112701    | 0 | 62779453 |
| 7 | ARS-BFGL-NGS-43585     | 0 | 62803781 |
| 7 | ARS-BFGL-NGS-104050    | 0 | 62839580 |
| 7 | UA-IFASA-7691          | 0 | 62860816 |
| 7 | Hapmap50476-BTA-79543  | 0 | 62889548 |
| 7 | BTB-00315110           | 0 | 62956627 |
| 7 | ARS-BFGL-NGS-26618     | 0 | 62978076 |
| 7 | BTB-01771007           | 0 | 63007092 |
| 7 | ARS-BFGL-NGS-34649     | 0 | 63037380 |
| 7 | Hapmap40463-BTA-79519  | 0 | 63052639 |
| 7 | ARS-BFGL-NGS-10231     | 0 | 63215249 |
| 7 | ARS-BFGL-NGS-114992    | 0 | 63231799 |
| 7 | BTB-00314778           | 0 | 63255889 |
| 7 | BTB-00314842           | 0 | 63300781 |
| 7 | Hapmap49317-BTA-79529  | 0 | 63324945 |
| 7 | ARS-BFGL-NGS-117682    | 0 | 63386032 |
| 7 | ARS-BFGL-NGS-88666     | 0 | 63494788 |
| 7 | BTA-79386-no-rs        | 0 | 63519073 |
| 7 | BTB-00312091           | 0 | 63547825 |
| 7 | ARS-BFGL-NGS-38651     | 0 | 63569723 |
| 7 | Hapmap47414-BTA-79396  | 0 | 63682321 |
| 7 | Hapmap39513-BTA-79399  | 0 | 63778905 |
| 7 | ARS-BFGL-NGS-41589     | 0 | 63843833 |
| 7 | BTA-79405-no-rs        | 0 | 63901946 |
| 7 | ARS-BFGL-NGS-100948    | 0 | 63935103 |
| 7 | Hapmap54307-rs29014078 | 0 | 63966892 |
| 7 | BTB-00312274           | 0 | 63994320 |
| 7 | ARS-BFGL-NGS-109962    | 0 | 64022666 |
| 7 | UA-IFASA-5392          | 0 | 64056299 |
| 7 | BTB-00312311           | 0 | 64109318 |
| 7 | ARS-BFGL-NGS-13342     | 0 | 64144040 |
| 7 | ARS-BFGL-NGS-84171     | 0 | 64173435 |
| 7 | ARS-BFGL-NGS-103580    | 0 | 64199993 |
| 7 | ARS-BFGL-NGS-109841    | 0 | 64288433 |

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| 7 | ARS-BFGL-NGS-104130             | 0        | 64318437 |          |
| 7 | ARS-BFGL-NGS-117221             | 0        | 64377869 |          |
| 7 | BTB-00315902                    | 0        | 64414652 |          |
| 7 | ARS-BFGL-NGS-84686              | 0        | 64451610 |          |
| 7 | UA-IFASA-7224                   | 0        | 64512119 |          |
| 7 | ARS-BFGL-NGS-14706              | 0        | 64560605 |          |
| 7 | ARS-BFGL-NGS-81508              | 0        | 64605680 |          |
| 7 | ARS-BFGL-NGS-112893             | 0        | 64704068 |          |
| 7 | Hapmap48570-BTA-104179          | 0        | 64728155 |          |
| 7 | ARS-BFGL-NGS-105590             | 0        | 64766846 |          |
| 7 | ARS-BFGL-NGS-119670             | 0        | 64798262 |          |
| 7 | ARS-BFGL-NGS-105214             | 0        | 64870335 |          |
| 7 | BTB-00316291                    | 0        | 64892251 |          |
| 7 | ARS-BFGL-NGS-14738              | 0        | 64918202 |          |
| 7 | BTB-00316348                    | 0        | 64939808 |          |
| 7 | ARS-BFGL-NGS-11636              | 0        | 64972893 |          |
| 7 | ARS-BFGL-NGS-113181             | 0        | 65047126 |          |
| 7 | Hapmap40464-BTA-79604           | 0        | 65071894 |          |
| 7 | BTB-00316650                    | 0        | 65098028 |          |
| 7 | ARS-BFGL-NGS-115727             | 0        | 65106237 |          |
| 7 | Hapmap47223-BTA-24023           | 0        | 65133175 |          |
| 7 | BTA-100740-no-rs                | 0        | 65156756 |          |
| 7 | ARS-BFGL-NGS-68523              | 0        | 65181374 |          |
| 7 | ARS-BFGL-NGS-103035             | 0        | 65245810 |          |
| 7 | BTB-01558699                    | 0        | 65287030 |          |
| 7 | Hapmap41133-BTA-103830          | 0        | 65331073 |          |
| 7 | Hapmap43748-BTA-103824          | 0        | 65358446 |          |
| 7 | BTA-103820-no-rs                | 0        | 65379758 |          |
| 7 | BTB-02035459                    | 0        | 65414632 |          |
| 7 | BTB-01219396                    | 0        | 65440735 |          |
| 7 | BTB-01219358                    | 0        | 65470615 |          |
| 7 | BTB-01219349                    | 0        | 65497498 |          |
| 7 | ARS-BFGL-NGS-33898              | 0        | 65520210 |          |
| 7 | Hapmap36214-SCAFFOLD145184_7453 | 0        | 65577310 | 65577310 |
| 7 | ARS-BFGL-NGS-89122              | 0        | 65636193 |          |
| 7 | BTB-01219206                    | 0        | 65662751 |          |
| 7 | ARS-BFGL-NGS-66769              | 0        | 65689219 |          |
| 7 | ARS-BFGL-NGS-14780              | 0        | 65761014 |          |
| 7 | BTB-01219012                    | 0        | 65799159 |          |
| 7 | ARS-BFGL-NGS-113819             | 0        | 65829695 |          |
| 7 | ARS-BFGL-NGS-109819             | 0        | 65884166 |          |
| 7 | ARS-BFGL-NGS-60290              | 65930546 |          |          |
| 7 | ARS-BFGL-NGS-104938             | 0        | 65944021 |          |
| 7 | BTB-01106139                    | 0        | 65969455 |          |
| 7 | BTA-28702-no-rs                 | 0        | 66061402 |          |
| 7 | BTB-01106344                    | 0        | 66107951 |          |
| 7 | Hapmap35285-BES4_Contig405_551  | 0        | 66156674 | 66156674 |
| 7 | BTB-01106504                    | 0        | 66181969 |          |
| 7 | BTA-12698-rs29024650            | 0        | 66212415 |          |
| 7 | Hapmap41494-BTA-28685           | 0        | 66254499 |          |
| 7 | BTA-28679-no-rs                 | 0        | 66281885 |          |
| 7 | BTB-01880776                    | 0        | 66303743 |          |
| 7 | BTB-01880736                    | 0        | 66328623 |          |
| 7 | BTA-28678-no-rs                 | 0        | 66371316 |          |

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| 7 | BTB-01105928           | 0 | 66428726 |
| 7 | ARS-BFGL-NGS-65587     | 0 | 66450039 |
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| 7 | BTB-01105691           | 0 | 66614258 |
| 7 | BTB-01697487           | 0 | 66645827 |
| 7 | BTB-01697440           | 0 | 66673891 |
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| 7 | BTB-00317489           | 0 | 66722552 |
| 7 | ARS-BFGL-NGS-95366     | 0 | 66758460 |
| 7 | BTB-00317657           | 0 | 66846209 |
| 7 | BTA-12616-no-rs        | 0 | 66880535 |
| 7 | BTA-79668-no-rs        | 0 | 66921835 |
| 7 | ARS-BFGL-NGS-34086     | 0 | 66951622 |
| 7 | BTA-97930-no-rs        | 0 | 66981407 |
| 7 | ARS-BFGL-NGS-39972     | 0 | 67011046 |
| 7 | BTB-00318021           | 0 | 67033026 |
| 7 | Hapmap50107-BTA-79606  | 0 | 67097507 |
| 7 | BTA-79609-no-rs        | 0 | 67118346 |
| 7 | ARS-BFGL-NGS-60914     | 0 | 67202130 |
| 7 | ARS-BFGL-NGS-42452     | 0 | 67265746 |
| 7 | ARS-BFGL-NGS-104252    | 0 | 67342317 |
| 7 | ARS-BFGL-NGS-89868     | 0 | 67399054 |
| 7 | ARS-BFGL-NGS-15617     | 0 | 67442121 |
| 7 | ARS-BFGL-NGS-102603    | 0 | 67495781 |
| 7 | BTB-00316959           | 0 | 67665007 |
| 7 | Hapmap31522-BTA-162970 | 0 | 67742899 |
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| 7 | BTB-00317024           | 0 | 67802183 |
| 7 | BTB-00317097           | 0 | 67831199 |
| 7 | BTB-01854364           | 0 | 67887168 |
| 7 | BTB-01854386           | 0 | 67913254 |
| 7 | BTA-104934-no-rs       | 0 | 67940770 |
| 7 | BTB-00317449           | 0 | 67988519 |
| 7 | BTB-01573458           | 0 | 68070311 |
| 7 | Hapmap54765-rs29012520 | 0 | 68156093 |
| 7 | ARS-BFGL-NGS-65419     | 0 | 68281468 |
| 7 | ARS-BFGL-NGS-102260    | 0 | 68382283 |
| 7 | BTA-19102-no-rs        | 0 | 68407836 |
| 7 | BTA-88775-no-rs        | 0 | 68436319 |
| 7 | BTA-109542-no-rs       | 0 | 68461305 |
| 7 | Hapmap27005-BTA-155483 | 0 | 68488456 |
| 7 | ARS-BFGL-NGS-101602    | 0 | 68516924 |
| 7 | BTB-01637672           | 0 | 68541361 |
| 7 | BTB-01668289           | 0 | 68627428 |
| 7 | BTB-01121435           | 0 | 68666448 |
| 7 | ARS-BFGL-NGS-10443     | 0 | 68747239 |
| 7 | BTB-01995337           | 0 | 68784628 |
| 7 | Hapmap33032-BTA-148803 | 0 | 68830299 |
| 7 | BTA-90220-no-rs        | 0 | 68921303 |
| 7 | BTB-01121166           | 0 | 68959591 |
| 7 | ARS-BFGL-NGS-75486     | 0 | 69004072 |
| 7 | BTB-01121084           | 0 | 69057569 |
| 7 | BTA-90219-no-rs        | 0 | 69079951 |
| 7 | BTB-01121005           | 0 | 69104720 |

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| 7 | BTB-01120926           | 0 | 69166473 |
| 7 | BTB-01120878           | 0 | 69200333 |
| 7 | Hapmap51517-BTA-90225  | 0 | 69233370 |
| 7 | BTB-01120796           | 0 | 69271200 |
| 7 | BTB-01930869           | 0 | 69305308 |
| 7 | Hapmap54916-rs29023505 | 0 | 69367406 |
| 7 | BTB-01765560           | 0 | 69391850 |
| 7 | BTA-119609-no-rs       | 0 | 69418216 |
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| 7 | ARS-BFGL-NGS-90561     | 0 | 69495479 |
| 7 | BTB-01174309           | 0 | 69520683 |
| 7 | BTB-01174252           | 0 | 69544487 |
| 7 | Hapmap25878-BTA-153605 | 0 | 69588814 |
| 7 | BTA-104331-no-rs       | 0 | 69610321 |
| 7 | Hapmap53401-rs29011412 | 0 | 69630391 |
| 7 | BTB-01174051           | 0 | 69672142 |
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| 7 | ARS-BFGL-NGS-33929     | 0 | 69898570 |
| 7 | ARS-BFGL-NGS-61492     | 0 | 70011889 |
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| 7 | ARS-BFGL-NGS-23857     | 0 | 70299314 |
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| 7 | Hapmap41158-BTA-113441 | 0 | 70453894 |
| 7 | ARS-BFGL-NGS-104924    | 0 | 70483529 |
| 7 | BTA-113434-no-rs       | 0 | 70516589 |
| 7 | BTA-27273-no-rs        | 0 | 70804701 |
| 7 | ARS-BFGL-NGS-39099     | 0 | 70886022 |
| 7 | ARS-BFGL-NGS-110264    | 0 | 70968179 |
| 7 | ARS-BFGL-NGS-77560     | 0 | 70988849 |
| 7 | ARS-BFGL-NGS-35004     | 0 | 71038040 |
| 7 | ARS-BFGL-NGS-82026     | 0 | 71141471 |
| 7 | ARS-BFGL-NGS-115639    | 0 | 71201175 |
| 7 | ARS-BFGL-NGS-12863     | 0 | 71240079 |
| 7 | Hapmap55701-rs29018719 | 0 | 71412946 |
| 7 | Hapmap52688-rs29024581 | 0 | 71440821 |
| 7 | ARS-BFGL-NGS-75852     | 0 | 71545383 |
| 7 | ARS-BFGL-NGS-23091     | 0 | 71614369 |
| 7 | BTB-00318572           | 0 | 71722224 |
| 7 | BTB-00318563           | 0 | 71764060 |
| 7 | BTB-01738526           | 0 | 71808779 |
| 7 | BTB-00318531           | 0 | 71870458 |
| 7 | ARS-BFGL-NGS-114649    | 0 | 71892762 |
| 7 | BTB-01602801           | 0 | 72000398 |
| 7 | ARS-BFGL-NGS-43040     | 0 | 72099380 |
| 7 | ARS-BFGL-NGS-68351     | 0 | 72144515 |
| 7 | BTB-00318480           | 0 | 72170033 |
| 7 | BTB-00318475           | 0 | 72192173 |
| 7 | ARS-BFGL-NGS-95195     | 0 | 72264142 |

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| 7 | ARS-BFGL-NGS-117673    | 0        | 72288274 |
| 7 | ARS-BFGL-NGS-79342     | 0        | 72361025 |
| 7 | Hapmap33486-BTA-145223 | 0        | 72399231 |
| 7 | ARS-BFGL-NGS-87456     | 0        | 72424026 |
| 7 | BTB-00318749           | 0        | 72446116 |
| 7 | ARS-BFGL-NGS-14756     | 0        | 72502891 |
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| 7 | Hapmap44912-BTA-79745  | 0        | 72582112 |
| 7 | BTB-00318846           | 0        | 72602819 |
| 7 | BTA-79755-no-rs        | 0        | 72695622 |
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| 7 | Hapmap29480-BTA-145229 | 0        | 72755685 |
| 7 | Hapmap26235-BTA-79759  | 0        | 72824476 |
| 7 | BTA-79764-no-rs        | 0        | 72837915 |
| 7 | Hapmap51050-BTA-79767  | 0        | 72882903 |
| 7 | BTB-00318996           | 0        | 72908532 |
| 7 | BTB-00319090           | 0        | 72931661 |
| 7 | ARS-BFGL-NGS-64667     | 0        | 73098206 |
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| 7 | ARS-BFGL-NGS-41157     | 0        | 73155944 |
| 7 | ARS-BFGL-NGS-10770     | 73202702 |          |
| 7 | BTA-79679-no-rs        | 0        | 73241149 |
| 7 | BTA-113124-no-rs       | 0        | 73290787 |
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| 7 | ARS-BFGL-NGS-109892    | 0        | 73344236 |
| 7 | BTB-00318253           | 0        | 73370317 |
| 7 | Hapmap25282-BTA-145208 | 0        | 73425804 |
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| 7 | ARS-BFGL-NGS-116640    | 0        | 73511189 |
| 7 | Hapmap53757-rs29023533 | 0        | 73549865 |
| 7 | ARS-BFGL-NGS-100082    | 0        | 73572091 |
| 7 | BTB-00319497           | 0        | 73595691 |
| 7 | ARS-BFGL-NGS-62939     | 0        | 73619490 |
| 7 | Hapmap43944-BTA-79809  | 0        | 73655100 |
| 7 | ARS-BFGL-NGS-116600    | 0        | 73675794 |
| 7 | BTB-00319402           | 0        | 73711288 |
| 7 | ARS-BFGL-NGS-117165    | 0        | 73753347 |
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| 7 | ARS-BFGL-NGS-56080     | 0        | 73886801 |
| 7 | ARS-BFGL-NGS-63249     | 0        | 73939652 |
| 7 | Hapmap38197-BTA-115802 | 0        | 73975422 |
| 7 | ARS-BFGL-NGS-28100     | 0        | 74066243 |
| 7 | Hapmap38631-BTA-79810  | 0        | 74094730 |
| 7 | BTB-00448579           | 0        | 74166945 |
| 7 | BTA-38342-no-rs        | 0        | 74200445 |
| 7 | BTB-00632527           | 0        | 74241339 |
| 7 | BTA-112613-no-rs       | 0        | 74320957 |
| 7 | BTB-01217877           | 0        | 74345253 |
| 7 | ARS-BFGL-NGS-30744     | 0        | 74367220 |
| 7 | ARS-BFGL-NGS-39185     | 0        | 74416249 |
| 7 | BTB-01217778           | 0        | 74453457 |
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| 7 | Hapmap24382-BTA-156441         | 0 | 74503833 |  |
| 7 | BTB-01217732                   | 0 | 74537346 |  |
| 7 | BTB-01217707                   | 0 | 74568754 |  |
| 7 | BTB-01217667                   | 0 | 74596426 |  |
| 7 | Hapmap50873-BTA-112610         | 0 | 74632687 |  |
| 7 | BTB-01217507                   | 0 | 74680158 |  |
| 7 | BTB-01217472                   | 0 | 74709675 |  |
| 7 | Hapmap48186-BTA-112617         | 0 | 74737726 |  |
| 7 | ARS-BFGL-NGS-37793             | 0 | 74773447 |  |
| 7 | ARS-BFGL-NGS-102365            | 0 | 74809260 |  |
| 7 | BTB-01738655                   | 0 | 74846204 |  |
| 7 | ARS-BFGL-NGS-107513            | 0 | 74946127 |  |
| 7 | Hapmap48995-BTA-103787         | 0 | 74970972 |  |
| 7 | BTB-01557864                   | 0 | 75017155 |  |
| 7 | Hapmap32399-BTA-26530          | 0 | 75060361 |  |
| 7 | ARS-BFGL-NGS-89239             | 0 | 75096446 |  |
| 7 | Hapmap50511-BTA-94590          | 0 | 75190535 |  |
| 7 | ARS-BFGL-NGS-12343             | 0 | 75305297 |  |
| 7 | Hapmap52738-rs29022304         | 0 | 75336419 |  |
| 7 | ARS-BFGL-NGS-100614            | 0 | 75370366 |  |
| 7 | BTB-01132427                   | 0 | 75522733 |  |
| 7 | Hapmap55033-rs29016821         | 0 | 75596606 |  |
| 7 | BTB-00319733                   | 0 | 75630151 |  |
| 7 | BTB-00319743                   | 0 | 75662956 |  |
| 7 | BTB-00319755                   | 0 | 75697428 |  |
| 7 | BTB-00319838                   | 0 | 75728672 |  |
| 7 | BTB-00319857                   | 0 | 75730641 |  |
| 7 | Hapmap34667-BES3_Contig253_417 | 0 | 75760069 |  |
| 7 | BTB-01731846                   | 0 | 75789716 |  |
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| 7 | ARS-BFGL-NGS-26484             | 0 | 75893393 |  |
| 7 | BTB-00328082                   | 0 | 75960737 |  |
| 7 | ARS-BFGL-NGS-10713             | 0 | 76021523 |  |
| 7 | ARS-BFGL-NGS-35829             | 0 | 76199889 |  |
| 7 | ARS-BFGL-NGS-23727             | 0 | 76269705 |  |
| 7 | BTB-00327936                   | 0 | 76349643 |  |
| 7 | BTB-00327890                   | 0 | 76432106 |  |
| 7 | BTB-00327755                   | 0 | 76497957 |  |
| 7 | Hapmap42072-BTA-113330         | 0 | 76615793 |  |
| 7 | BTB-01222854                   | 0 | 76641810 |  |
| 7 | BTB-01222634                   | 0 | 76668676 |  |
| 7 | Hapmap33654-BTA-113328         | 0 | 76719459 |  |
| 7 | ARS-BFGL-NGS-11893             | 0 | 76761667 |  |
| 7 | BTB-01222434                   | 0 | 76794446 |  |
| 7 | BTA-07167-rs29026833           | 0 | 76853131 |  |
| 7 | BTB-01222286                   | 0 | 76886696 |  |
| 7 | BTA-113341-no-rs               | 0 | 76910516 |  |
| 7 | Hapmap23645-BTA-156699         | 0 | 76946359 |  |
| 7 | BTB-01453634                   | 0 | 76986138 |  |
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| 7 | ARS-BFGL-NGS-114290            | 0 | 77165074 |  |
| 7 | BTB-01453325                   | 0 | 77193851 |  |
| 7 | Hapmap25581-BTA-149376         | 0 | 77223889 |  |

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| 7 | Hapmap44626-BTA-91902           | 0 | 77286962 |          |
| 7 | Hapmap27181-BTA-148757          | 0 | 77332002 |          |
| 7 | BTA-90093-no-rs                 | 0 | 77366113 |          |
| 7 | Hapmap51654-BTA-90094           | 0 | 77391747 |          |
| 7 | BTA-115932-no-rs                | 0 | 77435752 |          |
| 7 | Hapmap40658-BTA-115934          | 0 | 77485547 |          |
| 7 | ARS-BFGL-NGS-105066             | 0 | 77513074 |          |
| 7 | BTB-00510546                    | 0 | 77572670 |          |
| 7 | Hapmap26748-BTA-15768           | 0 | 77607412 |          |
| 7 | BTA-15780-no-rs                 | 0 | 77634909 |          |
| 7 | BTB-01268955                    | 0 | 77700319 |          |
| 7 | BTB-01269021                    | 0 | 77743281 |          |
| 7 | BTA-15764-no-rs                 | 0 | 77774904 |          |
| 7 | ARS-BFGL-NGS-97447              | 0 | 77811399 |          |
| 7 | ARS-BFGL-NGS-12644              | 0 | 77854696 |          |
| 7 | Hapmap40683-BTA-15777           | 0 | 77892934 |          |
| 7 | BTB-01269265                    | 0 | 77924956 |          |
| 7 | BTB-01925882                    | 0 | 77965485 |          |
| 7 | Hapmap43998-BTA-107878          | 0 | 78040701 |          |
| 7 | Hapmap53801-rs29012591          | 0 | 78081511 |          |
| 7 | ARS-BFGL-NGS-26789              | 0 | 78147443 |          |
| 7 | ARS-BFGL-NGS-35321              | 0 | 78307528 |          |
| 7 | Hapmap35434-SCAFFOLD296555_4978 | 0 |          | 78327426 |
| 7 | Hapmap33614-BTA-79859           | 0 | 78348620 |          |
| 7 | BTA-98900-no-rs                 | 0 | 78432686 |          |
| 7 | UA-IFASA-2364                   | 0 | 78584955 |          |
| 7 | BTA-23130-no-rs                 | 0 | 78599961 |          |
| 7 | ARS-BFGL-NGS-86134              | 0 | 78672889 |          |
| 7 | BTA-113701-no-rs                | 0 | 78719989 |          |
| 7 | BTB-01339172                    | 0 | 78799129 |          |
| 7 | BTB-01339206                    | 0 | 78822792 |          |
| 7 | BTB-01339323                    | 0 | 78852485 |          |
| 7 | BTB-01339341                    | 0 | 78877775 |          |
| 7 | BTB-01339356                    | 0 | 78901577 |          |
| 7 | BTA-113712-no-rs                | 0 | 78936990 |          |
| 7 | ARS-BFGL-NGS-99140              |   | 78965249 |          |
| 7 | BTB-01223707                    | 0 | 79012351 |          |
| 7 | BTB-00321961                    | 0 | 79096832 |          |
| 7 | BTA-79964-no-rs                 | 0 | 79285097 |          |
| 7 | Hapmap51051-BTA-79963           | 0 | 79335160 |          |
| 7 | BTB-01549678                    | 0 | 79370021 |          |
| 7 | BTB-01549688                    | 0 | 79403685 |          |
| 7 | ARS-BFGL-NGS-176                | 0 | 79431788 |          |
| 7 | BTB-01549763                    | 0 | 79462640 |          |
| 7 | BTB-00321734                    | 0 | 79527052 |          |
| 7 | ARS-BFGL-NGS-98599              | 0 | 79564106 |          |
| 7 | ARS-BFGL-NGS-31863              | 0 | 79624430 |          |
| 7 | UA-IFASA-8448                   | 0 | 79691139 |          |
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| 7 | BTB-01019973                    | 0 | 79747454 |          |
| 7 | Hapmap51847-BTA-65420           | 0 | 79803288 |          |
| 7 | Hapmap42286-BTA-65418           | 0 | 79840335 |          |
| 7 | BTB-00321215                    | 0 | 79898111 |          |
| 7 | BTB-01019887                    | 0 | 79967613 |          |



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| 7 | BTB-01273492                    | 0 | 80042191 |  |
| 7 | BTB-01273515                    | 0 | 80068653 |  |
| 7 | ARS-BFGL-NGS-73197              | 0 | 80093497 |  |
| 7 | BTB-01273562                    | 0 | 80136828 |  |
| 7 | BTB-01273612                    | 0 | 80165783 |  |
| 7 | BTB-01273634                    | 0 | 80202140 |  |
| 7 | Hapmap50899-BTA-16135           | 0 | 80229987 |  |
| 7 | BTB-01273731                    | 0 | 80272490 |  |
| 7 | ARS-BFGL-NGS-101651             | 0 | 80307024 |  |
| 7 | BTA-16138-no-rs                 | 0 | 80328266 |  |
| 7 | Hapmap39979-BTA-16142           | 0 | 80403492 |  |
| 7 | ARS-BFGL-NGS-110279             | 0 | 80483871 |  |
| 7 | ARS-BFGL-NGS-21810              | 0 | 80504356 |  |
| 7 | Hapmap49319-BTA-79888           | 0 | 80533048 |  |
| 7 | BTB-00320041                    | 0 | 80573481 |  |
| 7 | ARS-BFGL-NGS-111073             | 0 | 80638204 |  |
| 7 | BTB-00320122                    | 0 | 80660955 |  |
| 7 | BTB-00320148                    | 0 | 80731488 |  |
| 7 | BTA-79893-no-rs                 | 0 | 80885006 |  |
| 7 | ARS-BFGL-NGS-71362              | 0 | 80906011 |  |
| 7 | Hapmap48899-BTA-79966           | 0 | 80976979 |  |
| 7 | ARS-BFGL-NGS-87398              | 0 | 80997126 |  |
| 7 | ARS-BFGL-NGS-18898              | 0 | 81047142 |  |
| 7 | BTB-00320183                    | 0 | 81206362 |  |
| 7 | Hapmap55077-rs29014058          | 0 | 81254927 |  |
| 7 | BTB-00322735                    | 0 | 81492059 |  |
| 7 | ARS-BFGL-NGS-114593             | 0 | 81570647 |  |
| 7 | UA-IFASA-2577                   | 0 | 81591584 |  |
| 7 | Hapmap32782-BTA-123419          | 0 | 81634761 |  |
| 7 | Hapmap60017-rs29023471          | 0 | 81668727 |  |
| 7 | ARS-BFGL-NGS-109595             | 0 | 81697149 |  |
| 7 | Hapmap31118-BTA-145273          | 0 | 81782065 |  |
| 7 | Hapmap33211-BTA-145282          | 0 | 81836916 |  |
| 7 | BTB-00322386                    | 0 | 81863002 |  |
| 7 | BTB-00322452                    | 0 | 81910678 |  |
| 7 | Hapmap50109-BTA-79983           | 0 | 81964652 |  |
| 7 | Hapmap43360-BTA-79989           | 0 | 82023783 |  |
| 7 | Hapmap41973-BTA-80046           | 0 | 82088459 |  |
| 7 | Hapmap31776-BTA-145290          | 0 | 82131200 |  |
| 7 | Hapmap40812-BTA-80049           | 0 | 82173456 |  |
| 7 | Hapmap50786-BTA-80052           | 0 | 82209855 |  |
| 7 | ARS-BFGL-NGS-12785              | 0 | 82241276 |  |
| 7 | ARS-BFGL-NGS-13060              | 0 | 82274011 |  |
| 7 | ARS-BFGL-NGS-76274              | 0 | 82306133 |  |
| 7 | ARS-BFGL-NGS-114751             | 0 | 82380363 |  |
| 7 | Hapmap60651-rs29021930          | 0 | 82419764 |  |
| 7 | ARS-BFGL-NGS-20384              | 0 | 82473566 |  |
| 7 | Hapmap34339-BES10_Contig573_944 | 0 | 82510435 |  |
| 7 | BTB-00322983                    | 0 | 82711784 |  |
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| 7 | ARS-BFGL-NGS-36740              | 0 | 82784340 |  |
| 7 | ARS-BFGL-NGS-101456             | 0 | 82825197 |  |
| 7 | Hapmap27993-BTA-80011           | 0 | 82857269 |  |
| 7 | ARS-BFGL-NGS-64882              | 0 | 82923398 |  |

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| 7 | Hapmap49812-BTA-97012           | 0 | 82943896 |          |
| 7 | BTB-01483377                    | 0 | 82977192 |          |
| 7 | ARS-BFGL-NGS-11872              | 0 | 82998908 |          |
| 7 | BTB-01514150                    | 0 | 83057326 |          |
| 7 | BTB-01924842                    | 0 | 83081211 |          |
| 7 | BTB-01514314                    | 0 | 83109929 |          |
| 7 | BTB-01514268                    | 0 | 83155384 |          |
| 7 | ARS-BFGL-NGS-37133              | 0 | 83320199 |          |
| 7 | ARS-BFGL-NGS-69947              | 0 | 83397036 |          |
| 7 | BTB-00320903                    | 0 | 83417698 |          |
| 7 | Hapmap38256-BTA-79936           | 0 | 83438703 |          |
| 7 | Hapmap49761-BTA-79932           | 0 | 83551608 |          |
| 7 | ARS-BFGL-NGS-11750              | 0 | 83599948 |          |
| 7 | BTB-00320521                    | 0 | 83621039 |          |
| 7 | ARS-BFGL-NGS-27690              |   | 83648346 |          |
| 7 | BTA-62449-no-rs                 | 0 | 83866963 |          |
| 7 | BTB-00960162                    | 0 | 83915853 |          |
| 7 | Hapmap42292-BTA-68443           | 0 | 83945852 |          |
| 7 | Hapmap53869-rs29020071          | 0 | 84009045 |          |
| 7 | Hapmap55579-rs29017355          | 0 | 84068296 |          |
| 7 | ARS-BFGL-NGS-100314             | 0 | 84115592 |          |
| 7 | BTB-01865608                    | 0 | 84145466 |          |
| 7 | BTB-01250664                    | 0 | 84274700 |          |
| 7 | BTB-01250562                    | 0 | 84310411 |          |
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| 7 | Hapmap26460-BTA-159673          | 0 | 84488271 |          |
| 7 | ARS-BFGL-NGS-31540              |   | 84520981 |          |
| 7 | Hapmap33230-BTA-152909          | 0 | 84537259 |          |
| 7 | BTB-01541157                    | 0 | 84582299 |          |
| 7 | ARS-BFGL-NGS-23639              | 0 | 84640371 |          |
| 7 | BTB-01320890                    | 0 | 84677552 |          |
| 7 | Hapmap25618-BTA-161671          | 0 | 84709349 |          |
| 7 | Hapmap39985-BTA-22444           | 0 | 84832528 |          |
| 7 | ARS-BFGL-NGS-29764              | 0 | 84866897 |          |
| 7 | Hapmap52173-rs29017192          | 0 | 84896239 |          |
| 7 | BTB-01321253                    | 0 | 84925417 |          |
| 7 | ARS-BFGL-NGS-36796              | 0 | 84936377 |          |
| 7 | ARS-BFGL-NGS-112487             | 0 | 84971705 |          |
| 7 | ARS-BFGL-NGS-80444              | 0 | 84991860 |          |
| 7 | ARS-BFGL-NGS-111715             | 0 | 85015208 |          |
| 7 | BTB-01362002                    | 0 | 85041246 |          |
| 7 | BTB-01362030                    | 0 | 85071041 |          |
| 7 | Hapmap33885-BES9_Contig513_1348 | 0 |          | 85176647 |
| 7 | ARS-BFGL-NGS-62007              | 0 | 85216824 |          |
| 7 | Hapmap27427-BTA-151849          | 0 | 85337935 |          |
| 7 | BTB-01503564                    | 0 | 85387851 |          |
| 7 | BTB-01503544                    | 0 | 85418365 |          |
| 7 | BTB-01503516                    | 0 | 85462590 |          |
| 7 | BTA-119585-no-rs                | 0 | 85512674 |          |
| 7 | ARS-BFGL-NGS-101993             | 0 | 85544523 |          |
| 7 | ARS-BFGL-NGS-67190              | 0 | 85579651 |          |
| 7 | ARS-BFGL-NGS-41702              | 0 | 85619989 |          |
| 7 | ARS-BFGL-NGS-28236              | 0 | 85665441 |          |
| 7 | BTA-122383-no-rs                | 0 | 85686025 |          |

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| 7 | BTB-01687158           | 0 | 85712075 |
| 7 | ARS-BFGL-NGS-65574     | 0 | 85737117 |
| 7 | Hapmap51053-BTA-80120  | 0 | 85815849 |
| 7 | Hapmap51203-BTA-28900  | 0 | 85858580 |
| 7 | BTB-01363298           | 0 | 85957647 |
| 7 | Hapmap39437-BTA-80116  | 0 | 85971257 |
| 7 | BTB-00326076           | 0 | 86044835 |
| 7 | BTB-01363214           | 0 | 86095078 |
| 7 | BTB-01363189           | 0 | 86130978 |
| 7 | BTA-117735-no-rs       | 0 | 86169121 |
| 7 | BTB-01742022           | 0 | 86218866 |
| 7 | Hapmap43112-BTA-96532  | 0 | 86291041 |
| 7 | BTA-96526-no-rs        | 0 | 86326927 |
| 7 | BTB-01141010           | 0 | 86363738 |
| 7 | ARS-BFGL-NGS-103429    | 0 | 86385453 |
| 7 | Hapmap39793-BTA-96523  | 0 | 86421967 |
| 7 | ARS-BFGL-NGS-92532     | 0 | 86485159 |
| 7 | BTB-01140735           | 0 | 86522764 |
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| 7 | ARS-BFGL-NGS-110200    | 0 | 86823742 |
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| 7 | BTB-01920978           | 0 | 86915147 |
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| 7 | BTB-01592193           | 0 | 87158251 |
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| 7 | Hapmap44668-BTA-119022 | 0 | 87556048 |
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| 7 | ARS-BFGL-NGS-110483    | 0 | 87656497 |
| 7 | BTA-94810-no-rs        | 0 | 87678127 |
| 7 | ARS-BFGL-NGS-110503    | 0 | 87700528 |
| 7 | BTB-01829004           | 0 | 87740014 |
| 7 | ARS-BFGL-NGS-17291     | 0 | 87862183 |
| 7 | Hapmap50296-BTA-26292  | 0 | 87883599 |
| 7 | Hapmap43945-BTA-80083  | 0 | 87986502 |
| 7 | ARS-BFGL-NGS-101879    | 0 | 88034357 |
| 7 | BTB-00324749           | 0 | 88061784 |
| 7 | BTB-00324772           | 0 | 88094903 |
| 7 | Hapmap55194-rs29022931 | 0 | 88192479 |
| 7 | BTB-00324786           | 0 | 88268249 |
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| 7 | BTB-00325087           | 0 | 88317307 |
| 7 | Hapmap55570-rs29021609 | 0 | 88349672 |
| 7 | BTB-00325285           | 0 | 88381298 |
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| 7 | ARS-BFGL-NGS-13880              | 0        | 88471823 |          |
| 7 | ARS-BFGL-NGS-56565              | 0        | 88540604 |          |
| 7 | BTB-00325544                    | 0        | 88586997 |          |
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| 7 | BTB-01979796                    | 0        | 88684140 |          |
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| 7 | BTB-01771182                    | 0        | 88771142 |          |
| 7 | Hapmap54247-rs29017987          | 0        | 88828168 |          |
| 7 | BTA-86098-no-rs                 | 0        | 88859896 |          |
| 7 | BTB-01380281                    | 0        | 88886768 |          |
| 7 | Hapmap35978-SCAFFOLD186218_5128 | 0        |          | 88922026 |
| 7 | BTA-119020-no-rs                | 0        | 88971675 |          |
| 7 | ARS-BFGL-NGS-116915             | 0        | 89026917 |          |
| 7 | BTB-00325898                    | 0        | 89082685 |          |
| 7 | Hapmap49097-BTA-25597           | 0        | 89139219 |          |
| 7 | BTB-00325951                    | 0        | 89196559 |          |
| 7 | ARS-BFGL-NGS-118867             | 0        | 89241677 |          |
| 7 | BTB-00325965                    | 0        | 89262686 |          |
| 7 | BTB-00324215                    | 0        | 89342174 |          |
| 7 | Hapmap47742-BTA-80071           | 0        | 89384116 |          |
| 7 | BTB-01862398                    | 0        | 89421646 |          |
| 7 | ARS-BFGL-NGS-84444              | 0        | 89450810 |          |
| 7 | ARS-BFGL-NGS-28876              | 0        | 89496565 |          |
| 7 | ARS-BFGL-NGS-18844              | 0        | 89545945 |          |
| 7 | BTB-01259879                    | 0        | 89658972 |          |
| 7 | BTB-01259853                    | 0        | 89710665 |          |
| 7 | BTB-01259803                    | 0        | 89734142 |          |
| 7 | ARS-BFGL-NGS-116673             | 0        | 89800236 |          |
| 7 | Hapmap32130-BTA-158822          | 0        | 89830527 |          |
| 7 | BTB-01259691                    | 0        | 89855793 |          |
| 7 | ARS-BFGL-NGS-113270             | 0        | 89923165 |          |
| 7 | Hapmap49872-BTA-115580          | 0        | 89967934 |          |
| 7 | Hapmap25655-BTA-87375           | 0        | 90006186 |          |
| 7 | Hapmap43690-BTA-80156           | 0        | 90058029 |          |
| 7 | Hapmap60894-rs29027443          | 0        | 90080630 |          |
| 7 | BTA-80154-no-rs                 | 0        | 90111656 |          |
| 7 | BTB-00326369                    | 0        | 90166166 |          |
| 7 | BTB-00326280                    | 0        | 90202205 |          |
| 7 | Hapmap58847-rs29023123          | 0        | 90239425 |          |
| 7 | Hapmap48900-BTA-80148           | 0        | 90529356 |          |
| 7 | ARS-BFGL-NGS-17269              | 0        | 90562983 |          |
| 7 | ARS-BFGL-NGS-45520              | 90621200 |          |          |
| 7 | Hapmap39294-BTA-80145           | 0        | 90655911 |          |
| 7 | Hapmap51054-BTA-80144           | 0        | 90753869 |          |
| 7 | ARS-BFGL-NGS-115653             | 0        | 90900133 |          |
| 7 | Hapmap60739-rs29026571          | 0        | 90923765 |          |
| 7 | Hapmap47743-BTA-80126           | 0        | 90983382 |          |
| 7 | Hapmap31515-BTA-160768          | 0        | 91067769 |          |
| 7 | Hapmap59108-rs29018330          | 0        | 91149831 |          |
| 7 | Hapmap38846-BTA-63903           | 0        | 91226072 |          |
| 7 | Hapmap55128-rs29027252          | 0        | 91261221 |          |
| 7 | Hapmap27428-BTA-151920          | 0        | 91483570 |          |
| 7 | ARS-BFGL-NGS-118534             | 0        | 91507089 |          |

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| 7 | Hapmap38479-BTA-21119                 | 0 | 91602893 |          |
| 7 | BTA-21118-no-rs                       | 0 | 91670145 |          |
| 7 | ARS-BFGL-NGS-62578                    | 0 | 91693979 |          |
| 7 | Hapmap39636-BTA-21139                 | 0 | 91726911 |          |
| 7 | Hapmap44450-BTA-21138                 | 0 | 91762948 |          |
| 7 | ARS-BFGL-NGS-42061                    | 0 | 91839217 |          |
| 7 | Hapmap49911-BTA-21136                 | 0 | 91882019 |          |
| 7 | BTA-21135-no-rs                       | 0 | 91904522 |          |
| 7 | ARS-BFGL-NGS-43868                    | 0 | 91946384 |          |
| 7 | ARS-BFGL-NGS-111609                   | 0 | 91974966 |          |
| 7 | ARS-BFGL-NGS-111107                   | 0 | 92021282 |          |
| 7 | Hapmap33678-BTA-161179                | 0 | 92135559 |          |
| 7 | BTA-20841-no-rs                       | 0 | 92201609 |          |
| 7 | ARS-BFGL-NGS-15118                    | 0 | 92257938 |          |
| 7 | Hapmap46473-BTA-21133                 | 0 | 92293717 |          |
| 7 | BTA-21132-no-rs                       | 0 | 92347964 |          |
| 7 | ARS-BFGL-NGS-51390                    |   | 92474466 |          |
| 7 | ARS-BFGL-NGS-71105                    | 0 | 92599037 |          |
| 7 | Hapmap50618-BTA-21134                 | 0 | 92623127 |          |
| 7 | Hapmap34237-BES3_Contig337_1046       | 0 |          | 92654719 |
| 7 | Hapmap50982-BTA-48814                 | 0 | 92719881 |          |
| 7 | Hapmap60226-rs29011503                | 0 | 92744435 |          |
| 7 | ARS-BFGL-NGS-80813                    | 0 | 92817550 |          |
| 7 | ARS-BFGL-NGS-60410                    | 0 | 92974722 |          |
| 7 | ARS-BFGL-NGS-107035                   | 0 | 93007435 |          |
| 7 | ARS-BFGL-NGS-101886                   | 0 | 93073890 |          |
| 7 | ARS-BFGL-NGS-18900                    | 0 | 93218452 |          |
| 7 | BTA-19330-no-rs                       | 0 | 93289032 |          |
| 7 | ARS-BFGL-NGS-64446                    | 0 | 93396872 |          |
| 7 | Hapmap33775-BTA-80171                 | 0 | 93417036 |          |
| 7 | BTA-80195-no-rs                       | 0 | 93795629 |          |
| 7 | Hapmap54892-rs29024390                | 0 | 93834124 |          |
| 7 | Hapmap30843-BTA-148402                | 0 | 93869009 |          |
| 7 | Hapmap52307-rs29009626                | 0 | 93886136 |          |
| 7 | Hapmap51706-BTA-25479                 | 0 | 94105221 |          |
| 7 | Hapmap40829-BTA-88244                 | 0 | 94196902 |          |
| 7 | Hapmap53565-rs29013278                | 0 | 94242965 |          |
| 7 | Hapmap30011-BTA-148009                | 0 | 94245759 |          |
| 7 | ARS-USMARC-Parent-DQ786759-rs29026696 | 0 |          | 94259472 |
| 7 | ARS-BFGL-NGS-55808                    | 0 | 94378637 |          |
| 7 | Hapmap43392-BTA-88241                 | 0 | 94421648 |          |
| 7 | Hapmap31128-BTA-148018                | 0 | 94512228 |          |
| 7 | Hapmap47767-BTA-88245                 | 0 | 94548593 |          |
| 7 | BTA-11267-rs29017030                  | 0 | 94573436 |          |
| 7 | BTA-88250-no-rs                       | 0 | 94639822 |          |
| 7 | DIAS-192                              | 0 | 94783893 |          |
| 7 | ARS-BFGL-NGS-32449                    | 0 | 94840801 |          |
| 7 | BTA-80207-no-rs                       | 0 | 94884529 |          |
| 7 | Hapmap43946-BTA-80204                 | 0 | 94974831 |          |
| 7 | Hapmap40145-BTA-80198                 | 0 | 95027313 |          |
| 7 | ARS-BFGL-NGS-64025                    | 0 | 95065068 |          |
| 7 | Hapmap56856-rs29026678                | 0 | 95095555 |          |
| 7 | BTA-28026-no-rs                       | 0 | 95247190 |          |
| 7 | ARS-BFGL-NGS-117414                   | 0 | 95288401 |          |

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| 7 | ARS-BFGL-NGS-29400              | 0 | 95437013 |          |
| 7 | BTA-110434-no-rs                | 0 | 95554033 |          |
| 7 | ARS-BFGL-NGS-100632             | 0 | 95577863 |          |
| 7 | ARS-BFGL-NGS-43916              | 0 | 95600027 |          |
| 7 | Hapmap43404-BTA-93107           | 0 | 95838186 |          |
| 7 | ARS-BFGL-NGS-55872              | 0 | 95904050 |          |
| 7 | Hapmap33036-BTA-149699          | 0 | 96053557 |          |
| 7 | Hapmap27758-BTA-149696          | 0 | 96159996 |          |
| 7 | Hapmap55378-rs29025271          | 0 | 96192503 |          |
| 7 | Hapmap46388-BTA-93108           | 0 | 96254960 |          |
| 7 | Hapmap23231-BTA-80214           | 0 | 96320591 |          |
| 7 | Hapmap32825-BTA-145358          | 0 | 96482994 |          |
| 7 | ARS-BFGL-NGS-109541             | 0 | 96541131 |          |
| 7 | Hapmap25283-BTA-145370          | 0 | 96588126 |          |
| 7 | ARS-BFGL-NGS-113774             | 0 | 96695877 |          |
| 7 | BTA-80221-no-rs                 | 0 | 96765614 |          |
| 7 | ARS-BFGL-NGS-54745              | 0 | 96815359 |          |
| 7 | ARS-BFGL-NGS-24270              |   | 96844966 |          |
| 7 | ARS-BFGL-NGS-15731              | 0 | 96936145 |          |
| 7 | Hapmap58161-rs29021192          | 0 | 97030883 |          |
| 7 | ARS-BFGL-NGS-10780              |   | 97072141 |          |
| 7 | Hapmap46534-BTA-80232           | 0 | 97151592 |          |
| 7 | BTA-108803-no-rs                | 0 | 97372656 |          |
| 7 | BTA-108798-no-rs                | 0 | 97393157 |          |
| 7 | ARS-BFGL-NGS-64825              | 0 | 97430691 |          |
| 7 | ARS-BFGL-NGS-32277              | 0 | 97451422 |          |
| 7 | ARS-BFGL-NGS-80413              | 0 | 97501859 |          |
| 7 | Hapmap47490-BTA-108189          | 0 | 97529872 |          |
| 7 | Hapmap48993-BTA-102947          | 0 | 97652464 |          |
| 7 | ARS-BFGL-NGS-59390              | 0 | 97691853 |          |
| 7 | ARS-BFGL-NGS-42106              | 0 | 97772240 |          |
| 7 | Hapmap51510-BTA-87075           | 0 | 97861341 |          |
| 7 | Hapmap48501-BTA-87072           | 0 | 97898940 |          |
| 7 | Hapmap36470-SCAFFOLD25306_18005 | 0 |          | 97961659 |
| 7 | ARS-BFGL-NGS-68719              | 0 | 97987849 |          |
| 7 | Hapmap24200-BTA-147598          | 0 | 98013150 |          |
| 7 | ARS-BFGL-NGS-46120              |   | 98173299 |          |
| 7 | BTA-88724-no-rs                 | 0 | 98194828 |          |
| 7 | Hapmap40831-BTA-88715           | 0 | 98254815 |          |
| 7 | ARS-BFGL-NGS-107507             | 0 | 98375640 |          |
| 7 | ARS-BFGL-NGS-43901              | 0 | 98498047 |          |
| 7 | ARS-USMARC-670                  | 0 | 98534197 |          |
| 7 | ARS-USMARC-116                  | 0 | 98566391 |          |
| 7 | BTA-111223-no-rs                | 0 | 98601495 |          |
| 7 | ARS-BFGL-NGS-69455              | 0 | 98635208 |          |
| 7 | ARS-BFGL-NGS-85383              | 0 | 98680293 |          |
| 7 | Hapmap52177-rs29018251          | 0 | 98726055 |          |
| 7 | ARS-BFGL-NGS-22325              | 0 | 98757265 |          |
| 7 | ARS-BFGL-NGS-35611              | 0 | 98799246 |          |
| 7 | ARS-BFGL-NGS-40740              |   | 98820742 |          |
| 7 | Hapmap44138-BTA-80281           | 0 | 98887313 |          |
| 7 | ARS-BFGL-NGS-61744              | 0 | 98907404 |          |
| 7 | ARS-BFGL-NGS-111429             | 0 | 98974456 |          |
| 7 | Hapmap24251-BTA-145388          | 0 | 99024444 |          |

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| 7 | Hapmap48937-BTA-89613  | 0         | 99085299  |
| 7 | BTA-112159-no-rs       | 0         | 99178748  |
| 7 | ARS-BFGL-NGS-94147     | 0         | 99215474  |
| 7 | Hapmap38937-BTA-121815 | 0         | 99344820  |
| 7 | Hapmap23401-BTA-145415 | 0         | 99399852  |
| 7 | ARS-BFGL-NGS-65941     | 0         | 99492904  |
| 7 | ARS-BFGL-NGS-114490    | 0         | 99635841  |
| 7 | Hapmap48087-BTA-80315  | 0         | 99687614  |
| 7 | BTA-16856-no-rs        | 0         | 99776747  |
| 7 | Hapmap38209-BTA-22552  | 0         | 99845133  |
| 7 | ARS-BFGL-NGS-118099    | 0         | 99919908  |
| 7 | Hapmap25284-BTA-145409 | 0         | 99989176  |
| 7 | ARS-BFGL-NGS-42763     | 0         | 100015468 |
| 7 | ARS-BFGL-NGS-25853     | 0         | 100089527 |
| 7 | BTB-00327217           | 0         | 100131871 |
| 7 | BTB-00327062           | 0         | 100226236 |
| 7 | Hapmap25060-BTA-145394 | 0         | 100259656 |
| 7 | BTA-80298-no-rs        | 0         | 100491636 |
| 7 | Hapmap51320-BTA-80300  | 0         | 100562783 |
| 7 | ARS-BFGL-NGS-70915     | 0         | 100715757 |
| 7 | ARS-BFGL-NGS-113408    | 0         | 100765281 |
| 7 | ARS-BFGL-NGS-70114     | 0         | 100787445 |
| 7 | BTA-89272-no-rs        | 0         | 100872402 |
| 7 | Hapmap41999-BTA-89266  | 0         | 100892547 |
| 7 | Hapmap59124-rs29023522 | 0         | 101248064 |
| 7 | BTA-87872-no-rs        | 0         | 101358190 |
| 7 | BTA-87865-no-rs        | 0         | 101481295 |
| 7 | ARS-BFGL-NGS-111842    | 0         | 101530636 |
| 7 | ARS-BFGL-NGS-59783     | 0         | 101669109 |
| 7 | ARS-BFGL-NGS-21472     | 0         | 101697221 |
| 7 | ARS-BFGL-NGS-14878     | 0         | 101791480 |
| 7 | Hapmap54978-rs29019536 | 0         | 101903824 |
| 7 | Hapmap41090-BTA-80433  | 0         | 101980506 |
| 7 | ARS-BFGL-NGS-45480     | 102179529 |           |
| 7 | ARS-BFGL-NGS-32871     | 0         | 102218650 |
| 7 | ARS-BFGL-NGS-117669    | 0         | 102242251 |
| 7 | Hapmap38913-BTA-80438  | 0         | 102342232 |
| 7 | Hapmap38264-BTA-96587  | 0         | 102398654 |
| 7 | UA-IFASA-6140          | 0         | 102472846 |
| 7 | Hapmap51167-BTA-121817 | 0         | 102512960 |
| 7 | UA-IFASA-5377          | 0         | 102535821 |
| 7 | BTA-80429-no-rs        | 0         | 102564643 |
| 7 | Hapmap31441-BTA-145417 | 0         | 102658777 |
| 7 | Hapmap31054-BTA-112283 | 0         | 102777090 |
| 7 | Hapmap53461-rs29027660 | 0         | 102855103 |
| 7 | ARS-BFGL-NGS-43420     | 102889266 |           |
| 7 | ARS-BFGL-NGS-228       | 0         | 103074895 |
| 7 | BTA-45431-no-rs        | 0         | 103159234 |
| 7 | Hapmap53420-rs29015255 | 0         | 103224029 |
| 7 | ARS-BFGL-NGS-72471     | 0         | 103375625 |
| 7 | ARS-BFGL-NGS-37726     | 0         | 103469483 |
| 7 | ARS-BFGL-NGS-110972    | 0         | 103579177 |
| 7 | Hapmap27410-BTA-145424 | 0         | 103668071 |
| 7 | BTA-80440-no-rs        | 0         | 103758284 |

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| 7 | BTA-80441-no-rs        | 0 | 103779001 |
| 7 | Hapmap22951-BTA-163311 | 0 | 103989772 |
| 7 | ARS-BFGL-NGS-25628     | 0 | 104031906 |
| 7 | ARS-BFGL-NGS-118583    | 0 | 104072416 |
| 7 | ARS-BFGL-NGS-69739     | 0 | 104092252 |
| 7 | ARS-BFGL-NGS-103483    | 0 | 104132699 |
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| 7 | BTA-85910-no-rs        | 0 | 104257907 |
| 7 | Hapmap48479-BTA-80447  | 0 | 104282149 |
| 7 | Hapmap50111-BTA-80468  | 0 | 104510816 |
| 7 | BTA-80476-no-rs        | 0 | 104548278 |
| 7 | Hapmap40325-BTA-80477  | 0 | 104599575 |
| 7 | Hapmap32326-BTA-145438 | 0 | 104674563 |
| 7 | BTB-00328259           | 0 | 104702868 |
| 7 | ARS-BFGL-NGS-76665     | 0 | 104730721 |
| 7 | BTB-00328308           | 0 | 104750145 |
| 7 | BTA-10635-rs29016187   | 0 | 104833780 |
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| 7 | BTB-01865015           | 0 | 104967860 |
| 7 | Hapmap50428-BTA-63507  | 0 | 105059398 |
| 7 | BTA-63505-no-rs        | 0 | 105112282 |
| 7 | ARS-BFGL-NGS-83670     | 0 | 105142920 |
| 7 | Hapmap53417-rs29014877 | 0 | 105171211 |
| 7 | BTB-00956573           | 0 | 105214075 |
| 7 | ARS-BFGL-NGS-15833     | 0 | 105279874 |
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| 7 | ARS-BFGL-NGS-80165     | 0 | 105331292 |
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| 7 | BTB-00956256           | 0 | 105358442 |
| 7 | ARS-BFGL-NGS-48550     | 0 | 105385203 |
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| 7 | BTA-63485-no-rs        | 0 | 105537981 |
| 7 | ARS-BFGL-NGS-114863    | 0 | 105560604 |
| 7 | Hapmap53026-rs29010461 | 0 | 105582677 |
| 7 | BTB-00955523           | 0 | 105621232 |
| 7 | BTA-63478-no-rs        | 0 | 105690139 |
| 7 | ARS-BFGL-NGS-33994     | 0 | 105751261 |
| 7 | ARS-BFGL-NGS-73461     | 0 | 105938389 |
| 7 | BTA-63470-no-rs        | 0 | 105963598 |
| 7 | ARS-BFGL-NGS-104100    | 0 | 105987605 |
| 7 | Hapmap9011-BTA-63465   | 0 | 106012026 |
| 7 | BTB-00955215           | 0 | 106043966 |
| 7 | BTB-01671559           | 0 | 106092176 |
| 7 | Hapmap54690-rs29024551 | 0 | 106131431 |
| 7 | BTB-01472160           | 0 | 106211903 |
| 7 | BTB-01472249           | 0 | 106242916 |
| 7 | BTB-02081792           | 0 | 106274908 |
| 7 | BTA-120201-no-rs       | 0 | 106307605 |
| 7 | BTB-01772837           | 0 | 106340772 |
| 7 | BTB-01474298           | 0 | 106398519 |



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| 7 | BTB-01474104                     | 0 | 106422549 |  |
| 7 | Hapmap33224-BTA-150799           | 0 | 106472284 |  |
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| 7 | ARS-BFGL-NGS-59803               | 0 | 106533744 |  |
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| 7 | BTB-00328499                     | 0 | 106612109 |  |
| 7 | BTB-00328453                     | 0 | 106650902 |  |
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| 7 | Hapmap43691-BTA-80500            | 0 | 106984999 |  |
| 7 | BTB-00328969                     | 0 | 107014408 |  |
| 7 | Hapmap51860-BTA-80489            | 0 | 107051573 |  |
| 7 | BTA-121819-no-rs                 | 0 | 107075483 |  |
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| 7 | ARS-BFGL-NGS-109915              | 0 | 107153472 |  |
| 7 | BTB-00329283                     | 0 | 107247666 |  |
| 7 | BTA-17474-no-rs                  | 0 | 107304729 |  |
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| 7 | BTA-106359-no-rs                 | 0 | 107527276 |  |
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| 7 | BTB-00479495                     | 0 | 107645565 |  |
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| 7 | Hapmap51837-BTA-49470            | 0 | 108006295 |  |
| 7 | BTB-00114337                     | 0 | 108061850 |  |
| 7 | Hapmap35710-SCAFFOLD255050_10929 | 0 | 108096309 |  |
| 7 | ARS-BFGL-NGS-114645              | 0 | 108143128 |  |
| 7 | BTA-49481-no-rs                  | 0 | 108171368 |  |
| 7 | Hapmap51838-BTA-49482            | 0 | 108205624 |  |
| 7 | ARS-BFGL-NGS-67383               | 0 | 108307729 |  |
| 7 | BTB-00115134                     | 0 | 108325851 |  |
| 7 | ARS-BFGL-NGS-82310               | 0 | 108408892 |  |
| 7 | BTB-00331006                     | 0 | 108433154 |  |
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| 7 | Hapmap48901-BTA-80577            | 0 | 108478047 |  |
| 7 | ARS-BFGL-NGS-70170               | 0 | 108518821 |  |
| 7 | BTA-118266-no-rs                 | 0 | 108551598 |  |
| 7 | BTB-01771640                     | 0 | 108575314 |  |
| 7 | Hapmap41452-BTA-120126           | 0 | 108603408 |  |
| 7 | Hapmap49763-BTA-80570            | 0 | 108685133 |  |
| 7 | BTB-00330764                     | 0 | 108710126 |  |

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| 7 | BTB-00330738                     | 0 | 108730672 |  |
| 7 | Hapmap40814-BTA-80565            | 0 | 108756176 |  |
| 7 | ARS-BFGL-NGS-12657               | 0 | 108817785 |  |
| 7 | Hapmap57373-rs29019418           | 0 | 108861104 |  |
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| 7 | Hapmap41644-BTA-80557            | 0 | 108964273 |  |
| 7 | BTA-88511-no-rs                  | 0 | 108992486 |  |
| 7 | ARS-BFGL-NGS-107132              | 0 | 109076621 |  |
| 7 | BTB-00330379                     | 0 | 109106555 |  |
| 7 | ARS-BFGL-NGS-109842              | 0 | 109139835 |  |
| 7 | BTA-80552-no-rs                  | 0 | 109176557 |  |
| 7 | ARS-BFGL-NGS-43318               | 0 | 109210429 |  |
| 7 | BTB-00330249                     | 0 | 109234663 |  |
| 7 | Hapmap39686-BTA-80533            | 0 | 109268080 |  |
| 7 | BTB-00330149                     | 0 | 109293823 |  |
| 7 | ARS-BFGL-NGS-31168               | 0 | 109395242 |  |
| 7 | Hapmap50112-BTA-80530            | 0 | 109522610 |  |
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| 7 | ARS-BFGL-NGS-15475               | 0 | 109633993 |  |
| 7 | Hapmap46731-BTA-80527            | 0 | 109664621 |  |
| 7 | BTB-01922066                     | 0 | 109692862 |  |
| 7 | Hapmap48700-BTA-26199            | 0 | 109717145 |  |
| 7 | ARS-BFGL-NGS-21760               | 0 | 109751820 |  |
| 7 | ARS-BFGL-NGS-19041               | 0 | 109810378 |  |
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| 7 | Hapmap45685-BTA-80525            | 0 | 109970008 |  |
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| 7 | Hapmap44412-BTA-80524            | 0 | 110064329 |  |
| 7 | BTA-80518-no-rs                  | 0 | 110117517 |  |
| 7 | BTA-80514-no-rs                  | 0 | 110186764 |  |
| 7 | ARS-BFGL-NGS-37666               | 0 | 110222975 |  |
| 7 | ARS-BFGL-NGS-103199              | 0 | 110259397 |  |
| 7 | BTB-01965000                     | 0 | 110280728 |  |
| 7 | BTA-118421-no-rs                 | 0 | 110332484 |  |
| 7 | Hapmap53962-rs29017056           | 0 | 110397885 |  |
| 7 | Hapmap3177-BTA-16454             | 0 | 110422232 |  |
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| 7 | ARS-BFGL-NGS-55585               | 0 | 110650631 |  |
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| 7 | BTA-116241-no-rs                 | 0 | 110708620 |  |
| 7 | BTB-01239861                     | 0 | 110714665 |  |
| 7 | ARS-BFGL-NGS-116546              | 0 | 110756252 |  |
| 7 | BTA-122523-no-rs                 | 0 | 110791024 |  |
| 7 | ARS-BFGL-NGS-62253               | 0 | 110844583 |  |
| 7 | ARS-BFGL-NGS-99091               | 0 | 110878428 |  |
| 7 | ARS-BFGL-NGS-103547              | 0 | 110908263 |  |
| 7 | Hapmap26145-BTA-145462           | 0 | 110961714 |  |
| 7 | BTA-09813-rs29025969             | 0 | 111073047 |  |
| 7 | Hapmap51497-BTA-80591            | 0 | 111106929 |  |
| 7 | Hapmap36286-SCAFFOLD260285_24265 | 0 | 111161115 |  |
| 7 | BTA-80607-no-rs                  | 0 | 111185271 |  |
| 7 | ARS-BFGL-NGS-16396               | 0 | 111236140 |  |

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| 7 | Hapmap53611-rs29011370          | 0       | 111259941 |  |
| 7 | BTA-80626-no-rs                 | 0       | 111291704 |  |
| 7 | ARS-BFGL-NGS-78863              | 0       | 111335110 |  |
| 7 | BTB-00080311                    | 0       | 111383306 |  |
| 7 | UA-IFASA-3827                   | 0       | 111426059 |  |
| 7 | BTB-00080420                    | 0       | 111470224 |  |
| 7 | ARS-BFGL-NGS-115652             | 0       | 111540877 |  |
| 7 | BTA-80628-no-rs                 | 0       | 111565122 |  |
| 7 | Hapmap45215-BTA-80627           | 0       | 111607076 |  |
| 7 | ARS-BFGL-NGS-84234              | 0       | 111655507 |  |
| 7 | ARS-BFGL-NGS-43521              | 0       | 111684918 |  |
| 7 | BTA-112703-no-rs                | 0       | 111710279 |  |
| 7 | BTA-49168-no-rs                 | 0       | 111727311 |  |
| 7 | ARS-BFGL-NGS-55124              | 0       | 111756307 |  |
| 7 | BTB-00080644                    | 0       | 111782120 |  |
| 7 | BTB-00332855                    | 0       | 111842867 |  |
| 7 | ARS-BFGL-NGS-62329              | 0       | 111870494 |  |
| 7 | ARS-BFGL-NGS-67072              | 0       | 111891998 |  |
| 7 | Hapmap58496-rs29017214          | 0       | 111931788 |  |
| 7 | ARS-BFGL-NGS-43294              | 0       | 111973235 |  |
| 7 | BTA-80637-no-rs                 | 0       | 112007880 |  |
| 7 | ARS-BFGL-NGS-40535              | 0       | 112081115 |  |
| 7 | BTB-00332385                    | 0       | 112105388 |  |
| 7 | UA-IFASA-7211                   | 0       | 112131452 |  |
| 7 | Hapmap35118-BES3_Contig414_932  | 0       | 112133700 |  |
| 7 | BTB-00332282                    | 0       | 112172303 |  |
| 7 | BTB-01732239                    | 0       | 112207685 |  |
| 7 | ARS-BFGL-NGS-107523             | 0       | 112233306 |  |
| 7 | BTA-09064-rs29025231            | 0       | 112265796 |  |
| 7 | BTB-01550935                    | 0       | 112319174 |  |
| 7 | Hapmap55034-rs29016860          | 0       | 112359264 |  |
| 7 | BTB-01922672                    | 0       | 112459163 |  |
| 7 | Hapmap34037-BES6_Contig393_1062 | 0       | 112525255 |  |
| 7 | ARS-BFGL-NGS-22067              | 0       | 112570170 |  |
| 7 | BTB-01148986                    | 0       | 112610067 |  |
| 7 | BTB-01148969                    | 0       | 112628884 |  |
| 8 | Hapmap25289-BTA-147726          | 0       | 357078    |  |
| 8 | ARS-BFGL-NGS-21043              | 0       | 494866    |  |
| 8 | Hapmap39523-BTA-91856           | 0       | 527288    |  |
| 8 | ARS-BFGL-NGS-73741              | 0       | 541411    |  |
| 8 | ARS-BFGL-NGS-26511              | 0       | 597716    |  |
| 8 | ARS-BFGL-NGS-90219              | 0       | 649400    |  |
| 8 | ARS-BFGL-NGS-79659              | 0       | 679513    |  |
| 8 | ARS-BFGL-NGS-50960              | 712643  |           |  |
| 8 | ARS-BFGL-NGS-10647              | 0       | 761904    |  |
| 8 | Hapmap40373-BTA-82910           | 0       | 805394    |  |
| 8 | ARS-BFGL-NGS-38053              | 0       | 828888    |  |
| 8 | ARS-BFGL-NGS-27673              | 0       | 849432    |  |
| 8 | ARS-BFGL-NGS-118269             | 0       | 887291    |  |
| 8 | Hapmap52430-ss46526300          | 0       | 943817    |  |
| 8 | ARS-BFGL-NGS-27772              | 0       | 977328    |  |
| 8 | ARS-BFGL-NGS-37160              | 1014000 |           |  |
| 8 | Hapmap55644-rs29017545          | 0       | 1081614   |  |
| 8 | Hapmap57430-rs29016504          | 0       | 1154683   |  |

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| 8 | BTA-88882-no-rs                       | 0 | 1208626 |   |         |
| 8 | Hapmap30273-BTA-148272                | 0 | 1246506 |   |         |
| 8 | ARS-BFGL-NGS-10448                    | 0 | 1305820 |   |         |
| 8 | ARS-BFGL-NGS-14476                    | 0 | 1520277 |   |         |
| 8 | ARS-USMARC-Parent-DQ916058-rs29016146 | 0 | 1554706 | 0 | 1554706 |
| 8 | Hapmap41137-BTA-10594                 | 0 | 1554790 |   |         |
| 8 | BTA-111263-no-rs                      | 0 | 1569883 |   |         |
| 8 | Hapmap42066-BTA-111271                | 0 | 1604017 |   |         |
| 8 | ARS-BFGL-NGS-112540                   | 0 | 1698377 |   |         |
| 8 | ARS-BFGL-NGS-36158                    | 0 | 1720005 |   |         |
| 8 | ARS-BFGL-NGS-61974                    | 0 | 1745249 |   |         |
| 8 | ARS-BFGL-NGS-61390                    | 0 | 1767919 |   |         |
| 8 | Hapmap51143-BTA-111274                | 0 | 1794446 |   |         |
| 8 | ARS-BFGL-NGS-22750                    | 0 | 1873738 |   |         |
| 8 | Hapmap34297-BES11_Contig407_907       | 0 | 1946257 | 0 | 1946257 |
| 8 | ARS-BFGL-NGS-93070                    | 0 | 2034249 |   |         |
| 8 | ARS-BFGL-NGS-111379                   | 0 | 2453388 |   |         |
| 8 | ARS-BFGL-NGS-118699                   | 0 | 2641745 |   |         |
| 8 | ARS-BFGL-NGS-103299                   | 0 | 2691252 |   |         |
| 8 | Hapmap23333-BTA-80814                 | 0 | 2823484 |   |         |
| 8 | ARS-BFGL-NGS-68845                    | 0 | 2969864 |   |         |
| 8 | Hapmap39687-BTA-80991                 | 0 | 3046464 |   |         |
| 8 | Hapmap31231-BTA-80920                 | 0 | 3190201 |   |         |
| 8 | Hapmap36679-SCAFFOLD251980_4691       | 0 | 3258367 | 0 | 3258367 |
| 8 | ARS-BFGL-NGS-37168                    | 0 | 3323312 |   |         |
| 8 | ARS-BFGL-NGS-113635                   | 0 | 3397003 |   |         |
| 8 | Hapmap41388-BTA-95947                 | 0 | 3470459 |   |         |
| 8 | Hapmap46330-BTA-95948                 | 0 | 3533444 |   |         |
| 8 | ARS-BFGL-NGS-113904                   | 0 | 3617253 |   |         |
| 8 | Hapmap40047-BTA-119117                | 0 | 3663959 |   |         |
| 8 | BTB-01757448                          | 0 | 3703339 |   |         |
| 8 | BTB-01953563                          | 0 | 3737837 |   |         |
| 8 | BTA-87200-no-rs                       | 0 | 3771879 |   |         |
| 8 | BTB-01276763                          | 0 | 3798414 |   |         |
| 8 | Hapmap3181-BTA-16477                  | 0 | 3830280 |   |         |
| 8 | BTB-01276600                          | 0 | 3859393 |   |         |
| 8 | UA-IFASA-5111                         | 0 | 3922416 |   |         |
| 8 | BTB-01276574                          | 0 | 4023726 |   |         |
| 8 | ARS-BFGL-NGS-80510                    | 0 | 4047354 |   |         |
| 8 | BTB-01276510                          | 0 | 4069868 |   |         |
| 8 | BTB-01276504                          | 0 | 4098134 |   |         |
| 8 | BTB-01276450                          | 0 | 4197969 |   |         |
| 8 | Hapmap54974-rs29015318                | 0 | 4270697 |   |         |
| 8 | BTB-01582726                          | 0 | 4304423 |   |         |
| 8 | BTA-86031-no-rs                       | 0 | 4337657 |   |         |
| 8 | BTA-86030-no-rs                       | 0 | 4340819 |   |         |
| 8 | BTB-01956236                          | 0 | 4372100 |   |         |
| 8 | BTB-01634412                          | 0 | 4427025 |   |         |
| 8 | BTB-01634455                          | 0 | 4477531 |   |         |
| 8 | BTB-01990279                          | 0 | 4503268 |   |         |
| 8 | BTA-92628-no-rs                       | 0 | 4546756 |   |         |
| 8 | BTA-10665-rs29016217                  | 0 | 4651419 |   |         |
| 8 | Hapmap48947-BTA-92631                 | 0 | 4679635 |   |         |
| 8 | Hapmap53079-rs29025491                | 0 | 4708633 |   |         |

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| 8 | BTB-01812180           | 0       | 4821572 |
| 8 | Hapmap49521-BTA-19574  | 0       | 4865961 |
| 8 | BTB-01635042           | 0       | 4889524 |
| 8 | Hapmap45337-BTA-109277 | 0       | 4955143 |
| 8 | ARS-BFGL-NGS-68739     | 0       | 4988343 |
| 8 | BTB-01599781           | 0       | 4998120 |
| 8 | Hapmap48586-BTA-106838 | 0       | 5036995 |
| 8 | ARS-BFGL-NGS-112672    | 0       | 5064795 |
| 8 | ARS-BFGL-NGS-117676    | 0       | 5088066 |
| 8 | ARS-BFGL-NGS-11800     | 5113909 |         |
| 8 | ARS-BFGL-NGS-116547    | 0       | 5176744 |
| 8 | BTB-00811224           | 0       | 5217629 |
| 8 | Hapmap39592-BTA-81433  | 0       | 5344895 |
| 8 | BTA-81446-no-rs        | 0       | 5390916 |
| 8 | BTA-81490-no-rs        | 0       | 5437200 |
| 8 | Hapmap44292-BTA-81495  | 0       | 5461893 |
| 8 | ARS-BFGL-NGS-40620     | 5490554 |         |
| 8 | BTA-81513-no-rs        | 0       | 5526186 |
| 8 | BTB-00334028           | 0       | 5551878 |
| 8 | BTB-00334070           | 0       | 5612624 |
| 8 | Hapmap24152-BTA-148631 | 0       | 5636380 |
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| 8 | ARS-BFGL-NGS-30133     | 0       | 5895588 |
| 8 | BTB-00334408           | 0       | 5940575 |
| 8 | ARS-BFGL-NGS-46194     | 0       | 5982716 |
| 8 | BTB-00334512           | 0       | 6006842 |
| 8 | ARS-BFGL-NGS-104101    | 0       | 6038581 |
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| 8 | Hapmap54074-rs29012584 | 0       | 6158643 |
| 8 | BTA-81831-no-rs        | 0       | 6201599 |
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| 8 | Hapmap43064-BTA-81873  | 0       | 6311710 |
| 8 | BTB-00334763           | 0       | 6342923 |
| 8 | BTA-120282-no-rs       | 0       | 6372878 |
| 8 | Hapmap40264-BTA-120288 | 0       | 6413586 |
| 8 | Hapmap42099-BTA-120289 | 0       | 6457936 |
| 8 | Hapmap43365-BTA-81894  | 0       | 6498656 |
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| 8 | BTB-01944825           | 0       | 7068364 |
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| 8 | BTA-81086-no-rs        | 0       | 7199643 |

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| 8 | ARS-BFGL-NGS-113867    | 0       | 7337016  |
| 8 | ARS-BFGL-NGS-36797     | 0       | 7383352  |
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| 8 | ARS-BFGL-NGS-29411     | 0       | 7455047  |
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| 8 | ARS-BFGL-NGS-75735     | 0       | 7575166  |
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| 8 | ARS-BFGL-NGS-72833     | 0       | 7684602  |
| 8 | BTA-81233-no-rs        | 0       | 7706151  |
| 8 | BTA-22310-no-rs        | 0       | 7761207  |
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| 8 | ARS-BFGL-NGS-15306     | 0       | 7977499  |
| 8 | ARS-BFGL-NGS-58183     | 0       | 8010905  |
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| 8 | Hapmap60513-rs29011988 | 0       | 8082781  |
| 8 | ARS-BFGL-NGS-37391     | 0       | 8109244  |
| 8 | ARS-BFGL-NGS-68189     | 0       | 8145310  |
| 8 | ARS-BFGL-NGS-33535     | 0       | 8219119  |
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| 8 | ARS-BFGL-NGS-18580     | 8467926 |          |
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| 8 | ARS-BFGL-NGS-26667     | 0       | 8912792  |
| 8 | ARS-BFGL-NGS-69316     | 0       | 8953354  |
| 8 | Hapmap57169-rs29020666 | 0       | 9009550  |
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| 8 | ARS-BFGL-NGS-17210     | 0       | 9094594  |
| 8 | ARS-BFGL-NGS-101846    | 0       | 9133270  |
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| 8 | ARS-BFGL-NGS-105490    | 0       | 9194053  |
| 8 | BTA-44321-no-rs        | 0       | 9221629  |
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| 8 | ARS-BFGL-NGS-61244     | 0       | 9427134  |
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| 8 | BTB-00335368           | 0       | 10013895 |

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| 8 | ARS-BFGL-NGS-61077              | 0 | 10140515 |  |
| 8 | Hapmap30364-BTA-82566           | 0 | 10241759 |  |
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| 8 | ARS-BFGL-NGS-52825              | 0 | 10450293 |  |
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| 8 | ARS-BFGL-NGS-117845             | 0 | 10723864 |  |
| 8 | Hapmap59136-ss46526301          | 0 | 10796156 |  |
| 8 | ARS-BFGL-NGS-10466              | 0 | 10844538 |  |
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| 8 | Hapmap26798-BTA-82382           | 0 | 11398105 |  |
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| 8 | ARS-BFGL-NGS-31016              | 0 | 11478184 |  |
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| 8 | BTA-18947-no-rs                 | 0 | 12444009 |  |
| 8 | BTA-120203-no-rs                | 0 | 12657766 |  |
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| 8 | Hapmap51322-BTA-82932           | 0 | 13556083 |  |
| 8 | Hapmap51500-BTA-82970           | 0 | 13668554 |  |
| 8 | ARS-BFGL-NGS-109934             | 0 | 13822797 |  |
| 8 | Hapmap39518-BTA-82980           | 0 | 13929541 |  |
| 8 | BTA-82983-no-rs                 | 0 | 13981529 |  |
| 8 | Hapmap52631-rs29014860          | 0 | 14030646 |  |

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| 8 | ARS-BFGL-NGS-22169     | 0        | 14299239 |
| 8 | BTA-27910-no-rs        | 0        | 14356874 |
| 8 | BTA-92138-no-rs        | 0        | 14394671 |
| 8 | BTA-85449-no-rs        | 0        | 14456413 |
| 8 | BTA-16324-no-rs        | 0        | 14571777 |
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| 8 | BTB-00336089           | 0        | 14729192 |
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| 8 | BTB-01048256           | 0        | 14829896 |
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| 8 | BTB-00095218           | 0        | 15277877 |
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| 8 | ARS-BFGL-NGS-93716     | 0        | 15395242 |
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| 8 | ARS-BFGL-NGS-50811     | 0        | 15441189 |
| 8 | BTB-01732416           | 0        | 15477532 |
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| 8 | BTA-80761-no-rs        | 0        | 16728232 |
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| 8 | Hapmap25285-BTA-145628 | 0 | 17582607 |
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| 8 | ARS-BFGL-NGS-89368     | 0 | 17723623 |
| 8 | ARS-BFGL-NGS-10089     | 0 | 17755514 |
| 8 | ARS-BFGL-NGS-13131     | 0 | 17825722 |
| 8 | ARS-BFGL-NGS-38570     |   | 17903893 |
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| 8 | Hapmap54341-rs29011096 | 0 | 18086724 |
| 8 | Hapmap30635-BTA-80823  | 0 | 18112643 |
| 8 | Hapmap50115-BTA-80812  | 0 | 18139420 |
| 8 | Hapmap54672-rs29016823 | 0 | 18272635 |
| 8 | BTB-02091217           | 0 | 18386432 |
| 8 | BTB-01734744           | 0 | 18420652 |
| 8 | BTB-01734696           | 0 | 18451129 |
| 8 | BTA-23422-no-rs        | 0 | 18484928 |
| 8 | BTB-01098343           | 0 | 18514280 |
| 8 | BTB-01098367           | 0 | 18540444 |
| 8 | Hapmap52255-rs29014938 | 0 | 18582470 |
| 8 | BTB-01098498           | 0 | 18599493 |
| 8 | ARS-BFGL-NGS-71567     | 0 | 18638310 |
| 8 | BTB-01098658           | 0 | 18735454 |
| 8 | ARS-BFGL-NGS-26055     | 0 | 18759713 |
| 8 | BTA-23433-no-rs        | 0 | 18797386 |
| 8 | BTB-01098710           | 0 | 18829234 |
| 8 | BTA-23436-no-rs        | 0 | 18856112 |
| 8 | BTB-01098762           | 0 | 18894347 |
| 8 | UA-IFASA-4367          | 0 | 18932857 |
| 8 | ARS-BFGL-NGS-36682     | 0 | 18987672 |
| 8 | Hapmap60342-rs29012369 | 0 | 19014469 |
| 8 | BTA-23441-no-rs        | 0 | 19138288 |
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| 8 | BTB-01905267           | 0 | 19195042 |
| 8 | Hapmap47545-BTA-23286  | 0 | 19261635 |
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| 8 | Hapmap42381-BTA-98014  | 0 | 19511803 |
| 8 | BTB-01495172           | 0 | 19566012 |
| 8 | Hapmap24270-BTA-54317  | 0 | 19636378 |
| 8 | ARS-BFGL-NGS-12410     |   | 19697596 |
| 8 | BTA-14517-rs29023279   | 0 | 19811075 |
| 8 | Hapmap43614-BTA-54308  | 0 | 19835789 |
| 8 | BTA-29450-no-rs        | 0 | 19863242 |
| 8 | ARS-BFGL-NGS-115917    | 0 | 19895810 |
| 8 | Hapmap27472-BTA-29446  | 0 | 19941015 |
| 8 | BTB-01369338           | 0 | 19967642 |
| 8 | Hapmap50647-BTA-29448  | 0 | 20018829 |
| 8 | Hapmap49111-BTA-29451  | 0 | 20067861 |
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| 8 | ARS-BFGL-NGS-107527    | 0 | 20268702 |

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| 8 | Hapmap45451-BTA-80884  | 0        | 20336776 |
| 8 | Hapmap32076-BTA-145652 | 0        | 20364722 |
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| 8 | ARS-BFGL-NGS-44430     | 20479595 |          |
| 8 | BTB-01875318           | 0        | 20507980 |
| 8 | Hapmap58495-rs29017104 | 0        | 20535633 |
| 8 | Hapmap53914-rs29021936 | 0        | 20564440 |
| 8 | ARS-BFGL-NGS-117122    | 0        | 20608192 |
| 8 | ARS-BFGL-NGS-54314     | 0        | 20639085 |
| 8 | ARS-BFGL-NGS-58560     | 0        | 20686573 |
| 8 | Hapmap41362-BTA-80878  | 0        | 20731684 |
| 8 | Hapmap61095-rs29022036 | 0        | 20810240 |
| 8 | BTB-01727300           | 0        | 20885550 |
| 8 | BTB-01727316           | 0        | 20906765 |
| 8 | Hapmap32124-BTA-156778 | 0        | 20947716 |
| 8 | BTB-01687547           | 0        | 20989026 |
| 8 | BTA-87492-no-rs        | 0        | 21045898 |
| 8 | BTA-17775-no-rs        | 0        | 21073477 |
| 8 | BTA-118350-no-rs       | 0        | 21127450 |
| 8 | BTB-01286589           | 0        | 21161582 |
| 8 | BTB-01751208           | 0        | 21167011 |
| 8 | ARS-BFGL-NGS-38473     | 0        | 21197694 |
| 8 | BTB-01286648           | 0        | 21220037 |
| 8 | BTB-01286541           | 0        | 21267518 |
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| 8 | ARS-BFGL-NGS-26250     | 21328935 |          |
| 8 | BTB-01704894           | 0        | 21407626 |
| 8 | Hapmap24406-BTA-162725 | 0        | 21458833 |
| 8 | BTB-01431114           | 0        | 21525831 |
| 8 | BTB-01881993           | 0        | 21574564 |
| 8 | ARS-BFGL-NGS-33840     | 21627091 |          |
| 8 | BTA-92731-no-rs        | 0        | 21645089 |
| 8 | Hapmap24202-BTA-150022 | 0        | 21689093 |
| 8 | BTA-115701-no-rs       | 0        | 21724821 |
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| 8 | ARS-BFGL-NGS-39667     | 0        | 22028440 |
| 8 | Hapmap50189-BTA-103065 | 0        | 22084349 |
| 8 | BTA-80863-no-rs        | 0        | 22130988 |
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| 8 | BTB-01790530           | 0        | 22663016 |

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| 8 | Hapmap48603-BTA-110501 | 0 | 23139691 |
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| 8 | Hapmap24789-BTA-109852 | 0 | 23320131 |
| 8 | BTB-00863543           | 0 | 23387517 |
| 8 | ARS-BFGL-NGS-112336    | 0 | 23409295 |
| 8 | BTB-00863420           | 0 | 23448920 |
| 8 | ARS-BFGL-NGS-65689     | 0 | 23493443 |
| 8 | Hapmap49221-BTA-55632  | 0 | 23554326 |
| 8 | BTB-00863238           | 0 | 23589695 |
| 8 | BTB-00863195           | 0 | 23634451 |
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| 8 | Hapmap58136-rs29019642 | 0 | 23688851 |
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| 8 | BTB-00733204           | 0 | 23964538 |
| 8 | Hapmap42553-BTA-44037  | 0 | 23994042 |
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| 8 | Hapmap48564-BTA-103192 | 0 | 24103669 |
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| 8 | ARS-BFGL-NGS-41681     | 0 | 24365893 |
| 8 | Hapmap57444-rs29017715 | 0 | 24469261 |
| 8 | BTA-82938-no-rs        | 0 | 24499662 |
| 8 | ARS-BFGL-NGS-72604     | 0 | 24546086 |
| 8 | ARS-BFGL-NGS-82132     | 0 | 24572217 |
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| 8 | Hapmap27434-BTA-153229 | 0 | 24657393 |
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| 8 | ARS-BFGL-NGS-33628     | 0 | 24815466 |
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| 8 | BTB-01052583           | 0 | 24869885 |
| 8 | BTA-120636-no-rs       | 0 | 24957126 |
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| 8 | ARS-BFGL-NGS-43450     | 0 | 25133019 |
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| 8 | BTB-01710423           | 0 | 25253083 |
| 8 | ARS-BFGL-NGS-118745    | 0 | 25281675 |
| 8 | ARS-BFGL-NGS-106204    | 0 | 25337315 |

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| 8 | ARS-BFGL-NGS-116050    | 0        | 25383067 |
| 8 | ARS-BFGL-NGS-27512     | 0        | 25404712 |
| 8 | ARS-BFGL-NGS-24524     | 0        | 25435054 |
| 8 | ARS-BFGL-NGS-34670     | 25477913 |          |
| 8 | ARS-BFGL-NGS-110838    | 0        | 25499941 |
| 8 | BTB-01052145           | 0        | 25565937 |
| 8 | ARS-BFGL-NGS-107382    | 0        | 25668823 |
| 8 | BTB-01051906           | 0        | 25710676 |
| 8 | BTB-01051883           | 0        | 25740745 |
| 8 | Hapmap58082-rs29010933 | 0        | 25773928 |
| 8 | BTB-01051794           | 0        | 25822696 |
| 8 | Hapmap49881-BTA-120681 | 0        | 25850783 |
| 8 | BTA-27527-no-rs        | 0        | 25878710 |
| 8 | ARS-BFGL-NGS-52642     | 0        | 25958375 |
| 8 | ARS-BFGL-NGS-50534     | 0        | 25997609 |
| 8 | BTB-01051741           | 0        | 26062021 |
| 8 | ARS-BFGL-NGS-24959     | 0        | 26085287 |
| 8 | Hapmap47508-BTA-113961 | 0        | 26121169 |
| 8 | ARS-BFGL-NGS-25826     | 0        | 26146155 |
| 8 | ARS-BFGL-NGS-28432     | 0        | 26241724 |
| 8 | BTB-01108991           | 0        | 26283932 |
| 8 | Hapmap51430-BTA-29826  | 0        | 26330491 |
| 8 | BTB-01109106           | 0        | 26444056 |
| 8 | ARS-BFGL-NGS-43136     | 0        | 26468289 |
| 8 | ARS-BFGL-NGS-28001     | 0        | 26509592 |
| 8 | ARS-BFGL-NGS-107669    | 0        | 26569920 |
| 8 | Hapmap40707-BTA-29831  | 0        | 26609877 |
| 8 | BTA-29833-no-rs        | 0        | 26635544 |
| 8 | ARS-BFGL-NGS-68885     | 0        | 26665489 |
| 8 | BTB-01109448           | 0        | 26703251 |
| 8 | BTB-01109461           | 0        | 26729617 |
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| 8 | ARS-BFGL-NGS-119870    | 0        | 26862562 |
| 8 | BTB-01109703           | 0        | 26899147 |
| 8 | BTB-01962635           | 0        | 26932071 |
| 8 | Hapmap24639-BTA-113261 | 0        | 26971008 |
| 8 | BTB-01684239           | 0        | 27009405 |
| 8 | BTA-80886-no-rs        | 0        | 27067009 |
| 8 | BTB-01444130           | 0        | 27100515 |
| 8 | BTB-02079306           | 0        | 27143957 |
| 8 | BTA-93638-no-rs        | 0        | 27198294 |
| 8 | UA-IFASA-6308          | 0        | 27256568 |
| 8 | ARS-BFGL-NGS-60440     | 27276610 |          |
| 8 | ARS-BFGL-NGS-765       | 0        | 27295189 |
| 8 | BTB-01270974           | 0        | 27363700 |
| 8 | BTA-15966-no-rs        | 0        | 27387521 |
| 8 | Hapmap50602-BTA-15967  | 0        | 27433310 |
| 8 | BTB-01271101           | 0        | 27519327 |
| 8 | BTB-01271264           | 0        | 27557552 |
| 8 | Hapmap49891-BTA-15961  | 0        | 27596472 |
| 8 | BTB-01271294           | 0        | 27630256 |
| 8 | ARS-BFGL-NGS-23499     | 0        | 27710954 |
| 8 | BTB-01271445           | 0        | 27749930 |

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| 8 | BTB-01536113                          | 0 | 27831038 |  |  |
| 8 | ARS-BFGL-NGS-104947                   | 0 | 27873118 |  |  |
| 8 | BTB-01167198                          | 0 | 27908523 |  |  |
| 8 | Hapmap22942-BTA-153029                | 0 | 27945079 |  |  |
| 8 | BTA-102621-no-rs                      | 0 | 27975966 |  |  |
| 8 | Hapmap23142-BTA-102634                | 0 | 27997814 |  |  |
| 8 | ARS-BFGL-NGS-41406                    | 0 | 28058435 |  |  |
| 8 | BTA-102639-no-rs                      | 0 | 28094157 |  |  |
| 8 | ARS-BFGL-NGS-63478                    | 0 | 28134263 |  |  |
| 8 | ARS-BFGL-NGS-96834                    | 0 | 28178007 |  |  |
| 8 | BTB-01167508                          | 0 | 28205635 |  |  |
| 8 | BTB-01801819                          | 0 | 28266220 |  |  |
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| 8 | ARS-BFGL-NGS-81374                    | 0 | 28320753 |  |  |
| 8 | Hapmap27619-BTA-153041                | 0 | 28355947 |  |  |
| 8 | ARS-BFGL-NGS-83209                    | 0 | 28384201 |  |  |
| 8 | BTB-01167772                          | 0 | 28435895 |  |  |
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| 8 | BTB-00339941                          | 0 | 28587760 |  |  |
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| 8 | Hapmap48580-BTA-105450                | 0 | 28675828 |  |  |
| 8 | Hapmap24205-BTA-154013                | 0 | 28704024 |  |  |
| 8 | Hapmap52403-rs29025915                | 0 | 28726561 |  |  |
| 8 | Hapmap59091-rs29024524                | 0 | 28795833 |  |  |
| 8 | ARS-USMARC-Parent-DQ650636-rs29024525 | 0 | 28799249 |  |  |
| 8 | Hapmap39142-BTA-80905                 | 0 | 28870291 |  |  |
| 8 | BTB-01980927                          | 0 | 28908083 |  |  |
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| 8 | BTA-30073-no-rs                       | 0 | 28986164 |  |  |
| 8 | BTB-00339768                          | 0 | 29023325 |  |  |
| 8 | BTA-80900-no-rs                       | 0 | 29068846 |  |  |
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| 8 | ARS-BFGL-NGS-96214                    | 0 | 29199071 |  |  |
| 8 | Hapmap51708-BTA-27172                 | 0 | 29258761 |  |  |
| 8 | Hapmap43058-BTA-80894                 | 0 | 29342227 |  |  |
| 8 | ARS-BFGL-NGS-109355                   | 0 | 29379357 |  |  |
| 8 | Hapmap44913-BTA-80891                 | 0 | 29425215 |  |  |
| 8 | ARS-BFGL-NGS-106650                   | 0 | 29464724 |  |  |
| 8 | Hapmap35664-SCAFFOLD116678_816        | 0 | 29592011 |  |  |
| 8 | Hapmap52006-BTA-77999                 | 0 | 29628947 |  |  |
| 8 | ARS-BFGL-NGS-34586                    | 0 | 29711579 |  |  |
| 8 | UA-IFASA-5756                         | 0 | 29737467 |  |  |
| 8 | ARS-BFGL-NGS-23700                    | 0 | 29767566 |  |  |
| 8 | BTA-77988-no-rs                       | 0 | 29814195 |  |  |
| 8 | BTB-00285741                          | 0 | 29831209 |  |  |
| 8 | Hapmap48162-BTA-10367                 | 0 | 29885309 |  |  |
| 8 | BTB-00285604                          | 0 | 29915312 |  |  |
| 8 | BTB-00285566                          | 0 | 29944709 |  |  |
| 8 | BTB-00285653                          | 0 | 30036807 |  |  |
| 8 | ARS-BFGL-NGS-116276                   | 0 | 30088133 |  |  |
| 8 | ARS-BFGL-NGS-16216                    | 0 | 30129534 |  |  |
| 8 | BTB-00285484                          | 0 | 30162499 |  |  |
| 8 | BTB-00285454                          | 0 | 30188865 |  |  |

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| 8 | BTA-77985-no-rs        | 0 | 30263384 |
| 8 | Hapmap55505-rs29012932 | 0 | 30284829 |
| 8 | BTB-02040446           | 0 | 30320626 |
| 8 | BTB-00285327           | 0 | 30369356 |
| 8 | BTB-00285279           | 0 | 30407640 |
| 8 | ARS-BFGL-NGS-68597     | 0 | 30442371 |
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| 8 | BTB-01382934           | 0 | 30739625 |
| 8 | ARS-BFGL-NGS-27324     | 0 | 30772014 |
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| 8 | ARS-BFGL-NGS-99514     | 0 | 31144925 |
| 8 | Hapmap25930-BTA-20102  | 0 | 31240537 |
| 8 | Hapmap58885-rs29013453 | 0 | 31265066 |
| 8 | BTB-00340006           | 0 | 31341129 |
| 8 | ARS-BFGL-NGS-39319     | 0 | 31409233 |
| 8 | Hapmap26988-BTA-150702 | 0 | 31498732 |
| 8 | BTB-01914602           | 0 | 31518749 |
| 8 | BTB-01469421           | 0 | 31586227 |
| 8 | Hapmap32606-BTA-150700 | 0 | 31621113 |
| 8 | ARS-BFGL-NGS-102903    | 0 | 31721931 |
| 8 | ARS-BFGL-NGS-101576    | 0 | 31777151 |
| 8 | BTB-01978920           | 0 | 31801889 |
| 8 | BTA-123382-no-rs       | 0 | 31871995 |
| 8 | BTA-81018-no-rs        | 0 | 31887048 |
| 8 | Hapmap54720-rs29023017 | 0 | 31948876 |
| 8 | BTB-00327358           | 0 | 31978728 |
| 8 | Hapmap43172-BTA-120051 | 0 | 32002730 |
| 8 | BTA-120053-no-rs       | 0 | 32046441 |
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| 8 | BTB-00341953           | 0 | 32119814 |
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| 8 | ARS-BFGL-NGS-46364     | 0 | 32189084 |
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| 8 | Hapmap55482-rs29018412 | 0 | 32320213 |
| 8 | BTB-00588361           | 0 | 32366271 |
| 8 | BTB-00258020           | 0 | 32450361 |
| 8 | BTB-00258161           | 0 | 32611423 |
| 8 | BTA-76377-no-rs        | 0 | 32706175 |
| 8 | ARS-BFGL-NGS-30360     | 0 | 32749041 |
| 8 | ARS-BFGL-NGS-77074     | 0 | 32779057 |
| 8 | BTA-76384-no-rs        | 0 | 32895255 |
| 8 | ARS-BFGL-NGS-53140     | 0 | 32931536 |
| 8 | BTB-01709593           | 0 | 33023198 |
| 8 | BTB-01709624           | 0 | 33060034 |
| 8 | BTA-93576-no-rs        | 0 | 33112255 |
| 8 | BTA-99986-no-rs        | 0 | 33175156 |
| 8 | ARS-BFGL-NGS-108956    | 0 | 33216307 |

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| 8 | ARS-BFGL-NGS-95579     | 0        | 33255205 |
| 8 | BTA-94339-no-rs        | 0        | 33290613 |
| 8 | ARS-BFGL-NGS-25396     | 0        | 33356720 |
| 8 | ARS-BFGL-NGS-19330     | 33668705 |          |
| 8 | BTB-01156318           | 0        | 33697998 |
| 8 | Hapmap23351-BTA-123397 | 0        | 33725198 |
| 8 | Hapmap42794-BTA-108143 | 0        | 33747904 |
| 8 | BTB-01619293           | 0        | 33771490 |
| 8 | BTA-28927-no-rs        | 0        | 33805180 |
| 8 | Hapmap42882-BTA-24654  | 0        | 33875423 |
| 8 | BTB-01332340           | 0        | 33937052 |
| 8 | BTB-01332332           | 0        | 33964937 |
| 8 | BTB-01332326           | 0        | 33996728 |
| 8 | BTA-24652-no-rs        | 0        | 34031245 |
| 8 | BTB-01973796           | 0        | 34146856 |
| 8 | BTB-00255036           | 0        | 34211897 |
| 8 | BTB-00255048           | 0        | 34242903 |
| 8 | ARS-BFGL-NGS-97573     | 0        | 34281082 |
| 8 | Hapmap50854-BTA-106723 | 0        | 34308543 |
| 8 | BTB-01184997           | 0        | 34367019 |
| 8 | Hapmap55107-rs29014632 | 0        | 34470329 |
| 8 | BTA-106726-no-rs       | 0        | 34511209 |
| 8 | ARS-BFGL-NGS-40453     | 0        | 34536574 |
| 8 | BTB-01929442           | 0        | 34560427 |
| 8 | BTB-01493339           | 0        | 34584476 |
| 8 | BTB-01493310           | 0        | 34610579 |
| 8 | BTA-106729-no-rs       | 0        | 34636290 |
| 8 | BTB-01185113           | 0        | 34679524 |
| 8 | BTB-01493256           | 0        | 34714805 |
| 8 | Hapmap33684-BTA-27870  | 0        | 34795275 |
| 8 | BTB-01356324           | 0        | 34827816 |
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| 8 | BTA-27873-no-rs        | 0        | 35031727 |
| 8 | Hapmap51710-BTA-27877  | 0        | 35062961 |
| 8 | BTB-01238720           | 0        | 35100005 |
| 8 | BTA-116048-no-rs       | 0        | 35134183 |
| 8 | ARS-BFGL-NGS-16718     | 0        | 35216112 |
| 8 | Hapmap40204-BTA-116037 | 0        | 35268154 |
| 8 | ARS-BFGL-NGS-37907     | 0        | 35305194 |
| 8 | Hapmap41758-BTA-116042 | 0        | 35339110 |
| 8 | ARS-BFGL-NGS-53667     | 0        | 35370804 |
| 8 | BTB-02056135           | 0        | 35398490 |
| 8 | Hapmap59881-rs29018589 | 0        | 35434141 |
| 8 | Hapmap51398-BTA-116046 | 0        | 35464882 |
| 8 | BTB-02056717           | 0        | 35544964 |
| 8 | BTB-00685388           | 0        | 35568857 |
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| 8 | BTB-00685136           | 0        | 35671830 |
| 8 | BTB-00685114           | 0        | 35703640 |
| 8 | BTB-00685105           | 0        | 35733768 |

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| 8 | Hapmap51410-BTA-122762         | 0 | 35773975 |          |  |
| 8 | BTB-00340142                   | 0 | 35972079 |          |  |
| 8 | Hapmap26689-BTA-145674         | 0 | 36015388 |          |  |
| 8 | BTB-00340296                   | 0 | 36159723 |          |  |
| 8 | Hapmap50787-BTA-80934          | 0 | 36191988 |          |  |
| 8 | BTA-80935-no-rs                | 0 | 36228211 |          |  |
| 8 | ARS-BFGL-NGS-104544            | 0 | 36293755 |          |  |
| 8 | ARS-BFGL-NGS-37474             | 0 | 36420385 |          |  |
| 8 | ARS-BFGL-NGS-52657             | 0 | 36443492 |          |  |
| 8 | BTA-80939-no-rs                | 0 | 36489881 |          |  |
| 8 | BTA-80941-no-rs                | 0 | 36641920 |          |  |
| 8 | BTA-80950-no-rs                | 0 | 36666306 |          |  |
| 8 | BTA-80953-no-rs                | 0 | 36687139 |          |  |
| 8 | ARS-BFGL-NGS-12050             |   | 36715387 |          |  |
| 8 | Hapmap31882-BTA-80969          | 0 | 36781224 |          |  |
| 8 | ARS-BFGL-NGS-118690            | 0 | 36852207 |          |  |
| 8 | BTA-80981-no-rs                | 0 | 36896409 |          |  |
| 8 | BTB-00340616                   | 0 | 36984776 |          |  |
| 8 | BTA-80984-no-rs                | 0 | 37015854 |          |  |
| 8 | Hapmap48192-BTA-114766         | 0 | 37049707 |          |  |
| 8 | BTB-01229085                   | 0 | 37081128 |          |  |
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| 8 | ARS-BFGL-NGS-104344            | 0 | 37136374 |          |  |
| 8 | Hapmap26196-BTA-158728         | 0 | 37158190 |          |  |
| 8 | BTB-01762552                   | 0 | 37192348 |          |  |
| 8 | BTB-00340836                   | 0 | 37230536 |          |  |
| 8 | BTB-00340869                   | 0 | 37277153 |          |  |
| 8 | BTB-00675470                   | 0 | 37338560 |          |  |
| 8 | Hapmap43848-BTA-40752          | 0 | 37403028 |          |  |
| 8 | Hapmap58112-rs29014429         | 0 | 37451828 |          |  |
| 8 | Hapmap25906-BTA-159707         | 0 | 37471009 |          |  |
| 8 | Hapmap49068-BTA-17115          | 0 | 37508875 |          |  |
| 8 | Hapmap22961-BTA-81049          | 0 | 37560821 |          |  |
| 8 | BTB-00342370                   | 0 | 37585486 |          |  |
| 8 | Hapmap50116-BTA-81046          | 0 | 37604683 |          |  |
| 8 | BTA-81038-no-rs                | 0 | 37631330 |          |  |
| 8 | BTB-00342185                   | 0 | 37706259 |          |  |
| 8 | BTA-08698-rs29022255           | 0 | 37751069 |          |  |
| 8 | Hapmap27174-BTA-145710         | 0 | 37773396 |          |  |
| 8 | Hapmap44487-BTA-81030          | 0 | 37805845 |          |  |
| 8 | ARS-BFGL-NGS-23521             | 0 | 37827354 |          |  |
| 8 | ARS-BFGL-NGS-14923             | 0 | 37874636 |          |  |
| 8 | ARS-BFGL-NGS-58336             | 0 | 37909744 |          |  |
| 8 | ARS-BFGL-NGS-24088             | 0 | 37937905 |          |  |
| 8 | ARS-BFGL-NGS-68744             | 0 | 37985778 |          |  |
| 8 | BTB-01495564                   | 0 | 38030562 |          |  |
| 8 | BTA-98164-no-rs                | 0 | 38084197 |          |  |
| 8 | BTB-01921682                   | 0 | 38163651 |          |  |
| 8 | BTB-00342533                   | 0 | 38203926 |          |  |
| 8 | BTA-81061-no-rs                | 0 | 38244290 |          |  |
| 8 | ARS-BFGL-NGS-63218             | 0 | 38436411 |          |  |
| 8 | BTB-00342600                   | 0 | 38476077 |          |  |
| 8 | BTA-81064-no-rs                | 0 | 38518604 |          |  |
| 8 | Hapmap35668-SCAFFOLD40157_4581 | 0 |          | 38592459 |  |



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| 8 | Hapmap49060-BTA-122180          | 0 | 38925412 |          |
| 8 | Hapmap44323-BTA-96987           | 0 | 38976903 |          |
| 8 | Hapmap54347-rs29011524          | 0 | 39029952 |          |
| 8 | BTA-96984-no-rs                 | 0 | 39071586 |          |
| 8 | Hapmap59984-rs29026051          | 0 | 39107936 |          |
| 8 | BTA-94981-no-rs                 | 0 | 39137417 |          |
| 8 | Hapmap46895-BTA-94979           | 0 | 39160899 |          |
| 8 | ARS-BFGL-NGS-60640              |   | 39266437 |          |
| 8 | Hapmap51356-BTA-94975           | 0 | 39306605 |          |
| 8 | ARS-BFGL-NGS-36750              |   | 39475460 |          |
| 8 | ARS-BFGL-NGS-57930              |   | 39541982 |          |
| 8 | Hapmap46544-BTA-94974           | 0 | 39582056 |          |
| 8 | BTA-94973-no-rs                 | 0 | 39603249 |          |
| 8 | Hapmap42737-BTA-94970           | 0 | 39668361 |          |
| 8 | Hapmap48952-BTA-94977           | 0 | 39745401 |          |
| 8 | BTA-94972-no-rs                 | 0 | 39793100 |          |
| 8 | Hapmap55166-rs29016846          | 0 | 39836688 |          |
| 8 | Hapmap32013-BTA-104628          | 0 | 39873520 |          |
| 8 | BTA-81053-no-rs                 | 0 | 39910889 |          |
| 8 | Hapmap41646-BTA-81057           | 0 | 39932028 |          |
| 8 | ARS-BFGL-NGS-86036              | 0 | 39967479 |          |
| 8 | ARS-BFGL-NGS-54331              | 0 | 39995181 |          |
| 8 | ARS-BFGL-NGS-27933              | 0 | 40020068 |          |
| 8 | BTA-81058-no-rs                 | 0 | 40088787 |          |
| 8 | ARS-BFGL-NGS-64300              |   | 40159162 |          |
| 8 | ARS-BFGL-NGS-82111              | 0 | 40254102 |          |
| 8 | Hapmap52197-rs29019858          | 0 | 40282188 |          |
| 8 | ARS-BFGL-NGS-63764              | 0 | 40306760 |          |
| 8 | Hapmap27456-BTA-158380          | 0 | 40389762 |          |
| 8 | ARS-BFGL-NGS-88210              |   | 40422559 |          |
| 8 | Hapmap36155-SCAFFOLD226597_1989 | 0 |          | 40470452 |
| 8 | Hapmap59547-rs29026130          | 0 | 40538141 |          |
| 8 | Hapmap33220-BTA-149236          | 0 | 40585048 |          |
| 8 | Hapmap33243-BTA-158375          | 0 | 40610167 |          |
| 8 | ARS-BFGL-NGS-91112              | 0 | 40681934 |          |
| 8 | ARS-BFGL-NGS-102255             | 0 | 40747782 |          |
| 8 | ARS-BFGL-NGS-14536              | 0 | 40775647 |          |
| 8 | Hapmap42331-BTA-81118           | 0 | 40800617 |          |
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| 8 | BTB-00345234                    | 0 | 40988893 |          |
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| 8 | BTB-00345076                    | 0 | 41052217 |          |
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| 8 | Hapmap31847-BTA-162708          | 0 | 41416460 |          |
| 8 | BTB-01367207                    | 0 | 41469535 |          |
| 8 | BTB-01367197                    | 0 | 41491687 |          |
| 8 | BTB-01367163                    | 0 | 41527418 |          |
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| 8 | Hapmap40503-BTA-18766           | 0 | 41622437 |          |
| 8 | ARS-BFGL-NGS-30070              | 0 | 41660709 |          |

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| 8 | BTA-80993-no-rs                  | 0 | 41724336 |          |
| 8 | BTA-20225-no-rs                  | 0 | 41767556 |          |
| 8 | Hapmap41645-BTA-80995            | 0 | 41883274 |          |
| 8 | ARS-BFGL-NGS-111208              | 0 | 41958832 |          |
| 8 | BTA-09990-rs29026146             | 0 | 41994073 |          |
| 8 | ARS-BFGL-NGS-26964               | 0 | 42018516 |          |
| 8 | BTB-00341155                     | 0 | 42073454 |          |
| 8 | ARS-BFGL-NGS-15063               | 0 | 42100669 |          |
| 8 | ARS-BFGL-NGS-61239               | 0 | 42122467 |          |
| 8 | ARS-BFGL-NGS-113433              | 0 | 42271971 |          |
| 8 | ARS-BFGL-NGS-12833               | 0 | 42343307 |          |
| 8 | Hapmap30030-BTA-153524           | 0 | 42375411 |          |
| 8 | BTB-01581546                     | 0 | 42405548 |          |
| 8 | BTA-105579-no-rs                 | 0 | 42435980 |          |
| 8 | Hapmap47481-BTA-105587           | 0 | 42460982 |          |
| 8 | BTB-01581660                     | 0 | 42486699 |          |
| 8 | ARS-BFGL-NGS-43242               | 0 | 42545530 |          |
| 8 | Hapmap42083-BTA-117345           | 0 | 42568356 |          |
| 8 | ARS-BFGL-NGS-103016              | 0 | 42607942 |          |
| 8 | ARS-BFGL-NGS-77068               | 0 | 42632804 |          |
| 8 | BTB-01246512                     | 0 | 42653053 |          |
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| 8 | ARS-BFGL-NGS-90610               | 0 | 42730881 |          |
| 8 | BTB-01246594                     | 0 | 42775660 |          |
| 8 | BTB-01246669                     | 0 | 42810567 |          |
| 8 | BTB-01246690                     | 0 | 42835856 |          |
| 8 | BTB-01044663                     | 0 | 42862763 |          |
| 8 | Hapmap48283-BTA-30285            | 0 | 42969739 |          |
| 8 | ARS-BFGL-NGS-109695              | 0 | 43003529 |          |
| 8 | BTB-01044512                     | 0 | 43039113 |          |
| 8 | BTB-01838786                     | 0 | 43163468 |          |
| 8 | BTB-01721163                     | 0 | 43202753 |          |
| 8 | ARS-BFGL-NGS-47970               |   | 43241581 |          |
| 8 | ARS-BFGL-NGS-55343               | 0 | 43432019 |          |
| 8 | BTB-01251717                     | 0 | 43465813 |          |
| 8 | ARS-BFGL-NGS-86183               | 0 | 43497231 |          |
| 8 | ARS-BFGL-NGS-83850               | 0 | 43628838 |          |
| 8 | Hapmap35924-SCAFFOLD280513_16380 | 0 |          | 43779600 |
| 8 | Hapmap40627-BTA-100509           | 0 | 43816192 |          |
| 8 | BTB-01157265                     | 0 | 43855255 |          |
| 8 | BTB-01157292                     | 0 | 43890714 |          |
| 8 | BTB-01157295                     | 0 | 43919283 |          |
| 8 | ARS-BFGL-NGS-60725               | 0 | 44027940 |          |
| 8 | Hapmap27424-BTA-151078           | 0 | 44077250 |          |
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| 8 | BTB-00345863                     | 0 | 44246522 |          |
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| 8 | ARS-BFGL-NGS-25805               | 0 | 44402416 |          |
| 8 | Hapmap33488-BTA-145765           | 0 | 44458938 |          |
| 8 | Hapmap54235-rs29024181           | 0 | 44511061 |          |
| 8 | BTB-00345484                     | 0 | 44597808 |          |
| 8 | ARS-BFGL-NGS-40540               | 0 | 44674742 |          |
| 8 | BTB-00345453                     | 0 | 44697913 |          |

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| 8 | Hapmap52635-rs29019622 | 0        | 44764274 |
| 8 | Hapmap58021-ss46526078 | 0        | 44891581 |
| 8 | ARS-BFGL-NGS-96104     | 0        | 44931986 |
| 8 | BTB-00344647           | 0        | 45015797 |
| 8 | ARS-BFGL-NGS-81126     | 0        | 45041779 |
| 8 | Hapmap42684-BTA-81111  | 0        | 45063844 |
| 8 | ARS-BFGL-NGS-12866     | 0        | 45099416 |
| 8 | ARS-BFGL-NGS-107099    | 0        | 45130290 |
| 8 | BTB-00344825           | 0        | 45161783 |
| 8 | ARS-BFGL-NGS-37450     | 0        | 45198512 |
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| 8 | BTB-00344912           | 0        | 45255299 |
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| 8 | BTB-00344991           | 0        | 45335032 |
| 8 | ARS-BFGL-NGS-47742     | 0        | 45361292 |
| 8 | BTB-00343189           | 0        | 45549903 |
| 8 | ARS-BFGL-NGS-80442     | 0        | 45628525 |
| 8 | Hapmap48482-BTA-81078  | 0        | 45659166 |
| 8 | ARS-BFGL-NGS-102915    | 0        | 45696078 |
| 8 | BTA-81076-no-rs        | 0        | 45719905 |
| 8 | ARS-BFGL-NGS-114795    | 0        | 45740396 |
| 8 | UA-IFASA-2534          | 0        | 45804905 |
| 8 | BTB-01679674           | 0        | 45829367 |
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| 8 | BTA-28215-no-rs        | 0        | 45925424 |
| 8 | ARS-BFGL-NGS-113176    | 0        | 45957514 |
| 8 | ARS-BFGL-NGS-28838     | 0        | 46020875 |
| 8 | BTA-28204-no-rs        | 0        | 46041080 |
| 8 | ARS-BFGL-NGS-82736     | 0        | 46078510 |
| 8 | Hapmap24463-BTA-28206  | 0        | 46144093 |
| 8 | Hapmap31524-BTA-163487 | 0        | 46154811 |
| 8 | ARS-BFGL-NGS-114212    | 0        | 46239174 |
| 8 | ARS-BFGL-NGS-99602     | 0        | 46271357 |
| 8 | ARS-BFGL-NGS-22240     | 46299075 |          |
| 8 | BTB-01535731           | 0        | 46369566 |
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| 8 | BTB-01535659           | 0        | 46468733 |
| 8 | ARS-BFGL-NGS-80030     | 0        | 46577889 |
| 8 | ARS-BFGL-NGS-103766    | 0        | 46729375 |
| 8 | Hapmap25854-BTA-149442 | 0        | 46826308 |
| 8 | UA-IFASA-1863          | 0        | 46877924 |
| 8 | BTB-01126961           | 0        | 46906317 |
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| 8 | BTA-111112-no-rs       | 0        | 47138456 |
| 8 | ARS-BFGL-NGS-118200    | 0        | 47179793 |
| 8 | BTB-01127160           | 0        | 47224522 |
| 8 | ARS-BFGL-NGS-116077    | 0        | 47266632 |
| 8 | Hapmap42727-BTA-92113  | 0        | 47313169 |
| 8 | BTB-01127329           | 0        | 47336496 |
| 8 | BTB-01415880           | 0        | 47366278 |
| 8 | BTA-90958-no-rs        | 0        | 47412695 |

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| 8 | BTB-01415809           | 0 | 47479350 |
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| 8 | ARS-BFGL-NGS-63664     | 0 | 47633838 |
| 8 | BTB-02006625           | 0 | 47692727 |
| 8 | Hapmap44413-BTA-81151  | 0 | 47721188 |
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| 8 | Hapmap46438-BTA-73270  | 0 | 47771380 |
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| 8 | ARS-BFGL-NGS-119315    | 0 | 47898948 |
| 8 | ARS-BFGL-NGS-86508     | 0 | 48004440 |
| 8 | BTB-01563190           | 0 | 48070965 |
| 8 | BTA-104208-no-rs       | 0 | 48111618 |
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| 8 | ARS-BFGL-NGS-70194     | 0 | 48249714 |
| 8 | ARS-BFGL-NGS-53037     | 0 | 48297805 |
| 8 | ARS-BFGL-NGS-26860     | 0 | 48326136 |
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| 8 | Hapmap44288-BTA-81147  | 0 | 48581211 |
| 8 | BTA-81149-no-rs        | 0 | 48661319 |
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| 8 | Hapmap31884-BTA-83704  | 0 | 48834657 |
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| 8 | BTB-00392243           | 0 | 48914474 |
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| 8 | Hapmap23315-BTA-146508 | 0 | 49134109 |
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| 8 | BTB-00392134           | 0 | 49283003 |
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| 8 | Hapmap42685-BTA-81134  | 0 | 49723924 |
| 8 | BTB-00345981           | 0 | 49805589 |
| 8 | BTB-00345948           | 0 | 49837145 |
| 8 | BTB-00346133           | 0 | 49925026 |
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| 8 | Hapmap41647-BTA-81135  | 0 | 50019163 |

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| 8 | BTB-00346417           | 0        | 50074108 |
| 8 | Hapmap49898-BTA-17990  | 0        | 50111844 |
| 8 | BTA-113168-no-rs       | 0        | 50148467 |
| 8 | BTB-01682521           | 0        | 50189373 |
| 8 | Hapmap39004-BTA-111126 | 0        | 50215945 |
| 8 | Hapmap53625-rs29014626 | 0        | 50250254 |
| 8 | BTB-01657021           | 0        | 50278766 |
| 8 | Hapmap50141-BTA-88345  | 0        | 50310875 |
| 8 | BTB-01399092           | 0        | 50379563 |
| 8 | BTA-88347-no-rs        | 0        | 50435953 |
| 8 | Hapmap58724-rs29027171 | 0        | 50473492 |
| 8 | BTB-01849506           | 0        | 50499574 |
| 8 | BTB-01398754           | 0        | 50525859 |
| 8 | BTB-02043496           | 0        | 50553225 |
| 8 | BTB-00347427           | 0        | 50575791 |
| 8 | BTB-00347355           | 0        | 50626573 |
| 8 | BTB-00347320           | 0        | 50651804 |
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| 8 | ARS-BFGL-NGS-118729    | 0        | 50695489 |
| 8 | BTB-00347130           | 0        | 50725941 |
| 8 | ARS-BFGL-NGS-26080     | 50762327 |          |
| 8 | ARS-BFGL-NGS-78140     | 50793491 |          |
| 8 | Hapmap38287-BTA-112874 | 0        | 50833701 |
| 8 | BTB-00347575           | 0        | 50904360 |
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| 8 | ARS-BFGL-NGS-10990     | 0        | 51024542 |
| 8 | Hapmap53248-rs29027060 | 0        | 51045299 |
| 8 | Hapmap25563-BTA-145800 | 0        | 51067668 |
| 8 | ARS-BFGL-NGS-111925    | 0        | 51137296 |
| 8 | BTB-00347877           | 0        | 51162242 |
| 8 | Hapmap29314-BTA-156827 | 0        | 51185119 |
| 8 | Hapmap51395-BTA-113897 | 0        | 51227380 |
| 8 | ARS-BFGL-NGS-62750     | 51281537 |          |
| 8 | BTB-01908971           | 0        | 51330787 |
| 8 | Hapmap55401-rs29024656 | 0        | 51369892 |
| 8 | BTB-00349308           | 0        | 51460409 |
| 8 | BTB-00349291           | 0        | 51504147 |
| 8 | BTB-01713349           | 0        | 51560983 |
| 8 | BTB-01713444           | 0        | 51593010 |
| 8 | Hapmap48689-BTA-23260  | 0        | 51632699 |
| 8 | ARS-BFGL-NGS-39950     | 51662076 |          |
| 8 | Hapmap46879-BTA-81251  | 0        | 51695384 |
| 8 | ARS-BFGL-NGS-30559     | 0        | 51719716 |
| 8 | BTB-00349137           | 0        | 51747482 |
| 8 | BTB-00348844           | 0        | 51899568 |
| 8 | Hapmap57994-rs29022887 | 0        | 51948998 |
| 8 | Hapmap23034-BTA-81245  | 0        | 51982720 |
| 8 | BTA-81238-no-rs        | 0        | 52013978 |
| 8 | Hapmap24909-BTA-81234  | 0        | 52059076 |
| 8 | BTB-00348584           | 0        | 52124990 |
| 8 | BTA-81231-no-rs        | 0        | 52180527 |
| 8 | ARS-BFGL-NGS-72492     | 0        | 52204929 |
| 8 | BTA-81227-no-rs        | 0        | 52255692 |

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| 8 | BTB-00348451           | 0 | 52280365 |
| 8 | BTB-00348409           | 0 | 52303539 |
| 8 | ARS-BFGL-NGS-65269     | 0 | 52348205 |
| 8 | ARS-BFGL-NGS-73651     | 0 | 52432552 |
| 8 | BTB-00348223           | 0 | 52474895 |
| 8 | Hapmap25564-BTA-145819 | 0 | 52518683 |
| 8 | BTB-00795717           | 0 | 52557297 |
| 8 | BTA-81199-no-rs        | 0 | 52595027 |
| 8 | BTB-00348139           | 0 | 52645428 |
| 8 | Hapmap40911-BTA-121841 | 0 | 52693230 |
| 8 | BTA-81190-no-rs        | 0 | 52724898 |
| 8 | Hapmap47747-BTA-81189  | 0 | 52780433 |
| 8 | Hapmap48089-BTA-81187  | 0 | 52808981 |
| 8 | BTB-00348080           | 0 | 52912873 |
| 8 | ARS-BFGL-NGS-76537     | 0 | 52939275 |
| 8 | Hapmap41648-BTA-81180  | 0 | 52968995 |
| 8 | ARS-BFGL-NGS-111611    | 0 | 53005429 |
| 8 | BTB-00347944           | 0 | 53031744 |
| 8 | ARS-BFGL-NGS-34789     | 0 | 53070787 |
| 8 | ARS-BFGL-NGS-82334     | 0 | 53124621 |
| 8 | Hapmap60967-rs29016114 | 0 | 53173129 |
| 8 | ARS-BFGL-NGS-17993     | 0 | 53216502 |
| 8 | Hapmap42531-BTA-38304  | 0 | 53270232 |
| 8 | ARS-BFGL-NGS-85644     | 0 | 53343111 |
| 8 | Hapmap30618-BTA-38298  | 0 | 53382829 |
| 8 | ARS-BFGL-NGS-37874     | 0 | 53405158 |
| 8 | BTB-00631986           | 0 | 53432998 |
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| 8 | ARS-BFGL-NGS-116647    | 0 | 53688139 |
| 8 | BTB-00631715           | 0 | 53743552 |
| 8 | BTB-00631696           | 0 | 53785595 |
| 8 | Hapmap49589-BTA-38292  | 0 | 53845391 |
| 8 | Hapmap50345-BTA-38288  | 0 | 53899633 |
| 8 | ARS-BFGL-NGS-101465    | 0 | 53948268 |
| 8 | BTA-38275-no-rs        | 0 | 54006406 |
| 8 | BTA-38274-no-rs        | 0 | 54044256 |
| 8 | ARS-BFGL-NGS-30237     | 0 | 54105059 |
| 8 | BTA-38269-no-rs        | 0 | 54129358 |
| 8 | ARS-BFGL-NGS-83067     | 0 | 54152521 |
| 8 | ARS-BFGL-NGS-86682     | 0 | 54239367 |
| 8 | Hapmap49140-BTA-38265  | 0 | 54351569 |
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| 8 | ARS-BFGL-NGS-110568    | 0 | 54482615 |
| 8 | ARS-BFGL-NGS-118172    | 0 | 54507754 |
| 8 | ARS-BFGL-NGS-24437     | 0 | 54528592 |
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| 8 | ARS-BFGL-NGS-30955     | 0 | 54734728 |
| 8 | BTB-01520357           | 0 | 54779775 |
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| 8 | ARS-BFGL-NGS-19129     | 0 | 54894631 |
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| 8 | BTB-01634942           | 0 | 54961322 |

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| 8 | Hapmap59214-rs29014649 | 0 | 55004792 |
| 8 | Hapmap59304-rs29025230 | 0 | 55029393 |
| 8 | ARS-BFGL-NGS-69953     | 0 | 55054601 |
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| 8 | Hapmap50532-BTA-99413  | 0 | 55108986 |
| 8 | Hapmap51670-BTA-99409  | 0 | 55145132 |
| 8 | ARS-BFGL-NGS-103726    | 0 | 55167893 |
| 8 | ARS-BFGL-NGS-85223     | 0 | 55212232 |
| 8 | BTB-01865411           | 0 | 55239532 |
| 8 | ARS-BFGL-NGS-36380     | 0 | 55268071 |
| 8 | BTB-01820765           | 0 | 55291182 |
| 8 | ARS-BFGL-NGS-42260     | 0 | 55319864 |
| 8 | BTB-01328410           | 0 | 55364509 |
| 8 | Hapmap54208-rs29015846 | 0 | 55477297 |
| 8 | Hapmap54541-rs29014049 | 0 | 55505902 |
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| 8 | ARS-BFGL-NGS-76732     | 0 | 55663248 |
| 8 | BTB-02017947           | 0 | 55694695 |
| 8 | Hapmap51811-BTA-119735 | 0 | 55718826 |
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| 8 | ARS-BFGL-NGS-108258    | 0 | 55863837 |
| 8 | Hapmap49049-BTA-119736 | 0 | 55892688 |
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| 8 | BTB-01259244           | 0 | 55961041 |
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| 8 | Hapmap52471-rs29024221 | 0 | 56038396 |
| 8 | ARS-BFGL-NGS-101052    | 0 | 56098240 |
| 8 | Hapmap41713-BTA-04854  | 0 | 56124303 |
| 8 | ARS-BFGL-NGS-118192    | 0 | 56151592 |
| 8 | ARS-BFGL-NGS-69264     | 0 | 56213886 |
| 8 | BTB-01089565           | 0 | 56244907 |
| 8 | Hapmap42858-BTA-17121  | 0 | 56283438 |
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| 8 | BTA-15107-rs29026472   | 0 | 56390438 |
| 8 | ARS-BFGL-NGS-11505     | 0 | 56442826 |
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| 8 | ARS-BFGL-NGS-71630     | 0 | 56552376 |
| 8 | Hapmap29857-BTA-159710 | 0 | 56625850 |
| 8 | Hapmap42859-BTA-17125  | 0 | 56876146 |
| 8 | Hapmap47881-BTA-17122  | 0 | 56954830 |
| 8 | BTB-00349358           | 0 | 57010667 |
| 8 | Hapmap44621-BTA-81252  | 0 | 57064274 |
| 8 | ARS-BFGL-NGS-58080     | 0 | 57093427 |
| 8 | Hapmap59035-rs29025504 | 0 | 57115636 |
| 8 | BTB-01611439           | 0 | 57163381 |
| 8 | BTB-01777663           | 0 | 57206337 |
| 8 | BTA-108808-no-rs       | 0 | 57307140 |
| 8 | BTB-01627853           | 0 | 57339395 |
| 8 | BTB-00349451           | 0 | 57403486 |
| 8 | BTB-01732663           | 0 | 57482644 |
| 8 | Hapmap54905-rs29018794 | 0 | 57531155 |

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| 8 | BTB-00349550                    | 0 | 57559835 |  |
| 8 | ARS-BFGL-NGS-117692             | 0 | 57592438 |  |
| 8 | ARS-BFGL-NGS-108096             | 0 | 57619690 |  |
| 8 | BTB-00349566                    | 0 | 57663078 |  |
| 8 | ARS-BFGL-NGS-10175              | 0 | 57714648 |  |
| 8 | Hapmap47748-BTA-81265           | 0 | 57756381 |  |
| 8 | ARS-BFGL-NGS-33376              | 0 | 57821769 |  |
| 8 | BTA-81269-no-rs                 | 0 | 57847726 |  |
| 8 | Hapmap39591-BTA-81270           | 0 | 57883920 |  |
| 8 | ARS-BFGL-NGS-34280              | 0 | 57952087 |  |
| 8 | BTB-00529060                    | 0 | 57981006 |  |
| 8 | ARS-BFGL-NGS-60743              | 0 | 58010028 |  |
| 8 | UA-IFASA-4000                   | 0 | 58061272 |  |
| 8 | BTB-00529163                    | 0 | 58105422 |  |
| 8 | BTA-108493-no-rs                | 0 | 58140011 |  |
| 8 | ARS-BFGL-NGS-72705              | 0 | 58361529 |  |
| 8 | Hapmap47452-BTA-97231           | 0 | 58412150 |  |
| 8 | BTB-01485071                    | 0 | 58450779 |  |
| 8 | Hapmap38451-BTA-97230           | 0 | 58505244 |  |
| 8 | Hapmap27409-BTA-144593          | 0 | 58560232 |  |
| 8 | BTB-01818596                    | 0 | 58594366 |  |
| 8 | Hapmap43803-BTA-18277           | 0 | 58623048 |  |
| 8 | BTB-01989154                    | 0 | 58652991 |  |
| 8 | Hapmap46519-BTA-28770           | 0 | 58678555 |  |
| 8 | BTB-00349688                    | 0 | 58729476 |  |
| 8 | Hapmap34677-BES4_Contig489_1116 | 0 | 58789069 |  |
| 8 | BTB-00349712                    | 0 | 58874042 |  |
| 8 | Hapmap29835-BTA-145855          | 0 | 58898183 |  |
| 8 | ARS-BFGL-NGS-23181              | 0 | 58926246 |  |
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| 8 | BTB-00350639                    | 0 | 58986469 |  |
| 8 | ARS-BFGL-NGS-56537              | 0 | 59012043 |  |
| 8 | BTB-01795129                    | 0 | 59085873 |  |
| 8 | BTA-81277-no-rs                 | 0 | 59138856 |  |
| 8 | ARS-BFGL-NGS-84712              | 0 | 59205471 |  |
| 8 | BTB-01470106                    | 0 | 59245157 |  |
| 8 | BTA-95974-no-rs                 | 0 | 59314841 |  |
| 8 | ARS-BFGL-NGS-70772              | 0 | 59357791 |  |
| 8 | BTB-01614102                    | 0 | 59382947 |  |
| 8 | ARS-BFGL-NGS-118882             | 0 | 59464494 |  |
| 8 | BTA-107830-no-rs                | 0 | 59487308 |  |
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| 8 | BTB-00349946                    | 0 | 59541510 |  |
| 8 | Hapmap25232-BTA-123153          | 0 | 59571938 |  |
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| 8 | ARS-BFGL-NGS-11896              | 0 | 59662409 |  |
| 8 | BTA-81281-no-rs                 | 0 | 59731552 |  |
| 8 | ARS-BFGL-NGS-98517              | 0 | 59753691 |  |
| 8 | Hapmap30833-BTA-145860          | 0 | 59778455 |  |
| 8 | Hapmap23845-BTA-81285           | 0 | 59805132 |  |
| 8 | ARS-BFGL-NGS-17163              | 0 | 59841630 |  |
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| 8 | BTA-81286-no-rs                 | 0 | 59933931 |  |



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| 8 | Hapmap53279-rs29026049           | 0 | 59954021 |          |
| 8 | BTA-05411-rs29019571             | 0 | 59978473 |          |
| 8 | ARS-USMARC-Parent-AY850194-no-rs | 0 |          | 59996431 |
| 8 | BTB-00350198                     | 0 | 60006837 |          |
| 8 | ARS-BFGL-NGS-112343              | 0 | 60037216 |          |
| 8 | BTB-00350366                     | 0 | 60071322 |          |
| 8 | Hapmap55188-rs29018512           | 0 | 60108805 |          |
| 8 | ARS-BFGL-NGS-84004               | 0 | 60158030 |          |
| 8 | ARS-BFGL-NGS-55360               |   | 60192438 |          |
| 8 | ARS-BFGL-NGS-44611               | 0 | 60225941 |          |
| 8 | Hapmap48090-BTA-81304            | 0 | 60269047 |          |
| 8 | ARS-BFGL-NGS-100613              | 0 | 60290229 |          |
| 8 | ARS-BFGL-NGS-58499               | 0 | 60319936 |          |
| 8 | ARS-BFGL-NGS-10400               |   | 60352572 |          |
| 8 | ARS-BFGL-NGS-53720               |   | 60421946 |          |
| 8 | Hapmap57385-rs29020823           | 0 | 60474882 |          |
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| 8 | ARS-BFGL-NGS-40630               | 0 | 60800770 |          |
| 8 | ARS-BFGL-NGS-115798              | 0 | 60823250 |          |
| 8 | ARS-BFGL-NGS-12436               | 0 | 60872538 |          |
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| 8 | BTB-00352779                     | 0 | 60990733 |          |
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| 8 | Hapmap49326-BTA-81546            | 0 | 61042106 |          |
| 8 | ARS-BFGL-NGS-55438               | 0 | 61092282 |          |
| 8 | Hapmap36177-SCAFFOLD210634_2319  | 0 |          | 61115517 |
| 8 | BTB-00350945                     | 0 | 61165111 |          |
| 8 | BTA-81431-no-rs                  | 0 | 61189683 |          |
| 8 | Hapmap40026-BTA-81432            | 0 | 61213362 |          |
| 8 | ARS-BFGL-NGS-77735               | 0 | 61264051 |          |
| 8 | ARS-BFGL-NGS-107175              | 0 | 61327009 |          |
| 8 | ARS-BFGL-NGS-16470               |   | 61356475 |          |
| 8 | ARS-BFGL-NGS-71125               | 0 | 61400389 |          |
| 8 | ARS-BFGL-NGS-116121              | 0 | 61450541 |          |
| 8 | ARS-BFGL-NGS-20978               | 0 | 61481458 |          |
| 8 | ARS-BFGL-NGS-22891               | 0 | 61507067 |          |
| 8 | ARS-BFGL-NGS-16857               | 0 | 61536940 |          |
| 8 | BTB-00104976                     | 0 | 61614265 |          |
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| 8 | BTB-00351490                     | 0 | 61752353 |          |
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| 8 | BTA-81483-no-rs                  | 0 | 61838644 |          |
| 8 | BTA-81482-no-rs                  | 0 | 61877938 |          |
| 8 | Hapmap38025-BTA-81476            | 0 | 61915344 |          |
| 8 | BTA-81475-no-rs                  | 0 | 61930861 |          |
| 8 | Hapmap52876-ss46526288           | 0 | 61951362 |          |
| 8 | Hapmap46880-BTA-81470            | 0 | 61977595 |          |

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| 8 | ARS-BFGL-NGS-21937     | 0 | 62015685 |
| 8 | ARS-BFGL-NGS-21515     | 0 | 62040920 |
| 8 | ARS-BFGL-NGS-88926     | 0 | 62064212 |
| 8 | ARS-BFGL-NGS-27060     | 0 | 62108589 |
| 8 | ARS-BFGL-NGS-20552     | 0 | 62216452 |
| 8 | ARS-BFGL-NGS-41506     | 0 | 62281036 |
| 8 | Hapmap49765-BTA-81320  | 0 | 62359326 |
| 8 | Hapmap25013-BTA-121844 | 0 | 62398995 |
| 8 | ARS-BFGL-NGS-116281    | 0 | 62469487 |
| 8 | ARS-BFGL-NGS-104142    | 0 | 62490618 |
| 8 | ARS-BFGL-NGS-23940     | 0 | 62514917 |
| 8 | ARS-BFGL-NGS-97020     | 0 | 62544260 |
| 8 | Hapmap38124-BTA-81328  | 0 | 62575787 |
| 8 | ARS-BFGL-NGS-10850     | 0 | 62635719 |
| 8 | BTB-00350726           | 0 | 62664891 |
| 8 | BTA-96030-no-rs        | 0 | 62714909 |
| 8 | ARS-BFGL-NGS-43821     | 0 | 62754286 |
| 8 | ARS-BFGL-NGS-98511     | 0 | 62828794 |
| 8 | ARS-BFGL-NGS-118159    | 0 | 62849679 |
| 8 | Hapmap30023-BTA-150747 | 0 | 62891563 |
| 8 | ARS-BFGL-NGS-107859    | 0 | 63000189 |
| 8 | ARS-BFGL-NGS-63568     | 0 | 63162363 |
| 8 | Hapmap39528-BTA-03210  | 0 | 63220492 |
| 8 | Hapmap57239-rs29018125 | 0 | 63246078 |
| 8 | ARS-BFGL-NGS-33252     | 0 | 63300907 |
| 8 | Hapmap51058-BTA-81570  | 0 | 63358564 |
| 8 | ARS-BFGL-NGS-87919     | 0 | 63383924 |
| 8 | ARS-BFGL-NGS-16992     | 0 | 63435892 |
| 8 | Hapmap41091-BTA-81593  | 0 | 63482229 |
| 8 | ARS-BFGL-NGS-19737     | 0 | 63504584 |
| 8 | ARS-BFGL-NGS-72086     | 0 | 63580406 |
| 8 | BTB-00353329           | 0 | 63625209 |
| 8 | ARS-BFGL-NGS-17327     | 0 | 63653976 |
| 8 | BTA-09061-rs29025228   | 0 | 63671545 |
| 8 | ARS-BFGL-NGS-101225    | 0 | 63772223 |
| 8 | ARS-BFGL-NGS-14350     | 0 | 63815716 |
| 8 | BTB-00353549           | 0 | 63875597 |
| 8 | ARS-BFGL-NGS-66921     | 0 | 63901386 |
| 8 | BTB-00353359           | 0 | 63931756 |
| 8 | Hapmap51059-BTA-81602  | 0 | 63956656 |
| 8 | ARS-BFGL-NGS-34498     | 0 | 63987100 |
| 8 | ARS-BFGL-NGS-66538     | 0 | 64011227 |
| 8 | ARS-BFGL-NGS-73647     | 0 | 64033680 |
| 8 | Hapmap57206-rs29025935 | 0 | 64068111 |
| 8 | ARS-BFGL-NGS-69854     | 0 | 64089209 |
| 8 | ARS-BFGL-NGS-104688    | 0 | 64117462 |
| 8 | Hapmap54421-rs29021656 | 0 | 64172559 |
| 8 | ARS-BFGL-NGS-106208    | 0 | 64244606 |
| 8 | BTA-81701-no-rs        | 0 | 64266000 |
| 8 | BTB-01548939           | 0 | 64337449 |
| 8 | BTB-01549027           | 0 | 64398609 |
| 8 | BTB-01549056           | 0 | 64438267 |
| 8 | ARS-BFGL-NGS-16925     | 0 | 64476783 |
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| 8 | ARS-BFGL-NGS-87528     | 0 | 64556812 |
| 8 | BTB-01093491           | 0 | 64593005 |
| 8 | Hapmap27795-BTA-19344  | 0 | 64636409 |
| 8 | BTB-01093562           | 0 | 64685392 |
| 8 | ARS-BFGL-NGS-93209     | 0 | 64762033 |
| 8 | BTB-01093715           | 0 | 64811441 |
| 8 | ARS-BFGL-NGS-89215     | 0 | 64848565 |
| 8 | Hapmap44415-BTA-81700  | 0 | 64941406 |
| 8 | ARS-BFGL-NGS-66565     | 0 | 64979283 |
| 8 | Hapmap30871-BTA-158348 | 0 | 65008794 |
| 8 | BTA-118293-no-rs       | 0 | 65036298 |
| 8 | BTA-19343-no-rs        | 0 | 65066964 |
| 8 | BTB-01093959           | 0 | 65107050 |
| 8 | BTA-19348-no-rs        | 0 | 65338177 |
| 8 | ARS-BFGL-NGS-111193    | 0 | 65401868 |
| 8 | Hapmap23103-BTA-62512  | 0 | 65444771 |
| 8 | ARS-BFGL-NGS-15846     | 0 | 65499675 |
| 8 | ARS-BFGL-NGS-111488    | 0 | 65569786 |
| 8 | BTB-00950285           | 0 | 65609180 |
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| 8 | BTA-29456-no-rs        | 0 | 65659020 |
| 8 | ARS-BFGL-NGS-93472     | 0 | 65721612 |
| 8 | ARS-BFGL-NGS-118418    | 0 | 65897661 |
| 8 | Hapmap24224-BTA-93350  | 0 | 65960156 |
| 8 | ARS-BFGL-NGS-24979     | 0 | 65994188 |
| 8 | BTB-01847877           | 0 | 66192312 |
| 8 | BTB-01423887           | 0 | 66340852 |
| 8 | BTA-05482-rs29019641   | 0 | 66526862 |
| 8 | ARS-BFGL-NGS-78877     | 0 | 66596921 |
| 8 | Hapmap51208-BTA-31203  | 0 | 66621243 |
| 8 | BTB-01916334           | 0 | 66653491 |
| 8 | BTB-01149154           | 0 | 66721299 |
| 8 | ARS-BFGL-NGS-109331    | 0 | 66749701 |
| 8 | BTB-01149334           | 0 | 66785437 |
| 8 | ARS-BFGL-NGS-113542    | 0 | 66820951 |
| 8 | ARS-BFGL-NGS-39028     | 0 | 66877233 |
| 8 | BTB-01563041           | 0 | 66929546 |
| 8 | ARS-BFGL-NGS-36325     | 0 | 66979816 |
| 8 | Hapmap24376-BTA-145957 | 0 | 67020267 |
| 8 | ARS-BFGL-NGS-96805     | 0 | 67131705 |
| 8 | ARS-BFGL-NGS-87805     | 0 | 67156577 |
| 8 | ARS-BFGL-NGS-29663     | 0 | 67180774 |
| 8 | UA-IFASA-2642          | 0 | 67260693 |
| 8 | ARS-BFGL-NGS-117186    | 0 | 67290734 |
| 8 | ARS-BFGL-NGS-101907    | 0 | 67460654 |
| 8 | Hapmap51060-BTA-81722  | 0 | 67504393 |
| 8 | ARS-BFGL-NGS-100986    | 0 | 67527939 |
| 8 | BTB-01403232           | 0 | 67564479 |
| 8 | UA-IFASA-2124          | 0 | 67596919 |
| 8 | Hapmap24348-BTA-159633 | 0 | 67636677 |
| 8 | ARS-BFGL-NGS-102568    | 0 | 67664899 |
| 8 | ARS-BFGL-NGS-98704     | 0 | 67691448 |
| 8 | ARS-BFGL-NGS-32974     | 0 | 67748043 |
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| 8 | ARS-BFGL-NGS-40613     | 0 | 67846594 |
| 8 | ARS-BFGL-NGS-37196     | 0 | 67910357 |
| 8 | Hapmap59270-rs29027144 | 0 | 67960091 |
| 8 | ARS-BFGL-NGS-92029     | 0 | 67989830 |
| 8 | ARS-BFGL-NGS-88701     | 0 | 68010939 |
| 8 | BTB-01530957           | 0 | 68069707 |
| 8 | ARS-BFGL-NGS-60039     | 0 | 68141566 |
| 8 | ARS-BFGL-NGS-11076     | 0 | 68168243 |
| 8 | ARS-BFGL-NGS-102934    | 0 | 68205232 |
| 8 | ARS-BFGL-NGS-15420     | 0 | 68233244 |
| 8 | ARS-BFGL-NGS-34320     | 0 | 68264801 |
| 8 | BTA-107383-no-rs       | 0 | 68287089 |
| 8 | ARS-BFGL-NGS-112744    | 0 | 68340517 |
| 8 | BTA-23067-no-rs        | 0 | 68379333 |
| 8 | Hapmap50918-BTA-23068  | 0 | 68404576 |
| 8 | ARS-BFGL-NGS-19671     | 0 | 68442169 |
| 8 | BTB-01163619           | 0 | 68501738 |
| 8 | BTB-01163624           | 0 | 68525493 |
| 8 | Hapmap32347-BTA-152796 | 0 | 68569656 |
| 8 | Hapmap60569-rs29012097 | 0 | 68633530 |
| 8 | Hapmap58041-rs29013326 | 0 | 68659666 |
| 8 | Hapmap60281-rs29010321 | 0 | 68689710 |
| 8 | Hapmap20010-rs29023459 | 0 | 68714404 |
| 8 | ARS-BFGL-NGS-115666    | 0 | 68756483 |
| 8 | ARS-BFGL-NGS-12291     | 0 | 68825373 |
| 8 | Hapmap57880-rs29021271 | 0 | 68850097 |
| 8 | Hapmap25871-BTA-152798 | 0 | 68894735 |
| 8 | BTB-01164404           | 0 | 68921178 |
| 8 | ARS-BFGL-NGS-35672     | 0 | 69117267 |
| 8 | ARS-BFGL-NGS-14760     | 0 | 69149489 |
| 8 | Hapmap41092-BTA-81768  | 0 | 69194095 |
| 8 | ARS-BFGL-NGS-80717     | 0 | 69225039 |
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| 8 | ARS-BFGL-NGS-110811    | 0 | 69343704 |
| 8 | ARS-BFGL-NGS-116357    | 0 | 69399094 |
| 8 | ARS-BFGL-NGS-48897     | 0 | 69431109 |
| 8 | Hapmap38700-BTA-81760  | 0 | 69455202 |
| 8 | ARS-BFGL-NGS-119371    | 0 | 69485231 |
| 8 | Hapmap51638-BTA-81759  | 0 | 69525276 |
| 8 | ARS-BFGL-NGS-53243     | 0 | 69550332 |
| 8 | ARS-BFGL-NGS-61894     | 0 | 69622989 |
| 8 | ARS-BFGL-NGS-62999     | 0 | 69658202 |
| 8 | BTB-00352224           | 0 | 69683348 |
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| 8 | Hapmap45349-BTA-121854 | 0 | 70146951 |
| 8 | ARS-BFGL-NGS-90266     | 0 | 70197351 |
| 8 | BTB-01605981           | 0 | 70252582 |
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| 8 | BTB-00351877           | 0 | 70354923 |
| 8 | Hapmap58018-ss46526014 | 0 | 70401417 |

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| 8 | BTA-81502-no-rs                | 0 | 70472853 |          |
| 8 | Hapmap31119-BTA-145883         | 0 | 70495931 |          |
| 8 | ARS-BFGL-NGS-35876             | 0 | 70535700 |          |
| 8 | ARS-BFGL-NGS-111267            | 0 | 70561910 |          |
| 8 | Hapmap39439-BTA-81498          | 0 | 70585081 |          |
| 8 | BTB-00351625                   | 0 | 70613051 |          |
| 8 | ARS-BFGL-NGS-17346             | 0 | 70653923 |          |
| 8 | BTB-01673568                   | 0 | 70682780 |          |
| 8 | Hapmap26182-BTA-156401         | 0 | 70717409 |          |
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| 8 | ARS-BFGL-NGS-107926            | 0 | 70785796 |          |
| 8 | ARS-BFGL-NGS-119743            | 0 | 71293524 |          |
| 8 | ARS-BFGL-NGS-104801            | 0 | 71320860 |          |
| 8 | ARS-BFGL-NGS-108666            | 0 | 71352779 |          |
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| 8 | ARS-BFGL-NGS-110168            | 0 | 71463417 |          |
| 8 | ARS-BFGL-NGS-194               | 0 | 71491790 |          |
| 8 | Hapmap53725-rs29024484         | 0 | 71534841 |          |
| 8 | ARS-BFGL-NGS-12424             | 0 | 71600288 |          |
| 8 | BTB-00356863                   | 0 | 71627282 |          |
| 8 | ARS-BFGL-NGS-38650             |   | 71664605 |          |
| 8 | ARS-BFGL-NGS-106314            | 0 | 71690437 |          |
| 8 | ARS-BFGL-NGS-110492            | 0 | 71742957 |          |
| 8 | Hapmap39948-BTA-81787          | 0 | 71768899 |          |
| 8 | BTB-00356675                   | 0 | 71798562 |          |
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| 8 | Hapmap34135-BES5_Contig253_343 | 0 |          | 71874533 |
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| 8 | ARS-BFGL-NGS-55686             | 0 | 72395359 |          |
| 8 | Hapmap31170-BTA-156950         | 0 | 72433810 |          |
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| 8 | BTB-01913017                   | 0 | 72661428 |          |
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| 8 | ARS-BFGL-NGS-16507             | 0 | 72778125 |          |
| 8 | BTB-01975364                   | 0 | 72803853 |          |
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| 8 | Hapmap29566-BTA-148149         | 0 | 72912204 |          |
| 8 | ARS-BFGL-NGS-117081            | 0 | 72949048 |          |
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| 8 | BTB-00352897                   | 0 | 73131682 |          |
| 8 | Hapmap26149-BTA-146004         | 0 | 73238931 |          |
| 8 | BTB-00358338                   | 0 | 73267165 |          |
| 8 | ARS-BFGL-NGS-115183            | 0 | 73330125 |          |
| 8 | BTB-00358231                   | 0 | 73374994 |          |
| 8 | ARS-BFGL-NGS-16531             | 0 | 73415473 |          |
| 8 | BTA-81848-no-rs                | 0 | 73435613 |          |
| 8 | BTB-00357945                   | 0 | 73482124 |          |

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| 8 | ARS-BFGL-NGS-108557    | 0        | 73570274 |
| 8 | Hapmap42688-BTA-81832  | 0        | 73605879 |
| 8 | ARS-BFGL-NGS-10271     | 0        | 73652011 |
| 8 | BTB-00357814           | 0        | 73680263 |
| 8 | BTB-00357792           | 0        | 73715997 |
| 8 | BTB-00357728           | 0        | 73800791 |
| 8 | BTB-00357677           | 0        | 73829090 |
| 8 | BTB-00357641           | 0        | 73855871 |
| 8 | Hapmap48904-BTA-81827  | 0        | 73881694 |
| 8 | BTB-00357617           | 0        | 73907982 |
| 8 | BTA-81825-no-rs        | 0        | 73993040 |
| 8 | BTA-81821-no-rs        | 0        | 74018852 |
| 8 | ARS-BFGL-NGS-42120     | 74060086 |          |
| 8 | Hapmap43489-BTA-121857 | 0        | 74093999 |
| 8 | BTB-00357438           | 0        | 74125817 |
| 8 | Hapmap38894-BTA-44863  | 0        | 74158317 |
| 8 | ARS-BFGL-NGS-52940     | 74178784 |          |
| 8 | BTA-21730-no-rs        | 0        | 74336311 |
| 8 | Hapmap48427-BTA-66501  | 0        | 74373729 |
| 8 | BTB-01004402           | 0        | 74423117 |
| 8 | ARS-BFGL-NGS-91718     | 0        | 74467685 |
| 8 | Hapmap57757-ss46526215 | 0        | 74949334 |
| 8 | Hapmap40379-BTA-98361  | 0        | 74971186 |
| 8 | ARS-BFGL-NGS-53058     | 0        | 74997682 |
| 8 | ARS-BFGL-NGS-20848     | 0        | 75024518 |
| 8 | ARS-BFGL-NGS-31121     | 0        | 75048907 |
| 8 | ARS-BFGL-NGS-93354     | 0        | 75080206 |
| 8 | BTB-00358604           | 0        | 75109746 |
| 8 | BTA-81867-no-rs        | 0        | 75175034 |
| 8 | ARS-BFGL-NGS-12886     | 0        | 75203883 |
| 8 | Hapmap25566-BTA-146009 | 0        | 75249373 |
| 8 | BTB-00358369           | 0        | 75347512 |
| 8 | ARS-BFGL-NGS-112998    | 0        | 75392377 |
| 8 | BTB-01751181           | 0        | 75514239 |
| 8 | BTB-00359194           | 0        | 75621615 |
| 8 | Hapmap53985-rs29024476 | 0        | 75650021 |
| 8 | Hapmap57092-ss46526915 | 0        | 75680231 |
| 8 | ARS-BFGL-NGS-33264     | 0        | 75759261 |
| 8 | BTA-73603-no-rs        | 0        | 75798051 |
| 8 | BTB-01251263           | 0        | 75867695 |
| 8 | ARS-BFGL-NGS-45189     | 0        | 75874902 |
| 8 | ARS-BFGL-NGS-115955    | 0        | 75919385 |
| 8 | Hapmap31116-BTA-143121 | 0        | 75973285 |
| 8 | ARS-BFGL-NGS-63459     | 0        | 76005495 |
| 8 | BTB-00227661           | 0        | 76059716 |
| 8 | ARS-BFGL-NGS-105738    | 0        | 76089371 |
| 8 | BTB-00227581           | 0        | 76119002 |
| 8 | ARS-BFGL-NGS-114115    | 0        | 76152259 |
| 8 | ARS-BFGL-NGS-70800     | 76231601 |          |
| 8 | Hapmap31835-BTA-161315 | 0        | 76281603 |
| 8 | ARS-BFGL-NGS-79292     | 0        | 76353681 |
| 8 | BTB-00359112           | 0        | 76403422 |
| 8 | ARS-BFGL-NGS-118809    | 0        | 76454131 |
| 8 | ARS-BFGL-NGS-90466     | 0        | 76473229 |

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| 8 | BTA-18236-no-rs                | 0 | 76507379 |          |
| 8 | ARS-BFGL-NGS-89010             | 0 | 76530816 |          |
| 8 | Hapmap51639-BTA-81812          | 0 | 76620508 |          |
| 8 | ARS-BFGL-NGS-25137             | 0 | 76670107 |          |
| 8 | BTB-00357391                   | 0 | 76699749 |          |
| 8 | BTB-00357421                   | 0 | 76738695 |          |
| 8 | Hapmap39073-BTA-81872          | 0 | 76771728 |          |
| 8 | ARS-BFGL-NGS-112795            | 0 | 76827725 |          |
| 8 | Hapmap33945-BES1_Contig318_945 | 0 |          | 76868090 |
| 8 | Hapmap58591-rs29013400         | 0 | 76900430 |          |
| 8 | ARS-BFGL-NGS-18438             | 0 | 76956047 |          |
| 8 | ARS-BFGL-NGS-28135             | 0 | 76993372 |          |
| 8 | BTB-00359759                   | 0 | 77028125 |          |
| 8 | BTB-00359781                   | 0 | 77052419 |          |
| 8 | ARS-BFGL-NGS-83840             |   | 77078725 |          |
| 8 | ARS-BFGL-NGS-46718             | 0 | 77103681 |          |
| 8 | Hapmap58415-rs29020898         | 0 | 77125415 |          |
| 8 | ARS-BFGL-NGS-97175             | 0 | 77166351 |          |
| 8 | ARS-BFGL-NGS-29083             | 0 | 77204243 |          |
| 8 | ARS-BFGL-NGS-104382            | 0 | 77225335 |          |
| 8 | BTA-81945-no-rs                | 0 | 77252882 |          |
| 8 | ARS-BFGL-NGS-20022             | 0 | 77282343 |          |
| 8 | ARS-BFGL-NGS-79809             | 0 | 77397361 |          |
| 8 | ARS-BFGL-NGS-12088             | 0 | 77432453 |          |
| 8 | ARS-BFGL-NGS-72545             | 0 | 77514377 |          |
| 8 | ARS-BFGL-NGS-55938             | 0 | 77546886 |          |
| 8 | Hapmap38125-BTA-81948          | 0 | 77578357 |          |
| 8 | ARS-BFGL-NGS-54264             | 0 | 77608240 |          |
| 8 | Hapmap25375-BTA-81957          | 0 | 77631752 |          |
| 8 | ARS-BFGL-NGS-31251             | 0 | 77767018 |          |
| 8 | ARS-BFGL-NGS-29876             | 0 | 77842261 |          |
| 8 | BTB-00360436                   | 0 | 77877611 |          |
| 8 | BTB-00360293                   | 0 | 77937951 |          |
| 8 | BTB-00360249                   | 0 | 77984041 |          |
| 8 | ARS-BFGL-NGS-90520             |   | 78009328 |          |
| 8 | ARS-BFGL-NGS-116019            | 0 | 78055295 |          |
| 8 | BTB-00699115                   | 0 | 78082969 |          |
| 8 | BTB-00360130                   | 0 | 78145059 |          |
| 8 | BTB-01900316                   | 0 | 78226921 |          |
| 8 | ARS-BFGL-NGS-58296             | 0 | 78281627 |          |
| 8 | Hapmap23947-BTA-153013         | 0 | 78347212 |          |
| 8 | BTB-01139309                   | 0 | 78390388 |          |
| 8 | BTA-96361-no-rs                | 0 | 78438963 |          |
| 8 | BTB-01139387                   | 0 | 78482209 |          |
| 8 | ARS-BFGL-NGS-108587            | 0 | 78533314 |          |
| 8 | ARS-BFGL-NGS-74867             | 0 | 78556086 |          |
| 8 | ARS-BFGL-NGS-101317            | 0 | 78599915 |          |
| 8 | Hapmap43733-BTA-96346          | 0 | 78656558 |          |
| 8 | BTB-01139515                   | 0 | 78701950 |          |
| 8 | UA-IFASA-2457                  | 0 | 78744151 |          |
| 8 | BTB-01139563                   | 0 | 78778730 |          |
| 8 | ARS-BFGL-NGS-59526             | 0 | 78810298 |          |
| 8 | BTB-01139852                   | 0 | 78850678 |          |
| 8 | Hapmap41695-BTA-96357          | 0 | 78890670 |          |

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| 8 | BTB-01139763                    | 0 | 78914017 |          |
| 8 | BTB-01139875                    | 0 | 78940049 |          |
| 8 | Hapmap50167-BTA-95319           | 0 | 79187322 |          |
| 8 | ARS-BFGL-NGS-83530              | 0 | 79314073 |          |
| 8 | ARS-BFGL-NGS-33731              | 0 | 79343831 |          |
| 8 | BTB-01592913                    | 0 | 79380171 |          |
| 8 | BTA-106529-no-rs                | 0 | 79414861 |          |
| 8 | BTB-01733915                    | 0 | 79460414 |          |
| 8 | BTB-00360817                    | 0 | 79497558 |          |
| 8 | Hapmap54400-rs29020952          | 0 | 79534851 |          |
| 8 | Hapmap34874-BES3_Contig415_1312 | 0 |          | 79559282 |
| 8 | BTB-00360865                    | 0 | 79589820 |          |
| 8 | BTB-00360903                    | 0 | 79614032 |          |
| 8 | Hapmap60592-rs29025478          | 0 | 79660034 |          |
| 8 | Hapmap47751-BTA-81989           | 0 | 79734160 |          |
| 8 | ARS-BFGL-NGS-116992             | 0 | 79774422 |          |
| 8 | BTA-90142-no-rs                 | 0 | 79817203 |          |
| 8 | ARS-BFGL-NGS-86158              | 0 | 79932091 |          |
| 8 | BTB-01593847                    | 0 | 79968139 |          |
| 8 | BTB-01593897                    | 0 | 79994924 |          |
| 8 | BTB-01593919                    | 0 | 80027841 |          |
| 8 | Hapmap39358-BTA-82003           | 0 | 80126915 |          |
| 8 | BTB-00361164                    | 0 | 80152774 |          |
| 8 | ARS-BFGL-NGS-67446              | 0 | 80184285 |          |
| 8 | ARS-BFGL-NGS-109897             | 0 | 80212958 |          |
| 8 | ARS-BFGL-NGS-31544              | 0 | 80280501 |          |
| 8 | BTB-00360674                    | 0 | 80356103 |          |
| 8 | BTB-00360684                    | 0 | 80431297 |          |
| 8 | BTB-02074568                    | 0 | 80510385 |          |
| 8 | ARS-BFGL-NGS-43641              | 0 | 80647410 |          |
| 8 | BTB-00887774                    | 0 | 80684972 |          |
| 8 | Hapmap43694-BTA-81977           | 0 | 80768766 |          |
| 8 | Hapmap42595-BTA-58006           | 0 | 80899428 |          |
| 8 | Hapmap43395-BTA-88866           | 0 | 80944503 |          |
| 8 | BTB-00361571                    | 0 | 80993534 |          |
| 8 | BTB-01885821                    | 0 | 81083170 |          |
| 8 | ARS-BFGL-NGS-11101              | 0 | 81108363 |          |
| 8 | BTB-01205768                    | 0 | 81152983 |          |
| 8 | ARS-BFGL-NGS-55910              | 0 | 81220910 |          |
| 8 | BTB-01205736                    | 0 | 81305174 |          |
| 8 | BTA-110160-no-rs                | 0 | 81389800 |          |
| 8 | ARS-BFGL-NGS-15117              | 0 | 81464865 |          |
| 8 | BTB-02009158                    | 0 | 81545238 |          |
| 8 | BTB-01506818                    | 0 | 81573118 |          |
| 8 | Hapmap44267-BTA-65015           | 0 | 81603784 |          |
| 8 | Hapmap38552-BTA-99266           | 0 | 81612097 |          |
| 8 | ARS-BFGL-NGS-90582              | 0 | 81715421 |          |
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| 8 | UA-IFASA-4299                   | 0 | 81777958 |          |
| 8 | BTB-01769315                    | 0 | 81806150 |          |
| 8 | Hapmap43183-BTA-122592          | 0 | 81831816 |          |
| 8 | BTB-00362255                    | 0 | 81866074 |          |
| 8 | Hapmap47422-BTA-82035           | 0 | 81877902 |          |
| 8 | Hapmap33412-BTA-82032           | 0 | 81925054 |          |



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| 8 | BTB-01093397           | 0 | 82016661 |
| 8 | ARS-BFGL-NGS-97360     |   | 82044831 |
| 8 | BTB-01093337           | 0 | 82099108 |
| 8 | ARS-BFGL-NGS-46060     |   | 82125433 |
| 8 | ARS-BFGL-NGS-67447     | 0 | 82157258 |
| 8 | ARS-BFGL-NGS-33781     | 0 | 82195153 |
| 8 | BTB-01093064           | 0 | 82223990 |
| 8 | ARS-BFGL-NGS-22890     | 0 | 82249679 |
| 8 | ARS-BFGL-NGS-108549    | 0 | 82311830 |
| 8 | BTB-01092639           | 0 | 82341109 |
| 8 | Hapmap54924-ss46526008 | 0 | 82370775 |
| 8 | Hapmap25347-BTA-19003  | 0 | 82402255 |
| 8 | Hapmap39980-BTA-19002  | 0 | 82439119 |
| 8 | BTB-01092452           | 0 | 82471304 |
| 8 | BTA-18997-no-rs        | 0 | 82502419 |
| 8 | ARS-BFGL-NGS-88491     | 0 | 82551079 |
| 8 | Hapmap60571-rs29009769 | 0 | 82622674 |
| 8 | BTB-01092130           | 0 | 82687188 |
| 8 | BTB-01092096           | 0 | 82847525 |
| 8 | ARS-BFGL-NGS-59227     | 0 | 82922937 |
| 8 | BTA-82019-no-rs        | 0 | 82945723 |
| 8 | Hapmap32077-BTA-146051 | 0 | 82985995 |
| 8 | ARS-BFGL-NGS-105269    | 0 | 83023897 |
| 8 | UA-IFASA-8810          | 0 | 83048502 |
| 8 | ARS-BFGL-NGS-18324     | 0 | 83075862 |
| 8 | Hapmap18352-rs29019864 | 0 | 83102322 |
| 8 | BTB-00362297           | 0 | 83137521 |
| 8 | Hapmap26236-BTA-82014  | 0 | 83190665 |
| 8 | ARS-BFGL-NGS-24376     | 0 | 83273697 |
| 8 | BTB-00362368           | 0 | 83300867 |
| 8 | ARS-BFGL-NGS-37913     | 0 | 83369876 |
| 8 | BTB-00362387           | 0 | 83439524 |
| 8 | ARS-BFGL-NGS-57360     | 0 | 83480253 |
| 8 | ARS-BFGL-NGS-119893    | 0 | 83515554 |
| 8 | BTB-01183131           | 0 | 83537018 |
| 8 | BTB-01183118           | 0 | 83572230 |
| 8 | Hapmap57319-rs29012379 | 0 | 83635957 |
| 8 | Hapmap12476-BTA-90123  | 0 | 83667903 |
| 8 | BTA-101429-no-rs       | 0 | 83693221 |
| 8 | BTB-01532704           | 0 | 83730419 |
| 8 | BTA-14515-no-rs        | 0 | 83888935 |
| 8 | ARS-BFGL-NGS-99216     | 0 | 83927495 |
| 8 | Hapmap26709-BTA-149656 | 0 | 84098675 |
| 8 | ARS-BFGL-NGS-24230     | 0 | 84139335 |
| 8 | ARS-BFGL-NGS-108358    | 0 | 84178715 |
| 8 | BTB-01550361           | 0 | 84287660 |
| 8 | ARS-BFGL-NGS-93187     | 0 | 84317611 |
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| 8 | BTA-86829-no-rs        | 0 | 84446493 |
| 8 | ARS-BFGL-NGS-57673     | 0 | 84474299 |
| 8 | ARS-BFGL-NGS-42477     | 0 | 84508357 |
| 8 | Hapmap51498-BTA-82054  | 0 | 84556225 |
| 8 | ARS-BFGL-NGS-90763     | 0 | 84612010 |

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| 8 | BTB-00363190           | 0 | 84640314 |
| 8 | ARS-BFGL-NGS-86428     | 0 | 84666284 |
| 8 | BTB-00363158           | 0 | 84699176 |
| 8 | BTB-00363099           | 0 | 84738093 |
| 8 | BTA-82046-no-rs        | 0 | 84780381 |
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| 8 | BTB-00362651           | 0 | 84896726 |
| 8 | BTB-00364397           | 0 | 85117915 |
| 8 | BTB-02035029           | 0 | 85140840 |
| 8 | Hapmap48907-BTA-82124  | 0 | 85183773 |
| 8 | BTB-00364121           | 0 | 85226911 |
| 8 | Hapmap53638-rs29019444 | 0 | 85273894 |
| 8 | Hapmap40466-BTA-82123  | 0 | 85304450 |
| 8 | ARS-BFGL-NGS-58677     | 0 | 85329708 |
| 8 | BTB-00364006           | 0 | 85360254 |
| 8 | Hapmap41653-BTA-82121  | 0 | 85392078 |
| 8 | Hapmap39282-BTA-63744  | 0 | 85482389 |
| 8 | BTB-00321373           | 0 | 85511930 |
| 8 | Hapmap48898-BTA-79943  | 0 | 85555383 |
| 8 | Hapmap24198-BTA-145271 | 0 | 85578043 |
| 8 | ARS-BFGL-NGS-212       | 0 | 85645138 |
| 8 | BTA-82062-no-rs        | 0 | 85665183 |
| 8 | ARS-BFGL-NGS-111255    | 0 | 85738515 |
| 8 | ARS-BFGL-NGS-30466     | 0 | 85786900 |
| 8 | BTB-01235668           | 0 | 85810372 |
| 8 | ARS-BFGL-NGS-66366     | 0 | 85833568 |
| 8 | ARS-BFGL-NGS-116926    | 0 | 85880449 |
| 8 | BTB-01235513           | 0 | 85903941 |
| 8 | ARS-BFGL-NGS-63666     | 0 | 85937098 |
| 8 | ARS-BFGL-NGS-26532     | 0 | 86056611 |
| 8 | ARS-BFGL-NGS-104204    | 0 | 86101796 |
| 8 | ARS-BFGL-NGS-43823     | 0 | 86128908 |
| 8 | Hapmap49034-BTA-115720 | 0 | 86205872 |
| 8 | ARS-BFGL-NGS-107062    | 0 | 86245016 |
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| 8 | BTB-01599972           | 0 | 86316395 |
| 8 | ARS-BFGL-NGS-92065     | 0 | 86357827 |
| 8 | ARS-BFGL-NGS-20324     | 0 | 86384898 |
| 8 | ARS-BFGL-NGS-32393     | 0 | 86442366 |
| 8 | BTA-82147-no-rs        | 0 | 86472562 |
| 8 | ARS-BFGL-NGS-25285     | 0 | 86501009 |
| 8 | BTA-52694-no-rs        | 0 | 86538180 |
| 8 | ARS-BFGL-NGS-29780     | 0 | 86560410 |
| 8 | ARS-BFGL-NGS-110505    | 0 | 86613020 |
| 8 | ARS-BFGL-NGS-13571     | 0 | 86647495 |
| 8 | Hapmap51251-BTA-52691  | 0 | 86669435 |
| 8 | ARS-BFGL-NGS-11414     | 0 | 86690521 |
| 8 | BTB-00301689           | 0 | 86718128 |
| 8 | Hapmap47937-BTA-39125  | 0 | 86780525 |
| 8 | ARS-BFGL-NGS-61328     | 0 | 86810388 |
| 8 | BTB-00645476           | 0 | 86885417 |
| 8 | BTB-00079735           | 0 | 86974867 |
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| 8 | ARS-BFGL-NGS-102769    | 0 | 87038169 |

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| 8 | ARS-BFGL-NGS-103237                   | 0        | 87067969 |  |  |
| 8 | BTB-02000008                          | 0        | 87141059 |  |  |
| 8 | ARS-BFGL-NGS-101016                   | 0        | 87236608 |  |  |
| 8 | ARS-BFGL-NGS-110544                   | 0        | 87308122 |  |  |
| 8 | Hapmap57797-rs29012807                | 0        | 87331818 |  |  |
| 8 | ARS-BFGL-NGS-116122                   | 0        | 87367415 |  |  |
| 8 | ARS-BFGL-NGS-106057                   | 0        | 87402415 |  |  |
| 8 | ARS-BFGL-NGS-29240                    | 0        | 87434296 |  |  |
| 8 | ARS-BFGL-NGS-33753                    | 0        | 87503980 |  |  |
| 8 | Hapmap42335-BTA-82080                 | 0        | 87540746 |  |  |
| 8 | ARS-BFGL-NGS-64395                    | 0        | 87568636 |  |  |
| 8 | ARS-BFGL-NGS-69582                    | 0        | 87598677 |  |  |
| 8 | ARS-BFGL-NGS-10590                    | 0        | 87628120 |  |  |
| 8 | ARS-BFGL-NGS-57691                    | 0        | 87664192 |  |  |
| 8 | Hapmap39516-BTA-82096                 | 0        | 87695565 |  |  |
| 8 | Hapmap29836-BTA-146056                | 0        | 87751656 |  |  |
| 8 | Hapmap25842-BTA-146062                | 0        | 87859949 |  |  |
| 8 | ARS-BFGL-NGS-106522                   | 0        | 87903078 |  |  |
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| 8 | BTB-00363899                          | 0        | 88069043 |  |  |
| 8 | ARS-BFGL-NGS-28685                    | 0        | 88096752 |  |  |
| 8 | ARS-BFGL-NGS-23110                    | 0        | 88119170 |  |  |
| 8 | ARS-BFGL-NGS-101020                   | 0        | 88141495 |  |  |
| 8 | ARS-BFGL-NGS-103119                   | 0        | 88181529 |  |  |
| 8 | ARS-BFGL-NGS-19760                    | 88237379 |          |  |  |
| 8 | BTA-82128-no-rs                       | 0        | 88279367 |  |  |
| 8 | BTB-00364553                          | 0        | 88302649 |  |  |
| 8 | BTA-82131-no-rs                       | 0        | 88329628 |  |  |
| 8 | BTB-00364642                          | 0        | 88381021 |  |  |
| 8 | ARS-BFGL-NGS-34005                    | 0        | 88410238 |  |  |
| 8 | Hapmap49329-BTA-82142                 | 0        | 88464533 |  |  |
| 8 | ARS-BFGL-NGS-101790                   | 0        | 88512163 |  |  |
| 8 | BTB-00364735                          | 0        | 88545459 |  |  |
| 8 | ARS-BFGL-NGS-104416                   | 0        | 88669234 |  |  |
| 8 | BTB-00365129                          | 0        | 88738557 |  |  |
| 8 | BTB-01455119                          | 0        | 88776350 |  |  |
| 8 | Hapmap59594-rs29022959                | 0        | 88807058 |  |  |
| 8 | ARS-BFGL-NGS-103401                   | 0        | 88841102 |  |  |
| 8 | ARS-BFGL-NGS-15757                    | 0        | 88883442 |  |  |
| 8 | ARS-BFGL-NGS-47480                    | 88931059 |          |  |  |
| 8 | ARS-USMARC-Parent-DQ837644-rs29010468 | 0        | 88974063 |  |  |
| 8 | ARS-BFGL-NGS-19101                    | 0        | 89007062 |  |  |
| 8 | Hapmap49424-BTA-105436                | 0        | 89029556 |  |  |
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| 8 | BTB-02029442                          | 0        | 89134853 |  |  |
| 8 | ARS-BFGL-NGS-54460                    | 0        | 89151007 |  |  |
| 8 | BTB-01655367                          | 0        | 89185732 |  |  |
| 8 | BTB-01556311                          | 0        | 89255295 |  |  |
| 8 | BTB-01556270                          | 0        | 89296684 |  |  |
| 8 | Hapmap59870-rs29024531                | 0        | 89313850 |  |  |
| 8 | Hapmap29798-BTA-123165                | 0        | 89437358 |  |  |
| 8 | Hapmap50285-BTA-22414                 | 0        | 89524623 |  |  |
| 8 | Hapmap53185-rs29010294                | 0        | 89564388 |  |  |

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| 8 | BTB-00365682                   | 0        | 89587806 |  |
| 8 | ARS-BFGL-NGS-24598             | 0        | 89619126 |  |
| 8 | BTA-82162-no-rs                | 0        | 89657320 |  |
| 8 | ARS-BFGL-NGS-33495             | 0        | 89686757 |  |
| 8 | ARS-BFGL-NGS-73943             | 0        | 89707967 |  |
| 8 | ARS-BFGL-NGS-28334             | 0        | 89719761 |  |
| 8 | Hapmap33368-BTA-146079         | 0        | 89743053 |  |
| 8 | ARS-BFGL-NGS-40747             | 0        | 89775454 |  |
| 8 | ARS-BFGL-NGS-41176             | 0        | 89803602 |  |
| 8 | ARS-BFGL-NGS-94520             | 0        | 89824596 |  |
| 8 | Hapmap61061-rs29020453         | 0        | 89859523 |  |
| 8 | ARS-BFGL-NGS-66182             | 0        | 89960384 |  |
| 8 | ARS-BFGL-NGS-105601            | 0        | 90007976 |  |
| 8 | ARS-BFGL-NGS-17825             | 0        | 90048157 |  |
| 8 | ARS-BFGL-NGS-23784             | 0        | 90137668 |  |
| 8 | ARS-BFGL-NGS-100694            | 0        | 90176276 |  |
| 8 | ARS-BFGL-NGS-62422             | 0        | 90197837 |  |
| 8 | ARS-BFGL-NGS-61980             | 90249304 |          |  |
| 8 | ARS-BFGL-NGS-29059             | 0        | 90282154 |  |
| 8 | ARS-BFGL-NGS-22850             | 90338627 |          |  |
| 8 | BTA-82340-no-rs                | 0        | 90412852 |  |
| 8 | Hapmap45972-BTA-102617         | 0        | 90480558 |  |
| 8 | ARS-BFGL-NGS-85447             | 0        | 90503999 |  |
| 8 | ARS-BFGL-NGS-97157             | 0        | 90539222 |  |
| 8 | ARS-BFGL-NGS-102412            | 0        | 90579016 |  |
| 8 | Hapmap58427-rs29021328         | 0        | 90610971 |  |
| 8 | ARS-BFGL-NGS-113287            | 0        | 90669303 |  |
| 8 | Hapmap33490-BTA-146089         | 0        | 90693363 |  |
| 8 | Hapmap57848-rs29015158         | 0        | 90714611 |  |
| 8 | BTA-52455-no-rs                | 0        | 90808222 |  |
| 8 | ARS-BFGL-NGS-88250             | 0        | 90844129 |  |
| 8 | Hapmap51330-BTA-85616          | 0        | 90984428 |  |
| 8 | ARS-BFGL-NGS-41276             | 0        | 91028992 |  |
| 8 | Hapmap23639-BTA-147084         | 0        | 91062279 |  |
| 8 | ARS-BFGL-NGS-112367            | 0        | 91086691 |  |
| 8 | ARS-BFGL-NGS-54525             | 0        | 91125290 |  |
| 8 | Hapmap34207-BES2_Contig460_395 | 0        | 91186071 |  |
| 8 | ARS-BFGL-NGS-22144             | 0        | 91351636 |  |
| 8 | ARS-BFGL-NGS-41178             | 0        | 91401417 |  |
| 8 | BTA-23643-no-rs                | 0        | 91443463 |  |
| 8 | BTA-23646-no-rs                | 0        | 91464082 |  |
| 8 | ARS-BFGL-NGS-25309             | 0        | 91577184 |  |
| 8 | ARS-BFGL-NGS-87690             | 91642318 |          |  |
| 8 | Hapmap50118-BTA-82222          | 0        | 91667879 |  |
| 8 | ARS-BFGL-NGS-81161             | 0        | 91733872 |  |
| 8 | BTA-82231-no-rs                | 0        | 91814625 |  |
| 8 | ARS-BFGL-NGS-109639            | 0        | 91852447 |  |
| 8 | BTA-82243-no-rs                | 0        | 91904724 |  |
| 8 | ARS-BFGL-NGS-102315            | 0        | 91934056 |  |
| 8 | Hapmap52673-rs29019309         | 0        | 92041886 |  |
| 8 | BTA-93110-no-rs                | 0        | 92147781 |  |
| 8 | ARS-BFGL-NGS-114685            | 0        | 92263938 |  |
| 8 | Hapmap48568-BTA-103950         | 0        | 92360128 |  |
| 8 | ARS-BFGL-NGS-65038             | 0        | 92447183 |  |

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| 8 | ARS-BFGL-NGS-44247              | 0 | 92485682 |          |
| 8 | ARS-BFGL-NGS-13401              | 0 | 92509802 |          |
| 8 | BTB-01415906                    | 0 | 92575940 |          |
| 8 | Hapmap49330-BTA-82198           | 0 | 92627675 |          |
| 8 | BTB-00366038                    | 0 | 92657249 |          |
| 8 | Hapmap38258-BTA-82187           | 0 | 92700263 |          |
| 8 | Hapmap22748-BTA-146086          | 0 | 92721970 |          |
| 8 | Hapmap34958-BES7_Contig509_1173 | 0 |          | 92744889 |
| 8 | ARS-BFGL-NGS-107648             | 0 | 92792703 |          |
| 8 | BTB-00366190                    | 0 | 92828047 |          |
| 8 | Hapmap54525-ss46526442          | 0 | 92935430 |          |
| 8 | ARS-BFGL-NGS-64799              | 0 | 92972234 |          |
| 8 | BTA-16616-no-rs                 | 0 | 93017958 |          |
| 8 | BTB-00488829                    | 0 | 93055587 |          |
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| 8 | ARS-BFGL-NGS-36460              |   | 93145137 |          |
| 8 | ARS-BFGL-NGS-87787              | 0 | 93171893 |          |
| 8 | BTA-105718-no-rs                | 0 | 93276825 |          |
| 8 | BTB-01069323                    | 0 | 93307317 |          |
| 8 | BTB-01634267                    | 0 | 93336078 |          |
| 8 | ARS-BFGL-NGS-15170              |   | 93382177 |          |
| 8 | BTB-01864543                    | 0 | 93404723 |          |
| 8 | ARS-BFGL-NGS-19762              | 0 | 93433032 |          |
| 8 | BTB-01364301                    | 0 | 93470237 |          |
| 8 | Hapmap41495-BTA-28967           | 0 | 93506193 |          |
| 8 | BTA-28965-no-rs                 | 0 | 93558076 |          |
| 8 | BTA-28961-no-rs                 | 0 | 93582289 |          |
| 8 | BTB-01364009                    | 0 | 93611407 |          |
| 8 | Hapmap27238-BTA-163742          | 0 | 93655394 |          |
| 8 | BTB-01363817                    | 0 | 93691445 |          |
| 8 | BTB-01363633                    | 0 | 93725282 |          |
| 8 | BTB-01363589                    | 0 | 93733918 |          |
| 8 | BTB-01785453                    | 0 | 93786059 |          |
| 8 | BTB-01537249                    | 0 | 93825702 |          |
| 8 | BTA-101737-no-rs                | 0 | 93867246 |          |
| 8 | BTA-101724-no-rs                | 0 | 93896073 |          |
| 8 | ARS-BFGL-NGS-18836              | 0 | 93969992 |          |
| 8 | BTA-82314-no-rs                 | 0 | 93998021 |          |
| 8 | BTB-00367678                    | 0 | 94021165 |          |
| 8 | BTB-00367725                    | 0 | 94054045 |          |
| 8 | BTB-00367837                    | 0 | 94088291 |          |
| 8 | Hapmap35016-BES11_Contig229_940 | 0 |          | 94115663 |
| 8 | BTB-00368041                    | 0 | 94157018 |          |
| 8 | Hapmap50119-BTA-82316           | 0 | 94200849 |          |
| 8 | BTB-00368086                    | 0 | 94232387 |          |
| 8 | BTB-00368101                    | 0 | 94258722 |          |
| 8 | Hapmap41979-BTA-82318           | 0 | 94358932 |          |
| 8 | BTB-00368155                    | 0 | 94386951 |          |
| 8 | ARS-BFGL-NGS-54516              | 0 | 94413416 |          |
| 8 | ARS-BFGL-NGS-50038              | 0 | 94460889 |          |
| 8 | ARS-BFGL-NGS-32057              | 0 | 94531924 |          |
| 8 | BTB-00368434                    | 0 | 94560328 |          |
| 8 | Hapmap59516-rs29027400          | 0 | 94579362 |          |
| 8 | Hapmap50914-BTA-21089           | 0 | 94604387 |          |

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| 8 | Hapmap60096-rs29025529 | 0 | 94650099 |
| 8 | BTB-01734135           | 0 | 94708244 |
| 8 | BTA-18258-no-rs        | 0 | 94762004 |
| 8 | Hapmap42689-BTA-82250  | 0 | 94810609 |
| 8 | BTB-00366459           | 0 | 94833671 |
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| 8 | BTB-00366930           | 0 | 95003606 |
| 8 | BTB-00366966           | 0 | 95057877 |
| 8 | BTB-00366976           | 0 | 95085291 |
| 8 | BTB-01354175           | 0 | 95119569 |
| 8 | BTB-01354201           | 0 | 95157430 |
| 8 | ARS-BFGL-NGS-35261     | 0 | 95228955 |
| 8 | BTB-01670082           | 0 | 95277410 |
| 8 | BTB-01266056           | 0 | 95400554 |
| 8 | ARS-BFGL-NGS-52705     | 0 | 95468310 |
| 8 | BTB-01266196           | 0 | 95498189 |
| 8 | ARS-BFGL-NGS-101333    | 0 | 95563701 |
| 8 | BTB-01266301           | 0 | 95603538 |
| 8 | ARS-BFGL-NGS-65636     | 0 | 95625807 |
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| 8 | ARS-BFGL-NGS-61793     | 0 | 95739431 |
| 8 | Hapmap26926-BTA-100264 | 0 | 96071025 |
| 8 | BTB-01518929           | 0 | 96108670 |
| 8 | BTB-01620899           | 0 | 96166978 |
| 8 | ARS-BFGL-NGS-109757    | 0 | 96199051 |
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| 8 | BTB-00367562           | 0 | 96266647 |
| 8 | ARS-BFGL-NGS-113098    | 0 | 96294159 |
| 8 | ARS-BFGL-NGS-14436     | 0 | 96324054 |
| 8 | BTA-82304-no-rs        | 0 | 96366646 |
| 8 | Hapmap38440-BTA-82296  | 0 | 96387986 |
| 8 | Hapmap41365-BTA-82290  | 0 | 96468448 |
| 8 | BTB-00367351           | 0 | 96498706 |
| 8 | Hapmap54190-rs29025168 | 0 | 96529738 |
| 8 | BTA-82272-no-rs        | 0 | 96594716 |
| 8 | BTB-01877956           | 0 | 96618737 |
| 8 | ARS-BFGL-NGS-111561    | 0 | 96682814 |
| 8 | Hapmap47520-BTA-117879 | 0 | 96712245 |
| 8 | BTB-01729666           | 0 | 96743576 |
| 8 | Hapmap50244-BTA-116790 | 0 | 96780259 |
| 8 | Hapmap51091-BTA-92938  | 0 | 96839903 |
| 8 | BTB-01771776           | 0 | 96878869 |
| 8 | BTB-01435179           | 0 | 96991143 |
| 8 | ARS-BFGL-NGS-111964    | 0 | 97023025 |
| 8 | Hapmap33502-BTA-153027 | 0 | 97132412 |
| 8 | BTB-01067452           | 0 | 97171228 |
| 8 | ARS-BFGL-NGS-22109     | 0 | 97202686 |
| 8 | ARS-BFGL-NGS-28141     | 0 | 97241486 |
| 8 | ARS-BFGL-NGS-117570    | 0 | 97288061 |
| 8 | Hapmap53171-rs29012580 | 0 | 97338128 |
| 8 | BTB-01067406           | 0 | 97382310 |
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| 8 | Hapmap50544-BTA-102614 | 0 | 97447133 |

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| 8 | BTA-102613-no-rs               | 0 | 97464237  |          |
| 8 | Hapmap48991-BTA-102596         | 0 | 97543154  |          |
| 8 | Hapmap35095-BES4_Contig483_787 | 0 |           | 97684074 |
| 8 | ARS-BFGL-NGS-23360             | 0 | 97717526  |          |
| 8 | ARS-BFGL-NGS-110090            | 0 | 97789154  |          |
| 8 | BTB-01066770                   | 0 | 97834727  |          |
| 8 | Hapmap61015-rs29013523         | 0 | 97865326  |          |
| 8 | Hapmap27367-BTA-102584         | 0 | 97916681  |          |
| 8 | BTB-01066874                   | 0 | 97943027  |          |
| 8 | ARS-BFGL-NGS-101099            | 0 | 97989837  |          |
| 8 | BTB-01066786                   | 0 | 98018790  |          |
| 8 | BTB-01066700                   | 0 | 98056575  |          |
| 8 | Hapmap26439-BTA-153023         | 0 | 98097345  |          |
| 8 | ARS-BFGL-NGS-97584             | 0 | 98175894  |          |
| 8 | Hapmap40882-BTA-109620         | 0 | 98207923  |          |
| 8 | Hapmap42398-BTA-101913         | 0 | 98299383  |          |
| 8 | ARS-BFGL-NGS-57927             | 0 | 98341700  |          |
| 8 | Hapmap40865-BTA-100699         | 0 | 98447210  |          |
| 8 | ARS-BFGL-NGS-101669            | 0 | 98470411  |          |
| 8 | ARS-BFGL-NGS-101347            | 0 | 98510383  |          |
| 8 | ARS-BFGL-NGS-53616             | 0 | 98532984  |          |
| 8 | ARS-BFGL-NGS-64370             | 0 | 98555826  |          |
| 8 | ARS-BFGL-NGS-90460             | 0 | 98615555  |          |
| 8 | BTA-100692-no-rs               | 0 | 98654460  |          |
| 8 | Hapmap26624-BTA-100690         | 0 | 98702541  |          |
| 8 | ARS-BFGL-NGS-24293             | 0 | 98746331  |          |
| 8 | ARS-BFGL-NGS-119329            | 0 | 98811029  |          |
| 8 | Hapmap38716-BTA-100681         | 0 | 98861495  |          |
| 8 | ARS-BFGL-NGS-17358             | 0 | 98881581  |          |
| 8 | Hapmap27189-BTA-152390         | 0 | 98916948  |          |
| 8 | ARS-BFGL-NGS-115812            | 0 | 98967406  |          |
| 8 | ARS-BFGL-NGS-31066             | 0 | 99011307  |          |
| 8 | Hapmap49504-BTA-16110          | 0 | 99051520  |          |
| 8 | Hapmap24689-BTA-154983         | 0 | 99104349  |          |
| 8 | BTA-108253-no-rs               | 0 | 99138604  |          |
| 8 | ARS-BFGL-NGS-24280             | 0 | 99176833  |          |
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| 8 | ARS-BFGL-NGS-118307            | 0 | 99248153  |          |
| 8 | ARS-BFGL-NGS-105709            | 0 | 99331337  |          |
| 8 | ARS-BFGL-NGS-73870             | 0 | 99407829  |          |
| 8 | BTB-00371540                   | 0 | 99458916  |          |
| 8 | ARS-BFGL-NGS-62892             | 0 | 99484529  |          |
| 8 | BTB-00371641                   | 0 | 99527627  |          |
| 8 | BTB-01718952                   | 0 | 99731858  |          |
| 8 | Hapmap55431-rs29009604         | 0 | 99785679  |          |
| 8 | Hapmap50182-BTA-100796         | 0 | 99804172  |          |
| 8 | Hapmap48987-BTA-100795         | 0 | 99848718  |          |
| 8 | BTB-01525081                   | 0 | 99874540  |          |
| 8 | ARS-BFGL-NGS-111632            | 0 | 99899289  |          |
| 8 | BTB-01210282                   | 0 | 99937935  |          |
| 8 | Hapmap58894-rs29013940         | 0 | 99957737  |          |
| 8 | Hapmap48607-BTA-110989         | 0 | 100031298 |          |
| 8 | BTB-01210331                   | 0 | 100061670 |          |
| 8 | ARS-BFGL-NGS-15884             | 0 | 100109540 |          |

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| 8 | Hapmap42807-BTA-110986 | 0         | 100173145 |
| 8 | ARS-BFGL-NGS-82245     | 0         | 100212498 |
| 8 | ARS-BFGL-NGS-38116     | 0         | 100308341 |
| 8 | ARS-BFGL-NGS-38990     | 100379874 |           |
| 8 | BTA-108157-no-rs       | 0         | 100418054 |
| 8 | ARS-BFGL-NGS-115626    | 0         | 100465444 |
| 8 | ARS-BFGL-NGS-117512    | 0         | 100485658 |
| 8 | BTB-01192786           | 0         | 100510939 |
| 8 | ARS-BFGL-NGS-79358     | 0         | 100537840 |
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| 8 | ARS-BFGL-NGS-22161     | 0         | 100630361 |
| 8 | BTB-01193015           | 0         | 100671975 |
| 8 | ARS-BFGL-NGS-34041     | 0         | 100710117 |
| 8 | ARS-BFGL-NGS-34028     | 0         | 100873051 |
| 8 | BTA-85728-no-rs        | 0         | 100901113 |
| 8 | BTB-01377659           | 0         | 100932178 |
| 8 | Hapmap58471-rs29026091 | 0         | 100967241 |
| 8 | ARS-BFGL-NGS-31190     | 101012371 |           |
| 8 | ARS-BFGL-NGS-112179    | 0         | 101044054 |
| 8 | ARS-BFGL-NGS-64084     | 0         | 101135756 |
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| 8 | ARS-BFGL-NGS-111788    | 0         | 101231366 |
| 8 | ARS-BFGL-NGS-99031     | 0         | 101251865 |
| 8 | ARS-BFGL-NGS-28597     | 0         | 101272702 |
| 8 | ARS-BFGL-NGS-116489    | 0         | 101339903 |
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| 8 | ARS-BFGL-NGS-109827    | 0         | 101404929 |
| 8 | BTB-00370321           | 0         | 101446930 |
| 8 | ARS-BFGL-NGS-15712     | 0         | 101498454 |
| 8 | Hapmap58644-rs29010529 | 0         | 101529840 |
| 8 | BTB-00371041           | 0         | 101574067 |
| 8 | BTA-82556-no-rs        | 0         | 101616095 |
| 8 | BTA-107369-no-rs       | 0         | 101683774 |
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| 8 | Hapmap32985-BTA-123025 | 0         | 101875559 |
| 8 | Hapmap27265-BTA-82575  | 0         | 101931438 |
| 8 | Hapmap32826-BTA-146153 | 0         | 101965924 |
| 8 | ARS-BFGL-NGS-50962     | 0         | 102036518 |
| 8 | Hapmap30835-BTA-146159 | 0         | 102104126 |
| 8 | BTB-00371898           | 0         | 102123125 |
| 8 | BTB-00371934           | 0         | 102150739 |
| 8 | ARS-BFGL-NGS-107795    | 0         | 102179525 |
| 8 | BTB-00372041           | 0         | 102270686 |
| 8 | Hapmap39872-BTA-82611  | 0         | 102312465 |
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| 8 | BTB-00372235           | 0         | 102361784 |
| 8 | ARS-BFGL-NGS-109270    | 0         | 102410847 |
| 8 | ARS-BFGL-NGS-85230     | 102451836 |           |
| 8 | BTB-02000674           | 0         | 102484992 |
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| 8 | ARS-BFGL-NGS-34341     | 0         | 102578861 |
| 8 | BTA-82622-no-rs        | 0         | 102608032 |
| 8 | ARS-BFGL-NGS-93539     | 0         | 102664941 |



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| 8 | ARS-BFGL-NGS-116415             | 0         | 102694365 |           |
| 8 | ARS-BFGL-NGS-62681              | 0         | 102728532 |           |
| 8 | Hapmap31443-BTA-146174          | 0         | 102751575 |           |
| 8 | BTB-00372642                    | 0         | 102776706 |           |
| 8 | Hapmap51679-BTA-108591          | 0         | 102831948 |           |
| 8 | BTB-01624308                    | 0         | 102858846 |           |
| 8 | BTB-01624352                    | 0         | 102891951 |           |
| 8 | BTB-00370956                    | 0         | 102920161 |           |
| 8 | BTA-82554-no-rs                 | 0         | 102951187 |           |
| 8 | ARS-BFGL-NGS-33279              | 0         | 102992133 |           |
| 8 | Hapmap36253-SCAFFOLD35099_9605  | 0         |           | 103083474 |
| 8 | BTA-82640-no-rs                 | 0         | 103109649 |           |
| 8 | Hapmap55441-rs29010990          | 0         | 103137122 |           |
| 8 | ARS-BFGL-NGS-40447              | 0         | 103188091 |           |
| 8 | Hapmap40823-BTA-86437           | 0         | 103221633 |           |
| 8 | ARS-BFGL-NGS-103223             | 0         | 103278121 |           |
| 8 | BTA-86433-no-rs                 | 0         | 103305018 |           |
| 8 | Hapmap41664-BTA-86429           | 0         | 103352395 |           |
| 8 | Hapmap38860-BTA-86439           | 0         | 103406058 |           |
| 8 | Hapmap59067-rs29016547          | 0         | 103484427 |           |
| 8 | Hapmap32842-BTA-151355          | 0         | 103526477 |           |
| 8 | BTB-01491979                    | 0         | 103555540 |           |
| 8 | Hapmap34478-BES10_Contig614_291 | 0         |           | 103610418 |
| 8 | Hapmap42019-BTA-97664           | 0         | 103650209 |           |
| 8 | ARS-BFGL-NGS-24915              | 0         | 103679033 |           |
| 8 | Hapmap46882-BTA-82641           | 0         | 103724440 |           |
| 8 | Hapmap39689-BTA-82645           | 0         | 103766102 |           |
| 8 | ARS-BFGL-NGS-42404              | 0         | 103941108 |           |
| 8 | BTA-82403-no-rs                 | 0         | 104011184 |           |
| 8 | BTB-00370058                    | 0         | 104056597 |           |
| 8 | UA-IFASA-6154                   | 0         | 104158107 |           |
| 8 | Hapmap40625-BTA-06412           | 0         | 104220117 |           |
| 8 | Hapmap43119-BTA-07287           | 0         | 104273040 |           |
| 8 | ARS-BFGL-NGS-103332             | 0         | 104340545 |           |
| 8 | Hapmap57802-rs29009571          | 0         | 104383991 |           |
| 8 | ARS-BFGL-NGS-62416              | 0         | 104484489 |           |
| 8 | ARS-BFGL-NGS-106906             | 0         | 104517516 |           |
| 8 | BTB-00369009                    | 0         | 104572171 |           |
| 8 | ARS-BFGL-NGS-79979              | 0         | 104599805 |           |
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| 8 | Hapmap42693-BTA-82654           | 0         | 104701604 |           |
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| 8 | Hapmap39690-BTA-82650           | 0         | 104829510 |           |
| 8 | BTA-82649-no-rs                 | 0         | 104862806 |           |
| 8 | ARS-BFGL-NGS-17671              | 0         | 104884378 |           |
| 8 | ARS-BFGL-NGS-115630             | 0         | 104971314 |           |
| 8 | ARS-BFGL-NGS-96951              | 0         | 105033919 |           |
| 8 | ARS-BFGL-NGS-64795              | 0         | 105124888 |           |
| 8 | ARS-BFGL-NGS-23930              | 105195851 |           |           |
| 8 | Hapmap35194-BES2_Contig467_1067 | 0         |           | 105244069 |
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| 8 | ARS-BFGL-NGS-109887             | 0         | 105345136 |           |
| 8 | ARS-BFGL-NGS-116581             | 0         | 105534772 |           |
| 8 | BTA-82010-no-rs                 | 0         | 105566761 |           |

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| 8 | Hapmap38701-BTA-82008                 | 0 | 105596681 |   |           |
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| 8 | ARS-BFGL-NGS-60416                    | 0 | 105760927 |   |           |
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| 8 | ARS-BFGL-NGS-26530                    | 0 | 105846031 |   |           |
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| 8 | BTB-01972512                          | 0 | 105946838 |   |           |
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| 8 | BTB-00373508                          | 0 | 105999334 |   |           |
| 8 | ARS-BFGL-NGS-100395                   | 0 | 106024730 |   |           |
| 8 | Hapmap48639-BTA-119287                | 0 | 106044814 |   |           |
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| 8 | ARS-BFGL-NGS-39754                    | 0 | 106264025 |   |           |
| 8 | BTB-01257450                          | 0 | 106291686 |   |           |
| 8 | Hapmap48243-BTA-19814                 | 0 | 106349950 |   |           |
| 8 | Hapmap52716-rs29022784                | 0 | 106393609 |   |           |
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| 8 | ARS-BFGL-NGS-69431                    | 0 | 106577108 |   |           |
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| 8 | Hapmap27876-BTA-147931                | 0 | 106648392 |   |           |
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| 8 | BTB-01115500                          | 0 | 106747092 |   |           |
| 8 | Hapmap48509-BTA-88121                 | 0 | 106784491 |   |           |
| 8 | Hapmap57719-rs29018611                | 0 | 106817894 |   |           |
| 8 | BTA-88113-no-rs                       | 0 | 106854431 |   |           |
| 8 | Hapmap41996-BTA-88124                 | 0 | 106914734 |   |           |
| 8 | Hapmap25843-BTA-146186                | 0 | 107107709 |   |           |
| 8 | BTA-07702-no-rs                       | 0 | 107147441 |   |           |
| 8 | BTB-00374060                          | 0 | 107180392 |   |           |
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| 8 | ARS-BFGL-NGS-77930                    | 0 | 107272311 |   |           |
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| 8 | ARS-BFGL-NGS-96026                    | 0 | 107446564 |   |           |
| 8 | ARS-BFGL-NGS-100774                   | 0 | 107489681 |   |           |
| 8 | ARS-BFGL-NGS-113615                   | 0 | 107549097 |   |           |
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| 8 | ARS-BFGL-NGS-76693                    | 0 | 107658181 |   |           |
| 8 | ARS-BFGL-NGS-19963                    | 0 | 107707691 |   |           |
| 8 | ARS-BFGL-NGS-12138                    | 0 | 107756015 |   |           |
| 8 | Hapmap40677-BTA-121871                | 0 | 107821440 |   |           |
| 8 | Hapmap54001-rs29018510                | 0 | 107853193 |   |           |
| 8 | ARS-BFGL-NGS-84974                    | 0 | 107880717 |   |           |

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| 8 | ARS-BFGL-NGS-89781              | 0 | 107908278 |           |
| 8 | ARS-BFGL-NGS-20859              | 0 | 107982568 |           |
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| 8 | ARS-BFGL-NGS-41550              | 0 | 109008801 |           |
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| 8 | ARS-BFGL-NGS-118657             | 0 | 110859506 |           |
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| 8 | ARS-BFGL-NGS-111473             | 0 | 112824694 |           |
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| 8 | ARS-BFGL-NGS-107896             | 0 | 113012644 |           |
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| 8 | ARS-BFGL-NGS-72418              | 0 | 113069687 |           |
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| 8 | ARS-BFGL-NGS-39759     | 0 | 113118348 |
| 8 | ARS-BFGL-NGS-106379    | 0 | 113159018 |
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| 8 | ARS-BFGL-NGS-63329     | 0 | 113252230 |
| 8 | ARS-BFGL-NGS-104059    | 0 | 113301368 |
| 8 | ARS-BFGL-NGS-26013     | 0 | 113320764 |
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| 9 | ARS-BFGL-NGS-110614    | 0 | 123525    |
| 9 | ARS-BFGL-NGS-32382     | 0 | 594116    |
| 9 | BTB-00377605           | 0 | 640228    |
| 9 | ARS-BFGL-NGS-118118    | 0 | 670777    |
| 9 | Hapmap44660-BTA-85304  | 0 | 705560    |
| 9 | BTB-00377669           | 0 | 728696    |
| 9 | ARS-BFGL-NGS-49213     | 0 | 764836    |
| 9 | ARS-BFGL-NGS-79944     | 0 | 821062    |
| 9 | Hapmap38580-BTA-122605 | 0 | 918988    |
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| 9 | Hapmap41734-BTA-103209 | 0 | 1333028   |
| 9 | BTA-103211-no-rs       | 0 | 1363468   |
| 9 | BTB-00478134           | 0 | 1402494   |
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| 9 | BTB-01126763           | 0 | 1488019   |
| 9 | Hapmap28625-BTA-149369 | 0 | 1540910   |
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| 9 | BTA-85135-no-rs        | 0 | 1814610   |
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| 9 | ARS-BFGL-NGS-104763    | 0 | 1859781   |
| 9 | BTA-118469-no-rs       | 0 | 1888132   |
| 9 | BTB-01752812           | 0 | 1926314   |
| 9 | BTB-02036754           | 0 | 1952163   |
| 9 | ARS-BFGL-NGS-91989     | 0 | 1991632   |
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| 9 | Hapmap38946-BTA-23689  | 0 | 2637837   |
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| 9 | UA-IFASA-5710                  | 0 | 2728202 |         |
| 9 | BTB-01573029                   | 0 | 2763068 |         |
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| 9 | ARS-BFGL-NGS-29404             | 0 | 2934964 |         |
| 9 | BTB-00378581                   | 0 | 2981577 |         |
| 9 | BTB-00378544                   | 0 | 3029814 |         |
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| 9 | Hapmap33371-BTA-147485         | 0 | 3764510 |         |
| 9 | BTA-86675-no-rs                | 0 | 3971122 |         |
| 9 | BTA-18499-no-rs                | 0 | 4000045 |         |
| 9 | BTA-18498-no-rs                | 0 | 4050528 |         |
| 9 | BTB-02033050                   | 0 | 4075960 |         |
| 9 | BTA-83392-no-rs                | 0 | 4130601 |         |
| 9 | Hapmap49335-BTA-83363          | 0 | 4199056 |         |
| 9 | Hapmap32419-BTA-83359          | 0 | 4210428 |         |
| 9 | BTA-94256-no-rs                | 0 | 4239500 |         |
| 9 | Hapmap44492-BTA-88469          | 0 | 4283263 |         |
| 9 | BTB-01508741                   | 0 | 4339749 |         |
| 9 | Hapmap48549-BTA-99373          | 0 | 4386831 |         |
| 9 | ARS-BFGL-NGS-42521             | 0 | 4439872 |         |
| 9 | BTB-01487164                   | 0 | 4476378 |         |
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| 9 | ARS-BFGL-NGS-30289             | 0 | 4615023 |         |
| 9 | ARS-BFGL-NGS-13958             | 0 | 4648486 |         |
| 9 | ARS-BFGL-NGS-74232             | 0 | 4693848 |         |
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| 9 | BTB-00378748                   | 0 | 5251004 |         |
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| 9 | Hapmap26163-BTA-151864 | 0       | 5334828 |
| 9 | Hapmap27763-BTA-151852 | 0       | 5394763 |
| 9 | BTA-12989-no-rs        | 0       | 5465850 |
| 9 | BTB-01800430           | 0       | 5632136 |
| 9 | BTB-01800374           | 0       | 5653994 |
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| 9 | ARS-BFGL-NGS-105604    | 0       | 5981648 |
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| 9 | BTB-01427837           | 0       | 6110712 |
| 9 | Hapmap51346-BTA-89239  | 0       | 6237818 |
| 9 | BTB-01405916           | 0       | 6262126 |
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| 9 | ARS-BFGL-NGS-35259     | 0       | 6336040 |
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| 9 | Hapmap39122-BTA-91625  | 0       | 6820766 |
| 9 | Hapmap55055-rs29018260 | 0       | 6845938 |
| 9 | Hapmap38446-BTA-91621  | 0       | 6877256 |
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| 9 | ARS-BFGL-NGS-40446     | 0       | 7602607 |
| 9 | ARS-BFGL-NGS-29759     | 0       | 7645969 |
| 9 | ARS-BFGL-NGS-45135     | 0       | 7745901 |
| 9 | ARS-BFGL-NGS-19735     | 0       | 7992599 |
| 9 | ARS-BFGL-NGS-87203     | 0       | 8161026 |
| 9 | ARS-BFGL-NGS-26037     | 0       | 8189195 |
| 9 | Hapmap51197-BTA-25294  | 0       | 8245432 |
| 9 | BTA-25293-no-rs        | 0       | 8265484 |
| 9 | BTA-25295-no-rs        | 0       | 8303600 |
| 9 | Hapmap38146-BTA-25285  | 0       | 8329551 |
| 9 | BTA-83714-no-rs        | 0       | 8355654 |
| 9 | Hapmap43790-BTA-121886 | 0       | 8425284 |
| 9 | ARS-BFGL-NGS-20840     | 8466913 |         |
| 9 | ARS-BFGL-NGS-115110    | 0       | 8520816 |
| 9 | ARS-BFGL-NGS-111265    | 0       | 8547755 |
| 9 | BTA-83825-no-rs        | 0       | 8645936 |
| 9 | Hapmap11707-BTA-83854  | 0       | 8668733 |
| 9 | ARS-BFGL-NGS-106714    | 0       | 8720608 |
| 9 | BTA-83934-no-rs        | 0       | 8744696 |
| 9 | ARS-BFGL-NGS-85367     | 0       | 8815237 |
| 9 | ARS-BFGL-NGS-26285     | 0       | 8858542 |
| 9 | BTA-83978-no-rs        | 0       | 8906316 |
| 9 | ARS-BFGL-NGS-72307     | 0       | 8933985 |
| 9 | ARS-BFGL-NGS-113730    | 0       | 8955384 |
| 9 | ARS-BFGL-NGS-114374    | 0       | 8997419 |

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| 9 | ARS-BFGL-NGS-117804              | 0        | 9018195  |          |
| 9 | BTA-84044-no-rs                  | 0        | 9185180  |          |
| 9 | Hapmap38916-BTA-84073            | 0        | 9372653  |          |
| 9 | UA-IFASA-2626                    | 0        | 9396200  |          |
| 9 | ARS-BFGL-NGS-77146               | 0        | 9428460  |          |
| 9 | ARS-BFGL-NGS-100620              | 0        | 9517646  |          |
| 9 | Hapmap57776-rs29013550           | 0        | 9555330  |          |
| 9 | ARS-BFGL-NGS-45380               | 9660464  |          |          |
| 9 | Hapmap27457-BTA-159047           | 0        | 9709261  |          |
| 9 | ARS-BFGL-NGS-85616               | 0        | 9815418  |          |
| 9 | ARS-BFGL-NGS-53390               | 9863084  |          |          |
| 9 | ARS-BFGL-NGS-110800              | 0        | 9903240  |          |
| 9 | Hapmap41153-BTA-110528           | 0        | 10134275 |          |
| 9 | ARS-BFGL-NGS-15799               | 0        | 10180171 |          |
| 9 | ARS-BFGL-NGS-57285               | 0        | 10343145 |          |
| 9 | ARS-BFGL-NGS-37889               | 0        | 10370879 |          |
| 9 | ARS-BFGL-NGS-64801               | 0        | 10416250 |          |
| 9 | ARS-BFGL-NGS-93995               | 0        | 10453697 |          |
| 9 | ARS-BFGL-NGS-15511               | 0        | 10492302 |          |
| 9 | BTA-83229-no-rs                  | 0        | 10569900 |          |
| 9 | ARS-BFGL-NGS-110691              | 0        | 10726411 |          |
| 9 | Hapmap36170-SCAFFOLD200128_32745 | 0        |          | 10765698 |
| 9 | ARS-BFGL-NGS-10202               | 0        | 10838261 |          |
| 9 | BTA-03986-rs29011742             | 0        | 11008498 |          |
| 9 | BTA-28590-no-rs                  | 0        | 11178996 |          |
| 9 | ARS-BFGL-NGS-14697               | 0        | 11263819 |          |
| 9 | BTA-28596-no-rs                  | 0        | 11288423 |          |
| 9 | ARS-BFGL-NGS-16023               | 0        | 11390953 |          |
| 9 | BTA-93295-no-rs                  | 0        | 11698024 |          |
| 9 | ARS-BFGL-NGS-26204               | 0        | 11733281 |          |
| 9 | BTB-01438072                     | 0        | 11782032 |          |
| 9 | Hapmap40031-BTA-93288            | 0        | 11835351 |          |
| 9 | BTB-01438088                     | 0        | 11867269 |          |
| 9 | ARS-BFGL-NGS-50700               | 11890046 |          |          |
| 9 | Hapmap49802-BTA-93290            | 0        | 11937392 |          |
| 9 | BTB-01181673                     | 0        | 11972126 |          |
| 9 | ARS-BFGL-NGS-84006               | 0        | 12014469 |          |
| 9 | BTA-105963-no-rs                 | 0        | 12064517 |          |
| 9 | BTB-00379889                     | 0        | 12112722 |          |
| 9 | BTA-84589-no-rs                  | 0        | 12155305 |          |
| 9 | ARS-BFGL-NGS-57235               | 0        | 12234440 |          |
| 9 | ARS-BFGL-NGS-115296              | 0        | 12269923 |          |
| 9 | Hapmap27414-BTA-146260           | 0        | 12317031 |          |
| 9 | Hapmap48495-BTA-84685            | 0        | 12435776 |          |
| 9 | ARS-BFGL-NGS-113087              | 0        | 12503984 |          |
| 9 | BTA-84727-no-rs                  | 0        | 12524552 |          |
| 9 | Hapmap60175-rs29026961           | 0        | 12551343 |          |
| 9 | BTA-84773-no-rs                  | 0        | 12632125 |          |
| 9 | ARS-BFGL-NGS-59162               | 0        | 12707144 |          |
| 9 | Hapmap44300-BTA-84850            | 0        | 12763747 |          |
| 9 | ARS-BFGL-NGS-86047               | 0        | 12785965 |          |
| 9 | ARS-BFGL-NGS-35837               | 0        | 12837033 |          |
| 9 | ARS-BFGL-NGS-24145               | 0        | 12860193 |          |
| 9 | ARS-BFGL-NGS-101844              | 0        | 13292880 |          |



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| 9 | ARS-BFGL-NGS-10298              | 0        | 13418475 |          |
| 9 | ARS-BFGL-NGS-35138              | 0        | 13502951 |          |
| 9 | ARS-BFGL-NGS-80422              | 0        | 13630638 |          |
| 9 | BTB-01365165                    | 0        | 13660340 |          |
| 9 | BTB-01365157                    | 0        | 13764034 |          |
| 9 | ARS-BFGL-NGS-73513              | 0        | 13806650 |          |
| 9 | ARS-BFGL-NGS-31200              | 0        | 13835430 |          |
| 9 | Hapmap33607-BTA-163620          | 0        | 13886215 |          |
| 9 | BTA-115251-no-rs                | 0        | 13945212 |          |
| 9 | ARS-BFGL-NGS-21226              | 0        | 13966255 |          |
| 9 | ARS-BFGL-NGS-24708              | 0        | 14008759 |          |
| 9 | BTB-01644235                    | 0        | 14020737 |          |
| 9 | BTB-01644216                    | 0        | 14056685 |          |
| 9 | ARS-BFGL-NGS-72820              | 0        | 14091890 |          |
| 9 | BTB-01233331                    | 0        | 14132257 |          |
| 9 | BTB-01233147                    | 0        | 14194506 |          |
| 9 | BTA-91270-no-rs                 | 0        | 14216589 |          |
| 9 | BTA-115781-no-rs                | 0        | 14249791 |          |
| 9 | BTB-01715634                    | 0        | 14308744 |          |
| 9 | Hapmap33826-BES2_Contig266_1111 | 0        |          | 14340570 |
| 9 | ARS-BFGL-NGS-17755              | 0        | 14363128 |          |
| 9 | BTB-01828457                    | 0        | 14407679 |          |
| 9 | ARS-BFGL-NGS-14740              | 0        | 14436985 |          |
| 9 | BTB-01653669                    | 0        | 14489468 |          |
| 9 | BTA-87129-no-rs                 | 0        | 14513289 |          |
| 9 | BTA-86284-no-rs                 | 0        | 14535706 |          |
| 9 | BTB-00382301                    | 0        | 14564907 |          |
| 9 | BTB-01756385                    | 0        | 14642429 |          |
| 9 | BTB-01756422                    | 0        | 14683379 |          |
| 9 | ARS-BFGL-NGS-117900             | 0        | 14745626 |          |
| 9 | BTB-00381928                    | 0        | 14767890 |          |
| 9 | BTA-85297-no-rs                 | 0        | 14794389 |          |
| 9 | BTB-00381859                    | 0        | 14817532 |          |
| 9 | BTB-00381760                    | 0        | 14880487 |          |
| 9 | UA-IFASA-5793                   | 0        | 14917436 |          |
| 9 | BTB-00381706                    | 0        | 14936316 |          |
| 9 | BTA-85289-no-rs                 | 0        | 14961721 |          |
| 9 | ARS-BFGL-NGS-74565              | 0        | 14989177 |          |
| 9 | ARS-BFGL-NGS-42721              | 0        | 15029445 |          |
| 9 | BTA-85287-no-rs                 | 0        | 15057179 |          |
| 9 | ARS-BFGL-NGS-116690             | 0        | 15110882 |          |
| 9 | BTA-85266-no-rs                 | 0        | 15139261 |          |
| 9 | BTA-85265-no-rs                 | 0        | 15164082 |          |
| 9 | ARS-BFGL-NGS-116510             | 0        | 15224033 |          |
| 9 | BTA-103750-no-rs                | 0        | 15249126 |          |
| 9 | ARS-BFGL-NGS-39643              | 0        | 15269197 |          |
| 9 | Hapmap27634-BTA-158717          | 0        | 15312685 |          |
| 9 | ARS-BFGL-NGS-13570              | 15340558 |          |          |
| 9 | ARS-BFGL-NGS-14739              | 0        | 15417248 |          |
| 9 | BTB-01576268                    | 0        | 15440446 |          |
| 9 | Hapmap54560-rs29009707          | 0        | 15465760 |          |
| 9 | BTB-00380240                    | 0        | 15553873 |          |
| 9 | ARS-BFGL-NGS-64316              | 0        | 15591108 |          |
| 9 | Hapmap44930-BTA-109958          | 0        | 15640590 |          |

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| 9 | ARS-BFGL-NGS-105703    | 0 | 15672990 |
| 9 | BTB-01643298           | 0 | 15704212 |
| 9 | Hapmap51326-BTA-85047  | 0 | 15737060 |
| 9 | Hapmap57341-rs29010513 | 0 | 15767136 |
| 9 | BTB-00380322           | 0 | 15802561 |
| 9 | BTB-00380334           | 0 | 15820879 |
| 9 | UA-IFASA-5778          | 0 | 15876356 |
| 9 | BTA-85119-no-rs        | 0 | 15903249 |
| 9 | BTB-00380633           | 0 | 15966478 |
| 9 | Hapmap54831-rs29027235 | 0 | 15991964 |
| 9 | BTB-00380751           | 0 | 16023448 |
| 9 | BTB-00380899           | 0 | 16046958 |
| 9 | ARS-BFGL-NGS-58241     | 0 | 16070824 |
| 9 | BTB-01407863           | 0 | 16119778 |
| 9 | BTB-01407900           | 0 | 16142291 |
| 9 | BTA-91769-no-rs        | 0 | 16177638 |
| 9 | Hapmap33482-BTA-138844 | 0 | 16191221 |
| 9 | BTB-00932823           | 0 | 16201743 |
| 9 | Hapmap49346-BTA-85236  | 0 | 16231315 |
| 9 | BTB-01407982           | 0 | 16280902 |
| 9 | ARS-BFGL-NGS-26226     | 0 | 16342252 |
| 9 | Hapmap33218-BTA-148575 | 0 | 16364140 |
| 9 | INRA-614               | 0 | 16414903 |
| 9 | ARS-BFGL-NGS-13737     | 0 | 16564251 |
| 9 | ARS-BFGL-NGS-70421     | 0 | 16573115 |
| 9 | BTB-01632577           | 0 | 16613842 |
| 9 | BTB-01842145           | 0 | 16658980 |
| 9 | Hapmap27449-BTA-157147 | 0 | 16685512 |
| 9 | BTB-02052278           | 0 | 16768069 |
| 9 | BTB-01874104           | 0 | 16801734 |
| 9 | Hapmap25309-BTA-153368 | 0 | 16834975 |
| 9 | BTB-01556111           | 0 | 16861043 |
| 9 | BTB-01556197           | 0 | 16892513 |
| 9 | BTB-01612185           | 0 | 16931842 |
| 9 | BTB-01612195           | 0 | 16952295 |
| 9 | BTB-00381290           | 0 | 17007030 |
| 9 | BTA-85264-no-rs        | 0 | 17036083 |
| 9 | ARS-BFGL-NGS-95470     | 0 | 17068501 |
| 9 | ARS-BFGL-NGS-106070    | 0 | 17142289 |
| 9 | ARS-BFGL-NGS-46439     | 0 | 17242764 |
| 9 | ARS-BFGL-NGS-15012     | 0 | 17298279 |
| 9 | BTA-85259-no-rs        | 0 | 17386067 |
| 9 | ARS-BFGL-NGS-36670     | 0 | 17610541 |
| 9 | Hapmap53320-rs29018912 | 0 | 17726910 |
| 9 | Hapmap50274-BTA-18417  | 0 | 17814688 |
| 9 | Hapmap46780-BTA-18414  | 0 | 17864398 |
| 9 | Hapmap44430-BTA-94402  | 0 | 17963354 |
| 9 | BTA-115038-no-rs       | 0 | 18008701 |
| 9 | Hapmap47187-BTA-115042 | 0 | 18046372 |
| 9 | ARS-BFGL-NGS-101978    | 0 | 18123535 |
| 9 | ARS-BFGL-NGS-45684     | 0 | 18291643 |
| 9 | ARS-BFGL-NGS-78782     | 0 | 18327205 |
| 9 | Hapmap44304-BTA-87076  | 0 | 18372617 |
| 9 | Hapmap43410-BTA-94414  | 0 | 18423364 |

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| 9 | Hapmap46542-BTA-94412  | 0        | 18790503 |
| 9 | Hapmap43732-BTA-94409  | 0        | 18830838 |
| 9 | BTA-94407-no-rs        | 0        | 18862613 |
| 9 | ARS-BFGL-NGS-104719    | 0        | 18955509 |
| 9 | Hapmap42110-BTA-122117 | 0        | 19005457 |
| 9 | ARS-BFGL-NGS-115705    | 0        | 19040720 |
| 9 | ARS-BFGL-NGS-46104     | 0        | 19095437 |
| 9 | ARS-BFGL-NGS-14391     | 0        | 19116906 |
| 9 | Hapmap38885-BTA-16235  | 0        | 19172224 |
| 9 | ARS-BFGL-NGS-17500     | 19269845 |          |
| 9 | ARS-BFGL-NGS-70461     | 0        | 19318054 |
| 9 | ARS-BFGL-NGS-15193     | 0        | 19436768 |
| 9 | Hapmap48666-BTA-16236  | 0        | 19475905 |
| 9 | ARS-BFGL-NGS-20366     | 0        | 19499043 |
| 9 | ARS-BFGL-NGS-26075     | 0        | 19578621 |
| 9 | UA-IFASA-1686          | 0        | 19649248 |
| 9 | BTA-115573-no-rs       | 0        | 19702063 |
| 9 | Hapmap47550-BTA-25655  | 0        | 19774304 |
| 9 | Hapmap50840-BTA-99449  | 0        | 19876712 |
| 9 | BTA-99448-no-rs        | 0        | 19896087 |
| 9 | ARS-BFGL-NGS-17690     | 0        | 19937462 |
| 9 | BTA-85309-no-rs        | 0        | 20088776 |
| 9 | ARS-BFGL-NGS-98828     | 0        | 20117983 |
| 9 | Hapmap58910-rs29012613 | 0        | 20171743 |
| 9 | ARS-BFGL-NGS-108555    | 0        | 20305087 |
| 9 | Hapmap25659-BTA-94623  | 0        | 20347622 |
| 9 | BTA-85319-no-rs        | 0        | 20356212 |
| 9 | ARS-BFGL-NGS-114393    | 0        | 20446443 |
| 9 | BTA-19490-no-rs        | 0        | 20558713 |
| 9 | Hapmap43805-BTA-19491  | 0        | 20588432 |
| 9 | Hapmap31445-BTA-146290 | 0        | 20623338 |
| 9 | BTB-00382415           | 0        | 20645676 |
| 9 | Hapmap25287-BTA-146291 | 0        | 20677673 |
| 9 | BTB-01678771           | 0        | 20734430 |
| 9 | Hapmap27670-BTA-83067  | 0        | 20884113 |
| 9 | BTB-01990582           | 0        | 20937396 |
| 9 | BTB-01921442           | 0        | 20950546 |
| 9 | BTB-01964666           | 0        | 21030751 |
| 9 | BTA-86792-no-rs        | 0        | 21059107 |
| 9 | ARS-BFGL-BAC-35400     | 0        | 21165167 |
| 9 | BTB-01094964           | 0        | 21264060 |
| 9 | BTB-01095008           | 0        | 21289328 |
| 9 | BTA-20861-no-rs        | 0        | 21339912 |
| 9 | Hapmap42868-BTA-20866  | 0        | 21420138 |
| 9 | BTB-01095108           | 0        | 21457536 |
| 9 | BTB-01095154           | 0        | 21490009 |
| 9 | BTB-01095261           | 0        | 21601758 |
| 9 | BTB-01714079           | 0        | 21652331 |
| 9 | Hapmap40657-BTA-115707 | 0        | 21698685 |
| 9 | ARS-BFGL-BAC-35397     | 0        | 21734950 |
| 9 | ARS-BFGL-NGS-56480     | 21780613 |          |
| 9 | BTB-01985049           | 0        | 21827423 |
| 9 | BTB-00384592           | 0        | 21869336 |
| 9 | BTB-00384566           | 0        | 21915719 |

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| 9 | Hapmap51501-BTA-83079          | 0 | 22059097 |  |
| 9 | BTB-00384442                   | 0 | 22096200 |  |
| 9 | BTB-00384311                   | 0 | 22158096 |  |
| 9 | BTB-00384287                   | 0 | 22179702 |  |
| 9 | BTB-00382945                   | 0 | 22201684 |  |
| 9 | BTB-00382893                   | 0 | 22223425 |  |
| 9 | Hapmap43708-BTA-85337          | 0 | 22281170 |  |
| 9 | Hapmap44149-BTA-85336          | 0 | 22306417 |  |
| 9 | ARS-BFGL-NGS-55693             | 0 | 22367935 |  |
| 9 | ARS-BFGL-NGS-14741             | 0 | 22396640 |  |
| 9 | BTB-00383082                   | 0 | 22434577 |  |
| 9 | Hapmap38454-BTA-08591          | 0 | 22473669 |  |
| 9 | ARS-BFGL-NGS-58057             | 0 | 22556896 |  |
| 9 | BTB-02006729                   | 0 | 22567113 |  |
| 9 | ARS-BFGL-NGS-24453             | 0 | 22608528 |  |
| 9 | ARS-BFGL-NGS-22602             | 0 | 22652013 |  |
| 9 | Hapmap42728-BTA-92545          | 0 | 22706114 |  |
| 9 | BTA-26794-no-rs                | 0 | 22734454 |  |
| 9 | BTB-01348232                   | 0 | 22755204 |  |
| 9 | BTA-26796-no-rs                | 0 | 22816140 |  |
| 9 | ARS-BFGL-NGS-104704            | 0 | 22843876 |  |
| 9 | BTB-00383268                   | 0 | 22864414 |  |
| 9 | Hapmap52337-rs29022325         | 0 | 22892355 |  |
| 9 | BTB-00383200                   | 0 | 22919235 |  |
| 9 | Hapmap39044-BTA-85348          | 0 | 22961361 |  |
| 9 | ARS-BFGL-NGS-61979             | 0 | 23001645 |  |
| 9 | BTA-85350-no-rs                | 0 | 23037864 |  |
| 9 | BTB-00383473                   | 0 | 23069571 |  |
| 9 | Hapmap54302-rs29013643         | 0 | 23148211 |  |
| 9 | BTA-85354-no-rs                | 0 | 23185304 |  |
| 9 | ARS-BFGL-NGS-55463             | 0 | 23224626 |  |
| 9 | ARS-BFGL-NGS-119840            | 0 | 23286236 |  |
| 9 | ARS-BFGL-NGS-74851             | 0 | 23322608 |  |
| 9 | ARS-BFGL-NGS-108532            | 0 | 23392829 |  |
| 9 | BTB-01689031                   | 0 | 23470934 |  |
| 9 | Hapmap40261-BTA-113827         | 0 | 23517815 |  |
| 9 | BTB-00383772                   | 0 | 23538211 |  |
| 9 | BTB-00383781                   | 0 | 23563789 |  |
| 9 | BTA-83045-no-rs                | 0 | 23608920 |  |
| 9 | ARS-BFGL-NGS-10167             | 0 | 23630089 |  |
| 9 | ARS-BFGL-NGS-76440             | 0 | 23667082 |  |
| 9 | ARS-BFGL-NGS-13711             | 0 | 23716063 |  |
| 9 | ARS-BFGL-NGS-109816            | 0 | 23766667 |  |
| 9 | BTB-01320781                   | 0 | 23785037 |  |
| 9 | ARS-BFGL-NGS-115008            | 0 | 23828744 |  |
| 9 | Hapmap34256-BES9_Contig132_328 | 0 | 23855406 |  |
| 9 | ARS-BFGL-NGS-113750            | 0 | 23887506 |  |
| 9 | Hapmap60820-rs29014647         | 0 | 23907934 |  |
| 9 | Hapmap46562-BTA-28711          | 0 | 23944303 |  |
| 9 | BTB-01362150                   | 0 | 24024654 |  |
| 9 | BTB-01362144                   | 0 | 24046698 |  |
| 9 | BTB-01362120                   | 0 | 24079580 |  |
| 9 | ARS-BFGL-NGS-69657             | 0 | 24183775 |  |
| 9 | ARS-BFGL-NGS-44790             | 0 | 24272399 |  |

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| 9 | BTB-01072640                     | 0 | 24369582 |          |
| 9 | BTB-01072719                     | 0 | 24423856 |          |
| 9 | ARS-BFGL-NGS-31500               | 0 | 24447463 |          |
| 9 | BTB-01072759                     | 0 | 24473537 |          |
| 9 | BTB-01072717                     | 0 | 24495363 |          |
| 9 | BTB-01072905                     | 0 | 24573723 |          |
| 9 | BTB-01072969                     | 0 | 24623778 |          |
| 9 | BTB-01072997                     | 0 | 24667792 |          |
| 9 | Hapmap32656-BTA-26264            | 0 | 24726292 |          |
| 9 | BTB-01073083                     | 0 | 24782825 |          |
| 9 | BTB-01716044                     | 0 | 24875114 |          |
| 9 | BTB-01716039                     | 0 | 24898875 |          |
| 9 | BTB-00385217                     | 0 | 24949214 |          |
| 9 | BTB-00385381                     | 0 | 24979356 |          |
| 9 | Hapmap59909-rs29013870           | 0 | 25034961 |          |
| 9 | ARS-BFGL-NGS-27427               | 0 | 25060966 |          |
| 9 | BTA-83093-no-rs                  | 0 | 25126494 |          |
| 9 | BTB-02058641                     | 0 | 25158976 |          |
| 9 | BTB-02020793                     | 0 | 25185694 |          |
| 9 | BTB-00384715                     | 0 | 25277598 |          |
| 9 | BTB-00384619                     | 0 | 25302351 |          |
| 9 | Hapmap47111-BTA-83104            | 0 | 25359074 |          |
| 9 | BTB-00385685                     | 0 | 25408468 |          |
| 9 | ARS-BFGL-NGS-70545               | 0 | 25431900 |          |
| 9 | BTA-83107-no-rs                  | 0 | 25459892 |          |
| 9 | BTB-00385823                     | 0 | 25482899 |          |
| 9 | Hapmap39691-BTA-83109            | 0 | 25503367 |          |
| 9 | Hapmap50794-BTA-83112            | 0 | 25583572 |          |
| 9 | UA-IFASA-6324                    | 0 | 25649959 |          |
| 9 | Hapmap53101-rs29017323           | 0 | 25687858 |          |
| 9 | BTA-83125-no-rs                  | 0 | 25707960 |          |
| 9 | Hapmap32079-BTA-146364           | 0 | 25755182 |          |
| 9 | ARS-BFGL-NGS-83466               | 0 | 25793691 |          |
| 9 | BTB-00386041                     | 0 | 25852948 |          |
| 9 | BTA-100744-no-rs                 | 0 | 26009951 |          |
| 9 | ARS-BFGL-NGS-21958               | 0 | 26089739 |          |
| 9 | Hapmap53373-rs29012689           | 0 | 26110323 |          |
| 9 | ARS-BFGL-NGS-79982               | 0 | 26179360 |          |
| 9 | Hapmap43070-BTA-83139            | 0 | 26202892 |          |
| 9 | BTA-83137-no-rs                  | 0 | 26228944 |          |
| 9 | ARS-BFGL-NGS-91263               | 0 | 26262054 |          |
| 9 | ARS-BFGL-NGS-65224               | 0 | 26295194 |          |
| 9 | ARS-BFGL-NGS-65341               | 0 | 26331911 |          |
| 9 | ARS-BFGL-NGS-117371              | 0 | 26353585 |          |
| 9 | ARS-BFGL-NGS-115754              | 0 | 26386695 |          |
| 9 | ARS-BFGL-NGS-116108              | 0 | 26474805 |          |
| 9 | Hapmap35889-SCAFFOLD32492_3890   | 0 |          | 26643027 |
| 9 | ARS-BFGL-NGS-105440              | 0 | 26678862 |          |
| 9 | ARS-BFGL-NGS-32323               | 0 | 26785284 |          |
| 9 | BTB-00386062                     | 0 | 26817701 |          |
| 9 | Hapmap34403-BES10_Contig555_1400 | 0 |          | 26847057 |
| 9 | BTB-00386055                     | 0 | 26881881 |          |
| 9 | ARS-BFGL-NGS-37539               | 0 | 26959103 |          |
| 9 | Hapmap31053-BTA-111664           | 0 | 27017136 |          |

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| 9 | BTA-95805-no-rs        | 0 | 27102339 |
| 9 | BTB-01468350           | 0 | 27133410 |
| 9 | BTB-01468298           | 0 | 27165814 |
| 9 | BTA-95806-no-rs        | 0 | 27272926 |
| 9 | BTB-01468196           | 0 | 27308839 |
| 9 | Hapmap38570-BTA-112517 | 0 | 27356886 |
| 9 | ARS-BFGL-NGS-44031     | 0 | 27450622 |
| 9 | BTB-01319745           | 0 | 27487188 |
| 9 | BTB-01319772           | 0 | 27516531 |
| 9 | ARS-BFGL-NGS-118280    | 0 | 27585044 |
| 9 | Hapmap32811-BTA-140056 | 0 | 27616403 |
| 9 | Hapmap41922-BTA-63988  | 0 | 27684090 |
| 9 | BTA-101467-no-rs       | 0 | 27716491 |
| 9 | BTB-01534273           | 0 | 27741354 |
| 9 | ARS-BFGL-NGS-79864     | 0 | 27797201 |
| 9 | BTB-01932422           | 0 | 27946591 |
| 9 | BTB-01819195           | 0 | 27965979 |
| 9 | ARS-BFGL-NGS-21973     | 0 | 27991255 |
| 9 | BTB-01861211           | 0 | 28018172 |
| 9 | BTB-01861226           | 0 | 28043836 |
| 9 | BTB-01575668           | 0 | 28070840 |
| 9 | BTB-01575618           | 0 | 28108927 |
| 9 | ARS-BFGL-NGS-93119     | 0 | 28149131 |
| 9 | Hapmap50582-BTA-117173 | 0 | 28191512 |
| 9 | BTB-01083056           | 0 | 28211917 |
| 9 | ARS-BFGL-NGS-45002     | 0 | 28257531 |
| 9 | ARS-BFGL-NGS-39316     | 0 | 28315034 |
| 9 | ARS-BFGL-NGS-33303     | 0 | 28337856 |
| 9 | ARS-BFGL-NGS-58796     | 0 | 28400169 |
| 9 | Hapmap26192-BTA-157960 | 0 | 28447812 |
| 9 | Hapmap23440-BTA-157955 | 0 | 28493485 |
| 9 | Hapmap39984-BTA-21408  | 0 | 28538817 |
| 9 | ARS-BFGL-NGS-103124    | 0 | 28617193 |
| 9 | BTB-00386408           | 0 | 28662223 |
| 9 | ARS-BFGL-NGS-389       | 0 | 28684193 |
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| 9 | Hapmap27569-BTA-117153 | 0 | 28784218 |
| 9 | DPI-30                 | 0 | 28836299 |
| 9 | ARS-BFGL-NGS-15823     | 0 | 28887462 |
| 9 | Hapmap23169-BTA-83176  | 0 | 28925858 |
| 9 | ARS-BFGL-NGS-110238    | 0 | 28954785 |
| 9 | BTB-01082488           | 0 | 28975512 |
| 9 | BTB-00386842           | 0 | 28995927 |
| 9 | BTB-00386854           | 0 | 29029183 |
| 9 | BTB-00386956           | 0 | 29049570 |
| 9 | BTB-01769497           | 0 | 29102160 |
| 9 | BTB-00386978           | 0 | 29149576 |
| 9 | BTB-00387033           | 0 | 29200566 |
| 9 | BTB-00387060           | 0 | 29244257 |
| 9 | BTB-00387068           | 0 | 29292408 |
| 9 | Hapmap48938-BTA-90472  | 0 | 29676954 |
| 9 | BTA-90471-no-rs        | 0 | 29698883 |
| 9 | BTB-00387552           | 0 | 29755031 |
| 9 | ARS-BFGL-NGS-26323     | 0 | 29782038 |

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| 9 | Hapmap45223-BTA-86178          | 0 | 29852432 |          |  |
| 9 | ARS-BFGL-NGS-102239            | 0 | 29886258 |          |  |
| 9 | UA-IFASA-6188                  | 0 | 29910981 |          |  |
| 9 | BTB-00387307                   | 0 | 29948088 |          |  |
| 9 | BTB-01887882                   | 0 | 29977009 |          |  |
| 9 | BTB-01887905                   | 0 | 30006014 |          |  |
| 9 | Hapmap58501-rs29017499         | 0 | 30134814 |          |  |
| 9 | BTA-83186-no-rs                | 0 | 30175954 |          |  |
| 9 | Hapmap24843-BTA-146394         | 0 | 30229901 |          |  |
| 9 | BTA-90733-no-rs                | 0 | 30263355 |          |  |
| 9 | Hapmap51503-BTA-83211          | 0 | 30398503 |          |  |
| 9 | Hapmap26969-BTA-146406         | 0 | 30452965 |          |  |
| 9 | BTB-01209657                   | 0 | 30576191 |          |  |
| 9 | BTB-01708062                   | 0 | 30612205 |          |  |
| 9 | BTB-01708014                   | 0 | 30638895 |          |  |
| 9 | BTB-01746493                   | 0 | 30713089 |          |  |
| 9 | BTB-01746479                   | 0 | 30739761 |          |  |
| 9 | BTB-01444218                   | 0 | 30764991 |          |  |
| 9 | BTB-01444248                   | 0 | 30790689 |          |  |
| 9 | BTB-01444472                   | 0 | 30851787 |          |  |
| 9 | Hapmap34230-BES4_Contig184_623 | 0 |          | 30879351 |  |
| 9 | BTB-01444539                   | 0 | 30966432 |          |  |
| 9 | BTB-01614182                   | 0 | 31043707 |          |  |
| 9 | BTB-01614174                   | 0 | 31067189 |          |  |
| 9 | BTB-01768682                   | 0 | 31116835 |          |  |
| 9 | BTB-01685265                   | 0 | 31294046 |          |  |
| 9 | BTA-113348-no-rs               | 0 | 31327903 |          |  |
| 9 | Hapmap51344-BTA-88886          | 0 | 31370192 |          |  |
| 9 | BTB-02047616                   | 0 | 31394607 |          |  |
| 9 | BTB-01218275                   | 0 | 31457479 |          |  |
| 9 | BTB-01440667                   | 0 | 31482494 |          |  |
| 9 | BTA-93491-no-rs                | 0 | 31510537 |          |  |
| 9 | BTB-01846303                   | 0 | 31531815 |          |  |
| 9 | BTA-112797-no-rs               | 0 | 31644651 |          |  |
| 9 | BTA-93494-no-rs                | 0 | 31669195 |          |  |
| 9 | BTB-01218371                   | 0 | 31726626 |          |  |
| 9 | ARS-BFGL-NGS-116172            | 0 | 31748811 |          |  |
| 9 | BTB-01218452                   | 0 | 31782062 |          |  |
| 9 | BTB-01218518                   | 0 | 31833368 |          |  |
| 9 | BTB-01218539                   | 0 | 31855749 |          |  |
| 9 | BTB-01683955                   | 0 | 31933710 |          |  |
| 9 | BTB-01737039                   | 0 | 32004342 |          |  |
| 9 | BTB-01736853                   | 0 | 32024612 |          |  |
| 9 | ARS-BFGL-NGS-106238            | 0 | 32049723 |          |  |
| 9 | BTB-01674882                   | 0 | 32088660 |          |  |
| 9 | BTB-01674973                   | 0 | 32142930 |          |  |
| 9 | BTB-01675002                   | 0 | 32150229 |          |  |
| 9 | BTB-01632102                   | 0 | 32171013 |          |  |
| 9 | Hapmap38377-BTA-109065         | 0 | 32192120 |          |  |
| 9 | BTB-01561444                   | 0 | 32302157 |          |  |
| 9 | Hapmap24157-BTA-153554         | 0 | 32343804 |          |  |
| 9 | ARS-BFGL-NGS-26381             | 0 | 32430302 |          |  |
| 9 | ARS-BFGL-NGS-53845             | 0 | 32454628 |          |  |
| 9 | BTB-00386288                   | 0 | 32549297 |          |  |

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| 9 | Hapmap50121-BTA-83146  | 0 | 32583490 |
| 9 | BTB-01882599           | 0 | 32606924 |
| 9 | BTA-83149-no-rs        | 0 | 32659074 |
| 9 | ARS-BFGL-NGS-79910     | 0 | 32695841 |
| 9 | ARS-BFGL-NGS-116724    | 0 | 32723535 |
| 9 | Hapmap32418-BTA-83151  | 0 | 32760836 |
| 9 | Hapmap49089-BTA-23167  | 0 | 32795214 |
| 9 | Hapmap23593-BTA-146417 | 0 | 32840972 |
| 9 | Hapmap51957-BTA-83206  | 0 | 32875485 |
| 9 | ARS-BFGL-NGS-89800     | 0 | 32924138 |
| 9 | BTB-00387837           | 0 | 32989113 |
| 9 | ARS-BFGL-NGS-68206     | 0 | 33028520 |
| 9 | Hapmap60427-rs29021315 | 0 | 33096287 |
| 9 | BTA-83242-no-rs        | 0 | 33139824 |
| 9 | Hapmap41367-BTA-83244  | 0 | 33163184 |
| 9 | BTA-112863-no-rs       | 0 | 33196236 |
| 9 | UA-IFASA-814           | 0 | 33213808 |
| 9 | BTA-112867-no-rs       | 0 | 33237149 |
| 9 | BTA-112869-no-rs       | 0 | 33261837 |
| 9 | ARS-BFGL-NGS-98615     | 0 | 33321976 |
| 9 | BTB-00388602           | 0 | 33378478 |
| 9 | BTB-00388616           | 0 | 33442358 |
| 9 | BTA-83267-no-rs        | 0 | 33466950 |
| 9 | Hapmap48911-BTA-83268  | 0 | 33492363 |
| 9 | Hapmap50795-BTA-83271  | 0 | 33542049 |
| 9 | BTA-83274-no-rs        | 0 | 33618865 |
| 9 | BTB-00384802           | 0 | 34050782 |
| 9 | BTB-00384830           | 0 | 34076497 |
| 9 | BTB-00384837           | 0 | 34106755 |
| 9 | BTB-00384847           | 0 | 34146832 |
| 9 | ARS-BFGL-NGS-27063     | 0 | 34176604 |
| 9 | Hapmap27597-BTA-146334 | 0 | 34199814 |
| 9 | BTB-00388348           | 0 | 34261736 |
| 9 | BTB-00388274           | 0 | 34286455 |
| 9 | BTB-00388134           | 0 | 34317516 |
| 9 | BTA-83227-no-rs        | 0 | 34362359 |
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| 9 | BTB-00388242           | 0 | 34426533 |
| 9 | BTB-00388235           | 0 | 34453477 |
| 9 | Hapmap32328-BTA-146424 | 0 | 34608723 |
| 9 | Hapmap25127-BTA-83222  | 0 | 34658951 |
| 9 | ARS-BFGL-NGS-96784     | 0 | 34681064 |
| 9 | ARS-BFGL-NGS-11834     | 0 | 34720455 |
| 9 | BTB-00387942           | 0 | 34743324 |
| 9 | BTA-18520-no-rs        | 0 | 34765874 |
| 9 | BTA-00871-rs29014022   | 0 | 34802818 |
| 9 | BTB-00389059           | 0 | 34943071 |
| 9 | BTB-00389079           | 0 | 34970683 |
| 9 | BTB-00389092           | 0 | 35002290 |
| 9 | BTB-00389124           | 0 | 35036949 |
| 9 | BTA-83295-no-rs        | 0 | 35083835 |
| 9 | BTB-00389188           | 0 | 35109955 |
| 9 | Hapmap59178-rs29009651 | 0 | 35134706 |



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| 9 | Hapmap49334-BTA-83296  | 0 | 35187993 |
| 9 | Hapmap42695-BTA-83298  | 0 | 35226942 |
| 9 | BTB-00389315           | 0 | 35253091 |
| 9 | BTB-01843749           | 0 | 35314238 |
| 9 | BTB-01843757           | 0 | 35343932 |
| 9 | Hapmap44270-BTA-67318  | 0 | 35368035 |
| 9 | BTB-00124923           | 0 | 35396173 |
| 9 | BTB-00124963           | 0 | 35449575 |
| 9 | BTB-00389480           | 0 | 35516891 |
| 9 | BTB-01966120           | 0 | 35562515 |
| 9 | BTB-00389746           | 0 | 35601778 |
| 9 | BTB-00113934           | 0 | 35669753 |
| 9 | ARS-BFGL-NGS-42900     | 0 | 35731967 |
| 9 | Hapmap33388-BTA-156375 | 0 | 35813806 |
| 9 | BTB-02058916           | 0 | 35873605 |
| 9 | BTB-02058917           | 0 | 35912328 |
| 9 | Hapmap30779-BTA-128280 | 0 | 35953813 |
| 9 | BTB-00518052           | 0 | 35981595 |
| 9 | Hapmap49959-BTA-32153  | 0 | 36002535 |
| 9 | BTB-00518033           | 0 | 36022671 |
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| 9 | ARS-BFGL-NGS-16462     | 0 | 36139480 |
| 9 | ARS-BFGL-NGS-115260    | 0 | 36191579 |
| 9 | ARS-BFGL-NGS-36701     | 0 | 36440319 |
| 9 | ARS-BFGL-NGS-115580    | 0 | 36556225 |
| 9 | ARS-BFGL-NGS-109026    | 0 | 36578334 |
| 9 | ARS-BFGL-NGS-10196     | 0 | 36608760 |
| 9 | BTA-86557-no-rs        | 0 | 36645234 |
| 9 | ARS-BFGL-NGS-22590     | 0 | 36703840 |
| 9 | BTA-21753-no-rs        | 0 | 36790663 |
| 9 | ARS-BFGL-NGS-48430     | 0 | 36855063 |
| 9 | ARS-BFGL-NGS-22883     | 0 | 36960364 |
| 9 | ARS-BFGL-NGS-113787    | 0 | 37005223 |
| 9 | BTA-21733-no-rs        | 0 | 37036717 |
| 9 | ARS-BFGL-NGS-47660     | 0 | 37081624 |
| 9 | Hapmap23769-BTA-158201 | 0 | 37123701 |
| 9 | BTB-01249509           | 0 | 37214585 |
| 9 | ARS-BFGL-NGS-108289    | 0 | 37246169 |
| 9 | BTB-01249515           | 0 | 37269912 |
| 9 | Hapmap42830-BTA-117799 | 0 | 37292945 |
| 9 | ARS-BFGL-NGS-32807     | 0 | 37355623 |
| 9 | ARS-BFGL-NGS-49890     | 0 | 37382181 |
| 9 | BTB-01249963           | 0 | 37442535 |
| 9 | Hapmap54966-rs29014434 | 0 | 37467972 |
| 9 | BTB-01451908           | 0 | 37522992 |
| 9 | BTA-94534-no-rs        | 0 | 37549926 |
| 9 | BTB-01451870           | 0 | 37593586 |
| 9 | BTB-01451850           | 0 | 37661779 |
| 9 | BTB-00389006           | 0 | 37708677 |
| 9 | Hapmap49770-BTA-83294  | 0 | 37742092 |
| 9 | BTB-00957662           | 0 | 37783320 |
| 9 | BTA-62204-no-rs        | 0 | 37806052 |
| 9 | BTA-62198-no-rs        | 0 | 37858250 |
| 9 | BTB-00388729           | 0 | 37914265 |

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| 9 | ARS-BFGL-NGS-117511             | 0 | 37967702 |  |
| 9 | Hapmap60126-rs29022845          | 0 | 38015521 |  |
| 9 | BTA-83279-no-rs                 | 0 | 38111543 |  |
| 9 | BTA-83278-no-rs                 | 0 | 38225853 |  |
| 9 | Hapmap51935-BTA-17831           | 0 | 38252618 |  |
| 9 | ARS-BFGL-NGS-20610              | 0 | 38385371 |  |
| 9 | BTB-01229331                    | 0 | 38412334 |  |
| 9 | BTA-114812-no-rs                | 0 | 38433170 |  |
| 9 | ARS-BFGL-NGS-32966              | 0 | 38456609 |  |
| 9 | ARS-BFGL-NGS-63180              | 0 | 38575112 |  |
| 9 | ARS-BFGL-NGS-43879              | 0 | 38632274 |  |
| 9 | ARS-BFGL-NGS-56093              | 0 | 38732171 |  |
| 9 | ARS-BFGL-NGS-58120              | 0 | 38769703 |  |
| 9 | Hapmap29482-BTA-146449          | 0 | 38804655 |  |
| 9 | BTA-06997-rs29021351            | 0 | 38828043 |  |
| 9 | ARS-BFGL-NGS-15308              | 0 | 38938171 |  |
| 9 | Hapmap48912-BTA-83311           | 0 | 38992847 |  |
| 9 | BTA-83316-no-rs                 | 0 | 39015770 |  |
| 9 | ARS-BFGL-NGS-17236              | 0 | 39040657 |  |
| 9 | BTA-83317-no-rs                 | 0 | 39068194 |  |
| 9 | Hapmap47527-BTA-121897          | 0 | 39099376 |  |
| 9 | ARS-BFGL-NGS-27841              | 0 | 39166940 |  |
| 9 | ARS-BFGL-NGS-112742             | 0 | 39187022 |  |
| 9 | ARS-BFGL-NGS-118865             | 0 | 39310652 |  |
| 9 | ARS-BFGL-NGS-44162              | 0 | 39626344 |  |
| 9 | Hapmap50122-BTA-83335           | 0 | 39688215 |  |
| 9 | ARS-BFGL-NGS-75693              | 0 | 39779363 |  |
| 9 | Hapmap45687-BTA-83338           | 0 | 39816061 |  |
| 9 | Hapmap59361-rs29017977          | 0 | 40088647 |  |
| 9 | BTA-83341-no-rs                 | 0 | 40116301 |  |
| 9 | BTA-83342-no-rs                 | 0 | 40135009 |  |
| 9 | ARS-BFGL-NGS-42246              | 0 | 40164227 |  |
| 9 | ARS-BFGL-NGS-102349             | 0 | 40205144 |  |
| 9 | ARS-BFGL-NGS-10254              | 0 | 40256749 |  |
| 9 | ARS-BFGL-NGS-103721             | 0 | 40287003 |  |
| 9 | BTA-83528-no-rs                 | 0 | 40336144 |  |
| 9 | Hapmap42860-BTA-17231           | 0 | 40400556 |  |
| 9 | BTA-17229-no-rs                 | 0 | 40460754 |  |
| 9 | Hapmap27023-BTA-159777          | 0 | 40567657 |  |
| 9 | BTA-17225-no-rs                 | 0 | 40588423 |  |
| 9 | Hapmap43796-BTA-17224           | 0 | 40615253 |  |
| 9 | BTA-116260-no-rs                | 0 | 40699712 |  |
| 9 | Hapmap39630-BTA-17235           | 0 | 40771968 |  |
| 9 | BTA-17234-no-rs                 | 0 | 40813442 |  |
| 9 | ARS-BFGL-NGS-29436              | 0 | 40891551 |  |
| 9 | Hapmap31815-BTA-156123          | 0 | 40920531 |  |
| 9 | ARS-BFGL-NGS-72216              | 0 | 40979935 |  |
| 9 | Hapmap50250-BTA-118345          | 0 | 41036409 |  |
| 9 | ARS-BFGL-NGS-13783              | 0 | 41072210 |  |
| 9 | BTA-117313-no-rs                | 0 | 41125489 |  |
| 9 | UA-IFASA-7943                   | 0 | 41176288 |  |
| 9 | ARS-BFGL-NGS-111730             | 0 | 41209760 |  |
| 9 | Hapmap24391-BTA-83537           | 0 | 41252519 |  |
| 9 | Hapmap35705-SCAFFOLD135437_5344 | 0 | 41542971 |  |

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| 9 | ARS-BFGL-NGS-96167              | 0        | 41774653 |          |
| 9 | ARS-BFGL-NGS-109382             | 0        | 41897776 |          |
| 9 | Hapmap38574-BTA-118638          | 0        | 41989065 |          |
| 9 | Hapmap22667-BTA-118637          | 0        | 42126175 |          |
| 9 | UA-IFASA-8241                   | 0        | 42153923 |          |
| 9 | Hapmap34594-BES1_Contig678_1348 | 0        |          | 42204475 |
| 9 | ARS-BFGL-NGS-37643              | 0        | 42370768 |          |
| 9 | Hapmap44525-BTA-15474           | 0        | 42529450 |          |
| 9 | Hapmap51813-BTA-15470           | 0        | 42574267 |          |
| 9 | BTA-88357-no-rs                 | 0        | 42650599 |          |
| 9 | ARS-BFGL-NGS-21330              | 0        | 42706961 |          |
| 9 | BTA-59878-no-rs                 | 0        | 42751764 |          |
| 9 | ARS-BFGL-NGS-55374              | 0        | 42792078 |          |
| 9 | ARS-BFGL-NGS-37982              | 0        | 42819938 |          |
| 9 | ARS-BFGL-NGS-52530              | 0        | 42849970 |          |
| 9 | ARS-BFGL-NGS-103934             | 0        | 42875324 |          |
| 9 | BTA-83566-no-rs                 | 0        | 42951879 |          |
| 9 | Hapmap50123-BTA-83561           | 0        | 43054017 |          |
| 9 | Hapmap50484-BTA-83557           | 0        | 43144718 |          |
| 9 | UA-IFASA-4157                   | 0        | 43187936 |          |
| 9 | ARS-BFGL-NGS-66207              | 0        | 43310722 |          |
| 9 | Hapmap47424-BTA-83548           | 0        | 43350391 |          |
| 9 | ARS-BFGL-NGS-109772             | 0        | 43363563 |          |
| 9 | ARS-BFGL-NGS-101758             | 0        | 43552186 |          |
| 9 | Hapmap39443-BTA-83543           | 0        | 43595237 |          |
| 9 | BTA-101172-no-rs                | 0        | 43616136 |          |
| 9 | ARS-BFGL-NGS-115578             | 0        | 43653927 |          |
| 9 | ARS-BFGL-NGS-110579             | 0        | 43710426 |          |
| 9 | ARS-BFGL-NGS-59851              | 0        | 43747151 |          |
| 9 | ARS-BFGL-NGS-170                | 0        | 43855787 |          |
| 9 | ARS-BFGL-NGS-38561              | 0        | 43883136 |          |
| 9 | Hapmap49359-BTA-88301           | 0        | 43945908 |          |
| 9 | ARS-BFGL-NGS-39444              | 0        | 43960964 |          |
| 9 | ARS-BFGL-NGS-75844              | 0        | 44035529 |          |
| 9 | Hapmap57331-rs29009884          | 0        | 44075848 |          |
| 9 | ARS-BFGL-NGS-31921              | 0        | 44323878 |          |
| 9 | ARS-BFGL-NGS-108500             | 0        | 44460505 |          |
| 9 | ARS-BFGL-NGS-25589              | 0        | 44489665 |          |
| 9 | Hapmap31797-BTA-151328          | 0        | 44552212 |          |
| 9 | ARS-BFGL-NGS-85310              | 44713803 |          |          |
| 9 | Hapmap42799-BTA-109445          | 0        | 44775561 |          |
| 9 | Hapmap44189-BTA-109443          | 0        | 44815699 |          |
| 9 | ARS-BFGL-NGS-77863              | 0        | 44872698 |          |
| 9 | BTA-83636-no-rs                 | 0        | 44932317 |          |
| 9 | BTA-10828-no-rs                 | 0        | 44951803 |          |
| 9 | UA-IFASA-8966                   | 0        | 45231268 |          |
| 9 | Hapmap39950-BTA-83616           | 0        | 45303296 |          |
| 9 | Hapmap22884-BTA-24016           | 0        | 45357203 |          |
| 9 | BTA-93277-no-rs                 | 0        | 45420491 |          |
| 9 | Hapmap22744-BTA-137854          | 0        | 45488704 |          |
| 9 | ARS-BFGL-NGS-75277              | 0        | 45529939 |          |
| 9 | Hapmap60871-rs29026560          | 0        | 45627516 |          |
| 9 | BTA-83577-no-rs                 | 0        | 45699093 |          |
| 9 | UA-IFASA-1922                   | 0        | 45729853 |          |

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| 9 | Hapmap50124-BTA-83568           | 0 | 45767377 |          |
| 9 | ARS-BFGL-NGS-104543             | 0 | 45887929 |          |
| 9 | ARS-BFGL-NGS-106536             | 0 | 46053683 |          |
| 9 | BTA-100330-no-rs                | 0 | 46089759 |          |
| 9 | Hapmap35192-BES9_Contig552_1143 | 0 |          | 46118697 |
| 9 | ARS-BFGL-NGS-85944              | 0 | 46287560 |          |
| 9 | Hapmap24524-BTA-107865          | 0 | 46351157 |          |
| 9 | BTA-83591-no-rs                 | 0 | 46433336 |          |
| 9 | Hapmap33674-BTA-156367          | 0 | 46531368 |          |
| 9 | Hapmap34923-BES9_Contig458_891  | 0 |          | 46583336 |
| 9 | BTA-83597-no-rs                 | 0 | 46632366 |          |
| 9 | ARS-BFGL-NGS-119030             | 0 | 46662943 |          |
| 9 | BTA-83605-no-rs                 | 0 | 46739973 |          |
| 9 | Hapmap43954-BTA-83607           | 0 | 46961905 |          |
| 9 | BTA-22124-no-rs                 | 0 | 47208243 |          |
| 9 | BTA-83642-no-rs                 | 0 | 47246008 |          |
| 9 | ARS-BFGL-NGS-61224              | 0 | 47299900 |          |
| 9 | Hapmap40497-BTA-121906          | 0 | 47425511 |          |
| 9 | Hapmap41319-BTA-63990           | 0 | 47679438 |          |
| 9 | ARS-BFGL-NGS-14611              | 0 | 47723533 |          |
| 9 | ARS-BFGL-NGS-76636              | 0 | 47959651 |          |
| 9 | Hapmap51481-BTA-67522           | 0 | 48099985 |          |
| 9 | Hapmap43652-BTA-67521           | 0 | 48145429 |          |
| 9 | BTA-67516-no-rs                 | 0 | 48175366 |          |
| 9 | Hapmap50754-BTA-67505           | 0 | 48197342 |          |
| 9 | BTA-67497-no-rs                 | 0 | 48295406 |          |
| 9 | Hapmap49702-BTA-67493           | 0 | 48394081 |          |
| 9 | ARS-BFGL-NGS-88160              | 0 | 48675213 |          |
| 9 | ARS-BFGL-NGS-27097              | 0 | 48722389 |          |
| 9 | Hapmap43369-BTA-83656           | 0 | 48821695 |          |
| 9 | ARS-BFGL-NGS-219                | 0 | 48881374 |          |
| 9 | BTB-00391421                    | 0 | 48901956 |          |
| 9 | BTB-00391456                    | 0 | 48926104 |          |
| 9 | BTB-00391496                    | 0 | 48975316 |          |
| 9 | BTB-00391519                    | 0 | 48997819 |          |
| 9 | BTB-00391548                    | 0 | 49031626 |          |
| 9 | BTB-01609048                    | 0 | 49045410 |          |
| 9 | Hapmap58739-rs29021754          | 0 | 49099022 |          |
| 9 | BTB-01739003                    | 0 | 49314571 |          |
| 9 | BTA-27524-no-rs                 | 0 | 49397702 |          |
| 9 | BTB-01352573                    | 0 | 49423844 |          |
| 9 | Hapmap41217-BTA-27517           | 0 | 49449716 |          |
| 9 | BTB-01352726                    | 0 | 49487154 |          |
| 9 | BTA-01860-no-rs                 | 0 | 49521353 |          |
| 9 | BTB-01352842                    | 0 | 49556408 |          |
| 9 | BTB-01352876                    | 0 | 49597855 |          |
| 9 | BTB-01352946                    | 0 | 49620497 |          |
| 9 | BTB-01392212                    | 0 | 49649153 |          |
| 9 | Hapmap30840-BTA-147842          | 0 | 49678361 |          |
| 9 | BTB-00391886                    | 0 | 49742929 |          |
| 9 | BTA-83662-no-rs                 | 0 | 49784088 |          |
| 9 | BTB-00391944                    | 0 | 49805232 |          |
| 9 | BTA-87891-no-rs                 | 0 | 49865815 |          |
| 9 | BTB-02006579                    | 0 | 49899443 |          |

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| 9 | BTA-87887-no-rs        | 0 | 49923312 |
| 9 | Hapmap51338-BTA-87881  | 0 | 49952332 |
| 9 | BTA-87878-no-rs        | 0 | 49974322 |
| 9 | ARS-BFGL-NGS-51043     | 0 | 50027556 |
| 9 | Hapmap52880-ss46526560 | 0 | 50102947 |
| 9 | ARS-BFGL-NGS-41171     | 0 | 50132049 |
| 9 | ARS-BFGL-NGS-70971     | 0 | 50166295 |
| 9 | ARS-BFGL-NGS-92667     | 0 | 50186596 |
| 9 | BTB-01347067           | 0 | 50208711 |
| 9 | BTB-01347039           | 0 | 50235638 |
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| 9 | ARS-BFGL-NGS-69006     | 0 | 50349924 |
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| 9 | Hapmap47425-BTA-83657  | 0 | 50438455 |
| 9 | BTB-00391724           | 0 | 50535574 |
| 9 | Hapmap54273-rs29023608 | 0 | 50591670 |
| 9 | BTB-00391825           | 0 | 50632294 |
| 9 | BTB-00391835           | 0 | 50652338 |
| 9 | BTB-01888857           | 0 | 50669651 |
| 9 | ARS-BFGL-NGS-22125     | 0 | 50694137 |
| 9 | ARS-BFGL-NGS-103434    | 0 | 50728426 |
| 9 | BTA-83709-no-rs        | 0 | 50760808 |
| 9 | UA-IFASA-4980          | 0 | 50804011 |
| 9 | BTB-00392462           | 0 | 50832512 |
| 9 | Hapmap49336-BTA-83713  | 0 | 50869600 |
| 9 | BTB-00392496           | 0 | 50899854 |
| 9 | Hapmap44146-BTA-83959  | 0 | 50922485 |
| 9 | BTB-00397090           | 0 | 50964942 |
| 9 | BTB-00397064           | 0 | 50992462 |
| 9 | Hapmap27484-BTA-83951  | 0 | 51017656 |
| 9 | BTA-83950-no-rs        | 0 | 51078453 |
| 9 | BTB-00396972           | 0 | 51096382 |
| 9 | ARS-BFGL-NGS-101365    | 0 | 51129430 |
| 9 | ARS-BFGL-NGS-29072     | 0 | 51153579 |
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| 9 | Hapmap47870-BTA-121912 | 0 | 51217915 |
| 9 | BTB-01931984           | 0 | 51243021 |
| 9 | Hapmap31528-BTA-17293  | 0 | 51304721 |
| 9 | ARS-BFGL-NGS-616       | 0 | 51326132 |
| 9 | BTB-01282851           | 0 | 51357809 |
| 9 | Hapmap46961-BTA-17297  | 0 | 51395314 |
| 9 | Hapmap41465-BTA-17283  | 0 | 51420838 |
| 9 | Hapmap49897-BTA-17285  | 0 | 51443155 |
| 9 | Hapmap25907-BTA-159799 | 0 | 51473366 |
| 9 | BTB-01282960           | 0 | 51529308 |
| 9 | Hapmap60361-rs29012351 | 0 | 51578666 |
| 9 | ARS-BFGL-NGS-103666    | 0 | 51645766 |
| 9 | Hapmap24100-BTA-159805 | 0 | 51672633 |
| 9 | BTB-01283139           | 0 | 51698823 |
| 9 | Hapmap47166-BTA-107072 | 0 | 51728403 |
| 9 | BTA-107065-no-rs       | 0 | 51795122 |
| 9 | ARS-BFGL-NGS-111000    | 0 | 51824042 |
| 9 | ARS-BFGL-NGS-97180     | 0 | 51854082 |

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| 9 | UA-IFASA-845                   | 0 | 51893149 |          |
| 9 | ARS-BFGL-NGS-69840             | 0 | 51933324 |          |
| 9 | Hapmap51117-BTA-102867         | 0 | 51956276 |          |
| 9 | BTA-102864-no-rs               | 0 | 51985736 |          |
| 9 | Hapmap32423-BTA-92864          | 0 | 52133642 |          |
| 9 | BTB-01168331                   | 0 | 52162143 |          |
| 9 | Hapmap39302-BTA-102862         | 0 | 52197653 |          |
| 9 | BTB-01168267                   | 0 | 52221237 |          |
| 9 | BTB-01433341                   | 0 | 52258463 |          |
| 9 | Hapmap60949-rs29020404         | 0 | 52283151 |          |
| 9 | ARS-BFGL-NGS-31640             | 0 | 52430564 |          |
| 9 | BTA-26806-no-rs                | 0 | 52460185 |          |
| 9 | Hapmap23928-BTA-102869         | 0 | 52497549 |          |
| 9 | BTB-01168248                   | 0 | 52530654 |          |
| 9 | ARS-BFGL-NGS-104966            | 0 | 52571370 |          |
| 9 | BTB-01176710                   | 0 | 52644487 |          |
| 9 | ARS-BFGL-NGS-12787             | 0 | 52684647 |          |
| 9 | BTB-01176436                   | 0 | 52736750 |          |
| 9 | BTB-01247372                   | 0 | 52850186 |          |
| 9 | Hapmap32370-BTA-158089         | 0 | 52873430 |          |
| 9 | BTB-01176373                   | 0 | 53021342 |          |
| 9 | Hapmap27882-BTA-153819         | 0 | 53053923 |          |
| 9 | BTB-01176316                   | 0 | 53125794 |          |
| 9 | BTB-01215209                   | 0 | 53156338 |          |
| 9 | Hapmap55039-rs29017433         | 0 | 53197668 |          |
| 9 | Hapmap47506-BTA-111956         | 0 | 53237445 |          |
| 9 | BTA-111931-no-rs               | 0 | 53259875 |          |
| 9 | BTA-111932-no-rs               | 0 | 53282847 |          |
| 9 | BTB-01215320                   | 0 | 53313101 |          |
| 9 | BTA-111934-no-rs               | 0 | 53333834 |          |
| 9 | BTB-01215359                   | 0 | 53355112 |          |
| 9 | ARS-BFGL-NGS-82830             | 0 | 53380186 |          |
| 9 | BTA-111940-no-rs               | 0 | 53405564 |          |
| 9 | Hapmap38194-BTA-111942         | 0 | 53435079 |          |
| 9 | ARS-BFGL-NGS-113758            | 0 | 53470050 |          |
| 9 | ARS-BFGL-NGS-34392             | 0 | 53498305 |          |
| 9 | Hapmap41432-BTA-111954         | 0 | 53641388 |          |
| 9 | Hapmap54211-rs29016139         | 0 | 53711244 |          |
| 9 | ARS-BFGL-NGS-93755             | 0 | 53742353 |          |
| 9 | Hapmap44295-BTA-83716          | 0 | 53770853 |          |
| 9 | BTA-83720-no-rs                | 0 | 53806121 |          |
| 9 | BTB-00392829                   | 0 | 53835889 |          |
| 9 | Hapmap27874-BTA-146513         | 0 | 53871363 |          |
| 9 | BTB-00392847                   | 0 | 53907090 |          |
| 9 | BTB-00392873                   | 0 | 53936343 |          |
| 9 | Hapmap59283-rs29021602         | 0 | 53983792 |          |
| 9 | BTB-00392898                   | 0 | 54039827 |          |
| 9 | Hapmap59494-rs29020429         | 0 | 54062560 |          |
| 9 | BTB-01639540                   | 0 | 54148253 |          |
| 9 | Hapmap36575-SCAFFOLD243776_825 | 0 |          | 54168744 |
| 9 | Hapmap41423-BTA-109716         | 0 | 54190285 |          |
| 9 | BTA-83723-no-rs                | 0 | 54216888 |          |
| 9 | ARS-BFGL-NGS-108373            | 0 | 54249918 |          |
| 9 | Hapmap44208-BTA-119972         | 0 | 54369375 |          |

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| 9 | Hapmap42486-BTA-26497          | 0 | 54427364 |          |
| 9 | BTB-01286183                   | 0 | 54452359 |          |
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| 9 | ARS-BFGL-NGS-58330             |   | 54567712 |          |
| 9 | BTA-17652-no-rs                | 0 | 54607380 |          |
| 9 | BTB-01286081                   | 0 | 54628399 |          |
| 9 | BTB-01286068                   | 0 | 54668173 |          |
| 9 | BTB-00393938                   | 0 | 54690915 |          |
| 9 | BTB-00393918                   | 0 | 54778504 |          |
| 9 | BTB-00393881                   | 0 | 54832703 |          |
| 9 | ARS-BFGL-NGS-50770             |   | 54863600 |          |
| 9 | BTB-01837203                   | 0 | 54886468 |          |
| 9 | ARS-BFGL-NGS-28874             | 0 | 54916913 |          |
| 9 | BTB-01878346                   | 0 | 54937110 |          |
| 9 | BTA-22659-no-rs                | 0 | 54964534 |          |
| 9 | BTB-00393850                   | 0 | 54987576 |          |
| 9 | Hapmap32827-BTA-146530         | 0 | 55007839 |          |
| 9 | BTB-00393790                   | 0 | 55056680 |          |
| 9 | Hapmap60082-rs29026815         | 0 | 55096065 |          |
| 9 | BTB-01922590                   | 0 | 55117119 |          |
| 9 | Hapmap48917-BTA-83740          | 0 | 55300379 |          |
| 9 | BTA-83739-no-rs                | 0 | 55338203 |          |
| 9 | BTB-00393640                   | 0 | 55363999 |          |
| 9 | BTA-83735-no-rs                | 0 | 55390937 |          |
| 9 | BTB-00393505                   | 0 | 55414103 |          |
| 9 | Hapmap50126-BTA-83733          | 0 | 55449737 |          |
| 9 | BTB-00393397                   | 0 | 55496923 |          |
| 9 | BTA-83732-no-rs                | 0 | 55532332 |          |
| 9 | Hapmap26414-BTA-146523         | 0 | 55574798 |          |
| 9 | BTB-00393138                   | 0 | 55630797 |          |
| 9 | Hapmap26692-BTA-146519         | 0 | 55672271 |          |
| 9 | BTB-00393113                   | 0 | 55707005 |          |
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| 9 | Hapmap46458-BTA-104642         | 0 | 55980280 |          |
| 9 | BTB-02010143                   | 0 | 56003900 |          |
| 9 | Hapmap46176-BTA-88146          | 0 | 56030649 |          |
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| 9 | BTB-01395754                   | 0 | 56094640 |          |
| 9 | BTB-01828494                   | 0 | 56129132 |          |
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| 9 | BTB-01648170                   | 0 | 56253191 |          |
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| 9 | Hapmap35198-BES8_Contig519_816 | 0 |          | 56406855 |
| 9 | Hapmap41808-BTA-26633          | 0 | 56459368 |          |
| 9 | BTB-01346677                   | 0 | 56490122 |          |
| 9 | BTB-01346626                   | 0 | 56522192 |          |
| 9 | Hapmap44223-BTA-26639          | 0 | 56548919 |          |

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| 9 | ARS-BFGL-NGS-23310     | 56616446   |
| 9 | BTA-105130-no-rs       | 0 56756412 |
| 9 | BTB-01576221           | 0 56786292 |
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| 9 | BTB-01151441           | 0 56973559 |
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| 9 | Hapmap49396-BTA-98905  | 0 57069740 |
| 9 | BTB-01151569           | 0 57108633 |
| 9 | BTB-01151584           | 0 57128694 |
| 9 | BTA-98907-no-rs        | 0 57182000 |
| 9 | BTB-01151858           | 0 57224923 |
| 9 | Hapmap40152-BTA-98921  | 0 57249160 |
| 9 | BTB-01151930           | 0 57288578 |
| 9 | BTB-01152013           | 0 57327067 |
| 9 | BTB-01151988           | 0 57358362 |
| 9 | BTB-01152078           | 0 57384683 |
| 9 | BTB-01152124           | 0 57412955 |
| 9 | BTB-01852813           | 0 57428938 |
| 9 | ARS-BFGL-NGS-84840     | 0 57515862 |
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| 9 | UA-IFASA-4968          | 0 57559232 |
| 9 | BTA-83801-no-rs        | 0 57616379 |
| 9 | ARS-BFGL-NGS-111196    | 0 57658825 |
| 9 | BTB-01427738           | 0 57679687 |
| 9 | BTA-92485-no-rs        | 0 57709461 |
| 9 | BTB-01865977           | 0 57767547 |
| 9 | ARS-BFGL-NGS-16443     | 0 57826905 |
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| 9 | BTA-92472-no-rs        | 0 57891069 |
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| 9 | BTA-87269-no-rs        | 0 57949852 |
| 9 | BTB-01573160           | 0 58011347 |
| 9 | ARS-BFGL-NGS-14862     | 0 58044059 |
| 9 | BTB-01573139           | 0 58075303 |
| 9 | BTA-104917-no-rs       | 0 58113021 |
| 9 | BTB-01604502           | 0 58145538 |
| 9 | Hapmap42787-BTA-107169 | 0 58177852 |
| 9 | BTB-01467676           | 0 58258097 |
| 9 | BTA-109454-no-rs       | 0 58298041 |
| 9 | BTB-01467653           | 0 58414099 |
| 9 | ARS-BFGL-NGS-29768     | 0 58447291 |
| 9 | BTB-01671508           | 0 58487329 |
| 9 | Hapmap50486-BTA-83799  | 0 58536480 |
| 9 | BTB-00394165           | 0 58579267 |
| 9 | Hapmap58670-rs29015048 | 0 58624775 |
| 9 | BTB-00394155           | 0 58647319 |
| 9 | BTA-83794-no-rs        | 0 58668865 |
| 9 | ARS-BFGL-NGS-116848    | 0 58714428 |
| 9 | Hapmap57442-rs29017608 | 0 58757994 |
| 9 | BTA-21388-no-rs        | 0 58810351 |
| 9 | BTA-59711-no-rs        | 0 58868903 |
| 9 | BTB-00901299           | 0 58938350 |



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| 9 | BTB-00901195                   | 0 | 58981588 |          |
| 9 | Hapmap34381-BES9_Contig573_967 | 0 |          | 59015991 |
| 9 | Hapmap51290-BTA-70575          | 0 | 59036606 |          |
| 9 | ARS-BFGL-NGS-93427             | 0 | 59060811 |          |
| 9 | BTA-70599-no-rs                | 0 | 59114731 |          |
| 9 | Hapmap60059-rs29014427         | 0 | 59182901 |          |
| 9 | BTB-00185423                   | 0 | 59205671 |          |
| 9 | BTB-00394480                   | 0 | 59231149 |          |
| 9 | BTB-00394738                   | 0 | 59311260 |          |
| 9 | Hapmap51506-BTA-83806          | 0 | 59354125 |          |
| 9 | BTB-00394801                   | 0 | 59383405 |          |
| 9 | Hapmap30639-BTA-83807          | 0 | 59405277 |          |
| 9 | Hapmap54251-rs29018288         | 0 | 59431293 |          |
| 9 | ARS-BFGL-NGS-33605             | 0 | 59472770 |          |
| 9 | ARS-BFGL-NGS-92583             | 0 | 59519479 |          |
| 9 | BTB-00395111                   | 0 | 59546474 |          |
| 9 | BTB-00395187                   | 0 | 59571491 |          |
| 9 | BTB-00395273                   | 0 | 59595970 |          |
| 9 | ARS-BFGL-NGS-70890             | 0 | 59619559 |          |
| 9 | BTB-00395419                   | 0 | 59645951 |          |
| 9 | Hapmap38634-BTA-83821          | 0 | 59666555 |          |
| 9 | BTB-00395482                   | 0 | 59692848 |          |
| 9 | ARS-BFGL-NGS-33609             | 0 | 59726700 |          |
| 9 | Hapmap51401-BTA-117495         | 0 | 59756194 |          |
| 9 | ARS-BFGL-NGS-92972             | 0 | 59792545 |          |
| 9 | BTB-01853659                   | 0 | 59816494 |          |
| 9 | Hapmap41438-BTA-115881         | 0 | 59847463 |          |
| 9 | Hapmap49874-BTA-115876         | 0 | 59869895 |          |
| 9 | ARS-BFGL-NGS-111307            | 0 | 59927094 |          |
| 9 | BTB-00395607                   | 0 | 59972449 |          |
| 9 | BTA-83827-no-rs                | 0 | 59995189 |          |
| 9 | ARS-BFGL-NGS-38956             | 0 | 60033566 |          |
| 9 | BTA-83844-no-rs                | 0 | 60054010 |          |
| 9 | BTB-00395654                   | 0 | 60102040 |          |
| 9 | ARS-BFGL-NGS-26726             | 0 | 60157171 |          |
| 9 | BTA-06907-rs29021263           | 0 | 60177347 |          |
| 9 | Hapmap53523-rs29024932         | 0 | 60228560 |          |
| 9 | ARS-BFGL-NGS-66624             | 0 | 60260139 |          |
| 9 | BTA-83895-no-rs                | 0 | 60321793 |          |
| 9 | BTB-00395953                   | 0 | 60348785 |          |
| 9 | BTA-83899-no-rs                | 0 | 60385069 |          |
| 9 | ARS-BFGL-NGS-107809            | 0 | 60421338 |          |
| 9 | BTB-00396057                   | 0 | 60442593 |          |
| 9 | BTA-83905-no-rs                | 0 | 60465587 |          |
| 9 | ARS-BFGL-NGS-45271             | 0 | 60496111 |          |
| 9 | BTB-00396922                   | 0 | 60527870 |          |
| 9 | Hapmap29534-BTA-146538         | 0 | 60610834 |          |
| 9 | ARS-BFGL-NGS-34075             | 0 | 60641328 |          |
| 9 | ARS-BFGL-NGS-56932             | 0 | 60673344 |          |
| 9 | BTB-00396331                   | 0 | 60756087 |          |
| 9 | Hapmap43073-BTA-83925          | 0 | 60786164 |          |
| 9 | BTB-00396373                   | 0 | 60815205 |          |
| 9 | BTB-00396392                   | 0 | 60837285 |          |
| 9 | BTB-00396414                   | 0 | 60860296 |          |

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| 9 | Hapmap50487-BTA-83926           | 0 | 60886086 |          |
| 9 | ARS-BFGL-NGS-102173             | 0 | 60911412 |          |
| 9 | Hapmap49886-BTA-121910          | 0 | 60987860 |          |
| 9 | Hapmap51642-BTA-83927           | 0 | 61062154 |          |
| 9 | Hapmap48919-BTA-83929           | 0 | 61092707 |          |
| 9 | ARS-BFGL-NGS-78250              | 0 | 61128248 |          |
| 9 | BTB-00396602                    | 0 | 61152029 |          |
| 9 | BTB-00396685                    | 0 | 61209187 |          |
| 9 | Hapmap59008-rs29027423          | 0 | 61237569 |          |
| 9 | BTB-00396747                    | 0 | 61292190 |          |
| 9 | BTB-00396800                    | 0 | 61340713 |          |
| 9 | Hapmap41095-BTA-83941           | 0 | 61368087 |          |
| 9 | Hapmap52567-rs29017340          | 0 | 61399221 |          |
| 9 | ARS-BFGL-NGS-21904              | 0 | 61453492 |          |
| 9 | BTB-00397151                    | 0 | 61521049 |          |
| 9 | BTB-00397142                    | 0 | 61547823 |          |
| 9 | ARS-BFGL-NGS-77738              | 0 | 61571058 |          |
| 9 | BTB-00397198                    | 0 | 61599461 |          |
| 9 | Hapmap31551-BTA-83965           | 0 | 61622515 |          |
| 9 | BTB-00397464                    | 0 | 61719292 |          |
| 9 | ARS-BFGL-NGS-10020              | 0 | 61750208 |          |
| 9 | BTB-00397480                    | 0 | 61773207 |          |
| 9 | ARS-BFGL-NGS-12541              | 0 | 61818837 |          |
| 9 | Hapmap24311-BTA-163296          | 0 | 61852240 |          |
| 9 | BTB-01352997                    | 0 | 61883731 |          |
| 9 | Hapmap31864-BTA-27548           | 0 | 62038050 |          |
| 9 | Hapmap35110-BES4_Contig487_1232 | 0 |          | 62151101 |
| 9 | Hapmap23835-BTA-161158          | 0 | 62305144 |          |
| 9 | ARS-BFGL-NGS-31371              | 0 | 62328044 |          |
| 9 | BTB-01310178                    | 0 | 62356223 |          |
| 9 | BTB-01593409                    | 0 | 62407540 |          |
| 9 | BTB-01593383                    | 0 | 62429359 |          |
| 9 | BTB-01593372                    | 0 | 62462017 |          |
| 9 | BTB-01310243                    | 0 | 62496679 |          |
| 9 | Hapmap31834-BTA-161163          | 0 | 62516842 |          |
| 9 | BTB-01520203                    | 0 | 62539556 |          |
| 9 | Hapmap35811-SCAFFOLD290938_3570 | 0 |          | 62591320 |
| 9 | ARS-BFGL-NGS-114054             | 0 | 62751655 |          |
| 9 | ARS-BFGL-NGS-60933              | 0 | 62907869 |          |
| 9 | Hapmap35559-SCAFFOLD35632_12026 | 0 |          | 62961279 |
| 9 | ARS-BFGL-NGS-79902              | 0 | 62990077 |          |
| 9 | ARS-BFGL-NGS-44385              | 0 | 63030338 |          |
| 9 | BTA-12455-rs29024407            | 0 | 63116931 |          |
| 9 | BTB-01087475                    | 0 | 63285320 |          |
| 9 | Hapmap26693-BTA-146557          | 0 | 63460554 |          |
| 9 | ARS-BFGL-NGS-15887              | 0 | 63485138 |          |
| 9 | Hapmap54718-rs29022960          | 0 | 63574601 |          |
| 9 | BTA-83980-no-rs                 | 0 | 63632173 |          |
| 9 | BTB-00397611                    | 0 | 63693351 |          |
| 9 | BTB-00397630                    | 0 | 63717205 |          |
| 9 | Hapmap52601-rs29025947          | 0 | 63739649 |          |
| 9 | BTB-00397688                    | 0 | 63772321 |          |
| 9 | Hapmap34562-BES4_Contig366_1332 | 0 |          | 63820432 |
| 9 | ARS-BFGL-NGS-33774              | 0 | 63839779 |          |

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| 9 | BTA-83987-no-rs                 | 0 | 63863237 |  |
| 9 | BTB-01628262                    | 0 | 63967768 |  |
| 9 | Hapmap53639-rs29019504          | 0 | 64072491 |  |
| 9 | ARS-BFGL-NGS-35676              | 0 | 64109435 |  |
| 9 | BTB-01642014                    | 0 | 64130815 |  |
| 9 | BTB-01642049                    | 0 | 64182286 |  |
| 9 | ARS-BFGL-NGS-113585             | 0 | 64207421 |  |
| 9 | Hapmap47795-BTA-98172           | 0 | 64229989 |  |
| 9 | ARS-BFGL-NGS-36482              | 0 | 64262480 |  |
| 9 | BTB-01673493                    | 0 | 64291804 |  |
| 9 | ARS-BFGL-NGS-53537              | 0 | 64381905 |  |
| 9 | Hapmap31198-BTA-161981          | 0 | 64428333 |  |
| 9 | BTB-01704093                    | 0 | 64529140 |  |
| 9 | ARS-BFGL-NGS-30222              | 0 | 64557321 |  |
| 9 | BTB-01704243                    | 0 | 64583261 |  |
| 9 | BTA-15110-rs29026475            | 0 | 64690186 |  |
| 9 | BTB-01730460                    | 0 | 64716608 |  |
| 9 | BTB-01386273                    | 0 | 64899782 |  |
| 9 | ARS-BFGL-NGS-117127             | 0 | 64915912 |  |
| 9 | Hapmap44153-BTA-86963           | 0 | 64935301 |  |
| 9 | BTB-01594376                    | 0 | 65063673 |  |
| 9 | Hapmap31163-BTA-154377          | 0 | 65083334 |  |
| 9 | BTB-01594395                    | 0 | 65093167 |  |
| 9 | Hapmap55300-rs29024610          | 0 | 65113143 |  |
| 9 | ARS-BFGL-NGS-71599              | 0 | 65154296 |  |
| 9 | BTB-01746512                    | 0 | 65175762 |  |
| 9 | Hapmap57000-rs29011304          | 0 | 65203849 |  |
| 9 | UA-IFASA-4566                   | 0 | 65204298 |  |
| 9 | Hapmap53242-rs29026834          | 0 | 65252101 |  |
| 9 | BTB-00397809                    | 0 | 65284951 |  |
| 9 | ARS-BFGL-NGS-113788             | 0 | 65309511 |  |
| 9 | Hapmap25845-BTA-146562          | 0 | 65350049 |  |
| 9 | ARS-BFGL-NGS-98591              | 0 | 65384777 |  |
| 9 | Hapmap47426-BTA-83993           | 0 | 65407860 |  |
| 9 | Hapmap46381-BTA-84002           | 0 | 65449055 |  |
| 9 | BTB-00398162                    | 0 | 65480675 |  |
| 9 | ARS-BFGL-NGS-39615              | 0 | 65508867 |  |
| 9 | ARS-BFGL-NGS-76541              | 0 | 65543624 |  |
| 9 | ARS-BFGL-NGS-111623             | 0 | 65564012 |  |
| 9 | ARS-BFGL-NGS-71603              | 0 | 65608668 |  |
| 9 | BTB-00398421                    | 0 | 65639413 |  |
| 9 | BTB-00398454                    | 0 | 65672050 |  |
| 9 | Hapmap43075-BTA-84007           | 0 | 65694964 |  |
| 9 | Hapmap34494-BES3_Contig286_1171 | 0 | 65738419 |  |
| 9 | BTA-113948-no-rs                | 0 | 65818036 |  |
| 9 | Hapmap60982-rs29009579          | 0 | 65982390 |  |
| 9 | ARS-BFGL-NGS-34134              | 0 | 66124313 |  |
| 9 | BTA-84028-no-rs                 | 0 | 66183555 |  |
| 9 | Hapmap57940-rs29016449          | 0 | 66217784 |  |
| 9 | Hapmap58377-rs29014990          | 0 | 66292441 |  |
| 9 | Hapmap33655-BTA-115626          | 0 | 66379569 |  |
| 9 | ARS-BFGL-NGS-32356              | 0 | 66400243 |  |
| 9 | ARS-BFGL-NGS-50415              | 0 | 66481382 |  |
| 9 | ARS-BFGL-NGS-58983              | 0 | 66527271 |  |

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| 9 | UA-IFASA-2717                   | 0        | 66693686 |          |
| 9 | BTA-33284-no-rs                 | 0        | 66717079 |          |
| 9 | Hapmap51586-BTA-33282           | 0        | 66800447 |          |
| 9 | BTA-33278-no-rs                 | 0        | 66968533 |          |
| 9 | Hapmap42513-BTA-33276           | 0        | 66997852 |          |
| 9 | ARS-BFGL-NGS-95206              | 0        | 67006758 |          |
| 9 | Hapmap42473-BTA-21724           | 0        | 67074512 |          |
| 9 | Hapmap27624-BTA-154889          | 0        | 67122449 |          |
| 9 | Hapmap23219-BTA-154903          | 0        | 67244999 |          |
| 9 | ARS-BFGL-NGS-119043             | 0        | 67273738 |          |
| 9 | ARS-BFGL-NGS-15033              | 0        | 67301858 |          |
| 9 | Hapmap29263-BTA-128598          | 0        | 67342875 |          |
| 9 | ARS-BFGL-NGS-71216              | 0        | 67414112 |          |
| 9 | BTA-21201-no-rs                 | 0        | 67621140 |          |
| 9 | Hapmap51889-BTA-21207           | 0        | 67669856 |          |
| 9 | ARS-BFGL-NGS-10864              | 0        | 67715064 |          |
| 9 | Hapmap22946-BTA-157666          | 0        | 67801902 |          |
| 9 | ARS-BFGL-NGS-97739              | 0        | 67955346 |          |
| 9 | Hapmap53394-rs29011074          | 0        | 68622253 |          |
| 9 | Hapmap39783-BTA-84049           | 0        | 68652498 |          |
| 9 | ARS-BFGL-NGS-77713              | 0        | 68676829 |          |
| 9 | ARS-BFGL-NGS-102632             | 0        | 68833433 |          |
| 9 | Hapmap27875-BTA-146598          | 0        | 68973776 |          |
| 9 | Hapmap58190-rs29022461          | 0        | 69072417 |          |
| 9 | Hapmap51323-BTA-84058           | 0        | 69105572 |          |
| 9 | Hapmap49773-BTA-84060           | 0        | 69204493 |          |
| 9 | ARS-BFGL-NGS-18608              | 0        | 69236153 |          |
| 9 | BTA-84062-no-rs                 | 0        | 69290334 |          |
| 9 | Hapmap48920-BTA-84063           | 0        | 69314521 |          |
| 9 | Hapmap59023-rs29022215          | 0        | 69486616 |          |
| 9 | ARS-BFGL-NGS-21843              | 0        | 69512842 |          |
| 9 | Hapmap52411-rs29016144          | 0        | 69669920 |          |
| 9 | Hapmap53034-rs29011422          | 0        | 69696334 |          |
| 9 | ARS-BFGL-NGS-77406              | 0        | 69718369 |          |
| 9 | ARS-BFGL-NGS-62300              | 69818133 |          |          |
| 9 | BTA-84078-no-rs                 | 0        | 69856640 |          |
| 9 | UA-IFASA-4852                   | 0        | 69895004 |          |
| 9 | Hapmap43076-BTA-84080           | 0        | 69907989 |          |
| 9 | Hapmap43702-BTA-84086           | 0        | 69956436 |          |
| 9 | Hapmap27175-BTA-146614          | 0        | 69996975 |          |
| 9 | Hapmap60557-rs29018515          | 0        | 70069173 |          |
| 9 | BTA-121917-no-rs                | 0        | 70213859 |          |
| 9 | Hapmap51324-BTA-84103           | 0        | 70248005 |          |
| 9 | Hapmap32585-BTA-146623          | 0        | 70321037 |          |
| 9 | BTA-84106-no-rs                 | 0        | 70439087 |          |
| 9 | ARS-BFGL-NGS-10446              | 0        | 70479528 |          |
| 9 | ARS-BFGL-NGS-113524             | 0        | 70491698 |          |
| 9 | ARS-BFGL-NGS-17032              | 0        | 70549825 |          |
| 9 | BTA-84108-no-rs                 | 0        | 70589381 |          |
| 9 | BTA-102668-no-rs                | 0        | 70612283 |          |
| 9 | BTA-102674-no-rs                | 0        | 70645369 |          |
| 9 | Hapmap34932-BES2_Contig534_1340 | 0        |          | 70689180 |
| 9 | ARS-BFGL-NGS-24848              | 0        | 70874966 |          |
| 9 | ARS-BFGL-NGS-119476             | 0        | 70904362 |          |

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| 9 | BTA-97753-no-rs                 | 0 | 70959203 |          |
| 9 | BTA-97754-no-rs                 | 0 | 71021904 |          |
| 9 | ARS-BFGL-NGS-73931              | 0 | 71106014 |          |
| 9 | Hapmap49339-BTA-84110           | 0 | 71162153 |          |
| 9 | Hapmap39445-BTA-84115           | 0 | 71389287 |          |
| 9 | ARS-BFGL-NGS-65921              | 0 | 71450748 |          |
| 9 | ARS-BFGL-NGS-75682              | 0 | 71469050 |          |
| 9 | BTA-122057-no-rs                | 0 | 71499843 |          |
| 9 | Hapmap26151-BTA-146648          | 0 | 71736363 |          |
| 9 | BTA-84153-no-rs                 | 0 | 71785036 |          |
| 9 | BTA-84156-no-rs                 | 0 | 71838550 |          |
| 9 | ARS-BFGL-NGS-103273             | 0 | 71884731 |          |
| 9 | ARS-BFGL-NGS-88289              | 0 | 71915703 |          |
| 9 | ARS-BFGL-NGS-88546              | 0 | 71939142 |          |
| 9 | ARS-BFGL-NGS-78172              | 0 | 71970552 |          |
| 9 | Hapmap34441-BES9_Contig154_536  | 0 |          | 72062027 |
| 9 | BTA-84163-no-rs                 | 0 | 72115536 |          |
| 9 | BTA-84164-no-rs                 | 0 | 72191808 |          |
| 9 | Hapmap44658-BTA-84166           | 0 | 72213796 |          |
| 9 | Hapmap31779-BTA-146654          | 0 | 72287263 |          |
| 9 | BTA-84172-no-rs                 | 0 | 72308243 |          |
| 9 | Hapmap51986-BTA-84173           | 0 | 72331851 |          |
| 9 | Hapmap42338-BTA-84177           | 0 | 72503814 |          |
| 9 | Hapmap25288-BTA-146657          | 0 | 72533081 |          |
| 9 | ARS-BFGL-NGS-31553              | 0 | 72576471 |          |
| 9 | Hapmap35154-BES5_Contig430_1070 | 0 |          | 72670722 |
| 9 | Hapmap49774-BTA-84178           | 0 | 72694058 |          |
| 9 | BTA-84179-no-rs                 | 0 | 72716135 |          |
| 9 | BTA-84183-no-rs                 | 0 | 72745282 |          |
| 9 | BTA-84187-no-rs                 | 0 | 72764359 |          |
| 9 | Hapmap40256-BTA-84189           | 0 | 72822507 |          |
| 9 | ARS-BFGL-NGS-119805             | 0 | 73185539 |          |
| 9 | ARS-BFGL-NGS-40061              | 0 | 73219528 |          |
| 9 | ARS-BFGL-NGS-116287             | 0 | 73259605 |          |
| 9 | ARS-BFGL-NGS-34643              | 0 | 73340821 |          |
| 9 | Hapmap43703-BTA-84122           | 0 | 73368179 |          |
| 9 | BTA-84124-no-rs                 | 0 | 73417713 |          |
| 9 | ARS-BFGL-NGS-107540             | 0 | 73475655 |          |
| 9 | ARS-BFGL-NGS-29116              | 0 | 73525907 |          |
| 9 | ARS-BFGL-NGS-68900              | 0 | 73576722 |          |
| 9 | ARS-BFGL-NGS-20865              | 0 | 73718486 |          |
| 9 | Hapmap43370-BTA-84209           | 0 | 73749461 |          |
| 9 | Hapmap38127-BTA-84272           | 0 | 73873382 |          |
| 9 | BTA-84267-no-rs                 | 0 | 73922020 |          |
| 9 | ARS-BFGL-NGS-89981              | 0 | 73973594 |          |
| 9 | BTA-84258-no-rs                 | 0 | 74009972 |          |
| 9 | BTA-84257-no-rs                 | 0 | 74057041 |          |
| 9 | BTA-84256-no-rs                 | 0 | 74175488 |          |
| 9 | ARS-BFGL-NGS-16966              | 0 | 74223999 |          |
| 9 | BTA-84254-no-rs                 | 0 | 74265237 |          |
| 9 | ARS-BFGL-NGS-25071              | 0 | 74293236 |          |
| 9 | BTA-84246-no-rs                 | 0 | 74314570 |          |
| 9 | BTA-84244-no-rs                 | 0 | 74347032 |          |
| 9 | BTA-84242-no-rs                 | 0 | 74380933 |          |

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| 9 | ARS-BFGL-NGS-36451             | 0 | 74512290 |          |
| 9 | BTA-84237-no-rs                | 0 | 74582787 |          |
| 9 | Hapmap42339-BTA-84231          | 0 | 74624785 |          |
| 9 | ARS-BFGL-NGS-35569             | 0 | 74702101 |          |
| 9 | ARS-BFGL-NGS-28843             | 0 | 74722894 |          |
| 9 | ARS-BFGL-NGS-37054             | 0 | 74749292 |          |
| 9 | Hapmap61054-rs29010366         | 0 | 74848962 |          |
| 9 | BTA-19965-no-rs                | 0 | 74961950 |          |
| 9 | BTA-19966-no-rs                | 0 | 75080790 |          |
| 9 | BTA-07004-no-rs                | 0 | 75107997 |          |
| 9 | Hapmap31122-BTA-146680         | 0 | 75157517 |          |
| 9 | Hapmap44297-BTA-84289          | 0 | 75194809 |          |
| 9 | BTA-84286-no-rs                | 0 | 75484456 |          |
| 9 | Hapmap43955-BTA-84283          | 0 | 75535278 |          |
| 9 | Hapmap33532-BTA-84282          | 0 | 75597064 |          |
| 9 | ARS-BFGL-NGS-114921            | 0 | 75688599 |          |
| 9 | Hapmap54471-rs29017484         | 0 | 75753957 |          |
| 9 | ARS-BFGL-NGS-10608             | 0 | 75778896 |          |
| 9 | Hapmap51348-BTA-90742          | 0 | 75805249 |          |
| 9 | Hapmap48558-BTA-101012         | 0 | 75896385 |          |
| 9 | Hapmap34526-BES7_Contig402_572 | 0 |          | 75932080 |
| 9 | ARS-BFGL-NGS-35694             | 0 | 76071062 |          |
| 9 | BTA-01195-rs29012162           | 0 | 76100102 |          |
| 9 | Hapmap42848-BTA-122260         | 0 | 76152019 |          |
| 9 | ARS-BFGL-NGS-12104             | 0 | 76316163 |          |
| 9 | Hapmap38455-BTA-100999         | 0 | 76346736 |          |
| 9 | ARS-BFGL-NGS-74588             | 0 | 76413758 |          |
| 9 | BTA-84308-no-rs                | 0 | 76527168 |          |
| 9 | ARS-BFGL-NGS-37047             | 0 | 76586149 |          |
| 9 | ARS-BFGL-NGS-83490             | 0 | 76618632 |          |
| 9 | BTA-93583-no-rs                | 0 | 76649263 |          |
| 9 | BTA-84292-no-rs                | 0 | 76745413 |          |
| 9 | ARS-BFGL-NGS-20794             | 0 | 76776811 |          |
| 9 | ARS-BFGL-NGS-10679             | 0 | 76868290 |          |
| 9 | ARS-BFGL-NGS-118949            | 0 | 76905344 |          |
| 9 | ARS-BFGL-NGS-41333             | 0 | 76928003 |          |
| 9 | BTA-84317-no-rs                | 0 | 76987007 |          |
| 9 | Hapmap43704-BTA-84318          | 0 | 77033979 |          |
| 9 | ARS-BFGL-NGS-33808             | 0 | 77070363 |          |
| 9 | Hapmap50488-BTA-84319          | 0 | 77095410 |          |
| 9 | Hapmap50799-BTA-84323          | 0 | 77162640 |          |
| 9 | ARS-BFGL-NGS-64241             | 0 | 77234828 |          |
| 9 | BTA-19410-no-rs                | 0 | 77284126 |          |
| 9 | BTA-84325-no-rs                | 0 | 77345504 |          |
| 9 | BTA-18844-no-rs                | 0 | 77403405 |          |
| 9 | Hapmap49341-BTA-84329          | 0 | 77442550 |          |
| 9 | ARS-BFGL-NGS-116465            | 0 | 77733879 |          |
| 9 | ARS-BFGL-NGS-10386             | 0 | 77832949 |          |
| 9 | Hapmap42142-BTA-22984          | 0 | 77858196 |          |
| 9 | BTA-16148-no-rs                | 0 | 77873296 |          |
| 9 | Hapmap44040-BTA-22987          | 0 | 78040314 |          |
| 9 | Hapmap52202-rs29021143         | 0 | 78142382 |          |
| 9 | BTA-121926-no-rs               | 0 | 78276718 |          |
| 9 | BTA-84369-no-rs                | 0 | 78300558 |          |

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| 9 | Hapmap41986-BTA-84372  | 0 | 78394103 |
| 9 | Hapmap32828-BTA-146707 | 0 | 78487896 |
| 9 | ARS-BFGL-NGS-43195     | 0 | 78576880 |
| 9 | Hapmap42740-BTA-96267  | 0 | 78811934 |
| 9 | Hapmap50171-BTA-96266  | 0 | 78858626 |
| 9 | Hapmap50205-BTA-107882 | 0 | 78979091 |
| 9 | BTA-107880-no-rs       | 0 | 79032924 |
| 9 | Hapmap45612-BTA-28859  | 0 | 79191994 |
| 9 | Hapmap26214-BTA-163696 | 0 | 79256833 |
| 9 | ARS-BFGL-NGS-33739     | 0 | 79407633 |
| 9 | Hapmap48707-BTA-28856  | 0 | 79457186 |
| 9 | BTA-113455-no-rs       | 0 | 79530093 |
| 9 | Hapmap40091-BTA-91850  | 0 | 79637102 |
| 9 | BTA-89158-no-rs        | 0 | 79691648 |
| 9 | Hapmap40089-BTA-89155  | 0 | 79781621 |
| 9 | Hapmap44298-BTA-84382  | 0 | 79887463 |
| 9 | Hapmap43371-BTA-84377  | 0 | 79988795 |
| 9 | Hapmap58666-rs29014693 | 0 | 80015418 |
| 9 | ARS-BFGL-NGS-16486     | 0 | 80258329 |
| 9 | ARS-BFGL-NGS-62628     | 0 | 80390453 |
| 9 | BTA-84365-no-rs        | 0 | 80569843 |
| 9 | BTA-84362-no-rs        | 0 | 80634085 |
| 9 | Hapmap51325-BTA-84364  | 0 | 80669302 |
| 9 | BTA-84353-no-rs        | 0 | 80859295 |
| 9 | ARS-BFGL-NGS-55553     | 0 | 80888317 |
| 9 | Hapmap59267-rs29026781 | 0 | 80963141 |
| 9 | ARS-BFGL-NGS-112652    | 0 | 81009334 |
| 9 | ARS-BFGL-NGS-44418     | 0 | 81098768 |
| 9 | Hapmap57618-rs29026831 | 0 | 81166662 |
| 9 | Hapmap54921-rs29026461 | 0 | 81195326 |
| 9 | BTA-122201-no-rs       | 0 | 81216232 |
| 9 | Hapmap49843-BTA-106082 | 0 | 81247377 |
| 9 | ARS-BFGL-NGS-11256     | 0 | 81277154 |
| 9 | BTA-106078-no-rs       | 0 | 81329823 |
| 9 | BTB-01182680           | 0 | 81368713 |
| 9 | BTB-01182684           | 0 | 81388889 |
| 9 | Hapmap31482-BTA-154189 | 0 | 81417658 |
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| 9 | BTA-115307-no-rs       | 0 | 81545246 |
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| 9 | ARS-BFGL-NGS-27092     | 0 | 81708099 |
| 9 | Hapmap29793-BTA-106104 | 0 | 81749940 |
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| 9 | Hapmap60500-rs29024426 | 0 | 81821734 |
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| 9 | BTB-00401428           | 0 | 81924104 |
| 9 | ARS-BFGL-NGS-32670     | 0 | 81981575 |
| 9 | BTB-00401246           | 0 | 82003186 |
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| 9 | Hapmap57034-rs29025414 | 0 | 82084067 |

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| 9 | BTB-00401032           | 0        | 82176129 |
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| 9 | Hapmap51065-BTA-84434  | 0        | 82253520 |
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| 9 | ARS-BFGL-NGS-118161    | 0        | 82306396 |
| 9 | BTB-00400948           | 0        | 82355820 |
| 9 | ARS-BFGL-NGS-99576     | 0        | 82419691 |
| 9 | ARS-BFGL-NGS-100330    | 0        | 82444430 |
| 9 | ARS-BFGL-NGS-109349    | 0        | 82490024 |
| 9 | ARS-BFGL-NGS-17770     | 82563961 |          |
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| 9 | BTB-00400860           | 0        | 82634864 |
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| 9 | ARS-BFGL-NGS-22410     | 82727863 |          |
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| 9 | BTB-00400366           | 0        | 82873437 |
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| 9 | ARS-BFGL-NGS-25441     | 0        | 83714110 |
| 9 | Hapmap40235-BTA-119728 | 0        | 83738200 |
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| 9 | ARS-BFGL-NGS-35130     | 0        | 83904725 |
| 9 | Hapmap57148-rs29015116 | 0        | 84225154 |
| 9 | ARS-BFGL-NGS-114088    | 0        | 84339715 |
| 9 | ARS-BFGL-NGS-18660     | 84489200 |          |
| 9 | ARS-BFGL-NGS-118527    | 0        | 84595871 |
| 9 | ARS-BFGL-NGS-99132     | 0        | 84616437 |
| 9 | Hapmap27146-BTA-123441 | 0        | 84639150 |
| 9 | BTA-112235-no-rs       | 0        | 84723435 |
| 9 | Hapmap60699-rs29010238 | 0        | 84745111 |



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| 9 | ARS-BFGL-NGS-96898     | 0 | 85301768 |
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| 9 | Hapmap46173-BTA-84572  | 0 | 85396006 |
| 9 | ARS-BFGL-NGS-60678     | 0 | 85454475 |
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| 9 | BTA-84570-no-rs        | 0 | 85532211 |
| 9 | ARS-BFGL-NGS-105322    | 0 | 85565030 |
| 9 | BTA-84564-no-rs        | 0 | 85585657 |
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| 9 | BTA-02714-rs29010261   | 0 | 85737168 |
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| 9 | Hapmap39784-BTA-84610  | 0 | 87190233 |
| 9 | ARS-BFGL-NGS-53150     | 0 | 87212622 |
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| 9 | ARS-BFGL-NGS-25568     | 0 | 87429492 |
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| 9 | Hapmap47152-BTA-101314 | 0 | 87568944 |
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| 9 | BTA-56221-no-rs        | 0 | 87724552 |
| 9 | Hapmap54854-rs29025535 | 0 | 87759769 |
| 9 | ARS-BFGL-NGS-23462     | 0 | 87843841 |
| 9 | Hapmap55954-rs29018921 | 0 | 87888653 |
| 9 | Hapmap27481-BTA-80583  | 0 | 87989600 |
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| 9 | BTB-01693152           | 0 | 88112031 |
| 9 | Hapmap49063-BTA-122476 | 0 | 88145277 |
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| 9 | ARS-BFGL-NGS-25823     | 0 | 88448285 |
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| 9 | BTB-01864192           | 0 | 88613272 |
| 9 | BTA-56213-no-rs        | 0 | 88693128 |
| 9 | BTB-00866140           | 0 | 88714313 |
| 9 | Hapmap41585-BTA-56206  | 0 | 88737469 |
| 9 | BTA-56204-no-rs        | 0 | 88760079 |
| 9 | ARS-BFGL-NGS-36861     | 0 | 88814138 |
| 9 | Hapmap58334-rs29012728 | 0 | 88855919 |
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| 9 | BTB-00865957           | 0 | 88916220 |
| 9 | Hapmap43079-BTA-84708  | 0 | 88955721 |
| 9 | BTA-56201-no-rs        | 0 | 88964135 |
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| 9 | ARS-BFGL-NGS-33060     | 0 | 89036885 |
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| 9 | Hapmap50128-BTA-84697  | 0 | 89238979 |
| 9 | ARS-BFGL-NGS-92851     | 0 | 89271801 |
| 9 | Hapmap58876-ss46526986 | 0 | 89308006 |
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| 9 | ARS-BFGL-NGS-18187     | 0 | 89435441 |
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| 9 | BTB-00405268           | 0 | 89605738 |
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| 9 | BTB-00404625           | 0 | 90080368 |
| 9 | BTA-84673-no-rs        | 0 | 90103579 |
| 9 | Hapmap42341-BTA-84711  | 0 | 90155533 |
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| 9 | ARS-BFGL-NGS-46105             | 0 | 90247980 |  |
| 9 | BTB-00404361                   | 0 | 90283190 |  |
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| 9 | BTB-00404235                   | 0 | 90365450 |  |
| 9 | Hapmap30552-BTA-146773         | 0 | 90405501 |  |
| 9 | BTB-00404155                   | 0 | 90423605 |  |
| 9 | BTB-00404043                   | 0 | 90487574 |  |
| 9 | ARS-BFGL-NGS-118377            | 0 | 90521235 |  |
| 9 | Hapmap55532-rs29025303         | 0 | 90543408 |  |
| 9 | Hapmap33670-BTA-153234         | 0 | 90570234 |  |
| 9 | Hapmap25870-BTA-152557         | 0 | 90636095 |  |
| 9 | ARS-BFGL-NGS-32066             | 0 | 90690991 |  |
| 9 | BTB-01528583                   | 0 | 90719582 |  |
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| 9 | ARS-BFGL-NGS-27372             | 0 | 90807695 |  |
| 9 | BTB-01839335                   | 0 | 90839538 |  |
| 9 | BTB-01856096                   | 0 | 90884326 |  |
| 9 | BTB-01926094                   | 0 | 90924836 |  |
| 9 | BTB-00403185                   | 0 | 91058994 |  |
| 9 | Hapmap34846-BES9_Contig542_948 | 0 | 91090826 |  |
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| 9 | Hapmap44674-BTA-84638          | 0 | 91158204 |  |
| 9 | BTA-86768-no-rs                | 0 | 91289219 |  |
| 9 | BTB-00403297                   | 0 | 91346194 |  |
| 9 | BTB-00403334                   | 0 | 91381065 |  |
| 9 | BTB-00403355                   | 0 | 91405210 |  |
| 9 | ARS-BFGL-NGS-110412            | 0 | 91439245 |  |
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| 9 | BTB-00403474                   | 0 | 91469581 |  |
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| 9 | BTB-02052386                   | 0 | 91529844 |  |
| 9 | ARS-BFGL-NGS-117568            | 0 | 91555038 |  |
| 9 | BTB-01895465                   | 0 | 91580703 |  |
| 9 | Hapmap52598-rs29022272         | 0 | 91672738 |  |
| 9 | Hapmap42024-BTA-99056          | 0 | 91774553 |  |
| 9 | BTA-99189-no-rs                | 0 | 91832122 |  |
| 9 | Hapmap43117-BTA-99191          | 0 | 91856294 |  |
| 9 | BTA-99061-no-rs                | 0 | 91883035 |  |
| 9 | BTA-07298-no-rs                | 0 | 91919657 |  |
| 9 | BTA-116009-no-rs               | 0 | 91957395 |  |
| 9 | Hapmap59634-rs29013969         | 0 | 92061663 |  |
| 9 | BTA-115744-no-rs               | 0 | 92093186 |  |
| 9 | ARS-BFGL-NGS-26936             | 0 | 92117730 |  |
| 9 | ARS-BFGL-NGS-24141             | 0 | 92163441 |  |
| 9 | ARS-BFGL-NGS-29957             | 0 | 92193482 |  |
| 9 | ARS-BFGL-NGS-10572             | 0 | 92242453 |  |
| 9 | BTB-00406396                   | 0 | 92277085 |  |
| 9 | ARS-BFGL-NGS-101711            | 0 | 92300111 |  |
| 9 | Hapmap39594-BTA-84776          | 0 | 92350052 |  |
| 9 | BTA-84777-no-rs                | 0 | 92377210 |  |
| 9 | Hapmap43080-BTA-84772          | 0 | 92400217 |  |
| 9 | BTA-14629-rs29023391           | 0 | 92430269 |  |
| 9 | ARS-BFGL-NGS-51590             | 0 | 92462210 |  |
| 9 | BTB-00406164                   | 0 | 92490764 |  |

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| 9 | ARS-BFGL-NGS-89132              | 0 | 92520762 |          |
| 9 | ARS-BFGL-NGS-97534              | 0 | 92569439 |          |
| 9 | BTA-84762-no-rs                 | 0 | 92597218 |          |
| 9 | Hapmap42702-BTA-84760           | 0 | 92685796 |          |
| 9 | ARS-BFGL-NGS-21787              | 0 | 92743482 |          |
| 9 | BTA-84755-no-rs                 | 0 | 92773202 |          |
| 9 | BTB-00406083                    | 0 | 92806579 |          |
| 9 | ARS-BFGL-NGS-118920             | 0 | 92878393 |          |
| 9 | ARS-BFGL-NGS-12213              | 0 | 92909354 |          |
| 9 | BTB-00405876                    | 0 | 92939898 |          |
| 9 | Hapmap48921-BTA-84744           | 0 | 93000526 |          |
| 9 | ARS-BFGL-NGS-111177             | 0 | 93045670 |          |
| 9 | BTA-84733-no-rs                 | 0 | 93094049 |          |
| 9 | ARS-BFGL-NGS-20800              |   | 93144071 |          |
| 9 | ARS-BFGL-NGS-115094             | 0 | 93183596 |          |
| 9 | ARS-BFGL-NGS-57866              | 0 | 93246183 |          |
| 9 | ARS-BFGL-NGS-50730              |   | 93314047 |          |
| 9 | Hapmap38918-BTA-84725           | 0 | 93430532 |          |
| 9 | ARS-BFGL-NGS-52931              | 0 | 93472326 |          |
| 9 | ARS-BFGL-NGS-111419             | 0 | 93520501 |          |
| 9 | ARS-BFGL-NGS-112933             | 0 | 93552330 |          |
| 9 | BTA-84778-no-rs                 | 0 | 93685360 |          |
| 9 | Hapmap54030-rs29026423          | 0 | 93731471 |          |
| 9 | Hapmap44147-BTA-84872           | 0 | 93884361 |          |
| 9 | ARS-BFGL-NGS-39765              | 0 | 93910957 |          |
| 9 | ARS-BFGL-NGS-96838              | 0 | 93998350 |          |
| 9 | Hapmap49343-BTA-84864           | 0 | 94058536 |          |
| 9 | Hapmap36668-SCAFFOLD65016_14724 | 0 |          | 94123343 |
| 9 | ARS-BFGL-NGS-114310             | 0 | 94154628 |          |
| 9 | ARS-BFGL-NGS-85909              | 0 | 94206805 |          |
| 9 | ARS-BFGL-NGS-44527              | 0 | 94274847 |          |
| 9 | BTA-84833-no-rs                 | 0 | 94407624 |          |
| 9 | BTA-84832-no-rs                 | 0 | 94430300 |          |
| 9 | BTA-84831-no-rs                 | 0 | 94460606 |          |
| 9 | ARS-BFGL-NGS-81082              | 0 | 94511747 |          |
| 9 | ARS-BFGL-NGS-93641              | 0 | 94643772 |          |
| 9 | ARS-BFGL-NGS-69908              | 0 | 94683820 |          |
| 9 | ARS-BFGL-NGS-33437              | 0 | 94733670 |          |
| 9 | ARS-BFGL-NGS-16920              | 0 | 94824800 |          |
| 9 | Hapmap60123-rs29018437          | 0 | 94991477 |          |
| 9 | BTA-24107-no-rs                 | 0 | 95017314 |          |
| 9 | BTA-24108-no-rs                 | 0 | 95041591 |          |
| 9 | BTA-84883-no-rs                 | 0 | 95065382 |          |
| 9 | ARS-BFGL-NGS-110296             | 0 | 95127819 |          |
| 9 | Hapmap23265-BTA-146870          | 0 | 95149286 |          |
| 9 | ARS-BFGL-NGS-15852              | 0 | 95169727 |          |
| 9 | ARS-BFGL-NGS-116567             | 0 | 95194688 |          |
| 9 | ARS-BFGL-NGS-116774             | 0 | 95264976 |          |
| 9 | ARS-BFGL-NGS-59449              | 0 | 95328754 |          |
| 9 | ARS-BFGL-NGS-100271             | 0 | 95395251 |          |
| 9 | ARS-BFGL-NGS-102511             | 0 | 95425804 |          |
| 9 | ARS-BFGL-NGS-55179              | 0 | 95450193 |          |
| 9 | ARS-BFGL-NGS-58059              | 0 | 95470691 |          |
| 9 | ARS-BFGL-NGS-101339             | 0 | 95591202 |          |

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| 9 | ARS-BFGL-NGS-42139     | 0 | 95625955 |
| 9 | ARS-BFGL-NGS-85269     | 0 | 95670148 |
| 9 | ARS-BFGL-NGS-114841    | 0 | 95692242 |
| 9 | ARS-BFGL-NGS-21356     | 0 | 95728849 |
| 9 | ARS-BFGL-NGS-62853     | 0 | 95789766 |
| 9 | ARS-BFGL-NGS-61410     | 0 | 95891909 |
| 9 | Hapmap52146-ss46526966 | 0 | 95952795 |
| 9 | ARS-BFGL-NGS-94348     | 0 | 95976235 |
| 9 | BTA-94264-no-rs        | 0 | 95991198 |
| 9 | ARS-BFGL-NGS-103694    | 0 | 96030427 |
| 9 | Hapmap33236-BTA-155516 | 0 | 96100458 |
| 9 | ARS-BFGL-NGS-102803    | 0 | 96131728 |
| 9 | ARS-BFGL-NGS-113972    | 0 | 96179058 |
| 9 | Hapmap57700-rs29024438 | 0 | 96215762 |
| 9 | Hapmap48098-BTA-84937  | 0 | 96298532 |
| 9 | Hapmap58613-rs29012081 | 0 | 96352431 |
| 9 | BTA-84789-no-rs        | 0 | 96385031 |
| 9 | ARS-BFGL-NGS-40929     | 0 | 96448625 |
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| 9 | BTA-84792-no-rs        | 0 | 96513569 |
| 9 | ARS-BFGL-NGS-63323     | 0 | 96559065 |
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| 9 | ARS-BFGL-NGS-100825    | 0 | 96693865 |
| 9 | Hapmap38532-BTA-84823  | 0 | 96715173 |
| 9 | Hapmap41661-BTA-84825  | 0 | 96767099 |
| 9 | ARS-BFGL-NGS-52980     | 0 | 96938354 |
| 9 | BTA-94895-no-rs        | 0 | 96987304 |
| 9 | ARS-BFGL-NGS-64973     | 0 | 97022238 |
| 9 | ARS-BFGL-NGS-25581     | 0 | 97050334 |
| 9 | ARS-BFGL-NGS-82846     | 0 | 97100302 |
| 9 | ARS-BFGL-NGS-31750     | 0 | 97191669 |
| 9 | ARS-BFGL-NGS-115430    | 0 | 97219468 |
| 9 | ARS-BFGL-NGS-37602     | 0 | 97260495 |
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| 9 | BTA-93490-no-rs        | 0 | 97377573 |
| 9 | ARS-BFGL-NGS-117379    | 0 | 97397264 |
| 9 | Hapmap54387-rs29020464 | 0 | 97485003 |
| 9 | ARS-BFGL-NGS-69094     | 0 | 97521014 |
| 9 | ARS-BFGL-NGS-28538     | 0 | 97584669 |
| 9 | Hapmap38533-BTA-84943  | 0 | 97624409 |
| 9 | ARS-BFGL-NGS-112284    | 0 | 97647025 |
| 9 | ARS-BFGL-NGS-23123     | 0 | 97694082 |
| 9 | ARS-BFGL-NGS-119644    | 0 | 97732365 |
| 9 | ARS-BFGL-NGS-100350    | 0 | 97760489 |
| 9 | ARS-BFGL-NGS-119453    | 0 | 97790864 |
| 9 | Hapmap48923-BTA-85080  | 0 | 97825385 |
| 9 | Hapmap47120-BTA-85079  | 0 | 97872904 |
| 9 | ARS-BFGL-NGS-33140     | 0 | 97901467 |
| 9 | ARS-BFGL-NGS-102854    | 0 | 97929407 |
| 9 | BTA-84960-no-rs        | 0 | 97994503 |
| 9 | ARS-BFGL-NGS-92523     | 0 | 98022359 |
| 9 | Hapmap42703-BTA-84963  | 0 | 98047172 |
| 9 | ARS-BFGL-NGS-103746    | 0 | 98094492 |
| 9 | Hapmap49777-BTA-84987  | 0 | 98124370 |

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| 9 | Hapmap41988-BTA-84944                 | 0 | 98155499  |   |          |
| 9 | ARS-BFGL-NGS-95100                    | 0 | 98245564  |   |          |
| 9 | ARS-BFGL-NGS-43192                    | 0 | 98276262  |   |          |
| 9 | ARS-BFGL-NGS-38971                    | 0 | 98306160  |   |          |
| 9 | ARS-BFGL-NGS-114715                   | 0 | 98349764  |   |          |
| 9 | Hapmap45161-BTA-121933                | 0 | 98378633  |   |          |
| 9 | Hapmap60555-rs29018256                | 0 | 98460090  |   |          |
| 9 | ARS-USMARC-Parent-DQ786765-rs29009858 | 0 |           | 0 | 98483346 |
| 9 | Hapmap39447-BTA-85013                 | 0 | 98512648  |   |          |
| 9 | ARS-BFGL-NGS-22058                    | 0 | 98526918  |   |          |
| 9 | BTA-75291-no-rs                       | 0 | 98566722  |   |          |
| 9 | ARS-BFGL-NGS-11712                    | 0 | 98595966  |   |          |
| 9 | BTA-75293-no-rs                       | 0 | 98648213  |   |          |
| 9 | ARS-BFGL-NGS-103764                   | 0 | 98759214  |   |          |
| 9 | ARS-BFGL-NGS-83787                    | 0 | 98784166  |   |          |
| 9 | ARS-BFGL-NGS-20442                    | 0 | 98820692  |   |          |
| 9 | Hapmap43375-BTA-85005                 | 0 | 98847521  |   |          |
| 9 | ARS-BFGL-NGS-70685                    | 0 | 98876440  |   |          |
| 9 | ARS-BFGL-NGS-96330                    |   | 98923817  |   |          |
| 9 | ARS-BFGL-NGS-102054                   | 0 | 99023845  |   |          |
| 9 | ARS-BFGL-NGS-104698                   | 0 | 99072838  |   |          |
| 9 | Hapmap42705-BTA-85041                 | 0 | 99135245  |   |          |
| 9 | Hapmap50130-BTA-85042                 | 0 | 99206133  |   |          |
| 9 | ARS-BFGL-NGS-110002                   | 0 | 99229165  |   |          |
| 9 | BTA-85048-no-rs                       | 0 | 99271707  |   |          |
| 9 | ARS-BFGL-NGS-34000                    |   | 99334002  |   |          |
| 9 | ARS-BFGL-NGS-66951                    | 0 | 99354827  |   |          |
| 9 | Hapmap30268-BTA-146895                | 0 | 99396544  |   |          |
| 9 | Hapmap51327-BTA-85076                 | 0 | 99685101  |   |          |
| 9 | ARS-BFGL-NGS-114319                   | 0 | 99840865  |   |          |
| 9 | Hapmap43376-BTA-85122                 | 0 | 99871311  |   |          |
| 9 | ARS-BFGL-NGS-65306                    | 0 | 99896232  |   |          |
| 9 | ARS-BFGL-NGS-115765                   | 0 | 99936460  |   |          |
| 9 | ARS-BFGL-NGS-58450                    |   | 99978975  |   |          |
| 9 | BTA-85115-no-rs                       | 0 | 100022759 |   |          |
| 9 | ARS-BFGL-NGS-113413                   | 0 | 100113691 |   |          |
| 9 | ARS-BFGL-NGS-109783                   | 0 | 100138190 |   |          |
| 9 | ARS-BFGL-NGS-55675                    | 0 | 100163987 |   |          |
| 9 | Hapmap49345-BTA-85101                 | 0 | 100304045 |   |          |
| 9 | BTA-85096-no-rs                       | 0 | 100416580 |   |          |
| 9 | ARS-BFGL-NGS-114838                   | 0 | 100545557 |   |          |
| 9 | ARS-BFGL-NGS-24483                    | 0 | 100594251 |   |          |
| 9 | ARS-BFGL-NGS-106540                   | 0 | 100617810 |   |          |
| 9 | ARS-BFGL-NGS-116687                   | 0 | 100656795 |   |          |
| 9 | ARS-BFGL-NGS-10149                    | 0 | 100683744 |   |          |
| 9 | ARS-BFGL-NGS-10063                    | 0 | 100742806 |   |          |
| 9 | ARS-BFGL-NGS-75216                    | 0 | 100769016 |   |          |
| 9 | Hapmap46887-BTA-85088                 | 0 | 100800026 |   |          |
| 9 | ARS-BFGL-NGS-78761                    | 0 | 100827855 |   |          |
| 9 | ARS-BFGL-NGS-29290                    | 0 | 100892769 |   |          |
| 9 | BTA-108536-no-rs                      | 0 | 100927731 |   |          |
| 9 | ARS-BFGL-NGS-111830                   | 0 | 100955985 |   |          |
| 9 | Hapmap41989-BTA-85190                 | 0 | 100999972 |   |          |
| 9 | Hapmap46889-BTA-85184                 | 0 | 101044571 |   |          |

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| 9 | BTA-85182-no-rs        | 0 | 101065362 |
| 9 | Hapmap51770-BTA-85181  | 0 | 101113354 |
| 9 | ARS-BFGL-NGS-52906     | 0 | 101170043 |
| 9 | BTA-85169-no-rs        | 0 | 101286417 |
| 9 | ARS-BFGL-NGS-43200     | 0 | 101359409 |
| 9 | ARS-BFGL-NGS-38487     | 0 | 101384691 |
| 9 | Hapmap53323-rs29022857 | 0 | 101433902 |
| 9 | Hapmap23780-BTA-85163  | 0 | 101470808 |
| 9 | ARS-BFGL-NGS-24953     | 0 | 101517733 |
| 9 | UA-IFASA-9685          | 0 | 101640789 |
| 9 | Hapmap46888-BTA-85152  | 0 | 101667889 |
| 9 | ARS-BFGL-NGS-10499     | 0 | 101726621 |
| 9 | Hapmap48173-BTA-107833 | 0 | 101785435 |
| 9 | ARS-BFGL-NGS-28159     | 0 | 101844821 |
| 9 | ARS-BFGL-NGS-26349     | 0 | 101888398 |
| 9 | Hapmap38266-BTA-97562  | 0 | 101909183 |
| 9 | Hapmap33100-BTA-97564  | 0 | 101945908 |
| 9 | ARS-BFGL-NGS-41356     | 0 | 101966211 |
| 9 | ARS-BFGL-NGS-60675     | 0 | 102007389 |
| 9 | ARS-BFGL-NGS-106604    | 0 | 102027971 |
| 9 | BTA-85138-no-rs        | 0 | 102132569 |
| 9 | ARS-BFGL-NGS-72947     | 0 | 102301291 |
| 9 | ARS-BFGL-NGS-11625     | 0 | 102341518 |
| 9 | ARS-BFGL-NGS-22624     | 0 | 102574022 |
| 9 | ARS-BFGL-NGS-99341     | 0 | 102615967 |
| 9 | ARS-BFGL-NGS-111359    | 0 | 102711446 |
| 9 | ARS-BFGL-NGS-23888     | 0 | 102758143 |
| 9 | Hapmap42343-BTA-85195  | 0 | 102788323 |
| 9 | ARS-BFGL-NGS-58052     | 0 | 102811076 |
| 9 | ARS-BFGL-NGS-26554     | 0 | 102826828 |
| 9 | ARS-BFGL-NGS-117605    | 0 | 102930778 |
| 9 | BTA-85226-no-rs        | 0 | 103023183 |
| 9 | ARS-BFGL-NGS-114800    | 0 | 103043592 |
| 9 | Hapmap32586-BTA-146939 | 0 | 103108622 |
| 9 | ARS-BFGL-NGS-67540     | 0 | 103127530 |
| 9 | ARS-BFGL-NGS-114891    | 0 | 103153156 |
| 9 | ARS-BFGL-NGS-68458     | 0 | 103180423 |
| 9 | ARS-BFGL-NGS-85461     | 0 | 103216021 |
| 9 | ARS-BFGL-NGS-20741     | 0 | 103270667 |
| 9 | ARS-BFGL-NGS-18856     | 0 | 103308910 |
| 9 | ARS-BFGL-NGS-75115     | 0 | 103330374 |
| 9 | ARS-BFGL-NGS-32490     | 0 | 103383683 |
| 9 | ARS-BFGL-NGS-72792     | 0 | 103411929 |
| 9 | ARS-BFGL-NGS-14730     | 0 | 103465712 |
| 9 | ARS-BFGL-NGS-35249     | 0 | 103505743 |
| 9 | ARS-BFGL-NGS-87714     | 0 | 103544256 |
| 9 | ARS-BFGL-NGS-113574    | 0 | 103570739 |
| 9 | ARS-BFGL-NGS-119390    | 0 | 103604815 |
| 9 | ARS-BFGL-NGS-112262    | 0 | 103612265 |
| 9 | ARS-BFGL-NGS-102044    | 0 | 103646025 |
| 9 | ARS-BFGL-NGS-62112     | 0 | 103671451 |
| 9 | ARS-BFGL-NGS-61738     | 0 | 103700559 |
| 9 | Hapmap33058-BTA-158159 | 0 | 103727630 |
| 9 | ARS-BFGL-NGS-28590     | 0 | 103755777 |

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| 9  | ARS-BFGL-NGS-41284     | 0         | 103777260 |
| 9  | ARS-BFGL-NGS-64790     | 103822440 |           |
| 9  | ARS-BFGL-NGS-48434     | 0         | 103847209 |
| 9  | ARS-BFGL-NGS-36979     | 0         | 103874658 |
| 9  | ARS-BFGL-NGS-89011     | 0         | 103947174 |
| 9  | BTA-117687-no-rs       | 0         | 104013711 |
| 9  | ARS-BFGL-NGS-32882     | 0         | 104071394 |
| 9  | ARS-BFGL-NGS-53635     | 0         | 104094973 |
| 9  | ARS-BFGL-NGS-10559     | 0         | 104196469 |
| 9  | ARS-BFGL-NGS-103129    | 0         | 104265004 |
| 9  | ARS-BFGL-NGS-115046    | 0         | 104288016 |
| 9  | Hapmap40046-BTA-117691 | 0         | 104334228 |
| 9  | ARS-BFGL-NGS-67570     | 104387825 |           |
| 9  | ARS-BFGL-NGS-53294     | 0         | 104429330 |
| 9  | ARS-BFGL-NGS-16510     | 104473945 |           |
| 9  | ARS-BFGL-NGS-77944     | 0         | 104503206 |
| 9  | ARS-BFGL-NGS-34445     | 0         | 104529625 |
| 9  | ARS-BFGL-NGS-19753     | 0         | 104560004 |
| 9  | Hapmap51347-BTA-90657  | 0         | 104586319 |
| 9  | ARS-BFGL-NGS-87949     | 0         | 104676729 |
| 9  | ARS-BFGL-NGS-13350     | 104730150 |           |
| 9  | ARS-BFGL-NGS-59530     | 0         | 104812132 |
| 9  | ARS-BFGL-NGS-29898     | 0         | 104842677 |
| 9  | ARS-BFGL-NGS-53423     | 0         | 104880348 |
| 9  | ARS-BFGL-NGS-83257     | 0         | 104902072 |
| 9  | ARS-BFGL-NGS-114754    | 0         | 104926053 |
| 9  | Hapmap40387-BTA-107848 | 0         | 104960154 |
| 9  | ARS-BFGL-NGS-107084    | 0         | 105007436 |
| 9  | ARS-BFGL-NGS-26776     | 0         | 105035231 |
| 9  | Hapmap38884-BTA-122472 | 0         | 105074182 |
| 9  | ARS-BFGL-NGS-115093    | 0         | 105168826 |
| 9  | ARS-BFGL-NGS-45950     | 105238273 |           |
| 9  | ARS-BFGL-NGS-42329     | 0         | 105263583 |
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| 9  | ARS-BFGL-NGS-10411     | 0         | 105351459 |
| 9  | ARS-BFGL-NGS-22128     | 0         | 105462864 |
| 9  | ARS-BFGL-NGS-104591    | 0         | 105587941 |
| 10 | Hapmap47489-BTA-108175 | 0         | 961339    |
| 10 | ARS-BFGL-NGS-102129    | 0         | 1034726   |
| 10 | Hapmap60024-ss46526864 | 0         | 1093739   |
| 10 | UA-IFASA-8467          | 0         | 1126666   |
| 10 | ARS-BFGL-NGS-112953    | 0         | 1206871   |
| 10 | Hapmap39478-BTA-26135  | 0         | 1250058   |
| 10 | Hapmap53069-rs29027129 | 0         | 1304115   |
| 10 | ARS-BFGL-NGS-104767    | 0         | 1361856   |
| 10 | ARS-BFGL-NGS-40761     | 0         | 1386444   |
| 10 | BTA-107452-no-rs       | 0         | 1479316   |
| 10 | ARS-BFGL-NGS-17009     | 0         | 1519392   |
| 10 | ARS-BFGL-NGS-31475     | 0         | 1558353   |
| 10 | ARS-BFGL-NGS-92626     | 0         | 1612315   |
| 10 | BTA-07939-rs29027600   | 0         | 1783418   |
| 10 | ARS-BFGL-NGS-216       | 0         | 1943087   |
| 10 | Hapmap55445-rs29014484 | 0         | 1979167   |
| 10 | ARS-BFGL-NGS-119719    | 0         | 2013047   |



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| 10 | ARS-BFGL-NGS-22700                    | 2079050 |         |  |
| 10 | ARS-BFGL-NGS-67883                    | 0       | 2120126 |  |
| 10 | BTA-20613-no-rs                       | 0       | 2244249 |  |
| 10 | Hapmap50615-BTA-20585                 | 0       | 2290464 |  |
| 10 | ARS-BFGL-NGS-103363                   | 0       | 2312674 |  |
| 10 | BTA-20597-no-rs                       | 0       | 2335938 |  |
| 10 | ARS-BFGL-NGS-116535                   | 0       | 2361595 |  |
| 10 | Hapmap49460-BTA-114998                | 0       | 2445414 |  |
| 10 | ARS-BFGL-NGS-23526                    | 0       | 2541230 |  |
| 10 | ARS-BFGL-NGS-40198                    | 0       | 2617295 |  |
| 10 | Hapmap42821-BTA-115000                | 0       | 2640887 |  |
| 10 | Hapmap48018-BTA-60331                 | 0       | 2729641 |  |
| 10 | ARS-BFGL-NGS-35593                    | 0       | 2777001 |  |
| 10 | ARS-BFGL-NGS-79884                    | 0       | 2847964 |  |
| 10 | ARS-BFGL-NGS-116842                   | 0       | 2873749 |  |
| 10 | ARS-BFGL-NGS-77658                    | 0       | 2898111 |  |
| 10 | Hapmap57631-rs29027204                | 0       | 2943811 |  |
| 10 | ARS-BFGL-NGS-59753                    | 0       | 3123963 |  |
| 10 | ARS-BFGL-NGS-118679                   | 0       | 3153415 |  |
| 10 | ARS-BFGL-NGS-17640                    | 0       | 3200596 |  |
| 10 | ARS-BFGL-NGS-30225                    | 0       | 3229515 |  |
| 10 | BTB-01855834                          | 0       | 3250458 |  |
| 10 | ARS-BFGL-NGS-106325                   | 0       | 3274229 |  |
| 10 | BTB-01229409                          | 0       | 3308836 |  |
| 10 | ARS-BFGL-NGS-56669                    | 0       | 3343140 |  |
| 10 | Hapmap31371-BTA-114833                | 0       | 3389908 |  |
| 10 | ARS-BFGL-NGS-32417                    | 0       | 3428773 |  |
| 10 | Hapmap23546-BTA-155154                | 0       | 3465975 |  |
| 10 | ARS-BFGL-NGS-112670                   | 0       | 3488689 |  |
| 10 | ARS-USMARC-Parent-DQ786766-rs29012070 | 0       | 3530271 |  |
| 10 | Hapmap59914-rs29012068                | 0       | 3530555 |  |
| 10 | BTB-01575798                          | 0       | 3559435 |  |
| 10 | BTB-01575718                          | 0       | 3583000 |  |
| 10 | Hapmap32595-BTA-149082                | 0       | 3640011 |  |
| 10 | ARS-BFGL-NGS-66000                    | 3691643 |         |  |
| 10 | Hapmap46615-BTA-95810                 | 0       | 3749763 |  |
| 10 | ARS-BFGL-NGS-91238                    | 0       | 3804091 |  |
| 10 | ARS-BFGL-NGS-43692                    | 0       | 3892947 |  |
| 10 | ARS-BFGL-NGS-39325                    | 0       | 3948572 |  |
| 10 | ARS-BFGL-NGS-108526                   | 0       | 3991135 |  |
| 10 | ARS-BFGL-NGS-88819                    | 0       | 4081718 |  |
| 10 | ARS-BFGL-NGS-96591                    | 0       | 4157289 |  |
| 10 | Hapmap32857-BTA-155630                | 0       | 4226506 |  |
| 10 | Hapmap56646-rs29022216                | 0       | 4255382 |  |
| 10 | ARS-BFGL-NGS-39354                    | 0       | 4275686 |  |
| 10 | ARS-BFGL-NGS-92893                    | 0       | 4340696 |  |
| 10 | Hapmap25493-BTA-109827                | 0       | 4383927 |  |
| 10 | Hapmap22809-BTA-155621                | 0       | 4415581 |  |
| 10 | Hapmap41475-BTA-20524                 | 0       | 4462220 |  |
| 10 | Hapmap41235-BTA-34298                 | 0       | 4496977 |  |
| 10 | Hapmap51406-BTA-120988                | 0       | 4534148 |  |
| 10 | UA-IFASA-6738                         | 0       | 4558967 |  |
| 10 | ARS-BFGL-NGS-23041                    | 0       | 4610367 |  |
| 10 | ARS-BFGL-NGS-57388                    | 0       | 4742149 |  |

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| 10 | Hapmap53305-rs29024571        | 0 | 4766547 |         |
| 10 | ARS-BFGL-NGS-58299            | 0 | 4888243 |         |
| 10 | ARS-BFGL-BAC-12296            | 0 | 4915750 |         |
| 10 | ARS-BFGL-NGS-42498            | 0 | 4968122 |         |
| 10 | BTA-121980-no-rs              | 0 | 5049003 |         |
| 10 | Hapmap47695-BTA-67198         | 0 | 5115850 |         |
| 10 | BTA-18928-no-rs               | 0 | 5140497 |         |
| 10 | ARS-BFGL-NGS-106302           | 0 | 5181718 |         |
| 10 | ARS-BFGL-NGS-12481            | 0 | 5233073 |         |
| 10 | ARS-BFGL-NGS-113571           | 0 | 5264150 |         |
| 10 | BTA-75317-no-rs               | 0 | 5392944 |         |
| 10 | ARS-BFGL-NGS-106200           | 0 | 5406018 |         |
| 10 | ARS-BFGL-NGS-60051            | 0 | 5437359 |         |
| 10 | ARS-BFGL-NGS-36005            | 0 | 5502939 |         |
| 10 | ARS-BFGL-NGS-33007            | 0 | 5540505 |         |
| 10 | ARS-BFGL-NGS-13562            | 0 | 5561417 |         |
| 10 | BTA-22344-no-rs               | 0 | 5598788 |         |
| 10 | DPI-8                         | 0 | 5654720 |         |
| 10 | ARS-BFGL-BAC-12251            | 0 | 5767015 |         |
| 10 | ARS-BFGL-NGS-116641           | 0 | 5908521 |         |
| 10 | Hapmap35453-SCAFFOLD669_15136 | 0 | 5934534 | 5934534 |
| 10 | ARS-BFGL-NGS-117533           | 0 | 5968459 |         |
| 10 | BTA-11111-rs29016875          | 0 | 6003240 |         |
| 10 | ARS-BFGL-NGS-108185           | 0 | 6045644 |         |
| 10 | ARS-BFGL-NGS-107744           | 0 | 6076725 |         |
| 10 | ARS-BFGL-NGS-114662           | 0 | 6096967 |         |
| 10 | ARS-BFGL-NGS-82010            | 0 | 6125786 |         |
| 10 | ARS-BFGL-NGS-110364           | 0 | 6224953 |         |
| 10 | ARS-BFGL-BAC-12289            | 0 | 6243331 |         |
| 10 | ARS-BFGL-NGS-111453           | 0 | 6373370 |         |
| 10 | ARS-BFGL-NGS-61586            | 0 | 6413192 |         |
| 10 | ARS-BFGL-NGS-28605            | 0 | 6443750 |         |
| 10 | ARS-BFGL-NGS-18543            | 0 | 6521978 |         |
| 10 | BTA-23242-no-rs               | 0 | 6543434 |         |
| 10 | BTA-23236-no-rs               | 0 | 6621061 |         |
| 10 | ARS-BFGL-NGS-57821            | 0 | 6643198 |         |
| 10 | ARS-BFGL-NGS-53960            | 0 | 6669494 |         |
| 10 | ARS-BFGL-NGS-115918           | 0 | 6683566 |         |
| 10 | ARS-USMARC-307                | 0 | 6703611 |         |
| 10 | Hapmap40077-BTA-62305         | 0 | 6775423 |         |
| 10 | ARS-BFGL-NGS-107843           | 0 | 6804435 |         |
| 10 | BTA-62267-no-rs               | 0 | 6871209 |         |
| 10 | BTA-62252-no-rs               | 0 | 6913501 |         |
| 10 | ARS-BFGL-NGS-34208            | 0 | 7025392 |         |
| 10 | Hapmap38331-BTA-61256         | 0 | 7082683 |         |
| 10 | ARS-BFGL-NGS-22225            | 0 | 7136112 |         |
| 10 | BTA-60298-no-rs               | 0 | 7271842 |         |
| 10 | BTA-60292-no-rs               | 0 | 7308238 |         |
| 10 | Hapmap48017-BTA-60281         | 0 | 7329188 |         |
| 10 | ARS-BFGL-NGS-117680           | 0 | 7361825 |         |
| 10 | Hapmap39848-BTA-59393         | 0 | 7389647 |         |
| 10 | ARS-BFGL-NGS-36780            | 0 | 7452486 |         |
| 10 | ARS-BFGL-NGS-105248           | 0 | 7490264 |         |
| 10 | ARS-BFGL-NGS-108122           | 0 | 7521659 |         |

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| 10 | Hapmap31071-BTA-125074           | 0        | 7548661  |         |
| 10 | ARS-BFGL-NGS-55511               | 0        | 7601332  |         |
| 10 | ARS-BFGL-NGS-37053               | 0        | 7652531  |         |
| 10 | ARS-BFGL-NGS-35200               | 0        | 7683227  |         |
| 10 | BTA-118104-no-rs                 | 0        | 7729010  |         |
| 10 | ARS-BFGL-NGS-113239              | 0        | 7791755  |         |
| 10 | ARS-BFGL-NGS-87466               | 0        | 7830003  |         |
| 10 | ARS-BFGL-NGS-108825              | 0        | 7894323  |         |
| 10 | ARS-BFGL-NGS-83620               | 7943252  |          |         |
| 10 | BTA-63312-no-rs                  | 0        | 8090259  |         |
| 10 | ARS-BFGL-NGS-103826              | 0        | 8169386  |         |
| 10 | Hapmap35793-SCAFFOLD311748_23298 | 0        |          | 8204943 |
| 10 | Hapmap23512-BTA-125084           | 0        | 8232496  |         |
| 10 | ARS-BFGL-NGS-97105               | 0        | 8255705  |         |
| 10 | Hapmap40015-BTA-64391            | 0        | 8331353  |         |
| 10 | ARS-BFGL-NGS-101262              | 0        | 8371239  |         |
| 10 | ARS-USMARC-186                   | 0        | 8394690  |         |
| 10 | ARS-BFGL-NGS-115023              | 0        | 8480337  |         |
| 10 | ARS-BFGL-NGS-21248               | 0        | 8553040  |         |
| 10 | ARS-BFGL-NGS-38106               | 0        | 8596504  |         |
| 10 | Hapmap42288-BTA-66236            | 0        | 8639882  |         |
| 10 | BTA-66258-no-rs                  | 0        | 8675119  |         |
| 10 | ARS-BFGL-NGS-115756              | 0        | 8711277  |         |
| 10 | Hapmap59990-rs29016947           | 0        | 8778914  |         |
| 10 | BTA-119095-no-rs                 | 0        | 8802535  |         |
| 10 | ARS-BFGL-NGS-35762               | 0        | 8842386  |         |
| 10 | Hapmap52257-rs29015344           | 0        | 8873550  |         |
| 10 | ARS-BFGL-NGS-52180               | 9208908  |          |         |
| 10 | ARS-BFGL-NGS-28389               | 0        | 9309325  |         |
| 10 | ARS-BFGL-NGS-33270               | 0        | 9339256  |         |
| 10 | Hapmap40116-BTA-27577            | 0        | 9379039  |         |
| 10 | BTA-69299-no-rs                  | 0        | 9443148  |         |
| 10 | ARS-BFGL-NGS-25278               | 0        | 9510701  |         |
| 10 | ARS-BFGL-NGS-106806              | 0        | 9558767  |         |
| 10 | ARS-BFGL-NGS-117962              | 0        | 9613753  |         |
| 10 | ARS-BFGL-NGS-63702               | 0        | 9672265  |         |
| 10 | ARS-BFGL-BAC-65130               | 9714655  |          |         |
| 10 | ARS-BFGL-NGS-25575               | 0        | 9761530  |         |
| 10 | ARS-BFGL-NGS-59220               | 9789845  |          |         |
| 10 | ARS-BFGL-NGS-55845               | 0        | 9821501  |         |
| 10 | ARS-BFGL-NGS-101697              | 0        | 9900839  |         |
| 10 | ARS-BFGL-NGS-42953               | 0        | 10000188 |         |
| 10 | ARS-BFGL-NGS-111863              | 0        | 10072183 |         |
| 10 | ARS-BFGL-NGS-117943              | 0        | 10122128 |         |
| 10 | ARS-BFGL-NGS-16712               | 0        | 10164273 |         |
| 10 | BTA-112304-no-rs                 | 0        | 10195901 |         |
| 10 | ARS-BFGL-BAC-15492               | 0        | 10325495 |         |
| 10 | ARS-BFGL-NGS-41201               | 0        | 10385233 |         |
| 10 | ARS-BFGL-NGS-58190               | 10428184 |          |         |
| 10 | Hapmap38777-BTA-73331            | 0        | 10585717 |         |
| 10 | Hapmap41952-BTA-73370            | 0        | 10659761 |         |
| 10 | ARS-BFGL-NGS-117854              | 0        | 10680671 |         |
| 10 | ARS-BFGL-NGS-35455               | 0        | 10795992 |         |
| 10 | Hapmap28237-BTA-148240           | 0        | 10846884 |         |

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| 10 | BTB-00408511           | 0 | 10902127 |
| 10 | ARS-BFGL-NGS-19370     | 0 | 10930797 |
| 10 | BTB-00408453           | 0 | 10955343 |
| 10 | ARS-BFGL-NGS-96729     | 0 | 10993080 |
| 10 | ARS-BFGL-NGS-101723    | 0 | 11029490 |
| 10 | BTB-00408221           | 0 | 11077620 |
| 10 | ARS-BFGL-NGS-66090     | 0 | 11104820 |
| 10 | ARS-BFGL-NGS-119397    | 0 | 11154893 |
| 10 | ARS-BFGL-NGS-37609     | 0 | 11177371 |
| 10 | BTB-00407929           | 0 | 11215414 |
| 10 | BTB-00407977           | 0 | 11252642 |
| 10 | BTA-74285-no-rs        | 0 | 11294250 |
| 10 | BTB-00408050           | 0 | 11339554 |
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| 10 | ARS-BFGL-NGS-111486    | 0 | 11419926 |
| 10 | BTB-00411234           | 0 | 11469061 |
| 10 | BTB-00411248           | 0 | 11484520 |
| 10 | BTB-02050962           | 0 | 11534325 |
| 10 | BTB-00411310           | 0 | 11593666 |
| 10 | BTB-01812866           | 0 | 11654004 |
| 10 | Hapmap53112-rs29024630 | 0 | 11680324 |
| 10 | BTB-01775434           | 0 | 11707725 |
| 10 | Hapmap41096-BTA-84486  | 0 | 11768173 |
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| 10 | BTB-00411816           | 0 | 11899342 |
| 10 | ARS-BFGL-NGS-53129     | 0 | 11930486 |
| 10 | ARS-BFGL-NGS-28939     | 0 | 11998905 |
| 10 | BTB-00412151           | 0 | 12020216 |
| 10 | BTB-00412175           | 0 | 12059178 |
| 10 | Hapmap43706-BTA-84489  | 0 | 12085703 |
| 10 | ARS-BFGL-NGS-105394    | 0 | 12116620 |
| 10 | ARS-BFGL-NGS-42841     | 0 | 12200563 |
| 10 | ARS-BFGL-NGS-34980     | 0 | 12224784 |
| 10 | Hapmap46884-BTA-84494  | 0 | 12249649 |
| 10 | ARS-BFGL-NGS-80614     | 0 | 12272932 |
| 10 | ARS-BFGL-NGS-29327     | 0 | 12315530 |
| 10 | Hapmap32904-BTA-84499  | 0 | 12350996 |
| 10 | ARS-BFGL-NGS-80025     | 0 | 12386269 |
| 10 | ARS-BFGL-NGS-92296     | 0 | 12412780 |
| 10 | ARS-BFGL-NGS-26745     | 0 | 12448185 |
| 10 | ARS-BFGL-NGS-94704     | 0 | 12486527 |
| 10 | Hapmap51066-BTA-84509  | 0 | 12519179 |
| 10 | Hapmap56722-rs29026872 | 0 | 12545495 |
| 10 | BTB-01684979           | 0 | 12566322 |
| 10 | Hapmap54740-rs29013264 | 0 | 12609643 |
| 10 | BTB-01605503           | 0 | 12659662 |
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| 10 | ARS-BFGL-NGS-108679    | 0 | 12728376 |
| 10 | ARS-BFGL-NGS-37335     | 0 | 12749231 |
| 10 | Hapmap53235-rs29021091 | 0 | 12761429 |
| 10 | ARS-BFGL-NGS-41420     | 0 | 12790971 |
| 10 | ARS-BFGL-NGS-64110     |   | 12812193 |
| 10 | ARS-BFGL-NGS-17452     | 0 | 12834288 |
| 10 | ARS-BFGL-NGS-103122    | 0 | 12870180 |

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| 10 | BTB-00409355           | 0        | 12922313 |
| 10 | Hapmap41635-BTA-77313  | 0        | 12961478 |
| 10 | ARS-BFGL-NGS-24706     | 0        | 12992411 |
| 10 | ARS-BFGL-NGS-113038    | 0        | 13016466 |
| 10 | ARS-BFGL-NGS-105416    | 0        | 13040145 |
| 10 | ARS-BFGL-NGS-95140     | 13124380 |          |
| 10 | ARS-BFGL-NGS-71414     | 0        | 13162750 |
| 10 | Hapmap54283-ss46526290 | 0        | 13194173 |
| 10 | ARS-BFGL-NGS-10138     | 0        | 13239142 |
| 10 | ARS-BFGL-NGS-19609     | 0        | 13268829 |
| 10 | BTB-00410755           | 0        | 13290627 |
| 10 | BTB-00675323           | 0        | 13317919 |
| 10 | BTB-00410742           | 0        | 13339968 |
| 10 | ARS-BFGL-NGS-52740     | 13366352 |          |
| 10 | BTB-00410708           | 0        | 13386617 |
| 10 | ARS-BFGL-NGS-116295    | 0        | 13408067 |
| 10 | ARS-BFGL-BAC-13545     | 0        | 13436362 |
| 10 | ARS-BFGL-NGS-97461     | 0        | 13463275 |
| 10 | BTB-00410615           | 0        | 13484569 |
| 10 | ARS-BFGL-NGS-107051    | 0        | 13520857 |
| 10 | BTB-00410577           | 0        | 13567343 |
| 10 | UA-IFASA-7255          | 0        | 13606664 |
| 10 | ARS-BFGL-NGS-53210     | 13641088 |          |
| 10 | ARS-BFGL-NGS-71024     | 0        | 13684162 |
| 10 | ARS-BFGL-NGS-117447    | 0        | 13704613 |
| 10 | ARS-BFGL-NGS-38579     | 0        | 13737253 |
| 10 | ARS-BFGL-NGS-95091     | 0        | 13758980 |
| 10 | Hapmap40818-BTA-81387  | 0        | 13795916 |
| 10 | ARS-BFGL-NGS-10428     | 0        | 13822864 |
| 10 | ARS-BFGL-NGS-106435    | 0        | 13852686 |
| 10 | ARS-BFGL-NGS-100004    | 0        | 13932162 |
| 10 | UA-IFASA-9239          | 0        | 13962760 |
| 10 | BTB-00410322           | 0        | 13990943 |
| 10 | BTB-00410309           | 0        | 14037907 |
| 10 | ARS-BFGL-NGS-15334     | 0        | 14063148 |
| 10 | BTB-00410198           | 0        | 14129663 |
| 10 | ARS-BFGL-BAC-13546     | 0        | 14173020 |
| 10 | ARS-BFGL-NGS-115059    | 0        | 14200836 |
| 10 | ARS-BFGL-NGS-87702     | 0        | 14256075 |
| 10 | Hapmap51496-BTA-79294  | 0        | 14288475 |
| 10 | Hapmap39869-BTA-78346  | 0        | 14327969 |
| 10 | ARS-BFGL-NGS-11874     | 0        | 14388574 |
| 10 | ARS-BFGL-NGS-32952     | 0        | 14424153 |
| 10 | Hapmap27377-BTA-125151 | 0        | 14466153 |
| 10 | ARS-BFGL-NGS-113961    | 0        | 14514931 |
| 10 | Hapmap25018-BTA-125160 | 0        | 14554414 |
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| 10 | ARS-BFGL-NGS-39179     | 0        | 14616020 |
| 10 | ARS-BFGL-NGS-18282     | 0        | 14680950 |
| 10 | Hapmap38805-BTA-104874 | 0        | 14720037 |
| 10 | BTA-12897-no-rs        | 0        | 14832153 |
| 10 | ARS-BFGL-NGS-92657     | 0        | 15051277 |
| 10 | Hapmap56407-rs29020937 | 0        | 15072778 |

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| 10 | ARS-BFGL-NGS-29714              | 0        | 15102064 |          |
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| 10 | ARS-BFGL-NGS-119197             | 0        | 15163788 |          |
| 10 | ARS-BFGL-NGS-29149              | 0        | 15228026 |          |
| 10 | ARS-BFGL-NGS-68425              | 0        | 15262140 |          |
| 10 | ARS-BFGL-NGS-112323             | 0        | 15298290 |          |
| 10 | Hapmap47338-BTA-59326           | 0        | 15333419 |          |
| 10 | ARS-BFGL-NGS-12605              | 0        | 15357040 |          |
| 10 | ARS-BFGL-NGS-93718              | 0        | 15413589 |          |
| 10 | ARS-BFGL-NGS-92069              | 0        | 15459816 |          |
| 10 | ARS-BFGL-NGS-49700              | 15492812 |          |          |
| 10 | ARS-BFGL-NGS-90657              | 0        | 15528411 |          |
| 10 | Hapmap35960-SCAFFOLD231091_2678 | 0        |          | 15577727 |
| 10 | ARS-BFGL-NGS-64880              | 15615838 |          |          |
| 10 | ARS-BFGL-NGS-19415              | 0        | 15654348 |          |
| 10 | ARS-BFGL-NGS-61618              | 0        | 15707389 |          |
| 10 | ARS-BFGL-NGS-119196             | 0        | 15806087 |          |
| 10 | ARS-BFGL-NGS-116307             | 0        | 15849166 |          |
| 10 | ARS-BFGL-NGS-44234              | 0        | 15878155 |          |
| 10 | ARS-BFGL-NGS-118236             | 0        | 15935671 |          |
| 10 | Hapmap47826-BTA-107963          | 0        | 15974499 |          |
| 10 | ARS-BFGL-BAC-14174              | 0        | 16117231 |          |
| 10 | ARS-BFGL-NGS-57220              | 16140054 |          |          |
| 10 | ARS-BFGL-NGS-113265             | 0        | 16162053 |          |
| 10 | ARS-BFGL-NGS-16604              | 0        | 16191688 |          |
| 10 | ARS-BFGL-NGS-12369              | 0        | 16237904 |          |
| 10 | ARS-BFGL-NGS-87552              | 0        | 16326848 |          |
| 10 | BTA-83414-no-rs                 | 0        | 16412340 |          |
| 10 | ARS-BFGL-NGS-64755              | 0        | 16432723 |          |
| 10 | ARS-BFGL-NGS-43079              | 0        | 16460889 |          |
| 10 | ARS-BFGL-NGS-116044             | 0        | 16487469 |          |
| 10 | ARS-BFGL-NGS-110064             | 0        | 16524236 |          |
| 10 | ARS-BFGL-NGS-114232             | 0        | 16548361 |          |
| 10 | ARS-BFGL-BAC-14169              | 0        | 16569032 |          |
| 10 | BTA-83386-no-rs                 | 0        | 16606724 |          |
| 10 | ARS-BFGL-NGS-42010              | 16629826 |          |          |
| 10 | ARS-BFGL-NGS-13610              | 16686511 |          |          |
| 10 | ARS-BFGL-NGS-36287              | 0        | 16738622 |          |
| 10 | ARS-BFGL-NGS-84998              | 0        | 16819310 |          |
| 10 | BTA-83372-no-rs                 | 0        | 16854458 |          |
| 10 | Hapmap39240-BTA-83371           | 0        | 16875097 |          |
| 10 | ARS-BFGL-NGS-30236              | 0        | 16903570 |          |
| 10 | ARS-BFGL-NGS-66929              | 0        | 16985300 |          |
| 10 | ARS-BFGL-NGS-114309             | 0        | 17037395 |          |
| 10 | ARS-BFGL-NGS-82984              | 0        | 17100439 |          |
| 10 | ARS-BFGL-NGS-85695              | 0        | 17127861 |          |
| 10 | Hapmap22751-BTA-150021          | 0        | 17153584 |          |
| 10 | ARS-BFGL-NGS-20450              | 0        | 17209221 |          |
| 10 | ARS-BFGL-NGS-78548              | 0        | 17243680 |          |
| 10 | ARS-BFGL-NGS-117546             | 0        | 17285198 |          |
| 10 | ARS-BFGL-NGS-22837              | 0        | 17311138 |          |
| 10 | ARS-BFGL-NGS-28776              | 0        | 17377774 |          |
| 10 | ARS-BFGL-NGS-117735             | 0        | 17407918 |          |
| 10 | Hapmap40220-BTA-60296           | 0        | 17528963 |          |

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| 10 | ARS-BFGL-NGS-35076              | 0        | 17557149 |          |
| 10 | ARS-BFGL-NGS-91653              | 0        | 17625573 |          |
| 10 | Hapmap38385-BTA-120800          | 0        | 17655576 |          |
| 10 | ARS-BFGL-NGS-88284              | 0        | 17683504 |          |
| 10 | BTA-59410-no-rs                 | 0        | 17730891 |          |
| 10 | ARS-BFGL-NGS-28278              | 0        | 17777955 |          |
| 10 | ARS-BFGL-NGS-25507              | 0        | 17834362 |          |
| 10 | ARS-BFGL-NGS-99693              | 0        | 17867003 |          |
| 10 | Hapmap47670-BTA-60313           | 0        | 17955497 |          |
| 10 | ARS-BFGL-NGS-94247              | 0        | 18041832 |          |
| 10 | Hapmap53482-rs29025357          | 0        | 18086840 |          |
| 10 | ARS-BFGL-NGS-101031             | 0        | 18115876 |          |
| 10 | ARS-BFGL-NGS-59814              | 0        | 18150690 |          |
| 10 | ARS-BFGL-NGS-35904              | 0        | 18175151 |          |
| 10 | ARS-BFGL-NGS-37669              | 0        | 18209617 |          |
| 10 | ARS-BFGL-NGS-22303              | 0        | 18230679 |          |
| 10 | Hapmap35424-SCAFFOLD125215_9058 | 0        |          | 18251738 |
| 10 | BTA-17502-no-rs                 | 0        | 18287420 |          |
| 10 | ARS-BFGL-NGS-107048             | 0        | 18395377 |          |
| 10 | ARS-BFGL-NGS-21217              | 0        | 18420234 |          |
| 10 | ARS-BFGL-NGS-117076             | 0        | 18442011 |          |
| 10 | Hapmap32896-BTA-59412           | 0        | 18492108 |          |
| 10 | ARS-BFGL-NGS-74837              | 0        | 18519852 |          |
| 10 | ARS-BFGL-NGS-21879              | 0        | 18563984 |          |
| 10 | ARS-BFGL-NGS-15813              | 0        | 18574907 |          |
| 10 | ARS-BFGL-NGS-26461              | 0        | 18630194 |          |
| 10 | ARS-BFGL-NGS-52539              | 0        | 18743955 |          |
| 10 | ARS-BFGL-NGS-50086              | 0        | 18772359 |          |
| 10 | BTA-28297-no-rs                 | 0        | 18811354 |          |
| 10 | Hapmap49943-BTA-28302           | 0        | 18844246 |          |
| 10 | ARS-BFGL-BAC-10952              | 0        | 18882288 |          |
| 10 | Hapmap39474-BTA-19488           | 0        | 18921165 |          |
| 10 | ARS-BFGL-NGS-113726             | 0        | 18955979 |          |
| 10 | ARS-BFGL-NGS-32828              | 0        | 18983183 |          |
| 10 | Hapmap48821-BTA-59356           | 0        | 19017657 |          |
| 10 | ARS-BFGL-NGS-118357             | 0        | 19053897 |          |
| 10 | ARS-BFGL-NGS-43105              | 0        | 19095908 |          |
| 10 | ARS-BFGL-NGS-53772              | 0        | 19121922 |          |
| 10 | Hapmap30351-BTA-59378           | 0        | 19273147 |          |
| 10 | ARS-BFGL-NGS-116331             | 0        | 19301043 |          |
| 10 | Hapmap46308-BTA-59382           | 0        | 19366262 |          |
| 10 | ARS-BFGL-NGS-66778              | 0        | 19405189 |          |
| 10 | ARS-BFGL-NGS-22915              | 0        | 19436488 |          |
| 10 | BTA-59388-no-rs                 | 0        | 19466902 |          |
| 10 | ARS-BFGL-NGS-98985              | 0        | 19494672 |          |
| 10 | ARS-BFGL-NGS-104202             | 0        | 19565941 |          |
| 10 | Hapmap36089-SCAFFOLD1191_3399   | 0        |          | 19591280 |
| 10 | BTA-59405-no-rs                 | 0        | 19617303 |          |
| 10 | Hapmap42119-BTA-16944           | 0        | 19667613 |          |
| 10 | ARS-BFGL-NGS-67650              | 19696833 |          |          |
| 10 | ARS-BFGL-NGS-115332             | 0        | 19721672 |          |
| 10 | Hapmap43979-BTA-97666           | 0        | 19755465 |          |
| 10 | Hapmap60219-rs29009655          | 0        | 19793211 |          |
| 10 | ARS-BFGL-NGS-23190              | 0        | 19871847 |          |

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| 10 | Hapmap49474-BTA-117913 | 0        | 19924813 |
| 10 | ARS-BFGL-NGS-103140    | 0        | 19950788 |
| 10 | ARS-BFGL-NGS-40576     | 0        | 19987360 |
| 10 | ARS-BFGL-NGS-38535     | 0        | 20008636 |
| 10 | ARS-BFGL-NGS-79056     | 0        | 20030762 |
| 10 | Hapmap47849-BTA-117910 | 0        | 20050839 |
| 10 | ARS-BFGL-NGS-89500     | 0        | 20117400 |
| 10 | Hapmap27210-BTA-158247 | 0        | 20146107 |
| 10 | ARS-BFGL-NGS-74184     | 0        | 20203040 |
| 10 | Hapmap43780-BTA-117922 | 0        | 20229329 |
| 10 | ARS-BFGL-NGS-29616     | 0        | 20322987 |
| 10 | ARS-BFGL-NGS-112739    | 0        | 20359799 |
| 10 | ARS-BFGL-NGS-69490     | 20388692 |          |
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| 10 | Hapmap57100-rs29013509 | 0        | 20498087 |
| 10 | ARS-BFGL-NGS-35454     | 0        | 20550545 |
| 10 | ARS-BFGL-NGS-57195     | 0        | 20580094 |
| 10 | ARS-BFGL-BAC-10960     | 0        | 20609250 |
| 10 | ARS-BFGL-NGS-42236     | 0        | 20636156 |
| 10 | ARS-BFGL-NGS-44623     | 0        | 20667710 |
| 10 | ARS-BFGL-NGS-110110    | 0        | 20693677 |
| 10 | ARS-BFGL-NGS-114137    | 0        | 20721372 |
| 10 | UA-IFASA-5066          | 0        | 20763153 |
| 10 | ARS-BFGL-BAC-10972     | 0        | 20792754 |
| 10 | ARS-BFGL-NGS-67833     | 0        | 20820760 |
| 10 | ARS-BFGL-NGS-52654     | 0        | 20899486 |
| 10 | ARS-BFGL-NGS-19848     | 0        | 20932671 |
| 10 | Hapmap41308-BTA-60333  | 0        | 21008360 |
| 10 | ARS-BFGL-NGS-33923     | 0        | 21053074 |
| 10 | ARS-BFGL-NGS-64841     | 0        | 21105172 |
| 10 | ARS-BFGL-NGS-10121     | 0        | 21131661 |
| 10 | ARS-BFGL-NGS-36689     | 0        | 21169216 |
| 10 | ARS-BFGL-NGS-13835     | 0        | 21198154 |
| 10 | ARS-BFGL-BAC-10975     | 0        | 21225382 |
| 10 | ARS-BFGL-NGS-101359    | 0        | 21274787 |
| 10 | ARS-BFGL-NGS-112908    | 0        | 21329317 |
| 10 | BTA-61228-no-rs        | 0        | 21516136 |
| 10 | Hapmap47676-BTA-61231  | 0        | 21604877 |
| 10 | ARS-BFGL-NGS-44190     | 0        | 21643844 |
| 10 | ARS-BFGL-NGS-54655     | 0        | 21678471 |
| 10 | BTA-61235-no-rs        | 0        | 21698931 |
| 10 | Hapmap38616-BTA-61236  | 0        | 21769407 |
| 10 | Hapmap41917-BTA-61237  | 0        | 21793838 |
| 10 | ARS-BFGL-NGS-91109     | 0        | 21865155 |
| 10 | ARS-BFGL-NGS-64602     | 0        | 21986516 |
| 10 | ARS-BFGL-NGS-102029    | 0        | 22056376 |
| 10 | Hapmap23030-BTA-61248  | 0        | 22091239 |
| 10 | ARS-BFGL-NGS-19822     | 0        | 22128700 |
| 10 | ARS-BFGL-BAC-11616     | 0        | 22159072 |
| 10 | ARS-BFGL-NGS-100895    | 0        | 22190416 |
| 10 | ARS-BFGL-NGS-26125     | 0        | 22227480 |
| 10 | Hapmap47763-BTA-87494  | 0        | 22278002 |
| 10 | ARS-BFGL-NGS-112477    | 0        | 22339193 |
| 10 | Hapmap32589-BTA-147560 | 0        | 24301480 |



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| 10 | Hapmap57900-rs29027640         | 0 | 25598535 |          |
| 10 | ARS-BFGL-NGS-96824             | 0 | 25706139 |          |
| 10 | Hapmap58585-ss46526902         | 0 | 25732248 |          |
| 10 | ARS-BFGL-NGS-32292             | 0 | 25884143 |          |
| 10 | Hapmap32023-BTA-125260         | 0 | 25907293 |          |
| 10 | Hapmap50418-BTA-61313          | 0 | 25930288 |          |
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| 10 | ARS-BFGL-NGS-42815             | 0 | 26054054 |          |
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| 10 | ARS-BFGL-NGS-101502            | 0 | 26141254 |          |
| 10 | ARS-BFGL-NGS-23266             | 0 | 26173687 |          |
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| 10 | ARS-BFGL-NGS-24739             | 0 | 26406685 |          |
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| 10 | ARS-BFGL-NGS-104811            | 0 | 26553874 |          |
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| 10 | Hapmap54726-rs29023280         | 0 | 26614696 |          |
| 10 | Hapmap41751-BTA-110011         | 0 | 26640590 |          |
| 10 | ARS-BFGL-NGS-118210            | 0 | 26700563 |          |
| 10 | ARS-BFGL-NGS-34060             |   | 26728855 |          |
| 10 | Hapmap33849-BES3_Contig195_423 | 0 |          | 26767851 |
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| 10 | Hapmap44553-BTA-62251          | 0 | 26826138 |          |
| 10 | BTB-00414242                   | 0 | 26852413 |          |
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| 10 | ARS-BFGL-BAC-11598             | 0 | 26973237 |          |
| 10 | Hapmap50608-BTA-17803          | 0 | 27004974 |          |
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| 10 | ARS-BFGL-BAC-11612             | 0 | 27228918 |          |
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| 10 | BTB-00417797                   | 0 | 27848264 |          |
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| 10 | BTB-01967493           | 0 | 28231304 |
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| 10 | ARS-BFGL-NGS-87659     | 0 | 28599096 |
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| 10 | Hapmap55635-rs29018189 | 0 | 28647003 |
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| 10 | ARS-BFGL-NGS-35266     | 0 | 28970257 |
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| 10 | Hapmap41918-BTA-62309  | 0 | 29209932 |
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| 10 | ARS-BFGL-NGS-12842     | 0 | 29375348 |
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| 10 | ARS-BFGL-NGS-46096     | 0 | 29836917 |
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| 10 | Hapmap27226-BTA-161241 | 0 | 30094826 |
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| 10 | Hapmap43813-BTA-22578  | 0 | 30774096 |
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| 10 | BTB-00416964                   | 0 | 31326738 |  |
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| 10 | BTB-00416705                   | 0 | 31574360 |  |
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| 10 | Hapmap30523-BTA-133067         | 0 | 32006964 |  |
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| 10 | BTB-00415821                   | 0 | 32221643 |  |
| 10 | Hapmap39669-BTA-62312          | 0 | 32260224 |  |
| 10 | BTB-00415881                   | 0 | 32295516 |  |
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| 10 | BTA-63276-no-rs                | 0 | 32817478 |  |
| 10 | Hapmap50425-BTA-63280          | 0 | 32837737 |  |
| 10 | Hapmap44110-BTA-63281          | 0 | 32930297 |  |
| 10 | BTB-01678431                   | 0 | 32968054 |  |
| 10 | BTB-01678420                   | 0 | 32998282 |  |
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| 10 | BTA-01059-rs29012026           | 0 | 33042660 |  |
| 10 | BTA-109248-no-rs               | 0 | 33191321 |  |
| 10 | BTA-109243-no-rs               | 0 | 33218475 |  |
| 10 | Hapmap49430-BTA-107417         | 0 | 33343859 |  |
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| 10 | Hapmap23230-BTA-63355          | 0 | 33530540 |  |
| 10 | Hapmap25946-BTA-64301          | 0 | 33606957 |  |
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| 10 | ARS-BFGL-NGS-118622            | 0 | 33736444 |  |
| 10 | Hapmap55240-rs29011308         | 0 | 33774666 |  |
| 10 | ARS-BFGL-NGS-23573             | 0 | 33860402 |  |

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| 10 | BTA-65330-no-rs                 | 0 | 33877992 |          |
| 10 | ARS-BFGL-NGS-111136             | 0 | 33909902 |          |
| 10 | Hapmap51404-BTA-120806          | 0 | 33998082 |          |
| 10 | Hapmap50429-BTA-64384           | 0 | 34042986 |          |
| 10 | BTB-00418112                    | 0 | 34084113 |          |
| 10 | Hapmap29800-BTA-125333          | 0 | 34109824 |          |
| 10 | Hapmap38578-BTA-120804          | 0 | 34193887 |          |
| 10 | Hapmap54804-rs29015126          | 0 | 34238025 |          |
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| 10 | ARS-BFGL-NGS-15742              | 0 | 34383915 |          |
| 10 | ARS-BFGL-NGS-10287              | 0 | 34407598 |          |
| 10 | ARS-BFGL-NGS-69470              |   | 34438367 |          |
| 10 | ARS-BFGL-NGS-115388             | 0 | 34524821 |          |
| 10 | Hapmap59550-rs29015924          | 0 | 34603750 |          |
| 10 | ARS-BFGL-NGS-23492              | 0 | 34637715 |          |
| 10 | ARS-BFGL-NGS-503                | 0 | 34705386 |          |
| 10 | Hapmap25237-BTA-125338          | 0 | 34907534 |          |
| 10 | BTA-67177-no-rs                 | 0 | 35048321 |          |
| 10 | ARS-BFGL-BAC-632                | 0 | 35086759 |          |
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| 10 | ARS-BFGL-NGS-43296              | 0 | 35164064 |          |
| 10 | Hapmap55041-rs29017491          | 0 | 35212871 |          |
| 10 | Hapmap40785-BTA-66290           | 0 | 35248762 |          |
| 10 | Hapmap54460-rs29016462          | 0 | 35269105 |          |
| 10 | Hapmap39091-BTA-65354           | 0 | 35479280 |          |
| 10 | Hapmap24474-BTA-125357          | 0 | 35673350 |          |
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| 10 | ARS-BFGL-NGS-35101              | 0 | 36024341 |          |
| 10 | Hapmap34243-BES6_Contig306_1185 | 0 |          | 36065111 |
| 10 | BTA-120807-no-rs                | 0 | 36107186 |          |
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| 10 | ARS-BFGL-NGS-110581             | 0 | 36153707 |          |
| 10 | Hapmap25503-BTA-125443          | 0 | 36204749 |          |
| 10 | ARS-BFGL-NGS-34541              | 0 | 36253722 |          |
| 10 | BTA-66268-no-rs                 | 0 | 36374166 |          |
| 10 | ARS-BFGL-NGS-60218              | 0 | 36419341 |          |
| 10 | ARS-BFGL-NGS-40292              | 0 | 36465813 |          |
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| 10 | ARS-BFGL-NGS-35605              | 0 | 36626462 |          |
| 10 | ARS-BFGL-NGS-14128              | 0 | 36665562 |          |
| 10 | ARS-BFGL-BAC-12255              | 0 | 36733499 |          |
| 10 | Hapmap24333-BTA-125429          | 0 | 36786669 |          |
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| 10 | ARS-BFGL-NGS-55657              | 0 | 36835619 |          |
| 10 | ARS-BFGL-NGS-531                | 0 | 36946284 |          |
| 10 | BTA-65377-no-rs                 | 0 | 36978160 |          |
| 10 | ARS-BFGL-NGS-46880              |   | 37022108 |          |
| 10 | Hapmap53772-ss46526870          | 0 | 37055538 |          |
| 10 | ARS-BFGL-NGS-107699             | 0 | 37133985 |          |

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| 10 | ARS-BFGL-NGS-93998              | 0 | 37220076 |          |
| 10 | ARS-BFGL-NGS-33594              | 0 | 37290812 |          |
| 10 | ARS-BFGL-NGS-66354              | 0 | 37352437 |          |
| 10 | BTA-65379-no-rs                 | 0 | 37459014 |          |
| 10 | Hapmap44555-BTA-65378           | 0 | 37556648 |          |
| 10 | ARS-BFGL-NGS-95080              | 0 | 37594262 |          |
| 10 | ARS-BFGL-NGS-111984             | 0 | 37656583 |          |
| 10 | UA-IFASA-7737                   | 0 | 37709985 |          |
| 10 | ARS-BFGL-NGS-65966              | 0 | 37754495 |          |
| 10 | Hapmap48024-BTA-62291           | 0 | 37793494 |          |
| 10 | ARS-BFGL-NGS-13350              | 0 | 37830642 |          |
| 10 | Hapmap47063-BTA-62293           | 0 | 37852123 |          |
| 10 | ARS-BFGL-BAC-12264              | 0 | 37879727 |          |
| 10 | Hapmap29437-BTA-157777          | 0 | 37940620 |          |
| 10 | ARS-BFGL-NGS-72673              | 0 | 37971937 |          |
| 10 | BTA-01320-no-rs                 | 0 | 37995157 |          |
| 10 | ARS-BFGL-NGS-31425              | 0 | 38026306 |          |
| 10 | Hapmap49539-BTA-23203           | 0 | 38048013 |          |
| 10 | ARS-BFGL-NGS-33349              | 0 | 38097257 |          |
| 10 | ARS-BFGL-NGS-86838              | 0 | 38140855 |          |
| 10 | ARS-BFGL-NGS-34143              | 0 | 38273730 |          |
| 10 | Hapmap60155-rs29010222          | 0 | 38376013 |          |
| 10 | Hapmap34838-BES10_Contig603_291 | 0 |          | 38424075 |
| 10 | ARS-BFGL-NGS-102016             | 0 | 38452236 |          |
| 10 | ARS-BFGL-NGS-69240              |   | 38522043 |          |
| 10 | Hapmap55139-rs29022040          | 0 | 38622420 |          |
| 10 | Hapmap31855-BTA-17995           | 0 | 38727661 |          |
| 10 | BTB-01288029                    | 0 | 38750938 |          |
| 10 | Hapmap27895-BTA-18006           | 0 | 38799891 |          |
| 10 | Hapmap54301-rs29013631          | 0 | 38826667 |          |
| 10 | Hapmap53311-rs29018232          | 0 | 38856220 |          |
| 10 | BTA-18015-no-rs                 | 0 | 38884419 |          |
| 10 | BTB-01288298                    | 0 | 38909882 |          |
| 10 | ARS-BFGL-BAC-12885              | 0 | 38940103 |          |
| 10 | ARS-BFGL-NGS-28090              |   | 38960381 |          |
| 10 | BTB-01288585                    | 0 | 38986604 |          |
| 10 | ARS-BFGL-BAC-12872              | 0 | 39035263 |          |
| 10 | ARS-BFGL-BAC-12870              | 0 | 39071524 |          |
| 10 | Hapmap43484-BTA-119122          | 0 | 39166231 |          |
| 10 | BTB-01288875                    | 0 | 39278374 |          |
| 10 | BTB-01288864                    | 0 | 39318333 |          |
| 10 | BTA-18123-no-rs                 | 0 | 39440841 |          |
| 10 | BTA-20229-no-rs                 | 0 | 39486849 |          |
| 10 | Hapmap43590-BTA-47282           | 0 | 39528344 |          |
| 10 | BTB-00093532                    | 0 | 39572913 |          |
| 10 | BTB-01811042                    | 0 | 39607613 |          |
| 10 | BTB-00419069                    | 0 | 39702260 |          |
| 10 | BTB-00418984                    | 0 | 39741678 |          |
| 10 | BTA-66284-no-rs                 | 0 | 39787797 |          |
| 10 | BTA-66276-no-rs                 | 0 | 39846476 |          |
| 10 | BTA-66275-no-rs                 | 0 | 39883306 |          |
| 10 | BTB-00419119                    | 0 | 39909636 |          |
| 10 | ARS-BFGL-NGS-39082              | 0 | 39940420 |          |
| 10 | Hapmap60128-rs29023056          | 0 | 40088313 |          |

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| 10 | BTB-00418915                    | 0 | 40109742 |  |
| 10 | BTB-00418910                    | 0 | 40135969 |  |
| 10 | ARS-BFGL-NGS-110017             | 0 | 40220757 |  |
| 10 | BTB-00418888                    | 0 | 40268641 |  |
| 10 | ARS-BFGL-NGS-103742             | 0 | 40294545 |  |
| 10 | ARS-BFGL-BAC-12890              | 0 | 40335047 |  |
| 10 | ARS-BFGL-BAC-12891              | 0 | 40357081 |  |
| 10 | ARS-BFGL-NGS-34863              | 0 | 40411179 |  |
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| 10 | BTA-115971-no-rs                | 0 | 40486657 |  |
| 10 | ARS-BFGL-BAC-12893              | 0 | 40521002 |  |
| 10 | BTB-00418853                    | 0 | 40557575 |  |
| 10 | Hapmap55245-rs29011689          | 0 | 40593671 |  |
| 10 | BTB-00418666                    | 0 | 40613714 |  |
| 10 | Hapmap27858-BTA-125431          | 0 | 40635196 |  |
| 10 | ARS-BFGL-NGS-105685             | 0 | 40720260 |  |
| 10 | ARS-BFGL-NGS-109834             | 0 | 40794738 |  |
| 10 | BTA-122483-no-rs                | 0 | 40856335 |  |
| 10 | ARS-BFGL-NGS-103236             | 0 | 40939069 |  |
| 10 | ARS-BFGL-BAC-12899              | 0 | 40987378 |  |
| 10 | BTA-97771-no-rs                 | 0 | 41182354 |  |
| 10 | Hapmap49393-BTA-97772           | 0 | 41203784 |  |
| 10 | BTB-01400792                    | 0 | 41300000 |  |
| 10 | BTB-01970117                    | 0 | 41361189 |  |
| 10 | BTB-01700213                    | 0 | 41389231 |  |
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| 10 | BTB-01400850                    | 0 | 41514241 |  |
| 10 | Hapmap60390-rs29018736          | 0 | 41575638 |  |
| 10 | ARS-BFGL-NGS-87618              | 0 | 41621480 |  |
| 10 | ARS-BFGL-NGS-109403             | 0 | 41672195 |  |
| 10 | BTA-96964-no-rs                 | 0 | 41713480 |  |
| 10 | Hapmap51480-BTA-67184           | 0 | 41790011 |  |
| 10 | BTA-67183-no-rs                 | 0 | 41812396 |  |
| 10 | Hapmap23831-BTA-157135          | 0 | 41849457 |  |
| 10 | Hapmap39501-BTA-67181           | 0 | 41907778 |  |
| 10 | ARS-BFGL-NGS-103500             | 0 | 41979193 |  |
| 10 | Hapmap34990-BES11_Contig306_895 | 0 | 42024665 |  |
| 10 | ARS-BFGL-NGS-102487             | 0 | 42060020 |  |
| 10 | ARS-BFGL-NGS-24311              | 0 | 42091684 |  |
| 10 | ARS-BFGL-BAC-585                | 0 | 42113389 |  |
| 10 | BTA-107133-no-rs                | 0 | 42141669 |  |
| 10 | BTA-117973-no-rs                | 0 | 42189473 |  |
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| 10 | Hapmap49046-BTA-117967          | 0 | 42501988 |  |
| 10 | ARS-BFGL-NGS-16152              | 0 | 42533694 |  |
| 10 | ARS-BFGL-NGS-104220             | 0 | 42555055 |  |
| 10 | BTA-20085-no-rs                 | 0 | 42613344 |  |
| 10 | BTB-01302419                    | 0 | 42670826 |  |

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| 10 | ARS-BFGL-NGS-15026                    | 0 | 42723952 |          |  |
| 10 | BTA-67223-no-rs                       | 0 | 42747456 |          |  |
| 10 | BTB-00420509                          | 0 | 42769534 |          |  |
| 10 | Hapmap58536-rs29018693                | 0 | 42796747 |          |  |
| 10 | Hapmap43507-BTA-20079                 | 0 | 42830195 |          |  |
| 10 | ARS-BFGL-NGS-112899                   | 0 | 42862459 |          |  |
| 10 | BTA-115437-no-rs                      | 0 | 42949065 |          |  |
| 10 | ARS-BFGL-NGS-56650                    |   | 43012833 |          |  |
| 10 | ARS-BFGL-NGS-119395                   | 0 | 43037147 |          |  |
| 10 | ARS-BFGL-NGS-19553                    | 0 | 43229292 |          |  |
| 10 | Hapmap44476-BTA-67187                 | 0 | 43272273 |          |  |
| 10 | BTB-00419725                          | 0 | 43638542 |          |  |
| 10 | Hapmap34362-BES11_Contig425_1305      | 0 |          | 43669993 |  |
| 10 | BTA-67195-no-rs                       | 0 | 43773196 |          |  |
| 10 | BTB-00419789                          | 0 | 43865925 |          |  |
| 10 | BTB-00419760                          | 0 | 43893833 |          |  |
| 10 | BTA-90556-no-rs                       | 0 | 43917013 |          |  |
| 10 | Hapmap28049-BTA-148967                | 0 | 43956417 |          |  |
| 10 | ARS-BFGL-NGS-26081                    | 0 | 43982050 |          |  |
| 10 | BTB-01885735                          | 0 | 44006781 |          |  |
| 10 | ARS-BFGL-NGS-110754                   | 0 | 44040387 |          |  |
| 10 | BTB-01321748                          | 0 | 44065746 |          |  |
| 10 | BTB-01413108                          | 0 | 44082049 |          |  |
| 10 | ARS-USMARC-Parent-DQ786761-rs29012840 | 0 |          | 44103665 |  |
| 10 | ARS-BFGL-NGS-23144                    | 0 | 44143863 |          |  |
| 10 | ARS-BFGL-NGS-118414                   | 0 | 44209604 |          |  |
| 10 | Hapmap34336-BES7_Contig511_2306       | 0 |          | 44255052 |  |
| 10 | BTB-01321582                          | 0 | 44289495 |          |  |
| 10 | BTB-00544666                          | 0 | 44329584 |          |  |
| 10 | Hapmap48648-BTA-120966                | 0 | 44362494 |          |  |
| 10 | Hapmap49918-BTA-22571                 | 0 | 44417569 |          |  |
| 10 | BTB-01321829                          | 0 | 44445350 |          |  |
| 10 | ARS-BFGL-NGS-31641                    | 0 | 44481175 |          |  |
| 10 | BTB-00979154                          | 0 | 44521573 |          |  |
| 10 | Hapmap42628-BTA-67218                 | 0 | 44556318 |          |  |
| 10 | Hapmap56574-rs29026819                | 0 | 44601357 |          |  |
| 10 | ARS-BFGL-NGS-114188                   | 0 | 44694452 |          |  |
| 10 | BTA-108060-no-rs                      | 0 | 44733798 |          |  |
| 10 | ARS-BFGL-NGS-97032                    | 0 | 44773388 |          |  |
| 10 | ARS-BFGL-NGS-16794                    | 0 | 44798942 |          |  |
| 10 | ARS-BFGL-NGS-90359                    | 0 | 44821159 |          |  |
| 10 | ARS-BFGL-NGS-25177                    | 0 | 44847319 |          |  |
| 10 | Hapmap51024-BTA-67203                 | 0 | 44868505 |          |  |
| 10 | ARS-BFGL-BAC-589                      | 0 | 44899012 |          |  |
| 10 | BTB-00420215                          | 0 | 44920804 |          |  |
| 10 | Hapmap47696-BTA-67199                 | 0 | 45013558 |          |  |
| 10 | ARS-BFGL-BAC-13509                    | 0 | 45034945 |          |  |
| 10 | Hapmap42289-BTA-67247                 | 0 | 45069536 |          |  |
| 10 | BTB-00419986                          | 0 | 45207315 |          |  |
| 10 | BTB-00419968                          | 0 | 45237046 |          |  |
| 10 | ARS-BFGL-NGS-10310                    | 0 | 45268481 |          |  |
| 10 | ARS-BFGL-NGS-110134                   | 0 | 45288657 |          |  |
| 10 | Hapmap53059-rs17871435                | 0 | 45323831 |          |  |
| 10 | Hapmap52043-rs29027593                | 0 | 45351906 |          |  |

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| 10 | ARS-BFGL-NGS-111113    | 0        | 45387461 |
| 10 | Hapmap24529-BTA-125471 | 0        | 45436582 |
| 10 | BTB-00421141           | 0        | 45465423 |
| 10 | ARS-BFGL-NGS-109218    | 0        | 45488421 |
| 10 | BTB-00421066           | 0        | 45506957 |
| 10 | ARS-BFGL-NGS-118376    | 0        | 45531280 |
| 10 | Hapmap40184-BTA-67230  | 0        | 45564676 |
| 10 | BTB-01891199           | 0        | 45687660 |
| 10 | BTB-00420673           | 0        | 45736518 |
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| 10 | ARS-BFGL-NGS-43266     | 0        | 45864066 |
| 10 | ARS-BFGL-NGS-31747     | 0        | 45890859 |
| 10 | ARS-BFGL-NGS-61625     | 0        | 45941254 |
| 10 | ARS-BFGL-NGS-112187    | 0        | 46022642 |
| 10 | ARS-BFGL-NGS-113665    | 0        | 46054427 |
| 10 | ARS-BFGL-NGS-29665     | 0        | 46108878 |
| 10 | UA-IFASA-4326          | 0        | 46129778 |
| 10 | BTA-95233-no-rs        | 0        | 46151655 |
| 10 | Hapmap32096-BTA-150413 | 0        | 46199529 |
| 10 | BTB-00422333           | 0        | 46282142 |
| 10 | ARS-BFGL-BAC-13522     | 0        | 46312239 |
| 10 | ARS-BFGL-NGS-31031     | 0        | 46345098 |
| 10 | ARS-BFGL-NGS-16976     | 0        | 46388294 |
| 10 | ARS-BFGL-NGS-102512    | 0        | 46450370 |
| 10 | ARS-BFGL-NGS-107037    | 0        | 46486647 |
| 10 | ARS-BFGL-NGS-48394     | 0        | 46508754 |
| 10 | ARS-BFGL-NGS-30300     | 46548679 |          |
| 10 | ARS-BFGL-NGS-60054     | 0        | 46571563 |
| 10 | ARS-BFGL-NGS-107921    | 0        | 46598505 |
| 10 | ARS-BFGL-NGS-15826     | 0        | 46638835 |
| 10 | ARS-BFGL-NGS-76427     | 0        | 46665928 |
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| 10 | ARS-BFGL-NGS-10871     | 0        | 46729918 |
| 10 | ARS-BFGL-NGS-101768    | 0        | 46770457 |
| 10 | Hapmap57421-rs29025964 | 0        | 46802159 |
| 10 | Hapmap29960-BTA-125477 | 0        | 46835160 |
| 10 | ARS-BFGL-NGS-103937    | 0        | 46866043 |
| 10 | BTB-00421883           | 0        | 46923030 |
| 10 | ARS-BFGL-NGS-10383     | 0        | 46999079 |
| 10 | BTB-00421835           | 0        | 47031153 |
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| 10 | ARS-BFGL-NGS-117446    | 0        | 47174234 |
| 10 | ARS-BFGL-NGS-112309    | 0        | 47197199 |
| 10 | ARS-BFGL-NGS-41254     | 0        | 47220610 |
| 10 | ARS-BFGL-NGS-36243     | 0        | 47309122 |
| 10 | ARS-BFGL-NGS-31100     | 0        | 47341730 |
| 10 | ARS-BFGL-NGS-112377    | 0        | 47374058 |
| 10 | ARS-BFGL-NGS-30594     | 0        | 47406215 |
| 10 | ARS-BFGL-NGS-110468    | 0        | 47508914 |
| 10 | ARS-BFGL-NGS-35036     | 0        | 47601270 |



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| 10 | ARS-BFGL-NGS-119345            | 0 | 47634967 |          |
| 10 | ARS-BFGL-NGS-118656            | 0 | 47664187 |          |
| 10 | BTB-00422869                   | 0 | 47689396 |          |
| 10 | ARS-BFGL-NGS-104551            | 0 | 47721937 |          |
| 10 | BTB-00422746                   | 0 | 47751227 |          |
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| 10 | ARS-BFGL-NGS-26902             | 0 | 47806511 |          |
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| 10 | ARS-BFGL-NGS-102308            | 0 | 47864667 |          |
| 10 | ARS-BFGL-NGS-101904            | 0 | 47896045 |          |
| 10 | Hapmap36641-SCAFFOLD21136_2257 | 0 |          | 47924420 |
| 10 | ARS-BFGL-NGS-64260             | 0 | 47945151 |          |
| 10 | Hapmap51284-BTA-68231          | 0 | 48110941 |          |
| 10 | Hapmap50440-BTA-68229          | 0 | 48225546 |          |
| 10 | ARS-BFGL-NGS-29968             | 0 | 48303587 |          |
| 10 | Hapmap32025-BTA-125536         | 0 | 48339911 |          |
| 10 | ARS-BFGL-NGS-15006             | 0 | 48391115 |          |
| 10 | Hapmap59320-rs29015700         | 0 | 48421615 |          |
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| 10 | ARS-BFGL-NGS-117876            | 0 | 48502416 |          |
| 10 | ARS-BFGL-NGS-111510            | 0 | 48541387 |          |
| 10 | Hapmap43655-BTA-68208          | 0 | 48603725 |          |
| 10 | BTA-68202-no-rs                | 0 | 48625893 |          |
| 10 | ARS-BFGL-NGS-118272            | 0 | 48647362 |          |
| 10 | Hapmap48048-BTA-68194          | 0 | 48684692 |          |
| 10 | BTA-68192-no-rs                | 0 | 48728214 |          |
| 10 | ARS-BFGL-NGS-17352             | 0 | 48837583 |          |
| 10 | ARS-BFGL-BAC-11657             | 0 | 48926752 |          |
| 10 | ARS-BFGL-BAC-11658             | 0 | 49013809 |          |
| 10 | BTA-69321-no-rs                | 0 | 49058682 |          |
| 10 | ARS-BFGL-NGS-18462             | 0 | 49097110 |          |
| 10 | Hapmap38773-BTA-70157          | 0 | 49132397 |          |
| 10 | BTA-70155-no-rs                | 0 | 49165345 |          |
| 10 | BTB-00426034                   | 0 | 49189795 |          |
| 10 | BTB-00425970                   | 0 | 49212505 |          |
| 10 | BTB-00425983                   | 0 | 49237160 |          |
| 10 | Hapmap42644-BTA-70149          | 0 | 49261819 |          |
| 10 | BTA-70202-no-rs                | 0 | 49319621 |          |
| 10 | BTA-70198-no-rs                | 0 | 49394110 |          |
| 10 | Hapmap44480-BTA-70216          | 0 | 49435552 |          |
| 10 | ARS-BFGL-NGS-111546            | 0 | 49480741 |          |
| 10 | ARS-BFGL-NGS-20006             | 0 | 49503411 |          |
| 10 | Hapmap58563-rs29026478         | 0 | 49569157 |          |
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| 10 | ARS-BFGL-BAC-11666             | 0 | 49656226 |          |
| 10 | BTA-70186-no-rs                | 0 | 49749367 |          |
| 10 | BTA-13357-no-rs                | 0 | 49770607 |          |
| 10 | BTB-00426704                   | 0 | 49791638 |          |
| 10 | Hapmap43913-BTA-70188          | 0 | 49825804 |          |
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| 10 | BTB-00426818                   | 0 | 49889790 |          |
| 10 | ARS-BFGL-NGS-88023             | 0 | 49918624 |          |
| 10 | ARS-BFGL-NGS-70374             | 0 | 49942490 |          |

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| 10 | BTB-00427118           | 0        | 50086640 |
| 10 | Hapmap46718-BTA-70192  | 0        | 50108987 |
| 10 | BTB-00427152           | 0        | 50213424 |
| 10 | Hapmap53900-rs29027193 | 0        | 50251003 |
| 10 | ARS-BFGL-NGS-42256     | 0        | 50282066 |
| 10 | BTB-00427376           | 0        | 50353345 |
| 10 | BTA-70195-no-rs        | 0        | 50387217 |
| 10 | BTB-02009817           | 0        | 50407755 |
| 10 | Hapmap50870-BTA-111277 | 0        | 50445303 |
| 10 | Hapmap41480-BTA-20737  | 0        | 50462356 |
| 10 | BTB-01780583           | 0        | 50485686 |
| 10 | ARS-BFGL-NGS-15394     | 0        | 50537966 |
| 10 | BTA-92902-no-rs        | 0        | 50603674 |
| 10 | BTB-01434227           | 0        | 50625958 |
| 10 | Hapmap51989-BTA-92903  | 0        | 50680586 |
| 10 | BTB-01434144           | 0        | 50705459 |
| 10 | Hapmap54762-rs29012389 | 0        | 50747119 |
| 10 | ARS-BFGL-NGS-88360     | 50789886 |          |
| 10 | Hapmap45147-BTA-106533 | 0        | 50866684 |
| 10 | BTB-01592938           | 0        | 50894987 |
| 10 | ARS-BFGL-NGS-11399     | 0        | 50918709 |
| 10 | ARS-BFGL-NGS-54700     | 50943688 |          |
| 10 | ARS-BFGL-NGS-18540     | 51001410 |          |
| 10 | BTB-00428084           | 0        | 51037416 |
| 10 | Hapmap25794-BTA-125663 | 0        | 51073291 |
| 10 | BTB-00428016           | 0        | 51104105 |
| 10 | ARS-BFGL-NGS-92694     | 0        | 51133677 |
| 10 | ARS-BFGL-NGS-101657    | 0        | 51155876 |
| 10 | BTB-00427715           | 0        | 51224528 |
| 10 | ARS-BFGL-NGS-100387    | 0        | 51245656 |
| 10 | ARS-BFGL-NGS-53671     | 0        | 51269761 |
| 10 | ARS-BFGL-NGS-21533     | 0        | 51307984 |
| 10 | ARS-BFGL-NGS-100399    | 0        | 51383075 |
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| 10 | BTB-00426535           | 0        | 51502722 |
| 10 | ARS-BFGL-BAC-12270     | 0        | 51558941 |
| 10 | BTB-00423741           | 0        | 51607370 |
| 10 | BTB-00423742           | 0        | 51627715 |
| 10 | Hapmap51622-BTA-69253  | 0        | 51657226 |
| 10 | BTB-00423785           | 0        | 51679374 |
| 10 | BTA-16517-no-rs        | 0        | 51715026 |
| 10 | Hapmap58695-rs29019899 | 0        | 51735816 |
| 10 | BTB-00424023           | 0        | 51775341 |
| 10 | BTB-00424008           | 0        | 51803725 |
| 10 | ARS-BFGL-NGS-82941     | 0        | 51827797 |
| 10 | ARS-BFGL-NGS-24765     | 0        | 51850642 |
| 10 | ARS-BFGL-NGS-91094     | 0        | 51892644 |
| 10 | Hapmap48442-BTA-69255  | 0        | 51918601 |
| 10 | ARS-BFGL-NGS-24556     | 0        | 51980270 |
| 10 | Hapmap43018-BTA-69257  | 0        | 52011775 |
| 10 | ARS-BFGL-NGS-51300     | 52033595 |          |
| 10 | Hapmap49275-BTA-69259  | 0        | 52086383 |
| 10 | ARS-BFGL-NGS-15716     | 0        | 52109287 |

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| 10 | BTB-01984646                    | 0 | 52166976 |  |
| 10 | Hapmap51030-BTA-69263           | 0 | 52190618 |  |
| 10 | BTB-00424298                    | 0 | 52220883 |  |
| 10 | BTB-00424319                    | 0 | 52244274 |  |
| 10 | BTB-01677645                    | 0 | 52280724 |  |
| 10 | BTB-01677628                    | 0 | 52303038 |  |
| 10 | BTB-00424333                    | 0 | 52372286 |  |
| 10 | ARS-BFGL-NGS-80454              | 0 | 52401668 |  |
| 10 | Hapmap50760-BTA-69265           | 0 | 52442733 |  |
| 10 | ARS-BFGL-NGS-30873              | 0 | 52464256 |  |
| 10 | Hapmap25504-BTA-125586          | 0 | 52506582 |  |
| 10 | BTB-00424771                    | 0 | 52558914 |  |
| 10 | ARS-BFGL-NGS-72759              | 0 | 52584852 |  |
| 10 | BTB-00424787                    | 0 | 52606823 |  |
| 10 | BTB-00424791                    | 0 | 52629991 |  |
| 10 | Hapmap36078-SCAFFOLD50001_90016 | 0 | 52667436 |  |
| 10 | BTB-00424848                    | 0 | 52714589 |  |
| 10 | ARS-BFGL-NGS-68950              |   | 52755698 |  |
| 10 | ARS-BFGL-NGS-82094              | 0 | 52781919 |  |
| 10 | ARS-BFGL-NGS-77250              | 0 | 52814326 |  |
| 10 | ARS-BFGL-NGS-14607              | 0 | 52836817 |  |
| 10 | BTB-00425187                    | 0 | 52860808 |  |
| 10 | Hapmap57591-rs29019736          | 0 | 52884624 |  |
| 10 | BTA-69288-no-rs                 | 0 | 52933550 |  |
| 10 | BTA-69292-no-rs                 | 0 | 52955736 |  |
| 10 | ARS-BFGL-NGS-118883             | 0 | 52998549 |  |
| 10 | ARS-BFGL-NGS-110070             | 0 | 53041455 |  |
| 10 | BTA-69301-no-rs                 | 0 | 53080510 |  |
| 10 | BTB-00425619                    | 0 | 53110990 |  |
| 10 | BTB-00425652                    | 0 | 53136010 |  |
| 10 | BTB-00425665                    | 0 | 53169423 |  |
| 10 | Hapmap44274-BTA-69304           | 0 | 53204173 |  |
| 10 | Hapmap44612-BTA-69305           | 0 | 53226361 |  |
| 10 | ARS-BFGL-NGS-84148              | 0 | 53289822 |  |
| 10 | BTB-00425787                    | 0 | 53318692 |  |
| 10 | BTB-01047707                    | 0 | 53351901 |  |
| 10 | Hapmap27798-BTA-30644           | 0 | 53406835 |  |
| 10 | BTA-30640-no-rs                 | 0 | 53432912 |  |
| 10 | BTA-30638-no-rs                 | 0 | 53454128 |  |
| 10 | ARS-BFGL-NGS-11135              | 0 | 53484074 |  |
| 10 | Hapmap59000-rs29026853          | 0 | 53560658 |  |
| 10 | BTB-01137783                    | 0 | 53661155 |  |
| 10 | BTB-01137797                    | 0 | 53716124 |  |
| 10 | Hapmap26429-BTA-150727          | 0 | 53790650 |  |
| 10 | Hapmap47128-BTA-89018           | 0 | 53904445 |  |
| 10 | BTA-120184-no-rs                | 0 | 53949424 |  |
| 10 | BTA-87361-no-rs                 | 0 | 53987232 |  |
| 10 | BTB-01137914                    | 0 | 54012929 |  |
| 10 | BTB-01137887                    | 0 | 54032992 |  |
| 10 | BTA-95978-no-rs                 | 0 | 54082665 |  |
| 10 | BTB-01018269                    | 0 | 54132987 |  |
| 10 | BTB-00429692                    | 0 | 54181848 |  |
| 10 | BTB-00429663                    | 0 | 54206302 |  |
| 10 | ARS-BFGL-NGS-18534              | 0 | 54248308 |  |

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| 10 | ARS-BFGL-NGS-42301                    | 0 | 54289766 |          |  |
| 10 | ARS-BFGL-BAC-12295                    | 0 | 54341869 |          |  |
| 10 | BTB-00429342                          | 0 | 54388591 |          |  |
| 10 | BTB-00429363                          | 0 | 54413266 |          |  |
| 10 | ARS-BFGL-NGS-55330                    |   | 54439847 |          |  |
| 10 | ARS-BFGL-NGS-79865                    | 0 | 54485911 |          |  |
| 10 | ARS-BFGL-NGS-29248                    | 0 | 54514075 |          |  |
| 10 | Hapmap58863-rs29026593                | 0 | 54537392 |          |  |
| 10 | BTB-00429221                          | 0 | 54557845 |          |  |
| 10 | Hapmap38976-BTA-71247                 | 0 | 54582753 |          |  |
| 10 | ARS-BFGL-NGS-103720                   | 0 | 54635388 |          |  |
| 10 | ARS-BFGL-BAC-12297                    | 0 | 54687920 |          |  |
| 10 | ARS-BFGL-NGS-106255                   | 0 | 54719607 |          |  |
| 10 | ARS-BFGL-BAC-12299                    | 0 | 54735314 |          |  |
| 10 | Hapmap59551-rs29015976                | 0 | 54766746 |          |  |
| 10 | Hapmap29662-BTA-71235                 | 0 | 54787499 |          |  |
| 10 | Hapmap42649-BTA-71224                 | 0 | 54829993 |          |  |
| 10 | Hapmap28067-BTA-71220                 | 0 | 54885960 |          |  |
| 10 | BTA-71218-no-rs                       | 0 | 54928495 |          |  |
| 10 | BTB-00429005                          | 0 | 54968099 |          |  |
| 10 | BTB-00428991                          | 0 | 55020216 |          |  |
| 10 | ARS-BFGL-NGS-100901                   | 0 | 55105762 |          |  |
| 10 | BTB-01088401                          | 0 | 55119632 |          |  |
| 10 | BTB-00431144                          | 0 | 55323184 |          |  |
| 10 | BTB-00431053                          | 0 | 55378200 |          |  |
| 10 | BTB-00430996                          | 0 | 55422184 |          |  |
| 10 | ARS-BFGL-NGS-27708                    | 0 | 55510249 |          |  |
| 10 | BTB-00430730                          | 0 | 55535781 |          |  |
| 10 | BTB-00428180                          | 0 | 55591993 |          |  |
| 10 | ARS-USMARC-Parent-DQ984827-rs29012019 | 0 |          | 55611885 |  |
| 10 | Hapmap53200-rs29014555                | 0 | 55639027 |          |  |
| 10 | BTB-00428623                          | 0 | 55678689 |          |  |
| 10 | BTA-88344-no-rs                       | 0 | 55719332 |          |  |
| 10 | BTB-00430410                          | 0 | 55751369 |          |  |
| 10 | Hapmap48866-BTA-71278                 | 0 | 55773163 |          |  |
| 10 | BTB-00430224                          | 0 | 55805448 |          |  |
| 10 | BTA-03733-no-rs                       | 0 | 55904933 |          |  |
| 10 | Hapmap47874-BTA-15255                 | 0 | 55928939 |          |  |
| 10 | BTB-00430147                          | 0 | 55993255 |          |  |
| 10 | ARS-BFGL-NGS-119158                   | 0 | 56015779 |          |  |
| 10 | BTB-00430000                          | 0 | 56071742 |          |  |
| 10 | BTB-00429961                          | 0 | 56093653 |          |  |
| 10 | ARS-BFGL-NGS-21100                    | 0 | 56116909 |          |  |
| 10 | BTB-01911175                          | 0 | 56140822 |          |  |
| 10 | Hapmap59192-rs29010800                | 0 | 56175799 |          |  |
| 10 | ARS-BFGL-NGS-114252                   | 0 | 56230832 |          |  |
| 10 | BTB-00428684                          | 0 | 56304161 |          |  |
| 10 | ARS-BFGL-NGS-106042                   | 0 | 56325260 |          |  |
| 10 | ARS-BFGL-BAC-14185                    | 0 | 56347637 |          |  |
| 10 | ARS-BFGL-NGS-39078                    | 0 | 56384524 |          |  |
| 10 | BTB-01891590                          | 0 | 56464919 |          |  |
| 10 | Hapmap32380-BTA-159985                | 0 | 56525387 |          |  |
| 10 | BTB-01178563                          | 0 | 56582627 |          |  |
| 10 | ARS-BFGL-NGS-115499                   | 0 | 56638876 |          |  |

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| 10 | Hapmap49423-BTA-105416           | 0 | 56704765 |  |
| 10 | BTA-105411-no-rs                 | 0 | 56756581 |  |
| 10 | BTB-01178146                     | 0 | 56792715 |  |
| 10 | BTA-105432-no-rs                 | 0 | 56812824 |  |
| 10 | BTB-01178139                     | 0 | 56841655 |  |
| 10 | BTA-24978-no-rs                  | 0 | 56924485 |  |
| 10 | BTB-01890015                     | 0 | 56946611 |  |
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| 10 | BTB-01660086                     | 0 | 57094055 |  |
| 10 | BTB-00334796                     | 0 | 57131487 |  |
| 10 | BTA-66038-no-rs                  | 0 | 57193699 |  |
| 10 | ARS-BFGL-NGS-19199               | 0 | 57518113 |  |
| 10 | BTB-01125780                     | 0 | 57588822 |  |
| 10 | ARS-BFGL-BAC-14813               | 0 | 57611774 |  |
| 10 | ARS-BFGL-NGS-100272              | 0 | 57634236 |  |
| 10 | BTB-01125709                     | 0 | 57665215 |  |
| 10 | BTB-01125700                     | 0 | 57701989 |  |
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| 10 | Hapmap42723-BTA-91402            | 0 | 57786593 |  |
| 10 | BTB-01125665                     | 0 | 57832918 |  |
| 10 | BTA-89332-no-rs                  | 0 | 57864897 |  |
| 10 | Hapmap50802-BTA-85537            | 0 | 57890651 |  |
| 10 | ARS-BFGL-NGS-44942               | 0 | 57946593 |  |
| 10 | Hapmap38360-BTA-91400            | 0 | 57983290 |  |
| 10 | BTA-92498-no-rs                  | 0 | 58004357 |  |
| 10 | BTB-01125425                     | 0 | 58076494 |  |
| 10 | Hapmap58597-rs29013533           | 0 | 58097440 |  |
| 10 | BTB-01125413                     | 0 | 58119426 |  |
| 10 | ARS-BFGL-NGS-36675               | 0 | 58150209 |  |
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| 10 | ARS-BFGL-NGS-57640               | 0 | 58232442 |  |
| 10 | BTB-01524979                     | 0 | 58257801 |  |
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| 10 | ARS-BFGL-NGS-91856               | 0 | 58318595 |  |
| 10 | ARS-BFGL-NGS-55539               | 0 | 58488593 |  |
| 10 | BTB-00387744                     | 0 | 58517645 |  |
| 10 | ARS-BFGL-NGS-54405               | 0 | 58574738 |  |
| 10 | BTA-114683-no-rs                 | 0 | 58634276 |  |
| 10 | Hapmap36252-SCAFFOLD195517_10504 | 0 | 58707718 |  |
| 10 | BTA-114684-no-rs                 | 0 | 58749431 |  |
| 10 | Hapmap49031-BTA-114687           | 0 | 58775845 |  |
| 10 | ARS-BFGL-NGS-83717               | 0 | 58823755 |  |
| 10 | Hapmap48867-BTA-71298            | 0 | 58963653 |  |
| 10 | BTB-00431287                     | 0 | 59036433 |  |
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| 10 | ARS-BFGL-NGS-54030               | 0 | 59125626 |  |
| 10 | ARS-BFGL-NGS-12407               | 0 | 59151667 |  |
| 10 | BTA-72298-no-rs                  | 0 | 59181060 |  |
| 10 | BTA-72304-no-rs                  | 0 | 59230971 |  |
| 10 | ARS-BFGL-NGS-27172               | 0 | 59384121 |  |
| 10 | BTA-72321-no-rs                  | 0 | 59405502 |  |
| 10 | ARS-BFGL-NGS-19567               | 0 | 59470586 |  |
| 10 | ARS-BFGL-NGS-84473               | 0 | 59557358 |  |

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| 10 | BTB-01361971           | 0        | 59615280 |
| 10 | BTB-01361961           | 0        | 59642973 |
| 10 | BTB-01361928           | 0        | 59667969 |
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| 10 | BTB-01361809           | 0        | 59850162 |
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| 10 | Hapmap47175-BTA-110475 | 0        | 60267486 |
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| 10 | BTB-01837908           | 0        | 60527567 |
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| 10 | BTB-01157316           | 0        | 60854031 |
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| 10 | ARS-BFGL-NGS-93100     | 61567073 |          |
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| 10 | Hapmap51762-BTA-72357  | 0        | 61715619 |
| 10 | Hapmap51038-BTA-72356  | 0        | 61746412 |
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| 10 | ARS-BFGL-NGS-94775     | 0        | 61885278 |
| 10 | Hapmap27737-BTA-125689 | 0        | 61908608 |
| 10 | BTB-00432352           | 0        | 62038632 |
| 10 | Hapmap47084-BTA-72369  | 0        | 62081998 |
| 10 | BTA-72370-no-rs        | 0        | 62115155 |
| 10 | ARS-BFGL-BAC-14794     | 0        | 62229559 |
| 10 | Hapmap59097-rs29024832 | 0        | 62253559 |
| 10 | ARS-BFGL-NGS-115613    | 0        | 62309052 |
| 10 | ARS-BFGL-NGS-28353     | 0        | 62361408 |
| 10 | ARS-BFGL-NGS-21404     | 0        | 62402837 |
| 10 | Hapmap38247-BTA-73302  | 0        | 62463444 |
| 10 | BTB-00432722           | 0        | 62497512 |
| 10 | ARS-BFGL-NGS-80176     | 0        | 62587850 |
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| 10 | ARS-BFGL-NGS-35284     | 0        | 62822728 |
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| 10 | ARS-BFGL-NGS-97868     | 0        | 63001894 |
| 10 | ARS-BFGL-NGS-48980     | 63027070 |          |
| 10 | Hapmap53237-rs29021167 | 0        | 63095461 |
| 10 | ARS-BFGL-NGS-34398     | 0        | 63166747 |
| 10 | BTA-73349-no-rs        | 0        | 63343168 |
| 10 | BTA-73352-no-rs        | 0        | 63401724 |

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| 10 | Hapmap26935-BTA-125704 | 0 | 63504787 |
| 10 | BTA-73355-no-rs        | 0 | 63586417 |
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| 10 | Hapmap38195-BTA-112765 | 0 | 63836108 |
| 10 | ARS-BFGL-NGS-12875     | 0 | 63901294 |
| 10 | BTA-73360-no-rs        | 0 | 63947314 |
| 10 | BTA-112768-no-rs       | 0 | 64015533 |
| 10 | Hapmap59063-rs29016349 | 0 | 64131903 |
| 10 | Hapmap41699-BTA-96918  | 0 | 64203232 |
| 10 | ARS-BFGL-BAC-14182     | 0 | 64224480 |
| 10 | Hapmap43418-BTA-96915  | 0 | 64246254 |
| 10 | ARS-BFGL-BAC-609       | 0 | 64289128 |
| 10 | ARS-BFGL-NGS-23742     | 0 | 64316811 |
| 10 | Hapmap28142-BTA-161308 | 0 | 64383926 |
| 10 | ARS-BFGL-NGS-107098    | 0 | 64419396 |
| 10 | Hapmap48188-BTA-112933 | 0 | 64483394 |
| 10 | ARS-BFGL-NGS-117831    | 0 | 64594364 |
| 10 | ARS-BFGL-NGS-15094     | 0 | 64706581 |
| 10 | ARS-BFGL-NGS-69379     | 0 | 64752714 |
| 10 | Hapmap41275-BTA-47175  | 0 | 64905140 |
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| 10 | ARS-BFGL-BAC-14816     | 0 | 65106884 |
| 10 | ARS-BFGL-NGS-69577     | 0 | 65139528 |
| 10 | ARS-BFGL-NGS-105361    | 0 | 65212580 |
| 10 | BTA-112974-no-rs       | 0 | 65247522 |
| 10 | ARS-BFGL-NGS-53176     | 0 | 65407567 |
| 10 | BTA-73365-no-rs        | 0 | 65468277 |
| 10 | Hapmap33595-BTA-153983 | 0 | 65853941 |
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| 10 | Hapmap56930-rs29024128 | 0 | 65897687 |
| 10 | ARS-BFGL-NGS-42990     | 0 | 65970755 |
| 10 | ARS-BFGL-BAC-621       | 0 | 66022910 |
| 10 | Hapmap54949-rs29009945 | 0 | 66090075 |
| 10 | ARS-BFGL-NGS-66047     | 0 | 66174661 |
| 10 | ARS-BFGL-NGS-11407     | 0 | 66230263 |
| 10 | Hapmap33651-BTA-100665 | 0 | 66362078 |
| 10 | ARS-BFGL-BAC-14827     | 0 | 66397795 |
| 10 | Hapmap60320-rs29010337 | 0 | 66560673 |
| 10 | BTA-100680-no-rs       | 0 | 66591621 |
| 10 | BTA-100678-no-rs       | 0 | 66639142 |
| 10 | BTA-100674-no-rs       | 0 | 66659307 |
| 10 | Hapmap31150-BTA-152385 | 0 | 66687859 |
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| 10 | ARS-BFGL-NGS-103146    | 0 | 66766949 |
| 10 | ARS-BFGL-NGS-115726    | 0 | 66852021 |
| 10 | ARS-BFGL-NGS-119477    | 0 | 66884934 |
| 10 | BTA-100670-no-rs       | 0 | 66905609 |
| 10 | Hapmap60649-rs29021678 | 0 | 67003183 |
| 10 | Hapmap55116-rs29020033 | 0 | 67028558 |
| 10 | BTA-100668-no-rs       | 0 | 67118053 |
| 10 | ARS-BFGL-NGS-59050     | 0 | 67139023 |
| 10 | Hapmap31149-BTA-152372 | 0 | 67391727 |
| 10 | ARS-BFGL-NGS-64369     | 0 | 67414570 |
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| 10 | ARS-BFGL-NGS-44325             | 0 | 67500378 |  |
| 10 | ARS-BFGL-NGS-247               | 0 | 67538919 |  |
| 10 | ARS-BFGL-NGS-44563             | 0 | 67586540 |  |
| 10 | BTA-74241-no-rs                | 0 | 67626007 |  |
| 10 | ARS-BFGL-NGS-32233             | 0 | 67648206 |  |
| 10 | ARS-BFGL-BAC-15431             | 0 | 67694539 |  |
| 10 | ARS-BFGL-NGS-113835            | 0 | 67800499 |  |
| 10 | ARS-BFGL-BAC-15433             | 0 | 67938058 |  |
| 10 | ARS-BFGL-NGS-16198             | 0 | 68029646 |  |
| 10 | BTA-98744-no-rs                | 0 | 68089016 |  |
| 10 | ARS-BFGL-NGS-20892             | 0 | 68135917 |  |
| 10 | ARS-BFGL-NGS-110711            | 0 | 68162634 |  |
| 10 | BTA-98741-no-rs                | 0 | 68199588 |  |
| 10 | BTB-02057888                   | 0 | 68231955 |  |
| 10 | ARS-BFGL-BAC-15453             | 0 | 68296332 |  |
| 10 | BTB-01065229                   | 0 | 68324855 |  |
| 10 | ARS-BFGL-BAC-15450             | 0 | 68352930 |  |
| 10 | Hapmap42386-BTA-98732          | 0 | 68376935 |  |
| 10 | ARS-BFGL-NGS-112605            | 0 | 68413741 |  |
| 10 | ARS-BFGL-NGS-117890            | 0 | 68441863 |  |
| 10 | Hapmap26162-BTA-151732         | 0 | 68474685 |  |
| 10 | ARS-BFGL-NGS-104766            | 0 | 68499241 |  |
| 10 | ARS-BFGL-NGS-97889             | 0 | 68525616 |  |
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| 10 | Hapmap40849-BTA-98725          | 0 | 68604117 |  |
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| 10 | Hapmap35120-BES8_Contig406_894 | 0 | 68722425 |  |
| 10 | BTB-01064648                   | 0 | 68754185 |  |
| 10 | ARS-BFGL-NGS-21750             | 0 | 68789694 |  |
| 10 | ARS-BFGL-NGS-57077             | 0 | 68812168 |  |
| 10 | Hapmap50263-BTA-122214         | 0 | 68836485 |  |
| 10 | Hapmap24641-BTA-123196         | 0 | 68862316 |  |
| 10 | ARS-BFGL-NGS-18531             | 0 | 68895863 |  |
| 10 | ARS-BFGL-NGS-79790             | 0 | 68916657 |  |
| 10 | Hapmap39090-BTA-62181          | 0 | 68993955 |  |
| 10 | ARS-BFGL-NGS-19727             | 0 | 69037471 |  |
| 10 | ARS-BFGL-NGS-100631            | 0 | 69057957 |  |
| 10 | ARS-BFGL-NGS-12520             | 0 | 69107598 |  |
| 10 | BTB-01420453                   | 0 | 69287432 |  |
| 10 | Hapmap52248-rs29010868         | 0 | 69311079 |  |
| 10 | BTB-01343796                   | 0 | 69345037 |  |
| 10 | BTB-01343845                   | 0 | 69379251 |  |
| 10 | BTA-26321-no-rs                | 0 | 69394382 |  |
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| 10 | ARS-BFGL-NGS-105887            | 0 | 69557467 |  |
| 10 | Hapmap52599-rs29025208         | 0 | 69613188 |  |
| 10 | BTB-00433829                   | 0 | 69658256 |  |
| 10 | Hapmap29285-BTA-162580         | 0 | 69721690 |  |
| 10 | BTA-74277-no-rs                | 0 | 69759274 |  |
| 10 | BTB-00433535                   | 0 | 69785726 |  |



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| 10 | ARS-BFGL-NGS-55116               | 0 | 69811463 |          |
| 10 | BTB-00433492                     | 0 | 69832790 |          |
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| 10 | BTB-00433448                     | 0 | 69930520 |          |
| 10 | BTB-00433433                     | 0 | 69966083 |          |
| 10 | BTB-00433418                     | 0 | 69990962 |          |
| 10 | BTB-00433395                     | 0 | 70023640 |          |
| 10 | BTA-74271-no-rs                  | 0 | 70058470 |          |
| 10 | Hapmap41348-BTA-74269            | 0 | 70079613 |          |
| 10 | ARS-BFGL-NGS-85692               | 0 | 70109077 |          |
| 10 | Hapmap35357-SCAFFOLD220094_14112 | 0 |          | 70129609 |
| 10 | BTB-00433165                     | 0 | 70168665 |          |
| 10 | BTB-01866513                     | 0 | 70231445 |          |
| 10 | BTB-01866481                     | 0 | 70258844 |          |
| 10 | Hapmap60042-rs29009594           | 0 | 70296220 |          |
| 10 | Hapmap59093-rs29024594           | 0 | 70317873 |          |
| 10 | Hapmap38346-BTA-74335            | 0 | 70356017 |          |
| 10 | BTB-00435548                     | 0 | 70403973 |          |
| 10 | BTB-00435533                     | 0 | 70439293 |          |
| 10 | ARS-BFGL-NGS-115581              | 0 | 70476892 |          |
| 10 | ARS-BFGL-NGS-110504              | 0 | 70556929 |          |
| 10 | ARS-BFGL-NGS-114113              | 0 | 70589931 |          |
| 10 | Hapmap43670-BTA-74318            | 0 | 70663937 |          |
| 10 | Hapmap47719-BTA-74313            | 0 | 70736766 |          |
| 10 | BTA-74310-no-rs                  | 0 | 70774856 |          |
| 10 | Hapmap44482-BTA-74309            | 0 | 70813663 |          |
| 10 | BTB-00434592                     | 0 | 70871943 |          |
| 10 | BTB-00434566                     | 0 | 70894537 |          |
| 10 | BTA-04666-rs29015025             | 0 | 70923311 |          |
| 10 | ARS-BFGL-BAC-15461               | 0 | 70950774 |          |
| 10 | BTA-74307-no-rs                  | 0 | 70973402 |          |
| 10 | BTB-00434261                     | 0 | 70998768 |          |
| 10 | Hapmap51774-BTA-88280            | 0 | 71022679 |          |
| 10 | ARS-BFGL-NGS-81470               | 0 | 71058333 |          |
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| 10 | BTB-01449482                     | 0 | 71226626 |          |
| 10 | ARS-BFGL-NGS-116012              | 0 | 71266946 |          |
| 10 | BTB-01449316                     | 0 | 71318080 |          |
| 10 | ARS-BFGL-BAC-15464               | 0 | 71359437 |          |
| 10 | Hapmap43730-BTA-94217            | 0 | 71385230 |          |
| 10 | Hapmap22646-BTA-150036           | 0 | 71435050 |          |
| 10 | BTB-01797755                     | 0 | 71528114 |          |
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| 10 | BTA-85657-no-rs                  | 0 | 71591199 |          |
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| 10 | ARS-BFGL-NGS-84353               | 0 | 71672455 |          |
| 10 | ARS-BFGL-NGS-52145               | 0 | 71694404 |          |
| 10 | BTB-01246946                     | 0 | 71760152 |          |
| 10 | BTB-01246955                     | 0 | 71787600 |          |
| 10 | ARS-BFGL-NGS-23163               | 0 | 71835260 |          |
| 10 | Hapmap47507-BTA-112830           | 0 | 71869137 |          |

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| 10 | ARS-BFGL-NGS-101787    | 0 | 71907917 |
| 10 | Hapmap50247-BTA-117369 | 0 | 71933019 |
| 10 | Hapmap51558-BTA-117380 | 0 | 71985171 |
| 10 | BTB-01693217           | 0 | 72023342 |
| 10 | BTB-01693207           | 0 | 72060561 |
| 10 | Hapmap59040-rs29025644 | 0 | 72202330 |
| 10 | BTA-75252-no-rs        | 0 | 72228543 |
| 10 | Hapmap27051-BTA-75243  | 0 | 72250928 |
| 10 | BTB-00435791           | 0 | 72280968 |
| 10 | BTB-01653140           | 0 | 72315329 |
| 10 | BTB-01653149           | 0 | 72339726 |
| 10 | ARS-BFGL-NGS-40559     | 0 | 72380552 |
| 10 | BTB-00435823           | 0 | 72624579 |
| 10 | BTA-109792-no-rs       | 0 | 72658520 |
| 10 | BTB-01203179           | 0 | 72694329 |
| 10 | Hapmap27627-BTA-155600 | 0 | 72735730 |
| 10 | BTB-01203270           | 0 | 72769319 |
| 10 | ARS-BFGL-BAC-71660     |   | 72797444 |
| 10 | Hapmap24305-BTA-155605 | 0 | 72846830 |
| 10 | Hapmap26768-BTA-162354 | 0 | 73304477 |
| 10 | BTB-01332940           | 0 | 73417064 |
| 10 | BTB-01332998           | 0 | 73466092 |
| 10 | ARS-BFGL-NGS-47830     |   | 73487550 |
| 10 | ARS-BFGL-NGS-36446     | 0 | 73508747 |
| 10 | ARS-BFGL-NGS-22113     | 0 | 73551579 |
| 10 | BTA-98698-no-rs        | 0 | 73585685 |
| 10 | ARS-BFGL-NGS-107028    | 0 | 73622468 |
| 10 | BTB-01501723           | 0 | 73655817 |
| 10 | ARS-BFGL-NGS-36378     | 0 | 73739496 |
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| 10 | Hapmap41352-BTA-75284  | 0 | 73884120 |
| 10 | ARS-BFGL-NGS-68102     | 0 | 73920310 |
| 10 | ARS-BFGL-NGS-41480     | 0 | 73952261 |
| 10 | Hapmap49737-BTA-75278  | 0 | 73979984 |
| 10 | ARS-BFGL-NGS-69839     | 0 | 74011076 |
| 10 | Hapmap26367-BTA-125739 | 0 | 74032819 |
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| 10 | ARS-BFGL-NGS-18580     | 0 | 74183178 |
| 10 | ARS-BFGL-NGS-72852     | 0 | 74246905 |
| 10 | ARS-BFGL-BAC-71810     |   | 74273641 |
| 10 | BTA-91507-no-rs        | 0 | 74423731 |
| 10 | Hapmap33601-BTA-158177 | 0 | 74454485 |
| 10 | ARS-BFGL-NGS-103001    | 0 | 74608049 |
| 10 | Hapmap32371-BTA-158185 | 0 | 74638670 |
| 10 | Hapmap60941-rs29011199 | 0 | 74701672 |
| 10 | BTA-101575-no-rs       | 0 | 74788107 |
| 10 | ARS-BFGL-NGS-41655     | 0 | 74818051 |
| 10 | Hapmap49499-BTA-122540 | 0 | 74849835 |
| 10 | ARS-BFGL-NGS-112074    | 0 | 74876068 |
| 10 | ARS-BFGL-NGS-16475     | 0 | 75105774 |

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| 10 | Hapmap23438-BTA-152737         | 0        | 75226789 |  |
| 10 | Hapmap38457-BTA-101571         | 0        | 75403132 |  |
| 10 | ARS-BFGL-NGS-32860             | 75448590 |          |  |
| 10 | BTA-101581-no-rs               | 0        | 75502355 |  |
| 10 | ARS-BFGL-NGS-105188            | 0        | 75601133 |  |
| 10 | Hapmap32647-BTA-161357         | 0        | 75679227 |  |
| 10 | ARS-BFGL-NGS-10920             | 0        | 75713321 |  |
| 10 | UA-IFASA-4440                  | 0        | 75743110 |  |
| 10 | ARS-BFGL-NGS-69005             | 0        | 75821328 |  |
| 10 | Hapmap43035-BTA-75257          | 0        | 75886229 |  |
| 10 | Hapmap51491-BTA-75258          | 0        | 75981214 |  |
| 10 | Hapmap43351-BTA-75262          | 0        | 76014249 |  |
| 10 | ARS-BFGL-NGS-116801            | 0        | 76077957 |  |
| 10 | Hapmap40252-BTA-75263          | 0        | 76220343 |  |
| 10 | ARS-BFGL-NGS-51320             | 76293117 |          |  |
| 10 | ARS-BFGL-NGS-55396             | 0        | 76397552 |  |
| 10 | UA-IFASA-8040                  | 0        | 76428175 |  |
| 10 | Hapmap30771-BTA-125759         | 0        | 76478601 |  |
| 10 | ARS-BFGL-NGS-64829             | 0        | 76509714 |  |
| 10 | ARS-BFGL-NGS-93256             | 0        | 76530287 |  |
| 10 | ARS-BFGL-NGS-70614             | 0        | 76604316 |  |
| 10 | BTA-76225-no-rs                | 0        | 76638301 |  |
| 10 | Hapmap42662-BTA-75333          | 0        | 76667903 |  |
| 10 | ARS-BFGL-NGS-106082            | 0        | 76711436 |  |
| 10 | ARS-BFGL-NGS-93518             | 0        | 76779458 |  |
| 10 | Hapmap44484-BTA-75324          | 0        | 76931362 |  |
| 10 | Hapmap27859-BTA-125757         | 0        | 76984307 |  |
| 10 | ARS-BFGL-NGS-38839             | 0        | 77032581 |  |
| 10 | ARS-BFGL-NGS-36741             | 0        | 77063059 |  |
| 10 | ARS-BFGL-NGS-111871            | 0        | 77105887 |  |
| 10 | BTA-75315-no-rs                | 0        | 77151640 |  |
| 10 | ARS-BFGL-NGS-39980             | 77173249 |          |  |
| 10 | ARS-BFGL-NGS-36898             | 0        | 77206128 |  |
| 10 | ARS-BFGL-NGS-11435             | 0        | 77234231 |  |
| 10 | ARS-BFGL-NGS-82270             | 77303582 |          |  |
| 10 | Hapmap50095-BTA-76251          | 0        | 77339732 |  |
| 10 | ARS-BFGL-NGS-18574             | 0        | 77391821 |  |
| 10 | ARS-BFGL-NGS-23713             | 0        | 77423941 |  |
| 10 | ARS-BFGL-NGS-22656             | 0        | 77495125 |  |
| 10 | ARS-BFGL-NGS-114908            | 0        | 77518423 |  |
| 10 | ARS-BFGL-NGS-12172             | 0        | 77627272 |  |
| 10 | ARS-BFGL-NGS-116699            | 0        | 77652696 |  |
| 10 | UA-IFASA-1616                  | 0        | 77844350 |  |
| 10 | Hapmap50492-BTA-86239          | 0        | 77947864 |  |
| 10 | Hapmap36758-SCAFFOLD311992_936 | 0        | 78044879 |  |
| 10 | BTA-93995-no-rs                | 0        | 78114917 |  |
| 10 | ARS-BFGL-NGS-40336             | 0        | 78177540 |  |
| 10 | ARS-BFGL-NGS-91501             | 0        | 78217641 |  |
| 10 | ARS-BFGL-NGS-42799             | 0        | 78254077 |  |
| 10 | ARS-BFGL-NGS-111205            | 0        | 78345178 |  |
| 10 | ARS-BFGL-NGS-10378             | 0        | 78376836 |  |
| 10 | BTA-105475-no-rs               | 0        | 78424435 |  |
| 10 | ARS-BFGL-BAC-10993             | 0        | 78512500 |  |
| 10 | ARS-BFGL-NGS-38581             | 0        | 78549784 |  |

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| 10 | BTA-76282-no-rs                       | 0 | 78608571 |   |          |
| 10 | Hapmap24868-BTA-156007                | 0 | 78709942 |   |          |
| 10 | ARS-BFGL-NGS-115606                   | 0 | 78743173 |   |          |
| 10 | ARS-BFGL-NGS-55923                    | 0 | 78805285 |   |          |
| 10 | Hapmap53454-rs29027326                | 0 | 78878993 |   |          |
| 10 | BTA-76281-no-rs                       | 0 | 78905418 |   |          |
| 10 | ARS-BFGL-BAC-11000                    | 0 | 79252023 |   |          |
| 10 | ARS-BFGL-NGS-38772                    | 0 | 79349611 |   |          |
| 10 | Hapmap26419-BTA-147498                | 0 | 79433889 |   |          |
| 10 | Hapmap41666-BTA-86780                 | 0 | 79455690 |   |          |
| 10 | ARS-BFGL-NGS-116025                   | 0 | 79496312 |   |          |
| 10 | Hapmap58222-rs29015981                | 0 | 79517533 |   |          |
| 10 | Hapmap38526-BTA-76305                 | 0 | 79569443 |   |          |
| 10 | ARS-BFGL-NGS-35820                    |   | 79778640 |   |          |
| 10 | ARS-BFGL-NGS-95296                    | 0 | 79805180 |   |          |
| 10 | BTA-76288-no-rs                       | 0 | 79854150 |   |          |
| 10 | ARS-BFGL-NGS-35798                    | 0 | 79877539 |   |          |
| 10 | Hapmap44851-BTA-76300                 | 0 | 79958340 |   |          |
| 10 | Hapmap47099-BTA-76301                 | 0 | 80005765 |   |          |
| 10 | ARS-BFGL-NGS-111492                   | 0 | 80124726 |   |          |
| 10 | ARS-BFGL-NGS-117202                   | 0 | 80181163 |   |          |
| 10 | ARS-BFGL-NGS-96337                    | 0 | 80223217 |   |          |
| 10 | Hapmap27151-BTA-125794                | 0 | 80251019 |   |          |
| 10 | Hapmap45875-BTA-37931                 | 0 | 80331159 |   |          |
| 10 | ARS-BFGL-BAC-11003                    | 0 | 80410977 |   |          |
| 10 | ARS-BFGL-NGS-41880                    | 0 | 80525247 |   |          |
| 10 | BTB-00437473                          | 0 | 80546262 |   |          |
| 10 | ARS-BFGL-NGS-39800                    |   | 80567844 |   |          |
| 10 | UA-IFASA-4740                         | 0 | 80602211 |   |          |
| 10 | ARS-BFGL-NGS-111135                   | 0 | 80718224 |   |          |
| 10 | ARS-BFGL-NGS-59601                    | 0 | 80746402 |   |          |
| 10 | ARS-BFGL-BAC-11007                    | 0 | 80783719 |   |          |
| 10 | ARS-BFGL-NGS-61160                    |   | 80814522 |   |          |
| 10 | ARS-BFGL-NGS-104852                   | 0 | 80857205 |   |          |
| 10 | ARS-BFGL-NGS-32379                    | 0 | 80910121 |   |          |
| 10 | Hapmap53872-rs29020120                | 0 | 80942486 |   |          |
| 10 | BTB-00437636                          | 0 | 80963535 |   |          |
| 10 | ARS-BFGL-NGS-106025                   | 0 | 80986865 |   |          |
| 10 | BTB-00437729                          | 0 | 81020269 |   |          |
| 10 | ARS-BFGL-NGS-66716                    | 0 | 81040939 |   |          |
| 10 | BTB-00437757                          | 0 | 81069177 |   |          |
| 10 | ARS-BFGL-NGS-24724                    | 0 | 81091156 |   |          |
| 10 | ARS-BFGL-NGS-75073                    | 0 | 81113308 |   |          |
| 10 | ARS-BFGL-NGS-73354                    | 0 | 81135781 |   |          |
| 10 | Hapmap30076-BTA-77284                 | 0 | 81180801 |   |          |
| 10 | ARS-BFGL-NGS-14371                    | 0 | 81403443 |   |          |
| 10 | BTA-77293-no-rs                       | 0 | 81411008 |   |          |
| 10 | ARS-BFGL-NGS-113766                   | 0 | 81459970 |   |          |
| 10 | ARS-BFGL-NGS-14667                    | 0 | 81481148 |   |          |
| 10 | BTA-77299-no-rs                       | 0 | 81549606 |   |          |
| 10 | ARS-USMARC-Parent-DQ786762-rs29010772 | 0 | 81572252 | 0 | 81572252 |
| 10 | ARS-BFGL-NGS-106641                   | 0 | 81596602 |   |          |
| 10 | Hapmap40806-BTA-77302                 | 0 | 81648739 |   |          |
| 10 | BTB-00438561                          | 0 | 81695290 |   |          |

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| 10 | Hapmap42321-BTA-77310  | 0        | 81732421 |
| 10 | ARS-BFGL-NGS-18421     | 0        | 81760421 |
| 10 | ARS-BFGL-NGS-95044     | 0        | 81788224 |
| 10 | BTA-77307-no-rs        | 0        | 81866159 |
| 10 | BTB-02098111           | 0        | 81896955 |
| 10 | Hapmap24217-BTA-29800  | 0        | 81954218 |
| 10 | ARS-BFGL-NGS-30050     | 81981544 |          |
| 10 | BTB-01373360           | 0        | 82005034 |
| 10 | BTB-01373370           | 0        | 82030321 |
| 10 | ARS-BFGL-NGS-102536    | 0        | 82077994 |
| 10 | ARS-BFGL-NGS-25630     | 82104213 |          |
| 10 | ARS-BFGL-NGS-118013    | 0        | 82125798 |
| 10 | ARS-BFGL-NGS-59989     | 0        | 82261121 |
| 10 | ARS-BFGL-NGS-101487    | 0        | 82290325 |
| 10 | ARS-BFGL-NGS-32540     | 82405557 |          |
| 10 | Hapmap48256-BTA-24116  | 0        | 82444410 |
| 10 | BTB-00439685           | 0        | 82546242 |
| 10 | ARS-BFGL-NGS-43385     | 0        | 82579290 |
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| 10 | BTB-01600670           | 0        | 82830782 |
| 10 | BTB-01600614           | 0        | 82860814 |
| 10 | BTA-78317-no-rs        | 0        | 83050810 |
| 10 | BTA-78319-no-rs        | 0        | 83093527 |
| 10 | ARS-BFGL-NGS-31131     | 0        | 83114112 |
| 10 | ARS-BFGL-NGS-103175    | 0        | 83241282 |
| 10 | ARS-BFGL-NGS-115999    | 0        | 83276820 |
| 10 | ARS-BFGL-NGS-112698    | 0        | 83296927 |
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| 10 | ARS-BFGL-NGS-30064     | 0        | 83389165 |
| 10 | ARS-BFGL-NGS-98320     | 0        | 83435322 |
| 10 | BTA-78330-no-rs        | 0        | 83463992 |
| 10 | BTB-00440048           | 0        | 83486940 |
| 10 | BTB-00440053           | 0        | 83519829 |
| 10 | ARS-BFGL-NGS-110277    | 0        | 83545161 |
| 10 | ARS-BFGL-NGS-98120     | 0        | 83570915 |
| 10 | ARS-BFGL-NGS-89894     | 0        | 83580565 |
| 10 | ARS-BFGL-NGS-65639     | 0        | 83613368 |
| 10 | ARS-BFGL-NGS-10999     | 0        | 83729438 |
| 10 | Hapmap55817-rs29016350 | 0        | 83762976 |
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| 10 | ARS-BFGL-NGS-117288    | 0        | 84039652 |
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| 10 | BTB-00436473           | 0        | 84120931 |
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| 10 | BTB-00440580           | 0        | 84239548 |
| 10 | ARS-BFGL-NGS-70779     | 0        | 84307309 |
| 10 | BTB-00436535           | 0        | 84388256 |
| 10 | ARS-BFGL-NGS-118177    | 0        | 84424782 |

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| 10 | ARS-BFGL-NGS-111114    | 0 | 84446642 |
| 10 | ARS-BFGL-NGS-56719     | 0 | 84491671 |
| 10 | ARS-BFGL-BAC-11025     | 0 | 84516867 |
| 10 | BTB-00436922           | 0 | 84541663 |
| 10 | ARS-BFGL-NGS-102682    | 0 | 84612420 |
| 10 | ARS-BFGL-NGS-118392    | 0 | 84632536 |
| 10 | BTB-00436983           | 0 | 84672094 |
| 10 | ARS-BFGL-NGS-103212    | 0 | 84704024 |
| 10 | ARS-BFGL-NGS-24277     | 0 | 84736927 |
| 10 | ARS-BFGL-NGS-119786    | 0 | 84767850 |
| 10 | BTB-00440739           | 0 | 84792134 |
| 10 | ARS-BFGL-NGS-107149    | 0 | 84814561 |
| 10 | BTA-79267-no-rs        | 0 | 84842585 |
| 10 | ARS-BFGL-NGS-117016    | 0 | 84865323 |
| 10 | BTB-00440861           | 0 | 84899748 |
| 10 | BTA-79271-no-rs        | 0 | 84951492 |
| 10 | BTA-79272-no-rs        | 0 | 84977901 |
| 10 | BTB-00440958           | 0 | 84999308 |
| 10 | ARS-BFGL-NGS-117306    | 0 | 85028166 |
| 10 | BTB-01754290           | 0 | 85061962 |
| 10 | ARS-BFGL-NGS-108215    | 0 | 85085819 |
| 10 | ARS-BFGL-NGS-91396     | 0 | 85108423 |
| 10 | Hapmap43357-BTA-79273  | 0 | 85148373 |
| 10 | BTB-00441121           | 0 | 85187766 |
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| 10 | ARS-BFGL-NGS-103927    | 0 | 85302011 |
| 10 | ARS-BFGL-NGS-55327     | 0 | 85336874 |
| 10 | BTA-79291-no-rs        | 0 | 85359872 |
| 10 | BTB-02091381           | 0 | 85407544 |
| 10 | ARS-BFGL-NGS-13900     | 0 | 85428422 |
| 10 | ARS-BFGL-NGS-13501     | 0 | 85480303 |
| 10 | ARS-BFGL-NGS-22941     | 0 | 85525047 |
| 10 | Hapmap41972-BTA-79298  | 0 | 85547284 |
| 10 | ARS-BFGL-BAC-11028     | 0 | 85649939 |
| 10 | ARS-BFGL-NGS-86454     | 0 | 85723755 |
| 10 | ARS-BFGL-NGS-77430     | 0 | 85743848 |
| 10 | BTB-00441668           | 0 | 85774872 |
| 10 | Hapmap32991-BTA-125837 | 0 | 85827327 |
| 10 | BTB-00441700           | 0 | 85869307 |
| 10 | BTB-00441709           | 0 | 85889362 |
| 10 | BTB-00441717           | 0 | 85910292 |
| 10 | BTB-00441734           | 0 | 85944517 |
| 10 | ARS-BFGL-NGS-85161     | 0 | 85978674 |
| 10 | Hapmap40595-BTA-79304  | 0 | 86003549 |
| 10 | ARS-BFGL-NGS-16573     | 0 | 86036359 |
| 10 | ARS-BFGL-NGS-116931    | 0 | 86079641 |
| 10 | ARS-BFGL-NGS-109005    | 0 | 86100471 |
| 10 | ARS-BFGL-NGS-116336    | 0 | 86126108 |
| 10 | ARS-BFGL-NGS-108846    | 0 | 86155673 |
| 10 | ARS-BFGL-NGS-33556     | 0 | 86214669 |
| 10 | ARS-BFGL-NGS-32234     | 0 | 86242499 |
| 10 | ARS-BFGL-NGS-42230     | 0 | 86276682 |
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| 10 | Hapmap46726-BTA-77316  | 0 | 86511068 |

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| 10 | BTB-01988411           | 0 | 86541072 |
| 10 | ARS-BFGL-NGS-88671     | 0 | 86566429 |
| 10 | BTB-00438757           | 0 | 86594109 |
| 10 | ARS-BFGL-NGS-113063    | 0 | 86615332 |
| 10 | Hapmap57084-ss46526565 | 0 | 86654970 |
| 10 | BTB-00438922           | 0 | 86679535 |
| 10 | BTA-78285-no-rs        | 0 | 86717378 |
| 10 | UA-IFASA-7857          | 0 | 86774733 |
| 10 | BTB-00439031           | 0 | 86799458 |
| 10 | Hapmap58258-rs29024698 | 0 | 86868858 |
| 10 | ARS-BFGL-NGS-37780     | 0 | 86905558 |
| 10 | ARS-BFGL-NGS-19347     | 0 | 86938713 |
| 10 | ARS-BFGL-NGS-40930     | 0 | 86959672 |
| 10 | ARS-BFGL-NGS-34516     | 0 | 86994261 |
| 10 | ARS-BFGL-NGS-71717     | 0 | 87050505 |
| 10 | ARS-BFGL-NGS-61301     | 0 | 87078545 |
| 10 | ARS-BFGL-NGS-52747     | 0 | 87108872 |
| 10 | ARS-BFGL-NGS-67112     | 0 | 87139659 |
| 10 | ARS-BFGL-NGS-113370    | 0 | 87334868 |
| 10 | BTB-01661881           | 0 | 87383905 |
| 10 | ARS-BFGL-NGS-36431     | 0 | 87411126 |
| 10 | ARS-BFGL-NGS-32980     | 0 | 87523687 |
| 10 | BTB-01148543           | 0 | 87555282 |
| 10 | ARS-BFGL-NGS-105941    | 0 | 87615776 |
| 10 | Hapmap60876-rs29013997 | 0 | 87684721 |
| 10 | ARS-BFGL-NGS-110987    | 0 | 87707756 |
| 10 | ARS-BFGL-NGS-19018     | 0 | 87731360 |
| 10 | ARS-BFGL-NGS-98478     | 0 | 87763321 |
| 10 | BTB-01148955           | 0 | 87794200 |
| 10 | Hapmap57672-rs29015733 | 0 | 87848389 |
| 10 | ARS-BFGL-NGS-84380     | 0 | 87916083 |
| 10 | BTB-00439416           | 0 | 87953490 |
| 10 | BTB-00439466           | 0 | 87992789 |
| 10 | BTB-01087838           | 0 | 88035301 |
| 10 | BTB-01087778           | 0 | 88110028 |
| 10 | BTA-15593-no-rs        | 0 | 88133750 |
| 10 | Hapmap30878-BTA-159160 | 0 | 88202054 |
| 10 | ARS-BFGL-NGS-37520     | 0 | 88249621 |
| 10 | BTA-15582-no-rs        | 0 | 88310081 |
| 10 | BTB-01716362           | 0 | 88350226 |
| 10 | ARS-BFGL-NGS-113469    | 0 | 88384630 |
| 10 | BTB-01918080           | 0 | 88404985 |
| 10 | Hapmap42108-BTA-121976 | 0 | 88434861 |
| 10 | Hapmap39978-BTA-15580  | 0 | 88474720 |
| 10 | ARS-BFGL-NGS-25993     | 0 | 88563925 |
| 10 | Hapmap46117-BTA-106518 | 0 | 88605589 |
| 10 | ARS-BFGL-NGS-118148    | 0 | 88630762 |
| 10 | ARS-BFGL-NGS-58320     | 0 | 88673513 |
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| 10 | ARS-BFGL-NGS-116450    | 0 | 88722761 |
| 10 | ARS-BFGL-NGS-118077    | 0 | 88754402 |
| 10 | BTA-106513-no-rs       | 0 | 88777241 |
| 10 | ARS-BFGL-NGS-21116     | 0 | 88813187 |
| 10 | ARS-BFGL-NGS-102378    | 0 | 88857915 |

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| 10 | BTA-106506-no-rs                 | 0 | 88884981 |          |
| 10 | ARS-BFGL-NGS-18814               | 0 | 88945487 |          |
| 10 | ARS-BFGL-NGS-80270               | 0 | 88966467 |          |
| 10 | ARS-BFGL-NGS-38842               | 0 | 89017273 |          |
| 10 | Hapmap42049-BTA-106515           | 0 | 89051298 |          |
| 10 | ARS-BFGL-NGS-111661              | 0 | 89093810 |          |
| 10 | ARS-BFGL-NGS-21225               | 0 | 89136731 |          |
| 10 | ARS-BFGL-NGS-31112               | 0 | 89178634 |          |
| 10 | ARS-BFGL-NGS-101529              | 0 | 89207523 |          |
| 10 | BTB-00442962                     | 0 | 89235558 |          |
| 10 | Hapmap40024-BTA-79338            | 0 | 89269899 |          |
| 10 | ARS-BFGL-NGS-117807              | 0 | 89365394 |          |
| 10 | BTB-00442996                     | 0 | 89393861 |          |
| 10 | BTB-00443027                     | 0 | 89423823 |          |
| 10 | BTA-79342-no-rs                  | 0 | 89447461 |          |
| 10 | ARS-BFGL-NGS-61407               | 0 | 89494230 |          |
| 10 | ARS-BFGL-NGS-878                 | 0 | 89587249 |          |
| 10 | ARS-BFGL-NGS-31962               | 0 | 89619897 |          |
| 10 | Hapmap51767-BTA-79316            | 0 | 89641780 |          |
| 10 | BTA-79318-no-rs                  | 0 | 89717052 |          |
| 10 | ARS-BFGL-NGS-31526               | 0 | 89741589 |          |
| 10 | ARS-BFGL-NGS-82682               | 0 | 89774836 |          |
| 10 | ARS-BFGL-NGS-39000               |   | 89804719 |          |
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| 10 | Hapmap48472-BTA-79322            | 0 | 89848624 |          |
| 10 | ARS-BFGL-NGS-76980               | 0 | 89871901 |          |
| 10 | ARS-BFGL-NGS-17218               | 0 | 89905548 |          |
| 10 | BTB-00442692                     | 0 | 89923736 |          |
| 10 | BTB-00442788                     | 0 | 89977021 |          |
| 10 | BTB-01927033                     | 0 | 90020110 |          |
| 10 | ARS-BFGL-NGS-41304               | 0 | 90090039 |          |
| 10 | Hapmap34164-BES10_Contig538_1008 | 0 |          | 90150331 |
| 10 | ARS-BFGL-NGS-110760              | 0 | 90172460 |          |
| 10 | ARS-BFGL-NGS-39282               | 0 | 90201001 |          |
| 10 | ARS-BFGL-NGS-90586               | 0 | 90234048 |          |
| 10 | ARS-BFGL-NGS-19142               | 0 | 90279946 |          |
| 10 | ARS-BFGL-BAC-16717               | 0 | 90341373 |          |
| 10 | ARS-BFGL-NGS-92460               |   | 90379480 |          |
| 10 | UA-IFASA-9665                    | 0 | 90437684 |          |
| 10 | ARS-BFGL-NGS-36323               | 0 | 90461387 |          |
| 10 | BTA-80363-no-rs                  | 0 | 90484606 |          |
| 10 | ARS-BFGL-NGS-60581               | 0 | 90543010 |          |
| 10 | ARS-BFGL-NGS-41770               |   | 90589157 |          |
| 10 | ARS-BFGL-NGS-105160              | 0 | 90654364 |          |
| 10 | ARS-BFGL-NGS-87614               | 0 | 90705511 |          |
| 10 | BTB-00443654                     | 0 | 90725565 |          |
| 10 | Hapmap24141-BTA-125889           | 0 | 90747018 |          |
| 10 | ARS-BFGL-NGS-29797               | 0 | 90773750 |          |
| 10 | ARS-BFGL-BAC-16723               | 0 | 90806688 |          |
| 10 | ARS-BFGL-NGS-83117               | 0 | 90838000 |          |
| 10 | BTA-80351-no-rs                  | 0 | 90869856 |          |
| 10 | Hapmap39512-BTA-79353            | 0 | 90906002 |          |
| 10 | ARS-BFGL-NGS-115635              | 0 | 90954548 |          |
| 10 | BTB-00443249                     | 0 | 90979587 |          |



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| 10 | ARS-BFGL-NGS-53476            | 0 | 91019188 |          |
| 10 | ARS-BFGL-NGS-118199           | 0 | 91086389 |          |
| 10 | Hapmap36706-SCAFFOLD27815_931 | 0 |          | 91121384 |
| 10 | ARS-BFGL-NGS-16078            | 0 | 91155650 |          |
| 10 | Hapmap50599-BTA-122737        | 0 | 91185284 |          |
| 10 | Hapmap31839-BTA-161848        | 0 | 91236374 |          |
| 10 | ARS-BFGL-NGS-25471            | 0 | 91258020 |          |
| 10 | ARS-BFGL-NGS-43349            | 0 | 91304831 |          |
| 10 | BTB-01530607                  | 0 | 91330836 |          |
| 10 | ARS-BFGL-NGS-108074           | 0 | 91357108 |          |
| 10 | ARS-BFGL-NGS-112358           | 0 | 91398665 |          |
| 10 | BTA-80412-no-rs               | 0 | 91425685 |          |
| 10 | BTA-80395-no-rs               | 0 | 91472982 |          |
| 10 | ARS-BFGL-NGS-56116            | 0 | 91498619 |          |
| 10 | Hapmap48478-BTA-80389         | 0 | 91520748 |          |
| 10 | Hapmap43361-BTA-80384         | 0 | 91549718 |          |
| 10 | Hapmap60776-rs29026927        | 0 | 91580758 |          |
| 10 | ARS-BFGL-NGS-110578           | 0 | 91602885 |          |
| 10 | ARS-BFGL-NGS-115153           | 0 | 91642069 |          |
| 10 | ARS-BFGL-NGS-25022            | 0 | 91672310 |          |
| 10 | ARS-BFGL-NGS-29490            |   | 91720092 |          |
| 10 | BTB-00444654                  | 0 | 91751584 |          |
| 10 | ARS-BFGL-NGS-26052            | 0 | 91782840 |          |
| 10 | ARS-BFGL-NGS-57280            |   | 91810103 |          |
| 10 | BTB-00444587                  | 0 | 91846997 |          |
| 10 | ARS-BFGL-NGS-98590            | 0 | 91887770 |          |
| 10 | ARS-BFGL-NGS-111169           | 0 | 91955798 |          |
| 10 | BTA-80379-no-rs               | 0 | 91982227 |          |
| 10 | Hapmap48477-BTA-80377         | 0 | 92011190 |          |
| 10 | Hapmap54410-rs29021343        | 0 | 92034186 |          |
| 10 | ARS-BFGL-BAC-65250            |   | 92127288 |          |
| 10 | ARS-BFGL-NGS-103736           | 0 | 92152083 |          |
| 10 | BTB-00445081                  | 0 | 92240642 |          |
| 10 | BTB-01816862                  | 0 | 92284697 |          |
| 10 | Hapmap22816-BTA-160599        | 0 | 92332250 |          |
| 10 | Hapmap31521-BTA-162790        | 0 | 92386182 |          |
| 10 | Hapmap32392-BTA-162780        | 0 | 92440993 |          |
| 10 | ARS-BFGL-NGS-79766            | 0 | 92542068 |          |
| 10 | BTB-01102080                  | 0 | 92597410 |          |
| 10 | Hapmap38397-BTA-26095         | 0 | 92641202 |          |
| 10 | Hapmap55573-rs29025325        | 0 | 92695820 |          |
| 10 | Hapmap31849-BTA-162771        | 0 | 92760201 |          |
| 10 | ARS-BFGL-NGS-95966            | 0 | 92808200 |          |
| 10 | BTB-01101887                  | 0 | 92846879 |          |
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| 10 | ARS-BFGL-NGS-15632            | 0 | 92952608 |          |
| 10 | BTB-01101698                  | 0 | 92984267 |          |
| 10 | ARS-BFGL-NGS-78530            | 0 | 93019985 |          |
| 10 | BTB-01609932                  | 0 | 93138303 |          |
| 10 | BTB-01609978                  | 0 | 93200171 |          |
| 10 | BTB-00445088                  | 0 | 93246483 |          |
| 10 | BTB-00445100                  | 0 | 93275196 |          |
| 10 | Hapmap26174-BTA-154761        | 0 | 93295391 |          |
| 10 | ARS-BFGL-NGS-61859            | 0 | 93365815 |          |

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| 10 | BTB-00445145                    | 0 | 93387615 |  |
| 10 | ARS-BFGL-NGS-29782              | 0 | 93438381 |  |
| 10 | BTB-00445223                    | 0 | 93463666 |  |
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| 10 | UA-IFASA-6057                   | 0 | 93528030 |  |
| 10 | BTB-00445300                    | 0 | 93548683 |  |
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| 10 | ARS-BFGL-NGS-33429              | 0 | 93923726 |  |
| 10 | ARS-BFGL-NGS-20486              | 0 | 93946634 |  |
| 10 | UA-IFASA-7423                   | 0 | 93988930 |  |
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| 10 | Hapmap42687-BTA-81367           | 0 | 94195746 |  |
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| 10 | Hapmap38437-BTA-81372           | 0 | 94258071 |  |
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| 10 | Hapmap36759-SCAFFOLD50205_19130 | 0 | 94373404 |  |
| 10 | BTB-00446145                    | 0 | 94397322 |  |
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| 10 | BTB-01402723                    | 0 | 94482815 |  |
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| 10 | Hapmap43494-BTA-122491          | 0 | 94570405 |  |
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| 10 | BTB-01010697                    | 0 | 94950605 |  |
| 10 | BTA-65005-no-rs                 | 0 | 95039953 |  |
| 10 | Hapmap50283-BTA-22227           | 0 | 95089646 |  |
| 10 | BTA-15736-no-rs                 | 0 | 95123087 |  |
| 10 | BTA-15744-no-rs                 | 0 | 95149558 |  |
| 10 | ARS-BFGL-NGS-21459              | 0 | 95172902 |  |
| 10 | Hapmap59536-rs29025348          | 0 | 95198461 |  |
| 10 | ARS-BFGL-NGS-57680              | 0 | 95232032 |  |
| 10 | BTB-01311442                    | 0 | 95274618 |  |
| 10 | BTA-47044-no-rs                 | 0 | 95381173 |  |
| 10 | ARS-BFGL-BAC-15497              | 0 | 95419988 |  |
| 10 | ARS-BFGL-NGS-67195              | 0 | 95448891 |  |
| 10 | Hapmap50620-BTA-21279           | 0 | 95490805 |  |

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| 10 | BTA-21281-no-rs                       | 0 | 95524114 |          |  |
| 10 | BTB-01311849                          | 0 | 95608495 |          |  |
| 10 | Hapmap39357-BTA-81356                 | 0 | 95629821 |          |  |
| 10 | BTB-01970848                          | 0 | 95658568 |          |  |
| 10 | Hapmap38529-BTA-81355                 | 0 | 95699086 |          |  |
| 10 | BTA-81354-no-rs                       | 0 | 95728121 |          |  |
| 10 | Hapmap23513-BTA-125912                | 0 | 95768844 |          |  |
| 10 | ARS-BFGL-NGS-95465                    | 0 | 95857180 |          |  |
| 10 | Hapmap27762-BTA-151522                | 0 | 95891436 |          |  |
| 10 | BTB-01147175                          | 0 | 95923129 |          |  |
| 10 | BTB-01147198                          | 0 | 95971945 |          |  |
| 10 | Hapmap25863-BTA-151523                | 0 | 96032692 |          |  |
| 10 | BTB-01147244                          | 0 | 96065191 |          |  |
| 10 | BTB-01147467                          | 0 | 96155771 |          |  |
| 10 | ARS-BFGL-NGS-87019                    | 0 | 96219628 |          |  |
| 10 | Hapmap27052-BTA-98154                 | 0 | 96438460 |          |  |
| 10 | ARS-BFGL-NGS-94011                    | 0 | 96583675 |          |  |
| 10 | Hapmap46881-BTA-82468                 | 0 | 96641408 |          |  |
| 10 | Hapmap60286-rs29021072                | 0 | 96695555 |          |  |
| 10 | ARS-BFGL-NGS-109736                   | 0 | 96759172 |          |  |
| 10 | ARS-BFGL-NGS-56388                    | 0 | 96811802 |          |  |
| 10 | ARS-BFGL-NGS-23947                    | 0 | 96842358 |          |  |
| 10 | BTA-22070-no-rs                       | 0 | 96885456 |          |  |
| 10 | BTA-82461-no-rs                       | 0 | 96918472 |          |  |
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| 10 | ARS-BFGL-NGS-68683                    | 0 | 96973802 |          |  |
| 10 | ARS-BFGL-NGS-85148                    | 0 | 97043822 |          |  |
| 10 | Hapmap33186-BTA-125967                | 0 | 97096854 |          |  |
| 10 | ARS-BFGL-NGS-116407                   | 0 | 97372769 |          |  |
| 10 | Hapmap11534-BTA-82438                 | 0 | 97410796 |          |  |
| 10 | ARS-BFGL-NGS-76020                    | 0 | 97434128 |          |  |
| 10 | ARS-BFGL-NGS-81507                    | 0 | 97645897 |          |  |
| 10 | ARS-BFGL-NGS-91603                    | 0 | 97678437 |          |  |
| 10 | BTA-82436-no-rs                       | 0 | 97707791 |          |  |
| 10 | Hapmap51063-BTA-82431                 | 0 | 97753107 |          |  |
| 10 | Hapmap41654-BTA-82427                 | 0 | 97788857 |          |  |
| 10 | ARS-BFGL-NGS-54600                    |   | 97840979 |          |  |
| 10 | BTA-82413-no-rs                       | 0 | 97916188 |          |  |
| 10 | Hapmap58273-rs29018360                | 0 | 97953465 |          |  |
| 10 | ARS-BFGL-NGS-33701                    | 0 | 98054020 |          |  |
| 10 | Hapmap44291-BTA-81405                 | 0 | 98075367 |          |  |
| 10 | Hapmap33908-BES4_Contig352_1404       | 0 |          | 98111988 |  |
| 10 | ARS-BFGL-NGS-82902                    | 0 | 98138943 |          |  |
| 10 | BTA-81395-no-rs                       | 0 | 98176112 |          |  |
| 10 | ARS-BFGL-NGS-26456                    | 0 | 98223275 |          |  |
| 10 | ARS-USMARC-Parent-DQ984825-rs29012457 | 0 |          | 98230479 |  |
| 10 | Hapmap60701-rs29010356                | 0 | 98245112 |          |  |
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| 10 | ARS-BFGL-NGS-38289                    | 0 | 98310941 |          |  |
| 10 | Hapmap29139-BTA-125963                | 0 | 98387803 |          |  |
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| 10 | BTB-00446186                          | 0 | 98460121 |          |  |
| 10 | ARS-BFGL-NGS-25139                    | 0 | 98519683 |          |  |
| 10 | BTA-111053-no-rs                      | 0 | 98541920 |          |  |

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| 10 | Hapmap58172-rs29027092 | 0         | 98548526  |
| 10 | BTB-00446995           | 0         | 98588493  |
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| 10 | ARS-BFGL-NGS-29370     | 98680972  |           |
| 10 | ARS-BFGL-NGS-23086     | 0         | 98817467  |
| 10 | BTB-01049617           | 0         | 98840028  |
| 10 | ARS-BFGL-BAC-65150     | 98878851  |           |
| 10 | ARS-BFGL-NGS-102037    | 0         | 99006710  |
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| 10 | Hapmap49047-BTA-119053 | 0         | 99070425  |
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| 10 | ARS-BFGL-NGS-117433    | 0         | 99132260  |
| 10 | BTB-01901596           | 0         | 99234390  |
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| 10 | BTB-00891038           | 0         | 99404030  |
| 10 | BTA-119060-no-rs       | 0         | 99442350  |
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| 10 | ARS-BFGL-NGS-10384     | 0         | 99578526  |
| 10 | Hapmap39952-BTA-86345  | 0         | 99626471  |
| 10 | ARS-BFGL-NGS-107482    | 0         | 99662832  |
| 10 | BTB-01398247           | 0         | 99701407  |
| 10 | BTB-01398226           | 0         | 99731658  |
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| 10 | ARS-BFGL-NGS-109737    | 0         | 100072557 |
| 10 | Hapmap33690-BTA-82490  | 0         | 100111921 |
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| 10 | BTB-00447350           | 0         | 100212046 |
| 10 | BTB-01889380           | 0         | 100288306 |
| 10 | ARS-BFGL-NGS-40820     | 100366108 |           |
| 10 | BTB-00447463           | 0         | 100397249 |
| 10 | ARS-BFGL-NGS-10724     | 0         | 100418941 |
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| 10 | ARS-BFGL-NGS-112800    | 0         | 100544731 |
| 10 | Hapmap53669-rs29025229 | 0         | 100576773 |
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| 10 | BTA-104505-no-rs       | 0         | 100674363 |
| 10 | ARS-BFGL-NGS-37154     | 0         | 100701652 |
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| 10 | ARS-BFGL-NGS-74142     | 0         | 100775863 |
| 10 | ARS-BFGL-NGS-26243     | 0         | 100804186 |
| 10 | Hapmap27907-BTA-99577  | 0         | 100854505 |
| 10 | BTA-21035-no-rs        | 0         | 100871194 |
| 10 | BTB-01308993           | 0         | 100917539 |

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| 10 | ARS-BFGL-NGS-116660             | 0 | 100974235 |           |
| 10 | Hapmap54967-rs29014597          | 0 | 100994522 |           |
| 10 | BTA-21025-no-rs                 | 0 | 101026768 |           |
| 10 | ARS-BFGL-NGS-114186             | 0 | 101051178 |           |
| 10 | ARS-BFGL-NGS-22831              | 0 | 101083401 |           |
| 10 | Hapmap36326-SCAFFOLD266420_4418 | 0 |           | 101130681 |
| 10 | ARS-BFGL-NGS-57057              | 0 | 101168543 |           |
| 10 | ARS-BFGL-NGS-20157              | 0 | 101200927 |           |
| 10 | ARS-BFGL-NGS-17132              | 0 | 101354418 |           |
| 10 | Hapmap27138-BTA-101536          | 0 | 101427141 |           |
| 10 | BTB-01535139                    | 0 | 101452362 |           |
| 10 | ARS-BFGL-NGS-34509              | 0 | 101474077 |           |
| 10 | Hapmap26427-BTA-150241          | 0 | 101565894 |           |
| 10 | ARS-BFGL-NGS-570                | 0 | 101617256 |           |
| 10 | ARS-BFGL-NGS-60109              | 0 | 101654599 |           |
| 10 | ARS-BFGL-NGS-110830             | 0 | 101681492 |           |
| 10 | ARS-BFGL-NGS-64210              |   | 101724167 |           |
| 10 | ARS-BFGL-NGS-103752             | 0 | 101760343 |           |
| 10 | ARS-BFGL-NGS-16191              | 0 | 101792221 |           |
| 10 | ARS-BFGL-NGS-105933             | 0 | 101849783 |           |
| 10 | ARS-BFGL-NGS-75393              | 0 | 101874473 |           |
| 10 | ARS-BFGL-NGS-102591             | 0 | 101916247 |           |
| 10 | Hapmap33984-BES3_Contig376_957  | 0 |           | 101953883 |
| 10 | ARS-BFGL-NGS-33430              |   | 101984056 |           |
| 10 | ARS-BFGL-NGS-76232              | 0 | 102022247 |           |
| 10 | ARS-BFGL-NGS-40686              | 0 | 102050559 |           |
| 10 | ARS-BFGL-NGS-32470              |   | 102114085 |           |
| 10 | ARS-BFGL-NGS-63793              | 0 | 102141325 |           |
| 10 | ARS-BFGL-NGS-35190              | 0 | 102210987 |           |
| 10 | Hapmap59733-rs29016246          | 0 | 102238194 |           |
| 10 | ARS-BFGL-NGS-57304              | 0 | 102286251 |           |
| 10 | BTA-99881-no-rs                 | 0 | 102308122 |           |
| 10 | UA-IFASA-7264                   | 0 | 102363958 |           |
| 10 | ARS-BFGL-NGS-101069             | 0 | 102405153 |           |
| 10 | Hapmap42238-BTA-51186           | 0 | 102446402 |           |
| 10 | ARS-BFGL-NGS-56593              | 0 | 102500541 |           |
| 10 | ARS-BFGL-NGS-16920              |   | 102544951 |           |
| 10 | ARS-BFGL-NGS-70413              | 0 | 102574147 |           |
| 10 | Hapmap26519-BTA-83495           | 0 | 102611476 |           |
| 10 | ARS-BFGL-NGS-56430              |   | 102640045 |           |
| 10 | ARS-BFGL-NGS-110580             | 0 | 102681999 |           |
| 10 | ARS-BFGL-NGS-114138             | 0 | 102758856 |           |
| 10 | ARS-BFGL-NGS-44910              |   | 102794657 |           |
| 10 | ARS-BFGL-NGS-119194             | 0 | 102819188 |           |
| 10 | ARS-BFGL-NGS-116888             | 0 | 102849006 |           |
| 10 | ARS-BFGL-NGS-95108              | 0 | 102887596 |           |
| 10 | BTA-117549-no-rs                | 0 | 102907770 |           |
| 10 | Hapmap42829-BTA-117556          | 0 | 102935702 |           |
| 10 | Hapmap49784-BTA-87663           | 0 | 102972150 |           |
| 10 | ARS-BFGL-BAC-15488              | 0 | 103048273 |           |
| 10 | ARS-BFGL-NGS-102562             | 0 | 103092677 |           |
| 10 | ARS-BFGL-NGS-103960             | 0 | 103122889 |           |
| 10 | BTA-83473-no-rs                 | 0 | 103149093 |           |

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| 10 | ARS-BFGL-NGS-30527     | 0         | 103210766 |
| 10 | Hapmap47423-BTA-83469  | 0         | 103234411 |
| 10 | Hapmap59070-rs29016931 | 0         | 103280130 |
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| 10 | ARS-BFGL-NGS-118945    | 0         | 103382526 |
| 10 | ARS-BFGL-NGS-103474    | 0         | 103453412 |
| 10 | ARS-BFGL-NGS-27366     | 0         | 103470001 |
| 10 | Hapmap49930-BTA-24651  | 0         | 103599828 |
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| 10 | ARS-BFGL-NGS-109724    | 0         | 103670792 |
| 10 | ARS-BFGL-NGS-20413     | 0         | 103699875 |
| 10 | ARS-BFGL-NGS-41710     | 103731454 |           |
| 10 | ARS-BFGL-NGS-28197     | 0         | 103781481 |
| 10 | Hapmap13194-BTA-96646  | 0         | 103866671 |
| 10 | BTA-05225-no-rs        | 0         | 103908013 |
| 10 | BTA-96648-no-rs        | 0         | 103969064 |
| 10 | Hapmap24169-BTA-96647  | 0         | 104014406 |
| 10 | ARS-BFGL-NGS-25135     | 0         | 104038471 |
| 10 | Hapmap25613-BTA-158023 | 0         | 104062926 |
| 10 | ARS-BFGL-NGS-36623     | 0         | 104109661 |
| 10 | BTB-00448385           | 0         | 104136694 |
| 10 | Hapmap51305-BTA-74560  | 0         | 104215086 |
| 11 | BTB-01593930           | 0         | 68565     |
| 11 | BTB-01593958           | 0         | 109818    |
| 11 | Hapmap45596-BTA-106589 | 0         | 149982    |
| 11 | ARS-BFGL-NGS-41440     | 189568    |           |
| 11 | ARS-BFGL-NGS-103052    | 0         | 217441    |
| 11 | ARS-BFGL-NGS-17909     | 0         | 252264    |
| 11 | BTA-89794-no-rs        | 0         | 284026    |
| 11 | Hapmap49786-BTA-88669  | 0         | 317337    |
| 11 | ARS-BFGL-NGS-64198     | 0         | 339327    |
| 11 | BTB-00450797           | 0         | 368964    |
| 11 | Hapmap26105-BTA-126070 | 0         | 394772    |
| 11 | ARS-BFGL-NGS-30830     | 0         | 448267    |
| 11 | ARS-BFGL-NGS-83243     | 0         | 629873    |
| 11 | ARS-BFGL-NGS-20788     | 0         | 665543    |
| 11 | BTB-00449189           | 0         | 700120    |
| 11 | ARS-BFGL-NGS-28965     | 0         | 740136    |
| 11 | ARS-BFGL-NGS-111143    | 0         | 776127    |
| 11 | BTB-01701204           | 0         | 797650    |
| 11 | ARS-BFGL-NGS-62942     | 0         | 854379    |
| 11 | ARS-BFGL-NGS-106406    | 0         | 900938    |
| 11 | Hapmap22876-BTA-155681 | 0         | 980080    |
| 11 | ARS-BFGL-NGS-119513    | 0         | 1045889   |
| 11 | ARS-BFGL-NGS-112990    | 0         | 1075204   |
| 11 | ARS-BFGL-NGS-58003     | 0         | 1095830   |
| 11 | Hapmap60415-ss46526829 | 0         | 1153551   |
| 11 | BTB-00449535           | 0         | 1178211   |
| 11 | ARS-BFGL-NGS-38779     | 0         | 1214856   |
| 11 | ARS-BFGL-NGS-11211     | 0         | 1253725   |
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| 11 | BTB-00449812           | 0         | 1310834   |
| 11 | ARS-BFGL-NGS-84048     | 0         | 1341760   |

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| 11 | Hapmap52230-rs29018814           | 0 | 1362124 |         |
| 11 | BTB-01913344                     | 0 | 1386226 |         |
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| 11 | ARS-BFGL-NGS-108649              | 0 | 1440227 |         |
| 11 | ARS-BFGL-NGS-87981               | 0 | 1500950 |         |
| 11 | ARS-BFGL-NGS-101087              | 0 | 1525224 |         |
| 11 | ARS-BFGL-NGS-83503               | 0 | 1556094 |         |
| 11 | ARS-BFGL-NGS-116413              | 0 | 1596001 |         |
| 11 | BTB-00448847                     | 0 | 1620190 |         |
| 11 | ARS-BFGL-NGS-98455               | 0 | 1666202 |         |
| 11 | Hapmap57799-rs29012894           | 0 | 1703612 |         |
| 11 | ARS-BFGL-NGS-103834              | 0 | 1733607 |         |
| 11 | Hapmap48122-BTA-91937            | 0 | 1791685 |         |
| 11 | Hapmap22963-BTA-91941            | 0 | 1806374 |         |
| 11 | ARS-BFGL-NGS-54066               | 0 | 1834580 |         |
| 11 | BTB-00449987                     | 0 | 1865280 |         |
| 11 | ARS-BFGL-NGS-68030               | 0 | 1901787 |         |
| 11 | ARS-BFGL-NGS-24329               | 0 | 1920092 |         |
| 11 | Hapmap54920-rs29026446           | 0 | 1963074 |         |
| 11 | ARS-BFGL-NGS-18143               | 0 | 1998240 |         |
| 11 | ARS-BFGL-NGS-91320               | 0 | 2027021 |         |
| 11 | ARS-BFGL-NGS-85500               | 0 | 2072805 |         |
| 11 | ARS-BFGL-NGS-114980              | 0 | 2108830 |         |
| 11 | BTB-00448829                     | 0 | 2140304 |         |
| 11 | ARS-BFGL-NGS-84529               | 0 | 2167606 |         |
| 11 | ARS-BFGL-NGS-26790               |   | 2195687 |         |
| 11 | ARS-BFGL-NGS-102596              | 0 | 2227618 |         |
| 11 | ARS-BFGL-NGS-25380               | 0 | 2260123 |         |
| 11 | Hapmap36649-SCAFFOLD175947_14270 | 0 |         | 2288532 |
| 11 | ARS-BFGL-NGS-70527               | 0 | 2327073 |         |
| 11 | ARS-BFGL-NGS-40264               | 0 | 2350093 |         |
| 11 | Hapmap48504-BTA-87558            | 0 | 2371345 |         |
| 11 | UA-IFASA-6622                    | 0 | 2411071 |         |
| 11 | ARS-BFGL-NGS-79217               | 0 | 2458693 |         |
| 11 | ARS-BFGL-NGS-69130               | 0 | 2507194 |         |
| 11 | ARS-BFGL-NGS-23705               | 0 | 2545204 |         |
| 11 | BTB-00452943                     | 0 | 2584201 |         |
| 11 | ARS-BFGL-NGS-113057              | 0 | 2603799 |         |
| 11 | ARS-BFGL-NGS-33034               | 0 | 2637529 |         |
| 11 | ARS-BFGL-NGS-12715               | 0 | 2658085 |         |
| 11 | ARS-BFGL-NGS-101296              | 0 | 2691538 |         |
| 11 | ARS-BFGL-NGS-95775               | 0 | 2746796 |         |
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| 11 | ARS-BFGL-BAC-12918               | 0 | 2913218 |         |
| 11 | BTB-00452217                     | 0 | 2983521 |         |
| 11 | ARS-BFGL-NGS-56838               | 0 | 3016909 |         |
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| 11 | ARS-BFGL-NGS-113875              | 0 | 3106988 |         |
| 11 | BTB-00451982                     | 0 | 3140003 |         |

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| 11 | BTB-00451941           | 0 | 3236973 |
| 11 | Hapmap38641-BTA-93090  | 0 | 3303652 |
| 11 | ARS-BFGL-NGS-89583     | 0 | 3345221 |
| 11 | Hapmap43972-BTA-93042  | 0 | 3371395 |
| 11 | BTA-93031-no-rs        | 0 | 3410253 |
| 11 | Hapmap60518-rs29011691 | 0 | 3451642 |
| 11 | ARS-BFGL-NGS-19329     | 0 | 3477606 |
| 11 | ARS-BFGL-NGS-32173     | 0 | 3557549 |
| 11 | ARS-BFGL-NGS-11111     | 0 | 3579324 |
| 11 | Hapmap50529-BTA-99139  | 0 | 3618078 |
| 11 | ARS-BFGL-NGS-53430     | 0 | 3654963 |
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| 11 | ARS-BFGL-NGS-22749     | 0 | 3713607 |
| 11 | BTB-00453425           | 0 | 3736020 |
| 11 | ARS-BFGL-NGS-69066     | 0 | 3765380 |
| 11 | ARS-BFGL-BAC-14277     | 0 | 3803359 |
| 11 | BTB-00453176           | 0 | 3844952 |
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| 11 | ARS-BFGL-NGS-18450     | 0 | 3971531 |
| 11 | ARS-BFGL-NGS-27317     | 0 | 4009903 |
| 11 | BTA-24238-no-rs        | 0 | 4038392 |
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| 11 | ARS-BFGL-NGS-15071     | 0 | 4373645 |
| 11 | BTB-01723556           | 0 | 4419032 |
| 11 | Hapmap40381-BTA-09207  | 0 | 4465938 |
| 11 | BTB-00450113           | 0 | 4525511 |
| 11 | ARS-BFGL-BAC-12408     | 0 | 4590066 |
| 11 | ARS-BFGL-NGS-111573    | 0 | 4610000 |
| 11 | Hapmap30845-BTA-148497 | 0 | 4655636 |
| 11 | ARS-BFGL-NGS-13472     | 0 | 4696808 |
| 11 | ARS-BFGL-BAC-11090     | 0 | 4730528 |
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| 11 | BTB-01118293           | 0 | 4848397 |
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| 11 | ARS-BFGL-NGS-12127     | 0 | 4946563 |
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| 11 | ARS-BFGL-NGS-69404     | 0 | 5010099 |
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| 11 | ARS-BFGL-NGS-114076    | 0 | 5152170 |
| 11 | Hapmap53318-rs29018775 | 0 | 5209460 |
| 11 | ARS-BFGL-NGS-68850     | 0 | 5252617 |
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| 11 | BTA-101050-no-rs       | 0 | 5313647 |
| 11 | ARS-BFGL-NGS-43582     | 0 | 5349030 |
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| 11 | Hapmap30503-BTA-126122           | 0 | 5564863 |         |
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| 11 | ARS-BFGL-NGS-23750               | 0 | 5629691 |         |
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| 11 | Hapmap44283-BTA-77701            | 0 | 5768629 |         |
| 11 | Hapmap48902-BTA-81093            | 0 | 5806008 |         |
| 11 | BTB-00343922                     | 0 | 5851961 |         |
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| 11 | ARS-BFGL-NGS-30471               | 0 | 5904608 |         |
| 11 | ARS-BFGL-BAC-14947               | 0 | 5930204 |         |
| 11 | ARS-BFGL-NGS-34139               | 0 | 5964756 |         |
| 11 | Hapmap47418-BTA-81103            | 0 | 5999470 |         |
| 11 | ARS-BFGL-NGS-91251               | 0 | 6076003 |         |
| 11 | Hapmap39438-BTA-81105            | 0 | 6146536 |         |
| 11 | ARS-BFGL-NGS-116293              | 0 | 6167550 |         |
| 11 | BTB-01763350                     | 0 | 6222588 |         |
| 11 | ARS-BFGL-NGS-56810               | 0 | 6243988 |         |
| 11 | ARS-BFGL-NGS-42574               | 0 | 6322937 |         |
| 11 | Hapmap36226-SCAFFOLD212128_13243 | 0 | 6343983 | 6343983 |
| 11 | BTB-00454142                     | 0 | 6407087 |         |
| 11 | BTB-01802899                     | 0 | 6458630 |         |
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| 11 | ARS-BFGL-NGS-85361               | 0 | 6570754 |         |
| 11 | ARS-BFGL-NGS-80961               | 0 | 6602495 |         |
| 11 | BTA-112348-no-rs                 | 0 | 6621626 |         |
| 11 | UA-IFASA-6574                    | 0 | 6647746 |         |
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| 11 | ARS-BFGL-NGS-110191              | 0 | 6758495 |         |
| 11 | BTB-00456788                     | 0 | 6777332 |         |
| 11 | BTB-01626953                     | 0 | 6794673 |         |
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| 11 | Hapmap38994-BTA-101073           | 0 | 7434860 |         |
| 11 | Hapmap50540-BTA-101086           | 0 | 7460663 |         |
| 11 | ARS-BFGL-NGS-28646               | 0 | 7482969 |         |
| 11 | ARS-BFGL-NGS-11972               | 0 | 7509854 |         |
| 11 | ARS-BFGL-NGS-37576               | 0 | 7540560 |         |

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| 11 | ARS-BFGL-NGS-35216     | 0 | 7585747 |
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| 11 | BTA-103199-no-rs       | 0 | 7762423 |
| 11 | ARS-BFGL-NGS-64152     | 0 | 7785289 |
| 11 | BTA-103207-no-rs       | 0 | 7811865 |
| 11 | ARS-BFGL-NGS-96559     | 0 | 7851919 |
| 11 | BTA-104234-no-rs       | 0 | 7897531 |
| 11 | Hapmap54394-rs29020725 | 0 | 7981357 |
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| 11 | Hapmap55406-rs29018155 | 0 | 8284491 |
| 11 | ARS-BFGL-BAC-14319     | 0 | 8345552 |
| 11 | ARS-BFGL-NGS-25292     | 0 | 8395321 |
| 11 | ARS-BFGL-NGS-81019     | 0 | 8419110 |
| 11 | BTB-00455867           | 0 | 8449441 |
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| 11 | ARS-BFGL-NGS-83556     | 0 | 8615231 |
| 11 | BTA-108380-no-rs       | 0 | 8713134 |
| 11 | ARS-BFGL-NGS-28887     | 0 | 8763389 |
| 11 | ARS-BFGL-NGS-89554     | 0 | 8808020 |
| 11 | BTB-00456252           | 0 | 8836373 |
| 11 | Hapmap50562-BTA-109325 | 0 | 8904074 |
| 11 | BTB-01693261           | 0 | 8943841 |
| 11 | ARS-BFGL-NGS-97887     | 0 | 9016028 |
| 11 | ARS-BFGL-NGS-102975    | 0 | 9042103 |
| 11 | ARS-BFGL-NGS-31282     | 0 | 9086342 |
| 11 | ARS-BFGL-NGS-62299     | 0 | 9153560 |
| 11 | Hapmap40102-BTA-110410 | 0 | 9197291 |
| 11 | ARS-BFGL-NGS-42152     | 0 | 9227526 |
| 11 | ARS-BFGL-NGS-57976     | 0 | 9288132 |
| 11 | ARS-BFGL-NGS-83673     | 0 | 9329831 |
| 11 | ARS-BFGL-NGS-31844     | 0 | 9363209 |
| 11 | BTA-92021-no-rs        | 0 | 9385008 |
| 11 | BTB-01830724           | 0 | 9420152 |
| 11 | BTB-00456673           | 0 | 9449507 |
| 11 | BTB-00456759           | 0 | 9473158 |
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| 11 | BTA-119651-no-rs       | 0 | 9684328 |
| 11 | BTB-00457664           | 0 | 9723257 |
| 11 | BTB-01569510           | 0 | 9755667 |
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| 11 | ARS-BFGL-NGS-93955     | 0 | 9851948 |

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| 11 | Hapmap49397-BTA-98960  | 0        | 9905475  |
| 11 | ARS-BFGL-NGS-10500     | 0        | 9944217  |
| 11 | Hapmap40656-BTA-115565 | 0        | 10043181 |
| 11 | ARS-BFGL-NGS-72000     | 0        | 10087484 |
| 11 | ARS-BFGL-NGS-32340     | 10116081 |          |
| 11 | Hapmap44935-BTA-116656 | 0        | 10171079 |
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| 11 | BTB-00457184           | 0        | 10271653 |
| 11 | ARS-BFGL-NGS-106145    | 0        | 10319154 |
| 11 | ARS-BFGL-NGS-109939    | 0        | 10364456 |
| 11 | Hapmap43166-BTA-118641 | 0        | 10409847 |
| 11 | ARS-BFGL-NGS-25723     | 0        | 10437469 |
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| 11 | ARS-BFGL-NGS-40174     | 0        | 10564380 |
| 11 | UA-IFASA-2313          | 0        | 10604234 |
| 11 | Hapmap40688-BTA-21593  | 0        | 10630544 |
| 11 | BTA-16599-no-rs        | 0        | 10661606 |
| 11 | Hapmap43191-BTA-16575  | 0        | 10693902 |
| 11 | BTB-00458773           | 0        | 10753131 |
| 11 | Hapmap41190-BTA-16578  | 0        | 10776433 |
| 11 | Hapmap27794-BTA-16583  | 0        | 10800426 |
| 11 | Hapmap58528-rs29018292 | 0        | 10882793 |
| 11 | BTA-16572-no-rs        | 0        | 10906159 |
| 11 | ARS-BFGL-BAC-13552     | 0        | 10945714 |
| 11 | BTA-16568-no-rs        | 0        | 10985610 |
| 11 | Hapmap46203-BTA-16567  | 0        | 11009110 |
| 11 | UA-IFASA-5940          | 0        | 11041621 |
| 11 | BTA-11124-rs29016888   | 0        | 11073836 |
| 11 | BTB-00458289           | 0        | 11116195 |
| 11 | BTA-16564-no-rs        | 0        | 11139179 |
| 11 | ARS-BFGL-NGS-20722     | 0        | 11209209 |
| 11 | ARS-BFGL-NGS-31961     | 0        | 11254377 |
| 11 | BTA-16558-no-rs        | 0        | 11302689 |
| 11 | ARS-BFGL-NGS-92963     | 0        | 11336815 |
| 11 | ARS-BFGL-NGS-113864    | 0        | 11380878 |
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| 11 | ARS-BFGL-NGS-117717    | 0        | 11489680 |
| 11 | ARS-BFGL-NGS-118131    | 0        | 11540044 |
| 11 | BTA-16600-no-rs        | 0        | 11612663 |
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| 11 | BTB-00459119           | 0        | 11662712 |
| 11 | BTB-01917119           | 0        | 11715681 |
| 11 | BTB-02007301           | 0        | 11754597 |
| 11 | BTA-122291-no-rs       | 0        | 11804294 |
| 11 | BTB-01644390           | 0        | 11955169 |
| 11 | ARS-BFGL-BAC-13568     | 0        | 11994246 |
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| 11 | BTA-85491-no-rs        | 0        | 12136825 |
| 11 | BTA-85490-no-rs        | 0        | 12170656 |
| 11 | BTB-00461346           | 0        | 12201969 |
| 11 | ARS-BFGL-NGS-115446    | 0        | 12267076 |

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| 11 | ARS-BFGL-NGS-40307    | 0        | 12287657 |
| 11 | ARS-BFGL-NGS-25668    | 0        | 12331516 |
| 11 | ARS-BFGL-NGS-103158   | 0        | 12363892 |
| 11 | ARS-BFGL-NGS-100255   | 0        | 12390287 |
| 11 | ARS-BFGL-NGS-40411    | 0        | 12415887 |
| 11 | BTB-00461144          | 0        | 12444799 |
| 11 | ARS-BFGL-NGS-33225    | 0        | 12478437 |
| 11 | ARS-BFGL-NGS-107641   | 0        | 12513910 |
| 11 | Hapmap42165-BTA-28330 | 0        | 12539187 |
| 11 | ARS-BFGL-NGS-13182    | 0        | 12561278 |
| 11 | ARS-BFGL-NGS-21642    | 0        | 12596662 |
| 11 | BTA-85474-no-rs       | 0        | 12668083 |
| 11 | ARS-BFGL-NGS-37149    | 0        | 12717282 |
| 11 | ARS-BFGL-NGS-40347    | 0        | 12760805 |
| 11 | ARS-BFGL-NGS-26367    | 0        | 12790261 |
| 11 | ARS-BFGL-NGS-100878   | 0        | 12856120 |
| 11 | BTA-85470-no-rs       | 0        | 12877885 |
| 11 | BTB-00460506          | 0        | 12947549 |
| 11 | Hapmap48102-BTA-85468 | 0        | 12970800 |
| 11 | BTB-00460427          | 0        | 13050899 |
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| 11 | ARS-BFGL-NGS-24930    | 13114243 |          |
| 11 | ARS-BFGL-BAC-14209    | 0        | 13134752 |
| 11 | ARS-BFGL-NGS-28395    | 0        | 13174116 |
| 11 | BTA-84551-no-rs       | 0        | 13214516 |
| 11 | BTB-00459766          | 0        | 13248475 |
| 11 | Hapmap47755-BTA-84550 | 0        | 13288513 |
| 11 | BTA-84543-no-rs       | 0        | 13389841 |
| 11 | ARS-BFGL-NGS-13679    | 0        | 13429329 |
| 11 | ARS-BFGL-NGS-34091    | 0        | 13450833 |
| 11 | ARS-BFGL-NGS-59872    | 0        | 13484864 |
| 11 | ARS-BFGL-NGS-35411    | 0        | 13521427 |
| 11 | ARS-BFGL-NGS-40080    | 13546635 |          |
| 11 | ARS-BFGL-NGS-60010    | 0        | 13572966 |
| 11 | ARS-BFGL-NGS-34052    | 0        | 13597473 |
| 11 | ARS-BFGL-NGS-21754    | 0        | 13620175 |
| 11 | BTB-00461599          | 0        | 13681749 |
| 11 | BTA-85500-no-rs       | 0        | 13706029 |
| 11 | Hapmap41990-BTA-85501 | 0        | 13730813 |
| 11 | UA-IFASA-6712         | 0        | 13751244 |
| 11 | ARS-BFGL-NGS-15072    | 0        | 13777315 |
| 11 | ARS-BFGL-NGS-62906    | 0        | 13824939 |
| 11 | BTB-01515539          | 0        | 13849051 |
| 11 | Hapmap30370-BTA-99862 | 0        | 13870240 |
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| 11 | BTB-00563759          | 0        | 13946496 |
| 11 | ARS-BFGL-NGS-42999    | 0        | 13993403 |
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| 11 | Hapmap31534-BTA-26223 | 0        | 14134626 |
| 11 | ARS-BFGL-BAC-14227    | 0        | 14174539 |
| 11 | ARS-BFGL-BAC-14829    | 0        | 14212414 |
| 11 | Hapmap48692-BTA-24694 | 0        | 14241827 |
| 11 | BTB-00461771          | 0        | 14283365 |
| 11 | ARS-BFGL-NGS-66840    | 0        | 14334520 |

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| 11 | BTA-85510-no-rs        | 0 | 14808687 |
| 11 | ARS-BFGL-NGS-18480     |   | 14866870 |
| 11 | ARS-BFGL-NGS-25419     | 0 | 14947290 |
| 11 | BTB-00483333           | 0 | 15008020 |
| 11 | BTB-00461989           | 0 | 15029477 |
| 11 | ARS-BFGL-NGS-74492     | 0 | 15070600 |
| 11 | BTB-00462019           | 0 | 15115350 |
| 11 | BTA-05998-rs29020145   | 0 | 15156976 |
| 11 | BTB-01529593           | 0 | 15173418 |
| 11 | ARS-BFGL-NGS-71150     | 0 | 15201728 |
| 11 | BTB-01529507           | 0 | 15238642 |
| 11 | Hapmap38456-BTA-101186 | 0 | 15277886 |
| 11 | ARS-BFGL-NGS-20941     | 0 | 15336724 |
| 11 | ARS-BFGL-NGS-116521    | 0 | 15427710 |
| 11 | BTB-01972463           | 0 | 15462339 |
| 11 | ARS-BFGL-NGS-15959     | 0 | 15499838 |
| 11 | BTB-00463045           | 0 | 15524960 |
| 11 | BTA-86551-no-rs        | 0 | 15562180 |
| 11 | ARS-BFGL-NGS-16700     | 0 | 15615988 |
| 11 | ARS-BFGL-NGS-27258     | 0 | 15644634 |
| 11 | BTB-00462448           | 0 | 15814741 |
| 11 | ARS-BFGL-BAC-14856     | 0 | 15857007 |
| 11 | ARS-BFGL-NGS-17904     | 0 | 15877241 |
| 11 | BTB-00462303           | 0 | 15898107 |
| 11 | ARS-BFGL-NGS-68680     | 0 | 15919622 |
| 11 | ARS-BFGL-NGS-91675     | 0 | 15945389 |
| 11 | ARS-BFGL-NGS-51088     | 0 | 15999515 |
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| 11 | Hapmap29803-BTA-126260 | 0 | 16193493 |
| 11 | BTB-00461875           | 0 | 16230481 |
| 11 | BTB-00461926           | 0 | 16262479 |
| 11 | ARS-BFGL-NGS-21769     | 0 | 16290329 |
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| 11 | BTB-00463351           | 0 | 16374116 |
| 11 | ARS-BFGL-NGS-21563     | 0 | 16404805 |
| 11 | BTA-91697-no-rs        | 0 | 16487586 |
| 11 | BTB-01795141           | 0 | 16514661 |
| 11 | BTA-86548-no-rs        | 0 | 16612478 |
| 11 | BTB-01347992           | 0 | 16759475 |
| 11 | BTA-26718-no-rs        | 0 | 16820196 |
| 11 | BTA-119408-no-rs       | 0 | 16954791 |
| 11 | BTB-01762620           | 0 | 16983543 |
| 11 | BTB-01764269           | 0 | 17026673 |
| 11 | BTB-01391227           | 0 | 17058497 |
| 11 | BTB-01391272           | 0 | 17083043 |
| 11 | BTB-01661903           | 0 | 17143826 |
| 11 | BTB-01661919           | 0 | 17186241 |
| 11 | Hapmap26417-BTA-147042 | 0 | 17238549 |
| 11 | Hapmap42936-BTA-41076  | 0 | 17254274 |
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| 11 | BTB-01232906           | 0 | 17445658 |

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| 11 | BTB-01766447                     | 0 | 17484533 |          |
| 11 | BTA-25377-no-rs                  | 0 | 17630522 |          |
| 11 | ARS-BFGL-NGS-19198               | 0 | 17686944 |          |
| 11 | Hapmap51806-BTA-115203           | 0 | 17732614 |          |
| 11 | Hapmap32367-BTA-157251           | 0 | 17759740 |          |
| 11 | ARS-BFGL-NGS-95690               | 0 | 17801204 |          |
| 11 | ARS-BFGL-NGS-35098               | 0 | 17807276 |          |
| 11 | BTB-01934985                     | 0 | 17859035 |          |
| 11 | Hapmap30865-BTA-157248           | 0 | 17882307 |          |
| 11 | BTB-01670865                     | 0 | 17914834 |          |
| 11 | BTB-01670886                     | 0 | 17952803 |          |
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| 11 | BTB-01679746                     | 0 | 18026984 |          |
| 11 | BTB-01940421                     | 0 | 18050872 |          |
| 11 | BTB-01913936                     | 0 | 18107426 |          |
| 11 | BTA-28869-no-rs                  | 0 | 18139140 |          |
| 11 | BTB-01996428                     | 0 | 18182765 |          |
| 11 | BTB-01744126                     | 0 | 18221603 |          |
| 11 | Hapmap55223-rs29012734           | 0 | 18261860 |          |
| 11 | ARS-BFGL-BAC-15547               | 0 | 18279384 |          |
| 11 | BTA-94053-no-rs                  | 0 | 18340757 |          |
| 11 | BTB-01449090                     | 0 | 18364186 |          |
| 11 | BTB-01448825                     | 0 | 18390236 |          |
| 11 | ARS-BFGL-NGS-84166               | 0 | 18446256 |          |
| 11 | Hapmap48128-BTA-94056            | 0 | 18480826 |          |
| 11 | Hapmap36648-SCAFFOLD255197_18545 | 0 | 18544905 | 18544905 |
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| 11 | BTB-01836116                     | 0 | 18597619 |          |
| 11 | ARS-BFGL-NGS-72469               | 0 | 18635979 |          |
| 11 | BTA-118292-no-rs                 | 0 | 18657945 |          |
| 11 | BTB-01396464                     | 0 | 18699846 |          |
| 11 | Hapmap34566-BES11_Contig184_366  | 0 | 18735382 | 18735382 |
| 11 | BTA-88187-no-rs                  | 0 | 18760452 |          |
| 11 | ARS-BFGL-NGS-19324               | 0 | 18833272 |          |
| 11 | ARS-BFGL-NGS-66637               | 0 | 18867395 |          |
| 11 | BTB-01396675                     | 0 | 18897246 |          |
| 11 | Hapmap25656-BTA-88183            | 0 | 18933896 |          |
| 11 | Hapmap42709-BTA-86558            | 0 | 18969733 |          |
| 11 | BTA-86563-no-rs                  | 0 | 19056710 |          |
| 11 | Hapmap39596-BTA-86565            | 0 | 19101798 |          |
| 11 | ARS-BFGL-NGS-34210               | 0 | 19125116 |          |
| 11 | BTB-00753300                     | 0 | 19160760 |          |
| 11 | ARS-BFGL-NGS-24148               | 0 | 19182886 |          |
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| 11 | BTA-88614-no-rs                  | 0 | 19530404 |          |
| 11 | Hapmap32683-BTA-88615            | 0 | 19587769 |          |
| 11 | ARS-BFGL-BAC-16175               | 0 | 19644044 |          |
| 11 | BTB-00467573                     | 0 | 19781729 |          |
| 11 | Hapmap55558-rs29013980           | 0 | 19803705 |          |
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| 11 | ARS-BFGL-NGS-40996     | 0 | 19861225 |
| 11 | Hapmap44418-BTA-88623  | 0 | 19918911 |
| 11 | ARS-BFGL-NGS-102490    | 0 | 19971032 |
| 11 | ARS-BFGL-NGS-20053     | 0 | 20032403 |
| 11 | BTB-00467628           | 0 | 20061567 |
| 11 | BTB-01695728           | 0 | 20119555 |
| 11 | ARS-BFGL-NGS-25248     | 0 | 20202555 |
| 11 | Hapmap26194-BTA-158111 | 0 | 20271885 |
| 11 | ARS-BFGL-NGS-15494     | 0 | 20326518 |
| 11 | ARS-BFGL-NGS-104435    | 0 | 20350454 |
| 11 | BTB-01247916           | 0 | 20392877 |
| 11 | BTA-104373-no-rs       | 0 | 20467415 |
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| 11 | ARS-BFGL-NGS-104228    | 0 | 20558025 |
| 11 | Hapmap38198-BTA-117515 | 0 | 20622003 |
| 11 | ARS-BFGL-NGS-102824    | 0 | 20654410 |
| 11 | BTB-00464926           | 0 | 20707406 |
| 11 | Hapmap42710-BTA-86602  | 0 | 20729795 |
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| 11 | ARS-BFGL-NGS-113920    | 0 | 20783316 |
| 11 | ARS-BFGL-NGS-113404    | 0 | 20817600 |
| 11 | BTA-86600-no-rs        | 0 | 20838916 |
| 11 | ARS-BFGL-NGS-90348     | 0 | 20897395 |
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| 11 | Hapmap43962-BTA-86597  | 0 | 21081322 |
| 11 | Hapmap50806-BTA-86596  | 0 | 21123539 |
| 11 | Hapmap41665-BTA-86590  | 0 | 21156138 |
| 11 | BTB-00464573           | 0 | 21181637 |
| 11 | BTA-120835-no-rs       | 0 | 21208161 |
| 11 | BTB-00464454           | 0 | 21242337 |
| 11 | ARS-BFGL-BAC-11039     | 0 | 21276136 |
| 11 | BTB-00464392           | 0 | 21312462 |
| 11 | Hapmap32787-BTA-126306 | 0 | 21345301 |
| 11 | Hapmap44490-BTA-86580  | 0 | 21374188 |
| 11 | BTB-00464360           | 0 | 21411953 |
| 11 | BTB-00464268           | 0 | 21435093 |
| 11 | ARS-BFGL-NGS-29770     | 0 | 21461502 |
| 11 | ARS-BFGL-NGS-44338     | 0 | 21496394 |
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| 11 | BTB-00464022           | 0 | 21556940 |
| 11 | UA-IFASA-4213          | 0 | 21581503 |
| 11 | BTA-87499-no-rs        | 0 | 21622629 |
| 11 | ARS-BFGL-NGS-26022     | 0 | 21652185 |
| 11 | ARS-BFGL-BAC-11047     | 0 | 21681893 |
| 11 | BTB-00465155           | 0 | 21704414 |
| 11 | Hapmap48107-BTA-87507  | 0 | 21766263 |
| 11 | ARS-BFGL-NGS-74974     | 0 | 21794065 |
| 11 | BTA-87536-no-rs        | 0 | 21817694 |
| 11 | ARS-BFGL-NGS-117532    | 0 | 21865413 |
| 11 | Hapmap38359-BTA-87537  | 0 | 21887840 |
| 11 | BTA-87540-no-rs        | 0 | 21921227 |
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| 11 | Hapmap42711-BTA-87541            | 0 | 21994682 |  |
| 11 | Hapmap23962-BTA-87546            | 0 | 22038399 |  |
| 11 | ARS-BFGL-NGS-98592               | 0 | 22058432 |  |
| 11 | ARS-BFGL-NGS-114345              | 0 | 22096369 |  |
| 11 | ARS-BFGL-NGS-100459              | 0 | 22128569 |  |
| 11 | BTA-87562-no-rs                  | 0 | 22180066 |  |
| 11 | ARS-BFGL-BAC-11050               | 0 | 22201316 |  |
| 11 | BTB-01866238                     | 0 | 22230438 |  |
| 11 | ARS-BFGL-NGS-117972              | 0 | 22258745 |  |
| 11 | BTA-105796-no-rs                 | 0 | 22301772 |  |
| 11 | Hapmap52352-rs29018193           | 0 | 22373870 |  |
| 11 | ARS-BFGL-NGS-65895               | 0 | 22395430 |  |
| 11 | BTA-97224-no-rs                  | 0 | 22436382 |  |
| 11 | ARS-BFGL-NGS-27959               | 0 | 22465305 |  |
| 11 | BTA-97226-no-rs                  | 0 | 22497764 |  |
| 11 | Hapmap23765-BTA-151182           | 0 | 22518581 |  |
| 11 | BTA-97221-no-rs                  | 0 | 22558808 |  |
| 11 | ARS-BFGL-NGS-43804               | 0 | 22588525 |  |
| 11 | ARS-BFGL-NGS-110642              | 0 | 22613511 |  |
| 11 | BTA-120837-no-rs                 | 0 | 22638474 |  |
| 11 | ARS-BFGL-NGS-116483              | 0 | 22666445 |  |
| 11 | Hapmap49783-BTA-87584            | 0 | 22688045 |  |
| 11 | ARS-BFGL-NGS-118895              | 0 | 22716948 |  |
| 11 | BTB-00466225                     | 0 | 22746644 |  |
| 11 | Hapmap36745-SCAFFOLD105004_39631 | 0 | 22783522 |  |
| 11 | BTB-00466298                     | 0 | 22831667 |  |
| 11 | BTB-00466317                     | 0 | 22858088 |  |
| 11 | ARS-BFGL-NGS-62536               | 0 | 22912326 |  |
| 11 | BTB-00466422                     | 0 | 22936341 |  |
| 11 | BTB-01903909                     | 0 | 23051506 |  |
| 11 | Hapmap44345-BTA-119580           | 0 | 23085190 |  |
| 11 | BTA-119578-no-rs                 | 0 | 23121908 |  |
| 11 | ARS-BFGL-BAC-11672               | 0 | 23146620 |  |
| 11 | BTB-00466557                     | 0 | 23176087 |  |
| 11 | BTB-00466621                     | 0 | 23200575 |  |
| 11 | BTB-01859163                     | 0 | 23235749 |  |
| 11 | ARS-BFGL-BAC-11674               | 0 | 23276161 |  |
| 11 | ARS-BFGL-NGS-107853              | 0 | 23308266 |  |
| 11 | BTB-00466773                     | 0 | 23340880 |  |
| 11 | BTB-01805609                     | 0 | 23402070 |  |
| 11 | ARS-BFGL-NGS-40621               | 0 | 23443507 |  |
| 11 | BTA-93788-no-rs                  | 0 | 23538009 |  |
| 11 | BTA-103698-no-rs                 | 0 | 23626551 |  |
| 11 | Hapmap43993-BTA-103701           | 0 | 23654532 |  |
| 11 | BTB-01556917                     | 0 | 23700685 |  |
| 11 | BTB-01444917                     | 0 | 23719418 |  |
| 11 | BTB-01444756                     | 0 | 23762345 |  |
| 11 | Hapmap51172-BTA-122698           | 0 | 23803086 |  |
| 11 | BTB-01374666                     | 0 | 23867860 |  |
| 11 | ARS-BFGL-BAC-11706               | 0 | 23918407 |  |
| 11 | ARS-BFGL-NGS-61345               | 0 | 23986849 |  |
| 11 | ARS-BFGL-NGS-35892               | 0 | 24019490 |  |
| 11 | BTB-01374905                     | 0 | 24050822 |  |
| 11 | BTB-01742239                     | 0 | 24064571 |  |



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| 11 | ARS-BFGL-NGS-15908                    | 0        | 24102073 |   |          |
| 11 | BTB-00467532                          | 0        | 24128088 |   |          |
| 11 | BTB-00467512                          | 0        | 24151232 |   |          |
| 11 | ARS-BFGL-NGS-82790                    | 0        | 24175823 |   |          |
| 11 | Hapmap60548-rs29025725                | 0        | 24198851 |   |          |
| 11 | BTB-00467445                          | 0        | 24244391 |   |          |
| 11 | ARS-BFGL-NGS-113100                   | 0        | 24279803 |   |          |
| 11 | BTA-88608-no-rs                       | 0        | 24317047 |   |          |
| 11 | BTB-00467152                          | 0        | 24354910 |   |          |
| 11 | ARS-BFGL-NGS-115431                   | 0        | 24379969 |   |          |
| 11 | ARS-BFGL-NGS-43130                    | 0        | 24419621 |   |          |
| 11 | Hapmap32290-BTA-126325                | 0        | 24445657 |   |          |
| 11 | ARS-BFGL-NGS-34563                    | 0        | 24469874 |   |          |
| 11 | BTB-01740365                          | 0        | 24509650 |   |          |
| 11 | UA-IFASA-6098                         | 0        | 24539772 |   |          |
| 11 | ARS-USMARC-Parent-DQ837645-rs29015870 | 0        | 24553007 | 0 | 24553007 |
| 11 | Hapmap42452-BTA-120841                | 0        | 24571828 |   |          |
| 11 | ARS-BFGL-NGS-12964                    | 0        | 24592135 |   |          |
| 11 | Hapmap48926-BTA-86576                 | 0        | 24633643 |   |          |
| 11 | BTB-00463917                          | 0        | 24657528 |   |          |
| 11 | BTB-00463902                          | 0        | 24678787 |   |          |
| 11 | BTB-00463873                          | 0        | 24746576 |   |          |
| 11 | BTA-86574-no-rs                       | 0        | 24795491 |   |          |
| 11 | ARS-BFGL-NGS-18406                    | 0        | 24817971 |   |          |
| 11 | ARS-BFGL-NGS-37830                    | 0        | 24843332 |   |          |
| 11 | BTA-86572-no-rs                       | 0        | 24892409 |   |          |
| 11 | ARS-BFGL-NGS-115357                   | 0        | 24924270 |   |          |
| 11 | BTA-86248-no-rs                       | 0        | 24951915 |   |          |
| 11 | ARS-BFGL-NGS-68987                    | 0        | 24994130 |   |          |
| 11 | BTB-01537954                          | 0        | 25036830 |   |          |
| 11 | ARS-BFGL-NGS-21715                    | 0        | 25092349 |   |          |
| 11 | ARS-BFGL-NGS-29461                    | 0        | 25240446 |   |          |
| 11 | ARS-BFGL-NGS-34323                    | 0        | 25296089 |   |          |
| 11 | ARS-BFGL-NGS-27885                    | 0        | 25336110 |   |          |
| 11 | ARS-BFGL-BAC-58460                    | 25359786 |          |   |          |
| 11 | ARS-BFGL-NGS-94153                    | 0        | 25383840 |   |          |
| 11 | ARS-BFGL-NGS-20828                    | 0        | 25418833 |   |          |
| 11 | BTA-89843-no-rs                       | 0        | 25443477 |   |          |
| 11 | BTB-00468956                          | 0        | 25464223 |   |          |
| 11 | BTA-89847-no-rs                       | 0        | 25506263 |   |          |
| 11 | ARS-BFGL-NGS-29851                    | 0        | 25544002 |   |          |
| 11 | ARS-BFGL-NGS-89024                    | 0        | 25634382 |   |          |
| 11 | ARS-BFGL-NGS-44296                    | 0        | 25685264 |   |          |
| 11 | BTB-00469321                          | 0        | 25707098 |   |          |
| 11 | Hapmap42357-BTA-89853                 | 0        | 25736918 |   |          |
| 11 | BTA-90847-no-rs                       | 0        | 25812302 |   |          |
| 11 | ARS-BFGL-NGS-54880                    | 25837168 |          |   |          |
| 11 | ARS-BFGL-NGS-115481                   | 0        | 25865059 |   |          |
| 11 | ARS-BFGL-NGS-53350                    | 25941999 |          |   |          |
| 11 | BTA-36928-no-rs                       | 0        | 26067871 |   |          |
| 11 | Hapmap40963-BTA-36933                 | 0        | 26095067 |   |          |
| 11 | ARS-BFGL-NGS-618                      | 0        | 26128534 |   |          |
| 11 | ARS-BFGL-NGS-68600                    | 26162970 |          |   |          |
| 11 | BTB-01550704                          | 0        | 26185146 |   |          |

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| 11 | Hapmap54800-rs29014906 | 0 | 26222312 |
| 11 | BTB-00601827           | 0 | 26257193 |
| 11 | Hapmap49136-BTA-36934  | 0 | 26290518 |
| 11 | BTA-35790-no-rs        | 0 | 26326153 |
| 11 | BTB-00552184           | 0 | 26357422 |
| 11 | UA-IFASA-4316          | 0 | 26394588 |
| 11 | UA-IFASA-8334          | 0 | 26415787 |
| 11 | ARS-BFGL-NGS-111662    | 0 | 26437717 |
| 11 | BTB-00552225           | 0 | 26495513 |
| 11 | Hapmap38891-BTA-35860  | 0 | 26517882 |
| 11 | Hapmap27378-BTA-126277 | 0 | 26602571 |
| 11 | Hapmap51509-BTA-86526  | 0 | 26727988 |
| 11 | ARS-BFGL-NGS-116433    | 0 | 26808725 |
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| 11 | BTB-01492663           | 0 | 26914171 |
| 11 | Hapmap44191-BTA-109695 | 0 | 26935140 |
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| 11 | Hapmap30578-BTA-155532 | 0 | 27012013 |
| 11 | ARS-BFGL-NGS-103198    | 0 | 27054291 |
| 11 | ARS-BFGL-NGS-111248    | 0 | 27079215 |
| 11 | Hapmap23233-BTA-88497  | 0 | 27147078 |
| 11 | ARS-BFGL-NGS-36356     | 0 | 27205004 |
| 11 | ARS-BFGL-NGS-114146    | 0 | 27257304 |
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| 11 | ARS-BFGL-NGS-63481     | 0 | 27385912 |
| 11 | ARS-BFGL-NGS-118888    | 0 | 27423745 |
| 11 | ARS-BFGL-NGS-24935     | 0 | 27489026 |
| 11 | BTB-00470332           | 0 | 27519615 |
| 11 | ARS-BFGL-NGS-101857    | 0 | 27587137 |
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| 11 | Hapmap33187-BTA-126387 | 0 | 27761885 |
| 11 | Hapmap28109-BTA-163042 | 0 | 27812207 |
| 11 | ARS-BFGL-NGS-82906     | 0 | 27894797 |
| 11 | Hapmap23951-BTA-158868 | 0 | 27917853 |
| 11 | ARS-BFGL-NGS-107291    | 0 | 27948271 |
| 11 | ARS-BFGL-NGS-39693     | 0 | 28032517 |
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| 11 | ARS-BFGL-NGS-75483     | 0 | 28255163 |
| 11 | BTA-90865-no-rs        | 0 | 28308315 |
| 11 | ARS-BFGL-NGS-111484    | 0 | 28333085 |
| 11 | BTB-00470051           | 0 | 28358739 |
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| 11 | ARS-BFGL-NGS-101534    | 0 | 28741505 |
| 11 | ARS-BFGL-NGS-111483    | 0 | 28777056 |
| 11 | ARS-BFGL-NGS-87426     | 0 | 28807185 |

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| 11 | ARS-BFGL-NGS-21332               | 0 | 28845033 |          |
| 11 | Hapmap44160-BTA-90850            | 0 | 28866709 |          |
| 11 | ARS-BFGL-NGS-55891               | 0 | 28902978 |          |
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| 11 | ARS-BFGL-NGS-45601               | 0 | 29143359 |          |
| 11 | ARS-BFGL-NGS-103581              | 0 | 29174959 |          |
| 11 | ARS-BFGL-NGS-58445               | 0 | 29207614 |          |
| 11 | ARS-BFGL-NGS-114530              | 0 | 29231377 |          |
| 11 | ARS-BFGL-NGS-112640              | 0 | 29259074 |          |
| 11 | ARS-BFGL-NGS-14040               | 0 | 29297974 |          |
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| 11 | BTB-01522198                     | 0 | 29444819 |          |
| 11 | ARS-BFGL-NGS-54630               |   | 29468087 |          |
| 11 | ARS-BFGL-NGS-66241               | 0 | 29495322 |          |
| 11 | Hapmap35810-SCAFFOLD206370_23566 | 0 |          | 29515405 |
| 11 | ARS-BFGL-NGS-15269               | 0 | 29578421 |          |
| 11 | ARS-BFGL-BAC-15513               | 0 | 29602170 |          |
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| 11 | Hapmap48511-BTA-88656            | 0 | 29724170 |          |
| 11 | ARS-BFGL-NGS-118268              | 0 | 29749248 |          |
| 11 | ARS-BFGL-NGS-68010               | 0 | 29774437 |          |
| 11 | ARS-BFGL-NGS-86581               | 0 | 29822671 |          |
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| 11 | ARS-BFGL-NGS-35518               | 0 | 30128818 |          |
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| 11 | ARS-BFGL-NGS-30244               | 0 | 30262284 |          |
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| 11 | Hapmap45602-BTA-114057           | 0 | 30528419 |          |
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| 11 | Hapmap48121-BTA-90945            | 0 | 30575025 |          |
| 11 | BTB-00471167                     | 0 | 30608598 |          |
| 11 | BTB-00489432                     | 0 | 30651364 |          |
| 11 | ARS-BFGL-BAC-14892               | 0 | 30676561 |          |
| 11 | Hapmap23605-BTA-17581            | 0 | 30716002 |          |

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| 11 | BTA-17571-no-rs        | 0 | 30736743 |
| 11 | ARS-BFGL-NGS-82216     | 0 | 30763348 |
| 11 | BTB-01872902           | 0 | 30789183 |
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| 11 | ARS-BFGL-NGS-112032    | 0 | 30968132 |
| 11 | ARS-BFGL-NGS-101601    | 0 | 31078015 |
| 11 | BTB-00470779           | 0 | 31105767 |
| 11 | Hapmap45323-BTA-90907  | 0 | 31129384 |
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| 11 | BTA-93103-no-rs        | 0 | 31872332 |
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| 11 | BTB-01060743           | 0 | 32066197 |
| 11 | BTB-01060598           | 0 | 32153221 |
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| 11 | BTB-01397452                    | 0 | 33167082 |          |  |
| 11 | Hapmap23594-BTA-147986          | 0 | 33187852 |          |  |
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| 11 | Hapmap34370-BES10_Contig653_775 | 0 |          | 33309084 |  |
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| 11 | BTB-01550622                    | 0 | 33410702 |          |  |
| 11 | ARS-BFGL-NGS-64150              | 0 | 33464088 |          |  |
| 11 | BTB-01734254                    | 0 | 33541908 |          |  |
| 11 | BTB-01632890                    | 0 | 33599293 |          |  |
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| 11 | BTB-01641061                    | 0 | 33732628 |          |  |
| 11 | BTB-01641011                    | 0 | 33771048 |          |  |
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| 11 | Hapmap43102-BTA-92801           | 0 | 33963793 |          |  |
| 11 | BTB-01431728                    | 0 | 34002723 |          |  |
| 11 | BTB-01293441                    | 0 | 34068419 |          |  |
| 11 | BTB-01431917                    | 0 | 34147377 |          |  |
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| 11 | Hapmap23471-BTA-160293          | 0 | 34244441 |          |  |
| 11 | Hapmap49517-BTA-18783           | 0 | 34273579 |          |  |
| 11 | BTB-02040693                    | 0 | 34450957 |          |  |
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| 11 | ARS-BFGL-NGS-23240              | 0 | 34813659 |          |  |
| 11 | BTB-00024992                    | 0 | 34868230 |          |  |
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| 11 | BTB-00471717                    | 0 | 35004150 |          |  |
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| 11 | ARS-BFGL-NGS-42851              | 0 | 35078831 |          |  |
| 11 | BTB-01897941                    | 0 | 35134796 |          |  |
| 11 | BTB-01445949                    | 0 | 35169181 |          |  |
| 11 | BTB-01256624                    | 0 | 35211001 |          |  |
| 11 | Hapmap49478-BTA-119220          | 0 | 35252190 |          |  |
| 11 | Hapmap54261-rs29018776          | 0 | 35288276 |          |  |
| 11 | Hapmap53739-rs29018780          | 0 | 35319258 |          |  |
| 11 | ARS-BFGL-NGS-20444              | 0 | 35342626 |          |  |
| 11 | BTA-118779-no-rs                | 0 | 35473575 |          |  |
| 11 | Hapmap49064-BTA-122606          | 0 | 35493503 |          |  |
| 11 | BTA-15933-no-rs                 | 0 | 35529749 |          |  |
| 11 | ARS-BFGL-NGS-38940              | 0 | 35598979 |          |  |
| 11 | Hapmap42089-BTA-118782          | 0 | 35684228 |          |  |
| 11 | BTA-21062-no-rs                 | 0 | 35715323 |          |  |
| 11 | BTA-21064-no-rs                 | 0 | 35740262 |          |  |
| 11 | BTA-118786-no-rs                | 0 | 35782717 |          |  |

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| 11 | BTB-01959753                    | 0        | 35853623 |  |
| 11 | BTA-106955-no-rs                | 0        | 35897464 |  |
| 11 | ARS-BFGL-NGS-112269             | 0        | 35951082 |  |
| 11 | BTB-00471723                    | 0        | 35988982 |  |
| 11 | ARS-BFGL-NGS-18219              | 0        | 36028575 |  |
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| 11 | ARS-BFGL-NGS-13211              | 0        | 36088191 |  |
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| 11 | Hapmap59482-rs29019692          | 0        | 36332869 |  |
| 11 | ARS-BFGL-NGS-12523              | 0        | 36371041 |  |
| 11 | Hapmap42363-BTA-91950           | 0        | 36396178 |  |
| 11 | ARS-BFGL-NGS-101396             | 0        | 36523694 |  |
| 11 | Hapmap43097-BTA-91955           | 0        | 36597412 |  |
| 11 | Hapmap40148-BTA-92999           | 0        | 36713471 |  |
| 11 | ARS-BFGL-NGS-52020              | 0        | 36808946 |  |
| 11 | ARS-BFGL-NGS-12702              | 0        | 36893723 |  |
| 11 | ARS-BFGL-NGS-113322             | 0        | 36931716 |  |
| 11 | BTA-93012-no-rs                 | 0        | 36953495 |  |
| 11 | ARS-BFGL-NGS-66512              | 0        | 36983331 |  |
| 11 | ARS-BFGL-BAC-12987              | 0        | 37016893 |  |
| 11 | ARS-BFGL-NGS-32737              | 0        | 37110008 |  |
| 11 | ARS-BFGL-NGS-66378              | 0        | 37135843 |  |
| 11 | ARS-BFGL-NGS-36327              | 0        | 37169269 |  |
| 11 | Hapmap57787-rs29011991          | 0        | 37206682 |  |
| 11 | ARS-BFGL-NGS-51235              | 0        | 37228325 |  |
| 11 | ARS-BFGL-NGS-18624              | 0        | 37261133 |  |
| 11 | BTA-23761-no-rs                 | 0        | 37291456 |  |
| 11 | Hapmap38297-BTA-23763           | 0        | 37381127 |  |
| 11 | ARS-BFGL-BAC-13600              | 0        | 37436464 |  |
| 11 | ARS-BFGL-NGS-57198              | 0        | 37549808 |  |
| 11 | Hapmap23482-BTA-126430          | 0        | 37590668 |  |
| 11 | UA-IFASA-6619                   | 0        | 37613246 |  |
| 11 | ARS-BFGL-NGS-62976              | 0        | 37700016 |  |
| 11 | Hapmap55574-rs29015719          | 0        | 37733470 |  |
| 11 | ARS-BFGL-NGS-117280             | 0        | 37783495 |  |
| 11 | Hapmap34590-BES8_Contig394_1331 | 0        | 37876375 |  |
| 11 | Hapmap46632-BTA-89801           | 0        | 37954548 |  |
| 11 | BTA-89806-no-rs                 | 0        | 38007115 |  |
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| 11 | Hapmap51861-BTA-86131           | 0        | 38375934 |  |
| 11 | Hapmap39146-BTA-89809           | 0        | 38445947 |  |
| 11 | Hapmap24189-BTA-123161          | 0        | 38474579 |  |
| 11 | Hapmap47774-BTA-89811           | 0        | 38512409 |  |
| 11 | ARS-BFGL-NGS-81796              | 0        | 38630429 |  |
| 11 | ARS-BFGL-BAC-14233              | 0        | 38652048 |  |
| 11 | ARS-BFGL-NGS-111166             | 0        | 38692849 |  |
| 11 | Hapmap24102-BTA-162287          | 0        | 38733905 |  |
| 11 | ARS-BFGL-NGS-49980              | 38760385 |          |  |
| 11 | ARS-BFGL-NGS-104328             | 0        | 38785741 |  |
| 11 | ARS-BFGL-NGS-110808             | 0        | 38858028 |  |
| 11 | ARS-BFGL-NGS-11777              | 0        | 38942740 |  |
| 11 | Hapmap33734-BTA-162283          | 0        | 39002510 |  |

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| 11 | Hapmap23306-BTA-119892 | 0        | 39034411 |
| 11 | ARS-BFGL-NGS-11128     | 0        | 39104584 |
| 11 | ARS-BFGL-NGS-32998     | 0        | 39151084 |
| 11 | ARS-BFGL-NGS-114070    | 0        | 39211761 |
| 11 | Hapmap50810-BTA-89047  | 0        | 39299927 |
| 11 | ARS-BFGL-NGS-100655    | 0        | 39328123 |
| 11 | Hapmap25293-BTA-148337 | 0        | 39408728 |
| 11 | Hapmap33373-BTA-148341 | 0        | 39437937 |
| 11 | ARS-BFGL-NGS-51550     | 39477093 |          |
| 11 | ARS-BFGL-BAC-13660     | 0        | 39552876 |
| 11 | Hapmap32339-BTA-149195 | 0        | 39635793 |
| 11 | ARS-BFGL-BAC-13663     | 0        | 39664222 |
| 11 | Hapmap44496-BTA-91437  | 0        | 39687467 |
| 11 | Hapmap15326-rs29013300 | 0        | 39708839 |
| 11 | Hapmap27268-BTA-91439  | 0        | 39808625 |
| 11 | ARS-BFGL-NGS-112026    | 0        | 39936968 |
| 11 | Hapmap24910-BTA-91988  | 0        | 40079048 |
| 11 | ARS-BFGL-BAC-13667     | 0        | 40101129 |
| 11 | Hapmap54997-rs29026974 | 0        | 40183335 |
| 11 | ARS-BFGL-NGS-15495     | 0        | 40236222 |
| 11 | ARS-BFGL-NGS-95739     | 0        | 40414528 |
| 11 | BTA-26306-no-rs        | 0        | 40953278 |
| 11 | Hapmap50632-BTA-26315  | 0        | 41069409 |
| 11 | Hapmap57336-rs29010216 | 0        | 41114000 |
| 11 | Hapmap40850-BTA-98774  | 0        | 41204355 |
| 11 | Hapmap42022-BTA-98782  | 0        | 41277735 |
| 11 | ARS-BFGL-NGS-14714     | 0        | 41315430 |
| 11 | ARS-BFGL-NGS-36765     | 0        | 41379246 |
| 11 | ARS-BFGL-BAC-667       | 0        | 41428700 |
| 11 | BTA-01960-rs29012913   | 0        | 41534967 |
| 11 | ARS-BFGL-NGS-64295     | 0        | 41647520 |
| 11 | BTA-27906-no-rs        | 0        | 41680041 |
| 11 | Hapmap24893-BTA-27904  | 0        | 41740456 |
| 11 | ARS-BFGL-NGS-10028     | 0        | 41789973 |
| 11 | Hapmap54844-rs29022274 | 0        | 41833490 |
| 11 | ARS-BFGL-BAC-12994     | 0        | 41854251 |
| 11 | Hapmap50159-BTA-93064  | 0        | 41896237 |
| 11 | BTA-93062-no-rs        | 0        | 41992022 |
| 11 | Hapmap39698-BTA-93047  | 0        | 42070693 |
| 11 | BTA-99919-no-rs        | 0        | 42102223 |
| 11 | BTA-99924-no-rs        | 0        | 42133104 |
| 11 | ARS-BFGL-NGS-24591     | 0        | 42330073 |
| 11 | Hapmap49821-BTA-99909  | 0        | 42378612 |
| 11 | BTA-99908-no-rs        | 0        | 42406971 |
| 11 | Hapmap48977-BTA-99907  | 0        | 42429877 |
| 11 | ARS-BFGL-BAC-13009     | 0        | 42480088 |
| 11 | ARS-BFGL-NGS-25464     | 0        | 42520603 |
| 11 | ARS-BFGL-NGS-117681    | 0        | 42615206 |
| 11 | BTA-93084-no-rs        | 0        | 42671786 |
| 11 | Hapmap41109-BTA-93077  | 0        | 42713681 |
| 11 | Hapmap51778-BTA-93073  | 0        | 42773101 |
| 11 | BTA-93067-no-rs        | 0        | 42799812 |
| 11 | BTA-93093-no-rs        | 0        | 42852364 |
| 11 | Hapmap56532-rs29016027 | 0        | 42876838 |

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| 11 | ARS-BFGL-NGS-111986    | 0 | 42927846 |
| 11 | ARS-BFGL-BAC-13639     | 0 | 42977132 |
| 11 | ARS-BFGL-NGS-117393    | 0 | 43000948 |
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| 11 | ARS-BFGL-NGS-103055    | 0 | 43220203 |
| 11 | ARS-BFGL-NGS-90639     | 0 | 43296086 |
| 11 | Hapmap58608-rs29014004 | 0 | 43385446 |
| 11 | BTA-13997-no-rs        | 0 | 43420613 |
| 11 | ARS-BFGL-NGS-33002     | 0 | 43472272 |
| 11 | Hapmap43729-BTA-94097  | 0 | 43579130 |
| 11 | BTA-23305-no-rs        | 0 | 43720253 |
| 11 | Hapmap58586-ss46526926 | 0 | 43886198 |
| 11 | ARS-BFGL-NGS-109037    | 0 | 43911266 |
| 11 | ARS-BFGL-NGS-40760     | 0 | 43942195 |
| 11 | ARS-BFGL-BAC-14274     | 0 | 44019482 |
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| 11 | ARS-BFGL-NGS-43131     | 0 | 44122489 |
| 11 | ARS-BFGL-NGS-97543     | 0 | 44144352 |
| 11 | Hapmap23331-BTA-161297 | 0 | 44179527 |
| 11 | ARS-BFGL-NGS-105778    | 0 | 44207605 |
| 11 | BTA-94155-no-rs        | 0 | 44241286 |
| 11 | ARS-BFGL-NGS-13680     | 0 | 44294802 |
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| 11 | ARS-BFGL-NGS-112949    | 0 | 44439698 |
| 11 | ARS-BFGL-NGS-100264    | 0 | 44458785 |
| 11 | ARS-BFGL-NGS-16590     | 0 | 44478837 |
| 11 | Hapmap40407-BTA-23049  | 0 | 44531959 |
| 11 | ARS-BFGL-NGS-47330     | 0 | 44562022 |
| 11 | Hapmap43815-BTA-23051  | 0 | 44583035 |
| 11 | ARS-BFGL-NGS-106173    | 0 | 44611943 |
| 11 | Hapmap57340-rs29010501 | 0 | 44792485 |
| 11 | ARS-BFGL-NGS-111691    | 0 | 44844492 |
| 11 | Hapmap49807-BTA-95128  | 0 | 44891666 |
| 11 | ARS-BFGL-NGS-81295     | 0 | 44927955 |
| 11 | ARS-BFGL-NGS-28851     | 0 | 44967763 |
| 11 | BTA-95130-no-rs        | 0 | 45008048 |
| 11 | ARS-BFGL-NGS-112743    | 0 | 45096739 |
| 11 | ARS-BFGL-NGS-10350     | 0 | 45130713 |
| 11 | ARS-BFGL-NGS-112202    | 0 | 45152718 |
| 11 | ARS-BFGL-NGS-109763    | 0 | 45175551 |
| 11 | BTA-89336-no-rs        | 0 | 45267174 |
| 11 | ARS-BFGL-NGS-28924     | 0 | 45346657 |
| 11 | ARS-BFGL-NGS-91269     | 0 | 45470166 |
| 11 | ARS-BFGL-NGS-101724    | 0 | 45584828 |
| 11 | Hapmap56580-rs29022336 | 0 | 45641384 |
| 11 | Hapmap43116-BTA-97124  | 0 | 45688827 |
| 11 | ARS-BFGL-NGS-19839     | 0 | 45736640 |
| 11 | ARS-BFGL-NGS-117372    | 0 | 45758781 |
| 11 | Hapmap24028-BTA-97118  | 0 | 45783749 |
| 11 | ARS-BFGL-NGS-21435     | 0 | 45851216 |
| 11 | BTA-97105-no-rs        | 0 | 45893893 |
| 11 | BTA-26159-no-rs        | 0 | 45950882 |
| 11 | ARS-BFGL-NGS-36885     | 0 | 46007498 |
| 11 | BTA-21074-no-rs        | 0 | 46053492 |



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| 11 | Hapmap26804-BTA-97085            | 0 | 46091862 |          |
| 11 | ARS-BFGL-NGS-117216              | 0 | 46143526 |          |
| 11 | ARS-BFGL-NGS-39762               | 0 | 46241894 |          |
| 11 | ARS-BFGL-NGS-33830               | 0 | 46307696 |          |
| 11 | ARS-BFGL-NGS-27190               | 0 | 46340701 |          |
| 11 | Hapmap43105-BTA-94147            | 0 | 46363109 |          |
| 11 | ARS-BFGL-NGS-34952               | 0 | 46406314 |          |
| 11 | ARS-USMARC-Parent-AY851162-no-rs | 0 |          | 46411100 |
| 11 | ARS-BFGL-NGS-11328               | 0 | 46487959 |          |
| 11 | ARS-BFGL-NGS-29991               | 0 | 46523735 |          |
| 11 | ARS-BFGL-NGS-36900               | 0 | 46563366 |          |
| 11 | ARS-BFGL-NGS-37630               | 0 | 46590323 |          |
| 11 | BTA-95153-no-rs                  | 0 | 46616761 |          |
| 11 | Hapmap42371-BTA-95148            | 0 | 46657176 |          |
| 11 | ARS-BFGL-NGS-30536               | 0 | 46701073 |          |
| 11 | ARS-BFGL-NGS-18830               |   | 46735224 |          |
| 11 | ARS-BFGL-NGS-28070               | 0 | 46758998 |          |
| 11 | ARS-BFGL-NGS-34712               | 0 | 46794995 |          |
| 11 | ARS-BFGL-NGS-113289              | 0 | 46819460 |          |
| 11 | Hapmap42156-BTA-26114            | 0 | 46847994 |          |
| 11 | ARS-BFGL-NGS-40907               | 0 | 46878517 |          |
| 11 | ARS-BFGL-BAC-65910               |   | 46940237 |          |
| 11 | ARS-BFGL-NGS-36923               | 0 | 46967507 |          |
| 11 | BTA-100639-no-rs                 | 0 | 47037541 |          |
| 11 | Hapmap42396-BTA-100630           | 0 | 47116171 |          |
| 11 | BTA-100635-no-rs                 | 0 | 47148092 |          |
| 11 | Hapmap59563-rs29017556           | 0 | 47183635 |          |
| 11 | ARS-BFGL-NGS-108114              | 0 | 47210051 |          |
| 11 | ARS-BFGL-NGS-27691               | 0 | 47246925 |          |
| 11 | Hapmap35985-SCAFFOLD87273_8202   | 0 |          | 47283116 |
| 11 | ARS-BFGL-BAC-66020               |   | 47300300 |          |
| 11 | BTA-97080-no-rs                  | 0 | 47338489 |          |
| 11 | ARS-BFGL-BAC-66060               |   | 47361429 |          |
| 11 | Hapmap47792-BTA-97076            | 0 | 47430509 |          |
| 11 | BTA-97072-no-rs                  | 0 | 47522289 |          |
| 11 | ARS-BFGL-NGS-101771              | 0 | 47667214 |          |
| 11 | Hapmap54732-rs29026483           | 0 | 47716366 |          |
| 11 | ARS-BFGL-NGS-17920               |   | 47803744 |          |
| 11 | Hapmap59135-ss46526285           | 0 | 47878685 |          |
| 11 | ARS-BFGL-NGS-119597              | 0 | 47916623 |          |
| 11 | ARS-BFGL-NGS-87458               | 0 | 47941230 |          |
| 11 | ARS-BFGL-NGS-108515              | 0 | 47968880 |          |
| 11 | Hapmap52883-ss46526639           | 0 | 47995102 |          |
| 11 | ARS-BFGL-NGS-39910               | 0 | 48022444 |          |
| 11 | ARS-BFGL-NGS-103900              | 0 | 48066628 |          |
| 11 | Hapmap49391-BTA-97040            | 0 | 48155240 |          |
| 11 | Hapmap38795-BTA-97039            | 0 | 48179532 |          |
| 11 | Hapmap52811-ss46526817           | 0 | 48235519 |          |
| 11 | ARS-BFGL-NGS-81863               | 0 | 48300018 |          |
| 11 | ARS-BFGL-NGS-71120               | 0 | 48389954 |          |
| 11 | ARS-BFGL-NGS-35927               | 0 | 48425269 |          |
| 11 | ARS-BFGL-NGS-101636              | 0 | 48473153 |          |
| 11 | ARS-BFGL-NGS-107346              | 0 | 48495399 |          |
| 11 | ARS-BFGL-NGS-75906               | 0 | 48545880 |          |

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| 11 | ARS-BFGL-NGS-100960             | 0 | 48699068 |          |
| 11 | ARS-BFGL-NGS-68510              | 0 | 48739496 |          |
| 11 | ARS-BFGL-NGS-108232             | 0 | 48795556 |          |
| 11 | Hapmap59833-rs29027583          | 0 | 48827893 |          |
| 11 | Hapmap43414-BTA-96067           | 0 | 48881609 |          |
| 11 | BTA-96068-no-rs                 | 0 | 48970210 |          |
| 11 | ARS-BFGL-NGS-100103             | 0 | 49036136 |          |
| 11 | ARS-BFGL-NGS-43162              | 0 | 49172006 |          |
| 11 | ARS-BFGL-NGS-90404              | 0 | 49242330 |          |
| 11 | Hapmap34643-BES1_Contig588_854  | 0 |          | 49300590 |
| 11 | ARS-BFGL-NGS-81824              | 0 | 49322620 |          |
| 11 | Hapmap48534-BTA-96124           | 0 | 49374782 |          |
| 11 | UA-IFASA-8854                   | 0 | 49473033 |          |
| 11 | ARS-BFGL-NGS-119606             | 0 | 49583187 |          |
| 11 | Hapmap54495-rs29018810          | 0 | 49612828 |          |
| 11 | Hapmap47448-BTA-96139           | 0 | 49669569 |          |
| 11 | ARS-BFGL-NGS-12433              | 0 | 49690585 |          |
| 11 | ARS-BFGL-NGS-75350              | 0 | 49734417 |          |
| 11 | ARS-BFGL-NGS-36039              | 0 | 49763245 |          |
| 11 | BTB-01568010                    | 0 | 49793722 |          |
| 11 | BTA-104617-no-rs                | 0 | 49824565 |          |
| 11 | BTB-01568059                    | 0 | 49852621 |          |
| 11 | ARS-BFGL-NGS-109489             | 0 | 49877253 |          |
| 11 | BTB-01401975                    | 0 | 49912381 |          |
| 11 | BTB-01401912                    | 0 | 49955061 |          |
| 11 | Hapmap57382-rs29020516          | 0 | 49981376 |          |
| 11 | BTA-88741-no-rs                 | 0 | 50005266 |          |
| 11 | ARS-BFGL-NGS-113144             | 0 | 50041843 |          |
| 11 | ARS-BFGL-NGS-35180              | 0 | 50077474 |          |
| 11 | BTB-01898747                    | 0 | 50170608 |          |
| 11 | Hapmap38739-BTA-25571           | 0 | 50198437 |          |
| 11 | BTB-01660145                    | 0 | 50264058 |          |
| 11 | ARS-BFGL-NGS-27048              | 0 | 50286299 |          |
| 11 | BTB-01660245                    | 0 | 50307524 |          |
| 11 | ARS-BFGL-NGS-97754              | 0 | 50330158 |          |
| 11 | ARS-BFGL-NGS-117408             | 0 | 50376330 |          |
| 11 | ARS-BFGL-NGS-109669             | 0 | 50420385 |          |
| 11 | BTB-00474688                    | 0 | 50431031 |          |
| 11 | BTB-00474616                    | 0 | 50467910 |          |
| 11 | BTB-01828679                    | 0 | 50510351 |          |
| 11 | BTB-00474595                    | 0 | 50569415 |          |
| 11 | BTB-00474587                    | 0 | 50592880 |          |
| 11 | ARS-BFGL-NGS-66467              | 0 | 50912804 |          |
| 11 | ARS-BFGL-NGS-66339              | 0 | 51041758 |          |
| 11 | ARS-BFGL-NGS-17103              | 0 | 51082229 |          |
| 11 | Hapmap25657-BTA-93401           | 0 | 51251634 |          |
| 11 | Hapmap38714-BTA-93410           | 0 | 51392558 |          |
| 11 | BTA-26769-no-rs                 | 0 | 51482600 |          |
| 11 | ARS-BFGL-NGS-107461             | 0 | 51519270 |          |
| 11 | ARS-BFGL-BAC-11103              | 0 | 51660353 |          |
| 11 | ARS-BFGL-NGS-99000              | 0 | 51705900 |          |
| 11 | ARS-BFGL-NGS-112791             | 0 | 51741896 |          |
| 11 | Hapmap34739-BES8_Contig468_1027 | 0 |          | 51784891 |
| 11 | BTA-89253-no-rs                 | 0 | 51893364 |          |

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| 11 | Hapmap33275-BTA-98050  | 0        | 52045971 |
| 11 | ARS-BFGL-BAC-11714     | 0        | 52155944 |
| 11 | ARS-BFGL-BAC-11717     | 0        | 52195257 |
| 11 | Hapmap44309-BTA-89260  | 0        | 52240999 |
| 11 | Hapmap49814-BTA-98048  | 0        | 52318394 |
| 11 | ARS-BFGL-BAC-11718     | 0        | 52356168 |
| 11 | Hapmap59913-rs29011971 | 0        | 52491236 |
| 11 | Hapmap26721-BTA-152115 | 0        | 52539308 |
| 11 | ARS-BFGL-NGS-117912    | 0        | 52677772 |
| 11 | BTA-95332-no-rs        | 0        | 53045394 |
| 11 | ARS-BFGL-NGS-73398     | 0        | 53190924 |
| 11 | ARS-BFGL-NGS-85007     | 0        | 53430229 |
| 11 | Hapmap32633-BTA-157234 | 0        | 53778535 |
| 11 | ARS-BFGL-NGS-11740     | 0        | 54193489 |
| 11 | Hapmap23883-BTA-150314 | 0        | 54218975 |
| 11 | ARS-BFGL-NGS-106815    | 0        | 54246625 |
| 11 | Hapmap39099-BTA-94819  | 0        | 54366771 |
| 11 | ARS-BFGL-NGS-74690     | 54417014 |          |
| 11 | Hapmap32545-BTA-126570 | 0        | 54514500 |
| 11 | Hapmap39795-BTA-98059  | 0        | 54730416 |
| 11 | Hapmap27153-BTA-126567 | 0        | 54765154 |
| 11 | UA-IFASA-1529          | 0        | 54794949 |
| 11 | ARS-BFGL-NGS-117820    | 0        | 54855548 |
| 11 | ARS-BFGL-NGS-103442    | 0        | 54887301 |
| 11 | ARS-BFGL-NGS-42944     | 0        | 54946590 |
| 11 | BTA-98077-no-rs        | 0        | 54970636 |
| 11 | UA-IFASA-9350          | 0        | 55062461 |
| 11 | BTB-00475013           | 0        | 55107845 |
| 11 | ARS-BFGL-NGS-106494    | 0        | 55170733 |
| 11 | BTB-01638234           | 0        | 55229674 |
| 11 | Hapmap42420-BTA-109576 | 0        | 55264686 |
| 11 | Hapmap44417-BTA-88062  | 0        | 55290247 |
| 11 | Hapmap38708-BTA-88091  | 0        | 55345639 |
| 11 | ARS-BFGL-NGS-37348     | 0        | 55372054 |
| 11 | ARS-BFGL-NGS-31161     | 0        | 55456977 |
| 11 | Hapmap41377-BTA-88086  | 0        | 55496607 |
| 11 | BTA-88089-no-rs        | 0        | 55531725 |
| 11 | ARS-BFGL-NGS-13220     | 0        | 55598469 |
| 11 | ARS-BFGL-NGS-21601     | 0        | 55623112 |
| 11 | BTA-97179-no-rs        | 0        | 55651215 |
| 11 | Hapmap31558-BTA-97162  | 0        | 55705680 |
| 11 | BTA-122722-no-rs       | 0        | 55766410 |
| 11 | Hapmap42798-BTA-109203 | 0        | 55809281 |
| 11 | ARS-BFGL-NGS-73214     | 0        | 55946129 |
| 11 | BTA-32753-no-rs        | 0        | 56039089 |
| 11 | BTA-32746-no-rs        | 0        | 56112585 |
| 11 | ARS-BFGL-NGS-108438    | 0        | 56617997 |
| 11 | ARS-BFGL-NGS-32183     | 0        | 56709031 |
| 11 | Hapmap42382-BTA-98087  | 0        | 56800152 |
| 11 | ARS-BFGL-NGS-94091     | 0        | 56825445 |
| 11 | Hapmap51103-BTA-98088  | 0        | 56858167 |
| 11 | Hapmap27447-BTA-157066 | 0        | 56902948 |
| 11 | BTB-01079189           | 0        | 56932696 |
| 11 | BTA-114748-no-rs       | 0        | 56956782 |

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| 11 | BTB-00475277           | 0        | 56985921 |
| 11 | ARS-BFGL-NGS-118778    | 0        | 57029034 |
| 11 | BTB-01079278           | 0        | 57078447 |
| 11 | BTB-01079350           | 0        | 57107070 |
| 11 | ARS-BFGL-NGS-13914     | 0        | 57131335 |
| 11 | BTB-01696272           | 0        | 57184891 |
| 11 | Hapmap27889-BTA-156982 | 0        | 57231574 |
| 11 | Hapmap60754-rs29010392 | 0        | 57276682 |
| 11 | ARS-BFGL-BAC-12421     | 0        | 57296795 |
| 11 | BTB-01590983           | 0        | 57328939 |
| 11 | ARS-BFGL-NGS-13377     | 0        | 57366796 |
| 11 | ARS-BFGL-NGS-105803    | 0        | 57465783 |
| 11 | Hapmap60711-rs29014674 | 0        | 57502540 |
| 11 | Hapmap51531-BTA-98947  | 0        | 57522675 |
| 11 | BTB-01504494           | 0        | 57548472 |
| 11 | BTB-01328920           | 0        | 57639084 |
| 11 | BTB-01652806           | 0        | 57882097 |
| 11 | BTB-01328775           | 0        | 57912600 |
| 11 | Hapmap51672-BTA-00262  | 0        | 58212037 |
| 11 | ARS-BFGL-NGS-15285     | 0        | 58241212 |
| 11 | BTA-33625-no-rs        | 0        | 58306286 |
| 11 | BTB-01353217           | 0        | 58337445 |
| 11 | ARS-BFGL-BAC-11747     | 0        | 58419387 |
| 11 | ARS-BFGL-BAC-11748     | 0        | 58442169 |
| 11 | Hapmap44164-BTA-92933  | 0        | 58479028 |
| 11 | ARS-BFGL-BAC-44000     | 58501865 |          |
| 11 | Hapmap51539-BTA-105753 | 0        | 58524865 |
| 11 | BTB-01181002           | 0        | 58549120 |
| 11 | BTA-105747-no-rs       | 0        | 58651670 |
| 11 | BTB-01180855           | 0        | 58684365 |
| 11 | Hapmap32619-BTA-154095 | 0        | 58730199 |
| 11 | BTB-01180711           | 0        | 58754953 |
| 11 | ARS-BFGL-BAC-12355     | 0        | 58783251 |
| 11 | Hapmap42045-BTA-105766 | 0        | 58844378 |
| 11 | ARS-BFGL-NGS-118165    | 0        | 58856144 |
| 11 | ARS-BFGL-NGS-44565     | 0        | 58897545 |
| 11 | Hapmap32152-BTA-29315  | 0        | 58962936 |
| 11 | BTB-01454143           | 0        | 59006381 |
| 11 | BTA-122120-no-rs       | 0        | 59047987 |
| 11 | ARS-BFGL-NGS-82127     | 0        | 59110486 |
| 11 | Hapmap59738-rs29016857 | 0        | 59160754 |
| 11 | Hapmap60204-rs29026371 | 0        | 59186199 |
| 11 | Hapmap53406-rs29014440 | 0        | 59280903 |
| 11 | Hapmap48543-BTA-98093  | 0        | 59319163 |
| 11 | BTB-00475457           | 0        | 59351201 |
| 11 | BTB-00475498           | 0        | 59381768 |
| 11 | BTB-01756713           | 0        | 59421902 |
| 11 | BTB-01836963           | 0        | 59458469 |
| 11 | BTB-01630036           | 0        | 59522795 |
| 11 | BTB-01652151           | 0        | 59622185 |
| 11 | BTB-01947403           | 0        | 59668010 |
| 11 | BTB-01475120           | 0        | 59724651 |
| 11 | Hapmap43807-BTA-21732  | 0        | 59752454 |
| 11 | Hapmap59053-rs29015825 | 0        | 59794805 |

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| 11 | Hapmap32032-BTA-128772           | 0 | 59844058 |  |
| 11 | Hapmap32846-BTA-152118           | 0 | 60061414 |  |
| 11 | BTA-14202-rs29022967             | 0 | 60128321 |  |
| 11 | BTA-99888-no-rs                  | 0 | 60150644 |  |
| 11 | BTB-00475139                     | 0 | 60203243 |  |
| 11 | BTB-00475179                     | 0 | 60227348 |  |
| 11 | BTA-120858-no-rs                 | 0 | 60250739 |  |
| 11 | Hapmap47238-BTA-30090            | 0 | 60275771 |  |
| 11 | ARS-BFGL-NGS-11131               | 0 | 60303908 |  |
| 11 | ARS-BFGL-NGS-112135              | 0 | 60334708 |  |
| 11 | ARS-BFGL-NGS-112939              | 0 | 60377158 |  |
| 11 | Hapmap54520-ss46526432           | 0 | 60400664 |  |
| 11 | Hapmap57413-rs29022363           | 0 | 60426473 |  |
| 11 | ARS-BFGL-BAC-11723               | 0 | 60449477 |  |
| 11 | ARS-BFGL-BAC-11724               | 0 | 60498991 |  |
| 11 | Hapmap41117-BTA-99065            | 0 | 60548547 |  |
| 11 | BTA-99085-no-rs                  | 0 | 60572203 |  |
| 11 | BTA-99088-no-rs                  | 0 | 60602028 |  |
| 11 | Hapmap48973-BTA-99093            | 0 | 60706511 |  |
| 11 | ARS-BFGL-NGS-29366               | 0 | 60738925 |  |
| 11 | Hapmap23748-BTA-126592           | 0 | 60764924 |  |
| 11 | Hapmap50528-BTA-99089            | 0 | 60795555 |  |
| 11 | BTA-99098-no-rs                  | 0 | 60837975 |  |
| 11 | ARS-BFGL-NGS-24498               | 0 | 60880125 |  |
| 11 | ARS-BFGL-NGS-12092               | 0 | 60913659 |  |
| 11 | Hapmap48142-BTA-99107            | 0 | 60938631 |  |
| 11 | ARS-BFGL-NGS-110394              | 0 | 60974044 |  |
| 11 | Hapmap39736-BTA-26188            | 0 | 61037082 |  |
| 11 | BTA-117086-no-rs                 | 0 | 61056773 |  |
| 11 | ARS-BFGL-NGS-109370              | 0 | 61080039 |  |
| 11 | Hapmap43982-BTA-99111            | 0 | 61135811 |  |
| 11 | Hapmap23449-BTA-99119            | 0 | 61176781 |  |
| 11 | BTA-98135-no-rs                  | 0 | 61294221 |  |
| 11 | ARS-BFGL-NGS-77734               | 0 | 61480385 |  |
| 11 | ARS-BFGL-BAC-13039               | 0 | 61700872 |  |
| 11 | ARS-BFGL-NGS-107478              | 0 | 61745935 |  |
| 11 | Hapmap29025-BTA-156546           | 0 | 61786150 |  |
| 11 | ARS-BFGL-NGS-52541               | 0 | 61858071 |  |
| 11 | Hapmap33074-BTA-162904           | 0 | 61918836 |  |
| 11 | BTA-100099-no-rs                 | 0 | 61968503 |  |
| 11 | BTA-11701-rs29017459             | 0 | 61989432 |  |
| 11 | Hapmap47796-BTA-99180            | 0 | 62014800 |  |
| 11 | Hapmap44210-BTA-120859           | 0 | 62067321 |  |
| 11 | ARS-BFGL-NGS-47907               | 0 | 62123525 |  |
| 11 | Hapmap40862-BTA-100125           | 0 | 62144546 |  |
| 11 | Hapmap34935-BES11_Contig422_2192 | 0 | 62211117 |  |
| 11 | Hapmap43430-BTA-100124           | 0 | 62263631 |  |
| 11 | ARS-BFGL-NGS-102516              | 0 | 62322356 |  |
| 11 | BTA-100123-no-rs                 | 0 | 62364618 |  |
| 11 | Hapmap42394-BTA-100120           | 0 | 62392223 |  |
| 11 | Hapmap49855-BTA-108530           | 0 | 62473382 |  |
| 11 | ARS-BFGL-NGS-22522               | 0 | 62497171 |  |
| 11 | ARS-BFGL-NGS-31406               | 0 | 62537588 |  |
| 11 | Hapmap60837-rs29027434           | 0 | 62564825 |  |

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| 11 | ARS-BFGL-NGS-72428             | 0        | 62593469 |  |
| 11 | Hapmap42393-BTA-100116         | 0        | 62629106 |  |
| 11 | ARS-BFGL-NGS-110217            | 0        | 62703167 |  |
| 11 | ARS-BFGL-NGS-76191             | 0        | 62732451 |  |
| 11 | ARS-BFGL-NGS-113601            | 0        | 62762521 |  |
| 11 | ARS-BFGL-NGS-10966             | 0        | 62847615 |  |
| 11 | ARS-BFGL-NGS-10650             | 62868207 |          |  |
| 11 | ARS-BFGL-NGS-28217             | 0        | 62933569 |  |
| 11 | BTA-100171-no-rs               | 0        | 63059927 |  |
| 11 | Hapmap27380-BTA-126607         | 0        | 63083499 |  |
| 11 | BTA-99123-no-rs                | 0        | 63114545 |  |
| 11 | Hapmap41118-BTA-99124          | 0        | 63144107 |  |
| 11 | Hapmap40852-BTA-99129          | 0        | 63209412 |  |
| 11 | Hapmap29805-BTA-126612         | 0        | 63284445 |  |
| 11 | ARS-BFGL-NGS-111061            | 0        | 63337021 |  |
| 11 | ARS-BFGL-NGS-103794            | 0        | 63372591 |  |
| 11 | ARS-BFGL-NGS-102748            | 0        | 63409930 |  |
| 11 | Hapmap59148-ss46527122         | 0        | 63430172 |  |
| 11 | Hapmap42754-BTA-99156          | 0        | 63467507 |  |
| 11 | Hapmap59882-rs29018917         | 0        | 63505299 |  |
| 11 | BTA-29318-no-rs                | 0        | 63529222 |  |
| 11 | Hapmap42760-BTA-04812          | 0        | 63574961 |  |
| 11 | Hapmap45969-BTA-100173         | 0        | 63686208 |  |
| 11 | ARS-BFGL-NGS-100837            | 0        | 63721560 |  |
| 11 | ARS-BFGL-NGS-41687             | 0        | 63759322 |  |
| 11 | ARS-BFGL-NGS-79630             | 63797549 |          |  |
| 11 | ARS-BFGL-NGS-18313             | 0        | 63840544 |  |
| 11 | ARS-BFGL-NGS-115877            | 0        | 63863803 |  |
| 11 | ARS-BFGL-NGS-107486            | 0        | 63912771 |  |
| 11 | ARS-BFGL-NGS-19268             | 0        | 63939950 |  |
| 11 | ARS-BFGL-BAC-13049             | 0        | 64019136 |  |
| 11 | ARS-BFGL-NGS-114087            | 0        | 64057850 |  |
| 11 | Hapmap34879-BES7_Contig396_841 | 0        | 64106039 |  |
| 11 | ARS-BFGL-NGS-100607            | 0        | 64137185 |  |
| 11 | Hapmap48619-BTA-113290         | 0        | 64159128 |  |
| 11 | ARS-BFGL-NGS-43985             | 0        | 64184454 |  |
| 11 | ARS-BFGL-NGS-83732             | 0        | 64223964 |  |
| 11 | ARS-BFGL-NGS-119320            | 0        | 64269224 |  |
| 11 | ARS-BFGL-NGS-12929             | 0        | 64313748 |  |
| 11 | BTA-101039-no-rs               | 0        | 64339498 |  |
| 11 | ARS-BFGL-NGS-106368            | 0        | 64367438 |  |
| 11 | Hapmap31385-BTA-126644         | 0        | 64392003 |  |
| 11 | Hapmap49407-BTA-101030         | 0        | 64433929 |  |
| 11 | ARS-BFGL-NGS-89007             | 0        | 64537797 |  |
| 11 | ARS-BFGL-NGS-112469            | 0        | 64625361 |  |
| 11 | ARS-BFGL-BAC-14299             | 0        | 64742252 |  |
| 11 | ARS-BFGL-NGS-39360             | 64844989 |          |  |
| 11 | ARS-BFGL-NGS-33664             | 0        | 64906730 |  |
| 11 | ARS-BFGL-NGS-44192             | 0        | 65066890 |  |
| 11 | ARS-BFGL-NGS-74300             | 65133710 |          |  |
| 11 | BTA-99736-no-rs                | 0        | 65290109 |  |
| 11 | Hapmap45591-BTA-99735          | 0        | 65315609 |  |
| 11 | ARS-BFGL-NGS-117769            | 0        | 65353177 |  |
| 11 | ARS-BFGL-NGS-91335             | 0        | 65386179 |  |

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| 11 | ARS-BFGL-NGS-91014                    | 0 | 65493222 |          |  |
| 11 | BTA-04725-no-rs                       | 0 | 65565844 |          |  |
| 11 | Hapmap54405-rs29021155                | 0 | 65590436 |          |  |
| 11 | ARS-BFGL-NGS-54666                    | 0 | 65656294 |          |  |
| 11 | ARS-BFGL-NGS-52860                    | 0 | 65686532 |          |  |
| 11 | Hapmap60661-rs29016458                | 0 | 65789253 |          |  |
| 11 | BTA-99132-no-rs                       | 0 | 65852879 |          |  |
| 11 | ARS-BFGL-BAC-14935                    | 0 | 65925331 |          |  |
| 11 | Hapmap60779-rs29022104                | 0 | 65975590 |          |  |
| 11 | ARS-BFGL-BAC-14940                    | 0 | 66002572 |          |  |
| 11 | BTA-99142-no-rs                       | 0 | 66073158 |          |  |
| 11 | ARS-BFGL-NGS-16753                    | 0 | 66118270 |          |  |
| 11 | ARS-BFGL-NGS-107491                   | 0 | 66153626 |          |  |
| 11 | ARS-BFGL-NGS-35400                    |   | 66218925 |          |  |
| 11 | ARS-USMARC-Parent-DQ837643-rs29018818 | 0 |          | 66341589 |  |
| 11 | BTA-101061-no-rs                      | 0 | 66450428 |          |  |
| 11 | ARS-BFGL-NGS-114858                   | 0 | 66477233 |          |  |
| 11 | ARS-BFGL-NGS-12836                    | 0 | 66533595 |          |  |
| 11 | ARS-BFGL-NGS-31946                    | 0 | 66554571 |          |  |
| 11 | ARS-BFGL-NGS-109780                   | 0 | 66789317 |          |  |
| 11 | ARS-BFGL-NGS-115617                   | 0 | 66864873 |          |  |
| 11 | UA-IFASA-8511                         | 0 | 66946746 |          |  |
| 11 | UA-IFASA-5376                         | 0 | 66974370 |          |  |
| 11 | ARS-BFGL-NGS-78948                    | 0 | 67016791 |          |  |
| 11 | ARS-BFGL-NGS-80773                    | 0 | 67059602 |          |  |
| 11 | Hapmap39479-BTA-27512                 | 0 | 67083550 |          |  |
| 11 | Hapmap30504-BTA-126653                | 0 | 67108521 |          |  |
| 11 | ARS-BFGL-NGS-64740                    | 0 | 67185874 |          |  |
| 11 | ARS-BFGL-NGS-103217                   | 0 | 67257038 |          |  |
| 11 | ARS-BFGL-NGS-116982                   | 0 | 67319888 |          |  |
| 11 | ARS-BFGL-NGS-107597                   | 0 | 67347867 |          |  |
| 11 | Hapmap48671-BTA-17038                 | 0 | 67383421 |          |  |
| 11 | ARS-BFGL-NGS-104626                   | 0 | 67421419 |          |  |
| 11 | ARS-BFGL-NGS-34099                    | 0 | 67445963 |          |  |
| 11 | ARS-BFGL-NGS-18300                    | 0 | 67498111 |          |  |
| 11 | ARS-BFGL-NGS-17152                    | 0 | 67525323 |          |  |
| 11 | ARS-BFGL-NGS-82619                    | 0 | 67559090 |          |  |
| 11 | ARS-BFGL-NGS-38946                    | 0 | 67592479 |          |  |
| 11 | ARS-BFGL-NGS-32754                    | 0 | 67626052 |          |  |
| 11 | ARS-BFGL-NGS-39751                    | 0 | 67725058 |          |  |
| 11 | ARS-BFGL-NGS-114897                   | 0 | 67750746 |          |  |
| 11 | Hapmap41399-BTA-101088                | 0 | 67803326 |          |  |
| 11 | BTA-101085-no-rs                      | 0 | 67830333 |          |  |
| 11 | ARS-BFGL-NGS-19000                    |   | 67862943 |          |  |
| 11 | Hapmap51371-BTA-101084                | 0 | 67892519 |          |  |
| 11 | BTA-07453-no-rs                       | 0 | 67944693 |          |  |
| 11 | Hapmap48260-BTA-24589                 | 0 | 68036682 |          |  |
| 11 | BTA-101072-no-rs                      | 0 | 68085486 |          |  |
| 11 | ARS-BFGL-NGS-110881                   | 0 | 68120700 |          |  |
| 11 | Hapmap30491-BTA-101069                | 0 | 68252245 |          |  |
| 11 | Hapmap34845-BES7_Contig520_696        | 0 |          | 68277183 |  |
| 11 | Hapmap12055-BTA-86516                 | 0 | 68298497 |          |  |
| 11 | ARS-BFGL-NGS-116693                   | 0 | 68352879 |          |  |
| 11 | ARS-BFGL-BAC-15562                    | 0 | 68395814 |          |  |

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| 11 | Hapmap30773-BTA-126669          | 0 | 68484211 |  |
| 11 | Hapmap35713-SCAFFOLD296111_2548 | 0 | 68592752 |  |
| 11 | BTA-101106-no-rs                | 0 | 68614963 |  |
| 11 | ARS-BFGL-NGS-93037              | 0 | 68662418 |  |
| 11 | ARS-BFGL-NGS-10829              | 0 | 68687376 |  |
| 11 | ARS-BFGL-NGS-13199              | 0 | 68727902 |  |
| 11 | ARS-BFGL-NGS-26272              | 0 | 68759678 |  |
| 11 | BTA-102127-no-rs                | 0 | 68792124 |  |
| 11 | ARS-BFGL-NGS-118730             | 0 | 68820809 |  |
| 11 | ARS-BFGL-NGS-108785             | 0 | 68860065 |  |
| 11 | Hapmap35323-BES2_Contig305_891  | 0 | 68914228 |  |
| 11 | ARS-BFGL-NGS-556                | 0 | 68938216 |  |
| 11 | Hapmap42399-BTA-102134          | 0 | 68972281 |  |
| 11 | BTA-102140-no-rs                | 0 | 69015403 |  |
| 11 | Hapmap36263-SCAFFOLD265651_7554 | 0 | 69039926 |  |
| 11 | ARS-BFGL-NGS-114204             | 0 | 69103108 |  |
| 11 | ARS-BFGL-NGS-77753              | 0 | 69155670 |  |
| 11 | Hapmap45971-BTA-102151          | 0 | 69190084 |  |
| 11 | Hapmap27139-BTA-102152          | 0 | 69216078 |  |
| 11 | ARS-BFGL-BAC-15570              | 0 | 69240871 |  |
| 11 | ARS-BFGL-NGS-70302              | 0 | 69270522 |  |
| 11 | Hapmap55492-rs29026395          | 0 | 69303324 |  |
| 11 | ARS-BFGL-BAC-15571              | 0 | 69380054 |  |
| 11 | ARS-BFGL-NGS-67531              | 0 | 69418071 |  |
| 11 | ARS-BFGL-NGS-30983              | 0 | 69471955 |  |
| 11 | Hapmap47549-BTA-25561           | 0 | 69506822 |  |
| 11 | ARS-BFGL-NGS-14201              | 0 | 69529012 |  |
| 11 | ARS-BFGL-NGS-110885             | 0 | 69566554 |  |
| 11 | ARS-BFGL-NGS-110913             | 0 | 69593730 |  |
| 11 | Hapmap35208-BES3_Contig297_740  | 0 | 69617008 |  |
| 11 | ARS-BFGL-NGS-78923              | 0 | 69634769 |  |
| 11 | BTA-105548-no-rs                | 0 | 69666879 |  |
| 11 | Hapmap38370-BTA-105543          | 0 | 69725296 |  |
| 11 | BTA-28851-no-rs                 | 0 | 69790768 |  |
| 11 | BTA-28849-no-rs                 | 0 | 69835914 |  |
| 11 | ARS-BFGL-NGS-22048              | 0 | 69884769 |  |
| 11 | Hapmap29422-BTA-120570          | 0 | 69918099 |  |
| 11 | BTA-28852-no-rs                 | 0 | 70016398 |  |
| 11 | ARS-BFGL-NGS-10615              | 0 | 70065583 |  |
| 11 | ARS-BFGL-NGS-103799             | 0 | 70106153 |  |
| 11 | ARS-BFGL-NGS-26049              | 0 | 70134982 |  |
| 11 | Hapmap41131-BTA-103178          | 0 | 70201515 |  |
| 11 | Hapmap55927-rs29010962          | 0 | 70244530 |  |
| 11 | BTA-103170-no-rs                | 0 | 70286019 |  |
| 11 | ARS-BFGL-NGS-51970              | 0 | 70309933 |  |
| 11 | ARS-BFGL-NGS-91259              | 0 | 70333410 |  |
| 11 | Hapmap53195-rs29011519          | 0 | 70363411 |  |
| 11 | ARS-BFGL-NGS-28978              | 0 | 70438902 |  |
| 11 | Hapmap22740-BTA-126683          | 0 | 70487203 |  |
| 11 | ARS-BFGL-NGS-101356             | 0 | 70537728 |  |
| 11 | ARS-BFGL-NGS-36271              | 0 | 70597052 |  |
| 11 | ARS-BFGL-NGS-101505             | 0 | 70645590 |  |
| 11 | Hapmap51788-BTA-102182          | 0 | 70703633 |  |
| 11 | UA-IFASA-7706                   | 0 | 70750209 |  |



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| 11 | ARS-BFGL-NGS-106427              | 0        | 70777171 |          |
| 11 | Hapmap48562-BTA-102172           | 0        | 70830080 |          |
| 11 | Hapmap40038-BTA-102170           | 0        | 70879221 |          |
| 11 | ARS-BFGL-NGS-110450              | 0        | 71048976 |          |
| 11 | BTA-07322-no-rs                  | 0        | 71090191 |          |
| 11 | ARS-BFGL-NGS-116338              | 0        | 71117880 |          |
| 11 | ARS-BFGL-NGS-35608               | 0        | 71168249 |          |
| 11 | Hapmap30774-BTA-126783           | 0        | 71190087 |          |
| 11 | ARS-BFGL-NGS-20385               | 0        | 71251616 |          |
| 11 | ARS-BFGL-NGS-20691               | 0        | 71305272 |          |
| 11 | ARS-BFGL-NGS-52380               | 71343431 |          |          |
| 11 | ARS-BFGL-NGS-106460              | 0        | 71365918 |          |
| 11 | ARS-BFGL-NGS-66964               | 0        | 71391284 |          |
| 11 | Hapmap57647-rs29022293           | 0        | 71465910 |          |
| 11 | Hapmap36578-SCAFFOLD155529_13150 | 0        |          | 71520448 |
| 11 | Hapmap26983-BTA-150202           | 0        | 71623956 |          |
| 11 | ARS-BFGL-NGS-118456              | 0        | 71648772 |          |
| 11 | Hapmap31137-BTA-150206           | 0        | 71703366 |          |
| 11 | ARS-BFGL-BAC-15583               | 0        | 71734779 |          |
| 11 | Hapmap24000-BTA-150203           | 0        | 71811673 |          |
| 11 | ARS-BFGL-BAC-11763               | 0        | 71834635 |          |
| 11 | BTA-05094-no-rs                  | 0        | 71875910 |          |
| 11 | ARS-BFGL-NGS-42213               | 0        | 71901321 |          |
| 11 | Hapmap22700-BTA-126702           | 0        | 71936842 |          |
| 11 | Hapmap42771-BTA-104230           | 0        | 72069940 |          |
| 11 | BTA-104232-no-rs                 | 0        | 72091322 |          |
| 11 | Hapmap50593-BTA-120868           | 0        | 72159929 |          |
| 11 | Hapmap25882-BTA-155396           | 0        | 72190526 |          |
| 11 | ARS-BFGL-NGS-35655               | 0        | 72248536 |          |
| 11 | Hapmap57141-rs29027886           | 0        | 72305922 |          |
| 11 | ARS-BFGL-NGS-37893               | 0        | 72476622 |          |
| 11 | ARS-BFGL-NGS-16460               | 0        | 72524223 |          |
| 11 | ARS-BFGL-NGS-20173               | 0        | 72555948 |          |
| 11 | Hapmap29423-BTA-126740           | 0        | 72635559 |          |
| 11 | ARS-BFGL-NGS-61620               | 72732727 |          |          |
| 11 | Hapmap44798-BTA-104292           | 0        | 72767035 |          |
| 11 | ARS-BFGL-NGS-24347               | 0        | 72808667 |          |
| 11 | Hapmap633-BTA-104291             | 0        | 72844521 |          |
| 11 | ARS-BFGL-NGS-116021              | 0        | 72864887 |          |
| 11 | ARS-BFGL-NGS-22364               | 0        | 72900738 |          |
| 11 | ARS-BFGL-NGS-110283              | 0        | 72940410 |          |
| 11 | ARS-BFGL-NGS-74702               | 0        | 72973534 |          |
| 11 | ARS-BFGL-NGS-11057               | 0        | 73014799 |          |
| 11 | ARS-BFGL-NGS-20479               | 0        | 73042236 |          |
| 11 | ARS-BFGL-NGS-83128               | 0        | 73068822 |          |
| 11 | ARS-BFGL-NGS-12662               | 0        | 73092085 |          |
| 11 | ARS-BFGL-NGS-84969               | 0        | 73119591 |          |
| 11 | ARS-BFGL-NGS-37998               | 0        | 73150873 |          |
| 11 | Hapmap58572-ss46526046           | 0        | 73216006 |          |
| 11 | ARS-BFGL-NGS-95165               | 0        | 73295899 |          |
| 11 | ARS-BFGL-NGS-111034              | 0        | 73423641 |          |
| 11 | ARS-BFGL-NGS-41448               | 0        | 73470176 |          |
| 11 | BTA-104271-no-rs                 | 0        | 73514952 |          |
| 11 | Hapmap27575-BTA-126727           | 0        | 73753220 |          |

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| 11 | Hapmap51991-BTA-104263        | 0 | 73823078 |  |
| 11 | ARS-BFGL-NGS-533              | 0 | 73934314 |  |
| 11 | ARS-BFGL-NGS-26350            | 0 | 73976212 |  |
| 11 | ARS-BFGL-NGS-115531           | 0 | 74038177 |  |
| 11 | ARS-BFGL-NGS-102717           | 0 | 74079196 |  |
| 11 | Hapmap35883-POMC_121F2-SNP1   | 0 | 74116630 |  |
| 11 | ARS-BFGL-NGS-39507            | 0 | 74139241 |  |
| 11 | BTA-104251-no-rs              | 0 | 74160869 |  |
| 11 | ARS-BFGL-NGS-111941           | 0 | 74197538 |  |
| 11 | ARS-BFGL-NGS-96144            | 0 | 74237492 |  |
| 11 | ARS-BFGL-NGS-95312            | 0 | 74332869 |  |
| 11 | ARS-BFGL-NGS-90250            | 0 | 74354594 |  |
| 11 | ARS-BFGL-NGS-65485            | 0 | 74414798 |  |
| 11 | BTA-12956-rs29024900          | 0 | 74458809 |  |
| 11 | BTA-104238-no-rs              | 0 | 74487412 |  |
| 11 | ARS-BFGL-BAC-11783            | 0 | 74603943 |  |
| 11 | ARS-BFGL-NGS-64380            |   | 74739772 |  |
| 11 | Hapmap51971-BTA-18711         | 0 | 74867653 |  |
| 11 | Hapmap31722-BTA-126747        | 0 | 74983748 |  |
| 11 | ARS-BFGL-NGS-19413            | 0 | 75039655 |  |
| 11 | ARS-BFGL-NGS-41101            | 0 | 75089365 |  |
| 11 | Hapmap51794-BTA-105248        | 0 | 75259019 |  |
| 11 | Hapmap39303-BTA-105247        | 0 | 75295616 |  |
| 11 | ARS-BFGL-NGS-110868           | 0 | 75329413 |  |
| 11 | ARS-BFGL-NGS-119401           | 0 | 75352649 |  |
| 11 | ARS-BFGL-NGS-11925            | 0 | 75381605 |  |
| 11 | ARS-BFGL-NGS-108039           | 0 | 75461248 |  |
| 11 | ARS-BFGL-NGS-58504            | 0 | 75471064 |  |
| 11 | ARS-BFGL-NGS-45230            |   | 75495975 |  |
| 11 | ARS-BFGL-NGS-18369            | 0 | 75519957 |  |
| 11 | ARS-BFGL-NGS-102827           | 0 | 75564305 |  |
| 11 | ARS-BFGL-NGS-113325           | 0 | 75586338 |  |
| 11 | ARS-BFGL-NGS-53123            | 0 | 75662200 |  |
| 11 | ARS-BFGL-NGS-12720            | 0 | 75684514 |  |
| 11 | ARS-BFGL-NGS-35610            | 0 | 75726030 |  |
| 11 | Hapmap47819-BTA-105250        | 0 | 75760570 |  |
| 11 | ARS-BFGL-NGS-89642            | 0 | 75811425 |  |
| 11 | ARS-BFGL-NGS-24112            | 0 | 75879665 |  |
| 11 | Hapmap25799-BTA-126762        | 0 | 75976999 |  |
| 11 | ARS-BFGL-NGS-113105           | 0 | 76012286 |  |
| 11 | BTA-105268-no-rs              | 0 | 76171277 |  |
| 11 | ARS-BFGL-NGS-112276           | 0 | 76290356 |  |
| 11 | ARS-BFGL-NGS-66357            | 0 | 76354822 |  |
| 11 | Hapmap58551-rs29023108        | 0 | 76488136 |  |
| 11 | Hapmap39707-BTA-105289        | 0 | 76523004 |  |
| 11 | Hapmap54750-rs29013770        | 0 | 76579962 |  |
| 11 | Hapmap50195-BTA-105299        | 0 | 76615660 |  |
| 11 | Hapmap44632-BTA-105300        | 0 | 76675708 |  |
| 11 | Hapmap42047-BTA-106297        | 0 | 76765426 |  |
| 11 | ARS-BFGL-NGS-92911            | 0 | 76910253 |  |
| 11 | Hapmap51377-BTA-106302        | 0 | 76931025 |  |
| 11 | Hapmap53396-rs29011284        | 0 | 77012581 |  |
| 11 | Hapmap36385-SCAFFOLD47483_528 | 0 | 77048628 |  |
| 11 | Hapmap51378-BTA-106310        | 0 | 77076811 |  |

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| 11 | Hapmap33713-BTA-126768           | 0 | 77098826 |          |
| 11 | ARS-BFGL-BAC-66360               |   | 77119759 |          |
| 11 | Hapmap40478-BTA-106311           | 0 | 77159423 |          |
| 11 | Hapmap34906-BES11_Contig369_1053 | 0 |          | 77235847 |
| 11 | Hapmap61046-rs29018852           | 0 | 77274120 |          |
| 11 | ARS-BFGL-BAC-66410               |   | 77298454 |          |
| 11 | Hapmap42783-BTA-106327           | 0 | 77330791 |          |
| 11 | ARS-BFGL-NGS-80260               | 0 | 77353382 |          |
| 11 | ARS-BFGL-NGS-107543              | 0 | 77404521 |          |
| 11 | ARS-BFGL-NGS-56195               | 0 | 77493775 |          |
| 11 | ARS-BFGL-NGS-89190               |   | 77560928 |          |
| 11 | UA-IFASA-4453                    | 0 | 77735570 |          |
| 11 | ARS-BFGL-NGS-25709               | 0 | 77763464 |          |
| 11 | Hapmap48969-BTA-98116            | 0 | 77801029 |          |
| 11 | ARS-BFGL-NGS-65446               | 0 | 77825701 |          |
| 11 | ARS-BFGL-NGS-117322              | 0 | 77884744 |          |
| 11 | ARS-BFGL-NGS-105767              | 0 | 77911153 |          |
| 11 | ARS-BFGL-NGS-23094               | 0 | 77935514 |          |
| 11 | ARS-BFGL-NGS-61477               | 0 | 78001260 |          |
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| 11 | ARS-BFGL-NGS-16050               | 0 | 78114859 |          |
| 11 | ARS-BFGL-NGS-38413               | 0 | 78149242 |          |
| 11 | ARS-BFGL-NGS-73132               | 0 | 78290130 |          |
| 11 | ARS-BFGL-NGS-30299               | 0 | 78320656 |          |
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| 11 | ARS-BFGL-NGS-114020              | 0 | 78420248 |          |
| 11 | Hapmap27861-BTA-126818           | 0 | 78468627 |          |
| 11 | ARS-BFGL-NGS-11105               | 0 | 78510118 |          |
| 11 | Hapmap41140-BTA-107332           | 0 | 78545016 |          |
| 11 | Hapmap24334-BTA-126817           | 0 | 78645742 |          |
| 11 | ARS-BFGL-NGS-32286               | 0 | 78685302 |          |
| 11 | ARS-BFGL-NGS-85521               | 0 | 78708174 |          |
| 11 | ARS-BFGL-NGS-117037              | 0 | 78728798 |          |
| 11 | ARS-BFGL-NGS-93089               | 0 | 78755260 |          |
| 11 | ARS-BFGL-NGS-53147               | 0 | 78786007 |          |
| 11 | ARS-BFGL-NGS-13940               | 0 | 78831137 |          |
| 11 | ARS-BFGL-NGS-14403               | 0 | 79014697 |          |
| 11 | ARS-BFGL-NGS-116708              | 0 | 79051605 |          |
| 11 | ARS-BFGL-NGS-86115               | 0 | 79072589 |          |
| 11 | ARS-BFGL-NGS-19310               |   | 79092690 |          |
| 11 | ARS-BFGL-NGS-16123               | 0 | 79120293 |          |
| 11 | ARS-BFGL-NGS-27900               | 0 | 79150380 |          |
| 11 | ARS-BFGL-NGS-108206              | 0 | 79174664 |          |
| 11 | Hapmap25510-BTA-126799           | 0 | 79251237 |          |
| 11 | Hapmap30206-BTA-126797           | 0 | 79314962 |          |
| 11 | BTA-99263-no-rs                  | 0 | 79493646 |          |
| 11 | Hapmap54785-rs29011068           | 0 | 79516725 |          |
| 11 | Hapmap49851-BTA-107323           | 0 | 79657302 |          |
| 11 | BTA-107324-no-rs                 | 0 | 79689265 |          |
| 11 | BTA-107325-no-rs                 | 0 | 79713197 |          |
| 11 | Hapmap51367-BTA-99264            | 0 | 79776541 |          |
| 11 | Hapmap59372-rs29018442           | 0 | 79801116 |          |
| 11 | ARS-BFGL-NGS-106479              | 0 | 79852413 |          |
| 11 | ARS-BFGL-NGS-85638               | 0 | 79889994 |          |

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| 11 | Hapmap27739-BTA-126803 | 0 | 80047731 |
| 11 | BTA-107321-no-rs       | 0 | 80107135 |
| 11 | ARS-BFGL-NGS-85945     | 0 | 80187038 |
| 11 | ARS-BFGL-BAC-72820     | 0 | 80220452 |
| 11 | Hapmap39216-BTA-107320 | 0 | 80261461 |
| 11 | BTA-107309-no-rs       | 0 | 80283508 |
| 11 | Hapmap55785-rs29024486 | 0 | 80333103 |
| 11 | Hapmap47169-BTA-107308 | 0 | 80450475 |
| 11 | Hapmap44494-BTA-90423  | 0 | 80637936 |
| 11 | Hapmap43398-BTA-90422  | 0 | 80660777 |
| 11 | Hapmap53035-rs29011511 | 0 | 80682671 |
| 11 | Hapmap54112-rs29011508 | 0 | 80706513 |
| 11 | ARS-BFGL-NGS-41612     | 0 | 80730546 |
| 11 | ARS-BFGL-NGS-95608     | 0 | 80774399 |
| 11 | ARS-BFGL-NGS-25539     | 0 | 80839258 |
| 11 | ARS-BFGL-NGS-72120     | 0 | 80897892 |
| 11 | ARS-BFGL-BAC-11115     | 0 | 80922710 |
| 11 | ARS-BFGL-BAC-11121     | 0 | 80948516 |
| 11 | ARS-BFGL-BAC-16257     | 0 | 80982482 |
| 11 | Hapmap26978-BTA-148860 | 0 | 81077622 |
| 11 | ARS-BFGL-NGS-91517     | 0 | 81282660 |
| 11 | Hapmap53435-rs29020497 | 0 | 81352123 |
| 11 | Hapmap49431-BTA-107663 | 0 | 81459546 |
| 11 | BTA-107661-no-rs       | 0 | 81484369 |
| 11 | Hapmap39249-BTA-107660 | 0 | 81568010 |
| 11 | Hapmap58678-rs29019237 | 0 | 81689400 |
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| 11 | ARS-BFGL-NGS-105586    | 0 | 81845043 |
| 11 | Hapmap53157-rs29013358 | 0 | 81887656 |
| 11 | ARS-BFGL-NGS-15340     | 0 | 81948811 |
| 11 | ARS-BFGL-NGS-44270     | 0 | 81988596 |
| 11 | Hapmap44047-BTA-25137  | 0 | 82087156 |
| 11 | ARS-BFGL-NGS-116520    | 0 | 82182413 |
| 11 | ARS-BFGL-NGS-26123     | 0 | 82236437 |
| 11 | ARS-BFGL-NGS-31712     | 0 | 82282516 |
| 11 | ARS-BFGL-NGS-17721     | 0 | 82324709 |
| 11 | ARS-BFGL-NGS-88133     | 0 | 82409810 |
| 11 | ARS-BFGL-NGS-87124     | 0 | 82433558 |
| 11 | ARS-BFGL-NGS-98531     | 0 | 82548897 |
| 11 | ARS-BFGL-NGS-103293    | 0 | 82614093 |
| 11 | Hapmap46768-BTA-117394 | 0 | 82643114 |
| 11 | Hapmap3246-BTA-17059   | 0 | 82688494 |
| 11 | Hapmap40665-BTA-119811 | 0 | 82726422 |
| 11 | BTA-119803-no-rs       | 0 | 82811186 |
| 11 | ARS-BFGL-NGS-53710     | 0 | 82833655 |
| 11 | ARS-BFGL-NGS-93601     | 0 | 82920732 |
| 11 | ARS-BFGL-NGS-19406     | 0 | 82959206 |
| 11 | Hapmap56387-rs29014077 | 0 | 82982779 |
| 11 | ARS-BFGL-NGS-56620     | 0 | 83028893 |
| 11 | Hapmap29741-BTA-158857 | 0 | 83072589 |
| 11 | ARS-BFGL-NGS-62220     | 0 | 83099183 |
| 11 | ARS-BFGL-NGS-118794    | 0 | 83132988 |
| 11 | Hapmap22874-BTA-153755 | 0 | 83168133 |
| 11 | ARS-BFGL-NGS-18848     | 0 | 83192752 |

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| 11 | ARS-BFGL-NGS-117663    | 0        | 83219755 |
| 11 | ARS-BFGL-NGS-39818     | 0        | 83285910 |
| 11 | Hapmap31539-BTA-49825  | 0        | 83357256 |
| 11 | ARS-BFGL-NGS-13091     | 0        | 83426839 |
| 11 | Hapmap40477-BTA-105881 | 0        | 83526455 |
| 11 | Hapmap46918-BTA-105873 | 0        | 83553172 |
| 11 | ARS-BFGL-NGS-109727    | 0        | 83585365 |
| 11 | ARS-BFGL-NGS-63978     | 0        | 83637998 |
| 11 | ARS-BFGL-NGS-31004     | 0        | 83661143 |
| 11 | Hapmap40163-BTA-107343 | 0        | 83681904 |
| 11 | ARS-BFGL-NGS-41942     | 0        | 83737492 |
| 11 | ARS-BFGL-NGS-102088    | 0        | 83796925 |
| 11 | BTA-108432-no-rs       | 0        | 83835205 |
| 11 | ARS-BFGL-NGS-34903     | 0        | 83867859 |
| 11 | ARS-BFGL-BAC-73210     | 83911173 |          |
| 11 | Hapmap52546-rs29026760 | 0        | 83938054 |
| 11 | ARS-BFGL-BAC-73190     | 83972216 |          |
| 11 | BTA-108440-no-rs       | 0        | 84083499 |
| 11 | ARS-BFGL-BAC-73360     | 84410993 |          |
| 11 | Hapmap40930-BTA-26841  | 0        | 84641360 |
| 11 | Hapmap25343-BTA-163074 | 0        | 84701516 |
| 11 | BTA-26840-no-rs        | 0        | 84784082 |
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| 11 | ARS-BFGL-NGS-20150     | 84872349 |          |
| 11 | ARS-BFGL-NGS-83288     | 0        | 84899274 |
| 11 | Hapmap28038-BTA-126868 | 0        | 84947879 |
| 11 | ARS-BFGL-NGS-106748    | 0        | 84974574 |
| 11 | Hapmap59639-rs29012044 | 0        | 84997734 |
| 11 | BTA-120874-no-rs       | 0        | 85021084 |
| 11 | Hapmap29725-BTA-139107 | 0        | 85097357 |
| 11 | Hapmap52066-rs29015690 | 0        | 85153576 |
| 11 | BTA-61777-no-rs        | 0        | 85192381 |
| 11 | ARS-BFGL-NGS-37939     | 0        | 85215807 |
| 11 | ARS-BFGL-NGS-107825    | 0        | 85270375 |
| 11 | ARS-BFGL-NGS-110235    | 0        | 85367073 |
| 11 | ARS-BFGL-NGS-43769     | 0        | 85445919 |
| 11 | Hapmap57048-rs29017217 | 0        | 85574952 |
| 11 | ARS-BFGL-NGS-111563    | 0        | 85740344 |
| 11 | Hapmap39304-BTA-109342 | 0        | 85779114 |
| 11 | BTA-109337-no-rs       | 0        | 85846453 |
| 11 | Hapmap38876-BTA-109334 | 0        | 85906433 |
| 11 | BTA-120876-no-rs       | 0        | 85935590 |
| 11 | ARS-BFGL-NGS-108297    | 0        | 85982743 |
| 11 | ARS-BFGL-NGS-14236     | 0        | 86048363 |
| 11 | ARS-BFGL-NGS-31396     | 0        | 86071763 |
| 11 | ARS-BFGL-NGS-115717    | 0        | 86093825 |
| 11 | ARS-BFGL-NGS-115957    | 0        | 86182547 |
| 11 | Hapmap48178-BTA-109351 | 0        | 86242159 |
| 11 | ARS-BFGL-NGS-89249     | 0        | 86381892 |
| 11 | ARS-BFGL-NGS-26276     | 0        | 86455167 |
| 11 | ARS-BFGL-NGS-104379    | 0        | 86497486 |
| 11 | Hapmap53648-rs29021240 | 0        | 86569656 |
| 11 | ARS-BFGL-NGS-70611     | 0        | 86613134 |
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| 11 | ARS-BFGL-NGS-116569    | 0        | 86751976 |
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| 11 | ARS-BFGL-NGS-43715     | 0        | 86888060 |
| 11 | ARS-BFGL-NGS-17731     | 0        | 86926025 |
| 11 | ARS-BFGL-NGS-35730     | 0        | 86965492 |
| 11 | ARS-BFGL-NGS-90069     | 0        | 87004961 |
| 11 | ARS-BFGL-NGS-21314     | 0        | 87035961 |
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| 11 | ARS-BFGL-NGS-33784     | 0        | 87124625 |
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| 11 | Hapmap52090-rs29022201 | 0        | 87201011 |
| 11 | BTA-10539-no-rs        | 0        | 87235587 |
| 11 | BTA-110370-no-rs       | 0        | 87257595 |
| 11 | ARS-BFGL-NGS-114578    | 0        | 87279008 |
| 11 | ARS-BFGL-NGS-64278     | 0        | 87342165 |
| 11 | ARS-BFGL-NGS-42014     | 0        | 87380604 |
| 11 | ARS-BFGL-NGS-89483     | 0        | 87405137 |
| 11 | ARS-BFGL-NGS-102660    | 0        | 87455875 |
| 11 | ARS-BFGL-BAC-16216     | 0        | 87498559 |
| 11 | BTA-110426-no-rs       | 0        | 87552531 |
| 11 | ARS-BFGL-BAC-16215     | 0        | 87578836 |
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| 11 | BTA-110429-no-rs       | 0        | 87670344 |
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| 11 | ARS-BFGL-NGS-83068     | 0        | 87913641 |
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| 11 | ARS-BFGL-NGS-113560    | 0        | 88074583 |
| 11 | ARS-BFGL-NGS-25119     | 0        | 88096474 |
| 11 | ARS-BFGL-NGS-57488     | 0        | 88155618 |
| 11 | Hapmap46930-BTA-111382 | 0        | 88186796 |
| 11 | Hapmap30207-BTA-126940 | 0        | 88213919 |
| 11 | ARS-BFGL-NGS-22703     | 0        | 88257720 |
| 11 | Hapmap28132-BTA-149463 | 0        | 88377200 |
| 11 | ARS-BFGL-NGS-105605    | 0        | 88416017 |
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| 11 | Hapmap39967-BTA-111376 | 0        | 88596997 |
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| 11 | ARS-BFGL-NGS-12282     | 0        | 88669116 |
| 11 | ARS-BFGL-NGS-18890     | 0        | 88712798 |
| 11 | ARS-BFGL-NGS-68659     | 0        | 88744811 |
| 11 | Hapmap25021-BTA-126934 | 0        | 88832715 |
| 11 | ARS-BFGL-NGS-37849     | 0        | 88902399 |
| 11 | ARS-BFGL-NGS-83535     | 0        | 89023569 |
| 11 | BTA-04022-rs29014389   | 0        | 89058589 |
| 11 | ARS-BFGL-NGS-39719     | 0        | 89081028 |

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| 11 | ARS-BFGL-NGS-79604     | 0 89236308 |
| 11 | Hapmap42125-BTA-19379  | 0 89279221 |
| 11 | ARS-BFGL-NGS-28030     | 0 89338824 |
| 11 | Hapmap31724-BTA-126967 | 0 89371911 |
| 11 | Hapmap39619-BTA-112418 | 0 89466244 |
| 11 | ARS-BFGL-NGS-97969     | 0 89497577 |
| 11 | ARS-BFGL-NGS-19594     | 0 89552045 |
| 11 | Hapmap48617-BTA-112423 | 0 89589073 |
| 11 | Hapmap59373-rs29018501 | 0 89627301 |
| 11 | BTA-26109-no-rs        | 0 89655918 |
| 11 | ARS-BFGL-NGS-117441    | 0 89680768 |
| 11 | ARS-BFGL-NGS-14404     | 0 89770848 |
| 11 | ARS-BFGL-NGS-19701     | 0 89843860 |
| 11 | ARS-BFGL-NGS-17353     | 0 89880876 |
| 11 | ARS-BFGL-NGS-42603     | 0 89933322 |
| 11 | ARS-BFGL-NGS-39644     | 0 89973106 |
| 11 | Hapmap39886-BTA-112449 | 0 90076342 |
| 11 | Hapmap60356-rs29024194 | 0 90100118 |
| 11 | BTA-112448-no-rs       | 0 90131383 |
| 11 | ARS-BFGL-NGS-114789    | 0 90175621 |
| 11 | ARS-BFGL-NGS-79395     | 0 90215622 |
| 11 | BTA-112435-no-rs       | 0 90280832 |
| 11 | Hapmap58113-rs29014432 | 0 90343975 |
| 11 | ARS-BFGL-NGS-61730     | 0 90365254 |
| 11 | ARS-BFGL-NGS-27587     | 0 90388849 |
| 11 | ARS-BFGL-NGS-19031     | 0 90416748 |
| 11 | ARS-BFGL-NGS-87457     | 0 90474818 |
| 11 | Hapmap39716-BTA-112467 | 0 90501543 |
| 11 | Hapmap29966-BTA-126982 | 0 90528031 |
| 11 | ARS-BFGL-NGS-92082     | 0 90738123 |
| 11 | Hapmap31368-BTA-113494 | 0 90816469 |
| 11 | ARS-BFGL-NGS-102272    | 0 90876399 |
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| 11 | ARS-BFGL-NGS-30162     | 0 91068648 |
| 11 | Hapmap57682-rs29016418 | 0 91108018 |
| 11 | ARS-BFGL-NGS-107025    | 0 91133440 |
| 11 | Hapmap54254-rs29018336 | 0 91172628 |
| 11 | ARS-BFGL-NGS-34117     | 0 91205321 |
| 11 | ARS-BFGL-BAC-14322     | 0 91248735 |
| 11 | ARS-BFGL-NGS-14976     | 0 91328544 |
| 11 | ARS-BFGL-NGS-27341     | 0 91438914 |
| 11 | BTA-118584-no-rs       | 0 91459488 |
| 11 | BTA-118582-no-rs       | 0 91501099 |
| 11 | ARS-BFGL-NGS-118290    | 0 91525186 |
| 11 | BTA-118578-no-rs       | 0 91546547 |
| 11 | ARS-BFGL-NGS-44412     | 0 91578841 |
| 11 | Hapmap24852-BTA-149801 | 0 91603968 |
| 11 | BTA-93319-no-rs        | 0 91639283 |
| 11 | Hapmap40888-BTA-113548 | 0 91680069 |
| 11 | Hapmap54612-rs29020979 | 0 91703925 |
| 11 | ARS-BFGL-NGS-14308     | 0 91790033 |
| 11 | BTA-109943-no-rs       | 0 91875823 |
| 11 | Hapmap30052-BTA-161211 | 0 91961667 |

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| 11 | ARS-BFGL-NGS-113523             | 0 | 91995272 |          |
| 11 | Hapmap40702-BTA-25501           | 0 | 92019964 |          |
| 11 | BTA-17666-no-rs                 | 0 | 92059274 |          |
| 11 | Hapmap26463-BTA-159947          | 0 | 92086008 |          |
| 11 | ARS-BFGL-NGS-36340              |   | 92130041 |          |
| 11 | ARS-BFGL-NGS-114332             | 0 | 92155851 |          |
| 11 | ARS-BFGL-NGS-36344              | 0 | 92179277 |          |
| 11 | BTA-21473-no-rs                 | 0 | 92245650 |          |
| 11 | Hapmap35103-BES3_Contig455_1055 | 0 |          | 92297411 |
| 11 | ARS-BFGL-NGS-39150              | 0 | 92500678 |          |
| 11 | ARS-BFGL-NGS-104266             | 0 | 92558313 |          |
| 11 | ARS-BFGL-NGS-38395              | 0 | 92594518 |          |
| 11 | ARS-BFGL-NGS-20015              | 0 | 92692190 |          |
| 11 | ARS-BFGL-NGS-69973              | 0 | 92729047 |          |
| 11 | ARS-BFGL-NGS-32722              | 0 | 92785424 |          |
| 11 | ARS-BFGL-NGS-76359              | 0 | 92912897 |          |
| 11 | ARS-BFGL-NGS-11629              | 0 | 92963716 |          |
| 11 | ARS-BFGL-NGS-20482              | 0 | 92990077 |          |
| 11 | Hapmap45793-BTA-114539          | 0 | 93027457 |          |
| 11 | ARS-BFGL-NGS-54728              | 0 | 93142448 |          |
| 11 | ARS-BFGL-NGS-26793              | 0 | 93180378 |          |
| 11 | ARS-BFGL-NGS-25612              | 0 | 93193697 |          |
| 11 | ARS-BFGL-NGS-101954             | 0 | 93220907 |          |
| 11 | ARS-BFGL-NGS-42578              | 0 | 93241685 |          |
| 11 | Hapmap51151-BTA-114546          | 0 | 93285949 |          |
| 11 | BTB-02006984                    | 0 | 93445185 |          |
| 11 | ARS-BFGL-NGS-118517             | 0 | 93546324 |          |
| 11 | BTA-114544-no-rs                | 0 | 93587894 |          |
| 11 | ARS-BFGL-NGS-18460              |   | 93612322 |          |
| 11 | ARS-BFGL-NGS-103958             | 0 | 93635833 |          |
| 11 | ARS-BFGL-NGS-112740             | 0 | 93744013 |          |
| 11 | ARS-BFGL-NGS-25824              | 0 | 93773270 |          |
| 11 | Hapmap38572-BTA-115523          | 0 | 94071468 |          |
| 11 | BTA-115525-no-rs                | 0 | 94101466 |          |
| 11 | ARS-BFGL-NGS-83728              | 0 | 94227167 |          |
| 11 | ARS-BFGL-NGS-43236              | 0 | 94331862 |          |
| 11 | Hapmap46766-BTA-115526          | 0 | 94446742 |          |
| 11 | ARS-BFGL-NGS-52470              |   | 94494230 |          |
| 11 | ARS-BFGL-NGS-116626             | 0 | 94558900 |          |
| 11 | ARS-BFGL-NGS-97869              | 0 | 94578906 |          |
| 11 | Hapmap53129-rs29022984          | 0 | 94640611 |          |
| 11 | ARS-BFGL-NGS-116123             | 0 | 94686959 |          |
| 11 | BTA-04956-no-rs                 | 0 | 94713144 |          |
| 11 | Hapmap43475-BTA-115549          | 0 | 94772650 |          |
| 11 | Hapmap27144-BTA-115554          | 0 | 95000368 |          |
| 11 | Hapmap41435-BTA-115556          | 0 | 95026013 |          |
| 11 | Hapmap57855-rs29019732          | 0 | 95150490 |          |
| 11 | ARS-BFGL-NGS-110146             | 0 | 95213372 |          |
| 11 | ARS-BFGL-NGS-35627              | 0 | 95280294 |          |
| 11 | ARS-BFGL-NGS-109752             | 0 | 95322986 |          |
| 11 | Hapmap58933-rs29010836          | 0 | 95343295 |          |
| 11 | ARS-BFGL-NGS-12150              |   | 95380767 |          |
| 11 | Hapmap32546-BTA-127035          | 0 | 95433509 |          |
| 11 | ARS-BFGL-NGS-40157              | 0 | 95468672 |          |



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| 11 | ARS-BFGL-NGS-65310               | 95501827 |          |
| 11 | ARS-BFGL-NGS-12334               | 0        | 95516698 |
| 11 | ARS-BFGL-NGS-42283               | 0        | 95543411 |
| 11 | Hapmap53866-rs29019867           | 0        | 95568110 |
| 11 | BTA-113574-no-rs                 | 0        | 95606602 |
| 11 | Hapmap45640-BTA-113575           | 0        | 95637394 |
| 11 | Hapmap50224-BTA-113577           | 0        | 95669137 |
| 11 | ARS-BFGL-NGS-104055              | 0        | 95802430 |
| 11 | Hapmap24798-BTA-127049           | 0        | 95837993 |
| 11 | ARS-BFGL-NGS-103572              | 0        | 95866118 |
| 11 | Hapmap40206-BTA-120879           | 0        | 95985648 |
| 11 | ARS-BFGL-NGS-72642               | 0        | 96024302 |
| 11 | Hapmap47514-BTA-115564           | 0        | 96074475 |
| 11 | BTA-115558-no-rs                 | 0        | 96181878 |
| 11 | ARS-BFGL-NGS-101698              | 0        | 96230130 |
| 11 | ARS-BFGL-NGS-111672              | 0        | 96280890 |
| 11 | ARS-BFGL-NGS-43490               | 0        | 96317198 |
| 11 | ARS-BFGL-NGS-63566               | 0        | 96416913 |
| 11 | Hapmap60189-rs29017117           | 0        | 96449907 |
| 11 | ARS-BFGL-NGS-50500               | 0        | 96474351 |
| 11 | ARS-BFGL-NGS-116213              | 0        | 96510040 |
| 11 | Hapmap51470-BTA-57893            | 0        | 96604598 |
| 11 | Hapmap51471-BTA-57896            | 0        | 96695596 |
| 11 | ARS-BFGL-NGS-38587               | 0        | 96777054 |
| 11 | ARS-BFGL-NGS-112273              | 0        | 96816255 |
| 11 | ARS-BFGL-NGS-61468               | 0        | 96854128 |
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| 11 | ARS-BFGL-NGS-21607               | 0        | 97059246 |
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| 11 | ARS-BFGL-NGS-117250              | 0        | 97160473 |
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| 11 | ARS-BFGL-NGS-58004               | 0        | 97252894 |
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| 11 | ARS-BFGL-NGS-118218              | 0        | 97389037 |
| 11 | ARS-BFGL-NGS-116912              | 0        | 97481834 |
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| 11 | ARS-BFGL-NGS-26030               | 0        | 98001705 |
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| 11 | ARS-BFGL-NGS-38003               | 0        | 98219856 |
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| 11 | ARS-BFGL-NGS-31097     | 0         | 103289035 |
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| 11 | ARS-BFGL-NGS-285       | 0 | 106281709 |
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| 12 | BTB-01682876           | 0 | 1570237 |
| 12 | BTB-01682750           | 0 | 1601317 |
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| 12 | ARS-BFGL-BAC-12460     | 0 | 2095868 |
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| 12 | Hapmap42892-BTA-27499  | 0 | 2548024 |
| 12 | BTB-01103269           | 0 | 2569573 |
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| 12 | ARS-BFGL-NGS-14150     |   | 2643370 |
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| 12 | ARS-BFGL-NGS-45741     | 0 | 2766536 |
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| 12 | BTB-01114131           | 0       | 3971580 |
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| 12 | BTB-01713600           | 0       | 4484840 |
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| 12 | BTA-19632-no-rs        | 0       | 4717924 |
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| 12 | BTB-00485448           | 0       | 4889853 |
| 12 | BTB-02013697           | 0       | 4995556 |
| 12 | BTB-00485995           | 0       | 5026820 |
| 12 | BTB-00485860           | 0       | 5047421 |
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| 12 | ARS-BFGL-BAC-15668     | 0       | 5142554 |
| 12 | BTB-00485641           | 0       | 5182715 |
| 12 | ARS-BFGL-BAC-15659     | 0       | 5380015 |
| 12 | BTA-31542-no-rs        | 0       | 5413602 |
| 12 | Hapmap51386-BTA-108642 | 0       | 5817779 |
| 12 | ARS-BFGL-NGS-116104    | 0       | 5924378 |
| 12 | BTA-19336-no-rs        | 0       | 5954062 |
| 12 | BTA-116819-no-rs       | 0       | 5976132 |
| 12 | Hapmap38659-BTA-15790  | 0       | 6084897 |
| 12 | BTA-122526-no-rs       | 0       | 6125700 |
| 12 | Hapmap47846-BTA-116805 | 0       | 6195101 |
| 12 | Hapmap44519-BTA-116815 | 0       | 6327801 |
| 12 | ARS-BFGL-NGS-60899     | 0       | 6381592 |
| 12 | Hapmap50851-BTA-104846 | 0       | 6426246 |
| 12 | Hapmap51647-BTA-87484  | 0       | 6557369 |
| 12 | ARS-BFGL-NGS-76440     | 6581473 |         |
| 12 | Hapmap25512-BTA-127269 | 0       | 6701430 |
| 12 | Hapmap50610-BTA-18534  | 0       | 6763647 |
| 12 | BTA-17590-no-rs        | 0       | 6812936 |
| 12 | ARS-BFGL-NGS-42639     | 0       | 6873509 |
| 12 | Hapmap59122-rs29023094 | 0       | 6909020 |
| 12 | ARS-BFGL-NGS-23454     | 0       | 6960393 |
| 12 | BTA-17518-no-rs        | 0       | 7020056 |
| 12 | ARS-BFGL-BAC-16298     | 0       | 7062725 |
| 12 | Hapmap39726-BTA-16621  | 0       | 7086925 |
| 12 | BTA-96244-no-rs        | 0       | 7179384 |

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| 12 | BTA-114126-no-rs       | 0       | 7465610  |
| 12 | BTA-112946-no-rs       | 0       | 7660934  |
| 12 | ARS-BFGL-NGS-14719     | 0       | 7685957  |
| 12 | BTA-18975-no-rs        | 0       | 7730018  |
| 12 | BTA-28903-no-rs        | 0       | 7766553  |
| 12 | Hapmap23093-BTA-156802 | 0       | 7940808  |
| 12 | Hapmap39308-BTA-113771 | 0       | 8102057  |
| 12 | Hapmap49027-BTA-113781 | 0       | 8201659  |
| 12 | ARS-BFGL-BAC-15052     | 0       | 8498778  |
| 12 | Hapmap31862-BTA-26957  | 0       | 8601430  |
| 12 | Hapmap54153-rs29021206 | 0       | 8693887  |
| 12 | ARS-BFGL-NGS-29775     | 0       | 8742724  |
| 12 | Hapmap44034-BTA-21712  | 0       | 8785719  |
| 12 | ARS-BFGL-BAC-73490     | 8839027 |          |
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| 12 | BTB-01965368           | 0       | 9079069  |
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| 12 | BTB-00486354           | 0       | 9176065  |
| 12 | BTB-00109942           | 0       | 9273807  |
| 12 | BTB-00109935           | 0       | 9283496  |
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| 12 | BTB-01649322           | 0       | 9394407  |
| 12 | Hapmap48117-BTA-90454  | 0       | 9515754  |
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| 12 | Hapmap33362-BTA-136433 | 0       | 9684661  |
| 12 | ARS-BFGL-NGS-114401    | 0       | 9728887  |
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| 12 | ARS-BFGL-NGS-25155     | 0       | 9803194  |
| 12 | BTB-01665706           | 0       | 9851720  |
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| 12 | ARS-BFGL-BAC-73870     | 9964529 |          |
| 12 | BTB-01099458           | 0       | 10054259 |
| 12 | BTA-23884-no-rs        | 0       | 10080455 |
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| 12 | ARS-BFGL-NGS-60282     | 0       | 10185506 |
| 12 | Hapmap59058-rs29016195 | 0       | 10224679 |
| 12 | BTB-01099783           | 0       | 10247689 |
| 12 | BTB-01099836           | 0       | 10297281 |
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| 12 | ARS-BFGL-NGS-112946    | 0       | 10342887 |
| 12 | Hapmap49909-BTA-20579  | 0       | 10370963 |
| 12 | ARS-BFGL-NGS-91903     | 0       | 10397472 |
| 12 | BTA-23892-no-rs        | 0       | 10423968 |
| 12 | ARS-BFGL-NGS-101603    | 0       | 10453840 |
| 12 | Hapmap23949-BTA-155557 | 0       | 10529576 |
| 12 | ARS-BFGL-NGS-111318    | 0       | 10566940 |
| 12 | BTB-01512270           | 0       | 10611104 |
| 12 | ARS-BFGL-NGS-106546    | 0       | 10657641 |
| 12 | ARS-BFGL-NGS-42607     | 0       | 10691145 |
| 12 | ARS-BFGL-NGS-101700    | 0       | 10719656 |
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| 12 | BTB-01100174                          | 0 | 10808520 |          |  |
| 12 | Hapmap35046-BES11_Contig381_736       | 0 |          | 10859759 |  |
| 12 | ARS-BFGL-NGS-21526                    | 0 | 10880359 |          |  |
| 12 | ARS-BFGL-NGS-55715                    | 0 | 10938907 |          |  |
| 12 | Hapmap48641-BTA-119400                | 0 | 10996119 |          |  |
| 12 | Hapmap58280-rs29018848                | 0 | 11105284 |          |  |
| 12 | Hapmap22720-BTA-24775                 | 0 | 11128372 |          |  |
| 12 | ARS-BFGL-NGS-43211                    | 0 | 11179949 |          |  |
| 12 | ARS-BFGL-NGS-87459                    | 0 | 11222385 |          |  |
| 12 | ARS-BFGL-NGS-71187                    | 0 | 11353817 |          |  |
| 12 | BTB-00486553                          | 0 | 11414743 |          |  |
| 12 | BTB-00487004                          | 0 | 11443955 |          |  |
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| 12 | Hapmap43230-BTA-31437                 | 0 | 11500999 |          |  |
| 12 | BTB-00487070                          | 0 | 11521313 |          |  |
| 12 | ARS-BFGL-NGS-119608                   | 0 | 11555315 |          |  |
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| 12 | ARS-BFGL-NGS-55319                    | 0 | 11653787 |          |  |
| 12 | ARS-BFGL-NGS-107216                   | 0 | 11676079 |          |  |
| 12 | BTA-31536-no-rs                       | 0 | 11701542 |          |  |
| 12 | Hapmap36756-SCAFFOLD322140_14795      | 0 |          | 11731902 |  |
| 12 | BTA-31543-no-rs                       | 0 | 11752906 |          |  |
| 12 | ARS-BFGL-NGS-30550                    |   | 11777636 |          |  |
| 12 | ARS-USMARC-Parent-DQ786763-rs29020472 | 0 |          | 11824653 |  |
| 12 | UA-IFASA-4065                         | 0 | 11824890 |          |  |
| 12 | ARS-BFGL-NGS-44030                    | 0 | 11865727 |          |  |
| 12 | BTA-120902-no-rs                      | 0 | 11908665 |          |  |
| 12 | UA-IFASA-3296                         | 0 | 11934219 |          |  |
| 12 | BTA-31552-no-rs                       | 0 | 11955547 |          |  |
| 12 | BTA-31554-no-rs                       | 0 | 11987741 |          |  |
| 12 | Hapmap53580-rs29012667                | 0 | 12041734 |          |  |
| 12 | ARS-BFGL-NGS-78831                    | 0 | 12141029 |          |  |
| 12 | BTB-01467969                          | 0 | 12200976 |          |  |
| 12 | Hapmap28312-BTA-150632                | 0 | 12256375 |          |  |
| 12 | ARS-BFGL-NGS-102031                   | 0 | 12294597 |          |  |
| 12 | Hapmap58728-rs29027441                | 0 | 12375872 |          |  |
| 12 | BTA-29033-no-rs                       | 0 | 12414267 |          |  |
| 12 | BTA-29127-no-rs                       | 0 | 12480546 |          |  |
| 12 | ARS-BFGL-NGS-54167                    | 0 | 12513750 |          |  |
| 12 | ARS-BFGL-NGS-113269                   | 0 | 12557821 |          |  |
| 12 | BTA-30071-no-rs                       | 0 | 12612422 |          |  |
| 12 | ARS-BFGL-NGS-84637                    | 0 | 12639631 |          |  |
| 12 | ARS-BFGL-NGS-27102                    | 0 | 12664697 |          |  |
| 12 | ARS-BFGL-NGS-50752                    | 0 | 12685397 |          |  |
| 12 | Hapmap27382-BTA-127292                | 0 | 12750252 |          |  |
| 12 | ARS-BFGL-NGS-22820                    |   | 12779945 |          |  |
| 12 | ARS-BFGL-NGS-33442                    | 0 | 12805107 |          |  |
| 12 | ARS-BFGL-NGS-21177                    | 0 | 12977211 |          |  |
| 12 | Hapmap50654-BTA-31559                 | 0 | 13140896 |          |  |
| 12 | Hapmap49116-BTA-31557                 | 0 | 13179696 |          |  |
| 12 | UA-IFASA-8584                         | 0 | 13204137 |          |  |
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| 12 | ARS-BFGL-NGS-72076                    | 0 | 13301311 |          |  |
| 12 | Hapmap49502-BTA-15784                 | 0 | 13326361 |          |  |

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| 12 | ARS-BFGL-NGS-18132               | 0 | 13353262 |          |
| 12 | BTA-103393-no-rs                 | 0 | 13374015 |          |
| 12 | BTA-103391-no-rs                 | 0 | 13400067 |          |
| 12 | Hapmap32107-BTA-153273           | 0 | 13422910 |          |
| 12 | ARS-BFGL-NGS-113622              | 0 | 13481865 |          |
| 12 | Hapmap41738-BTA-105872           | 0 | 13515819 |          |
| 12 | ARS-BFGL-NGS-31202               | 0 | 13559248 |          |
| 12 | Hapmap41136-BTA-105871           | 0 | 13604904 |          |
| 12 | ARS-BFGL-BAC-11792               | 0 | 13671044 |          |
| 12 | BTA-98929-no-rs                  | 0 | 13698622 |          |
| 12 | Hapmap35040-BES10_Contig531_1099 | 0 |          | 13724378 |
| 12 | ARS-BFGL-NGS-118438              | 0 | 13752664 |          |
| 12 | ARS-BFGL-NGS-87452               | 0 | 13793421 |          |
| 12 | ARS-BFGL-NGS-27490               |   | 13834028 |          |
| 12 | ARS-BFGL-BAC-11798               | 0 | 13856656 |          |
| 12 | ARS-BFGL-BAC-11801               | 0 | 13903112 |          |
| 12 | BTA-96362-no-rs                  | 0 | 13962534 |          |
| 12 | ARS-BFGL-NGS-108492              | 0 | 13983082 |          |
| 12 | Hapmap33729-BTA-160452           | 0 | 14022545 |          |
| 12 | BTB-01296488                     | 0 | 14048839 |          |
| 12 | ARS-BFGL-NGS-35078               | 0 | 14074284 |          |
| 12 | Hapmap49074-BTA-19146            | 0 | 14099914 |          |
| 12 | BTB-01475864                     | 0 | 14126668 |          |
| 12 | BTB-01296573                     | 0 | 14150980 |          |
| 12 | BTB-01296818                     | 0 | 14227828 |          |
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| 12 | BTB-01477690                     | 0 | 14358955 |          |
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| 12 | BTB-00114227                     | 0 | 14602889 |          |
| 12 | Hapmap30507-BTA-127316           | 0 | 14624098 |          |
| 12 | Hapmap59827-rs29026804           | 0 | 14654029 |          |
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| 12 | Hapmap49118-BTA-31696            | 0 | 14882746 |          |
| 12 | ARS-BFGL-BAC-11805               | 0 | 14944031 |          |
| 12 | ARS-BFGL-NGS-18629               | 0 | 15050628 |          |
| 12 | ARS-BFGL-NGS-102105              | 0 | 15103754 |          |
| 12 | ARS-BFGL-NGS-18648               | 0 | 15124411 |          |
| 12 | BTA-31588-no-rs                  | 0 | 15251837 |          |
| 12 | BTA-31578-no-rs                  | 0 | 15325401 |          |
| 12 | BTA-31575-no-rs                  | 0 | 15349303 |          |
| 12 | ARS-BFGL-NGS-94479               | 0 | 15405850 |          |
| 12 | BTA-31571-no-rs                  | 0 | 15430493 |          |
| 12 | Hapmap39990-BTA-31570            | 0 | 15441597 |          |
| 12 | Hapmap36290-SCAFFOLD191599_16698 | 0 |          | 15462779 |
| 12 | ARS-BFGL-NGS-42200               | 0 | 15573724 |          |
| 12 | ARS-BFGL-NGS-17193               | 0 | 15624531 |          |
| 12 | ARS-BFGL-NGS-108793              | 0 | 15688064 |          |
| 12 | ARS-BFGL-NGS-102369              | 0 | 15726574 |          |
| 12 | ARS-BFGL-NGS-19408               | 0 | 15753601 |          |
| 12 | ARS-BFGL-NGS-115892              | 0 | 15778700 |          |
| 12 | ARS-BFGL-NGS-17688               | 0 | 15817583 |          |

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| 12 | ARS-BFGL-NGS-80488     | 0 | 15837482 |
| 12 | ARS-BFGL-NGS-105816    | 0 | 15865286 |
| 12 | Hapmap27026-BTA-160084 | 0 | 15888596 |
| 12 | BTA-31719-no-rs        | 0 | 15937798 |
| 12 | ARS-BFGL-NGS-58789     | 0 | 16035681 |
| 12 | ARS-BFGL-NGS-55674     | 0 | 16069827 |
| 12 | ARS-BFGL-BAC-11821     | 0 | 16098884 |
| 12 | Hapmap58297-rs29023722 | 0 | 16167243 |
| 12 | ARS-BFGL-NGS-39673     | 0 | 16218277 |
| 12 | Hapmap54287-ss46526670 | 0 | 16255818 |
| 12 | ARS-BFGL-NGS-33734     | 0 | 16300115 |
| 12 | BTA-31715-no-rs        | 0 | 16326231 |
| 12 | ARS-BFGL-NGS-105749    | 0 | 16337985 |
| 12 | ARS-BFGL-NGS-84339     | 0 | 16400906 |
| 12 | Hapmap26644-BTA-127355 | 0 | 16473206 |
| 12 | Hapmap38104-BTA-31727  | 0 | 16491701 |
| 12 | BTB-00487464           | 0 | 16518473 |
| 12 | ARS-BFGL-NGS-43671     | 0 | 16546902 |
| 12 | ARS-BFGL-NGS-118239    | 0 | 16586796 |
| 12 | Hapmap46977-BTA-31741  | 0 | 16606941 |
| 12 | ARS-BFGL-NGS-28136     | 0 | 16641931 |
| 12 | ARS-BFGL-NGS-114512    | 0 | 16699315 |
| 12 | BTA-31743-no-rs        | 0 | 16732810 |
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| 12 | BTB-00487920           | 0 | 16806502 |
| 12 | Hapmap22790-BTA-127363 | 0 | 16849047 |
| 12 | Hapmap40412-BTA-31752  | 0 | 16886483 |
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| 12 | ARS-BFGL-NGS-100320    | 0 | 17004927 |
| 12 | BTA-31754-no-rs        | 0 | 17035782 |
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| 12 | ARS-BFGL-NGS-114222    | 0 | 17121591 |
| 12 | ARS-BFGL-NGS-113826    | 0 | 17150394 |
| 12 | BTB-00488399           | 0 | 17193622 |
| 12 | ARS-BFGL-BAC-12434     | 0 | 17238290 |
| 12 | ARS-BFGL-NGS-99674     | 0 | 17265269 |
| 12 | ARS-BFGL-BAC-12432     | 0 | 17454675 |
| 12 | Hapmap39741-BTA-31768  | 0 | 17514165 |
| 12 | BTB-00488482           | 0 | 17546998 |
| 12 | BTA-111971-no-rs       | 0 | 17628784 |
| 12 | ARS-BFGL-NGS-75964     | 0 | 17679745 |
| 12 | BTB-01538178           | 0 | 17703371 |
| 12 | Hapmap61148-rs29015935 | 0 | 17723687 |
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| 12 | ARS-BFGL-NGS-112294    | 0 | 18001484 |
| 12 | ARS-BFGL-NGS-29349     | 0 | 18033575 |
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| 12 | BTA-21705-no-rs        | 0 | 18195634 |
| 12 | BTA-16623-no-rs        | 0 | 18279051 |
| 12 | BTA-31795-no-rs        | 0 | 18527013 |
| 12 | ARS-BFGL-NGS-52290     | 0 | 18584913 |

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| 12 | BTA-31798-no-rs        | 0        | 18701196 |
| 12 | ARS-BFGL-NGS-10833     | 0        | 18757843 |
| 12 | BTA-31807-no-rs        | 0        | 18804912 |
| 12 | ARS-BFGL-BAC-12429     | 0        | 18855871 |
| 12 | ARS-BFGL-NGS-15329     | 0        | 18878313 |
| 12 | BTA-102802-no-rs       | 0        | 18950029 |
| 12 | ARS-BFGL-NGS-14499     | 0        | 19006540 |
| 12 | Hapmap60173-rs29026795 | 0        | 19063506 |
| 12 | BTA-20927-no-rs        | 0        | 19116631 |
| 12 | Hapmap31189-BTA-161111 | 0        | 19140235 |
| 12 | ARS-BFGL-NGS-62217     | 0        | 19169661 |
| 12 | ARS-BFGL-NGS-26839     | 0        | 19191656 |
| 12 | ARS-BFGL-NGS-110057    | 0        | 19244706 |
| 12 | ARS-BFGL-NGS-103302    | 0        | 19291126 |
| 12 | BTA-20919-no-rs        | 0        | 19336501 |
| 12 | Hapmap49780-BTA-86092  | 0        | 19406605 |
| 12 | Hapmap50932-BTA-31770  | 0        | 19433104 |
| 12 | Hapmap47565-BTA-31771  | 0        | 19462885 |
| 12 | ARS-BFGL-NGS-119610    | 0        | 19676138 |
| 12 | ARS-BFGL-NGS-43672     | 0        | 19767492 |
| 12 | ARS-BFGL-NGS-101050    | 0        | 19868800 |
| 12 | BTA-98575-no-rs        | 0        | 19900184 |
| 12 | BTA-31783-no-rs        | 0        | 19982250 |
| 12 | Hapmap39312-BTA-120905 | 0        | 20079121 |
| 12 | ARS-BFGL-NGS-21160     | 0        | 20129895 |
| 12 | ARS-BFGL-NGS-104500    | 0        | 20180276 |
| 12 | Hapmap30016-BTA-149504 | 0        | 20261439 |
| 12 | Hapmap43970-BTA-92461  | 0        | 20402284 |
| 12 | ARS-BFGL-NGS-119219    | 0        | 20434115 |
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| 12 | ARS-BFGL-NGS-30100     | 20570113 |          |
| 12 | BTA-88360-no-rs        | 0        | 20610785 |
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| 12 | ARS-BFGL-NGS-62496     | 0        | 21279986 |
| 12 | ARS-BFGL-NGS-11531     | 0        | 21315343 |
| 12 | ARS-BFGL-NGS-118769    | 0        | 21352699 |
| 12 | ARS-BFGL-NGS-33369     | 0        | 21816198 |
| 12 | ARS-BFGL-NGS-63117     | 0        | 21988137 |
| 12 | ARS-BFGL-NGS-29450     | 22059710 |          |
| 12 | ARS-BFGL-NGS-34964     | 0        | 22161726 |
| 12 | BTA-31817-no-rs        | 0        | 22219373 |
| 12 | ARS-BFGL-NGS-57040     | 0        | 22250330 |
| 12 | BTA-31818-no-rs        | 0        | 22301586 |
| 12 | ARS-BFGL-NGS-64184     | 0        | 22372861 |
| 12 | ARS-BFGL-NGS-10048     | 0        | 22393281 |
| 12 | BTA-120906-no-rs       | 0        | 22451649 |
| 12 | Hapmap43554-BTA-31822  | 0        | 22481119 |
| 12 | Hapmap52315-rs29014466 | 0        | 22664255 |
| 12 | Hapmap42862-BTA-17548  | 0        | 22705057 |

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| 12 | ARS-BFGL-NGS-23769               | 0 | 22793228 |          |
| 12 | Hapmap51176-BTA-17547            | 0 | 22863845 |          |
| 12 | ARS-BFGL-BAC-12458               | 0 | 22885975 |          |
| 12 | Hapmap38390-BTA-17559            | 0 | 22979469 |          |
| 12 | ARS-BFGL-NGS-38475               | 0 | 23046778 |          |
| 12 | Hapmap48927-BTA-86815            | 0 | 23068924 |          |
| 12 | Hapmap56571-rs29020869           | 0 | 23090031 |          |
| 12 | ARS-BFGL-NGS-110281              | 0 | 23132213 |          |
| 12 | BTA-86812-no-rs                  | 0 | 23174195 |          |
| 12 | ARS-BFGL-NGS-38957               | 0 | 23260751 |          |
| 12 | ARS-BFGL-NGS-101837              | 0 | 23282855 |          |
| 12 | ARS-BFGL-NGS-64211               | 0 | 23319980 |          |
| 12 | Hapmap48235-BTA-17587            | 0 | 23340411 |          |
| 12 | ARS-BFGL-NGS-51613               | 0 | 23450916 |          |
| 12 | Hapmap22997-BTA-127428           | 0 | 23473573 |          |
| 12 | Hapmap24208-BTA-157199           | 0 | 23549976 |          |
| 12 | Hapmap40891-BTA-115072           | 0 | 23577169 |          |
| 12 | Hapmap41756-BTA-115061           | 0 | 23725552 |          |
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| 12 | BTA-115055-no-rs                 | 0 | 23774978 |          |
| 12 | Hapmap27450-BTA-157196           | 0 | 23796102 |          |
| 12 | Hapmap58664-rs29014508           | 0 | 23874869 |          |
| 12 | ARS-BFGL-NGS-42141               | 0 | 23960686 |          |
| 12 | ARS-BFGL-NGS-59877               | 0 | 23991213 |          |
| 12 | Hapmap47789-BTA-96396            | 0 | 24585150 |          |
| 12 | ARS-BFGL-BAC-56750               | 0 | 24619280 |          |
| 12 | ARS-BFGL-NGS-61869               | 0 | 24668970 |          |
| 12 | ARS-BFGL-BAC-802                 | 0 | 24730929 |          |
| 12 | Hapmap39051-BTA-117620           | 0 | 24803254 |          |
| 12 | ARS-BFGL-BAC-12462               | 0 | 24824923 |          |
| 12 | ARS-BFGL-NGS-68202               | 0 | 24864654 |          |
| 12 | BTA-117635-no-rs                 | 0 | 24983974 |          |
| 12 | Hapmap47518-BTA-117641           | 0 | 25066554 |          |
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| 12 | ARS-BFGL-NGS-52730               | 0 | 25141005 |          |
| 12 | BTA-117645-no-rs                 | 0 | 25216679 |          |
| 12 | ARS-BFGL-NGS-21636               | 0 | 25255436 |          |
| 12 | ARS-BFGL-NGS-12145               | 0 | 25374111 |          |
| 12 | ARS-BFGL-NGS-103078              | 0 | 25412732 |          |
| 12 | ARS-BFGL-NGS-63371               | 0 | 25493014 |          |
| 12 | Hapmap48677-BTA-18532            | 0 | 25517843 |          |
| 12 | Hapmap58115-rs29014561           | 0 | 25552044 |          |
| 12 | ARS-BFGL-NGS-113220              | 0 | 25604908 |          |
| 12 | ARS-BFGL-NGS-119943              | 0 | 25662403 |          |
| 12 | ARS-USMARC-Parent-DQ786764-no-rs | 0 | 25668974 | 25668974 |
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| 12 | ARS-BFGL-NGS-58970               | 0 | 25775588 |          |
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| 12 | ARS-BFGL-BAC-12454               | 0 | 25986217 |          |
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| 12 | Hapmap27740-BTA-127447           | 0 | 26075020 |          |
| 12 | Hapmap27862-BTA-127450           | 0 | 26188157 |          |

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| 12 | Hapmap27244-BTA-19334           | 0 | 26236394 |          |
| 12 | Hapmap35355-BES8_Contig494_1036 | 0 |          | 26358215 |
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| 12 | Hapmap51425-BTA-24269           | 0 | 26558724 |          |
| 12 | Hapmap49516-BTA-18533           | 0 | 26578478 |          |
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| 12 | Hapmap38391-BTA-18545           | 0 | 26810556 |          |
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| 12 | Hapmap38392-BTA-18567           | 0 | 26967177 |          |
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| 12 | BTA-06955-no-rs                 | 0 | 27058646 |          |
| 12 | Hapmap53304-rs29024387          | 0 | 27078899 |          |
| 12 | Hapmap41772-BTA-120909          | 0 | 27133552 |          |
| 12 | Hapmap22998-BTA-127456          | 0 | 27181474 |          |
| 12 | Hapmap54741-rs29013272          | 0 | 27231432 |          |
| 12 | Hapmap41790-BTA-18584           | 0 | 27276153 |          |
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| 12 | ARS-BFGL-NGS-60507              | 0 | 27377291 |          |
| 12 | BTA-18598-no-rs                 | 0 | 27390774 |          |
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| 12 | ARS-BFGL-NGS-34818              | 0 | 27744034 |          |
| 12 | ARS-BFGL-NGS-45371              | 0 | 27807391 |          |
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| 12 | Hapmap53957-rs29016480          | 0 | 27954424 |          |
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| 12 | Hapmap58420-rs29021098          | 0 | 28052265 |          |
| 12 | ARS-BFGL-NGS-22794              | 0 | 28127197 |          |
| 12 | ARS-BFGL-NGS-110312             | 0 | 28184859 |          |
| 12 | BTA-120860-no-rs                | 0 | 28205239 |          |
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| 12 | ARS-BFGL-BAC-15012              | 0 | 28942584 |          |
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| 12 | ARS-BFGL-NGS-40668              | 0 | 29031334 |          |

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| 12 | ARS-BFGL-NGS-28116     | 0        | 29148530 |
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| 12 | Hapmap23766-BTA-152495 | 0        | 29217254 |
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| 12 | ARS-BFGL-NGS-42277     | 0        | 29372191 |
| 12 | ARS-BFGL-NGS-60085     | 0        | 29422204 |
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| 12 | BTA-18601-no-rs        | 0        | 31790894 |
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| 12 | ARS-BFGL-NGS-57294     | 0 | 32310451 |
| 12 | ARS-BFGL-BAC-15632     | 0 | 32368787 |
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| 12 | ARS-BFGL-BAC-15633     | 0 | 32508762 |
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| 12 | ARS-BFGL-NGS-15590     |   | 32777480 |
| 12 | ARS-BFGL-NGS-115095    | 0 | 32807921 |
| 12 | Hapmap41201-BTA-20646  | 0 | 32840998 |
| 12 | BTA-20647-no-rs        | 0 | 32870031 |
| 12 | Hapmap42130-BTA-20648  | 0 | 32967261 |
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| 12 | ARS-BFGL-NGS-112091    | 0 | 33121622 |
| 12 | Hapmap24800-BTA-127498 | 0 | 33150154 |
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| 12 | ARS-BFGL-NGS-61937     | 0 | 33306946 |
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| 12 | ARS-BFGL-NGS-55763     | 0 | 34635671 |
| 12 | ARS-BFGL-NGS-110443    | 0 | 34682985 |
| 12 | ARS-BFGL-NGS-22385     | 0 | 34748604 |
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| 12 | Hapmap58345-rs29010310 | 0 | 34907499 |
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| 12 | Hapmap23019-BTA-152656 | 0 | 35189028 |
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| 12 | ARS-BFGL-NGS-98585     | 0 | 35396022 |
| 12 | ARS-BFGL-NGS-72624     | 0 | 35454037 |
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| 12 | Hapmap48195-BTA-116793 | 0 | 35581416 |
| 12 | Hapmap40689-BTA-21639  | 0 | 35614532 |
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| 12 | ARS-BFGL-NGS-30197     | 0 | 35675997 |
| 12 | BTA-21634-no-rs        | 0 | 35703502 |
| 12 | Hapmap31530-BTA-21631  | 0 | 35740174 |
| 12 | Hapmap51188-BTA-21659  | 0 | 35819166 |
| 12 | BTA-21660-no-rs        | 0 | 35860041 |
| 12 | Hapmap47215-BTA-20719  | 0 | 35886159 |
| 12 | ARS-BFGL-NGS-115728    | 0 | 35934370 |
| 12 | BTA-20720-no-rs        | 0 | 35982723 |
| 12 | Hapmap42131-BTA-20723  | 0 | 36004714 |
| 12 | ARS-BFGL-NGS-18170     | 0 | 36063522 |
| 12 | ARS-BFGL-NGS-10508     | 0 | 36096213 |
| 12 | BTA-20724-no-rs        | 0 | 36155970 |
| 12 | ARS-BFGL-NGS-22089     | 0 | 36252254 |
| 12 | ARS-BFGL-NGS-14399     | 0 | 36335510 |
| 12 | ARS-BFGL-NGS-16155     | 0 | 36415307 |
| 12 | ARS-BFGL-NGS-55787     | 0 | 36475306 |
| 12 | BTA-21644-no-rs        | 0 | 36524758 |
| 12 | BTA-21641-no-rs        | 0 | 36599482 |
| 12 | ARS-BFGL-NGS-27554     | 0 | 36672231 |
| 12 | Hapmap51939-BTA-21630  | 0 | 36708993 |
| 12 | ARS-BFGL-NGS-33509     | 0 | 36764448 |
| 12 | ARS-BFGL-NGS-32801     | 0 | 36828848 |
| 12 | Hapmap26769-BTA-162373 | 0 | 36910749 |
| 12 | ARS-BFGL-NGS-82501     | 0 | 36989957 |
| 12 | ARS-BFGL-NGS-45806     | 0 | 37025686 |
| 12 | ARS-BFGL-NGS-100956    | 0 | 37110042 |
| 12 | ARS-BFGL-NGS-27730     | 0 | 37211264 |
| 12 | ARS-BFGL-NGS-59161     | 0 | 37322461 |
| 12 | Hapmap24209-BTA-157354 | 0 | 37506351 |
| 12 | ARS-BFGL-NGS-89246     | 0 | 37588238 |
| 12 | ARS-BFGL-NGS-13845     | 0 | 37678844 |
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| 12 | BTA-90709-no-rs        | 0 | 38409372 |
| 12 | Hapmap51511-BTA-87999  | 0 | 38480644 |
| 12 | BTA-27542-no-rs        | 0 | 38532399 |
| 12 | ARS-BFGL-NGS-83273     | 0 | 38589298 |
| 12 | Hapmap49412-BTA-102739 | 0 | 38660049 |
| 12 | BTA-102658-no-rs       | 0 | 38721336 |
| 12 | Hapmap52179-rs29018440 | 0 | 38825085 |
| 12 | Hapmap55243-rs29011649 | 0 | 39022698 |
| 12 | Hapmap44678-BTA-18978  | 0 | 39249662 |
| 12 | ARS-BFGL-NGS-103169    | 0 | 39426607 |
| 12 | ARS-BFGL-NGS-63417     | 0 | 39538392 |
| 12 | Hapmap43547-BTA-28238  | 0 | 39575324 |
| 12 | ARS-BFGL-NGS-20034     | 0 | 39673251 |
| 12 | ARS-BFGL-NGS-62883     | 0 | 39695130 |
| 12 | Hapmap43991-BTA-102559 | 0 | 39752637 |
| 12 | ARS-BFGL-BAC-16276     | 0 | 39801280 |
| 12 | BTA-102546-no-rs       | 0 | 39878164 |
| 12 | BTA-102528-no-rs       | 0 | 39925909 |

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| 12 | ARS-BFGL-NGS-110832    | 0        | 40009119 |
| 12 | Hapmap30291-BTA-152994 | 0        | 40170825 |
| 12 | Hapmap57051-rs29018418 | 0        | 40213160 |
| 12 | BTA-21976-no-rs        | 0        | 40331755 |
| 12 | Hapmap51421-BTA-21975  | 0        | 40396118 |
| 12 | Hapmap28034-BTA-116850 | 0        | 40559886 |
| 12 | ARS-BFGL-NGS-84218     | 0        | 40657942 |
| 12 | BTA-29432-no-rs        | 0        | 40797906 |
| 12 | Hapmap51894-BTA-29431  | 0        | 40821597 |
| 12 | Hapmap33731-BTA-160760 | 0        | 41039498 |
| 12 | Hapmap47538-BTA-19932  | 0        | 41075239 |
| 12 | Hapmap44316-BTA-93259  | 0        | 41239706 |
| 12 | BTA-93265-no-rs        | 0        | 41267489 |
| 12 | BTA-93262-no-rs        | 0        | 41430204 |
| 12 | Hapmap42762-BTA-100328 | 0        | 41479027 |
| 12 | BTA-100327-no-rs       | 0        | 41666540 |
| 12 | BTA-100318-no-rs       | 0        | 41872777 |
| 12 | Hapmap38798-BTA-100325 | 0        | 42005184 |
| 12 | ARS-BFGL-NGS-100964    | 0        | 42046435 |
| 12 | Hapmap40023-BTA-76828  | 0        | 42086283 |
| 12 | BTA-93372-no-rs        | 0        | 42221127 |
| 12 | Hapmap40149-BTA-93384  | 0        | 42314088 |
| 12 | Hapmap57953-rs29017138 | 0        | 42346189 |
| 12 | Hapmap45233-BTA-100751 | 0        | 42606004 |
| 12 | Hapmap50181-BTA-100747 | 0        | 42645523 |
| 12 | ARS-BFGL-NGS-109720    | 0        | 42709211 |
| 12 | Hapmap55276-rs29021589 | 0        | 43398340 |
| 12 | ARS-BFGL-BAC-16287     | 0        | 43551814 |
| 12 | BTA-21437-no-rs        | 0        | 43601825 |
| 12 | Hapmap53603-rs29011176 | 0        | 43638160 |
| 12 | Hapmap50916-BTA-21430  | 0        | 43683352 |
| 12 | Hapmap41206-BTA-21427  | 0        | 43735322 |
| 12 | Hapmap52274-rs29017133 | 0        | 43799317 |
| 12 | Hapmap58144-rs29020106 | 0        | 43838225 |
| 12 | ARS-BFGL-NGS-114010    | 0        | 43866499 |
| 12 | Hapmap33524-BTA-21440  | 0        | 43902185 |
| 12 | Hapmap33492-BTA-147483 | 0        | 44109687 |
| 12 | ARS-BFGL-NGS-108048    | 0        | 44133597 |
| 12 | Hapmap47762-BTA-86668  | 0        | 44245297 |
| 12 | ARS-BFGL-NGS-100396    | 0        | 44276949 |
| 12 | Hapmap52726-rs29018162 | 0        | 44326840 |
| 12 | ARS-BFGL-NGS-25840     | 44351981 |          |
| 12 | ARS-BFGL-NGS-114590    | 0        | 44402707 |
| 12 | ARS-BFGL-NGS-100985    | 0        | 44501711 |
| 12 | ARS-BFGL-BAC-830       | 0        | 44628599 |
| 12 | UA-IFASA-9547          | 0        | 44668222 |
| 12 | ARS-BFGL-NGS-39971     | 0        | 44800140 |
| 12 | BTA-113803-no-rs       | 0        | 44853729 |
| 12 | BTA-21671-no-rs        | 0        | 45002070 |
| 12 | ARS-BFGL-NGS-37934     | 0        | 45050839 |
| 12 | BTA-21672-no-rs        | 0        | 45073424 |
| 12 | ARS-BFGL-NGS-19223     | 0        | 45105758 |
| 12 | Hapmap43513-BTA-21673  | 0        | 45135480 |
| 12 | BTA-21678-no-rs        | 0        | 45196682 |

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| 12 | BTA-11801-no-rs        | 0 | 45268668 |
| 12 | BTB-01438270           | 0 | 45297046 |
| 12 | BTB-01438321           | 0 | 45329684 |
| 12 | BTB-01438340           | 0 | 45358430 |
| 12 | Hapmap58985-rs29020498 | 0 | 45387398 |
| 12 | BTB-01438513           | 0 | 45409287 |
| 12 | BTB-01438525           | 0 | 45432759 |
| 12 | BTB-00491586           | 0 | 45505409 |
| 12 | BTB-00491397           | 0 | 45552480 |
| 12 | BTB-00491321           | 0 | 45594909 |
| 12 | BTB-01944898           | 0 | 45619802 |
| 12 | BTA-22711-no-rs        | 0 | 45649503 |
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| 12 | BTA-22699-no-rs        | 0 | 45919459 |
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| 12 | ARS-BFGL-NGS-29737     | 0 | 47364745 |
| 12 | Hapmap33349-BTA-127624 | 0 | 47391047 |
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| 12 | BTB-00492474           | 0 | 47485522 |
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| 12 | BTB-00492557           | 0 | 47590506 |

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| 12 | BTB-00492713           | 0 | 47647948 |
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| 12 | BTA-50119-no-rs        | 0 | 48352391 |
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| 12 | ARS-BFGL-NGS-37837     | 0 | 49421215 |
| 12 | ARS-BFGL-BAC-779       | 0 | 49444893 |
| 12 | BTB-01544419           | 0 | 49464372 |
| 12 | BTA-89351-no-rs        | 0 | 49496489 |
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| 12 | Hapmap42878-BTA-23796  | 0 | 49733358 |
| 12 | BTB-01902268           | 0 | 49760634 |
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| 12 | BTB-00493082           | 0 | 52598114 |
| 12 | BTB-00493063           | 0 | 52618243 |
| 12 | BTA-23803-no-rs        | 0 | 52641232 |
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| 12 | BTB-00221755           | 0 | 53337773 |
| 12 | ARS-BFGL-NGS-17386     | 0 | 53364295 |
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| 12 | ARS-BFGL-NGS-27779     | 0 | 53468735 |
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| 12 | BTB-00496702           | 0 | 53685709 |
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| 12 | BTB-00498124           | 0        | 54014920 |
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| 12 | Hapmap51890-BTA-25936  | 0        | 54111801 |
| 12 | BTB-00498059           | 0        | 54149489 |
| 12 | Hapmap42886-BTA-25934  | 0        | 54184360 |
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| 12 | ARS-BFGL-NGS-115846    | 0        | 54244309 |
| 12 | ARS-BFGL-NGS-76959     | 0        | 54304795 |
| 12 | BTB-00497918           | 0        | 54325176 |
| 12 | BTB-00497910           | 0        | 54336046 |
| 12 | Hapmap49098-BTA-25922  | 0        | 54361410 |
| 12 | Hapmap26937-BTA-127685 | 0        | 54409035 |
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| 12 | ARS-BFGL-NGS-35791     | 0        | 54714234 |
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| 12 | ARS-BFGL-NGS-83030     | 0        | 55045337 |
| 12 | Hapmap47552-BTA-25948  | 0        | 55074178 |
| 12 | ARS-BFGL-NGS-21510     | 55097796 |          |
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| 12 | ARS-BFGL-BAC-13734     | 0        | 55163810 |
| 12 | BTB-00498394           | 0        | 55190550 |
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| 12 | Hapmap41810-BTA-26946  | 0        | 55410460 |
| 12 | ARS-BFGL-NGS-14623     | 0        | 55438943 |
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| 12 | BTB-00499182           | 0        | 55545557 |
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| 12 | BTA-25970-no-rs        | 0        | 55752915 |
| 12 | BTA-25969-no-rs        | 0        | 55778182 |
| 12 | BTA-25963-no-rs        | 0        | 55811850 |
| 12 | BTB-00498885           | 0        | 55837570 |
| 12 | Hapmap48424-BTA-65447  | 0        | 55867003 |

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| 12 | BTB-01021067                    | 0 | 55982934 |  |
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| 12 | BTB-01021521                    | 0 | 56289541 |  |
| 12 | BTB-01021469                    | 0 | 56326750 |  |
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| 12 | BTB-02035517                    | 0 | 57077252 |  |
| 12 | BTB-00500006                    | 0 | 57111185 |  |
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| 12 | BTA-26979-no-rs                 | 0 | 57194006 |  |
| 12 | Hapmap43220-BTA-26980           | 0 | 57211328 |  |
| 12 | BTB-00500072                    | 0 | 57280313 |  |
| 12 | BTB-01886351                    | 0 | 57333227 |  |
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| 12 | BTB-01537438                    | 0 | 57433505 |  |
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| 12 | BTB-01350541                    | 0 | 57565202 |  |
| 12 | ARS-BFGL-NGS-17551              | 0 | 57603061 |  |
| 12 | BTB-01839492                    | 0 | 57661486 |  |
| 12 | Hapmap50611-BTA-19865           | 0 | 57684714 |  |
| 12 | ARS-BFGL-BAC-13745              | 0 | 57707362 |  |
| 12 | Hapmap40211-BTA-27114           | 0 | 57747455 |  |
| 12 | BTB-01350179                    | 0 | 57769768 |  |
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| 12 | BTB-01745779                    | 0 | 57865136 |  |
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| 12 | BTB-00500086                    | 0 | 57931622 |  |
| 12 | BTB-01280552                    | 0 | 57987018 |  |
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| 12 | BTB-01280469                    | 0 | 58089757 |  |
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| 12 | BTB-00506196           | 0 | 59185443 |
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| 12 | BTA-30878-no-rs        | 0 | 59239590 |
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| 12 | BTA-121767-no-rs       | 0 | 59473949 |
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| 12 | Hapmap33010-BTA-141084 | 0 | 60832218 |
| 12 | ARS-BFGL-NGS-66329     | 0 | 60863971 |
| 12 | BTB-00122473           | 0 | 60896592 |
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| 12 | ARS-BFGL-NGS-116351    | 0 | 61026341 |

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| 12 | BTA-29393-no-rs        | 0 | 61179992 |
| 12 | BTA-65034-no-rs        | 0 | 61212072 |
| 12 | BTB-01011960           | 0 | 61234845 |
| 12 | Hapmap43007-BTA-65036  | 0 | 61258655 |
| 12 | BTB-01012231           | 0 | 61314786 |
| 12 | BTB-01980499           | 0 | 61345454 |
| 12 | Hapmap51193-BTA-23532  | 0 | 61376874 |
| 12 | BTA-90150-no-rs        | 0 | 61396071 |
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| 12 | ARS-BFGL-NGS-61680     | 0 | 61457442 |
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| 12 | BTB-01625220           | 0 | 61608282 |
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| 12 | Hapmap22815-BTA-160564 | 0 | 61950490 |
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| 12 | BTB-01537841           | 0 | 62342403 |
| 12 | BTA-101800-no-rs       | 0 | 62380750 |
| 12 | BTB-01537669           | 0 | 62419569 |
| 12 | Hapmap51372-BTA-101786 | 0 | 62450584 |
| 12 | BTA-21330-no-rs        | 0 | 62486744 |
| 12 | BTA-21329-no-rs        | 0 | 62517886 |
| 12 | BTB-01908247           | 0 | 62550434 |
| 12 | BTB-00146229           | 0 | 62585226 |
| 12 | Hapmap27169-BTA-141662 | 0 | 62615139 |
| 12 | Hapmap55458-rs29025293 | 0 | 62648430 |
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| 12 | BTB-02009715           | 0 | 63163164 |
| 12 | BTB-01277392           | 0 | 63195078 |
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| 12 | Hapmap54902-rs29018449 | 0 | 63368729 |
| 12 | Hapmap50648-BTA-29871  | 0 | 63427656 |
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| 12 | ARS-BFGL-NGS-102416    | 0 | 63506252 |
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| 12 | Hapmap51995-BTA-16641  | 0 | 63560427 |

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| 12 | Hapmap41121-BTA-99856  | 0 | 63630728 |
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| 12 | ARS-BFGL-NGS-39813     | 0 | 63735841 |
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| 12 | BTB-01427603           | 0 | 64088197 |
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| 12 | ARS-BFGL-NGS-32696     | 0 | 64499123 |
| 12 | ARS-BFGL-NGS-104868    | 0 | 64520128 |
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| 12 | ARS-BFGL-NGS-29925     | 0 | 64631815 |
| 12 | ARS-BFGL-NGS-104192    | 0 | 64663790 |
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| 12 | BTB-00554247           | 0 | 65644303 |
| 12 | BTB-00554297           | 0 | 65662261 |
| 12 | BTA-00455-rs29013612   | 0 | 65684932 |
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| 12 | BTA-99438-no-rs                 | 0 | 66497699 |          |
| 12 | BTA-99443-no-rs                 | 0 | 66544890 |          |
| 12 | Hapmap51671-BTA-99441           | 0 | 66597090 |          |
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| 12 | BTA-120474-no-rs                | 0 | 66690581 |          |
| 12 | Hapmap44023-BTA-122769          | 0 | 66724256 |          |
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| 12 | BTB-01592095                    | 0 | 67034845 |          |
| 12 | Hapmap38372-BTA-106410          | 0 | 67073994 |          |
| 12 | Hapmap28306-BTA-142098          | 0 | 67197518 |          |
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| 12 | Hapmap29283-BTA-161280          | 0 | 67614973 |          |
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| 12 | Hapmap35637-SCAFFOLD231403_4624 | 0 |          | 67767045 |
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| 12 | ARS-BFGL-NGS-29150              |   | 68060288 |          |
| 12 | Hapmap38665-BTA-28024           | 0 | 68085835 |          |
| 12 | Hapmap33072-BTA-162856          | 0 | 68107929 |          |
| 12 | ARS-BFGL-NGS-114263             | 0 | 68202500 |          |
| 12 | BTB-00501758                    | 0 | 68227222 |          |
| 12 | ARS-BFGL-BAC-14374              | 0 | 68249566 |          |
| 12 | ARS-BFGL-NGS-117873             | 0 | 68271937 |          |
| 12 | Hapmap38825-BTA-28013           | 0 | 68295390 |          |
| 12 | BTB-00501637                    | 0 | 68331935 |          |
| 12 | BTB-00501626                    | 0 | 68351968 |          |
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| 12 | BTB-00501374                    | 0 | 68506471 |          |
| 12 | Hapmap52912-rs29011621          | 0 | 68532165 |          |
| 12 | BTB-00501232                    | 0 | 68603527 |          |
| 12 | ARS-BFGL-NGS-54132              | 0 | 68628611 |          |
| 12 | ARS-BFGL-BAC-58480              |   | 68657690 |          |
| 12 | BTB-00500979                    | 0 | 68678678 |          |
| 12 | Hapmap51198-BTA-27036           | 0 | 68703184 |          |
| 12 | BTB-00500935                    | 0 | 68728376 |          |
| 12 | ARS-BFGL-NGS-39236              | 0 | 68784880 |          |
| 12 | BTA-27027-no-rs                 | 0 | 68812742 |          |

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| 12 | BTB-00500829           | 0 | 68846890 |
| 12 | BTB-00500819           | 0 | 68882339 |
| 12 | BTA-28056-no-rs        | 0 | 68913946 |
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| 12 | BTB-00503044           | 0 | 68979011 |
| 12 | Hapmap43825-BTA-28068  | 0 | 69005539 |
| 12 | ARS-BFGL-BAC-14989     | 0 | 69043790 |
| 12 | BTA-28075-no-rs        | 0 | 69054353 |
| 12 | ARS-BFGL-BAC-14990     | 0 | 69106382 |
| 12 | BTB-00751362           | 0 | 69128132 |
| 12 | Hapmap38187-BTA-105082 | 0 | 69216840 |
| 12 | ARS-BFGL-NGS-39393     | 0 | 69277902 |
| 12 | BTA-123122-no-rs       | 0 | 69319934 |
| 12 | ARS-BFGL-NGS-21085     | 0 | 69345857 |
| 12 | BTA-121184-no-rs       | 0 | 69368196 |
| 12 | BTB-00751066           | 0 | 69389713 |
| 12 | Hapmap44078-BTA-45393  | 0 | 69440549 |
| 12 | ARS-BFGL-BAC-56900     | 0 | 69467211 |
| 12 | Hapmap54363-rs29014773 | 0 | 69494347 |
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| 12 | BTB-00500725           | 0 | 69648659 |
| 12 | ARS-BFGL-NGS-96259     | 0 | 69744529 |
| 12 | Hapmap23511-BTA-119303 | 0 | 69768137 |
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| 12 | BTA-28079-no-rs        | 0 | 69874053 |
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| 12 | Hapmap50646-BTA-29027  | 0 | 70140996 |
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| 12 | ARS-BFGL-NGS-59515     | 0 | 70186665 |
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| 12 | ARS-BFGL-NGS-45730     | 0 | 70260457 |
| 12 | ARS-BFGL-NGS-117275    | 0 | 70290528 |
| 12 | ARS-BFGL-NGS-57278     | 0 | 72285729 |
| 12 | ARS-BFGL-NGS-28261     | 0 | 72311316 |
| 12 | BTA-95991-no-rs        | 0 | 72341102 |
| 12 | ARS-BFGL-BAC-15060     | 0 | 72358156 |
| 12 | BTB-02069540           | 0 | 72395142 |
| 12 | BTB-01857726           | 0 | 75439996 |
| 12 | ARS-BFGL-NGS-103383    | 0 | 76787101 |
| 12 | ARS-BFGL-NGS-48150     | 0 | 76839422 |
| 12 | BTA-29081-no-rs        | 0 | 76926072 |
| 12 | Hapmap30308-BTA-156697 | 0 | 77242303 |
| 12 | ARS-BFGL-NGS-57541     | 0 | 77315938 |
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| 12 | ARS-BFGL-NGS-85162     | 0 | 77379757 |
| 12 | Hapmap49113-BTA-30008  | 0 | 77388557 |

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| 12 | Hapmap58455-rs29022321          | 0        | 77447074 |  |
| 12 | ARS-BFGL-NGS-110039             | 0        | 77477113 |  |
| 12 | BTA-29998-no-rs                 | 0        | 77500623 |  |
| 12 | ARS-BFGL-NGS-15699              | 0        | 77524541 |  |
| 12 | BTA-29995-no-rs                 | 0        | 77611452 |  |
| 12 | Hapmap53999-rs29018278          | 0        | 77695384 |  |
| 12 | ARS-BFGL-NGS-16052              | 0        | 77725016 |  |
| 12 | ARS-BFGL-NGS-41986              | 0        | 77746796 |  |
| 12 | BTA-29990-no-rs                 | 0        | 77816640 |  |
| 12 | ARS-BFGL-NGS-75733              | 0        | 77964481 |  |
| 12 | BTA-29126-no-rs                 | 0        | 77992661 |  |
| 12 | ARS-BFGL-NGS-14529              | 0        | 78014490 |  |
| 12 | ARS-BFGL-NGS-24482              | 0        | 78099072 |  |
| 12 | ARS-BFGL-NGS-53179              | 0        | 78146737 |  |
| 12 | ARS-BFGL-NGS-111037             | 0        | 78170646 |  |
| 12 | BTA-25306-no-rs                 | 0        | 78212571 |  |
| 12 | Hapmap23403-BTA-162591          | 0        | 78235491 |  |
| 12 | Hapmap43821-BTA-25321           | 0        | 78276736 |  |
| 12 | Hapmap58533-rs29018583          | 0        | 78300814 |  |
| 12 | ARS-BFGL-NGS-37992              | 0        | 78327456 |  |
| 12 | ARS-BFGL-NGS-110479             | 0        | 78367374 |  |
| 12 | ARS-BFGL-NGS-44151              | 0        | 78447443 |  |
| 12 | Hapmap52668-rs29014650          | 0        | 78479265 |  |
| 12 | ARS-BFGL-NGS-109427             | 0        | 78507995 |  |
| 12 | ARS-BFGL-NGS-32303              | 0        | 78540440 |  |
| 12 | ARS-BFGL-NGS-115891             | 0        | 78606843 |  |
| 12 | ARS-BFGL-NGS-19812              | 0        | 78694446 |  |
| 12 | ARS-BFGL-NGS-41319              | 0        | 78728978 |  |
| 12 | Hapmap49949-BTA-30042           | 0        | 78750520 |  |
| 12 | Hapmap34950-BES7_Contig406_1227 | 0        | 78787855 |  |
| 12 | ARS-BFGL-NGS-36086              | 0        | 78821023 |  |
| 12 | Hapmap41498-BTA-30049           | 0        | 78922242 |  |
| 12 | BTA-00784-rs29013935            | 0        | 79012825 |  |
| 12 | BTA-122515-no-rs                | 0        | 79124282 |  |
| 12 | Hapmap42441-BTA-115588          | 0        | 79170861 |  |
| 12 | BTA-115591-no-rs                | 0        | 79224151 |  |
| 12 | ARS-BFGL-NGS-104936             | 0        | 79250355 |  |
| 12 | ARS-BFGL-BAC-73620              | 79289169 |          |  |
| 12 | ARS-BFGL-NGS-117564             | 0        | 79310379 |  |
| 12 | Hapmap24871-BTA-157401          | 0        | 79331006 |  |
| 12 | ARS-BFGL-NGS-89207              | 0        | 79352555 |  |
| 12 | ARS-BFGL-NGS-87010              | 79374370 |          |  |
| 12 | Hapmap27863-BTA-127921          | 0        | 79456283 |  |
| 12 | ARS-BFGL-NGS-36799              | 0        | 79520461 |  |
| 12 | ARS-BFGL-NGS-40082              | 0        | 79559951 |  |
| 12 | UA-IFASA-2256                   | 0        | 79603226 |  |
| 12 | ARS-BFGL-NGS-112325             | 0        | 79643103 |  |
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| 12 | ARS-BFGL-NGS-56771              | 0        | 79708146 |  |
| 12 | ARS-BFGL-NGS-29810              | 0        | 79742974 |  |
| 12 | ARS-BFGL-NGS-112758             | 0        | 79788015 |  |
| 12 | ARS-BFGL-NGS-115889             | 0        | 79814959 |  |
| 12 | ARS-BFGL-NGS-12016              | 0        | 79871469 |  |
| 12 | BTA-109112-no-rs                | 0        | 79896813 |  |

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| 12 | BTA-30857-no-rs                       | 0 | 80058952 |   |          |
| 12 | ARS-BFGL-NGS-100                      | 0 | 80148778 |   |          |
| 12 | ARS-BFGL-NGS-34730                    | 0 | 80190099 |   |          |
| 12 | ARS-BFGL-NGS-36295                    | 0 | 80221993 |   |          |
| 12 | ARS-BFGL-NGS-101287                   | 0 | 80252500 |   |          |
| 12 | Hapmap42503-BTA-30861                 | 0 | 80331512 |   |          |
| 12 | Hapmap58260-rs29024773                | 0 | 80395615 |   |          |
| 12 | ARS-BFGL-NGS-41474                    | 0 | 80419526 |   |          |
| 12 | ARS-BFGL-BAC-73730                    |   | 80460375 |   |          |
| 12 | Hapmap40904-BTA-120929                | 0 | 80583093 |   |          |
| 12 | ARS-USMARC-Parent-DQ832700-rs29012872 | 0 |          | 0 | 80629629 |
| 12 | ARS-BFGL-NGS-103725                   | 0 | 80664887 |   |          |
| 12 | ARS-BFGL-NGS-32310                    | 0 | 80707508 |   |          |
| 12 | ARS-BFGL-NGS-27810                    | 0 | 80804251 |   |          |
| 12 | ARS-BFGL-NGS-75100                    | 0 | 80851441 |   |          |
| 12 | UA-IFASA-2080                         | 0 | 80892109 |   |          |
| 12 | Hapmap48943-BTA-91147                 | 0 | 80915244 |   |          |
| 12 | BTA-91151-no-rs                       | 0 | 80978461 |   |          |
| 12 | ARS-BFGL-NGS-22985                    | 0 | 81048745 |   |          |
| 12 | ARS-BFGL-NGS-51180                    |   | 81084869 |   |          |
| 12 | ARS-BFGL-NGS-80730                    |   | 81119950 |   |          |
| 12 | ARS-BFGL-NGS-13252                    | 0 | 81184160 |   |          |
| 12 | ARS-BFGL-NGS-80160                    |   | 81302573 |   |          |
| 12 | ARS-BFGL-NGS-106587                   | 0 | 81372372 |   |          |
| 12 | Hapmap58143-rs29019806                | 0 | 81396082 |   |          |
| 12 | ARS-BFGL-NGS-32656                    | 0 | 81445405 |   |          |
| 12 | ARS-BFGL-NGS-39990                    | 0 | 81491302 |   |          |
| 12 | ARS-BFGL-NGS-18448                    | 0 | 81540197 |   |          |
| 12 | ARS-BFGL-NGS-116352                   | 0 | 81565644 |   |          |
| 12 | Hapmap48108-BTA-87770                 | 0 | 81586853 |   |          |
| 12 | Hapmap48930-BTA-87766                 | 0 | 81619169 |   |          |
| 12 | ARS-BFGL-NGS-12480                    | 0 | 81642369 |   |          |
| 12 | ARS-BFGL-NGS-92966                    | 0 | 81677757 |   |          |
| 12 | Hapmap60895-rs29027510                | 0 | 81719087 |   |          |
| 12 | ARS-BFGL-NGS-101290                   | 0 | 81797480 |   |          |
| 12 | ARS-BFGL-NGS-30633                    | 0 | 81820882 |   |          |
| 12 | Hapmap30556-BTA-147818                | 0 | 81849554 |   |          |
| 12 | Hapmap23317-BTA-147815                | 0 | 81939978 |   |          |
| 12 | ARS-BFGL-NGS-28500                    |   | 81979631 |   |          |
| 12 | ARS-BFGL-NGS-31505                    | 0 | 82024309 |   |          |
| 12 | BTA-87771-no-rs                       | 0 | 82056537 |   |          |
| 12 | BTA-100491-no-rs                      | 0 | 82159124 |   |          |
| 12 | ARS-BFGL-BAC-15043                    | 0 | 82199690 |   |          |
| 12 | Hapmap48226-BTA-122391                | 0 | 82326530 |   |          |
| 12 | Hapmap49040-BTA-116557                | 0 | 82410180 |   |          |
| 12 | ARS-BFGL-NGS-12368                    | 0 | 82450106 |   |          |
| 12 | ARS-BFGL-NGS-114955                   | 0 | 82486060 |   |          |
| 12 | ARS-BFGL-NGS-113366                   | 0 | 82564341 |   |          |
| 12 | ARS-BFGL-NGS-118242                   | 0 | 82631955 |   |          |
| 12 | ARS-BFGL-NGS-38451                    | 0 | 82661747 |   |          |
| 12 | ARS-BFGL-NGS-84649                    | 0 | 82722364 |   |          |
| 12 | Hapmap40709-BTA-30902                 | 0 | 82765192 |   |          |
| 12 | ARS-BFGL-NGS-104210                   | 0 | 82791816 |   |          |
| 12 | Hapmap40215-BTA-30901                 | 0 | 82812721 |   |          |

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| 12 | Hapmap47240-BTA-30899  | 0        | 82892543 |
| 12 | Hapmap43722-BTA-91004  | 0        | 82958992 |
| 12 | ARS-BFGL-NGS-64884     | 0        | 82982368 |
| 12 | BTA-31284-no-rs        | 0        | 83024081 |
| 12 | ARS-BFGL-NGS-32848     | 0        | 83047196 |
| 12 | Hapmap60748-rs29010135 | 0        | 83073114 |
| 12 | Hapmap40943-BTA-30957  | 0        | 83153654 |
| 12 | ARS-BFGL-NGS-105587    | 0        | 83225374 |
| 12 | ARS-BFGL-NGS-96876     | 0        | 83268834 |
| 12 | ARS-BFGL-NGS-90500     | 83340249 |          |
| 12 | Hapmap27384-BTA-127840 | 0        | 83372832 |
| 12 | Hapmap58356-rs29011128 | 0        | 83477477 |
| 12 | BTA-30947-no-rs        | 0        | 83507160 |
| 12 | BTA-30939-no-rs        | 0        | 83541616 |
| 12 | ARS-BFGL-NGS-48280     | 83593529 |          |
| 12 | BTA-30932-no-rs        | 0        | 83614359 |
| 12 | Hapmap38889-BTA-30928  | 0        | 83696121 |
| 12 | ARS-BFGL-NGS-100170    | 0        | 83739416 |
| 12 | ARS-BFGL-BAC-15046     | 0        | 83777475 |
| 12 | Hapmap31074-BTA-127826 | 0        | 83887789 |
| 12 | Hapmap43734-BTA-96376  | 0        | 84040274 |
| 12 | Hapmap60388-rs29016486 | 0        | 84095269 |
| 12 | ARS-BFGL-NGS-118171    | 0        | 84180733 |
| 12 | Hapmap54945-rs29009588 | 0        | 84249881 |
| 12 | Hapmap24294-BTA-127859 | 0        | 84286737 |
| 12 | Hapmap42176-BTA-31298  | 0        | 84466783 |
| 12 | ARS-BFGL-NGS-108499    | 0        | 84528778 |
| 12 | Hapmap24074-BTA-127860 | 0        | 84559270 |
| 12 | Hapmap59799-rs29010339 | 0        | 84646394 |
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| 12 | ARS-BFGL-NGS-17980     | 84743514 |          |
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| 12 | Hapmap39822-BTA-31309  | 0        | 84817834 |
| 12 | BTA-31315-no-rs        | 0        | 84840915 |
| 12 | Hapmap57428-rs29016058 | 0        | 84882391 |
| 12 | BTA-31316-no-rs        | 0        | 84935780 |
| 12 | Hapmap46067-BTA-31318  | 0        | 85040905 |
| 12 | BTA-31319-no-rs        | 0        | 85063382 |
| 12 | ARS-BFGL-NGS-64378     | 0        | 85097647 |
| 12 | ARS-BFGL-NGS-98754     | 0        | 85134208 |
| 12 | Hapmap39262-BTA-31326  | 0        | 85172060 |
| 12 | BTA-29811-no-rs        | 0        | 85206411 |
| 12 | ARS-BFGL-NGS-74771     | 0        | 85240392 |
| 12 | BTB-00507211           | 0        | 85272488 |
| 12 | Hapmap49567-BTA-31338  | 0        | 85308799 |
| 12 | ARS-BFGL-NGS-22481     | 0        | 85329377 |
| 12 | Hapmap59661-rs29014560 | 0        | 85354051 |
| 12 | ARS-BFGL-NGS-71885     | 0        | 85378740 |
| 12 | BTA-31384-no-rs        | 0        | 85428753 |
| 12 | ARS-BFGL-NGS-62477     | 0        | 85453952 |
| 12 | BTB-00507736           | 0        | 85475400 |
| 12 | BTA-31359-no-rs        | 0        | 85500588 |
| 12 | ARS-BFGL-NGS-117650    | 0        | 85569048 |
| 12 | Hapmap48715-BTA-31366  | 0        | 85595151 |



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| 12 | Hapmap35036-BES10_Contig668_769 | 0        | 85612852 |
| 12 | ARS-BFGL-BAC-73840              | 85654650 |          |
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| 12 | ARS-BFGL-NGS-83167              | 0        | 85718983 |
| 12 | Hapmap35553-SCAFFOLD269299_1521 | 0        | 85777352 |
| 12 | ARS-BFGL-NGS-17075              | 0        | 85798850 |
| 12 | BTA-31372-no-rs                 | 0        | 85829746 |
| 12 | ARS-BFGL-NGS-54203              | 0        | 85860898 |
| 12 | Hapmap48716-BTA-31374           | 0        | 85884022 |
| 12 | BTA-31376-no-rs                 | 0        | 85926556 |
| 12 | Hapmap31728-BTA-127926          | 0        | 85986433 |
| 12 | BTA-31390-no-rs                 | 0        | 86048240 |
| 12 | Hapmap41824-BTA-31393           | 0        | 86077889 |
| 12 | ARS-BFGL-NGS-53310              | 0        | 86114773 |
| 12 | ARS-BFGL-NGS-22298              | 0        | 86146208 |
| 12 | ARS-BFGL-NGS-33672              | 0        | 86222488 |
| 12 | BTA-31397-no-rs                 | 0        | 86277371 |
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| 12 | ARS-BFGL-NGS-90850              | 0        | 86560276 |
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| 12 | ARS-BFGL-NGS-103773             | 0        | 86658942 |
| 12 | ARS-BFGL-NGS-31955              | 0        | 86684265 |
| 12 | ARS-BFGL-NGS-53938              | 0        | 86725371 |
| 12 | Hapmap59892-rs29026618          | 0        | 86772298 |
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| 12 | BTB-00507334                    | 0        | 86853940 |
| 12 | Hapmap42507-BTA-31345           | 0        | 86935120 |
| 12 | BTB-00507405                    | 0        | 86938949 |
| 12 | Hapmap42023-BTA-98950           | 0        | 86961976 |
| 12 | Hapmap52834-rs29019297          | 0        | 87110689 |
| 12 | Hapmap46975-BTA-31417           | 0        | 87150059 |
| 12 | BTB-00507934                    | 0        | 87193223 |
| 12 | Hapmap55090-rs29012630          | 0        | 87226140 |
| 12 | BTB-00508023                    | 0        | 87254702 |
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| 12 | BTB-00508109                    | 0        | 87293129 |
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| 12 | ARS-BFGL-NGS-26557              | 0        | 87341395 |
| 12 | BTB-01315661                    | 0        | 87373604 |
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| 12 | ARS-BFGL-NGS-17757              | 0        | 87433191 |
| 12 | BTA-46351-no-rs                 | 0        | 87468430 |
| 12 | BTA-46352-no-rs                 | 0        | 87554080 |
| 12 | BTB-02022818                    | 0        | 87579030 |
| 12 | ARS-BFGL-NGS-41933              | 0        | 87672871 |
| 12 | ARS-BFGL-NGS-105662             | 0        | 87694731 |
| 12 | Hapmap48554-BTA-100227          | 0        | 87717675 |
| 12 | BTB-01518349                    | 0        | 87824321 |
| 12 | ARS-BFGL-NGS-112793             | 0        | 87855136 |
| 12 | Hapmap41148-BTA-108981          | 0        | 87891233 |
| 12 | ARS-BFGL-NGS-67070              | 87977170 |          |
| 12 | ARS-BFGL-NGS-116175             | 0        | 88050115 |

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| 12 | BTB-01198535                    | 0 | 88130564 |          |
| 12 | BTB-01198500                    | 0 | 88162862 |          |
| 12 | Hapmap50208-BTA-108976          | 0 | 88204550 |          |
| 12 | ARS-BFGL-NGS-31217              | 0 | 88245784 |          |
| 12 | ARS-BFGL-NGS-110977             | 0 | 88319342 |          |
| 12 | ARS-BFGL-BAC-11200              | 0 | 88347846 |          |
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| 12 | BTB-01198418                    | 0 | 88394447 |          |
| 12 | BTB-01504898                    | 0 | 88434154 |          |
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| 12 | BTA-112970-no-rs                | 0 | 88677992 |          |
| 12 | BTB-01680650                    | 0 | 88703946 |          |
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| 12 | ARS-BFGL-NGS-20588              | 0 | 88810078 |          |
| 12 | ARS-BFGL-NGS-17940              |   | 88834796 |          |
| 12 | BTB-00508549                    | 0 | 88862272 |          |
| 12 | ARS-BFGL-NGS-117411             | 0 | 88894609 |          |
| 12 | ARS-BFGL-NGS-29926              | 0 | 88935274 |          |
| 12 | Hapmap36267-SCAFFOLD65222_30573 | 0 |          | 88979628 |
| 12 | BTB-01812005                    | 0 | 89006700 |          |
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| 12 | ARS-BFGL-BAC-11206              | 0 | 89095085 |          |
| 12 | ARS-BFGL-NGS-119794             | 0 | 89117682 |          |
| 12 | ARS-BFGL-NGS-99530              | 0 | 89154911 |          |
| 12 | ARS-BFGL-NGS-52278              | 0 | 89182471 |          |
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| 12 | Hapmap56975-ss46526944          | 0 | 89304609 |          |
| 12 | ARS-BFGL-NGS-116369             | 0 | 89364618 |          |
| 12 | ARS-BFGL-NGS-15855              | 0 | 89377897 |          |
| 12 | Hapmap57684-rs29016454          | 0 | 89404996 |          |
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| 12 | ARS-BFGL-NGS-14303              | 0 | 89551198 |          |
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| 12 | ARS-BFGL-NGS-111587             | 0 | 89803936 |          |
| 12 | ARS-BFGL-NGS-116997             | 0 | 89844449 |          |
| 12 | BTB-01795396                    | 0 | 89981057 |          |
| 12 | ARS-BFGL-NGS-106663             | 0 | 90015695 |          |
| 12 | ARS-BFGL-NGS-114545             | 0 | 90052570 |          |
| 12 | ARS-BFGL-NGS-27674              | 0 | 90077862 |          |
| 12 | ARS-BFGL-NGS-38850              |   | 90101327 |          |
| 12 | BTA-31480-no-rs                 | 0 | 90132513 |          |
| 12 | Hapmap42508-BTA-31479           | 0 | 90156582 |          |
| 12 | ARS-BFGL-NGS-89118              | 0 | 90179467 |          |
| 12 | Hapmap40945-BTA-31475           | 0 | 90243573 |          |
| 12 | ARS-BFGL-NGS-36097              | 0 | 90280720 |          |
| 12 | ARS-BFGL-NGS-114285             | 0 | 90330112 |          |
| 12 | ARS-BFGL-NGS-23827              | 0 | 90412384 |          |
| 12 | ARS-BFGL-NGS-106661             | 0 | 90449343 |          |
| 12 | BTA-31466-no-rs                 | 0 | 90483656 |          |

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| 12 | ARS-BFGL-NGS-14750                    | 0 | 90536166 |  |  |
| 12 | BTB-00508719                          | 0 | 90599750 |  |  |
| 12 | Hapmap57288-ss46526584                | 0 | 90621015 |  |  |
| 12 | ARS-BFGL-NGS-69018                    | 0 | 90662839 |  |  |
| 12 | ARS-BFGL-BAC-11215                    | 0 | 90704572 |  |  |
| 12 | ARS-BFGL-NGS-40352                    | 0 | 90755955 |  |  |
| 12 | BTA-23315-no-rs                       | 0 | 90778028 |  |  |
| 12 | ARS-BFGL-NGS-44210                    | 0 | 90805949 |  |  |
| 12 | ARS-BFGL-NGS-112884                   | 0 | 90826206 |  |  |
| 12 | ARS-BFGL-NGS-26054                    | 0 | 90858277 |  |  |
| 12 | ARS-BFGL-NGS-56364                    | 0 | 90888686 |  |  |
| 12 | UA-IFASA-1900                         | 0 | 90936162 |  |  |
| 12 | ARS-BFGL-NGS-30740                    | 0 | 90957287 |  |  |
| 12 | ARS-BFGL-NGS-32158                    | 0 | 90983897 |  |  |
| 12 | ARS-BFGL-NGS-49526                    | 0 | 91017026 |  |  |
| 12 | Hapmap46770-BTA-120932                | 0 | 91057879 |  |  |
| 12 | BTB-00509530                          | 0 | 91091598 |  |  |
| 13 | BTA-92225-no-rs                       | 0 | 313308   |  |  |
| 13 | Hapmap52431-ss46526792                | 0 | 533391   |  |  |
| 13 | BTB-01141508                          | 0 | 679009   |  |  |
| 13 | Hapmap48136-BTA-96744                 | 0 | 719908   |  |  |
| 13 | Hapmap26161-BTA-151057                | 0 | 739720   |  |  |
| 13 | BTB-01141770                          | 0 | 777430   |  |  |
| 13 | Hapmap27855-BTA-123415                | 0 | 806792   |  |  |
| 13 | Hapmap52285-rs29018888                | 0 | 836904   |  |  |
| 13 | ARS-BFGL-NGS-23386                    | 0 | 902754   |  |  |
| 13 | BTA-96729-no-rs                       | 0 | 928025   |  |  |
| 13 | Hapmap48962-BTA-96730                 | 0 | 964098   |  |  |
| 13 | Hapmap48963-BTA-96734                 | 0 | 999229   |  |  |
| 13 | ARS-BFGL-NGS-71458                    | 0 | 1053585  |  |  |
| 13 | BTA-122179-no-rs                      | 0 | 1098463  |  |  |
| 13 | Hapmap42741-BTA-96743                 | 0 | 1153830  |  |  |
| 13 | BTB-01142552                          | 0 | 1191877  |  |  |
| 13 | BTA-123518-no-rs                      | 0 | 1247948  |  |  |
| 13 | ARS-BFGL-BAC-12483                    | 0 | 1278678  |  |  |
| 13 | Hapmap47208-BTA-15912                 | 0 | 1299992  |  |  |
| 13 | Hapmap60144-rs29013559                | 0 | 1397454  |  |  |
| 13 | Hapmap45253-BTA-15908                 | 0 | 1477972  |  |  |
| 13 | ARS-BFGL-NGS-115902                   | 0 | 1559165  |  |  |
| 13 | BTA-01022-no-rs                       | 0 | 1596024  |  |  |
| 13 | Hapmap32862-BTA-159304                | 0 | 1633474  |  |  |
| 13 | BTA-15916-no-rs                       | 0 | 1655502  |  |  |
| 13 | ARS-BFGL-NGS-99344                    | 0 | 1687736  |  |  |
| 13 | BTA-16874-no-rs                       | 0 | 1735034  |  |  |
| 13 | BTB-01795734                          | 0 | 1770384  |  |  |
| 13 | Hapmap58162-rs29021214                | 0 | 1799876  |  |  |
| 13 | BTB-01721718                          | 0 | 1829085  |  |  |
| 13 | BTB-01324240                          | 0 | 1867669  |  |  |
| 13 | Hapmap39731-BTA-23124                 | 0 | 1912749  |  |  |
| 13 | BTB-01324017                          | 0 | 1966648  |  |  |
| 13 | ARS-USMARC-Parent-EF026087-rs29011643 | 0 | 1982209  |  |  |
| 13 | UA-IFASA-5150                         | 0 | 1982591  |  |  |
| 13 | ARS-BFGL-NGS-78741                    | 0 | 2004958  |  |  |
| 13 | ARS-BFGL-NGS-53356                    | 0 | 2011011  |  |  |

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| 13 | ARS-BFGL-BAC-74600               | 2037295 |         |
| 13 | ARS-BFGL-BAC-11276               | 0       | 2153905 |
| 13 | BTA-32271-no-rs                  | 0       | 2181574 |
| 13 | ARS-BFGL-BAC-11281               | 0       | 2217706 |
| 13 | Hapmap25024-BTA-127992           | 0       | 2247713 |
| 13 | ARS-BFGL-NGS-18679               | 0       | 2272672 |
| 13 | ARS-BFGL-NGS-103504              | 0       | 2321652 |
| 13 | ARS-BFGL-NGS-84635               | 0       | 2342625 |
| 13 | BTB-00511258                     | 0       | 2372577 |
| 13 | ARS-BFGL-NGS-113923              | 0       | 2416151 |
| 13 | BTA-34172-no-rs                  | 0       | 2456626 |
| 13 | Hapmap40953-BTA-33887            | 0       | 2553974 |
| 13 | ARS-BFGL-NGS-114264              | 0       | 2585410 |
| 13 | ARS-BFGL-NGS-21650               | 2606402 |         |
| 13 | ARS-BFGL-NGS-40779               | 0       | 2633006 |
| 13 | ARS-BFGL-NGS-102805              | 0       | 2686675 |
| 13 | Hapmap54324-rs29009783           | 0       | 2711744 |
| 13 | Hapmap55262-rs29019766           | 0       | 2751375 |
| 13 | BTA-27426-no-rs                  | 0       | 2823073 |
| 13 | BTB-01940842                     | 0       | 2838806 |
| 13 | BTB-01521401                     | 0       | 2924417 |
| 13 | Hapmap60195-rs29018211           | 0       | 2939325 |
| 13 | BTA-100496-no-rs                 | 0       | 2982093 |
| 13 | Hapmap35931-SCAFFOLD200024_14429 | 0       | 3110731 |
| 13 | Hapmap57657-rs29025501           | 0       | 3143331 |
| 13 | ARS-BFGL-NGS-17234               | 0       | 3218993 |
| 13 | ARS-BFGL-BAC-15070               | 0       | 3246468 |
| 13 | ARS-BFGL-NGS-60191               | 0       | 3358263 |
| 13 | ARS-BFGL-NGS-42610               | 3398628 |         |
| 13 | ARS-BFGL-NGS-63809               | 0       | 3427049 |
| 13 | ARS-BFGL-NGS-42720               | 3479193 |         |
| 13 | BTA-21259-no-rs                  | 0       | 3572777 |
| 13 | BTA-117397-no-rs                 | 0       | 3609795 |
| 13 | BTB-01738798                     | 0       | 3637414 |
| 13 | ARS-BFGL-NGS-37393               | 0       | 3723531 |
| 13 | ARS-BFGL-NGS-103379              | 0       | 3764223 |
| 13 | ARS-BFGL-NGS-57178               | 0       | 3815373 |
| 13 | BTB-02037818                     | 0       | 3839998 |
| 13 | ARS-BFGL-NGS-104913              | 0       | 3868670 |
| 13 | Hapmap53219-rs29019450           | 0       | 3948936 |
| 13 | ARS-BFGL-NGS-62490               | 0       | 3978354 |
| 13 | ARS-BFGL-NGS-105636              | 0       | 3999095 |
| 13 | ARS-BFGL-NGS-103950              | 0       | 4026817 |
| 13 | Hapmap25313-BTA-153969           | 0       | 4115711 |
| 13 | ARS-BFGL-NGS-116013              | 0       | 4153901 |
| 13 | BTB-01748916                     | 0       | 4308889 |
| 13 | Hapmap28161-BTA-128006           | 0       | 4360924 |
| 13 | BTB-00511781                     | 0       | 4384637 |
| 13 | BTA-113242-no-rs                 | 0       | 4511863 |
| 13 | BTB-01221558                     | 0       | 4557764 |
| 13 | ARS-BFGL-NGS-39305               | 0       | 4634576 |
| 13 | ARS-BFGL-NGS-34860               | 0       | 4673065 |
| 13 | Hapmap61019-rs29009751           | 0       | 4693551 |
| 13 | Hapmap50223-BTA-113230           | 0       | 4733016 |

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| 13 | ARS-BFGL-NGS-49836               | 0 | 4755215 |         |
| 13 | Hapmap31821-BTA-156670           | 0 | 4788451 |         |
| 13 | ARS-BFGL-NGS-98610               | 0 | 4851794 |         |
| 13 | Hapmap32631-BTA-156665           | 0 | 4883916 |         |
| 13 | ARS-BFGL-NGS-92938               | 0 | 4907772 |         |
| 13 | BTB-01221050                     | 0 | 4940762 |         |
| 13 | ARS-BFGL-NGS-24691               | 0 | 4973274 |         |
| 13 | ARS-BFGL-NGS-54242               | 0 | 5002150 |         |
| 13 | UA-IFASA-1553                    | 0 | 5128166 |         |
| 13 | ARS-BFGL-NGS-103952              | 0 | 5239814 |         |
| 13 | ARS-BFGL-NGS-23356               | 0 | 5280461 |         |
| 13 | ARS-BFGL-NGS-31564               | 0 | 5300921 |         |
| 13 | BTA-112780-no-rs                 | 0 | 5324891 |         |
| 13 | Hapmap35364-SCAFFOLD255028_58009 | 0 |         | 5594384 |
| 13 | BTB-00511494                     | 0 | 5623697 |         |
| 13 | ARS-BFGL-NGS-30161               | 0 | 5665394 |         |
| 13 | ARS-BFGL-NGS-118262              | 0 | 5712408 |         |
| 13 | ARS-BFGL-NGS-84327               | 0 | 5774000 |         |
| 13 | Hapmap46979-BTA-32175            | 0 | 5795316 |         |
| 13 | ARS-BFGL-NGS-116758              | 0 | 5827434 |         |
| 13 | ARS-BFGL-NGS-69781               | 0 | 5871584 |         |
| 13 | BTB-01886436                     | 0 | 5907819 |         |
| 13 | ARS-BFGL-NGS-71328               | 0 | 5937554 |         |
| 13 | Hapmap44438-BTA-105375           | 0 | 5992621 |         |
| 13 | ARS-BFGL-NGS-117919              | 0 | 6028965 |         |
| 13 | ARS-BFGL-NGS-22195               | 0 | 6049058 |         |
| 13 | Hapmap59869-rs29024442           | 0 | 6132754 |         |
| 13 | BTA-103296-no-rs                 | 0 | 6226308 |         |
| 13 | ARS-BFGL-NGS-53116               | 0 | 6282908 |         |
| 13 | BTB-01123944                     | 0 | 6350039 |         |
| 13 | Hapmap57586-rs29015232           | 0 | 6396120 |         |
| 13 | BTA-91096-no-rs                  | 0 | 6434606 |         |
| 13 | Hapmap49374-BTA-91097            | 0 | 6460644 |         |
| 13 | BTB-01124223                     | 0 | 6494442 |         |
| 13 | ARS-BFGL-NGS-105883              | 0 | 6527856 |         |
| 13 | ARS-BFGL-BAC-13203               | 0 | 6567143 |         |
| 13 | BTB-01124378                     | 0 | 6600008 |         |
| 13 | Hapmap54224-rs29017378           | 0 | 6637085 |         |
| 13 | BTB-01124458                     | 0 | 6683656 |         |
| 13 | ARS-BFGL-NGS-70064               | 0 | 6724839 |         |
| 13 | BTB-01124640                     | 0 | 6772860 |         |
| 13 | ARS-BFGL-NGS-40326               | 0 | 6822805 |         |
| 13 | BTB-01666402                     | 0 | 6853227 |         |
| 13 | ARS-BFGL-NGS-99512               | 0 | 6880072 |         |
| 13 | ARS-BFGL-NGS-68489               | 0 | 6923326 |         |
| 13 | Hapmap30338-BTA-32842            | 0 | 6982667 |         |
| 13 | ARS-BFGL-NGS-31806               | 0 | 7053194 |         |
| 13 | ARS-BFGL-NGS-17084               | 0 | 7091674 |         |
| 13 | BTA-14523-no-rs                  | 0 | 7161324 |         |
| 13 | ARS-BFGL-NGS-39930               | 0 | 7358665 |         |
| 13 | Hapmap27251-BTA-32688            | 0 | 7460395 |         |
| 13 | Hapmap31075-BTA-128022           | 0 | 7538755 |         |
| 13 | ARS-BFGL-NGS-28406               | 0 | 7564399 |         |
| 13 | ARS-BFGL-NGS-13519               | 0 | 7594811 |         |

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| 13 | Hapmap32549-BTA-128020         | 0       | 7675926  |          |
| 13 | UA-IFASA-2056                  | 0       | 7748847  |          |
| 13 | Hapmap26184-BTA-156969         | 0       | 7815040  |          |
| 13 | Hapmap38890-BTA-32883          | 0       | 7970420  |          |
| 13 | BTA-32894-no-rs                | 0       | 7976775  |          |
| 13 | BTA-32929-no-rs                | 0       | 8165260  |          |
| 13 | ARS-BFGL-BAC-15171             | 0       | 8347568  |          |
| 13 | ARS-BFGL-NGS-16424             | 0       | 8386291  |          |
| 13 | ARS-BFGL-NGS-13291             | 0       | 8411554  |          |
| 13 | ARS-BFGL-NGS-29118             | 0       | 8497369  |          |
| 13 | Hapmap44948-BTA-33105          | 0       | 8580383  |          |
| 13 | ARS-BFGL-NGS-15609             | 0       | 8672679  |          |
| 13 | ARS-BFGL-NGS-180               | 0       | 8737253  |          |
| 13 | UA-IFASA-2669                  | 0       | 8831875  |          |
| 13 | ARS-BFGL-NGS-93056             | 0       | 8880814  |          |
| 13 | BTB-00513394                   | 0       | 8920866  |          |
| 13 | ARS-BFGL-NGS-966               | 0       | 8956466  |          |
| 13 | Hapmap50661-BTA-33254          | 0       | 9008328  |          |
| 13 | ARS-BFGL-NGS-30669             | 0       | 9100403  |          |
| 13 | ARS-BFGL-NGS-89019             | 0       | 9139641  |          |
| 13 | ARS-BFGL-NGS-107746            | 0       | 9204187  |          |
| 13 | BTA-100864-no-rs               | 0       | 9276071  |          |
| 13 | ARS-BFGL-NGS-16509             | 0       | 9321076  |          |
| 13 | BTB-01526358                   | 0       | 9352790  |          |
| 13 | ARS-BFGL-NGS-116697            | 0       | 9381924  |          |
| 13 | BTB-01135267                   | 0       | 9424085  |          |
| 13 | Hapmap42012-BTA-95193          | 0       | 9459895  |          |
| 13 | BTA-95118-no-rs                | 0       | 9490320  |          |
| 13 | Hapmap53972-rs29024048         | 0       | 9512443  |          |
| 13 | Hapmap55461-rs29025797         | 0       | 9556357  |          |
| 13 | ARS-BFGL-NGS-19364             | 0       | 9586153  |          |
| 13 | ARS-BFGL-NGS-119032            | 0       | 9623038  |          |
| 13 | ARS-BFGL-BAC-12503             | 0       | 9718475  |          |
| 13 | ARS-BFGL-NGS-75511             | 0       | 9755065  |          |
| 13 | ARS-BFGL-NGS-101346            | 0       | 9798234  |          |
| 13 | ARS-BFGL-NGS-25574             | 0       | 9839639  |          |
| 13 | ARS-BFGL-NGS-18630             | 9862273 |          |          |
| 13 | ARS-BFGL-NGS-113280            | 0       | 9892378  |          |
| 13 | Hapmap58556-rs29023432         | 0       | 9937302  |          |
| 13 | ARS-BFGL-NGS-67830             | 9979409 |          |          |
| 13 | ARS-BFGL-NGS-42362             | 0       | 10006981 |          |
| 13 | BTA-33639-no-rs                | 0       | 10048229 |          |
| 13 | ARS-BFGL-NGS-43836             | 0       | 10083710 |          |
| 13 | ARS-BFGL-NGS-41111             | 0       | 10111504 |          |
| 13 | ARS-BFGL-NGS-95258             | 0       | 10146255 |          |
| 13 | ARS-BFGL-NGS-57637             | 0       | 10173103 |          |
| 13 | ARS-BFGL-NGS-13253             | 0       | 10194150 |          |
| 13 | ARS-BFGL-NGS-101649            | 0       | 10232495 |          |
| 13 | Hapmap40636-BTA-106122         | 0       | 10255498 |          |
| 13 | Hapmap34939-BES1_Contig527_922 | 0       |          | 10302310 |
| 13 | ARS-BFGL-NGS-116545            | 0       | 10338784 |          |
| 13 | BTA-96657-no-rs                | 0       | 10368225 |          |
| 13 | ARS-BFGL-NGS-108920            | 0       | 10400443 |          |
| 13 | ARS-BFGL-NGS-61056             | 0       | 10467314 |          |

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| 13 | ARS-BFGL-NGS-32505     | 0        | 10508131 |
| 13 | ARS-BFGL-NGS-23315     | 0        | 10567492 |
| 13 | ARS-BFGL-BAC-789 0     | 10590830 |          |
| 13 | ARS-BFGL-NGS-42224     | 0        | 10663054 |
| 13 | ARS-BFGL-NGS-34731     | 0        | 10695973 |
| 13 | Hapmap54284-ss46526494 | 0        | 10747684 |
| 13 | Hapmap39554-BTA-33438  | 0        | 10779832 |
| 13 | ARS-BFGL-BAC-12487     | 0        | 10898488 |
| 13 | ARS-BFGL-NGS-64857     | 0        | 10926940 |
| 13 | ARS-BFGL-NGS-74648     | 0        | 11581444 |
| 13 | ARS-BFGL-NGS-80694     | 0        | 11642644 |
| 13 | Hapmap40843-BTA-96445  | 0        | 11733081 |
| 13 | ARS-BFGL-NGS-56654     | 0        | 11784421 |
| 13 | Hapmap39701-BTA-96441  | 0        | 11831480 |
| 13 | Hapmap38101-BTA-24198  | 0        | 11879234 |
| 13 | BTA-24190-no-rs 0      | 11904880 |          |
| 13 | ARS-BFGL-NGS-111456    | 0        | 11976079 |
| 13 | ARS-BFGL-NGS-27780     | 0        | 12009567 |
| 13 | BTA-24187-no-rs 0      | 12076103 |          |
| 13 | ARS-BFGL-NGS-84012     | 0        | 12109189 |
| 13 | ARS-BFGL-NGS-63200     | 12152700 |          |
| 13 | ARS-BFGL-NGS-16995     | 0        | 12194320 |
| 13 | Hapmap59198-rs29011285 | 0        | 12375438 |
| 13 | Hapmap54459-rs29016219 | 0        | 12436043 |
| 13 | ARS-BFGL-NGS-117859    | 0        | 12529399 |
| 13 | ARS-BFGL-NGS-23170     | 12587622 |          |
| 13 | ARS-BFGL-BAC-11867     | 0        | 12675181 |
| 13 | ARS-BFGL-NGS-15741     | 0        | 12715838 |
| 13 | ARS-BFGL-NGS-21062     | 0        | 12759014 |
| 13 | ARS-BFGL-BAC-785 0     | 12808180 |          |
| 13 | ARS-BFGL-NGS-64965     | 0        | 12841397 |
| 13 | ARS-BFGL-NGS-23681     | 0        | 12877928 |
| 13 | Hapmap50320-BTA-33854  | 0        | 12903703 |
| 13 | ARS-BFGL-NGS-81968     | 0        | 12967677 |
| 13 | Hapmap46985-BTA-33916  | 0        | 13013693 |
| 13 | BTA-33924-no-rs 0      | 13042986 |          |
| 13 | BTA-33932-no-rs 0      | 13067288 |          |
| 13 | ARS-BFGL-NGS-110571    | 0        | 13131014 |
| 13 | Hapmap50662-BTA-33967  | 0        | 13195270 |
| 13 | Hapmap40956-BTA-34026  | 0        | 13306287 |
| 13 | BTA-34041-no-rs 0      | 13334977 |          |
| 13 | ARS-BFGL-BAC-12479     | 0        | 13385570 |
| 13 | ARS-BFGL-NGS-81122     | 0        | 13447983 |
| 13 | ARS-BFGL-NGS-35328     | 0        | 13492207 |
| 13 | ARS-BFGL-NGS-38533     | 0        | 13552102 |
| 13 | ARS-BFGL-NGS-18107     | 0        | 13589089 |
| 13 | ARS-BFGL-NGS-25175     | 0        | 13657289 |
| 13 | ARS-BFGL-NGS-106924    | 0        | 13706672 |
| 13 | ARS-BFGL-NGS-22557     | 0        | 13790975 |
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| 13 | Hapmap38951-BTA-34140  | 0        | 13876935 |
| 13 | Hapmap50305-BTA-27942  | 0        | 13907892 |
| 13 | Hapmap48542-BTA-97857  | 0        | 14203335 |
| 13 | BTA-08210-rs29021773   | 0        | 14356314 |

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| 13 | Hapmap43530-BTA-25745            | 0 | 14443021 |          |
| 13 | ARS-BFGL-NGS-114459              | 0 | 14509110 |          |
| 13 | BTA-54898-no-rs                  | 0 | 14531420 |          |
| 13 | Hapmap26998-BTA-152949           | 0 | 14623911 |          |
| 13 | BTA-102427-no-rs                 | 0 | 14665246 |          |
| 13 | Hapmap32791-BTA-128109           | 0 | 14748672 |          |
| 13 | ARS-BFGL-NGS-109071              | 0 | 14773635 |          |
| 13 | Hapmap44228-BTA-34185            | 0 | 14814734 |          |
| 13 | Hapmap44458-BTA-34177            | 0 | 14863533 |          |
| 13 | ARS-BFGL-NGS-28179               | 0 | 14889722 |          |
| 13 | ARS-BFGL-NGS-27497               | 0 | 14923596 |          |
| 13 | BTA-34170-no-rs                  | 0 | 15017558 |          |
| 13 | Hapmap25802-BTA-128101           | 0 | 15088689 |          |
| 13 | BTA-34161-no-rs                  | 0 | 15146915 |          |
| 13 | ARS-BFGL-BAC-56760               |   | 15178253 |          |
| 13 | ARS-BFGL-NGS-78672               | 0 | 15366046 |          |
| 13 | ARS-BFGL-NGS-28482               | 0 | 15411544 |          |
| 13 | ARS-BFGL-NGS-21550               | 0 | 15456721 |          |
| 13 | Hapmap36438-SCAFFOLD135036_36443 | 0 |          | 15512766 |
| 13 | ARS-BFGL-NGS-98874               | 0 | 15735028 |          |
| 13 | BTB-00514401                     | 0 | 15776690 |          |
| 13 | ARS-BFGL-BAC-12507               | 0 | 15805823 |          |
| 13 | ARS-BFGL-NGS-10111               | 0 | 15828258 |          |
| 13 | Hapmap41833-BTA-34149            | 0 | 15849135 |          |
| 13 | ARS-BFGL-NGS-114762              | 0 | 15899318 |          |
| 13 | ARS-BFGL-BAC-13110               | 0 | 15923779 |          |
| 13 | ARS-BFGL-NGS-16065               | 0 | 15963362 |          |
| 13 | ARS-BFGL-NGS-104129              | 0 | 16007421 |          |
| 13 | BTB-01640519                     | 0 | 16156297 |          |
| 13 | BTA-05595-rs29019754             | 0 | 16165614 |          |
| 13 | ARS-BFGL-NGS-36148               | 0 | 16239004 |          |
| 13 | ARS-BFGL-NGS-23940               |   | 16275528 |          |
| 13 | ARS-BFGL-NGS-13543               | 0 | 16364894 |          |
| 13 | ARS-BFGL-NGS-92946               | 0 | 16399441 |          |
| 13 | ARS-BFGL-NGS-13142               | 0 | 16424596 |          |
| 13 | BTB-00515019                     | 0 | 16466935 |          |
| 13 | ARS-BFGL-NGS-16128               | 0 | 16560433 |          |
| 13 | BTB-00515369                     | 0 | 16597249 |          |
| 13 | ARS-BFGL-NGS-25859               | 0 | 16643405 |          |
| 13 | ARS-BFGL-NGS-57332               | 0 | 16740787 |          |
| 13 | ARS-BFGL-BAC-13111               | 0 | 16806019 |          |
| 13 | ARS-BFGL-NGS-74140               | 0 | 16866102 |          |
| 13 | UA-IFASA-8290                    | 0 | 16901756 |          |
| 13 | ARS-BFGL-NGS-96622               | 0 | 16953393 |          |
| 13 | Hapmap41504-BTA-31952            | 0 | 16988665 |          |
| 13 | BTA-31951-no-rs                  | 0 | 17025364 |          |
| 13 | ARS-BFGL-NGS-66728               | 0 | 17064169 |          |
| 13 | ARS-BFGL-NGS-89089               | 0 | 17104043 |          |
| 13 | BTA-118215-no-rs                 | 0 | 17146206 |          |
| 13 | ARS-BFGL-BAC-13113               | 0 | 17184475 |          |
| 13 | BTA-31946-no-rs                  | 0 | 17232510 |          |
| 13 | ARS-BFGL-NGS-78665               | 0 | 17266404 |          |
| 13 | ARS-BFGL-NGS-113455              | 0 | 17303547 |          |
| 13 | Hapmap24537-BTA-128215           | 0 | 17327772 |          |



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| 13 | ARS-BFGL-NGS-28798             | 0        | 17348861 |  |
| 13 | ARS-BFGL-NGS-104014            | 0        | 17383654 |  |
| 13 | ARS-BFGL-NGS-11585             | 0        | 17407043 |  |
| 13 | ARS-BFGL-BAC-15065             | 0        | 17431234 |  |
| 13 | Hapmap32400-BTA-31937          | 0        | 17452477 |  |
| 13 | ARS-BFGL-BAC-15708             | 0        | 17492791 |  |
| 13 | Hapmap39397-BTA-31932          | 0        | 17533073 |  |
| 13 | Hapmap42509-BTA-31930          | 0        | 17555964 |  |
| 13 | ARS-BFGL-NGS-82109             | 0        | 17584003 |  |
| 13 | ARS-BFGL-NGS-112250            | 0        | 17617716 |  |
| 13 | ARS-BFGL-NGS-118324            | 0        | 17628745 |  |
| 13 | ARS-BFGL-BAC-67880             | 17673806 |          |  |
| 13 | Hapmap55207-ss46526284         | 0        | 18045930 |  |
| 13 | ARS-BFGL-NGS-35631             | 0        | 18066756 |  |
| 13 | Hapmap38668-BTA-34221          | 0        | 18149664 |  |
| 13 | Hapmap51587-BTA-34220          | 0        | 18235268 |  |
| 13 | ARS-BFGL-NGS-31365             | 0        | 18268908 |  |
| 13 | Hapmap24536-BTA-128131         | 0        | 18368056 |  |
| 13 | Hapmap39556-BTA-34210          | 0        | 18436194 |  |
| 13 | ARS-BFGL-NGS-30447             | 0        | 18458155 |  |
| 13 | Hapmap50266-BTA-13664          | 0        | 18536707 |  |
| 13 | Hapmap49833-BTA-103929         | 0        | 18657767 |  |
| 13 | Hapmap32149-BTA-24861          | 0        | 18703065 |  |
| 13 | ARS-BFGL-NGS-21967             | 0        | 18762878 |  |
| 13 | BTA-25900-no-rs                | 0        | 18783020 |  |
| 13 | ARS-BFGL-BAC-74440             | 18832047 |          |  |
| 13 | Hapmap58390-rs29019645         | 0        | 18853772 |  |
| 13 | ARS-BFGL-NGS-116274            | 0        | 18899560 |  |
| 13 | BTA-31832-no-rs                | 0        | 18950080 |  |
| 13 | Hapmap43233-BTA-31838          | 0        | 18995676 |  |
| 13 | BTA-10553-rs29016106           | 0        | 19030945 |  |
| 13 | ARS-BFGL-NGS-72609             | 0        | 19067761 |  |
| 13 | ARS-BFGL-NGS-13518             | 0        | 19097566 |  |
| 13 | ARS-BFGL-NGS-68568             | 0        | 19146003 |  |
| 13 | ARS-BFGL-NGS-109707            | 0        | 19167543 |  |
| 13 | ARS-BFGL-NGS-116613            | 0        | 19227633 |  |
| 13 | ARS-BFGL-NGS-111161            | 0        | 19283942 |  |
| 13 | ARS-BFGL-NGS-102840            | 0        | 19364445 |  |
| 13 | ARS-BFGL-NGS-32085             | 0        | 19388240 |  |
| 13 | ARS-BFGL-NGS-32012             | 0        | 19472091 |  |
| 13 | ARS-BFGL-NGS-112023            | 0        | 19533614 |  |
| 13 | ARS-BFGL-NGS-103355            | 0        | 19590132 |  |
| 13 | ARS-BFGL-NGS-17420             | 19694687 |          |  |
| 13 | Hapmap26649-BTA-128159         | 0        | 19734286 |  |
| 13 | Hapmap40119-BTA-31847          | 0        | 19773655 |  |
| 13 | BTB-00516251                   | 0        | 19816277 |  |
| 13 | ARS-BFGL-NGS-84305             | 0        | 19855697 |  |
| 13 | ARS-BFGL-NGS-118304            | 0        | 19966786 |  |
| 13 | Hapmap35524-SCAFFOLD5373_40104 | 0        | 19987212 |  |
| 13 | Hapmap42180-BTA-31841          | 0        | 20011204 |  |
| 13 | ARS-BFGL-NGS-104834            | 0        | 20049382 |  |
| 13 | BTA-31857-no-rs                | 0        | 20091667 |  |
| 13 | BTB-00516473                   | 0        | 20137246 |  |
| 13 | ARS-BFGL-NGS-40580             | 0        | 20164831 |  |

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| 13 | Hapmap25637-BTA-31828          | 0 | 20194782 |          |
| 13 | BTA-90722-no-rs                | 0 | 20225194 |          |
| 13 | BTB-01811439                   | 0 | 20342688 |          |
| 13 | BTA-17922-no-rs                | 0 | 20371685 |          |
| 13 | Hapmap31057-BTA-115291         | 0 | 20457510 |          |
| 13 | Hapmap51397-BTA-115996         | 0 | 20491529 |          |
| 13 | BTB-02071807                   | 0 | 20545039 |          |
| 13 | ARS-BFGL-NGS-80460             | 0 | 20584188 |          |
| 13 | BTB-01233700                   | 0 | 20615821 |          |
| 13 | ARS-BFGL-NGS-41168             | 0 | 20654751 |          |
| 13 | BTA-115298-no-rs               | 0 | 20687500 |          |
| 13 | ARS-BFGL-NGS-81428             | 0 | 20735468 |          |
| 13 | ARS-BFGL-NGS-117931            | 0 | 20788173 |          |
| 13 | Hapmap47517-BTA-116140         | 0 | 20891289 |          |
| 13 | Hapmap57706-rs29024881         | 0 | 20914286 |          |
| 13 | ARS-BFGL-NGS-117417            | 0 | 21004145 |          |
| 13 | Hapmap47895-BTA-24456          | 0 | 21069742 |          |
| 13 | ARS-BFGL-NGS-61194             | 0 | 21206435 |          |
| 13 | BTA-24488-no-rs                | 0 | 21236959 |          |
| 13 | Hapmap30327-BTA-162257         | 0 | 21363395 |          |
| 13 | ARS-BFGL-NGS-109090            | 0 | 21412697 |          |
| 13 | ARS-BFGL-NGS-629               | 0 | 21442240 |          |
| 13 | Hapmap38820-BTA-24487          | 0 | 21554077 |          |
| 13 | ARS-BFGL-BAC-74670             |   | 21590166 |          |
| 13 | BTA-24483-no-rs                | 0 | 21619445 |          |
| 13 | ARS-BFGL-NGS-20264             | 0 | 21676028 |          |
| 13 | Hapmap51705-BTA-24478          | 0 | 21822462 |          |
| 13 | ARS-BFGL-NGS-99559             | 0 | 21891617 |          |
| 13 | ARS-BFGL-NGS-103700            | 0 | 21928806 |          |
| 13 | ARS-BFGL-NGS-22974             | 0 | 21989172 |          |
| 13 | BTA-24463-no-rs                | 0 | 22021716 |          |
| 13 | BTA-24452-no-rs                | 0 | 22062178 |          |
| 13 | ARS-BFGL-NGS-12072             | 0 | 22163094 |          |
| 13 | Hapmap45137-BTA-85614          | 0 | 22184257 |          |
| 13 | ARS-BFGL-NGS-39834             | 0 | 22206126 |          |
| 13 | ARS-BFGL-NGS-106940            | 0 | 22308682 |          |
| 13 | UA-IFASA-2266                  | 0 | 22339600 |          |
| 13 | ARS-BFGL-NGS-28633             | 0 | 22363763 |          |
| 13 | ARS-BFGL-NGS-90391             | 0 | 22418071 |          |
| 13 | Hapmap42135-BTA-21541          | 0 | 22445369 |          |
| 13 | Hapmap33087-BTA-21546          | 0 | 22476667 |          |
| 13 | ARS-BFGL-NGS-72802             | 0 | 22565561 |          |
| 13 | Hapmap30332-BTA-18283          | 0 | 22609886 |          |
| 13 | ARS-BFGL-NGS-22539             | 0 | 22647616 |          |
| 13 | ARS-BFGL-NGS-42537             | 0 | 22669969 |          |
| 13 | ARS-BFGL-NGS-72249             | 0 | 22720760 |          |
| 13 | Hapmap35027-BES1_Contig330_454 | 0 |          | 22787813 |
| 13 | Hapmap59622-rs29013323         | 0 | 22821740 |          |
| 13 | ARS-BFGL-NGS-36580             |   | 22868297 |          |
| 13 | BTA-112161-no-rs               | 0 | 22904772 |          |
| 13 | Hapmap57186-rs29027389         | 0 | 23013169 |          |
| 13 | ARS-BFGL-BAC-11283             | 0 | 23196342 |          |
| 13 | Hapmap58057-rs29012102         | 0 | 23452414 |          |
| 13 | Hapmap45544-BTA-122351         | 0 | 23478182 |          |

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| 13 | Hapmap39219-BTA-31890                 | 0 | 23529663 |          |  |
| 13 | BTA-11196-rs29016959                  | 0 | 23590320 |          |  |
| 13 | BTA-31887-no-rs                       | 0 | 23610529 |          |  |
| 13 | BTA-31880-no-rs                       | 0 | 23644481 |          |  |
| 13 | ARS-BFGL-NGS-112203                   | 0 | 23821652 |          |  |
| 13 | ARS-BFGL-NGS-101509                   | 0 | 23867876 |          |  |
| 13 | ARS-BFGL-NGS-99560                    | 0 | 23925250 |          |  |
| 13 | ARS-BFGL-NGS-79011                    | 0 | 24031113 |          |  |
| 13 | ARS-BFGL-NGS-80617                    | 0 | 24084823 |          |  |
| 13 | ARS-BFGL-NGS-14188                    | 0 | 24174701 |          |  |
| 13 | ARS-BFGL-NGS-91120                    | 0 | 24202640 |          |  |
| 13 | ARS-BFGL-NGS-31326                    | 0 | 24269841 |          |  |
| 13 | ARS-BFGL-NGS-56387                    | 0 | 24355847 |          |  |
| 13 | ARS-BFGL-NGS-102355                   | 0 | 24416810 |          |  |
| 13 | ARS-BFGL-BAC-869                      | 0 | 24645652 |          |  |
| 13 | BTA-31870-no-rs                       | 0 | 24688809 |          |  |
| 13 | Hapmap53835-rs29011344                | 0 | 24732116 |          |  |
| 13 | Hapmap39817-BTA-25361                 | 0 | 24784515 |          |  |
| 13 | ARS-BFGL-NGS-70502                    | 0 | 24860333 |          |  |
| 13 | ARS-BFGL-BAC-11290                    | 0 | 24951471 |          |  |
| 13 | Hapmap47566-BTA-31922                 | 0 | 24972496 |          |  |
| 13 | ARS-BFGL-NGS-113296                   | 0 | 24993156 |          |  |
| 13 | Hapmap50656-BTA-31918                 | 0 | 25057651 |          |  |
| 13 | ARS-BFGL-NGS-15781                    | 0 | 25101088 |          |  |
| 13 | BTA-31912-no-rs                       | 0 | 25138665 |          |  |
| 13 | ARS-BFGL-NGS-115560                   | 0 | 25254394 |          |  |
| 13 | ARS-BFGL-NGS-53270                    |   | 25298145 |          |  |
| 13 | Hapmap42181-BTA-31908                 | 0 | 25323323 |          |  |
| 13 | ARS-BFGL-NGS-104788                   | 0 | 25351049 |          |  |
| 13 | BTA-05384-rs29019544                  | 0 | 25486017 |          |  |
| 13 | Hapmap32792-BTA-128187                | 0 | 25540833 |          |  |
| 13 | BTA-31894-no-rs                       | 0 | 25594852 |          |  |
| 13 | ARS-USMARC-Parent-EF034081-rs29009668 | 0 |          | 25606469 |  |
| 13 | Hapmap36338-SCAFFOLD140080_5028       | 0 |          | 25631340 |  |
| 13 | ARS-BFGL-NGS-15471                    | 0 | 25652793 |          |  |
| 13 | ARS-BFGL-NGS-102728                   | 0 | 25681327 |          |  |
| 13 | ARS-BFGL-NGS-66330                    | 0 | 25710529 |          |  |
| 13 | ARS-BFGL-NGS-20934                    | 0 | 25733265 |          |  |
| 13 | Hapmap25007-BTA-109433                | 0 | 25762442 |          |  |
| 13 | UA-IFASA-2685                         | 0 | 25783475 |          |  |
| 13 | ARS-BFGL-NGS-92202                    | 0 | 25818921 |          |  |
| 13 | BTA-31928-no-rs                       | 0 | 25842073 |          |  |
| 13 | Hapmap50657-BTA-31929                 | 0 | 25873125 |          |  |
| 13 | BTA-31957-no-rs                       | 0 | 25961066 |          |  |
| 13 | ARS-BFGL-NGS-41845                    | 0 | 25985907 |          |  |
| 13 | ARS-BFGL-NGS-113966                   | 0 | 26028188 |          |  |
| 13 | ARS-BFGL-NGS-35376                    | 0 | 26182286 |          |  |
| 13 | BTA-31976-no-rs                       | 0 | 26301726 |          |  |
| 13 | Hapmap39018-BTA-31978                 | 0 | 26370317 |          |  |
| 13 | Hapmap41828-BTA-31980                 | 0 | 26404674 |          |  |
| 13 | BTA-31991-no-rs                       | 0 | 26446051 |          |  |
| 13 | BTA-31995-no-rs                       | 0 | 26469939 |          |  |
| 13 | ARS-BFGL-NGS-111594                   | 0 | 26496734 |          |  |
| 13 | ARS-BFGL-NGS-36122                    | 0 | 26524321 |          |  |

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| 13 | ARS-BFGL-NGS-19310     | 0        | 26614651 |
| 13 | BTA-98790-no-rs        | 0        | 26654447 |
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| 13 | Hapmap39398-BTA-31996  | 0        | 26708860 |
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| 13 | BTA-13329-rs29018291   | 0        | 26794137 |
| 13 | ARS-BFGL-NGS-17725     | 0        | 26859883 |
| 13 | ARS-BFGL-NGS-14593     | 0        | 26882688 |
| 13 | Hapmap46978-BTA-32012  | 0        | 26937127 |
| 13 | BTA-32021-no-rs        | 0        | 26976082 |
| 13 | BTA-32030-no-rs        | 0        | 27013737 |
| 13 | BTA-32047-no-rs        | 0        | 27074094 |
| 13 | BTA-112222-no-rs       | 0        | 27337367 |
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| 13 | Hapmap44402-BTA-73818  | 0        | 27398154 |
| 13 | Hapmap25132-BTA-96391  | 0        | 27504215 |
| 13 | Hapmap55095-rs29010810 | 0        | 27589301 |
| 13 | BTA-26152-no-rs        | 0        | 27623653 |
| 13 | Hapmap49549-BTA-26157  | 0        | 27643794 |
| 13 | Hapmap48698-BTA-26145  | 0        | 27737305 |
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| 13 | ARS-BFGL-BAC-11913     | 0        | 27911263 |
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| 13 | ARS-BFGL-NGS-24013     | 0        | 28065143 |
| 13 | ARS-BFGL-NGS-56660     | 0        | 28095457 |
| 13 | Hapmap30917-BTA-91510  | 0        | 28115879 |
| 13 | ARS-BFGL-NGS-79738     | 0        | 28149879 |
| 13 | ARS-BFGL-NGS-67591     | 0        | 28183389 |
| 13 | ARS-BFGL-NGS-47570     | 28299842 |          |
| 13 | ARS-BFGL-NGS-109467    | 0        | 28331553 |
| 13 | ARS-BFGL-NGS-110285    | 0        | 28404972 |
| 13 | ARS-BFGL-NGS-17771     | 0        | 28445047 |
| 13 | ARS-BFGL-BAC-11918     | 0        | 28504163 |
| 13 | ARS-BFGL-NGS-78038     | 0        | 28598101 |
| 13 | Hapmap29968-BTA-128253 | 0        | 28634098 |
| 13 | ARS-BFGL-NGS-15563     | 0        | 28659628 |
| 13 | ARS-BFGL-NGS-44677     | 0        | 28696977 |
| 13 | ARS-BFGL-NGS-107316    | 0        | 28727990 |
| 13 | ARS-BFGL-BAC-11922     | 0        | 28859669 |
| 13 | Hapmap54619-rs29026745 | 0        | 28913623 |
| 13 | ARS-BFGL-NGS-108308    | 0        | 28999095 |
| 13 | ARS-BFGL-NGS-114179    | 0        | 29042658 |
| 13 | ARS-BFGL-NGS-51350     | 29072163 |          |
| 13 | ARS-BFGL-NGS-49        | 0        | 29161012 |
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| 13 | ARS-BFGL-NGS-19838     | 0        | 29300299 |
| 13 | Hapmap30510-BTA-128266 | 0        | 29388019 |
| 13 | ARS-BFGL-NGS-118301    | 0        | 29420539 |
| 13 | Hapmap42511-BTA-32130  | 0        | 29463587 |
| 13 | Hapmap57967-rs29017684 | 0        | 29508182 |
| 13 | ARS-BFGL-NGS-20151     | 0        | 29577577 |
| 13 | ARS-BFGL-NGS-76821     | 0        | 29616303 |
| 13 | ARS-BFGL-NGS-113236    | 0        | 29647662 |

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| 13 | Hapmap41181-BTA-120938           | 0 | 29670823 |          |
| 13 | BTA-32111-no-rs                  | 0 | 29718368 |          |
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| 13 | ARS-BFGL-NGS-84696               | 0 | 29789119 |          |
| 13 | Hapmap35392-SCAFFOLD196656_10302 | 0 |          | 29821617 |
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| 13 | ARS-BFGL-NGS-33422               | 0 | 29876435 |          |
| 13 | BTA-06771-rs29021128             | 0 | 29897763 |          |
| 13 | Hapmap25787-BTA-122982           | 0 | 29934974 |          |
| 13 | ARS-BFGL-NGS-100178              | 0 | 30062520 |          |
| 13 | Hapmap41720-BTA-101335           | 0 | 30108205 |          |
| 13 | ARS-BFGL-NGS-109691              | 0 | 30197435 |          |
| 13 | ARS-BFGL-NGS-21977               | 0 | 30235320 |          |
| 13 | ARS-BFGL-NGS-101633              | 0 | 30310253 |          |
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| 13 | ARS-BFGL-NGS-29647               | 0 | 30480475 |          |
| 13 | BTA-32199-no-rs                  | 0 | 30530185 |          |
| 13 | ARS-BFGL-BAC-11935               | 0 | 30551596 |          |
| 13 | ARS-BFGL-NGS-55024               | 0 | 30713329 |          |
| 13 | Hapmap26650-BTA-128286           | 0 | 30733648 |          |
| 13 | Hapmap54246-rs29017970           | 0 | 30878341 |          |
| 13 | BTA-32160-no-rs                  | 0 | 30920957 |          |
| 13 | Hapmap49960-BTA-32159            | 0 | 30989687 |          |
| 13 | Hapmap60147-rs29013821           | 0 | 31014861 |          |
| 13 | Hapmap35375-SCAFFOLD206_10369    | 0 |          | 31037485 |
| 13 | ARS-BFGL-NGS-86040               | 0 | 31075993 |          |
| 13 | ARS-BFGL-NGS-50063               | 0 | 31153536 |          |
| 13 | Hapmap24336-BTA-128283           | 0 | 31177467 |          |
| 13 | ARS-BFGL-NGS-113540              | 0 | 31304022 |          |
| 13 | ARS-BFGL-NGS-107803              | 0 | 31364982 |          |
| 13 | ARS-BFGL-NGS-40191               | 0 | 31416451 |          |
| 13 | BTA-32302-no-rs                  | 0 | 31442043 |          |
| 13 | ARS-BFGL-NGS-36809               | 0 | 31475142 |          |
| 13 | BTA-18257-no-rs                  | 0 | 31524626 |          |
| 13 | ARS-BFGL-NGS-113714              | 0 | 31560145 |          |
| 13 | BTA-70648-no-rs                  | 0 | 31580781 |          |
| 13 | ARS-BFGL-NGS-17819               | 0 | 31645254 |          |
| 13 | Hapmap44124-BTA-70668            | 0 | 31667421 |          |
| 13 | ARS-BFGL-NGS-26770               |   | 31726339 |          |
| 13 | ARS-BFGL-BAC-11941               | 0 | 31750419 |          |
| 13 | ARS-BFGL-BAC-11942               | 0 | 31785117 |          |
| 13 | Hapmap54575-rs29011158           | 0 | 31826409 |          |
| 13 | BTA-32267-no-rs                  | 0 | 31851749 |          |
| 13 | ARS-BFGL-NGS-84887               | 0 | 31876709 |          |
| 13 | Hapmap39553-BTA-32269            | 0 | 31938349 |          |
| 13 | BTA-32272-no-rs                  | 0 | 32064099 |          |
| 13 | ARS-BFGL-NGS-30975               | 0 | 32151932 |          |
| 13 | Hapmap42040-BTA-103877           | 0 | 32394745 |          |
| 13 | ARS-BFGL-NGS-22290               | 0 | 32443744 |          |
| 13 | Hapmap24688-BTA-153495           | 0 | 32497741 |          |
| 13 | ARS-BFGL-BAC-13828               | 0 | 32531513 |          |
| 13 | ARS-BFGL-NGS-112302              | 0 | 32615860 |          |
| 13 | BTA-103890-no-rs                 | 0 | 32655461 |          |
| 13 | Hapmap48567-BTA-103893           | 0 | 32710351 |          |

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| 13 | Hapmap42041-BTA-103894 | 0        | 32769279 |
| 13 | BTA-103897-no-rs       | 0        | 32802426 |
| 13 | ARS-BFGL-NGS-69389     | 0        | 32831454 |
| 13 | ARS-BFGL-NGS-103507    | 0        | 32882712 |
| 13 | Hapmap31800-BTA-152132 | 0        | 32932074 |
| 13 | ARS-BFGL-NGS-31606     | 0        | 32979253 |
| 13 | BTA-32318-no-rs        | 0        | 33166252 |
| 13 | UA-IFASA-6479          | 0        | 33201457 |
| 13 | BTB-00518743           | 0        | 33239258 |
| 13 | Hapmap40947-BTA-32313  | 0        | 33274673 |
| 13 | ARS-BFGL-NGS-33839     | 0        | 33310839 |
| 13 | UA-IFASA-4025          | 0        | 33366445 |
| 13 | ARS-BFGL-NGS-110104    | 0        | 33411471 |
| 13 | Hapmap52547-rs29026933 | 0        | 33455505 |
| 13 | ARS-BFGL-BAC-13827     | 0        | 33501056 |
| 13 | ARS-BFGL-NGS-42320     | 0        | 33530995 |
| 13 | ARS-BFGL-NGS-38328     | 0        | 33591992 |
| 13 | ARS-BFGL-NGS-115789    | 0        | 33626917 |
| 13 | ARS-BFGL-NGS-93247     | 0        | 33652701 |
| 13 | Hapmap31841-BTA-161879 | 0        | 33680817 |
| 13 | ARS-BFGL-NGS-33873     | 0        | 33763853 |
| 13 | BTB-01325364           | 0        | 33798146 |
| 13 | ARS-BFGL-NGS-42098     | 0        | 33857935 |
| 13 | ARS-BFGL-NGS-57955     | 0        | 33903159 |
| 13 | ARS-BFGL-NGS-118434    | 0        | 33959871 |
| 13 | BTB-01447452           | 0        | 33986035 |
| 13 | ARS-BFGL-NGS-32007     | 0        | 34017769 |
| 13 | Hapmap51780-BTA-93959  | 0        | 34047662 |
| 13 | Hapmap57166-rs29020401 | 0        | 34124325 |
| 13 | BTB-01447256           | 0        | 34162016 |
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| 13 | BTA-54181-no-rs        | 0        | 34498517 |
| 13 | BTB-00830935           | 0        | 34534590 |
| 13 | BTB-00518930           | 0        | 34684941 |
| 13 | ARS-BFGL-NGS-79261     | 0        | 34851781 |
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| 13 | Hapmap42512-BTA-32321  | 0        | 34909187 |
| 13 | Hapmap40414-BTA-32320  | 0        | 34935939 |
| 13 | BTA-32325-no-rs        | 0        | 34947259 |
| 13 | ARS-BFGL-NGS-34861     | 0        | 34980846 |
| 13 | ARS-BFGL-BAC-14435     | 0        | 35007368 |
| 13 | ARS-BFGL-NGS-111777    | 0        | 35029615 |
| 13 | ARS-BFGL-NGS-98854     | 0        | 35116013 |
| 13 | ARS-BFGL-NGS-113008    | 0        | 35148331 |
| 13 | ARS-BFGL-NGS-44320     | 35263460 |          |
| 13 | BTB-01342926           | 0        | 35309000 |
| 13 | ARS-BFGL-NGS-90758     | 0        | 35352877 |
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| 13 | ARS-BFGL-NGS-32491     | 0        | 35497855 |
| 13 | Hapmap59420-ss46527113 | 0        | 35533998 |
| 13 | ARS-BFGL-NGS-119227    | 0        | 35563916 |
| 13 | ARS-BFGL-NGS-30074     | 0        | 35593309 |
| 13 | ARS-BFGL-NGS-14820     | 0        | 35614532 |
| 13 | Hapmap41113-BTA-95325  | 0        | 35638992 |

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| 13 | ARS-BFGL-NGS-24318     | 0 | 35661069 |
| 13 | ARS-BFGL-NGS-87795     | 0 | 35691175 |
| 13 | ARS-BFGL-NGS-54558     | 0 | 35744438 |
| 13 | Hapmap60951-rs29020538 | 0 | 35787638 |
| 13 | ARS-BFGL-NGS-117085    | 0 | 35837395 |
| 13 | ARS-BFGL-NGS-19915     | 0 | 35875350 |
| 13 | ARS-BFGL-NGS-19638     | 0 | 35974760 |
| 13 | BTA-32100-no-rs        | 0 | 36008671 |
| 13 | Hapmap38304-BTA-32098  | 0 | 36043347 |
| 13 | BTB-00517773           | 0 | 36079542 |
| 13 | Hapmap46799-BTA-32094  | 0 | 36117082 |
| 13 | BTB-00517708           | 0 | 36143388 |
| 13 | ARS-BFGL-NGS-72426     | 0 | 36171020 |
| 13 | Hapmap45550-BTA-32092  | 0 | 36197476 |
| 13 | ARS-BFGL-NGS-116536    | 0 | 36224197 |
| 13 | BTA-32083-no-rs        | 0 | 36289664 |
| 13 | BTB-00517668           | 0 | 36405903 |
| 13 | BTB-00517643           | 0 | 36480046 |
| 13 | BTB-01351678           | 0 | 36530872 |
| 13 | ARS-BFGL-NGS-110793    | 0 | 36576754 |
| 13 | ARS-BFGL-NGS-35590     | 0 | 36623846 |
| 13 | BTA-17784-no-rs        | 0 | 36672545 |
| 13 | ARS-BFGL-NGS-14452     | 0 | 36730055 |
| 13 | ARS-BFGL-NGS-88695     | 0 | 36827318 |
| 13 | Hapmap51578-BTA-27320  | 0 | 36852814 |
| 13 | BTA-32343-no-rs        | 0 | 36876232 |
| 13 | ARS-BFGL-NGS-35710     | 0 | 36918152 |
| 13 | ARS-BFGL-NGS-107865    | 0 | 37013486 |
| 13 | BTA-32337-no-rs        | 0 | 37089930 |
| 13 | Hapmap27250-BTA-32334  | 0 | 37134812 |
| 13 | ARS-BFGL-NGS-31451     | 0 | 37164944 |
| 13 | ARS-BFGL-NGS-36852     | 0 | 37210394 |
| 13 | Hapmap44287-BTA-81022  | 0 | 37301226 |
| 13 | ARS-BFGL-NGS-88685     | 0 | 37334004 |
| 13 | ARS-BFGL-NGS-38298     | 0 | 37429612 |
| 13 | BTB-00519631           | 0 | 37571088 |
| 13 | ARS-BFGL-NGS-66410     | 0 | 37602219 |
| 13 | BTA-32371-no-rs        | 0 | 37675851 |
| 13 | BTA-32376-no-rs        | 0 | 37725131 |
| 13 | ARS-BFGL-NGS-24450     | 0 | 37757395 |
| 13 | BTB-00520031           | 0 | 37811017 |
| 13 | ARS-BFGL-NGS-14560     | 0 | 37865729 |
| 13 | ARS-BFGL-NGS-103645    | 0 | 37960816 |
| 13 | ARS-BFGL-NGS-88501     | 0 | 38086947 |
| 13 | ARS-BFGL-NGS-103989    | 0 | 38165980 |
| 13 | UA-IFASA-9311          | 0 | 38186854 |
| 13 | ARS-BFGL-NGS-111603    | 0 | 38217833 |
| 13 | UA-IFASA-7733          | 0 | 38260976 |
| 13 | ARS-BFGL-NGS-42980     | 0 | 38288391 |
| 13 | BTB-00520329           | 0 | 38326767 |
| 13 | ARS-BFGL-NGS-28202     | 0 | 38359460 |
| 13 | BTB-00520443           | 0 | 38430293 |
| 13 | ARS-BFGL-NGS-31610     | 0 | 38462778 |
| 13 | BTA-32346-no-rs        | 0 | 38530393 |

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| 13 | ARS-BFGL-NGS-14089     | 0        | 38568755 |
| 13 | BTB-00519355           | 0        | 38618369 |
| 13 | ARS-BFGL-NGS-118784    | 0        | 38656618 |
| 13 | BTA-32348-no-rs        | 0        | 38674487 |
| 13 | ARS-BFGL-NGS-37672     | 0        | 38787006 |
| 13 | Hapmap55179-rs29024483 | 0        | 38830375 |
| 13 | ARS-BFGL-NGS-20188     | 0        | 38858641 |
| 13 | UA-IFASA-8759          | 0        | 38881719 |
| 13 | ARS-BFGL-NGS-102990    | 0        | 38943133 |
| 13 | ARS-BFGL-NGS-18039     | 0        | 39019728 |
| 13 | BTB-00354852           | 0        | 39046771 |
| 13 | ARS-BFGL-NGS-36070     | 39076246 |          |
| 13 | ARS-BFGL-NGS-24069     | 0        | 39110625 |
| 13 | Hapmap28918-BTA-159771 | 0        | 39208304 |
| 13 | ARS-BFGL-NGS-84653     | 0        | 39270967 |
| 13 | Hapmap52925-rs29019171 | 0        | 39301840 |
| 13 | Hapmap47096-BTA-75138  | 0        | 39328066 |
| 13 | ARS-BFGL-NGS-48540     | 39378251 |          |
| 13 | ARS-BFGL-NGS-116070    | 0        | 39419924 |
| 13 | ARS-BFGL-NGS-110611    | 0        | 39513558 |
| 13 | ARS-BFGL-NGS-40100     | 39545522 |          |
| 13 | ARS-BFGL-NGS-54940     | 39569134 |          |
| 13 | Hapmap41547-BTA-46171  | 0        | 39602766 |
| 13 | ARS-BFGL-NGS-109701    | 0        | 39641742 |
| 13 | ARS-BFGL-NGS-12801     | 0        | 39682536 |
| 13 | ARS-BFGL-BAC-14448     | 0        | 39707232 |
| 13 | Hapmap39199-BTA-32420  | 0        | 39741913 |
| 13 | ARS-BFGL-NGS-22093     | 0        | 39766187 |
| 13 | ARS-BFGL-NGS-23363     | 0        | 39799861 |
| 13 | ARS-BFGL-NGS-65199     | 0        | 39826900 |
| 13 | ARS-BFGL-NGS-80270     | 39846449 |          |
| 13 | ARS-BFGL-NGS-108568    | 0        | 39961667 |
| 13 | Hapmap49122-BTA-32454  | 0        | 40001727 |
| 13 | ARS-BFGL-NGS-36574     | 0        | 40031719 |
| 13 | ARS-BFGL-NGS-27815     | 0        | 40103153 |
| 13 | ARS-BFGL-NGS-92424     | 0        | 40263696 |
| 13 | ARS-BFGL-NGS-87289     | 0        | 40305153 |
| 13 | ARS-BFGL-NGS-26331     | 0        | 40338272 |
| 13 | ARS-BFGL-NGS-90891     | 0        | 40386012 |
| 13 | Hapmap50934-BTA-32439  | 0        | 40427350 |
| 13 | ARS-BFGL-NGS-44116     | 0        | 40491708 |
| 13 | ARS-BFGL-NGS-91535     | 0        | 40525851 |
| 13 | ARS-BFGL-NGS-14594     | 0        | 40547718 |
| 13 | UA-IFASA-3757          | 0        | 40581554 |
| 13 | ARS-BFGL-NGS-29144     | 0        | 40606621 |
| 13 | ARS-BFGL-NGS-27078     | 0        | 40628125 |
| 13 | ARS-BFGL-NGS-30012     | 0        | 40666278 |
| 13 | ARS-BFGL-NGS-95823     | 0        | 40722564 |
| 13 | ARS-BFGL-NGS-21158     | 0        | 40753080 |
| 13 | ARS-BFGL-NGS-41919     | 0        | 40777908 |
| 13 | ARS-BFGL-NGS-15975     | 0        | 40815971 |
| 13 | ARS-BFGL-NGS-37354     | 0        | 40837170 |
| 13 | ARS-BFGL-NGS-58346     | 0        | 40880250 |
| 13 | BTB-00521804           | 0        | 40972213 |



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| 13 | Hapmap58773-rs29015694 | 0        | 41023312 |
| 13 | ARS-BFGL-NGS-113071    | 0        | 41083814 |
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| 13 | ARS-BFGL-NGS-113658    | 0        | 41236006 |
| 13 | Hapmap47248-BTA-32461  | 0        | 41258124 |
| 13 | ARS-BFGL-NGS-22137     | 0        | 41291761 |
| 13 | ARS-BFGL-NGS-115482    | 0        | 41337809 |
| 13 | ARS-BFGL-NGS-101382    | 0        | 41366870 |
| 13 | ARS-BFGL-NGS-16279     | 0        | 41414256 |
| 13 | ARS-BFGL-NGS-40188     | 0        | 41484694 |
| 13 | BTA-26412-no-rs        | 0        | 41506674 |
| 13 | ARS-BFGL-NGS-102025    | 0        | 41529941 |
| 13 | ARS-BFGL-NGS-84490     | 41669155 |          |
| 13 | BTB-00522444           | 0        | 41702235 |
| 13 | ARS-BFGL-NGS-13176     | 0        | 41749885 |
| 13 | Hapmap47567-BTA-32536  | 0        | 41800337 |
| 13 | Hapmap58859-rs29023610 | 0        | 41833607 |
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| 13 | ARS-BFGL-NGS-109376    | 0        | 41952009 |
| 13 | ARS-BFGL-NGS-64510     | 0        | 42015567 |
| 13 | ARS-BFGL-NGS-113343    | 0        | 42043229 |
| 13 | Hapmap61089-rs29014590 | 0        | 42070556 |
| 13 | ARS-BFGL-NGS-74106     | 0        | 42148059 |
| 13 | ARS-BFGL-NGS-14104     | 0        | 42192875 |
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| 13 | Hapmap47569-BTA-32680  | 0        | 42281089 |
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| 13 | ARS-BFGL-NGS-29010     | 0        | 42340884 |
| 13 | ARS-BFGL-NGS-13061     | 0        | 42361611 |
| 13 | ARS-BFGL-NGS-57596     | 0        | 42400503 |
| 13 | ARS-BFGL-NGS-118368    | 0        | 42425880 |
| 13 | Hapmap48292-BTA-32583  | 0        | 42448271 |
| 13 | ARS-BFGL-NGS-12976     | 0        | 42503102 |
| 13 | Hapmap51209-BTA-32563  | 0        | 42539299 |
| 13 | BTA-32556-no-rs        | 0        | 42613759 |
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| 13 | ARS-BFGL-NGS-57335     | 0        | 42927726 |
| 13 | ARS-BFGL-NGS-14221     | 0        | 42966892 |
| 13 | BTA-32517-no-rs        | 0        | 43009513 |
| 13 | ARS-BFGL-NGS-71025     | 0        | 43113693 |
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| 13 | Hapmap53719-rs29024306 | 0        | 44493281 |
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| 13 | Hapmap30330-BTA-164073 | 0        | 45032736 |
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| 13 | ARS-BFGL-NGS-101531    | 0        | 46280482 |

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| 13 | ARS-BFGL-NGS-115802              | 0 | 46353847 |          |
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| 13 | ARS-BFGL-NGS-116062              | 0 | 46510476 |          |
| 13 | BTB-01318142                     | 0 | 46543726 |          |
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| 13 | ARS-BFGL-NGS-63599               | 0 | 46692521 |          |
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| 13 | ARS-BFGL-NGS-107916              | 0 | 47167515 |          |
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| 13 | BTB-00526221                     | 0 | 47450332 |          |
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| 13 | Hapmap29868-BTA-32784            | 0 | 47576311 |          |
| 13 | Hapmap49571-BTA-32781            | 0 | 47583553 |          |
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| 13 | BTA-32777-no-rs                  | 0 | 47728879 |          |
| 13 | BTB-00525539                     | 0 | 47778392 |          |
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| 13 | ARS-BFGL-NGS-84799               | 0 | 48091318 |          |
| 13 | ARS-BFGL-NGS-38562               | 0 | 48179394 |          |
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| 13 | Hapmap54365-rs29014934           | 0 | 48305310 |          |
| 13 | BTB-01718516                     | 0 | 48318066 |          |
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| 13 | BTB-00527671                     | 0 | 48522460 |          |
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| 13 | ARS-BFGL-NGS-70206               | 0 | 48622655 |          |
| 13 | ARS-BFGL-NGS-101264              | 0 | 48676506 |          |

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| 13 | BTA-115847-no-rs       | 0 | 48826815 |
| 13 | Hapmap38189-BTA-107106 | 0 | 48939117 |
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| 13 | BTB-01186797           | 0 | 49053256 |
| 13 | ARS-BFGL-NGS-26045     | 0 | 49100664 |
| 13 | BTB-01186688           | 0 | 49169253 |
| 13 | BTB-01186659           | 0 | 49204396 |
| 13 | Hapmap41414-BTA-107108 | 0 | 49300389 |
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| 13 | Hapmap49962-BTA-32832  | 0 | 49392089 |
| 13 | BTB-00526875           | 0 | 49467659 |
| 13 | BTA-32829-no-rs        | 0 | 49548390 |
| 13 | Hapmap51715-BTA-32830  | 0 | 49596331 |
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| 13 | BTB-00527031           | 0 | 49655217 |
| 13 | BTB-00527085           | 0 | 49700244 |
| 13 | BTB-02018187           | 0 | 49786666 |
| 13 | BTA-88058-no-rs        | 0 | 49829137 |
| 13 | BTB-01394423           | 0 | 49963611 |
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| 13 | ARS-BFGL-NGS-117659    | 0 | 50029349 |
| 13 | BTB-01301268           | 0 | 50063872 |
| 13 | Hapmap28107-BTA-161385 | 0 | 50199537 |
| 13 | BTA-03159-no-rs        | 0 | 50306089 |
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| 13 | BTA-32905-no-rs        | 0 | 51415790 |
| 13 | ARS-BFGL-NGS-20220     | 0 | 51513229 |
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| 13 | Hapmap25025-BTA-128441 | 0 | 51732402 |
| 13 | ARS-BFGL-NGS-37129     | 0 | 51753146 |
| 13 | BTA-32870-no-rs        | 0 | 51852671 |
| 13 | BTA-32869-no-rs        | 0 | 51880463 |
| 13 | ARS-BFGL-NGS-18073     | 0 | 51901646 |
| 13 | ARS-BFGL-NGS-47950     | 0 | 51953691 |
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| 13 | Hapmap33575-BTA-128424 | 0 | 52065761 |

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| 13 | BTA-32865-no-rs        | 0 | 52098338 |
| 13 | ARS-BFGL-NGS-74160     |   | 52133351 |
| 13 | BTA-32900-no-rs        | 0 | 52211663 |
| 13 | ARS-BFGL-BAC-60110     |   | 52241778 |
| 13 | ARS-BFGL-BAC-16372     | 0 | 52303334 |
| 13 | ARS-BFGL-NGS-52456     | 0 | 52426064 |
| 13 | ARS-BFGL-NGS-114228    | 0 | 52447531 |
| 13 | ARS-BFGL-BAC-74820     |   | 52468051 |
| 13 | Hapmap23813-BTA-128455 | 0 | 52496684 |
| 13 | Hapmap41228-BTA-32897  | 0 | 52531127 |
| 13 | BTB-01493007           | 0 | 52625702 |
| 13 | ARS-BFGL-NGS-35859     | 0 | 52708811 |
| 13 | BTB-01492842           | 0 | 52737845 |
| 13 | BTB-00534731           | 0 | 52786304 |
| 13 | BTB-00534695           | 0 | 52837622 |
| 13 | ARS-BFGL-NGS-21294     | 0 | 52944462 |
| 13 | ARS-BFGL-NGS-108401    | 0 | 52982280 |
| 13 | ARS-BFGL-NGS-117488    | 0 | 53003864 |
| 13 | Hapmap23071-BTA-128452 | 0 | 53045127 |
| 13 | Hapmap47571-BTA-32877  | 0 | 53091922 |
| 13 | ARS-BFGL-NGS-34510     | 0 | 53121791 |
| 13 | ARS-BFGL-NGS-70740     | 0 | 53167293 |
| 13 | BTB-00528306           | 0 | 53205470 |
| 13 | ARS-BFGL-NGS-113013    | 0 | 53245417 |
| 13 | ARS-BFGL-NGS-68384     | 0 | 53266833 |
| 13 | ARS-BFGL-NGS-22053     | 0 | 53306364 |
| 13 | ARS-BFGL-NGS-109458    | 0 | 53347036 |
| 13 | BTB-01231290           | 0 | 53489269 |
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| 13 | Hapmap58156-rs29020918 | 0 | 53618441 |
| 13 | UA-IFASA-3974          | 0 | 53618942 |
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| 13 | ARS-BFGL-NGS-116998    | 0 | 53684993 |
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| 13 | ARS-BFGL-NGS-14448     | 0 | 53766894 |
| 13 | ARS-BFGL-NGS-110706    | 0 | 53809825 |
| 13 | BTA-25036-no-rs        | 0 | 54039170 |
| 13 | ARS-BFGL-NGS-58116     | 0 | 54106367 |
| 13 | ARS-BFGL-NGS-37275     | 0 | 54167722 |
| 13 | ARS-BFGL-NGS-31560     | 0 | 54200800 |
| 13 | ARS-BFGL-NGS-24994     | 0 | 54230207 |
| 13 | ARS-BFGL-NGS-19155     | 0 | 54269404 |
| 13 | ARS-BFGL-NGS-73404     | 0 | 54315870 |
| 13 | ARS-BFGL-NGS-82210     | 0 | 54343726 |
| 13 | ARS-BFGL-BAC-12549     | 0 | 54397045 |
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| 13 | ARS-BFGL-NGS-65917     | 0 | 54629335 |
| 13 | ARS-BFGL-NGS-33209     | 0 | 54663649 |
| 13 | ARS-BFGL-NGS-42070     | 0 | 54742445 |
| 13 | BTA-16884-no-rs        | 0 | 54763115 |
| 13 | Hapmap30591-BTA-159623 | 0 | 54804053 |

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| 13 | ARS-BFGL-NGS-76148     | 0        | 54829615 |
| 13 | ARS-BFGL-NGS-11200     | 54865583 |          |
| 13 | ARS-BFGL-NGS-118051    | 0        | 54895475 |
| 13 | ARS-BFGL-BAC-12577     | 0        | 54956566 |
| 13 | ARS-BFGL-BAC-12578     | 0        | 55006836 |
| 13 | ARS-BFGL-NGS-100973    | 0        | 55090558 |
| 13 | BTB-00529185           | 0        | 55131886 |
| 13 | ARS-BFGL-NGS-25461     | 0        | 55183375 |
| 13 | Hapmap30063-BTA-32922  | 0        | 55244135 |
| 13 | ARS-BFGL-NGS-33859     | 0        | 55288364 |
| 13 | ARS-BFGL-NGS-31462     | 0        | 55332025 |
| 13 | Hapmap46742-BTA-01253  | 0        | 55409520 |
| 13 | ARS-BFGL-NGS-116624    | 0        | 55449134 |
| 13 | ARS-BFGL-NGS-22427     | 0        | 55495757 |
| 13 | BTB-00529466           | 0        | 55529589 |
| 13 | Hapmap40246-BTA-32935  | 0        | 55613243 |
| 13 | ARS-BFGL-NGS-104967    | 0        | 55642499 |
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| 13 | ARS-BFGL-NGS-29831     | 0        | 56064752 |
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| 13 | ARS-BFGL-NGS-26401     | 0        | 56128139 |
| 13 | ARS-BFGL-NGS-25592     | 0        | 56159653 |
| 13 | Hapmap38200-BTA-120950 | 0        | 56190025 |
| 13 | BTB-00530343           | 0        | 56220523 |
| 13 | ARS-BFGL-NGS-13650     | 56249416 |          |
| 13 | Hapmap52629-rs29014811 | 0        | 56292896 |
| 13 | BTA-32981-no-rs        | 0        | 56324282 |
| 13 | Hapmap26373-BTA-128487 | 0        | 56347415 |
| 13 | ARS-BFGL-NGS-81600     | 56372599 |          |
| 13 | BTA-32982-no-rs        | 0        | 56402912 |
| 13 | ARS-BFGL-NGS-94587     | 0        | 56427608 |
| 13 | ARS-BFGL-NGS-87928     | 0        | 56459611 |
| 13 | Hapmap48219-BTA-121969 | 0        | 56532232 |
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| 13 | ARS-BFGL-NGS-41752     | 0        | 56610032 |
| 13 | ARS-BFGL-NGS-14592     | 0        | 56642417 |
| 13 | ARS-BFGL-NGS-15480     | 56664174 |          |
| 13 | ARS-BFGL-NGS-21065     | 0        | 56698060 |
| 13 | ARS-BFGL-NGS-65704     | 0        | 56751418 |
| 13 | UA-IFASA-4705          | 0        | 56793164 |
| 13 | BTA-33019-no-rs        | 0        | 56833592 |
| 13 | ARS-BFGL-NGS-73490     | 56870735 |          |
| 13 | BTA-33013-no-rs        | 0        | 56921813 |
| 13 | Hapmap43556-BTA-33007  | 0        | 56967700 |
| 13 | ARS-BFGL-NGS-21687     | 0        | 57016938 |
| 13 | ARS-BFGL-NGS-13201     | 0        | 57051358 |
| 13 | ARS-BFGL-NGS-57199     | 0        | 57085910 |

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| 13 | ARS-BFGL-BAC-839       | 0 | 57320572 |
| 13 | Hapmap26375-BTA-128510 | 0 | 57367631 |
| 13 | ARS-BFGL-NGS-19009     | 0 | 57446360 |
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| 13 | ARS-BFGL-NGS-27559     | 0 | 57548174 |
| 13 | ARS-BFGL-NGS-30853     | 0 | 57570093 |
| 13 | ARS-BFGL-NGS-109563    | 0 | 57693460 |
| 13 | BTA-32994-no-rs        | 0 | 57799152 |
| 13 | ARS-BFGL-BAC-12582     | 0 | 57848276 |
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| 13 | ARS-BFGL-NGS-119375    | 0 | 58140449 |
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| 13 | ARS-BFGL-NGS-115363    | 0 | 58285197 |
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| 13 | ARS-BFGL-NGS-21830     | 0 | 58716956 |
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| 13 | BTB-01252771           | 0 | 58871642 |
| 13 | Hapmap47850-BTA-118310 | 0 | 58904174 |
| 13 | ARS-BFGL-NGS-60269     | 0 | 58943426 |
| 13 | BTB-02067445           | 0 | 58988091 |
| 13 | ARS-BFGL-NGS-21699     | 0 | 59018628 |
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| 13 | ARS-BFGL-NGS-110904    | 0 | 59072057 |
| 13 | ARS-BFGL-NGS-119420    | 0 | 59101909 |
| 13 | ARS-BFGL-NGS-433       | 0 | 59137860 |
| 13 | ARS-BFGL-NGS-352       | 0 | 59160965 |
| 13 | BTB-01434891           | 0 | 59195392 |
| 13 | ARS-BFGL-NGS-116527    | 0 | 59223837 |
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| 13 | ARS-BFGL-NGS-88660     | 0 | 59291745 |
| 13 | ARS-BFGL-BAC-13190     | 0 | 59329731 |
| 13 | ARS-BFGL-NGS-118168    | 0 | 59447893 |
| 13 | BTB-00533558           | 0 | 59482598 |
| 13 | ARS-BFGL-NGS-72660     | 0 | 59514859 |
| 13 | ARS-BFGL-NGS-26065     | 0 | 59537585 |
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| 13 | ARS-BFGL-NGS-86646     | 0 | 59582211 |
| 13 | ARS-BFGL-NGS-15080     | 0 | 59616070 |
| 13 | BTA-33082-no-rs        | 0 | 59638244 |

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| 13 | ARS-BFGL-NGS-36593             | 0        | 59854361 |
| 13 | ARS-BFGL-NGS-31787             | 0        | 59916883 |
| 13 | ARS-BFGL-BAC-13199             | 0        | 59963672 |
| 13 | BTB-00534196                   | 0        | 60002265 |
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| 13 | ARS-BFGL-NGS-66442             | 0        | 60094367 |
| 13 | BTB-00534445                   | 0        | 60198826 |
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| 13 | ARS-BFGL-NGS-15183             | 0        | 60506763 |
| 13 | ARS-BFGL-NGS-117832            | 0        | 60558889 |
| 13 | ARS-BFGL-NGS-55159             | 0        | 60593663 |
| 13 | Hapmap47572-BTA-33133          | 0        | 60626082 |
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| 13 | ARS-BFGL-NGS-73420             | 60714542 |          |
| 13 | ARS-BFGL-NGS-116544            | 0        | 60756573 |
| 13 | Hapmap59840-rs29022170         | 0        | 60781323 |
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| 13 | Hapmap32610-BTA-151880         | 0        | 61065155 |
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| 13 | ARS-BFGL-NGS-99897             | 0        | 61279037 |
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| 13 | BTB-00535099                   | 0        | 61373749 |
| 13 | Hapmap49573-BTA-33131          | 0        | 61493252 |
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| 13 | ARS-BFGL-NGS-17861             | 0        | 61665594 |
| 13 | BTB-00536531                   | 0        | 61880984 |
| 13 | INRA-759                       | 0        | 61927452 |
| 13 | ARS-BFGL-NGS-43714             | 0        | 61947481 |
| 13 | ARS-BFGL-NGS-117823            | 0        | 61999652 |
| 13 | ARS-BFGL-NGS-101600            | 0        | 62069793 |
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| 13 | BTA-71452-no-rs                | 0        | 62141480 |
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| 13 | ARS-BFGL-NGS-83446             | 0        | 62259448 |
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| 13 | ARS-BFGL-NGS-39350             | 62404218 |          |
| 13 | ARS-BFGL-NGS-20976             | 0        | 62429199 |
| 13 | ARS-BFGL-NGS-104301            | 0        | 62498532 |
| 13 | ARS-BFGL-NGS-58950             | 62534909 |          |
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| 13 | ARS-BFGL-NGS-81431              | 0        | 62618708 |          |
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| 13 | ARS-BFGL-NGS-112644             | 0        | 62692209 |          |
| 13 | ARS-BFGL-NGS-80625              | 0        | 62806429 |          |
| 13 | ARS-BFGL-NGS-56157              | 0        | 62881877 |          |
| 13 | ARS-BFGL-NGS-112015             | 0        | 62909025 |          |
| 13 | ARS-BFGL-NGS-100677             | 0        | 62933067 |          |
| 13 | ARS-BFGL-NGS-90261              | 0        | 62955647 |          |
| 13 | ARS-BFGL-NGS-64703              | 0        | 62991477 |          |
| 13 | ARS-BFGL-NGS-109982             | 0        | 63015278 |          |
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| 13 | ARS-BFGL-NGS-11473              | 0        | 63163288 |          |
| 13 | ARS-BFGL-NGS-52692              | 0        | 63184499 |          |
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| 13 | ARS-BFGL-NGS-109250             | 0        | 63236944 |          |
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| 13 | ARS-BFGL-NGS-65082              | 0        | 63323694 |          |
| 13 | Hapmap47573-BTA-33163           | 0        | 63369536 |          |
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| 13 | BTA-33327-no-rs                 | 0        | 63622437 |          |
| 13 | ARS-BFGL-NGS-113824             | 0        | 63688976 |          |
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| 13 | Hapmap35906-SCAFFOLD25274_18984 | 0        | 63733206 | 63733206 |
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| 13 | ARS-BFGL-NGS-28233              | 0        | 63875561 |          |
| 13 | ARS-BFGL-NGS-17925              | 0        | 63907611 |          |
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| 13 | UA-IFASA-7527                   | 0        | 63978193 |          |
| 13 | ARS-BFGL-NGS-52892              | 0        | 64068392 |          |
| 13 | ARS-BFGL-NGS-65699              | 0        | 64253779 |          |
| 13 | Hapmap54972-rs29014977          | 0        | 64399733 |          |
| 13 | BTB-00537751                    | 0        | 64804947 |          |
| 13 | ARS-BFGL-NGS-113964             | 0        | 64840460 |          |
| 13 | BTA-33287-no-rs                 | 0        | 64875239 |          |
| 13 | ARS-BFGL-NGS-35385              | 0        | 64920640 |          |
| 13 | ARS-BFGL-BAC-847                | 0        | 64953618 |          |
| 13 | Hapmap48297-BTA-33286           | 0        | 64977414 |          |
| 13 | ARS-BFGL-NGS-103077             | 0        | 65006713 |          |
| 13 | Hapmap39743-BTA-33304           | 0        | 65108908 |          |
| 13 | ARS-BFGL-NGS-100338             | 0        | 65164792 |          |
| 13 | ARS-BFGL-NGS-790                | 0        | 65201054 |          |
| 13 | ARS-BFGL-NGS-89409              | 0        | 65236809 |          |
| 13 | Hapmap54034-rs29026486          | 0        | 65259649 |          |
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| 13 | ARS-BFGL-NGS-72080              | 65369103 |          |          |
| 13 | ARS-BFGL-NGS-65586              | 0        | 65399569 |          |
| 13 | ARS-BFGL-BAC-14471              | 0        | 65424218 |          |
| 13 | ARS-BFGL-BAC-898                | 0        | 65445282 |          |
| 13 | ARS-BFGL-BAC-15132              | 0        | 65470288 |          |
| 13 | BTB-00537534                    | 0        | 65574833 |          |
| 13 | BTB-00537519                    | 0        | 65661023 |          |

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| 13 | BTB-00536567           | 0        | 65761897 |
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| 13 | Hapmap53988-rs29024591 | 0        | 65855988 |
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| 13 | ARS-BFGL-NGS-27792     | 0        | 66049830 |
| 13 | Hapmap38307-BTA-33222  | 0        | 66080035 |
| 13 | ARS-BFGL-NGS-87803     | 0        | 66118164 |
| 13 | ARS-BFGL-NGS-102293    | 0        | 66179152 |
| 13 | ARS-BFGL-NGS-98521     | 0        | 66240806 |
| 13 | BTA-33234-no-rs        | 0        | 66291997 |
| 13 | ARS-BFGL-NGS-112656    | 0        | 66336246 |
| 13 | ARS-BFGL-NGS-110102    | 0        | 66370867 |
| 13 | ARS-BFGL-NGS-24867     | 0        | 66395465 |
| 13 | BTA-87290-no-rs        | 0        | 66415470 |
| 13 | BTB-01351628           | 0        | 66572178 |
| 13 | ARS-BFGL-NGS-65111     | 0        | 66623395 |
| 13 | ARS-BFGL-NGS-63663     | 0        | 66660916 |
| 13 | ARS-BFGL-BAC-15764     | 0        | 66727403 |
| 13 | ARS-BFGL-NGS-19222     | 0        | 66774859 |
| 13 | ARS-BFGL-NGS-109197    | 0        | 66825292 |
| 13 | ARS-BFGL-NGS-110385    | 0        | 66854427 |
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| 13 | BTB-00539392           | 0        | 66925874 |
| 13 | ARS-BFGL-NGS-803       | 0        | 66960026 |
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| 13 | ARS-BFGL-NGS-92308     | 0        | 67081069 |
| 13 | Hapmap40712-BTA-33406  | 0        | 67101174 |
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| 13 | ARS-BFGL-NGS-63777     | 0        | 67144437 |
| 13 | ARS-BFGL-NGS-116471    | 0        | 67178078 |
| 13 | ARS-BFGL-NGS-28020     | 0        | 67212324 |
| 13 | BTA-33373-no-rs        | 0        | 67264571 |
| 13 | Hapmap31078-BTA-128645 | 0        | 67316762 |
| 13 | ARS-BFGL-NGS-100298    | 0        | 67375037 |
| 13 | UA-IFASA-7262          | 0        | 67406632 |
| 13 | ARS-BFGL-BAC-13217     | 0        | 67443474 |
| 13 | ARS-BFGL-NGS-70551     | 0        | 67467905 |
| 13 | ARS-BFGL-NGS-32791     | 0        | 67490759 |
| 13 | ARS-BFGL-NGS-38230     | 67530414 |          |
| 13 | ARS-BFGL-NGS-15189     | 0        | 67557015 |
| 13 | BTA-33341-no-rs        | 0        | 67578984 |
| 13 | ARS-BFGL-NGS-34120     | 0        | 67616199 |
| 13 | ARS-BFGL-NGS-52100     | 67663982 |          |
| 13 | ARS-BFGL-NGS-104616    | 0        | 67698840 |
| 13 | Hapmap47164-BTA-104545 | 0        | 67725380 |
| 13 | ARS-BFGL-NGS-112008    | 0        | 67749699 |
| 13 | ARS-BFGL-NGS-32914     | 0        | 67780665 |
| 13 | ARS-BFGL-BAC-13210     | 0        | 67810247 |
| 13 | BPI-2                  | 0        | 67833153 |
| 13 | BPI-1                  | 0        | 67833218 |
| 13 | BPI-3                  | 0        | 67836459 |

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| 13 | UA-IFASA-9446                    | 0 | 67837132 |          |
| 13 | ARS-BFGL-NGS-103635              | 0 | 67888763 |          |
| 13 | BTA-33429-no-rs                  | 0 | 67919195 |          |
| 13 | ARS-BFGL-NGS-107113              | 0 | 67958189 |          |
| 13 | Hapmap44949-BTA-33430            | 0 | 67994235 |          |
| 13 | BTA-33432-no-rs                  | 0 | 68022725 |          |
| 13 | BTA-33433-no-rs                  | 0 | 68080631 |          |
| 13 | ARS-BFGL-NGS-110387              | 0 | 68133617 |          |
| 13 | ARS-BFGL-NGS-81601               | 0 | 68324133 |          |
| 13 | ARS-BFGL-NGS-39007               | 0 | 68363581 |          |
| 13 | ARS-BFGL-NGS-36552               | 0 | 68389914 |          |
| 13 | Hapmap53251-rs29027216           | 0 | 68437003 |          |
| 13 | ARS-BFGL-NGS-115655              | 0 | 68537473 |          |
| 13 | ARS-BFGL-NGS-68380               | 0 | 68568254 |          |
| 13 | Hapmap26733-BTA-154785           | 0 | 68626956 |          |
| 13 | ARS-BFGL-NGS-38630               | 0 | 68688618 |          |
| 13 | ARS-BFGL-NGS-62274               | 0 | 68766380 |          |
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| 13 | Hapmap55254-rs29014939           | 0 | 69042143 |          |
| 13 | ARS-BFGL-NGS-85867               | 0 | 69070669 |          |
| 13 | Hapmap39255-BTA-119464           | 0 | 69124045 |          |
| 13 | ARS-BFGL-NGS-119823              | 0 | 69148458 |          |
| 13 | ARS-BFGL-NGS-112094              | 0 | 69187742 |          |
| 13 | Hapmap53805-rs29012784           | 0 | 69248366 |          |
| 13 | ARS-BFGL-NGS-112745              | 0 | 69306366 |          |
| 13 | ARS-BFGL-NGS-101814              | 0 | 69329751 |          |
| 13 | ARS-BFGL-NGS-76722               | 0 | 69360031 |          |
| 13 | ARS-BFGL-NGS-24000               | 0 | 69462978 |          |
| 13 | ARS-BFGL-NGS-23007               | 0 | 69495032 |          |
| 13 | ARS-BFGL-NGS-112690              | 0 | 69539974 |          |
| 13 | ARS-BFGL-NGS-81530               |   | 69645687 |          |
| 13 | ARS-BFGL-NGS-103010              | 0 | 69670639 |          |
| 13 | ARS-BFGL-NGS-34937               | 0 | 69702161 |          |
| 13 | ARS-BFGL-NGS-112608              | 0 | 69863520 |          |
| 13 | ARS-BFGL-NGS-51557               | 0 | 69892551 |          |
| 13 | ARS-BFGL-NGS-58037               | 0 | 69929079 |          |
| 13 | ARS-BFGL-NGS-99220               |   | 69970083 |          |
| 13 | ARS-BFGL-NGS-118627              | 0 | 70004629 |          |
| 13 | ARS-BFGL-NGS-107306              | 0 | 70171253 |          |
| 13 | ARS-BFGL-NGS-78493               | 0 | 70195187 |          |
| 13 | ARS-BFGL-NGS-108302              | 0 | 70239106 |          |
| 13 | ARS-BFGL-NGS-34968               | 0 | 70262878 |          |
| 13 | BTA-33507-no-rs                  | 0 | 70286265 |          |
| 13 | Hapmap25516-BTA-128677           | 0 | 70429543 |          |
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| 13 | ARS-BFGL-NGS-77823               | 0 | 70548675 |          |
| 13 | ARS-BFGL-NGS-112889              | 0 | 70571114 |          |
| 13 | ARS-BFGL-NGS-55182               | 0 | 70656675 |          |
| 13 | BTA-120959-no-rs                 | 0 | 70702815 |          |
| 13 | Hapmap35235-BES10_Contig446_1064 | 0 |          | 70744382 |
| 13 | ARS-BFGL-NGS-62707               | 0 | 70767104 |          |
| 13 | Hapmap57013-rs29019369           | 0 | 70790140 |          |
| 13 | BTA-33523-no-rs                  | 0 | 70860749 |          |

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| 13 | ARS-BFGL-NGS-108573    | 0        | 70893423 |
| 13 | ARS-BFGL-BAC-15769     | 0        | 70976625 |
| 13 | ARS-BFGL-NGS-95635     | 0        | 71006628 |
| 13 | ARS-BFGL-NGS-80843     | 0        | 71050077 |
| 13 | ARS-BFGL-NGS-107717    | 0        | 71075689 |
| 13 | ARS-BFGL-NGS-31976     | 0        | 71212300 |
| 13 | ARS-BFGL-NGS-44859     | 0        | 71224579 |
| 13 | ARS-BFGL-NGS-21649     | 0        | 71271729 |
| 13 | ARS-BFGL-NGS-99043     | 0        | 71301458 |
| 13 | ARS-BFGL-NGS-39985     | 0        | 71321982 |
| 13 | ARS-BFGL-NGS-105763    | 0        | 71344736 |
| 13 | Hapmap60394-rs29020827 | 0        | 71384205 |
| 13 | Hapmap54125-rs29019206 | 0        | 71442112 |
| 13 | ARS-BFGL-NGS-41610     | 71489545 |          |
| 13 | Hapmap47901-BTA-26507  | 0        | 71544363 |
| 13 | ARS-BFGL-NGS-32582     | 0        | 71576870 |
| 13 | BTB-00540483           | 0        | 71637943 |
| 13 | ARS-BFGL-NGS-13210     | 71691419 |          |
| 13 | ARS-BFGL-NGS-95865     | 0        | 71713558 |
| 13 | ARS-BFGL-NGS-33181     | 0        | 71736298 |
| 13 | ARS-BFGL-NGS-44322     | 0        | 71766574 |
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| 13 | Hapmap58984-rs29020381 | 0        | 71898074 |
| 13 | ARS-BFGL-NGS-31590     | 71919584 |          |
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| 13 | ARS-BFGL-NGS-14434     | 0        | 71987095 |
| 13 | ARS-BFGL-NGS-119443    | 0        | 72027150 |
| 13 | BTA-33684-no-rs        | 0        | 72052858 |
| 13 | ARS-BFGL-NGS-38677     | 0        | 72077698 |
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| 13 | ARS-BFGL-NGS-28054     | 0        | 72120569 |
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| 13 | ARS-BFGL-NGS-108803    | 0        | 72197105 |
| 13 | ARS-BFGL-NGS-100187    | 0        | 72280054 |
| 13 | ARS-BFGL-NGS-23438     | 0        | 72297854 |
| 13 | ARS-BFGL-NGS-42429     | 0        | 72350125 |
| 13 | ARS-BFGL-NGS-22295     | 0        | 72395309 |
| 13 | Hapmap54667-rs29016013 | 0        | 72431970 |
| 13 | Hapmap57858-rs29019930 | 0        | 72484670 |
| 13 | ARS-BFGL-NGS-42581     | 0        | 72522566 |
| 13 | ARS-BFGL-NGS-27196     | 0        | 72570537 |
| 13 | Hapmap39531-BTA-101781 | 0        | 72610173 |
| 13 | ARS-BFGL-NGS-81880     | 0        | 72638085 |
| 13 | ARS-BFGL-NGS-41119     | 0        | 72674575 |
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| 13 | BTA-98290-no-rs        | 0        | 72757236 |
| 13 | Hapmap42914-BTA-33652  | 0        | 72779588 |
| 13 | Hapmap15258-rs29013198 | 0        | 72807094 |
| 13 | ARS-BFGL-NGS-32910     | 0        | 72842894 |
| 13 | Hapmap29808-BTA-128693 | 0        | 72883365 |
| 13 | ARS-BFGL-NGS-98525     | 0        | 72927026 |
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| 13 | ARS-BFGL-NGS-110020    | 0        | 72999296 |
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| 13 | ARS-BFGL-NGS-71538               | 0 | 73061785 |          |
| 13 | ARS-BFGL-NGS-96720               | 0 | 73191673 |          |
| 13 | ARS-BFGL-NGS-97229               | 0 | 73230677 |          |
| 13 | ARS-BFGL-NGS-42827               | 0 | 73273012 |          |
| 13 | ARS-BFGL-NGS-108476              | 0 | 73329460 |          |
| 13 | Hapmap43471-BTA-114689           | 0 | 73369210 |          |
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| 13 | ARS-BFGL-NGS-119333              | 0 | 73478012 |          |
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| 13 | ARS-BFGL-NGS-37962               | 0 | 73557436 |          |
| 13 | ARS-BFGL-NGS-117163              | 0 | 73600600 |          |
| 13 | ARS-BFGL-NGS-114029              | 0 | 73653480 |          |
| 13 | Hapmap51212-BTA-33858            | 0 | 73681829 |          |
| 13 | ARS-BFGL-NGS-111299              | 0 | 73746516 |          |
| 13 | Hapmap40517-BTA-33731            | 0 | 73782308 |          |
| 13 | ARS-BFGL-NGS-18767               | 0 | 73803783 |          |
| 13 | ARS-BFGL-NGS-46020               |   | 73895443 |          |
| 13 | ARS-BFGL-NGS-110498              | 0 | 73934354 |          |
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| 13 | ARS-BFGL-NGS-71990               |   | 74078322 |          |
| 13 | ARS-BFGL-NGS-116438              | 0 | 74109992 |          |
| 13 | Hapmap23352-BTA-128741           | 0 | 74132934 |          |
| 13 | ARS-BFGL-NGS-118453              | 0 | 74179277 |          |
| 13 | BTB-02072287                     | 0 | 74206029 |          |
| 13 | ARS-BFGL-NGS-87877               | 0 | 74283673 |          |
| 13 | ARS-BFGL-NGS-43096               | 0 | 74349661 |          |
| 13 | ARS-BFGL-NGS-89241               | 0 | 74370647 |          |
| 13 | ARS-BFGL-NGS-41570               |   | 74391936 |          |
| 13 | BTB-00543819                     | 0 | 74436097 |          |
| 13 | ARS-BFGL-NGS-86323               | 0 | 74478509 |          |
| 13 | ARS-BFGL-NGS-96263               | 0 | 74505706 |          |
| 13 | UA-IFASA-8610                    | 0 | 74557133 |          |
| 13 | ARS-BFGL-NGS-112625              | 0 | 74579327 |          |
| 13 | ARS-BFGL-NGS-67511               | 0 | 74667261 |          |
| 13 | ARS-BFGL-NGS-112746              | 0 | 74795835 |          |
| 13 | BTA-33443-no-rs                  | 0 | 74821416 |          |
| 13 | ARS-BFGL-NGS-18191               | 0 | 74919430 |          |
| 13 | BTB-01918848                     | 0 | 74944491 |          |
| 13 | ARS-BFGL-NGS-105280              | 0 | 74973171 |          |
| 13 | Hapmap31079-BTA-128662           | 0 | 75018157 |          |
| 13 | BTB-00750386                     | 0 | 75122713 |          |
| 13 | BTB-00750399                     | 0 | 75164553 |          |
| 13 | ARS-BFGL-NGS-58580               |   | 75192838 |          |
| 13 | ARS-BFGL-NGS-30791               | 0 | 75310875 |          |
| 13 | Hapmap57019-rs29020756           | 0 | 75356494 |          |
| 13 | ARS-BFGL-NGS-21380               |   | 75380614 |          |
| 13 | ARS-USMARC-Parent-AY853303-no-rs | 0 |          | 75383374 |
| 13 | ARS-BFGL-NGS-33300               | 0 | 75409647 |          |
| 13 | ARS-BFGL-NGS-30910               | 0 | 75432478 |          |
| 13 | ARS-BFGL-NGS-108603              | 0 | 75482933 |          |
| 13 | ARS-BFGL-NGS-59493               | 0 | 75558137 |          |
| 13 | ARS-BFGL-NGS-97944               | 0 | 75567844 |          |
| 13 | BTA-33806-no-rs                  | 0 | 75639590 |          |
| 13 | ARS-BFGL-NGS-54023               | 0 | 75693756 |          |

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| 13 | ARS-BFGL-NGS-37880              | 0        | 75742150 |          |
| 13 | ARS-BFGL-BAC-14535              | 0        | 75885429 |          |
| 13 | ARS-BFGL-NGS-113805             | 0        | 75913775 |          |
| 13 | ARS-BFGL-NGS-119536             | 0        | 75928133 |          |
| 13 | ARS-BFGL-NGS-114018             | 0        | 75973864 |          |
| 13 | ARS-BFGL-NGS-32176              | 0        | 76008898 |          |
| 13 | ARS-BFGL-NGS-23787              | 0        | 76042839 |          |
| 13 | ARS-BFGL-NGS-31974              | 0        | 76078033 |          |
| 13 | ARS-BFGL-NGS-63040              | 0        | 76103249 |          |
| 13 | ARS-BFGL-NGS-114957             | 0        | 76261073 |          |
| 13 | UA-IFASA-4736                   | 0        | 76330479 |          |
| 13 | ARS-BFGL-NGS-112106             | 0        | 76371179 |          |
| 13 | Hapmap47059-BTA-59750           | 0        | 76412074 |          |
| 13 | Hapmap42991-BTA-59734           | 0        | 76443044 |          |
| 13 | ARS-BFGL-NGS-101621             | 0        | 76483214 |          |
| 13 | ARS-BFGL-NGS-106732             | 0        | 76510361 |          |
| 13 | BTB-00893915                    | 0        | 76553868 |          |
| 13 | ARS-BFGL-NGS-69387              | 0        | 76586112 |          |
| 13 | BTB-00893866                    | 0        | 76616107 |          |
| 13 | BTA-123412-no-rs                | 0        | 76651389 |          |
| 13 | ARS-BFGL-NGS-118692             | 0        | 76705709 |          |
| 13 | BTA-59658-no-rs                 | 0        | 76738443 |          |
| 13 | Hapmap50050-BTA-59655           | 0        | 76768919 |          |
| 13 | ARS-BFGL-BAC-916                | 0        | 76841156 |          |
| 13 | ARS-BFGL-NGS-111291             | 0        | 76865730 |          |
| 13 | ARS-BFGL-NGS-33728              | 0        | 76889545 |          |
| 13 | ARS-BFGL-NGS-104779             | 0        | 76910874 |          |
| 13 | ARS-BFGL-NGS-26996              | 0        | 76932968 |          |
| 13 | ARS-BFGL-NGS-115280             | 0        | 76955034 |          |
| 13 | BTA-120560-no-rs                | 0        | 76994266 |          |
| 13 | ARS-BFGL-NGS-96358              | 0        | 77022083 |          |
| 13 | Hapmap39263-BTA-33871           | 0        | 77055493 |          |
| 13 | ARS-BFGL-NGS-107515             | 0        | 77076450 |          |
| 13 | ARS-BFGL-NGS-18008              | 0        | 77099745 |          |
| 13 | ARS-BFGL-NGS-53993              | 0        | 77138363 |          |
| 13 | ARS-BFGL-NGS-52851              | 0        | 77161984 |          |
| 13 | BTB-00545624                    | 0        | 77193223 |          |
| 13 | BTB-00545671                    | 0        | 77222219 |          |
| 13 | Hapmap47254-BTA-33890           | 0        | 77287986 |          |
| 13 | Hapmap36528-SCAFFOLD281997_6609 | 0        |          | 77319144 |
| 13 | Hapmap52923-rs29015102          | 0        | 77366161 |          |
| 13 | ARS-BFGL-NGS-119514             | 0        | 77390382 |          |
| 13 | ARS-BFGL-NGS-62620              | 77428851 |          |          |
| 13 | BTA-33900-no-rs                 | 0        | 77450012 |          |
| 13 | Hapmap38308-BTA-33903           | 0        | 77476233 |          |
| 13 | ARS-BFGL-NGS-116564             | 0        | 77501497 |          |
| 13 | ARS-BFGL-NGS-38764              | 0        | 77546073 |          |
| 13 | ARS-BFGL-NGS-97619              | 0        | 77572954 |          |
| 13 | ARS-BFGL-NGS-111336             | 0        | 77612891 |          |
| 13 | ARS-BFGL-NGS-85499              | 0        | 77635899 |          |
| 13 | ARS-BFGL-NGS-23316              | 0        | 77686707 |          |
| 13 | ARS-BFGL-NGS-36080              | 77730384 |          |          |
| 13 | Hapmap35890-SCAFFOLD130234_3209 | 0        |          | 77773492 |
| 13 | BTB-00546519                    | 0        | 77812145 |          |

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| 13 | BTA-33921-no-rs        | 0        | 77856701 |
| 13 | ARS-BFGL-NGS-25828     | 0        | 77884465 |
| 13 | BTB-00546606           | 0        | 77922330 |
| 13 | ARS-BFGL-NGS-65255     | 0        | 77956325 |
| 13 | ARS-BFGL-NGS-62464     | 0        | 77981595 |
| 13 | Hapmap39400-BTA-33927  | 0        | 78023758 |
| 13 | ARS-BFGL-NGS-39114     | 0        | 78045735 |
| 13 | BTB-00547162           | 0        | 78078786 |
| 13 | Hapmap38488-BTA-33933  | 0        | 78115143 |
| 13 | ARS-BFGL-NGS-66863     | 0        | 78148257 |
| 13 | ARS-BFGL-NGS-18031     | 0        | 78184563 |
| 13 | ARS-BFGL-NGS-69298     | 0        | 78214545 |
| 13 | ARS-BFGL-NGS-20100     | 78276214 |          |
| 13 | ARS-BFGL-NGS-67913     | 0        | 78318767 |
| 13 | ARS-BFGL-NGS-107747    | 0        | 78343210 |
| 13 | ARS-BFGL-NGS-38671     | 0        | 78383148 |
| 13 | ARS-BFGL-NGS-41546     | 0        | 78614384 |
| 13 | ARS-BFGL-NGS-95538     | 0        | 78644697 |
| 13 | BTA-34010-no-rs        | 0        | 78705310 |
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| 13 | ARS-BFGL-NGS-115682    | 0        | 78901415 |
| 13 | Hapmap50322-BTA-34017  | 0        | 78928305 |
| 13 | ARS-BFGL-NGS-36787     | 0        | 78982992 |
| 13 | ARS-BFGL-NGS-22500     | 0        | 79032255 |
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| 13 | ARS-BFGL-NGS-112522    | 0        | 79125065 |
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| 13 | ARS-BFGL-NGS-57674     | 0        | 79203716 |
| 13 | ARS-BFGL-NGS-16572     | 0        | 79252803 |
| 13 | ARS-BFGL-NGS-80280     | 0        | 79291110 |
| 13 | ARS-BFGL-NGS-32120     | 0        | 79337240 |
| 13 | ARS-BFGL-NGS-58162     | 0        | 79407505 |
| 13 | ARS-BFGL-NGS-112386    | 0        | 79498756 |
| 13 | ARS-BFGL-NGS-36046     | 0        | 79523868 |
| 13 | UA-IFASA-9680          | 0        | 79546003 |
| 13 | ARS-BFGL-NGS-86017     | 0        | 79597357 |
| 13 | ARS-BFGL-NGS-110409    | 0        | 79623291 |
| 13 | BTB-00548558           | 0        | 79664627 |
| 13 | ARS-BFGL-NGS-57373     | 0        | 79689692 |
| 13 | Hapmap47255-BTA-34035  | 0        | 79730805 |
| 13 | ARS-BFGL-NGS-77284     | 0        | 79775537 |
| 13 | ARS-BFGL-NGS-112395    | 0        | 79813972 |
| 13 | ARS-BFGL-NGS-110534    | 0        | 79843180 |
| 13 | ARS-BFGL-NGS-32633     | 0        | 79866776 |
| 13 | ARS-BFGL-NGS-102517    | 0        | 79894254 |
| 13 | ARS-BFGL-NGS-114069    | 0        | 79914560 |
| 13 | ARS-BFGL-NGS-83944     | 0        | 79936156 |
| 13 | Hapmap38489-BTA-33960  | 0        | 79966199 |
| 13 | ARS-BFGL-NGS-25698     | 0        | 79991041 |
| 13 | ARS-BFGL-NGS-83969     | 0        | 80026050 |
| 13 | BTA-33950-no-rs        | 0        | 80094921 |
| 13 | ARS-BFGL-NGS-95398     | 0        | 80120883 |

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| 13 | ARS-BFGL-NGS-14408     | 0 | 80168838 |
| 13 | ARS-BFGL-NGS-78930     | 0 | 80190924 |
| 13 | ARS-BFGL-NGS-69613     | 0 | 80214872 |
| 13 | ARS-BFGL-NGS-36793     | 0 | 80239131 |
| 13 | ARS-BFGL-NGS-35502     | 0 | 80261022 |
| 13 | ARS-BFGL-NGS-110831    | 0 | 80303579 |
| 13 | ARS-BFGL-NGS-53237     | 0 | 80329116 |
| 13 | BTA-33938-no-rs        | 0 | 80350185 |
| 13 | ARS-BFGL-NGS-102859    | 0 | 80384401 |
| 13 | BTA-68839-no-rs        | 0 | 80442302 |
| 13 | Hapmap40789-BTA-68838  | 0 | 80485791 |
| 13 | ARS-BFGL-NGS-82178     | 0 | 80540951 |
| 13 | ARS-BFGL-NGS-112197    | 0 | 80563915 |
| 13 | ARS-BFGL-NGS-113928    | 0 | 80583992 |
| 13 | ARS-BFGL-NGS-61888     | 0 | 80605895 |
| 13 | ARS-BFGL-NGS-118948    | 0 | 80630167 |
| 13 | ARS-BFGL-NGS-113647    | 0 | 80676368 |
| 13 | ARS-BFGL-NGS-118584    | 0 | 80708532 |
| 13 | Hapmap50323-BTA-34046  | 0 | 80747113 |
| 13 | ARS-BFGL-NGS-47826     | 0 | 80824810 |
| 13 | ARS-BFGL-NGS-70710     | 0 | 80848032 |
| 13 | UA-IFASA-3461          | 0 | 80891240 |
| 13 | BTA-19908-no-rs        | 0 | 80932683 |
| 13 | ARS-BFGL-BAC-15164     | 0 | 80957038 |
| 13 | Hapmap41120-BTA-99310  | 0 | 80980304 |
| 13 | BTB-01507604           | 0 | 81029787 |
| 13 | Hapmap41707-BTA-99303  | 0 | 81069871 |
| 13 | ARS-BFGL-NGS-67848     | 0 | 81113312 |
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| 13 | Hapmap53515-rs29024560 | 0 | 81204768 |
| 13 | ARS-BFGL-NGS-55699     | 0 | 81233258 |
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| 13 | ARS-BFGL-NGS-101078    | 0 | 81297978 |
| 13 | ARS-BFGL-NGS-60187     | 0 | 81358950 |
| 13 | ARS-BFGL-NGS-48534     | 0 | 81379580 |
| 13 | BTA-34052-no-rs        | 0 | 81417910 |
| 13 | ARS-BFGL-NGS-119917    | 0 | 81455125 |
| 13 | ARS-BFGL-NGS-36728     | 0 | 81495674 |
| 13 | Hapmap47256-BTA-34049  | 0 | 81533808 |
| 13 | ARS-BFGL-NGS-96133     | 0 | 81576035 |
| 13 | BTB-01548576           | 0 | 81606009 |
| 13 | ARS-BFGL-BAC-15167     | 0 | 81638022 |
| 13 | BTA-102882-no-rs       | 0 | 81665695 |
| 13 | BTB-02009374           | 0 | 81701980 |
| 13 | Hapmap32551-BTA-128831 | 0 | 81743652 |
| 13 | UA-IFASA-4008          | 0 | 81765805 |
| 13 | Hapmap61120-rs29012586 | 0 | 81814135 |
| 13 | ARS-BFGL-NGS-25084     | 0 | 81862366 |
| 13 | BTA-07889-rs29027551   | 0 | 81891671 |
| 13 | ARS-BFGL-NGS-72634     | 0 | 81946354 |
| 13 | ARS-BFGL-NGS-115121    | 0 | 82026919 |
| 13 | ARS-BFGL-NGS-56575     | 0 | 82081858 |
| 13 | ARS-BFGL-NGS-113195    | 0 | 82111894 |
| 13 | ARS-BFGL-NGS-35781     | 0 | 82166673 |



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| 13 | BTA-34097-no-rs                  | 0       | 82187858 |          |
| 13 | ARS-BFGL-NGS-25391               | 0       | 82212330 |          |
| 13 | ARS-BFGL-NGS-56559               | 0       | 82240934 |          |
| 13 | Hapmap35838-SCAFFOLD300165_20480 | 0       |          | 82297637 |
| 13 | BTA-28181-no-rs                  | 0       | 82336468 |          |
| 13 | BTA-34123-no-rs                  | 0       | 82364234 |          |
| 13 | ARS-BFGL-NGS-29997               | 0       | 82418960 |          |
| 13 | BTA-34116-no-rs                  | 0       | 82443688 |          |
| 13 | BTB-01329170                     | 0       | 82455320 |          |
| 13 | BTA-23977-no-rs                  | 0       | 82464169 |          |
| 13 | ARS-BFGL-NGS-11074               | 0       | 82513961 |          |
| 13 | BTB-01329459                     | 0       | 82559505 |          |
| 13 | ARS-BFGL-NGS-110690              | 0       | 82621346 |          |
| 13 | BTB-01852080                     | 0       | 82871098 |          |
| 13 | Hapmap35901-SCAFFOLD235093_18356 | 0       |          | 82930525 |
| 13 | BTA-29190-no-rs                  | 0       | 82957975 |          |
| 13 | ARS-BFGL-NGS-39164               | 0       | 82982226 |          |
| 13 | ARS-BFGL-NGS-19988               | 0       | 83018263 |          |
| 13 | ARS-BFGL-BAC-15172               | 0       | 83050038 |          |
| 13 | ARS-BFGL-NGS-114426              | 0       | 83097979 |          |
| 13 | ARS-BFGL-NGS-59041               | 0       | 83118515 |          |
| 13 | Hapmap43830-BTA-29180            | 0       | 83163575 |          |
| 13 | ARS-BFGL-NGS-56163               | 0       | 83202886 |          |
| 13 | BTB-01317318                     | 0       | 83273989 |          |
| 13 | BTB-01317883                     | 0       | 83371147 |          |
| 13 | ARS-BFGL-NGS-38171               | 0       | 83412973 |          |
| 13 | Hapmap43792-BTA-122725           | 0       | 83437845 |          |
| 13 | ARS-BFGL-NGS-90001               | 0       | 83554410 |          |
| 13 | ARS-BFGL-NGS-92904               | 0       | 83588785 |          |
| 13 | BTA-102818-no-rs                 | 0       | 83632355 |          |
| 13 | ARS-BFGL-NGS-13138               | 0       | 83662585 |          |
| 13 | BTA-108110-no-rs                 | 0       | 83697323 |          |
| 13 | ARS-BFGL-NGS-87277               | 0       | 83717589 |          |
| 13 | ARS-BFGL-NGS-87042               | 0       | 83757126 |          |
| 13 | ARS-BFGL-NGS-114977              | 0       | 83797587 |          |
| 13 | BTA-99429-no-rs                  | 0       | 83844673 |          |
| 13 | ARS-BFGL-NGS-89423               | 0       | 83878380 |          |
| 13 | Hapmap49355-BTA-87438            | 0       | 83917405 |          |
| 13 | BTB-01390173                     | 0       | 83951281 |          |
| 13 | Hapmap40029-BTA-87430            | 0       | 83979616 |          |
| 13 | ARS-BFGL-NGS-54483               | 0       | 84002346 |          |
| 13 | Hapmap27417-BTA-147737           | 0       | 84024423 |          |
| 13 | Hapmap40030-BTA-87432            | 0       | 84053901 |          |
| 13 | Hapmap41376-BTA-87433            | 0       | 84112965 |          |
| 13 | BTB-01390401                     | 0       | 84148909 |          |
| 13 | ARS-BFGL-NGS-109749              | 0       | 84176216 |          |
| 14 | Hapmap30381-BTC-005750           | 0       | 1463676  |          |
| 14 | Hapmap30383-BTC-005848           | 0       | 1489496  |          |
| 14 | BTA-34956-no-rs                  | 0       | 1514056  |          |
| 14 | ARS-BFGL-BAC-88150               | 1535099 |          |          |
| 14 | ARS-BFGL-NGS-20321               | 0       | 1616618  |          |
| 14 | ARS-BFGL-NGS-57820               | 0       | 1651311  |          |
| 14 | ARS-BFGL-NGS-34135               | 0       | 1675278  |          |
| 14 | ARS-BFGL-NGS-94706               | 0       | 1696470  |          |

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| 14 | ARS-BFGL-NGS-49390             | 1801116 |         |
| 14 | Hapmap52798-ss46526455         | 0       | 1923292 |
| 14 | ARS-BFGL-NGS-71749             | 0       | 1954317 |
| 14 | UA-IFASA-6878                  | 0       | 2002873 |
| 14 | ARS-BFGL-NGS-107379            | 0       | 2054457 |
| 14 | ARS-BFGL-NGS-18365             | 0       | 2117455 |
| 14 | UA-IFASA-8997                  | 0       | 2194228 |
| 14 | Hapmap25384-BTC-001997         | 0       | 2217163 |
| 14 | Hapmap24715-BTC-001973         | 0       | 2239085 |
| 14 | BTA-35941-no-rs                | 0       | 2276443 |
| 14 | ARS-BFGL-NGS-101653            | 0       | 2319504 |
| 14 | UA-IFASA-6375                  | 0       | 2357815 |
| 14 | ARS-BFGL-NGS-26520             | 0       | 2386688 |
| 14 | Hapmap30374-BTC-002159         | 0       | 2468020 |
| 14 | Hapmap30086-BTC-002066         | 0       | 2524432 |
| 14 | Hapmap30646-BTC-002054         | 0       | 2553525 |
| 14 | ARS-BFGL-NGS-41248             | 0       | 2605493 |
| 14 | Hapmap25961-BTC-003785         | 0       | 2641607 |
| 14 | Hapmap29758-BTC-003619         | 0       | 2674264 |
| 14 | ARS-BFGL-NGS-31220             | 2721633 |         |
| 14 | ARS-BFGL-NGS-103064            | 0       | 2754909 |
| 14 | Hapmap29888-BTC-003509         | 0       | 2803998 |
| 14 | ARS-BFGL-NGS-22866             | 0       | 2826632 |
| 14 | ARS-BFGL-NGS-74058             | 0       | 2853845 |
| 14 | ARS-BFGL-NGS-18858             | 0       | 2909929 |
| 14 | Hapmap24717-BTC-002824         | 0       | 2951045 |
| 14 | Hapmap24718-BTC-002945         | 0       | 2985755 |
| 14 | ARS-BFGL-NGS-59769             | 0       | 3006509 |
| 14 | Hapmap30375-BTC-003040         | 0       | 3029996 |
| 14 | ARS-BFGL-NGS-70821             | 0       | 3078843 |
| 14 | ARS-BFGL-NGS-32047             | 0       | 3117493 |
| 14 | ARS-BFGL-NGS-13653             | 0       | 3137184 |
| 14 | ARS-BFGL-NGS-109739            | 0       | 3218998 |
| 14 | ARS-BFGL-NGS-85419             | 0       | 3243897 |
| 14 | ARS-BFGL-NGS-67477             | 0       | 3275592 |
| 14 | Hapmap36620-SCAFFOLD50018_7571 | 0       | 3297177 |
| 14 | UA-IFASA-5815                  | 0       | 3342470 |
| 14 | ARS-BFGL-NGS-10284             | 0       | 3433372 |
| 14 | ARS-BFGL-NGS-96957             | 0       | 3484849 |
| 14 | ARS-BFGL-NGS-74378             | 0       | 3640788 |
| 14 | ARS-BFGL-NGS-117542            | 0       | 3664511 |
| 14 | ARS-BFGL-BAC-17627             | 0       | 3720067 |
| 14 | ARS-BFGL-BAC-15110             | 3765019 |         |
| 14 | Hapmap30730-BTC-064822         | 0       | 3802542 |
| 14 | UA-IFASA-7076                  | 0       | 3840576 |
| 14 | ARS-BFGL-NGS-33248             | 0       | 3885798 |
| 14 | ARS-BFGL-NGS-40540             | 3918408 |         |
| 14 | UA-IFASA-9288                  | 0       | 3956956 |
| 14 | Hapmap33328-BTC-064942         | 0       | 3994681 |
| 14 | Hapmap24777-BTC-064977         | 0       | 4017201 |
| 14 | Hapmap32970-BTC-064990         | 0       | 4043743 |
| 14 | Hapmap24986-BTC-065021         | 0       | 4068825 |
| 14 | ARS-BFGL-NGS-22111             | 0       | 4103850 |
| 14 | UA-IFASA-7269                  | 0       | 4127413 |

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| 14 | Hapmap26072-BTC-065132 | 0       | 4149375 |
| 14 | Hapmap26527-BTC-005059 | 0       | 4176618 |
| 14 | BTA-34893-no-rs        | 0       | 4209266 |
| 14 | ARS-BFGL-NGS-118081    | 0       | 4267053 |
| 14 | ARS-BFGL-NGS-56327     | 0       | 4336714 |
| 14 | ARS-BFGL-NGS-100480    | 0       | 4364952 |
| 14 | ARS-BFGL-NGS-102710    | 0       | 4386955 |
| 14 | ARS-BFGL-NGS-113379    | 0       | 4415636 |
| 14 | ARS-BFGL-NGS-42263     | 0       | 4438267 |
| 14 | UA-IFASA-5306          | 0       | 4468478 |
| 14 | ARS-BFGL-NGS-54400     | 0       | 4493904 |
| 14 | UA-IFASA-5765          | 0       | 4520969 |
| 14 | ARS-BFGL-NGS-103321    | 0       | 4542563 |
| 14 | ARS-BFGL-BAC-25166     | 0       | 4563129 |
| 14 | ARS-BFGL-NGS-84713     | 0       | 4606904 |
| 14 | Hapmap29889-BTC-004295 | 0       | 4651891 |
| 14 | Hapmap29778-BTC-046868 | 0       | 4672500 |
| 14 | Hapmap31680-BTC-068499 | 0       | 4700163 |
| 14 | Hapmap22692-BTC-068210 | 0       | 4767039 |
| 14 | ARS-BFGL-NGS-110993    | 0       | 4808166 |
| 14 | Hapmap23302-BTC-052123 | 0       | 4848750 |
| 14 | ARS-BFGL-NGS-113309    | 0       | 4870972 |
| 14 | Hapmap26077-BTC-067877 | 0       | 4904271 |
| 14 | Hapmap25217-BTC-067767 | 0       | 4943963 |
| 14 | ARS-BFGL-BAC-22086     | 0       | 4964634 |
| 14 | ARS-BFGL-NGS-109902    | 0       | 4984674 |
| 14 | ARS-BFGL-NGS-17644     | 0       | 5010734 |
| 14 | ARS-BFGL-NGS-62400     | 5048719 |         |
| 14 | ARS-BFGL-NGS-41353     | 0       | 5083224 |
| 14 | UA-IFASA-6329          | 0       | 5096531 |
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| 14 | Hapmap30182-BTC-067735 | 0       | 5161708 |
| 14 | ARS-BFGL-NGS-42708     | 0       | 5198398 |
| 14 | ARS-BFGL-NGS-35710     | 5225467 |         |
| 14 | Hapmap25216-BTC-067581 | 0       | 5245003 |
| 14 | UA-IFASA-8927          | 0       | 5279283 |
| 14 | ARS-BFGL-NGS-118478    | 0       | 5299449 |
| 14 | ARS-BFGL-NGS-78318     | 0       | 5337183 |
| 14 | Hapmap26076-BTC-067160 | 0       | 5359558 |
| 14 | ARS-BFGL-NGS-110563    | 0       | 5428037 |
| 14 | Hapmap32262-BTC-066621 | 0       | 5462752 |
| 14 | ARS-BFGL-NGS-115947    | 0       | 5494654 |
| 14 | Hapmap25663-BTC-005111 | 0       | 5535102 |
| 14 | Hapmap30091-BTC-005211 | 0       | 5569639 |
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| 14 | ARS-BFGL-BAC-24839     | 0       | 5631243 |
| 14 | ARS-BFGL-NGS-114178    | 0       | 5651579 |
| 14 | Hapmap31008-BTC-060802 | 0       | 5769804 |
| 14 | ARS-BFGL-BAC-24804     | 0       | 5795431 |
| 14 | Hapmap23454-BTC-046932 | 0       | 5831267 |
| 14 | Hapmap33446-BTC-057195 | 0       | 5857075 |
| 14 | ARS-BFGL-NGS-67590     | 5883219 |         |
| 14 | ARS-BFGL-BAC-18703     | 0       | 5903806 |
| 14 | Hapmap27709-BTC-057052 | 0       | 5925382 |

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| 14 | Hapmap51646-BTA-86764  | 0       | 5952697 |
| 14 | ARS-BFGL-NGS-88263     | 0       | 5977096 |
| 14 | UA-IFASA-9107          | 0       | 5991493 |
| 14 | Hapmap31968-BTC-056754 | 0       | 6042525 |
| 14 | Hapmap30451-BTC-056740 | 0       | 6077252 |
| 14 | Hapmap26591-BTC-056596 | 0       | 6112676 |
| 14 | ARS-BFGL-BAC-10345     | 0       | 6133529 |
| 14 | Hapmap23618-BTC-056528 | 0       | 6154166 |
| 14 | Hapmap31643-BTC-056500 | 0       | 6170976 |
| 14 | Hapmap32486-BTC-056478 | 0       | 6203679 |
| 14 | UA-IFASA-6370          | 0       | 6250514 |
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| 14 | Hapmap30988-BTC-056315 | 0       | 6324728 |
| 14 | Hapmap31965-BTC-056250 | 0       | 6347325 |
| 14 | ARS-BFGL-BAC-10172     | 0       | 6371334 |
| 14 | ARS-BFGL-NGS-43719     | 0       | 6415535 |
| 14 | Hapmap23915-BTC-050343 | 0       | 6456988 |
| 14 | Hapmap33459-BTC-069647 | 0       | 6486431 |
| 14 | Hapmap23299-BTC-050306 | 0       | 6522847 |
| 14 | UA-IFASA-4560          | 0       | 6555671 |
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| 14 | ARS-BFGL-BAC-12120     | 6642970 |         |
| 14 | Hapmap24177-BTC-049968 | 0       | 6671964 |
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| 14 | ARS-BFGL-NGS-55227     | 0       | 6718127 |
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| 14 | ARS-BFGL-NGS-113706    | 0       | 6778397 |
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| 14 | Hapmap31941-BTC-049764 | 0       | 6819966 |
| 14 | Hapmap26023-BTC-049737 | 0       | 6850767 |
| 14 | UA-IFASA-6228          | 0       | 6859824 |
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| 14 | ARS-BFGL-NGS-115374    | 0       | 7104148 |
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| 14 | Hapmap25718-BTC-048274 | 0       | 7293439 |
| 14 | Hapmap32234-BTC-048199 | 0       | 7314869 |
| 14 | Hapmap25435-BTC-048160 | 0       | 7342696 |
| 14 | Hapmap26283-BTC-048098 | 0       | 7371252 |
| 14 | Hapmap29792-BTC-071523 | 0       | 7401787 |
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| 14 | UA-IFASA-6647          | 0       | 7484351 |
| 14 | Hapmap32948-BTC-047992 | 0       | 7514610 |
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| 14 | ARS-BFGL-BAC-12761     | 0       | 7566056 |
| 14 | Hapmap24756-BTC-047876 | 0       | 7589670 |

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| 14 | Hapmap31626-BTC-047671          | 0       | 7747301 |         |
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| 14 | ARS-BFGL-BAC-87300              | 7926827 |         |         |
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| 14 | ARS-BFGL-NGS-20781              | 0       | 7951654 |         |
| 14 | ARS-BFGL-NGS-16109              | 0       | 8001066 |         |
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| 14 | Hapmap26905-BTC-062381          | 0       | 8088890 |         |
| 14 | Hapmap31989-BTC-062364          | 0       | 8113083 |         |
| 14 | Hapmap41162-BTA-115830          | 0       | 8144892 |         |
| 14 | Hapmap27714-BTC-062128          | 0       | 8207783 |         |
| 14 | ARS-BFGL-NGS-28337              | 0       | 8264685 |         |
| 14 | Hapmap23736-BTC-062102          | 0       | 8330484 |         |
| 14 | Hapmap26322-BTC-062079          | 0       | 8351971 |         |
| 14 | UA-IFASA-8561                   | 0       | 8385937 |         |
| 14 | Hapmap31987-BTC-062044          | 0       | 8425401 |         |
| 14 | Hapmap22779-BTC-061888          | 0       | 8454690 |         |
| 14 | Hapmap26904-BTC-061747          | 0       | 8479608 |         |
| 14 | Hapmap26903-BTC-061707          | 0       | 8499902 |         |
| 14 | Hapmap22964-BTC-001504          | 0       | 8529243 |         |
| 14 | Hapmap27836-BTC-052671          | 0       | 8551460 |         |
| 14 | Hapmap30441-BTC-052405          | 0       | 8601115 |         |
| 14 | Hapmap26030-BTC-052382          | 0       | 8621379 |         |
| 14 | ARS-BFGL-NGS-85289              | 0       | 8659069 |         |
| 14 | Hapmap31945-BTC-052169          | 0       | 8698150 |         |
| 14 | Hapmap22724-BTC-001541          | 0       | 8730305 |         |
| 14 | ARS-BFGL-NGS-114851             | 0       | 8760727 |         |
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| 14 | Hapmap30095-BTC-006664          | 0       | 9125857 |         |
| 14 | ARS-BFGL-NGS-91421              | 0       | 9154632 |         |
| 14 | UA-IFASA-5474                   | 0       | 9187841 |         |
| 14 | Hapmap36763-SCAFFOLD240007_5847 | 0       |         | 9215622 |
| 14 | ARS-BFGL-NGS-11246              | 0       | 9283113 |         |
| 14 | Hapmap53910-rs29021775          | 0       | 9322587 |         |
| 14 | ARS-BFGL-NGS-112271             | 0       | 9345140 |         |
| 14 | Hapmap41241-BTA-35529           | 0       | 9365588 |         |
| 14 | ARS-BFGL-NGS-101419             | 0       | 9404594 |         |
| 14 | ARS-BFGL-BAC-18370              | 0       | 9426662 |         |
| 14 | ARS-BFGL-NGS-78917              | 0       | 9449027 |         |
| 14 | UA-IFASA-7842                   | 0       | 9472109 |         |
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| 14 | ARS-BFGL-BAC-20850              | 0       | 9542083 |         |
| 14 | Hapmap30097-BTC-007678          | 0       | 9577474 |         |
| 14 | Hapmap31564-BTC-007633          | 0       | 9606819 |         |

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| 14 | Hapmap33415-BTC-007589           | 0       | 9639182  |          |
| 14 | ARS-BFGL-NGS-71623               | 0       | 9673842  |          |
| 14 | Hapmap24032-BTC-007493           | 0       | 9697011  |          |
| 14 | UA-IFASA-5356                    | 0       | 9740815  |          |
| 14 | ARS-BFGL-BAC-20217               | 0       | 9812155  |          |
| 14 | ARS-BFGL-BAC-20798               | 0       | 9845820  |          |
| 14 | Hapmap29891-BTC-007427           | 0       | 9877646  |          |
| 14 | ARS-BFGL-BAC-20360               | 9906433 |          |          |
| 14 | ARS-BFGL-NGS-18570               | 9933344 |          |          |
| 14 | Hapmap24767-BTC-058058           | 0       | 9964138  |          |
| 14 | Hapmap22733-BTC-058037           | 0       | 9986782  |          |
| 14 | Hapmap23517-BTC-058008           | 0       | 10013686 |          |
| 14 | ARS-BFGL-NGS-110321              | 0       | 10051740 |          |
| 14 | UA-IFASA-6233                    | 0       | 10090807 |          |
| 14 | ARS-BFGL-NGS-41494               | 0       | 10118287 |          |
| 14 | Hapmap30653-BTC-008335           | 0       | 10153386 |          |
| 14 | ARS-USMARC-Parent-DQ846690-no-rs | 0       |          | 10171919 |
| 14 | ARS-BFGL-BAC-20822               | 0       | 10192415 |          |
| 14 | Hapmap24065-BTC-072634           | 0       | 10213875 |          |
| 14 | Hapmap27057-BTC-008527           | 0       | 10235805 |          |
| 14 | ARS-BFGL-BAC-20261               | 0       | 10271449 |          |
| 14 | ARS-BFGL-NGS-28580               | 0       | 10307071 |          |
| 14 | Hapmap30986-BTC-056068           | 0       | 10346734 |          |
| 14 | Hapmap26301-BTC-055949           | 0       | 10387828 |          |
| 14 | Hapmap25450-BTC-055819           | 0       | 10424817 |          |
| 14 | Hapmap30158-BTC-057468           | 0       | 10466300 |          |
| 14 | Hapmap26890-BTC-057492           | 0       | 10491491 |          |
| 14 | ARS-BFGL-NGS-115397              | 0       | 10516673 |          |
| 14 | Hapmap26061-BTC-063438           | 0       | 10549180 |          |
| 14 | Hapmap26606-BTC-063486           | 0       | 10586742 |          |
| 14 | Hapmap22906-BTC-050650           | 0       | 10637788 |          |
| 14 | Hapmap31653-BTC-058682           | 0       | 10664449 |          |
| 14 | Hapmap31893-BTC-008716           | 0       | 10691624 |          |
| 14 | Hapmap24111-BTC-009033           | 0       | 10717598 |          |
| 14 | Hapmap27495-BTC-009081           | 0       | 10740697 |          |
| 14 | Hapmap25145-BTC-009159           | 0       | 10763835 |          |
| 14 | Hapmap54453-rs29015999           | 0       | 10812434 |          |
| 14 | Hapmap31246-BTC-009295           | 0       | 10884437 |          |
| 14 | Hapmap26247-BTC-009319           | 0       | 10920377 |          |
| 14 | UA-IFASA-7013                    | 0       | 10994069 |          |
| 14 | ARS-BFGL-BAC-31572               | 0       | 11017871 |          |
| 14 | ARS-BFGL-NGS-103730              | 0       | 11038356 |          |
| 14 | Hapmap29763-BTC-009422           | 0       | 11079567 |          |
| 14 | Hapmap27677-BTC-009441           | 0       | 11106992 |          |
| 14 | ARS-BFGL-BAC-27127               | 0       | 11130509 |          |
| 14 | Hapmap30927-BTC-009475           | 0       | 11154590 |          |
| 14 | Hapmap25965-BTC-009503           | 0       | 11176524 |          |
| 14 | ARS-BFGL-NGS-26959               | 0       | 11220778 |          |
| 14 | Hapmap53853-rs29015157           | 0       | 11272570 |          |
| 14 | Hapmap23192-BTC-059018           | 0       | 11328725 |          |
| 14 | UA-IFASA-8705                    | 0       | 11440482 |          |
| 14 | ARS-BFGL-NGS-31174               | 0       | 11466299 |          |
| 14 | Hapmap30100-BTC-009671           | 0       | 11490338 |          |
| 14 | Hapmap26533-BTC-009833           | 0       | 11519315 |          |

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| 14 | ARS-BFGL-BAC-13286              | 0 | 11573817 |          |
| 14 | Hapmap31248-BTC-010204          | 0 | 11600913 |          |
| 14 | ARS-BFGL-NGS-117252             | 0 | 11621252 |          |
| 14 | ARS-USMARC-416                  | 0 | 11659369 |          |
| 14 | ARS-BFGL-NGS-79338              | 0 | 11683342 |          |
| 14 | Hapmap42591-BTA-57149           | 0 | 11711053 |          |
| 14 | Hapmap36733-SCAFFOLD230838_1182 | 0 |          | 11736525 |
| 14 | Hapmap23621-BTC-064696          | 0 | 11776673 |          |
| 14 | Hapmap27348-BTC-064649          | 0 | 11816360 |          |
| 14 | Hapmap24455-BTC-064551          | 0 | 11848870 |          |
| 14 | ARS-BFGL-NGS-17803              | 0 | 11881261 |          |
| 14 | Hapmap23620-BTC-064278          | 0 | 11931937 |          |
| 14 | Hapmap30171-BTC-063976          | 0 | 11983913 |          |
| 14 | Hapmap25468-BTC-063927          | 0 | 12005796 |          |
| 14 | Hapmap25467-BTC-063663          | 0 | 12051530 |          |
| 14 | Hapmap22917-BTC-068800          | 0 | 12075830 |          |
| 14 | Hapmap25440-BTC-053771          | 0 | 12106554 |          |
| 14 | Hapmap26328-BTC-063507          | 0 | 12190775 |          |
| 14 | Hapmap25770-BTC-068957          | 0 | 12219785 |          |
| 14 | Hapmap27846-BTC-068984          | 0 | 12247110 |          |
| 14 | Hapmap26611-BTC-069044          | 0 | 12267596 |          |
| 14 | ARS-BFGL-NGS-18053              | 0 | 12312615 |          |
| 14 | UA-IFASA-6074                   | 0 | 12331161 |          |
| 14 | Hapmap23304-BTC-069412          | 0 | 12418239 |          |
| 14 | ARS-BFGL-NGS-119373             | 0 | 12442126 |          |
| 14 | ARS-BFGL-NGS-102234             | 0 | 12487050 |          |
| 14 | UA-IFASA-6621                   | 0 | 12524964 |          |
| 14 | ARS-BFGL-BAC-94250              |   | 12545251 |          |
| 14 | UA-IFASA-6870                   | 0 | 12588770 |          |
| 14 | Hapmap38378-BTA-114219          | 0 | 12603761 |          |
| 14 | Hapmap24056-BTC-060048          | 0 | 12625813 |          |
| 14 | ARS-BFGL-NGS-119057             | 0 | 12650659 |          |
| 14 | Hapmap33448-BTC-060018          | 0 | 12672880 |          |
| 14 | ARS-BFGL-NGS-20645              | 0 | 12694203 |          |
| 14 | UA-IFASA-5274                   | 0 | 12786338 |          |
| 14 | ARS-BFGL-NGS-53454              | 0 | 12821953 |          |
| 14 | ARS-BFGL-NGS-70236              | 0 | 12877549 |          |
| 14 | Hapmap39020-BTA-35975           | 0 | 12901291 |          |
| 14 | ARS-BFGL-NGS-76832              | 0 | 12934396 |          |
| 14 | ARS-BFGL-NGS-104836             | 0 | 13023286 |          |
| 14 | BTB-00553140                    | 0 | 13051936 |          |
| 14 | ARS-BFGL-NGS-119211             | 0 | 13081432 |          |
| 14 | BTA-35971-no-rs                 | 0 | 13146789 |          |
| 14 | Hapmap57409-rs29021898          | 0 | 13166900 |          |
| 14 | ARS-BFGL-NGS-119442             | 0 | 13188143 |          |
| 14 | Hapmap26535-BTC-010313          | 0 | 13217565 |          |
| 14 | UA-IFASA-6560                   | 0 | 13300257 |          |
| 14 | ARS-BFGL-NGS-82210              |   | 13337232 |          |
| 14 | Hapmap23784-BTC-010226          | 0 | 13364466 |          |
| 14 | ARS-BFGL-NGS-76907              | 0 | 13384870 |          |
| 14 | UA-IFASA-6753                   | 0 | 13432581 |          |
| 14 | ARS-BFGL-NGS-77195              | 0 | 13468736 |          |
| 14 | ARS-BFGL-NGS-82479              | 0 | 13488780 |          |
| 14 | ARS-BFGL-NGS-26975              | 0 | 13509287 |          |

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| 14 | ARS-BFGL-NGS-13077     | 0 | 13529632 |
| 14 | ARS-BFGL-NGS-63592     | 0 | 13554095 |
| 14 | ARS-BFGL-NGS-24160     | 0 | 13580277 |
| 14 | ARS-BFGL-NGS-105600    | 0 | 13602486 |
| 14 | Hapmap29971-BTA-128951 | 0 | 13638715 |
| 14 | Hapmap46741-BTA-00625  | 0 | 13680187 |
| 14 | ARS-BFGL-NGS-18662     | 0 | 13882578 |
| 14 | UA-IFASA-7429          | 0 | 13927529 |
| 14 | Hapmap56398-rs29010937 | 0 | 13949095 |
| 14 | UA-IFASA-7696          | 0 | 13998894 |
| 14 | Hapmap41845-BTA-35927  | 0 | 14086905 |
| 14 | Hapmap47521-BTA-120525 | 0 | 14159708 |
| 14 | UA-IFASA-8537          | 0 | 14220182 |
| 14 | ARS-BFGL-NGS-84610     | 0 | 14361666 |
| 14 | ARS-BFGL-NGS-104239    | 0 | 14474033 |
| 14 | Hapmap31182-BTA-159357 | 0 | 15438757 |
| 14 | ARS-BFGL-NGS-19893     | 0 | 15519654 |
| 14 | Hapmap58424-rs29021188 | 0 | 15551978 |
| 14 | BTB-01109852           | 0 | 15585398 |
| 14 | BTB-01109980           | 0 | 15617151 |
| 14 | BTB-01110022           | 0 | 15653451 |
| 14 | Hapmap24051-BTC-053131 | 0 | 15657396 |
| 14 | BTA-85430-no-rs        | 0 | 15700185 |
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| 14 | UA-IFASA-5902          | 0 | 15799383 |
| 14 | Hapmap26696-BTA-147023 | 0 | 15836610 |
| 14 | BTB-01110396           | 0 | 15879588 |
| 14 | ARS-BFGL-NGS-116053    | 0 | 15924671 |
| 14 | BTB-01110425           | 0 | 15969787 |
| 14 | ARS-BFGL-NGS-108913    | 0 | 16015924 |
| 14 | BTB-01544572           | 0 | 16052531 |
| 14 | ARS-BFGL-NGS-64738     | 0 | 16088967 |
| 14 | UA-IFASA-7112          | 0 | 16109986 |
| 14 | ARS-BFGL-NGS-21534     | 0 | 16134242 |
| 14 | ARS-BFGL-NGS-33755     | 0 | 16185315 |
| 14 | ARS-BFGL-NGS-101433    | 0 | 16224327 |
| 14 | ARS-BFGL-NGS-117354    | 0 | 16245416 |
| 14 | ARS-BFGL-NGS-37911     | 0 | 16387114 |
| 14 | BTA-122374-no-rs       | 0 | 16435749 |
| 14 | ARS-BFGL-NGS-63270     | 0 | 16481804 |
| 14 | ARS-BFGL-NGS-549       | 0 | 16526322 |
| 14 | UA-IFASA-5528          | 0 | 16677121 |
| 14 | ARS-USMARC-20          | 0 | 16732650 |
| 14 | ARS-BFGL-NGS-62025     | 0 | 16779216 |
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| 14 | BTA-122375-no-rs       | 0 | 16923900 |
| 14 | ARS-BFGL-NGS-86648     | 0 | 16967274 |
| 14 | Hapmap60993-rs29025756 | 0 | 17002466 |
| 14 | BTA-108463-no-rs       | 0 | 17033441 |
| 14 | UA-IFASA-6545          | 0 | 17060991 |
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| 14 | BTB-01072588           | 0 | 17138879 |
| 14 | Hapmap23864-BTA-108357 | 0 | 17174829 |
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| 14 | BTB-00672453                    | 0 | 17288504 |  |
| 14 | Hapmap41259-BTA-42142           | 0 | 17322658 |  |
| 14 | ARS-BFGL-NGS-114730             | 0 | 17378950 |  |
| 14 | UA-IFASA-9282                   | 0 | 17457836 |  |
| 14 | UA-IFASA-5697                   | 0 | 17483216 |  |
| 14 | ARS-BFGL-NGS-82859              | 0 | 17517923 |  |
| 14 | ARS-BFGL-BAC-10591              | 0 | 17544926 |  |
| 14 | ARS-BFGL-BAC-14014              | 0 | 17587065 |  |
| 14 | Hapmap38314-BTA-42171           | 0 | 17614674 |  |
| 14 | Hapmap60650-rs29021886          | 0 | 17674401 |  |
| 14 | ARS-BFGL-NGS-30433              | 0 | 17833828 |  |
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| 14 | BTB-00553468                    | 0 | 18086520 |  |
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| 14 | ARS-BFGL-NGS-109987             | 0 | 18208347 |  |
| 14 | Hapmap38405-BTA-35996           | 0 | 18228964 |  |
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| 14 | UA-IFASA-6693                   | 0 | 18296407 |  |
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| 14 | ARS-BFGL-NGS-607                | 0 | 18460103 |  |
| 14 | ARS-BFGL-NGS-103663             | 0 | 18500168 |  |
| 14 | BTB-00554463                    | 0 | 18568023 |  |
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| 14 | ARS-BFGL-NGS-12878              | 0 | 18670379 |  |
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| 14 | Hapmap27800-BTA-36016           | 0 | 18907826 |  |
| 14 | BTA-36021-no-rs                 | 0 | 18941267 |  |
| 14 | ARS-BFGL-NGS-93803              | 0 | 18971196 |  |
| 14 | BTB-00554640                    | 0 | 19001879 |  |
| 14 | BTB-00554700                    | 0 | 19030974 |  |
| 14 | BTB-01774363                    | 0 | 19089297 |  |
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| 14 | ARS-BFGL-BAC-13422              | 0 | 19172385 |  |
| 14 | ARS-BFGL-NGS-101630             | 0 | 19220744 |  |
| 14 | BTB-00554873                    | 0 | 19250398 |  |
| 14 | ARS-BFGL-NGS-16159              | 0 | 19290077 |  |
| 14 | ARS-BFGL-NGS-116233             | 0 | 19316702 |  |
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| 14 | BTA-75794-no-rs                 | 0 | 19380690 |  |
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| 14 | UA-IFASA-6489                   | 0 | 19531288 |  |
| 14 | ARS-BFGL-NGS-106185             | 0 | 19559066 |  |
| 14 | UA-IFASA-5964                   | 0 | 19629540 |  |
| 14 | ARS-BFGL-NGS-32563              | 0 | 19649604 |  |
| 14 | Hapmap41130-BTA-102871          | 0 | 19715562 |  |
| 14 | BTB-01548274                    | 0 | 19749033 |  |

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| 14 | BTA-18878-no-rs                 | 0        | 19820400 |  |
| 14 | Hapmap54994-rs29026820          | 0        | 19849178 |  |
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| 14 | Hapmap32629-BTA-156370          | 0        | 19938597 |  |
| 14 | BTB-01720377                    | 0        | 19993440 |  |
| 14 | BTB-00555185                    | 0        | 20089569 |  |
| 14 | BTB-00555233                    | 0        | 20119611 |  |
| 14 | BTB-01283269                    | 0        | 20196617 |  |
| 14 | BTA-36062-no-rs                 | 0        | 20216601 |  |
| 14 | Hapmap47925-BTA-36060           | 0        | 20273115 |  |
| 14 | ARS-BFGL-NGS-28867              | 0        | 20323857 |  |
| 14 | UA-IFASA-6356                   | 0        | 20347849 |  |
| 14 | BTA-09180-no-rs                 | 0        | 20398361 |  |
| 14 | ARS-BFGL-NGS-74296              | 0        | 20421717 |  |
| 14 | ARS-BFGL-NGS-54787              | 0        | 20606100 |  |
| 14 | ARS-BFGL-NGS-112623             | 0        | 20635979 |  |
| 14 | ARS-BFGL-NGS-90302              | 0        | 20759946 |  |
| 14 | ARS-BFGL-NGS-25065              | 0        | 20831633 |  |
| 14 | Hapmap35443-SCAFFOLD20068_27016 | 0        | 20921507 |  |
| 14 | ARS-BFGL-NGS-102399             | 0        | 20952022 |  |
| 14 | Hapmap25518-BTA-129035          | 0        | 20991931 |  |
| 14 | ARS-BFGL-NGS-61360              | 21037828 |          |  |
| 14 | ARS-BFGL-NGS-36955              | 0        | 21065833 |  |
| 14 | ARS-BFGL-NGS-37279              | 0        | 21104637 |  |
| 14 | ARS-BFGL-NGS-43802              | 0        | 21129363 |  |
| 14 | ARS-BFGL-NGS-19602              | 0        | 21286894 |  |
| 14 | ARS-BFGL-NGS-28234              | 0        | 21343649 |  |
| 14 | ARS-BFGL-NGS-17207              | 0        | 21365494 |  |
| 14 | UA-IFASA-5635                   | 0        | 21406039 |  |
| 14 | ARS-BFGL-NGS-102610             | 0        | 21452744 |  |
| 14 | ARS-BFGL-NGS-22262              | 0        | 21476868 |  |
| 14 | ARS-BFGL-NGS-28898              | 0        | 21559712 |  |
| 14 | Hapmap32588-BTA-147384          | 0        | 21581739 |  |
| 14 | ARS-BFGL-NGS-100407             | 0        | 21626317 |  |
| 14 | UA-IFASA-6634                   | 0        | 21655180 |  |
| 14 | Hapmap41993-BTA-86407           | 0        | 21790724 |  |
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| 14 | Hapmap54398-rs29020900          | 0        | 21870878 |  |
| 14 | Hapmap30838-BTA-147387          | 0        | 21910798 |  |
| 14 | ARS-BFGL-NGS-31980              | 21933950 |          |  |
| 14 | Hapmap27177-BTA-147405          | 0        | 21954567 |  |
| 14 | Hapmap41372-BTA-86411           | 0        | 21997828 |  |
| 14 | UA-IFASA-7482                   | 0        | 22056082 |  |
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| 14 | ARS-BFGL-NGS-68879              | 0        | 22159702 |  |
| 14 | Hapmap40705-BTA-28727           | 0        | 22189056 |  |
| 14 | ARS-BFGL-BAC-11800              | 22226073 |          |  |
| 14 | BTB-00556501                    | 0        | 22265101 |  |
| 14 | Hapmap57415-rs29022496          | 0        | 22300864 |  |
| 14 | Hapmap32552-BTA-129045          | 0        | 22323719 |  |
| 14 | Hapmap50246-BTA-117246          | 0        | 22363637 |  |
| 14 | ARS-BFGL-NGS-111958             | 0        | 22392760 |  |
| 14 | BTB-01251993                    | 0        | 22486270 |  |
| 14 | BTB-01252028                    | 0        | 22544496 |  |

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| 14 | ARS-BFGL-BAC-12159     | 0        | 22587081 |
| 14 | ARS-BFGL-NGS-43648     | 0        | 22610144 |
| 14 | BTB-01252321           | 0        | 22643306 |
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| 14 | BTB-01252388           | 0        | 22762825 |
| 14 | ARS-BFGL-NGS-66553     | 0        | 22800695 |
| 14 | ARS-BFGL-NGS-34390     | 0        | 22823936 |
| 14 | UA-IFASA-9039          | 0        | 22875603 |
| 14 | BTA-34264-no-rs        | 0        | 22919538 |
| 14 | ARS-BFGL-NGS-26028     | 0        | 22946107 |
| 14 | Hapmap40063-BTA-34263  | 0        | 22983665 |
| 14 | BTB-00556983           | 0        | 23020091 |
| 14 | Hapmap60530-rs29020019 | 0        | 23054179 |
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| 14 | ARS-BFGL-NGS-42006     | 0        | 23122719 |
| 14 | ARS-BFGL-NGS-75663     | 0        | 23252097 |
| 14 | UA-IFASA-6711          | 0        | 23347427 |
| 14 | BTB-00556813           | 0        | 23384687 |
| 14 | ARS-BFGL-NGS-106196    | 0        | 23421933 |
| 14 | BTA-34248-no-rs        | 0        | 23444537 |
| 14 | UA-IFASA-7382          | 0        | 23475634 |
| 14 | ARS-BFGL-BAC-13494     | 0        | 23529165 |
| 14 | ARS-BFGL-NGS-15935     | 0        | 23571854 |
| 14 | Hapmap49966-BTA-34362  | 0        | 23594322 |
| 14 | BTB-01337014           | 0        | 23721713 |
| 14 | BTB-01953819           | 0        | 23817572 |
| 14 | Hapmap45796-BTA-25271  | 0        | 23853811 |
| 14 | ARS-BFGL-BAC-80520     | 23893220 |          |
| 14 | Hapmap31202-BTA-162588 | 0        | 23988778 |
| 14 | ARS-BFGL-NGS-104268    | 0        | 24057354 |
| 14 | ARS-BFGL-NGS-100389    | 0        | 24109116 |
| 14 | BTA-91250-no-rs        | 0        | 24145838 |
| 14 | BTB-01417924           | 0        | 24182406 |
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| 14 | Hapmap44358-BTA-24265  | 0        | 24275232 |
| 14 | ARS-BFGL-NGS-110427    | 0        | 24326513 |
| 14 | Hapmap59686-rs29020689 | 0        | 24365162 |
| 14 | ARS-BFGL-NGS-102351    | 0        | 24407125 |
| 14 | BTB-01532239           | 0        | 24437778 |
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| 14 | Hapmap41234-BTA-34285  | 0        | 25107556 |
| 14 | BTB-02056709           | 0        | 25175950 |
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| 14 | Hapmap46986-BTA-34282  | 0        | 25307116 |
| 14 | BTB-01779799           | 0        | 25351733 |
| 14 | Hapmap46735-BTA-86653  | 0        | 25401722 |
| 14 | ARS-BFGL-NGS-44032     | 0        | 25425357 |

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| 14 | Hapmap50664-BTA-34279  | 0 | 25459674 |
| 14 | ARS-BFGL-NGS-113949    | 0 | 25501417 |
| 14 | Hapmap54618-rs29021334 | 0 | 25612510 |
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| 14 | BTB-01144089           | 0 | 25667290 |
| 14 | ARS-BFGL-NGS-36089     | 0 | 25698286 |
| 14 | ARS-BFGL-NGS-111395    | 0 | 25731992 |
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| 14 | Hapmap39876-BTA-97370  | 0 | 25857110 |
| 14 | BTA-97369-no-rs        | 0 | 25887784 |
| 14 | Hapmap32241-BTC-054753 | 0 | 25962036 |
| 14 | ARS-BFGL-NGS-83080     |   | 25982072 |
| 14 | Hapmap25446-BTC-054694 | 0 | 26003598 |
| 14 | Hapmap31956-BTC-054628 | 0 | 26035082 |
| 14 | Hapmap24967-BTC-054601 | 0 | 26060343 |
| 14 | Hapmap24966-BTC-054594 | 0 | 26080801 |
| 14 | BTB-01143648           | 0 | 26168147 |
| 14 | BTB-01143619           | 0 | 26196375 |
| 14 | UA-IFASA-8415          | 0 | 26223437 |
| 14 | BTB-01143580           | 0 | 26264142 |
| 14 | BTB-01648093           | 0 | 26352020 |
| 14 | Hapmap40958-BTA-34312  | 0 | 26450034 |
| 14 | Hapmap32434-BTC-011497 | 0 | 26473490 |
| 14 | ARS-BFGL-NGS-35159     | 0 | 26508236 |
| 14 | Hapmap50665-BTA-34310  | 0 | 26542736 |
| 14 | ARS-BFGL-NGS-83583     | 0 | 26597692 |
| 14 | ARS-BFGL-NGS-32721     | 0 | 26621020 |
| 14 | Hapmap23172-BTC-011263 | 0 | 26685204 |
| 14 | Hapmap28828-BTC-011250 | 0 | 26713734 |
| 14 | Hapmap30932-BTC-011225 | 0 | 26766010 |
| 14 | UA-IFASA-7902          | 0 | 26800529 |
| 14 | Hapmap31672-BTC-065429 | 0 | 26836013 |
| 14 | Hapmap23524-BTC-065402 | 0 | 26874157 |
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| 14 | BTB-01280026           | 0 | 27035971 |
| 14 | Hapmap30734-BTC-065251 | 0 | 27115079 |
| 14 | Hapmap27934-BTC-065223 | 0 | 27155254 |
| 14 | Hapmap23509-BTC-073113 | 0 | 27198715 |
| 14 | Hapmap23255-BTC-073028 | 0 | 27231200 |
| 14 | Hapmap27112-BTC-063342 | 0 | 27271835 |
| 14 | Hapmap32503-BTC-063356 | 0 | 27296663 |
| 14 | Hapmap24414-BTC-073009 | 0 | 27321716 |
| 14 | Hapmap23060-BTC-072978 | 0 | 27360366 |
| 14 | Hapmap26621-BTC-072953 | 0 | 27380992 |
| 14 | Hapmap28032-BTC-072944 | 0 | 27408939 |
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| 14 | ARS-BFGL-NGS-116462    | 0 | 27575294 |
| 14 | ARS-BFGL-BAC-13020     |   | 27604507 |
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| 14 | Hapmap24928-BTC-010710 | 0 | 27669598 |
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| 14 | UA-IFASA-7062                         | 0 | 27751780 |          |          |
| 14 | ARS-USMARC-Parent-DQ984826-rs29027559 |   |          | 0        | 27751888 |
| 14 | Hapmap25002-BTC-073386                | 0 | 27808182 |          |          |
| 14 | UA-IFASA-6332                         | 0 | 27846373 |          |          |
| 14 | UA-IFASA-7947                         | 0 | 27875890 |          |          |
| 14 | Hapmap33173-BTC-073249                | 0 | 27896353 |          |          |
| 14 | Hapmap60213-rs29014046                | 0 | 27916840 |          |          |
| 14 | Hapmap27563-BTC-073928                | 0 | 27961362 |          |          |
| 14 | ARS-BFGL-NGS-19050                    | 0 | 28003576 |          |          |
| 14 | ARS-BFGL-NGS-110447                   | 0 | 28024026 |          |          |
| 14 | UA-IFASA-7441                         | 0 | 28053009 |          |          |
| 14 | ARS-BFGL-NGS-24031                    | 0 | 28076510 |          |          |
| 14 | ARS-BFGL-NGS-101963                   | 0 | 28103189 |          |          |
| 14 | ARS-BFGL-NGS-104003                   | 0 | 28155879 |          |          |
| 14 | ARS-BFGL-NGS-116559                   | 0 | 28201349 |          |          |
| 14 | BTB-00560182                          | 0 | 28247205 |          |          |
| 14 | UA-IFASA-9679                         | 0 | 28276206 |          |          |
| 14 | Hapmap48722-BTA-34404                 | 0 | 28332133 |          |          |
| 14 | UA-IFASA-8554                         | 0 | 28381520 |          |          |
| 14 | BTB-00561300                          | 0 | 28494888 |          |          |
| 14 | BTA-34419-no-rs                       | 0 | 28548600 |          |          |
| 14 | UA-IFASA-8135                         | 0 | 28575850 |          |          |
| 14 | ARS-BFGL-NGS-21384                    | 0 | 28625324 |          |          |
| 14 | Hapmap44230-BTA-34389                 | 0 | 28647658 |          |          |
| 14 | ARS-BFGL-BAC-83320                    |   | 28674493 |          |          |
| 14 | BTB-00561155                          | 0 | 28774535 |          |          |
| 14 | ARS-BFGL-NGS-27940                    | 0 | 28818196 |          |          |
| 14 | BTB-00561102                          | 0 | 28911839 |          |          |
| 14 | Hapmap49554-BTA-28269                 | 0 | 29014319 |          |          |
| 14 | UA-IFASA-8188                         | 0 | 29061608 |          |          |
| 14 | UA-IFASA-8638                         | 0 | 29109628 |          |          |
| 14 | UA-IFASA-9439                         | 0 | 29129820 |          |          |
| 14 | Hapmap49073-BTA-18180                 | 0 | 29161409 |          |          |
| 14 | ARS-BFGL-NGS-17540                    |   | 29362549 |          |          |
| 14 | ARS-BFGL-NGS-32892                    | 0 | 29388540 |          |          |
| 14 | BTB-00561988                          | 0 | 29444378 |          |          |
| 14 | Hapmap36079-SCAFFOLD271848_3858       | 0 |          | 29491023 |          |
| 14 | ARS-BFGL-NGS-69925                    | 0 | 29543761 |          |          |
| 14 | ARS-BFGL-NGS-10148                    | 0 | 29571889 |          |          |
| 14 | Hapmap34036-BES10_Contig636_1251      | 0 |          | 29641237 |          |
| 14 | BTB-00562416                          | 0 | 29680105 |          |          |
| 14 | ARS-BFGL-NGS-27095                    | 0 | 29695925 |          |          |
| 14 | ARS-BFGL-NGS-76187                    | 0 | 29731180 |          |          |
| 14 | ARS-BFGL-NGS-42822                    | 0 | 29753276 |          |          |
| 14 | BTB-00562904                          | 0 | 29817571 |          |          |
| 14 | Hapmap42187-BTA-34463                 | 0 | 29856945 |          |          |
| 14 | Hapmap32033-BTA-129075                | 0 | 29894264 |          |          |
| 14 | BTA-34455-no-rs                       | 0 | 29942659 |          |          |
| 14 | ARS-BFGL-NGS-26270                    |   | 29987025 |          |          |
| 14 | BTB-00562506                          | 0 | 30113351 |          |          |
| 14 | Hapmap34907-BES11_Contig197_663       | 0 |          | 30169472 |          |
| 14 | Hapmap51213-BTA-34435                 | 0 | 30220852 |          |          |
| 14 | BTB-00562611                          | 0 | 30275865 |          |          |
| 14 | Hapmap49130-BTA-34437                 | 0 | 30307874 |          |          |

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| 14 | BTB-00562658                  | 0 | 30329532 |          |
| 14 | BTA-34452-no-rs               | 0 | 30361887 |          |
| 14 | ARS-BFGL-NGS-69534            | 0 | 30397178 |          |
| 14 | BTB-00562922                  | 0 | 30449596 |          |
| 14 | ARS-BFGL-NGS-117404           | 0 | 30498375 |          |
| 14 | UA-IFASA-7756                 | 0 | 30552114 |          |
| 14 | Hapmap60118-rs29024888        | 0 | 30595032 |          |
| 14 | BTB-01936090                  | 0 | 30702073 |          |
| 14 | BTB-00563896                  | 0 | 30731341 |          |
| 14 | UA-IFASA-7641                 | 0 | 30764147 |          |
| 14 | BTB-00563836                  | 0 | 30818549 |          |
| 14 | BTA-34529-no-rs               | 0 | 30938531 |          |
| 14 | Hapmap59709-rs29021868        | 0 | 31014368 |          |
| 14 | ARS-BFGL-BAC-85350            |   | 31060310 |          |
| 14 | Hapmap38216-BTA-34530         | 0 | 31107531 |          |
| 14 | BTB-02062304                  | 0 | 31148945 |          |
| 14 | UA-IFASA-8520                 | 0 | 31197593 |          |
| 14 | ARS-BFGL-NGS-93878            | 0 | 31219729 |          |
| 14 | UA-IFASA-8640                 | 0 | 31242174 |          |
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| 14 | Hapmap50960-BTA-43399         | 0 | 31322421 |          |
| 14 | Hapmap43764-BTA-111517        | 0 | 31369019 |          |
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| 14 | Hapmap39713-BTA-111152        | 0 | 31446697 |          |
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| 14 | Hapmap42549-BTA-42953         | 0 | 31589988 |          |
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| 14 | Hapmap43265-BTA-42290         | 0 | 31752520 |          |
| 14 | Hapmap38958-BTA-44398         | 0 | 31785149 |          |
| 14 | ARS-BFGL-BAC-10245            | 0 | 31819743 |          |
| 14 | Hapmap48764-BTA-44326         | 0 | 31853480 |          |
| 14 | ARS-BFGL-NGS-93027            | 0 | 31973472 |          |
| 14 | Hapmap49092-BTA-24990         | 0 | 32002622 |          |
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| 14 | BTB-01689254                  | 0 | 32569930 |          |
| 14 | ARS-BFGL-NGS-13139            | 0 | 32590800 |          |
| 14 | ARS-BFGL-BAC-84960            |   | 32663649 |          |
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| 14 | Hapmap33993-BES7_Contig58_410 | 0 |          | 32849098 |
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| 14 | Hapmap49131-BTA-34531         | 0 | 33026716 |          |
| 14 | BTB-00563966                  | 0 | 33069775 |          |
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| 14 | Hapmap31390-BTA-129087        | 0 | 33309894 |          |
| 14 | ARS-BFGL-NGS-16064            | 0 | 33348218 |          |

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| 14 | BTB-01336217           | 0 | 33716508 |
| 14 | Hapmap41433-BTA-114994 | 0 | 33832243 |
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| 14 | BTB-01336033           | 0 | 33918070 |
| 14 | BTB-01336012           | 0 | 33964818 |
| 14 | Hapmap40239-BTA-20881  | 0 | 33999209 |
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| 14 | BTB-01119610           | 0 | 34100477 |
| 14 | ARS-BFGL-NGS-69360     |   | 34148235 |
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| 14 | BTA-10115-no-rs        | 0 | 34835330 |
| 14 | Hapmap39612-BTA-105019 | 0 | 34930139 |
| 14 | ARS-BFGL-NGS-38815     | 0 | 34974815 |
| 14 | ARS-BFGL-NGS-112748    | 0 | 35052708 |
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| 14 | Hapmap48747-BTA-40164  | 0 | 35151359 |
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| 14 | ARS-BFGL-NGS-104172    | 0 | 35775056 |
| 14 | BTA-34556-no-rs        | 0 | 35890205 |
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| 14 | Hapmap46481-BTA-34558  | 0 | 36056525 |
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| 14 | Hapmap36024-SCAFFOLD270113_28063 | 0 |          | 36659687 |
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| 14 | BTA-107728-no-rs                 | 0 | 37247174 |          |
| 14 | BTA-107730-no-rs                 | 0 | 37336815 |          |
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| 14 | Hapmap41741-BTA-107702           | 0 | 37389945 |          |
| 14 | Hapmap41415-BTA-107703           | 0 | 37535038 |          |
| 14 | ARS-BFGL-NGS-48279               | 0 | 37615335 |          |
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| 14 | BTA-107712-no-rs                 | 0 | 37803677 |          |
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| 14 | ARS-BFGL-NGS-21895               | 0 | 38583008 |          |
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| 14 | Hapmap50324-BTA-34690            | 0 | 39640732 |          |



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| 14 | BTB-00565647                   | 0 | 39706371 |  |
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| 14 | Hapmap50929-BTA-28833          | 0 | 40785938 |  |
| 14 | UA-IFASA-7391                  | 0 | 40812291 |  |
| 14 | BTB-01362889                   | 0 | 40852681 |  |
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| 14 | BTB-01387869                   | 0 | 41169239 |  |
| 14 | UA-IFASA-5445                  | 0 | 41195688 |  |
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| 14 | BTA-63816-no-rs                | 0 | 41897082 |  |
| 14 | BTB-00983358                   | 0 | 42001544 |  |
| 14 | BTA-63812-no-rs                | 0 | 42045113 |  |
| 14 | BTB-00983321                   | 0 | 42089128 |  |

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| 14 | UA-IFASA-8067                  | 0 | 42175775 |          |
| 14 | Hapmap39578-BTA-63807          | 0 | 42234114 |          |
| 14 | BTA-63803-no-rs                | 0 | 42260232 |          |
| 14 | ARS-BFGL-NGS-115436            | 0 | 42288828 |          |
| 14 | ARS-BFGL-NGS-31699             | 0 | 42333424 |          |
| 14 | Hapmap32993-BTA-129125         | 0 | 42363191 |          |
| 14 | BTB-00566241                   | 0 | 42392304 |          |
| 14 | BTB-00566264                   | 0 | 42508026 |          |
| 14 | BTB-00566296                   | 0 | 42550365 |          |
| 14 | BTB-00566332                   | 0 | 42598616 |          |
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| 14 | Hapmap40096-BTA-98144          | 0 | 42793470 |          |
| 14 | BTB-01495401                   | 0 | 42841242 |          |
| 14 | Hapmap47456-BTA-98145          | 0 | 42875925 |          |
| 14 | BTA-28303-no-rs                | 0 | 42950017 |          |
| 14 | Hapmap42427-BTA-110915         | 0 | 43022142 |          |
| 14 | Hapmap48605-BTA-110895         | 0 | 43069802 |          |
| 14 | BTB-01739971                   | 0 | 43099166 |          |
| 14 | Hapmap36191-SCAFFOLD388152_519 | 0 |          | 43242051 |
| 14 | Hapmap44003-BTA-110897         | 0 | 43292662 |          |
| 14 | UA-IFASA-8173                  | 0 | 43353000 |          |
| 14 | Hapmap42426-BTA-110900         | 0 | 43430880 |          |
| 14 | ARS-BFGL-BAC-21432             | 0 | 43499031 |          |
| 14 | Hapmap40233-BTA-110906         | 0 | 43526891 |          |
| 14 | ARS-BFGL-BAC-21440             | 0 | 43645037 |          |
| 14 | UA-IFASA-6444                  | 0 | 43740951 |          |
| 14 | BTB-00566982                   | 0 | 43814459 |          |
| 14 | ARS-BFGL-BAC-21447             | 0 | 43899216 |          |
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| 14 | Hapmap56777-ss46526772         | 0 | 43979834 |          |
| 14 | ARS-BFGL-NGS-111920            | 0 | 44029634 |          |
| 14 | ARS-BFGL-BAC-21453             | 0 | 44105320 |          |
| 14 | Hapmap43697-BTA-82657          | 0 | 44126252 |          |
| 14 | BTB-01291445                   | 0 | 44141376 |          |
| 14 | Hapmap52122-rs29020455         | 0 | 44254668 |          |
| 14 | BTB-01708641                   | 0 | 44291954 |          |
| 14 | Hapmap44419-BTA-88982          | 0 | 44323404 |          |
| 14 | Hapmap39106-BTA-18647          | 0 | 44349969 |          |
| 14 | ARS-BFGL-BAC-24005             | 0 | 44445182 |          |
| 14 | Hapmap47579-BTA-34773          | 0 | 44531321 |          |
| 14 | ARS-BFGL-NGS-114247            | 0 | 44587394 |          |
| 14 | ARS-BFGL-NGS-87964             | 0 | 44655357 |          |
| 14 | UA-IFASA-8273                  | 0 | 44765662 |          |
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| 14 | ARS-BFGL-BAC-17008             | 0 | 44941560 |          |
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| 14 | UA-IFASA-8493                  | 0 | 44983157 |          |
| 14 | UA-IFASA-5479                  | 0 | 45003977 |          |
| 14 | UA-IFASA-8766                  | 0 | 45028309 |          |
| 14 | ARS-BFGL-NGS-97078             | 0 | 45088662 |          |
| 14 | ARS-BFGL-BAC-23853             | 0 | 45174382 |          |

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| 14 | ARS-BFGL-NGS-25980                    | 45280979 |          |  |
| 14 | ARS-BFGL-NGS-103608                   | 0        | 45337333 |  |
| 14 | Hapmap32017-BTA-123301                | 0        | 45517950 |  |
| 14 | BTA-02620-rs29010169                  | 0        | 45601728 |  |
| 14 | Hapmap41211-BTA-25540                 | 0        | 45711331 |  |
| 14 | UA-IFASA-6858                         | 0        | 45843102 |  |
| 14 | Hapmap27155-BTA-129145                | 0        | 45905109 |  |
| 14 | ARS-BFGL-NGS-108612                   | 0        | 45945108 |  |
| 14 | ARS-BFGL-NGS-49187                    | 0        | 46016583 |  |
| 14 | Hapmap53046-rs29015307                | 0        | 46060033 |  |
| 14 | Hapmap40519-BTA-34798                 | 0        | 46110191 |  |
| 14 | ARS-BFGL-NGS-91939                    | 0        | 46236763 |  |
| 14 | Hapmap29973-BTA-129162                | 0        | 46264806 |  |
| 14 | ARS-BFGL-NGS-37644                    | 0        | 46299534 |  |
| 14 | ARS-BFGL-NGS-34212                    | 0        | 46465704 |  |
| 14 | Hapmap58451-rs29022181                | 0        | 46558182 |  |
| 14 | BTB-02010665                          | 0        | 46756507 |  |
| 14 | BTB-00567254                          | 0        | 46793521 |  |
| 14 | BTB-00567299                          | 0        | 46845423 |  |
| 14 | BTB-00567509                          | 0        | 46928407 |  |
| 14 | BTB-00567566                          | 0        | 46959846 |  |
| 14 | BTA-34836-no-rs                       | 0        | 46991388 |  |
| 14 | UA-IFASA-6104                         | 0        | 47013926 |  |
| 14 | ARS-BFGL-NGS-59210                    | 0        | 47036013 |  |
| 14 | BTB-01709715                          | 0        | 47090795 |  |
| 14 | Hapmap60270-ss46526106                | 0        | 47141282 |  |
| 14 | BTB-00862481                          | 0        | 47194767 |  |
| 14 | ARS-BFGL-NGS-51050                    | 47233282 |          |  |
| 14 | BTB-00567600                          | 0        | 47267133 |  |
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| 14 | BTB-01709766                          | 0        | 47337155 |  |
| 14 | Hapmap26746-BTA-157258                | 0        | 47368746 |  |
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| 14 | BTB-00567714                          | 0        | 47542510 |  |
| 14 | Hapmap51718-BTA-34853                 | 0        | 47591427 |  |
| 14 | UA-IFASA-9140                         | 0        | 47652361 |  |
| 14 | Hapmap57857-rs29019922                | 0        | 47686253 |  |
| 14 | Hapmap40718-BTA-34856                 | 0        | 47770268 |  |
| 14 | ARS-BFGL-BAC-23417                    | 0        | 47823469 |  |
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| 14 | UA-IFASA-8217                         | 0        | 47926524 |  |
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| 14 | Hapmap47262-BTA-34870                 | 0        | 48116962 |  |
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| 14 | ARS-BFGL-NGS-69090                    | 0        | 48184967 |  |
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| 14 | UA-IFASA-6995                         | 0        | 48302835 |  |
| 14 | UA-IFASA-6822                         | 0        | 48359660 |  |
| 14 | ARS-USMARC-Parent-DQ846691-rs29019814 | 0        | 48380429 |  |

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| 14 | ARS-BFGL-NGS-116920    | 0 | 48484709 |
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| 14 | Hapmap47581-BTA-34891  | 0 | 49032157 |
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| 14 | ARS-BFGL-NGS-30322     | 0 | 49289017 |
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| 14 | Hapmap58353-rs29010993 | 0 | 49450613 |
| 14 | Hapmap33594-BTA-153900 | 0 | 49466422 |
| 14 | ARS-BFGL-BAC-26470     | 0 | 49518377 |
| 14 | BTB-00569928           | 0 | 49724647 |
| 14 | BTB-00569940           | 0 | 49760299 |
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| 14 | Hapmap60755-rs29010395 | 0 | 49840077 |
| 14 | ARS-BFGL-NGS-33585     | 0 | 49883707 |
| 14 | Hapmap51215-BTA-34925  | 0 | 49955911 |
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| 14 | BTA-113382-no-rs       | 0 | 50844434 |
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| 14 | BTA-113394-no-rs       | 0 | 50976308 |
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| 14 | BTB-00569863           | 0 | 51285167 |
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| 14 | BTB-00592398           | 0 | 51361589 |

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| 14 | BTB-01891955           | 0        | 51430094 |
| 14 | BTA-23975-no-rs        | 0        | 51457342 |
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| 14 | BTA-111311-no-rs       | 0        | 52049002 |
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| 14 | BTB-01212667           | 0        | 52216536 |
| 14 | BTB-01212678           | 0        | 52244037 |
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| 14 | Hapmap55822-rs29024649 | 0        | 53456052 |
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| 14 | BTA-60160-no-rs        | 0        | 53896478 |
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| 14 | Hapmap55624-rs29014120 | 0 | 54240653 |
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| 14 | BTB-00574150           | 0 | 59539237 |
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| 14 | ARS-BFGL-NGS-72484     | 0 | 59929251 |
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| 14 | BTA-106885-no-rs       | 0 | 60946824 |
| 14 | BTB-02029178           | 0 | 60992958 |
| 14 | ARS-BFGL-BAC-21623     | 0 | 61034113 |
| 14 | BTB-01361552           | 0 | 61068246 |
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| 14 | ARS-BFGL-NGS-117014    | 0 | 61213865 |
| 14 | ARS-BFGL-NGS-14484     | 0 | 61299549 |
| 14 | ARS-BFGL-NGS-17106     | 0 | 61344362 |
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| 14 | Hapmap50326-BTA-35180  | 0 | 61449078 |
| 14 | UA-IFASA-7855          | 0 | 61506966 |
| 14 | Hapmap51129-BTA-104919 | 0 | 61535356 |
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| 14 | ARS-BFGL-NGS-17114     | 0 | 61924770 |
| 14 | ARS-BFGL-NGS-10025     | 0 | 61965465 |



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| 14 | UA-IFASA-9447          | 0        | 62025584 |
| 14 | BTB-01075741           | 0        | 62081472 |
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| 14 | BTB-01075703           | 0        | 62216852 |
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| 14 | BTA-110835-no-rs       | 0        | 62420816 |
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| 14 | ARS-BFGL-NGS-14050     | 62508173 |          |
| 14 | ARS-BFGL-BAC-22425     | 0        | 62549674 |
| 14 | BTA-110833-no-rs       | 0        | 62601499 |
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| 14 | Hapmap23829-BTA-155920 | 0        | 62676800 |
| 14 | ARS-BFGL-BAC-17750     | 62698714 |          |
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| 14 | BTB-00575283           | 0        | 62794502 |
| 14 | Hapmap44372-BTA-35201  | 0        | 62830899 |
| 14 | BTB-01831458           | 0        | 62887920 |
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| 14 | BTB-01048106           | 0        | 63004255 |
| 14 | Hapmap54769-rs29012948 | 0        | 63056074 |
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| 14 | Hapmap59713-rs29022117 | 0        | 63192356 |
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| 14 | Hapmap56993-rs29010230 | 0        | 63276703 |
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| 14 | BTB-00574687           | 0        | 63412220 |
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| 14 | ARS-BFGL-NGS-108994    | 0        | 63587920 |
| 14 | BTA-13956-no-rs        | 0        | 63695912 |
| 14 | ARS-BFGL-NGS-18770     | 0        | 63725761 |
| 14 | Hapmap41515-BTA-35210  | 0        | 63777156 |
| 14 | UA-IFASA-6806          | 0        | 63827753 |
| 14 | ARS-BFGL-NGS-112193    | 0        | 63869311 |
| 14 | ARS-BFGL-NGS-70724     | 0        | 63894637 |
| 14 | BTA-35174-no-rs        | 0        | 63917588 |
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| 14 | ARS-BFGL-NGS-49290     | 63972246 |          |
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| 14 | Hapmap54399-rs29020908 | 0        | 64298207 |
| 14 | BTA-34338-no-rs        | 0        | 64333123 |
| 14 | ARS-BFGL-NGS-117088    | 0        | 64480626 |
| 14 | ARS-BFGL-NGS-39793     | 0        | 64512418 |
| 14 | ARS-BFGL-NGS-102461    | 0        | 64541527 |
| 14 | Hapmap53312-rs29018332 | 0        | 64579853 |

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| 14 | BTB-00559671                   | 0        | 64619111 |          |
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| 14 | ARS-BFGL-NGS-98481             | 0        | 64767268 |          |
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| 14 | ARS-BFGL-NGS-41976             | 0        | 64968182 |          |
| 14 | Hapmap32169-BTA-85778          | 0        | 65079238 |          |
| 14 | BTB-00575979                   | 0        | 65096463 |          |
| 14 | BTB-00575969                   | 0        | 65127051 |          |
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| 14 | Hapmap54010-rs29018717         | 0        | 65300637 |          |
| 14 | Hapmap23606-BTA-35239          | 0        | 65330073 |          |
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| 14 | ARS-BFGL-NGS-20250             | 65452336 |          |          |
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| 14 | UA-IFASA-6240                  | 0        | 65511994 |          |
| 14 | BTA-35226-no-rs                | 0        | 65536696 |          |
| 14 | Hapmap43967-BTA-90526          | 0        | 65587374 |          |
| 14 | Hapmap41135-BTA-104993         | 0        | 65934535 |          |
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| 14 | Hapmap34587-BES7_Contig136_464 | 0        |          | 66282557 |
| 14 | ARS-BFGL-NGS-85411             | 0        | 66339300 |          |
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| 14 | Hapmap35102-BES3_Contig324_378 | 0        |          | 66523007 |
| 14 | ARS-BFGL-BAC-17146             | 0        | 66599210 |          |
| 14 | ARS-BFGL-NGS-18168             | 0        | 66652627 |          |
| 14 | Hapmap22954-BTA-35300          | 0        | 66676148 |          |
| 14 | Hapmap44682-BTA-35290          | 0        | 66697244 |          |
| 14 | BTA-35285-no-rs                | 0        | 66771994 |          |
| 14 | ARS-BFGL-NGS-115036            | 0        | 66819485 |          |
| 14 | ARS-BFGL-NGS-28894             | 0        | 66877367 |          |
| 14 | Hapmap49582-BTA-35282          | 0        | 66907798 |          |
| 14 | Hapmap39171-BTA-35277          | 0        | 66951519 |          |
| 14 | BTA-35274-no-rs                | 0        | 67013273 |          |
| 14 | UA-IFASA-5830                  | 0        | 67048933 |          |
| 14 | ARS-BFGL-BAC-24806             | 0        | 67129346 |          |
| 14 | ARS-BFGL-NGS-16512             | 0        | 67278468 |          |
| 14 | Hapmap27898-BTA-35347          | 0        | 67396538 |          |
| 14 | ARS-BFGL-NGS-24670             | 0        | 67443766 |          |
| 14 | ARS-BFGL-NGS-107586            | 0        | 67529191 |          |
| 14 | Hapmap42918-BTA-35350          | 0        | 67555556 |          |
| 14 | ARS-BFGL-NGS-115837            | 0        | 67593766 |          |
| 14 | ARS-BFGL-NGS-70650             | 0        | 67649210 |          |
| 14 | Hapmap32118-BTA-155388         | 0        | 67689451 |          |
| 14 | Hapmap41150-BTA-109116         | 0        | 67732408 |          |
| 14 | Hapmap50669-BTA-35344          | 0        | 67831515 |          |
| 14 | Hapmap54223-rs29017219         | 0        | 67871897 |          |

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| 14 | ARS-BFGL-NGS-449       | 0 | 67913507 |
| 14 | ARS-BFGL-NGS-70280     |   | 67963582 |
| 14 | UA-IFASA-8451          | 0 | 68026718 |
| 14 | ARS-BFGL-NGS-100885    | 0 | 68078532 |
| 14 | ARS-BFGL-NGS-75890     | 0 | 68199931 |
| 14 | ARS-BFGL-NGS-95221     | 0 | 68225066 |
| 14 | Hapmap39201-BTA-35312  | 0 | 68304416 |
| 14 | UA-IFASA-5677          | 0 | 68337686 |
| 14 | ARS-BFGL-NGS-29390     |   | 68378101 |
| 14 | BTA-07375-no-rs        | 0 | 68450192 |
| 14 | ARS-BFGL-NGS-11838     | 0 | 68549959 |
| 14 | ARS-BFGL-NGS-103346    | 0 | 68578968 |
| 14 | ARS-BFGL-NGS-33213     | 0 | 68599010 |
| 14 | BTA-35325-no-rs        | 0 | 68619030 |
| 14 | ARS-BFGL-NGS-59595     | 0 | 68642901 |
| 14 | ARS-BFGL-NGS-57879     | 0 | 68683259 |
| 14 | BTA-120998-no-rs       | 0 | 68722604 |
| 14 | ARS-BFGL-NGS-33860     |   | 68817604 |
| 14 | ARS-BFGL-NGS-31720     | 0 | 68858195 |
| 14 | ARS-BFGL-NGS-40093     | 0 | 68926398 |
| 14 | ARS-BFGL-NGS-82976     | 0 | 68962221 |
| 14 | ARS-BFGL-NGS-53440     |   | 69028708 |
| 14 | ARS-BFGL-NGS-116480    | 0 | 69058558 |
| 14 | ARS-BFGL-NGS-31537     | 0 | 69103642 |
| 14 | ARS-BFGL-NGS-31823     | 0 | 69223777 |
| 14 | ARS-BFGL-NGS-40417     | 0 | 69254228 |
| 14 | UA-IFASA-7236          | 0 | 69288756 |
| 14 | ARS-BFGL-NGS-74268     | 0 | 69356963 |
| 14 | ARS-BFGL-NGS-117144    | 0 | 69433217 |
| 14 | ARS-BFGL-BAC-18048     | 0 | 69539373 |
| 14 | ARS-BFGL-NGS-111902    | 0 | 69563547 |
| 14 | Hapmap29974-BTA-129366 | 0 | 69633366 |
| 14 | ARS-BFGL-BAC-18590     | 0 | 69665346 |
| 14 | Hapmap23814-BTA-129373 | 0 | 69709010 |
| 14 | ARS-BFGL-NGS-29155     | 0 | 69791197 |
| 14 | ARS-BFGL-NGS-33182     | 0 | 69815341 |
| 14 | Hapmap59390-rs29023275 | 0 | 69851391 |
| 14 | BTA-35387-no-rs        | 0 | 69965123 |
| 14 | ARS-BFGL-NGS-119102    | 0 | 70003286 |
| 14 | ARS-BFGL-NGS-114823    | 0 | 70094732 |
| 14 | ARS-BFGL-NGS-32742     | 0 | 70229610 |
| 14 | ARS-BFGL-BAC-20439     | 0 | 70250637 |
| 14 | ARS-BFGL-BAC-20448     | 0 | 70271131 |
| 14 | Hapmap25340-BTA-162244 | 0 | 70314452 |
| 14 | ARS-BFGL-NGS-113698    | 0 | 70358208 |
| 14 | UA-IFASA-8063          | 0 | 70387887 |
| 14 | ARS-BFGL-BAC-19878     | 0 | 70413905 |
| 14 | ARS-BFGL-BAC-23075     | 0 | 70440306 |
| 14 | ARS-BFGL-BAC-23087     | 0 | 70466397 |
| 14 | ARS-BFGL-NGS-38765     | 0 | 70493990 |
| 14 | ARS-BFGL-NGS-104630    | 0 | 70526189 |
| 14 | ARS-BFGL-NGS-19849     | 0 | 70546189 |
| 14 | ARS-BFGL-BAC-23102     | 0 | 70570164 |
| 14 | ARS-BFGL-NGS-22314     | 0 | 70590801 |

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| 14 | ARS-BFGL-NGS-23509              | 0        | 70636087 |          |
| 14 | ARS-BFGL-NGS-35091              | 0        | 70699834 |          |
| 14 | ARS-BFGL-NGS-104909             | 0        | 70763413 |          |
| 14 | UA-IFASA-6721                   | 0        | 70817582 |          |
| 14 | ARS-BFGL-NGS-112964             | 0        | 70921476 |          |
| 14 | UA-IFASA-7753                   | 0        | 71025573 |          |
| 14 | UA-IFASA-4785                   | 0        | 71096693 |          |
| 14 | Hapmap26651-BTA-129784          | 0        | 71135340 |          |
| 14 | ARS-BFGL-BAC-25658              | 0        | 71159186 |          |
| 14 | ARS-BFGL-NGS-12338              | 0        | 71184631 |          |
| 14 | ARS-BFGL-NGS-60194              | 0        | 71230312 |          |
| 14 | Hapmap24788-BTA-109508          | 0        | 71256147 |          |
| 14 | Hapmap34620-BES3_Contig445_1227 | 0        |          | 71276942 |
| 14 | ARS-BFGL-BAC-26290              | 0        | 71313926 |          |
| 14 | Hapmap38877-BTA-110114          | 0        | 71347166 |          |
| 14 | ARS-BFGL-NGS-14330              | 71433555 |          |          |
| 14 | Hapmap51435-BTA-35416           | 0        | 71471610 |          |
| 14 | BTA-35414-no-rs                 | 0        | 71571894 |          |
| 14 | ARS-BFGL-NGS-10628              | 0        | 71663481 |          |
| 14 | Hapmap42350-BTA-88359           | 0        | 71684246 |          |
| 14 | ARS-BFGL-NGS-60065              | 0        | 71793738 |          |
| 14 | ARS-BFGL-NGS-22433              | 0        | 71843758 |          |
| 14 | Hapmap34377-BES7_Contig473_1475 | 0        |          | 71876826 |
| 14 | ARS-BFGL-NGS-64269              | 0        | 71927138 |          |
| 14 | Hapmap25804-BTA-129404          | 0        | 71964937 |          |
| 14 | Hapmap40247-BTA-35401           | 0        | 71999527 |          |
| 14 | Hapmap55664-rs29021594          | 0        | 72069520 |          |
| 14 | ARS-BFGL-NGS-31489              | 0        | 72106554 |          |
| 14 | ARS-BFGL-NGS-30735              | 0        | 72166145 |          |
| 14 | ARS-BFGL-NGS-113708             | 0        | 72228540 |          |
| 14 | Hapmap33967-BES2_Contig190_681  | 0        |          | 72259787 |
| 14 | ARS-BFGL-NGS-65360              | 72381743 |          |          |
| 14 | ARS-BFGL-NGS-50923              | 0        | 72413890 |          |
| 14 | UA-IFASA-7620                   | 0        | 72447823 |          |
| 14 | ARS-BFGL-NGS-27908              | 0        | 72490329 |          |
| 14 | ARS-BFGL-NGS-104221             | 0        | 72591421 |          |
| 14 | ARS-BFGL-NGS-109175             | 0        | 72641268 |          |
| 14 | ARS-BFGL-NGS-113054             | 0        | 72697034 |          |
| 14 | Hapmap58529-rs29018397          | 0        | 72721320 |          |
| 14 | Hapmap55935-rs29020117          | 0        | 72764713 |          |
| 14 | ARS-BFGL-NGS-118967             | 0        | 72900273 |          |
| 14 | ARS-BFGL-NGS-12011              | 0        | 72959368 |          |
| 14 | Hapmap47584-BTA-35432           | 0        | 72995583 |          |
| 14 | ARS-BFGL-NGS-37170              | 73021667 |          |          |
| 14 | ARS-BFGL-NGS-69078              | 0        | 73043341 |          |
| 14 | ARS-BFGL-NGS-84433              | 0        | 73065261 |          |
| 14 | ARS-BFGL-NGS-46500              | 73136888 |          |          |
| 14 | Hapmap32361-BTA-155525          | 0        | 73161964 |          |
| 14 | ARS-BFGL-NGS-68191              | 0        | 73221850 |          |
| 14 | ARS-BFGL-NGS-55517              | 0        | 73248513 |          |
| 14 | UA-IFASA-7523                   | 0        | 73285969 |          |
| 14 | Hapmap51548-BTA-109652          | 0        | 73406438 |          |
| 14 | UA-IFASA-8643                   | 0        | 73434867 |          |
| 14 | UA-IFASA-8028                   | 0        | 73467089 |          |

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| 14 | ARS-BFGL-BAC-20491              | 0 | 73615442 |          |
| 14 | BTA-35465-no-rs                 | 0 | 73755259 |          |
| 14 | Hapmap55749-rs29016527          | 0 | 73832166 |          |
| 14 | BTA-35462-no-rs                 | 0 | 73897732 |          |
| 14 | ARS-BFGL-NGS-859                | 0 | 73919098 |          |
| 14 | Hapmap54796-rs29014519          | 0 | 73941140 |          |
| 14 | ARS-BFGL-NGS-12514              | 0 | 73979692 |          |
| 14 | UA-IFASA-8614                   | 0 | 74021731 |          |
| 14 | ARS-BFGL-BAC-21070              | 0 | 74043882 |          |
| 14 | Hapmap22793-BTA-129434          | 0 | 74133189 |          |
| 14 | ARS-BFGL-BAC-19360              |   | 74189329 |          |
| 14 | UA-IFASA-4638                   | 0 | 74227618 |          |
| 14 | UA-IFASA-6765                   | 0 | 74414864 |          |
| 14 | Hapmap41395-BTA-97523           | 0 | 74496096 |          |
| 14 | Hapmap58449-rs29021974          | 0 | 74524985 |          |
| 14 | UA-IFASA-9661                   | 0 | 74557688 |          |
| 14 | ARS-BFGL-NGS-25111              | 0 | 74612084 |          |
| 14 | UA-IFASA-8281                   | 0 | 74709582 |          |
| 14 | ARS-BFGL-NGS-26876              | 0 | 74753039 |          |
| 14 | ARS-BFGL-NGS-66016              | 0 | 74814889 |          |
| 14 | Hapmap35155-BES9_Contig354_1350 | 0 |          | 74860697 |
| 14 | Hapmap41843-BTA-35493           | 0 | 74955284 |          |
| 14 | Hapmap50329-BTA-35492           | 0 | 74991009 |          |
| 14 | ARS-BFGL-BAC-17954              | 0 | 75035895 |          |
| 14 | Hapmap35669-SCAFFOLD60962_16617 | 0 |          | 75073151 |
| 14 | UA-IFASA-9534                   | 0 | 75097271 |          |
| 14 | ARS-BFGL-NGS-32340              | 0 | 75118814 |          |
| 14 | UA-IFASA-5362                   | 0 | 75145124 |          |
| 14 | Hapmap52494-rs29015005          | 0 | 75279426 |          |
| 14 | ARS-BFGL-NGS-88900              |   | 75463242 |          |
| 14 | BTA-110405-no-rs                | 0 | 75488942 |          |
| 14 | UA-IFASA-5711                   | 0 | 75517287 |          |
| 14 | UA-IFASA-7002                   | 0 | 75571250 |          |
| 14 | BTA-123449-no-rs                | 0 | 75748284 |          |
| 14 | ARS-BFGL-NGS-112763             | 0 | 75832105 |          |
| 14 | ARS-BFGL-NGS-81352              | 0 | 75870850 |          |
| 14 | BTA-35506-no-rs                 | 0 | 75991522 |          |
| 14 | UA-IFASA-7973                   | 0 | 76043148 |          |
| 14 | BTA-35525-no-rs                 | 0 | 76075224 |          |
| 14 | UA-IFASA-7148                   | 0 | 76101743 |          |
| 14 | Hapmap58632-rs29009701          | 0 | 76217573 |          |
| 14 | Hapmap53458-rs29027601          | 0 | 76306945 |          |
| 14 | ARS-BFGL-NGS-13904              | 0 | 76348124 |          |
| 14 | ARS-BFGL-NGS-65910              | 0 | 76426315 |          |
| 14 | ARS-BFGL-NGS-115921             | 0 | 76472657 |          |
| 14 | BTA-07770-rs29027433            | 0 | 76497740 |          |
| 14 | ARS-BFGL-NGS-57639              | 0 | 76524093 |          |
| 14 | Hapmap48725-BTA-35541           | 0 | 76585288 |          |
| 14 | ARS-BFGL-BAC-23728              | 0 | 76619852 |          |
| 14 | ARS-BFGL-BAC-23729              | 0 | 76803498 |          |
| 14 | ARS-BFGL-NGS-31428              | 0 | 76923332 |          |
| 14 | Hapmap43459-BTA-111191          | 0 | 76999733 |          |
| 14 | Hapmap34937-BES5_Contig538_1040 | 0 |          | 77048373 |
| 14 | BTB-00476821                    | 0 | 77095240 |          |

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| 14 | BTB-00476800                          | 0 | 77123730 |          |  |
| 14 | Hapmap38269-BTA-100162                | 0 | 77151172 |          |  |
| 14 | UA-IFASA-6585                         | 0 | 77173227 |          |  |
| 14 | BTA-116518-no-rs                      | 0 | 77222049 |          |  |
| 14 | ARS-BFGL-NGS-16144                    | 0 | 77253862 |          |  |
| 14 | ARS-BFGL-NGS-113293                   | 0 | 77274386 |          |  |
| 14 | ARS-BFGL-NGS-36660                    | 0 | 77292340 |          |  |
| 14 | BTB-00640662                          | 0 | 77315279 |          |  |
| 14 | BTA-100160-no-rs                      | 0 | 77362211 |          |  |
| 14 | Hapmap58971-rs29019251                | 0 | 77475737 |          |  |
| 14 | UA-IFASA-5379                         | 0 | 77532152 |          |  |
| 14 | ARS-BFGL-NGS-104297                   | 0 | 77610030 |          |  |
| 14 | UA-IFASA-8066                         | 0 | 77652439 |          |  |
| 14 | ARS-BFGL-BAC-20948                    | 0 | 77759163 |          |  |
| 14 | ARS-BFGL-NGS-118465                   | 0 | 77797082 |          |  |
| 14 | BTB-02019179                          | 0 | 77820814 |          |  |
| 14 | UA-IFASA-6510                         | 0 | 77853126 |          |  |
| 14 | BTB-00576713                          | 0 | 77900043 |          |  |
| 14 | BTB-01243104                          | 0 | 77941252 |          |  |
| 14 | BTB-01242944                          | 0 | 78014439 |          |  |
| 14 | ARS-BFGL-NGS-57555                    | 0 | 78045374 |          |  |
| 14 | BTA-54848-no-rs                       | 0 | 78092917 |          |  |
| 14 | UA-IFASA-6254                         | 0 | 78118859 |          |  |
| 14 | BTB-00853404                          | 0 | 78163341 |          |  |
| 14 | ARS-BFGL-NGS-87940                    | 0 | 78312920 |          |  |
| 14 | ARS-BFGL-NGS-67896                    | 0 | 78370714 |          |  |
| 14 | ARS-BFGL-NGS-112376                   | 0 | 78522183 |          |  |
| 14 | ARS-BFGL-NGS-97791                    | 0 | 78621774 |          |  |
| 14 | ARS-BFGL-BAC-21000                    | 0 | 78702548 |          |  |
| 14 | ARS-BFGL-NGS-65978                    | 0 | 78826020 |          |  |
| 14 | UA-IFASA-9421                         | 0 | 78848315 |          |  |
| 14 | BTA-121000-no-rs                      | 0 | 78874656 |          |  |
| 14 | ARS-BFGL-NGS-116949                   | 0 | 78949314 |          |  |
| 14 | Hapmap23001-BTA-129517                | 0 | 78990321 |          |  |
| 14 | UA-IFASA-7371                         | 0 | 79024799 |          |  |
| 14 | Hapmap50330-BTA-35650                 | 0 | 79074896 |          |  |
| 14 | ARS-BFGL-NGS-61550                    | 0 | 79178022 |          |  |
| 14 | Hapmap49969-BTA-35641                 | 0 | 79223221 |          |  |
| 14 | ARS-BFGL-NGS-63487                    | 0 | 79322701 |          |  |
| 14 | Hapmap35917-SCAFFOLD20441_13371       | 0 |          | 79361350 |  |
| 14 | ARS-BFGL-NGS-75485                    | 0 | 79391292 |          |  |
| 14 | Hapmap57268-ss46526401                | 0 | 79411382 |          |  |
| 14 | ARS-BFGL-NGS-75368                    | 0 | 79715760 |          |  |
| 14 | ARS-BFGL-NGS-116056                   | 0 | 79751498 |          |  |
| 14 | ARS-BFGL-NGS-27929                    | 0 | 79834107 |          |  |
| 14 | ARS-BFGL-NGS-106221                   | 0 | 79929279 |          |  |
| 14 | ARS-BFGL-BAC-19843                    | 0 | 79952134 |          |  |
| 14 | UA-IFASA-9372                         | 0 | 79972473 |          |  |
| 14 | UA-IFASA-5839                         | 0 | 80010342 |          |  |
| 14 | Hapmap56994-rs29010282                | 0 | 80082712 |          |  |
| 14 | ARS-USMARC-Parent-DQ846692-rs29010281 | 0 |          | 80082923 |  |
| 14 | ARS-BFGL-NGS-111567                   | 0 | 80177772 |          |  |
| 14 | UA-IFASA-7735                         | 0 | 80227476 |          |  |
| 14 | ARS-BFGL-NGS-32581                    | 0 | 80453355 |          |  |

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| 14 | ARS-BFGL-NGS-42421     | 0        | 80475984 |
| 14 | UA-IFASA-8287          | 0        | 80543545 |
| 14 | ARS-BFGL-NGS-85960     | 80558266 |          |
| 14 | ARS-BFGL-NGS-98209     | 0        | 80618301 |
| 14 | ARS-BFGL-NGS-20322     | 0        | 80647010 |
| 14 | Hapmap48305-BTA-35766  | 0        | 80681101 |
| 14 | ARS-BFGL-NGS-118668    | 0        | 80723890 |
| 14 | ARS-BFGL-BAC-26936     | 0        | 80753881 |
| 14 | ARS-BFGL-NGS-91204     | 0        | 80824324 |
| 14 | ARS-BFGL-BAC-26939     | 0        | 80862874 |
| 14 | Hapmap42522-BTA-35773  | 0        | 80893135 |
| 14 | Hapmap39778-BTA-73848  | 0        | 80983068 |
| 14 | ARS-BFGL-BAC-26943     | 0        | 81002892 |
| 14 | BTA-73850-no-rs        | 0        | 81037465 |
| 14 | UA-IFASA-8867          | 0        | 81059082 |
| 14 | BTA-101419-no-rs       | 0        | 81125493 |
| 14 | Hapmap29628-BTA-158324 | 0        | 81197368 |
| 14 | BTA-104697-no-rs       | 0        | 81269892 |
| 14 | Hapmap48163-BTA-104696 | 0        | 81309300 |
| 14 | ARS-BFGL-NGS-115716    | 0        | 81379203 |
| 14 | ARS-BFGL-NGS-113331    | 0        | 81414515 |
| 14 | Hapmap41128-BTA-101807 | 0        | 81464163 |
| 14 | UA-IFASA-6020          | 0        | 81613196 |
| 14 | ARS-BFGL-NGS-35469     | 0        | 81686481 |
| 14 | Hapmap58005-rs29023402 | 0        | 81709896 |
| 14 | BTA-104742-no-rs       | 0        | 81764428 |
| 14 | ARS-BFGL-BAC-18907     | 0        | 81864817 |
| 14 | ARS-BFGL-NGS-15424     | 0        | 81878266 |
| 14 | ARS-BFGL-NGS-104251    | 0        | 81881644 |
| 14 | UA-IFASA-9431          | 0        | 82053449 |
| 14 | UA-IFASA-8257          | 0        | 82261140 |
| 14 | ARS-BFGL-NGS-40771     | 0        | 82315067 |
| 14 | ARS-BFGL-NGS-80577     | 0        | 82345678 |
| 14 | Hapmap43506-BTA-19779  | 0        | 82380321 |
| 14 | Hapmap39598-BTA-88198  | 0        | 82418605 |
| 14 | ARS-BFGL-NGS-18080     | 82578235 |          |
| 14 | BTA-19762-no-rs        | 0        | 82596715 |
| 14 | BTA-19753-no-rs        | 0        | 82625001 |
| 14 | ARS-BFGL-BAC-19910     | 82648300 |          |
| 14 | Hapmap39981-BTA-19748  | 0        | 82688199 |
| 14 | BTA-120049-no-rs       | 0        | 82745092 |
| 14 | UA-IFASA-8924          | 0        | 82842840 |
| 14 | Hapmap30325-BTA-161942 | 0        | 82918781 |
| 14 | Hapmap42413-BTA-106820 | 0        | 82945057 |
| 14 | Hapmap49062-BTA-122353 | 0        | 82991915 |
| 14 | ARS-BFGL-NGS-53972     | 0        | 83027085 |
| 14 | Hapmap38284-BTA-109763 | 0        | 83072371 |
| 14 | ARS-BFGL-BAC-20862     | 0        | 83131368 |
| 14 | ARS-BFGL-BAC-44090     | 83178222 |          |
| 14 | Hapmap50331-BTA-35792  | 0        | 83255426 |
| 14 | ARS-BFGL-NGS-104114    | 0        | 83393209 |
| 14 | ARS-BFGL-NGS-18046     | 0        | 83504134 |
| 14 | Hapmap26378-BTA-129537 | 0        | 83582981 |
| 14 | ARS-BFGL-NGS-58369     | 0        | 83716641 |

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| 14 | Hapmap34730-BES8_Contig464_1373 | 0       | 83749297 |
| 14 | ARS-BFGL-NGS-55720              | 0       | 83773615 |
| 14 | ARS-BFGL-NGS-34916              | 0       | 83798136 |
| 14 | Hapmap38070-BTA-35797           | 0       | 83828022 |
| 14 | ARS-BFGL-NGS-65227              | 0       | 83853220 |
| 14 | BTA-35813-no-rs                 | 0       | 83945172 |
| 14 | UA-IFASA-6257                   | 0       | 83988724 |
| 14 | Hapmap32035-BTA-129548          | 0       | 84013201 |
| 14 | UA-IFASA-7705                   | 0       | 84081581 |
| 14 | ARS-BFGL-BAC-20179              | 0       | 84114637 |
| 14 | ARS-BFGL-NGS-118371             | 0       | 84145486 |
| 14 | Hapmap46990-BTA-35846           | 0       | 84190881 |
| 14 | ARS-BFGL-NGS-26662              | 0       | 84275325 |
| 14 | ARS-BFGL-NGS-114667             | 0       | 84358672 |
| 14 | Hapmap57920-rs29025560          | 0       | 84387809 |
| 14 | ARS-BFGL-NGS-26968              | 0       | 84437125 |
| 14 | ARS-BFGL-NGS-30051              | 0       | 84474186 |
| 14 | ARS-BFGL-BAC-18466              | 0       | 84505345 |
| 14 | Hapmap27423-BTA-150958          | 0       | 84553454 |
| 14 | ARS-BFGL-NGS-100844             | 0       | 84594318 |
| 14 | ARS-BFGL-NGS-103633             | 0       | 84616190 |
| 15 | BTB-01948114                    | 0       | 812701   |
| 15 | ARS-BFGL-NGS-15618              | 0       | 1035366  |
| 15 | ARS-BFGL-NGS-100023             | 0       | 1242901  |
| 15 | ARS-BFGL-NGS-23262              | 0       | 1459288  |
| 15 | ARS-BFGL-NGS-109495             | 0       | 1492400  |
| 15 | ARS-BFGL-NGS-26535              | 0       | 1589960  |
| 15 | ARS-BFGL-NGS-20641              | 0       | 1645280  |
| 15 | UA-IFASA-4229                   | 0       | 1676811  |
| 15 | Hapmap31804-BTA-153738          | 0       | 1757737  |
| 15 | ARS-BFGL-NGS-116439             | 0       | 1784872  |
| 15 | ARS-BFGL-NGS-28025              | 0       | 1933113  |
| 15 | BTA-18366-no-rs                 | 0       | 1958234  |
| 15 | ARS-BFGL-NGS-65843              | 0       | 1991615  |
| 15 | Hapmap52632-rs29014915          | 0       | 2045135  |
| 15 | Hapmap50196-BTA-105647          | 0       | 2121835  |
| 15 | ARS-BFGL-NGS-40368              | 0       | 2274316  |
| 15 | UA-IFASA-7453                   | 0       | 2317117  |
| 15 | BTA-105648-no-rs                | 0       | 2349440  |
| 15 | ARS-BFGL-NGS-550                | 0       | 2378099  |
| 15 | Hapmap39475-BTA-20743           | 0       | 2411630  |
| 15 | ARS-BFGL-BAC-32189              | 0       | 2439431  |
| 15 | ARS-BFGL-NGS-17321              | 0       | 2491081  |
| 15 | Hapmap27014-BTA-158504          | 0       | 2623420  |
| 15 | Hapmap23442-BTA-159557          | 0       | 2686449  |
| 15 | ARS-BFGL-NGS-94070              | 2801109 |          |
| 15 | ARS-BFGL-NGS-116269             | 0       | 2922907  |
| 15 | BTB-01576078                    | 0       | 2988789  |
| 15 | BTB-02053852                    | 0       | 3025580  |
| 15 | BTA-26081-no-rs                 | 0       | 3084118  |
| 15 | ARS-BFGL-NGS-101623             | 0       | 3185413  |
| 15 | ARS-BFGL-NGS-109478             | 0       | 3212853  |
| 15 | ARS-BFGL-NGS-72590              | 0       | 3286452  |
| 15 | Hapmap24310-BTA-162764          | 0       | 3335649  |



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| 15 | Hapmap40243-BTA-26072           | 0 | 3369565 |         |
| 15 | BTB-02021101                    | 0 | 3416019 |         |
| 15 | ARS-BFGL-NGS-58265              | 0 | 3471188 |         |
| 15 | ARS-BFGL-NGS-110742             | 0 | 3508945 |         |
| 15 | BTB-00577977                    | 0 | 3550238 |         |
| 15 | BTA-55068-no-rs                 | 0 | 3645462 |         |
| 15 | ARS-BFGL-BAC-18253              | 0 | 3669413 |         |
| 15 | Hapmap47928-BTA-37003           | 0 | 3735247 |         |
| 15 | Hapmap36451-SCAFFOLD241031_2363 | 0 |         | 3768790 |
| 15 | ARS-BFGL-BAC-31451              | 0 | 3811254 |         |
| 15 | Hapmap58134-rs29019385          | 0 | 3833007 |         |
| 15 | Hapmap27045-BTA-37616           | 0 | 3857845 |         |
| 15 | Hapmap27259-BTA-67640           | 0 | 4039184 |         |
| 15 | BTA-67635-no-rs                 | 0 | 4071222 |         |
| 15 | Hapmap58997-rs29021352          | 0 | 4094542 |         |
| 15 | BTB-01454431                    | 0 | 4155885 |         |
| 15 | ARS-BFGL-NGS-88590              |   | 4183554 |         |
| 15 | BTB-01900838                    | 0 | 4285360 |         |
| 15 | BTB-01430347                    | 0 | 4437637 |         |
| 15 | ARS-BFGL-NGS-60854              | 0 | 4504810 |         |
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| 15 | ARS-BFGL-NGS-105135             | 0 | 4668361 |         |
| 15 | ARS-BFGL-NGS-29703              | 0 | 4692182 |         |
| 15 | ARS-BFGL-NGS-29754              | 0 | 4779130 |         |
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| 15 | BTA-102514-no-rs                | 0 | 4944846 |         |
| 15 | BTB-01545112                    | 0 | 5001246 |         |
| 15 | BTB-01576968                    | 0 | 5027884 |         |
| 15 | BTA-105187-no-rs                | 0 | 5060293 |         |
| 15 | Hapmap42143-BTA-23359           | 0 | 5097507 |         |
| 15 | BTB-01802172                    | 0 | 5134162 |         |
| 15 | Hapmap48135-BTA-96568           | 0 | 5170124 |         |
| 15 | Hapmap38644-BTA-96569           | 0 | 5208201 |         |
| 15 | ARS-BFGL-NGS-84790              | 0 | 5295111 |         |
| 15 | ARS-BFGL-NGS-102429             | 0 | 5328767 |         |
| 15 | ARS-BFGL-NGS-113783             | 0 | 5371776 |         |
| 15 | Hapmap51149-BTA-113410          | 0 | 5400560 |         |
| 15 | BTB-01870522                    | 0 | 5474020 |         |
| 15 | BTB-02022229                    | 0 | 5504157 |         |
| 15 | Hapmap23448-BTA-55607           | 0 | 5537822 |         |
| 15 | BTB-00862749                    | 0 | 5595051 |         |
| 15 | BTB-00578376                    | 0 | 5728691 |         |
| 15 | Hapmap40172-BTA-37943           | 0 | 5766975 |         |
| 15 | BTB-00578401                    | 0 | 5791533 |         |
| 15 | BTB-00862781                    | 0 | 5825778 |         |
| 15 | BTA-55622-no-rs                 | 0 | 5884811 |         |
| 15 | BTA-36065-no-rs                 | 0 | 5965215 |         |
| 15 | Hapmap57381-rs29020495          | 0 | 6007478 |         |
| 15 | Hapmap50884-BTA-120303          | 0 | 6086317 |         |
| 15 | ARS-BFGL-NGS-20320              | 0 | 6129665 |         |
| 15 | ARS-BFGL-NGS-79463              | 0 | 6215101 |         |
| 15 | ARS-BFGL-NGS-85936              | 0 | 6234482 |         |

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| 15 | ARS-BFGL-NGS-113484            | 0 | 6268552 |         |
| 15 | ARS-BFGL-NGS-99299             | 0 | 6296367 |         |
| 15 | UA-IFASA-6437                  | 0 | 6335201 |         |
| 15 | ARS-BFGL-NGS-113225            | 0 | 6362468 |         |
| 15 | BTB-01726657                   | 0 | 6398381 |         |
| 15 | BTB-01713978                   | 0 | 6461480 |         |
| 15 | Hapmap50335-BTA-36703          | 0 | 6512162 |         |
| 15 | BTB-00580383                   | 0 | 6548250 |         |
| 15 | Hapmap28179-BTA-149370         | 0 | 6664624 |         |
| 15 | Hapmap22860-BTA-134754         | 0 | 6738789 |         |
| 15 | Hapmap23284-BTA-162040         | 0 | 6808535 |         |
| 15 | ARS-BFGL-NGS-22440             | 0 | 6866592 |         |
| 15 | ARS-BFGL-NGS-102963            | 0 | 6914643 |         |
| 15 | BTB-01512634                   | 0 | 6962261 |         |
| 15 | BTB-01512684                   | 0 | 7039507 |         |
| 15 | BTB-01512723                   | 0 | 7075005 |         |
| 15 | ARS-BFGL-NGS-34532             | 0 | 7268564 |         |
| 15 | ARS-BFGL-NGS-68254             | 0 | 7306679 |         |
| 15 | Hapmap58472-rs29026137         | 0 | 7533304 |         |
| 15 | BTA-83673-no-rs                | 0 | 7632165 |         |
| 15 | Hapmap35973-SCAFFOLD370608_251 | 0 |         | 7702552 |
| 15 | Hapmap39965-BTA-105589         | 0 | 7752904 |         |
| 15 | ARS-BFGL-NGS-112972            | 0 | 7823632 |         |
| 15 | ARS-BFGL-BAC-20590             | 0 | 7944599 |         |
| 15 | Hapmap50589-BTA-119599         | 0 | 7989843 |         |
| 15 | ARS-BFGL-NGS-72772             | 0 | 8147442 |         |
| 15 | Hapmap46909-BTA-103259         | 0 | 8180827 |         |
| 15 | BTB-01587735                   | 0 | 8283195 |         |
| 15 | BTB-01587671                   | 0 | 8336156 |         |
| 15 | ARS-BFGL-NGS-20972             | 0 | 8392795 |         |
| 15 | BTB-00483953                   | 0 | 8431650 |         |
| 15 | ARS-BFGL-NGS-59251             | 0 | 8495973 |         |
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| 15 | BTB-01375809                   | 0 | 8572916 |         |
| 15 | ARS-BFGL-NGS-40245             | 0 | 8689537 |         |
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| 15 | BTB-00580307                   | 0 | 8835116 |         |
| 15 | BTB-00580212                   | 0 | 8905048 |         |
| 15 | BTB-00580106                   | 0 | 8984238 |         |
| 15 | ARS-BFGL-NGS-89820             | 0 | 9041018 |         |
| 15 | BTA-36377-no-rs                | 0 | 9089072 |         |
| 15 | Hapmap60604-rs29023253         | 0 | 9125948 |         |
| 15 | ARS-BFGL-NGS-32170             | 0 | 9151485 |         |
| 15 | BTB-00579569                   | 0 | 9181074 |         |
| 15 | Hapmap49562-BTA-29896          | 0 | 9315623 |         |
| 15 | Hapmap45353-BTA-20338          | 0 | 9422834 |         |
| 15 | BTB-01417458                   | 0 | 9474687 |         |
| 15 | Hapmap36660-SCAFFOLD16253_557  | 0 |         | 9524088 |
| 15 | BTB-01417402                   | 0 | 9563016 |         |
| 15 | BTB-01417358                   | 0 | 9598055 |         |
| 15 | BTA-91114-no-rs                | 0 | 9640892 |         |
| 15 | Hapmap50818-BTA-91110          | 0 | 9708615 |         |
| 15 | BTB-01173692                   | 0 | 9761626 |         |

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| 15 | BTB-01173648           | 0 | 9792729  |
| 15 | BTB-01173545           | 0 | 9814478  |
| 15 | ARS-BFGL-NGS-68340     | 0 | 9846110  |
| 15 | BTB-01516952           | 0 | 9876776  |
| 15 | ARS-BFGL-NGS-48673     | 0 | 10150214 |
| 15 | ARS-BFGL-NGS-21847     | 0 | 10263772 |
| 15 | ARS-BFGL-NGS-26612     | 0 | 10320166 |
| 15 | BTB-00580768           | 0 | 10373621 |
| 15 | BTB-00580688           | 0 | 10517607 |
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| 15 | BTB-01465621           | 0 | 10700852 |
| 15 | BTB-01465708           | 0 | 10860778 |
| 15 | ARS-BFGL-BAC-48180     |   | 10975086 |
| 15 | ARS-BFGL-BAC-21910     |   | 11089074 |
| 15 | BTB-01813405           | 0 | 11141176 |
| 15 | BTB-02063964           | 0 | 11170854 |
| 15 | BTB-01830390           | 0 | 11197384 |
| 15 | BTB-01608944           | 0 | 11236826 |
| 15 | BTA-91816-no-rs        | 0 | 11395733 |
| 15 | BTB-01421844           | 0 | 11439502 |
| 15 | BTB-01421892           | 0 | 11480394 |
| 15 | BTB-01421934           | 0 | 11502268 |
| 15 | BTB-01422008           | 0 | 11531149 |
| 15 | BTA-91820-no-rs        | 0 | 11604685 |
| 15 | ARS-BFGL-NGS-44820     |   | 11655203 |
| 15 | ARS-BFGL-NGS-113839    | 0 | 11681142 |
| 15 | Hapmap51870-BTA-100797 | 0 | 11710409 |
| 15 | Hapmap40037-BTA-100798 | 0 | 11747880 |
| 15 | BTA-94770-no-rs        | 0 | 11784949 |
| 15 | ARS-BFGL-NGS-27782     | 0 | 11849162 |
| 15 | BTB-02083350           | 0 | 11957544 |
| 15 | Hapmap31453-BTA-148475 | 0 | 12027285 |
| 15 | ARS-BFGL-NGS-10128     | 0 | 12083672 |
| 15 | ARS-BFGL-NGS-45200     |   | 12116216 |
| 15 | BTA-86760-no-rs        | 0 | 12144839 |
| 15 | Hapmap45455-BTA-89343  | 0 | 12204899 |
| 15 | BTB-01384592           | 0 | 12289192 |
| 15 | ARS-BFGL-NGS-114125    | 0 | 12371864 |
| 15 | Hapmap44444-BTA-115434 | 0 | 12412932 |
| 15 | BTB-01786587           | 0 | 12465925 |
| 15 | Hapmap40697-BTA-24633  | 0 | 12476540 |
| 15 | BTB-01786632           | 0 | 12520480 |
| 15 | ARS-BFGL-NGS-117317    | 0 | 12567793 |
| 15 | BTB-01565510           | 0 | 12596350 |
| 15 | ARS-BFGL-NGS-39783     | 0 | 12644660 |
| 15 | BTB-01565542           | 0 | 12682016 |
| 15 | BTA-22642-no-rs        | 0 | 12708424 |
| 15 | BTB-00581158           | 0 | 12751702 |
| 15 | ARS-BFGL-NGS-108891    | 0 | 12788038 |
| 15 | BTB-00581295           | 0 | 12928912 |
| 15 | Hapmap39826-BTA-37247  | 0 | 12975036 |
| 15 | BTB-00581380           | 0 | 13018001 |
| 15 | Hapmap54889-rs29024088 | 0 | 13077556 |

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| 15 | BTB-00581462                    | 0 | 13202638 |          |
| 15 | BTB-00581487                    | 0 | 13226449 |          |
| 15 | BTA-37402-no-rs                 | 0 | 13254952 |          |
| 15 | BTB-01892086                    | 0 | 13306889 |          |
| 15 | BTA-112824-no-rs                | 0 | 13388849 |          |
| 15 | Hapmap59263-rs29021295          | 0 | 13416704 |          |
| 15 | BTB-01922500                    | 0 | 13489817 |          |
| 15 | Hapmap35631-SCAFFOLD30086_14346 | 0 |          | 13519590 |
| 15 | ARS-BFGL-NGS-44065              | 0 | 13555979 |          |
| 15 | BTB-01826523                    | 0 | 13598961 |          |
| 15 | Hapmap51391-BTA-112776          | 0 | 13631935 |          |
| 15 | BTA-112772-no-rs                | 0 | 13668964 |          |
| 15 | Hapmap24380-BTA-149592          | 0 | 13771288 |          |
| 15 | BTB-00581588                    | 0 | 13792186 |          |
| 15 | BTB-00581622                    | 0 | 13828128 |          |
| 15 | Hapmap48933-BTA-88161           | 0 | 13860852 |          |
| 15 | ARS-BFGL-NGS-113409             | 0 | 13936718 |          |
| 15 | Hapmap38637-BTA-88156           | 0 | 13964124 |          |
| 15 | Hapmap45702-BTA-93884           | 0 | 14035393 |          |
| 15 | ARS-BFGL-NGS-54874              | 0 | 14062514 |          |
| 15 | Hapmap42732-BTA-93037           | 0 | 14086864 |          |
| 15 | BTA-93035-no-rs                 | 0 | 14126741 |          |
| 15 | BTA-93022-no-rs                 | 0 | 14165000 |          |
| 15 | UA-IFASA-6994                   | 0 | 14193573 |          |
| 15 | ARS-BFGL-NGS-114291             | 0 | 14242668 |          |
| 15 | ARS-BFGL-NGS-117603             | 0 | 14272339 |          |
| 15 | Hapmap34171-BES7_Contig298_1427 | 0 |          | 14411226 |
| 15 | ARS-BFGL-NGS-20874              | 0 | 14436263 |          |
| 15 | ARS-BFGL-BAC-19445              | 0 | 14464613 |          |
| 15 | BTA-07098-no-rs                 | 0 | 14553484 |          |
| 15 | ARS-BFGL-BAC-19446              | 0 | 14583394 |          |
| 15 | ARS-BFGL-NGS-61066              | 0 | 14605466 |          |
| 15 | Hapmap59803-rs29011136          | 0 | 14667911 |          |
| 15 | ARS-BFGL-NGS-67810              | 0 | 14732521 |          |
| 15 | ARS-BFGL-BAC-31587              | 0 | 14886476 |          |
| 15 | BTA-93186-no-rs                 | 0 | 14935918 |          |
| 15 | BTA-93194-no-rs                 | 0 | 14957338 |          |
| 15 | Hapmap43725-BTA-93174           | 0 | 14986629 |          |
| 15 | ARS-BFGL-NGS-110213             | 0 | 15014275 |          |
| 15 | Hapmap44578-BTA-93175           | 0 | 15086137 |          |
| 15 | Hapmap59061-rs29016275          | 0 | 15127363 |          |
| 15 | Hapmap59332-rs29016542          | 0 | 15162470 |          |
| 15 | UA-IFASA-2285                   | 0 | 15190242 |          |
| 15 | Hapmap58058-rs29012133          | 0 | 15213319 |          |
| 15 | ARS-BFGL-NGS-10627              | 0 | 15245842 |          |
| 15 | ARS-BFGL-BAC-31586              | 0 | 15305071 |          |
| 15 | ARS-BFGL-NGS-10723              | 0 | 15367990 |          |
| 15 | Hapmap35322-BES8_Contig457_1759 | 0 |          | 15520367 |
| 15 | ARS-BFGL-NGS-17747              | 0 | 15544958 |          |
| 15 | Hapmap41817-BTA-29310           | 0 | 15595454 |          |
| 15 | ARS-BFGL-NGS-17568              | 0 | 15656347 |          |
| 15 | Hapmap35448-SCAFFOLD52197_3147  | 0 |          | 15697628 |
| 15 | ARS-BFGL-NGS-119701             | 0 | 15738972 |          |
| 15 | ARS-BFGL-NGS-33023              | 0 | 15772343 |          |

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| 15 | ARS-BFGL-NGS-71082              | 0        | 15822085 |          |
| 15 | ARS-BFGL-NGS-12483              | 0        | 15908105 |          |
| 15 | ARS-BFGL-NGS-69055              | 0        | 15949175 |          |
| 15 | ARS-BFGL-NGS-10629              | 0        | 15973136 |          |
| 15 | ARS-BFGL-NGS-25540              | 0        | 16017841 |          |
| 15 | ARS-BFGL-NGS-84562              | 0        | 16042857 |          |
| 15 | Hapmap25806-BTA-129597          | 0        | 16147383 |          |
| 15 | ARS-BFGL-NGS-65440              | 0        | 16167972 |          |
| 15 | ARS-BFGL-NGS-32949              | 0        | 16218152 |          |
| 15 | ARS-BFGL-NGS-33404              | 0        | 16273879 |          |
| 15 | ARS-BFGL-NGS-100235             | 0        | 16331203 |          |
| 15 | Hapmap44375-BTA-37785           | 0        | 16362189 |          |
| 15 | Hapmap50674-BTA-37765           | 0        | 16416329 |          |
| 15 | ARS-BFGL-NGS-43250              | 16721338 |          |          |
| 15 | ARS-BFGL-NGS-62545              | 0        | 16784232 |          |
| 15 | ARS-BFGL-NGS-33216              | 0        | 16809081 |          |
| 15 | ARS-BFGL-NGS-105084             | 0        | 16877554 |          |
| 15 | BTB-01822806                    | 0        | 16937958 |          |
| 15 | Hapmap36174-SCAFFOLD261110_7747 | 0        |          | 17042871 |
| 15 | BTB-01295791                    | 0        | 17080803 |          |
| 15 | Hapmap33066-BTA-160413          | 0        | 17107459 |          |
| 15 | Hapmap39168-BTA-122655          | 0        | 17131141 |          |
| 15 | BTB-01295915                    | 0        | 17199655 |          |
| 15 | ARS-BFGL-BAC-31585              | 0        | 17277530 |          |
| 15 | ARS-BFGL-NGS-14418              | 0        | 17314307 |          |
| 15 | BTB-01296218                    | 0        | 17344116 |          |
| 15 | Hapmap42835-BTA-120131          | 0        | 17374175 |          |
| 15 | ARS-BFGL-NGS-10895              | 0        | 17426575 |          |
| 15 | Hapmap39467-BTA-120135          | 0        | 17457200 |          |
| 15 | BTB-01262385                    | 0        | 17505709 |          |
| 15 | ARS-BFGL-BAC-21800              | 17533776 |          |          |
| 15 | BTB-01262668                    | 0        | 17608371 |          |
| 15 | BTB-01821148                    | 0        | 17631380 |          |
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| 15 | ARS-BFGL-NGS-14320              | 17748081 |          |          |
| 15 | ARS-BFGL-NGS-38288              | 0        | 18108465 |          |
| 15 | Hapmap43845-BTA-37936           | 0        | 18173159 |          |
| 15 | Hapmap43134-BTA-106590          | 0        | 18253196 |          |
| 15 | ARS-BFGL-NGS-35704              | 0        | 18335423 |          |
| 15 | Hapmap43113-BTA-96564           | 0        | 18429110 |          |
| 15 | ARS-BFGL-NGS-13356              | 0        | 18461961 |          |
| 15 | ARS-BFGL-NGS-59156              | 0        | 18507545 |          |
| 15 | ARS-BFGL-NGS-112664             | 0        | 18581717 |          |
| 15 | ARS-BFGL-NGS-61307              | 0        | 18627008 |          |
| 15 | Hapmap44329-BTA-98197           | 0        | 18924675 |          |
| 15 | BTA-98208-no-rs                 | 0        | 18992057 |          |
| 15 | BTA-98204-no-rs                 | 0        | 19025669 |          |
| 15 | Hapmap44175-BTA-98206           | 0        | 19059568 |          |
| 15 | ARS-BFGL-NGS-109198             | 0        | 19096101 |          |
| 15 | UA-IFASA-5855                   | 0        | 19117037 |          |
| 15 | ARS-BFGL-NGS-108854             | 0        | 19375298 |          |
| 15 | ARS-BFGL-NGS-17598              | 0        | 19522861 |          |
| 15 | ARS-BFGL-NGS-19244              | 0        | 19632736 |          |
| 15 | Hapmap23222-BTA-156901          | 0        | 19654297 |          |

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| 15 | ARS-BFGL-NGS-97601               | 0 | 19701979 |          |
| 15 | ARS-BFGL-NGS-75199               | 0 | 19936704 |          |
| 15 | ARS-BFGL-NGS-72688               | 0 | 20062054 |          |
| 15 | ARS-BFGL-NGS-50620               |   | 20116462 |          |
| 15 | BTB-00289299                     | 0 | 20157934 |          |
| 15 | BTA-78469-no-rs                  | 0 | 20228101 |          |
| 15 | BTA-80072-no-rs                  | 0 | 20257802 |          |
| 15 | Hapmap48599-BTA-109039           | 0 | 20332125 |          |
| 15 | BTB-01199261                     | 0 | 20435893 |          |
| 15 | ARS-BFGL-BAC-32214               | 0 | 20472800 |          |
| 15 | ARS-BFGL-NGS-97051               | 0 | 20500282 |          |
| 15 | ARS-BFGL-NGS-80166               | 0 | 20538182 |          |
| 15 | BTA-05407-rs29019567             | 0 | 20610552 |          |
| 15 | Hapmap46483-BTA-38059            | 0 | 20652731 |          |
| 15 | BTB-01912619                     | 0 | 20712027 |          |
| 15 | Hapmap40880-BTA-109049           | 0 | 20795418 |          |
| 15 | BTB-00584305                     | 0 | 20825067 |          |
| 15 | ARS-BFGL-NGS-94841               | 0 | 20853193 |          |
| 15 | ARS-BFGL-NGS-57433               | 0 | 20989030 |          |
| 15 | Hapmap50676-BTA-37992            | 0 | 21053284 |          |
| 15 | BTA-37993-no-rs                  | 0 | 21083986 |          |
| 15 | ARS-BFGL-NGS-32130               |   | 21106423 |          |
| 15 | BTB-00582624                     | 0 | 21138866 |          |
| 15 | BTB-02053380                     | 0 | 21162454 |          |
| 15 | ARS-USMARC-Parent-EF042090-no-rs | 0 |          | 21207529 |
| 15 | Hapmap41524-BTA-37998            | 0 | 21251960 |          |
| 15 | Hapmap59640-rs29012229           | 0 | 21281860 |          |
| 15 | ARS-BFGL-NGS-112368              | 0 | 21325465 |          |
| 15 | Hapmap38222-BTA-38012            | 0 | 21353698 |          |
| 15 | BTB-00582817                     | 0 | 21401836 |          |
| 15 | Hapmap41192-BTA-16797            | 0 | 21445154 |          |
| 15 | ARS-BFGL-NGS-75541               | 0 | 21468337 |          |
| 15 | ARS-BFGL-NGS-35405               | 0 | 21494306 |          |
| 15 | ARS-BFGL-NGS-113811              | 0 | 21542915 |          |
| 15 | BTB-00583159                     | 0 | 21596689 |          |
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| 15 | BTB-01046082                     | 0 | 21687680 |          |
| 15 | ARS-BFGL-NGS-113417              | 0 | 21732355 |          |
| 15 | BTB-00311744                     | 0 | 21845158 |          |
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| 15 | ARS-BFGL-NGS-72888               | 0 | 22148534 |          |
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| 15 | BTB-01512525                     | 0 | 22399482 |          |
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| 15 | Hapmap52669-rs29014752           | 0 | 22542686 |          |
| 15 | ARS-BFGL-NGS-16485               | 0 | 22572881 |          |
| 15 | ARS-BFGL-NGS-12649               | 0 | 22595095 |          |
| 15 | ARS-BFGL-NGS-20519               | 0 | 22620312 |          |

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| 15 | ARS-BFGL-NGS-13313     | 0        | 22649155 |
| 15 | BTB-00583426           | 0        | 22674046 |
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| 15 | BTB-00583707           | 0        | 22809416 |
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| 15 | Hapmap49882-BTA-121007 | 0        | 22960231 |
| 15 | BTB-00583912           | 0        | 22990151 |
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| 15 | ARS-BFGL-NGS-58474     | 0        | 23100794 |
| 15 | Hapmap33506-BTA-155065 | 0        | 23124932 |
| 15 | ARS-BFGL-NGS-100131    | 0        | 23154872 |
| 15 | ARS-BFGL-NGS-34338     | 0        | 23188415 |
| 15 | Hapmap41525-BTA-38090  | 0        | 23213346 |
| 15 | ARS-BFGL-NGS-81322     | 0        | 23235436 |
| 15 | BTA-38085-no-rs        | 0        | 23257042 |
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| 15 | ARS-BFGL-NGS-21240     | 23339130 |          |
| 15 | BTB-00584953           | 0        | 23367462 |
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| 15 | ARS-BFGL-NGS-86899     | 0        | 23448971 |
| 15 | BTB-00585111           | 0        | 23504176 |
| 15 | ARS-BFGL-NGS-11605     | 0        | 23535129 |
| 15 | ARS-BFGL-NGS-118069    | 0        | 23568073 |
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| 15 | ARS-BFGL-NGS-89413     | 0        | 23620358 |
| 15 | ARS-BFGL-NGS-16495     | 0        | 23643505 |
| 15 | ARS-BFGL-NGS-17400     | 0        | 23673146 |
| 15 | ARS-BFGL-NGS-19750     | 23738373 |          |
| 15 | BTB-00585496           | 0        | 23764722 |
| 15 | ARS-BFGL-NGS-78685     | 0        | 23792120 |
| 15 | Hapmap43253-BTA-38125  | 0        | 23845295 |
| 15 | ARS-BFGL-NGS-100356    | 0        | 23908055 |
| 15 | ARS-BFGL-NGS-38126     | 0        | 23946829 |
| 15 | ARS-BFGL-NGS-23028     | 0        | 23970148 |
| 15 | Hapmap27194-BTA-153449 | 0        | 23989149 |
| 15 | ARS-BFGL-NGS-118767    | 0        | 24021537 |
| 15 | BTB-00585630           | 0        | 24045338 |
| 15 | ARS-BFGL-NGS-81045     | 0        | 24072661 |
| 15 | ARS-BFGL-NGS-54247     | 0        | 24099068 |
| 15 | UA-IFASA-5703          | 0        | 24128943 |
| 15 | ARS-BFGL-NGS-87397     | 0        | 24167440 |
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| 15 | BTB-00586211           | 0        | 24370926 |
| 15 | BTA-36087-no-rs        | 0        | 24419938 |
| 15 | ARS-BFGL-NGS-54973     | 0        | 24444882 |
| 15 | ARS-BFGL-NGS-118154    | 0        | 24518631 |
| 15 | ARS-BFGL-NGS-106449    | 0        | 24563671 |
| 15 | ARS-BFGL-NGS-19320     | 0        | 24588338 |

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| 15 | Hapmap57339-rs29010375 | 0        | 24632628 |
| 15 | ARS-BFGL-NGS-43730     | 0        | 24647064 |
| 15 | ARS-BFGL-BAC-20623     | 0        | 24673090 |
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| 15 | BTB-00586899           | 0        | 24740091 |
| 15 | BTB-00586906           | 0        | 24774522 |
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| 15 | ARS-BFGL-NGS-35531     | 0        | 24890676 |
| 15 | ARS-BFGL-NGS-55890     | 24930212 |          |
| 15 | ARS-BFGL-NGS-24098     | 0        | 24959547 |
| 15 | ARS-BFGL-NGS-55619     | 0        | 25033715 |
| 15 | ARS-BFGL-NGS-119819    | 0        | 25113217 |
| 15 | ARS-BFGL-NGS-107528    | 0        | 25181966 |
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| 15 | ARS-BFGL-NGS-55976     | 0        | 25622211 |
| 15 | ARS-BFGL-NGS-73890     | 0        | 25669397 |
| 15 | BTB-00587441           | 0        | 25693584 |
| 15 | Hapmap59915-rs29012086 | 0        | 25719311 |
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| 15 | ARS-BFGL-NGS-70081     | 0        | 25859204 |
| 15 | ARS-BFGL-NGS-119165    | 0        | 25899143 |
| 15 | Hapmap54078-rs29012645 | 0        | 25925175 |
| 15 | BTB-02029494           | 0        | 25968574 |
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| 15 | BTB-01138108           | 0        | 26138126 |
| 15 | BTB-01138133           | 0        | 26167118 |
| 15 | BTB-01138158           | 0        | 26193248 |
| 15 | ARS-BFGL-NGS-82231     | 0        | 26224828 |
| 15 | BTB-01138289           | 0        | 26265940 |
| 15 | ARS-BFGL-NGS-37606     | 0        | 26291524 |
| 15 | Hapmap27185-BTA-150760 | 0        | 26330841 |
| 15 | ARS-BFGL-NGS-112349    | 0        | 26371559 |
| 15 | BTA-96062-no-rs        | 0        | 26409205 |
| 15 | ARS-BFGL-NGS-115784    | 0        | 26439342 |
| 15 | BTB-01138539           | 0        | 26472899 |
| 15 | ARS-BFGL-NGS-53781     | 0        | 26511360 |
| 15 | ARS-BFGL-NGS-116737    | 0        | 26532213 |
| 15 | ARS-BFGL-NGS-76740     | 26558827 |          |
| 15 | ARS-BFGL-NGS-16947     | 0        | 26629340 |
| 15 | ARS-BFGL-NGS-114536    | 0        | 26660750 |
| 15 | ARS-BFGL-NGS-27798     | 0        | 26697713 |
| 15 | ARS-BFGL-NGS-114022    | 0        | 26767493 |
| 15 | ARS-BFGL-BAC-34776     | 0        | 26790090 |
| 15 | ARS-BFGL-NGS-108631    | 0        | 26820202 |
| 15 | BTB-01964423           | 0        | 26863687 |
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| 15 | ARS-BFGL-NGS-24961     | 0        | 26956506 |
| 15 | BTB-00588098           | 0        | 26980225 |
| 15 | ARS-BFGL-NGS-57647     | 0        | 27007530 |
| 15 | ARS-BFGL-NGS-116089    | 0        | 27046519 |



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| 15 | Hapmap39993-BTA-36164  | 0 | 27081133 |
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| 15 | ARS-BFGL-NGS-18771     | 0 | 27235378 |
| 15 | ARS-BFGL-NGS-30697     | 0 | 27265448 |
| 15 | ARS-BFGL-NGS-12066     | 0 | 27291268 |
| 15 | ARS-BFGL-NGS-52655     | 0 | 27370710 |
| 15 | BTA-36187-no-rs        | 0 | 27410239 |
| 15 | ARS-BFGL-NGS-14765     | 0 | 27444730 |
| 15 | BTA-36189-no-rs        | 0 | 27470647 |
| 15 | ARS-BFGL-NGS-44469     | 0 | 27490711 |
| 15 | BTA-36195-no-rs        | 0 | 27523498 |
| 15 | ARS-BFGL-NGS-77543     | 0 | 27550645 |
| 15 | BTA-36201-no-rs        | 0 | 27617863 |
| 15 | ARS-BFGL-NGS-39079     | 0 | 27654853 |
| 15 | BTA-36229-no-rs        | 0 | 27722302 |
| 15 | Hapmap55838-rs29012459 | 0 | 27766084 |
| 15 | ARS-BFGL-NGS-24654     | 0 | 27786172 |
| 15 | ARS-BFGL-NGS-12610     | 0 | 27822630 |
| 15 | ARS-BFGL-NGS-31970     | 0 | 27858313 |
| 15 | ARS-BFGL-NGS-113392    | 0 | 27883643 |
| 15 | ARS-BFGL-NGS-32125     | 0 | 27905645 |
| 15 | ARS-BFGL-NGS-67832     | 0 | 27926186 |
| 15 | ARS-BFGL-NGS-110372    | 0 | 27977096 |
| 15 | ARS-BFGL-NGS-13040     | 0 | 28015489 |
| 15 | BTB-00589034           | 0 | 28061291 |
| 15 | ARS-BFGL-NGS-22263     | 0 | 28115478 |
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| 15 | ARS-BFGL-NGS-44793     | 0 | 28223909 |
| 15 | Hapmap51439-BTA-38072  | 0 | 28262882 |
| 15 | ARS-BFGL-NGS-79610     |   | 28306544 |
| 15 | ARS-BFGL-NGS-106352    | 0 | 28330931 |
| 15 | Hapmap30784-BTA-129668 | 0 | 28361551 |
| 15 | ARS-BFGL-NGS-18501     | 0 | 28458582 |
| 15 | ARS-BFGL-NGS-117683    | 0 | 28497908 |
| 15 | ARS-BFGL-NGS-119538    | 0 | 28538767 |
| 15 | Hapmap60722-rs29027621 | 0 | 28561382 |
| 15 | ARS-BFGL-NGS-14225     | 0 | 28604794 |
| 15 | ARS-BFGL-NGS-118149    | 0 | 28646485 |
| 15 | BTA-36256-no-rs        | 0 | 28673068 |
| 15 | ARS-BFGL-NGS-18339     | 0 | 28708543 |
| 15 | ARS-BFGL-NGS-107927    | 0 | 28731380 |
| 15 | ARS-BFGL-NGS-12906     | 0 | 28760415 |
| 15 | BTA-36265-no-rs        | 0 | 28804641 |
| 15 | Hapmap31391-BTA-129725 | 0 | 28851260 |
| 15 | ARS-BFGL-NGS-67912     | 0 | 28882493 |
| 15 | Hapmap40522-BTA-36266  | 0 | 28913313 |
| 15 | ARS-BFGL-NGS-114922    | 0 | 28966610 |
| 15 | ARS-BFGL-NGS-34342     | 0 | 28998023 |
| 15 | Hapmap55087-rs29012314 | 0 | 29032738 |
| 15 | BTA-03122-rs29010888   | 0 | 29087315 |
| 15 | ARS-BFGL-NGS-113510    | 0 | 29113608 |
| 15 | ARS-BFGL-NGS-37613     | 0 | 29162110 |
| 15 | Hapmap22814-BTA-159347 | 0 | 29206191 |

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| 15 | BTB-01271761                    | 0 | 29233683 |          |
| 15 | ARS-BFGL-NGS-24733              | 0 | 29271879 |          |
| 15 | ARS-BFGL-NGS-33714              | 0 | 29305818 |          |
| 15 | ARS-BFGL-NGS-90910              | 0 | 29328220 |          |
| 15 | BTA-16088-no-rs                 | 0 | 29392924 |          |
| 15 | Hapmap50333-BTA-36296           | 0 | 29445663 |          |
| 15 | Hapmap38406-BTA-36295           | 0 | 29448587 |          |
| 15 | BTB-00590629                    | 0 | 29477369 |          |
| 15 | Hapmap34560-BES11_Contig371_409 | 0 |          | 29486499 |
| 15 | ARS-BFGL-BAC-34781              | 0 | 29518222 |          |
| 15 | Hapmap38594-BTA-36288           | 0 | 29648882 |          |
| 15 | UA-IFASA-8316                   | 0 | 29672063 |          |
| 15 | BTB-00590603                    | 0 | 29702877 |          |
| 15 | BTB-00590588                    | 0 | 29767119 |          |
| 15 | ARS-BFGL-NGS-106073             | 0 | 29821955 |          |
| 15 | BTB-00590495                    | 0 | 29867373 |          |
| 15 | BTB-00590483                    | 0 | 29896356 |          |
| 15 | BTA-36283-no-rs                 | 0 | 29925131 |          |
| 15 | ARS-BFGL-NGS-42331              | 0 | 29949570 |          |
| 15 | ARS-BFGL-NGS-109406             | 0 | 29985272 |          |
| 15 | ARS-BFGL-NGS-15379              | 0 | 30021603 |          |
| 15 | Hapmap57135-rs29011424          | 0 | 30046695 |          |
| 15 | ARS-BFGL-NGS-86583              | 0 | 30076410 |          |
| 15 | Hapmap54043-ss46526420          | 0 | 30122484 |          |
| 15 | Hapmap35071-BES8_Contig293_787  | 0 |          | 30189508 |
| 15 | BTB-00590103                    | 0 | 30223756 |          |
| 15 | ARS-BFGL-NGS-33700              | 0 | 30266400 |          |
| 15 | BTB-01738606                    | 0 | 30306603 |          |
| 15 | ARS-BFGL-NGS-81952              | 0 | 30373278 |          |
| 15 | ARS-BFGL-NGS-101114             | 0 | 30409179 |          |
| 15 | ARS-BFGL-NGS-116755             | 0 | 30461222 |          |
| 15 | ARS-BFGL-NGS-43849              | 0 | 30484798 |          |
| 15 | ARS-BFGL-NGS-74021              | 0 | 30531680 |          |
| 15 | ARS-BFGL-NGS-63893              | 0 | 30573210 |          |
| 15 | ARS-BFGL-NGS-40310              |   | 30610039 |          |
| 15 | ARS-BFGL-NGS-40490              |   | 30642040 |          |
| 15 | ARS-BFGL-NGS-13464              | 0 | 30685947 |          |
| 15 | ARS-BFGL-NGS-72331              | 0 | 30712492 |          |
| 15 | ARS-BFGL-NGS-42181              | 0 | 30740367 |          |
| 15 | ARS-BFGL-NGS-18321              | 0 | 30773423 |          |
| 15 | Hapmap49971-BTA-36297           | 0 | 30794026 |          |
| 15 | ARS-BFGL-NGS-112350             | 0 | 30840190 |          |
| 15 | ARS-BFGL-NGS-269                | 0 | 30870911 |          |
| 15 | Hapmap31736-BTA-129752          | 0 | 30956961 |          |
| 15 | ARS-BFGL-NGS-114870             | 0 | 30990220 |          |
| 15 | BTB-00591691                    | 0 | 31074059 |          |
| 15 | ARS-BFGL-NGS-111168             | 0 | 31109854 |          |
| 15 | ARS-BFGL-NGS-100946             | 0 | 31153294 |          |
| 15 | ARS-BFGL-NGS-116192             | 0 | 31235679 |          |
| 15 | ARS-BFGL-NGS-113705             | 0 | 31265444 |          |
| 15 | ARS-BFGL-NGS-101298             | 0 | 31296371 |          |
| 15 | ARS-BFGL-NGS-114993             | 0 | 31334742 |          |
| 15 | BTA-36320-no-rs                 | 0 | 31361073 |          |
| 15 | ARS-BFGL-NGS-19845              | 0 | 31381330 |          |

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| 15 | BTA-36278-no-rs               | 0 | 31412283 |          |
| 15 | ARS-BFGL-BAC-34783            | 0 | 31469036 |          |
| 15 | Hapmap58227-rs29016390        | 0 | 31501499 |          |
| 15 | BTB-00590405                  | 0 | 31527773 |          |
| 15 | BTB-00590347                  | 0 | 31555266 |          |
| 15 | ARS-BFGL-NGS-100678           | 0 | 31599942 |          |
| 15 | Hapmap36165-SCAFFOLD12487_317 | 0 |          | 31647441 |
| 15 | BTB-01640924                  | 0 | 31714380 |          |
| 15 | ARS-BFGL-NGS-119665           | 0 | 31742880 |          |
| 15 | Hapmap24690-BTA-155572        | 0 | 31773037 |          |
| 15 | BTA-117223-no-rs              | 0 | 31803631 |          |
| 15 | Hapmap40660-BTA-117222        | 0 | 31835418 |          |
| 15 | ARS-BFGL-NGS-36604            | 0 | 31873933 |          |
| 15 | BTB-00592582                  | 0 | 31908207 |          |
| 15 | ARS-BFGL-NGS-111015           | 0 | 31947879 |          |
| 15 | ARS-BFGL-NGS-102557           | 0 | 31984513 |          |
| 15 | ARS-BFGL-NGS-14132            | 0 | 32006501 |          |
| 15 | ARS-BFGL-NGS-43229            | 0 | 32044715 |          |
| 15 | ARS-BFGL-NGS-20863            | 0 | 32068089 |          |
| 15 | Hapmap40720-BTA-36401         | 0 | 32135352 |          |
| 15 | BTB-00591939                  | 0 | 32163701 |          |
| 15 | BTB-00591978                  | 0 | 32203235 |          |
| 15 | Hapmap41518-BTA-36331         | 0 | 32229913 |          |
| 15 | Hapmap47270-BTA-36334         | 0 | 32272973 |          |
| 15 | ARS-BFGL-NGS-61408            | 0 | 32303235 |          |
| 15 | Hapmap44062-BTA-36347         | 0 | 32345923 |          |
| 15 | BTB-00592110                  | 0 | 32395964 |          |
| 15 | ARS-BFGL-NGS-25525            | 0 | 32560472 |          |
| 15 | ARS-BFGL-NGS-32346            | 0 | 32617589 |          |
| 15 | ARS-BFGL-NGS-57210            | 0 | 32637662 |          |
| 15 | BTB-00592717                  | 0 | 32662524 |          |
| 15 | UA-IFASA-6898                 | 0 | 32713410 |          |
| 15 | ARS-BFGL-NGS-19827            | 0 | 32750892 |          |
| 15 | Hapmap57622-rs29026935        | 0 | 32783311 |          |
| 15 | ARS-BFGL-NGS-42229            | 0 | 32861621 |          |
| 15 | BTA-09703-rs29025860          | 0 | 32944079 |          |
| 15 | BTA-36518-no-rs               | 0 | 32983903 |          |
| 15 | Hapmap50943-BTA-36514         | 0 | 33061734 |          |
| 15 | ARS-BFGL-NGS-15779            | 0 | 33099529 |          |
| 15 | BTB-00594693                  | 0 | 33134638 |          |
| 15 | Hapmap43560-BTA-36511         | 0 | 33179049 |          |
| 15 | ARS-BFGL-BAC-35394            | 0 | 33219702 |          |
| 15 | UA-IFASA-7611                 | 0 | 33247009 |          |
| 15 | Hapmap24803-BTA-129848        | 0 | 33310389 |          |
| 15 | ARS-BFGL-BAC-35396            | 0 | 33333725 |          |
| 15 | ARS-BFGL-NGS-112072           | 0 | 33393282 |          |
| 15 | Hapmap26109-BTA-129826        | 0 | 33423046 |          |
| 15 | ARS-BFGL-NGS-106188           | 0 | 33447481 |          |
| 15 | ARS-BFGL-NGS-107321           | 0 | 33479232 |          |
| 15 | ARS-BFGL-BAC-21580            |   | 33508261 |          |
| 15 | BTB-00594438                  | 0 | 33565804 |          |
| 15 | BTB-00594449                  | 0 | 33601229 |          |
| 15 | Hapmap39348-BTA-63139         | 0 | 33648898 |          |
| 15 | BTB-00972570                  | 0 | 33674612 |          |

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| 15 | ARS-BFGL-NGS-38840            | 0 | 33734568 |          |
| 15 | ARS-BFGL-NGS-110076           | 0 | 33819859 |          |
| 15 | Hapmap39409-BTA-46690         | 0 | 33867401 |          |
| 15 | ARS-BFGL-NGS-42087            | 0 | 33949272 |          |
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| 15 | ARS-BFGL-NGS-22671            | 0 | 34014822 |          |
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| 15 | Hapmap39267-BTA-36676         | 0 | 34082620 |          |
| 15 | Hapmap48730-BTA-36688         | 0 | 34134098 |          |
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| 15 | ARS-BFGL-NGS-106172           | 0 | 34322250 |          |
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| 15 | ARS-BFGL-NGS-17345            | 0 | 34413443 |          |
| 15 | BTB-00593284                  | 0 | 34450507 |          |
| 15 | BTA-36425-no-rs               | 0 | 34494054 |          |
| 15 | ARS-BFGL-NGS-26086            | 0 | 34539235 |          |
| 15 | ARS-BFGL-NGS-75576            | 0 | 34563333 |          |
| 15 | ARS-BFGL-NGS-27130            |   | 34592225 |          |
| 15 | ARS-BFGL-NGS-98724            | 0 | 34647723 |          |
| 15 | ARS-BFGL-NGS-59760            |   | 34682617 |          |
| 15 | ARS-BFGL-NGS-111085           | 0 | 34742988 |          |
| 15 | ARS-BFGL-NGS-116109           | 0 | 34763290 |          |
| 15 | BTB-00593773                  | 0 | 34787093 |          |
| 15 | UA-IFASA-8490                 | 0 | 34810860 |          |
| 15 | ARS-BFGL-NGS-106696           | 0 | 34852656 |          |
| 15 | Hapmap40961-BTA-36457         | 0 | 34881930 |          |
| 15 | Hapmap49972-BTA-36466         | 0 | 34946066 |          |
| 15 | ARS-BFGL-NGS-118826           | 0 | 35025637 |          |
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| 15 | ARS-BFGL-NGS-43617            | 0 | 35138494 |          |
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| 15 | ARS-BFGL-NGS-21421            | 0 | 35298693 |          |
| 15 | ARS-BFGL-NGS-99491            | 0 | 35333265 |          |
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| 15 | ARS-BFGL-NGS-33711            | 0 | 35502071 |          |
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| 15 | ARS-BFGL-NGS-103978              | 0 | 36187297 |          |
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| 15 | BTB-01444556                     | 0 | 36250368 |          |
| 15 | BTB-00595683                     | 0 | 36382948 |          |
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| 15 | Hapmap50831-BTA-95979            | 0 | 36429977 |          |
| 15 | BTB-00595592                     | 0 | 36558372 |          |
| 15 | ARS-BFGL-NGS-72394               | 0 | 36584262 |          |
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| 15 | BTB-02055779                     | 0 | 36817688 |          |
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| 15 | BTB-01559194                     | 0 | 36950873 |          |
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| 15 | ARS-BFGL-BAC-27751               | 0 | 37063494 |          |
| 15 | ARS-BFGL-NGS-77871               | 0 | 37107956 |          |
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| 15 | ARS-BFGL-NGS-101578              | 0 | 37180090 |          |
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| 15 | BTB-00483457                     | 0 | 37338267 |          |
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| 15 | ARS-BFGL-NGS-112089              | 0 | 37511439 |          |
| 15 | ARS-BFGL-NGS-58110               |   | 37534610 |          |
| 15 | Hapmap51782-BTA-95909            | 0 | 37575605 |          |
| 15 | BTB-01828299                     | 0 | 37664756 |          |
| 15 | ARS-BFGL-NGS-15820               |   | 37701094 |          |
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| 15 | ARS-BFGL-NGS-110172              | 0 | 37756194 |          |
| 15 | ARS-BFGL-NGS-19258               | 0 | 37814282 |          |
| 15 | Hapmap48533-BTA-95919            | 0 | 37856701 |          |
| 15 | Hapmap47787-BTA-95921            | 0 | 37893014 |          |
| 15 | ARS-BFGL-NGS-12951               | 0 | 37917022 |          |
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| 15 | BTA-36568-no-rs                  | 0 | 38099059 |          |
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| 15 | ARS-BFGL-NGS-115960              | 0 | 38251520 |          |
| 15 | Hapmap50456-BTA-72525            | 0 | 38281190 |          |
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| 15 | Hapmap42524-BTA-36558            | 0 | 38379083 |          |
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| 15 | ARS-BFGL-NGS-111723             | 0 | 38852264 |          |
| 15 | ARS-BFGL-BAC-27764              | 0 | 38879030 |          |
| 15 | ARS-BFGL-NGS-11794              | 0 | 39016114 |          |
| 15 | ARS-BFGL-NGS-11846              | 0 | 39063079 |          |
| 15 | Hapmap47272-BTA-36655           | 0 | 39096970 |          |
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| 15 | ARS-BFGL-BAC-27767              | 0 | 39349430 |          |
| 15 | ARS-BFGL-NGS-115927             | 0 | 39469268 |          |
| 15 | ARS-BFGL-NGS-25472              | 0 | 39509533 |          |
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| 15 | BTA-36753-no-rs                 | 0 | 39634819 |          |
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| 15 | BTA-06215-no-rs                 | 0 | 39738784 |          |
| 15 | ARS-BFGL-NGS-110928             | 0 | 39880970 |          |
| 15 | ARS-BFGL-NGS-69700              | 0 | 40006891 |          |
| 15 | ARS-BFGL-NGS-100509             | 0 | 40066501 |          |
| 15 | Hapmap25520-BTA-129887          | 0 | 40090548 |          |
| 15 | ARS-BFGL-NGS-15888              | 0 | 40158360 |          |
| 15 | Hapmap39482-BTA-36746           | 0 | 40279014 |          |
| 15 | ARS-BFGL-NGS-70745              | 0 | 40300680 |          |
| 15 | ARS-BFGL-NGS-54901              | 0 | 40356568 |          |
| 15 | ARS-BFGL-NGS-106750             | 0 | 40425845 |          |
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| 15 | ARS-BFGL-NGS-11311              | 0 | 40612416 |          |
| 15 | BTA-86087-no-rs                 | 0 | 40640815 |          |
| 15 | ARS-BFGL-NGS-27012              | 0 | 40724043 |          |
| 15 | ARS-BFGL-NGS-68233              | 0 | 40753429 |          |
| 15 | ARS-BFGL-NGS-117437             | 0 | 40767236 |          |
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| 15 | ARS-BFGL-NGS-34422              | 0 | 40835081 |          |
| 15 | ARS-BFGL-NGS-18204              | 0 | 40889434 |          |
| 15 | ARS-BFGL-BAC-27775              | 0 | 40996892 |          |
| 15 | ARS-BFGL-BAC-27778              | 0 | 41043816 |          |
| 15 | ARS-BFGL-NGS-106807             | 0 | 41169953 |          |
| 15 | BTA-36779-no-rs                 | 0 | 41240684 |          |
| 15 | Hapmap32995-BTA-129924          | 0 | 41303655 |          |
| 15 | Hapmap50533-BTA-99607           | 0 | 41339715 |          |
| 15 | Hapmap52590-rs29020878          | 0 | 41383202 |          |
| 15 | ARS-BFGL-NGS-119103             | 0 | 41422783 |          |
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| 15 | ARS-BFGL-NGS-76827              | 0 | 41757348 |          |
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| 15 | ARS-BFGL-NGS-61890     | 0 | 41926810 |
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| 15 | ARS-BFGL-NGS-93566     | 0 | 42032171 |
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| 15 | ARS-BFGL-NGS-103485    | 0 | 42175075 |
| 15 | ARS-BFGL-NGS-31299     | 0 | 42261266 |
| 15 | ARS-BFGL-NGS-39654     | 0 | 42268297 |
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| 15 | ARS-BFGL-NGS-100136    | 0 | 42343306 |
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| 15 | ARS-BFGL-NGS-20723     | 0 | 42448029 |
| 15 | BTB-00597170           | 0 | 42523274 |
| 15 | ARS-BFGL-NGS-56238     | 0 | 42547043 |
| 15 | ARS-BFGL-NGS-19510     | 0 | 42599781 |
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| 15 | ARS-BFGL-NGS-117777    | 0 | 42715966 |
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| 15 | Hapmap49973-BTA-36846  | 0 | 42886086 |
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| 15 | BTA-36850-no-rs        | 0 | 42949577 |
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| 15 | Hapmap58228-rs29016818 | 0 | 43039782 |
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| 15 | Hapmap38748-BTA-36879  | 0 | 43434590 |
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| 15 | BTA-115335-no-rs       | 0 | 43589342 |
| 15 | ARS-BFGL-NGS-81500     | 0 | 43652444 |
| 15 | BTB-00596891           | 0 | 43704584 |
| 15 | Hapmap44232-BTA-36765  | 0 | 43746244 |
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| 15 | Hapmap58050-rs29013793 | 0 | 44011208 |
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| 15 | ARS-BFGL-NGS-108402    | 0 | 44066727 |
| 15 | Hapmap27578-BTA-129987 | 0 | 44094347 |
| 15 | ARS-BFGL-NGS-80468     | 0 | 44124168 |

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| 15 | Hapmap38595-BTA-36915  | 0 | 44224325 |
| 15 | ARS-BFGL-NGS-13713     | 0 | 44254734 |
| 15 | ARS-BFGL-NGS-23476     | 0 | 44287527 |
| 15 | Hapmap31058-BTA-115718 | 0 | 44328599 |
| 15 | ARS-BFGL-NGS-65283     | 0 | 44359823 |
| 15 | ARS-BFGL-NGS-108453    | 0 | 44398514 |
| 15 | ARS-BFGL-NGS-111839    | 0 | 44417808 |
| 15 | BTA-36905-no-rs        | 0 | 44443083 |
| 15 | UA-IFASA-8177          | 0 | 44471231 |
| 15 | ARS-BFGL-NGS-119682    | 0 | 44535759 |
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| 15 | BTB-01784952           | 0 | 44636772 |
| 15 | ARS-BFGL-NGS-32196     | 0 | 44762224 |
| 15 | ARS-BFGL-NGS-88118     | 0 | 44808240 |
| 15 | Hapmap25296-BTA-148754 | 0 | 44870998 |
| 15 | ARS-BFGL-NGS-78300     | 0 | 44892011 |
| 15 | BTA-122029-no-rs       | 0 | 44916353 |
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| 15 | BTB-01120372           | 0 | 44972007 |
| 15 | BTB-01120359           | 0 | 44999012 |
| 15 | ARS-BFGL-NGS-24309     | 0 | 45047891 |
| 15 | ARS-BFGL-NGS-93495     | 0 | 45104876 |
| 15 | ARS-BFGL-NGS-113640    | 0 | 45134081 |
| 15 | BTB-02069420           | 0 | 45241208 |
| 15 | ARS-BFGL-NGS-109679    | 0 | 45314266 |
| 15 | BTB-01926509           | 0 | 45363793 |
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| 15 | Hapmap57286-ss46526482 | 0 | 45667482 |
| 15 | ARS-BFGL-NGS-77202     | 0 | 45714137 |
| 15 | BTA-88657-no-rs        | 0 | 45743620 |
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| 15 | ARS-BFGL-NGS-18693     | 0 | 45815706 |
| 15 | ARS-BFGL-NGS-101151    | 0 | 45842102 |
| 15 | ARS-BFGL-NGS-115414    | 0 | 45862797 |
| 15 | ARS-BFGL-NGS-25066     | 0 | 45915821 |
| 15 | ARS-BFGL-NGS-22122     | 0 | 45968445 |
| 15 | ARS-BFGL-NGS-10087     | 0 | 46002857 |
| 15 | ARS-BFGL-NGS-72108     | 0 | 46058920 |
| 15 | ARS-BFGL-BAC-19395     | 0 | 46208504 |
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| 15 | ARS-BFGL-NGS-29801     | 0 | 46436262 |
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| 15 | BTB-02052107           | 0 | 46460348 |
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| 15 | BTB-00599376           | 0 | 47109587 |
| 15 | ARS-BFGL-NGS-90546     | 0 | 47135215 |
| 15 | ARS-BFGL-NGS-114458    | 0 | 47176194 |
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| 15 | ARS-BFGL-NGS-110736             | 0 | 47266773 |  |
| 15 | ARS-BFGL-BAC-33541              | 0 | 47336499 |  |
| 15 | BTB-01551877                    | 0 | 47403843 |  |
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| 15 | Hapmap50337-BTA-37006           | 0 | 47494237 |  |
| 15 | ARS-BFGL-NGS-27623              | 0 | 47522748 |  |
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| 15 | BTB-01793600                    | 0 | 47605562 |  |
| 15 | BTB-01793542                    | 0 | 47641955 |  |
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| 15 | ARS-BFGL-NGS-40561              | 0 | 48112581 |  |
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| 15 | BTB-01372515                    | 0 | 48347277 |  |
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| 15 | Hapmap44055-BTA-29694           | 0 | 48534829 |  |
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| 15 | ARS-BFGL-NGS-41690              | 0 | 48628725 |  |
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| 15 | BTA-36962-no-rs                 | 0 | 48763311 |  |
| 15 | Hapmap44373-BTA-36964           | 0 | 48790861 |  |
| 15 | BTA-36975-no-rs                 | 0 | 48817814 |  |
| 15 | Hapmap47589-BTA-36976           | 0 | 48876926 |  |
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| 15 | ARS-BFGL-NGS-23589              | 0 | 50222093 |  |
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| 15 | BTB-01501127                    | 0 | 50485308 |  |
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| 15 | ARS-BFGL-BAC-19403              | 0 | 51828442 |  |
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| 15 | BTA-117812-no-rs                | 0 | 51902597 |  |
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| 15 | BTB-00604223                     | 0 | 52098193 |  |
| 15 | BTB-00604170                     | 0 | 52131353 |  |
| 15 | BTB-00604120                     | 0 | 52165987 |  |
| 15 | ARS-BFGL-NGS-80211               | 0 | 52290626 |  |
| 15 | UA-IFASA-7131                    | 0 | 52311393 |  |
| 15 | BTA-36897-no-rs                  | 0 | 52342031 |  |
| 15 | BTB-00600805                     | 0 | 52415557 |  |
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| 15 | ARS-BFGL-NGS-73444               | 0 | 52465901 |  |
| 15 | ARS-BFGL-NGS-11860               |   | 52511359 |  |
| 15 | BTB-00600564                     | 0 | 52547046 |  |
| 15 | ARS-BFGL-NGS-114583              | 0 | 52624549 |  |
| 15 | ARS-BFGL-NGS-57400               |   | 52660739 |  |
| 15 | BTA-36883-no-rs                  | 0 | 52727193 |  |
| 15 | ARS-BFGL-NGS-59605               | 0 | 52762755 |  |
| 15 | ARS-BFGL-NGS-44311               | 0 | 52799618 |  |
| 15 | ARS-BFGL-BAC-19412               | 0 | 52848012 |  |
| 15 | BTB-00600391                     | 0 | 52875986 |  |
| 15 | BTB-00600374                     | 0 | 52910307 |  |
| 15 | Hapmap41245-BTA-36880            | 0 | 52982531 |  |
| 15 | ARS-BFGL-NGS-59460               | 0 | 53041839 |  |
| 15 | ARS-BFGL-NGS-110461              | 0 | 53072568 |  |
| 15 | ARS-BFGL-NGS-100143              | 0 | 53138487 |  |
| 15 | ARS-BFGL-NGS-107234              | 0 | 53166998 |  |
| 15 | ARS-BFGL-NGS-40602               | 0 | 53250782 |  |
| 15 | Hapmap32796-BTA-130010           | 0 | 53372343 |  |
| 15 | Hapmap50948-BTA-37067            | 0 | 53459520 |  |
| 15 | ARS-BFGL-NGS-101040              | 0 | 53500910 |  |
| 15 | ARS-BFGL-NGS-61456               | 0 | 53554378 |  |
| 15 | ARS-BFGL-NGS-110365              | 0 | 53586591 |  |
| 15 | Hapmap35547-SCAFFOLD316738_25851 | 0 | 53622495 |  |
| 15 | ARS-BFGL-NGS-37966               | 0 | 53671639 |  |
| 15 | Hapmap50949-BTA-37419            | 0 | 53707042 |  |
| 15 | ARS-BFGL-NGS-78659               | 0 | 53733504 |  |
| 15 | Hapmap60878-rs29012474           | 0 | 53757917 |  |
| 15 | Hapmap43128-BTA-105550           | 0 | 53801075 |  |
| 15 | BTA-37420-no-rs                  | 0 | 53911790 |  |
| 15 | ARS-BFGL-BAC-19418               | 0 | 54065284 |  |
| 15 | ARS-BFGL-BAC-19419               | 0 | 54127887 |  |
| 15 | ARS-BFGL-NGS-46130               |   | 54170684 |  |
| 15 | Hapmap52074-ss46527004           | 0 | 54199080 |  |
| 15 | Hapmap35699-UCP3_119F1-SNP1      | 0 | 54218907 |  |
| 15 | ARS-BFGL-NGS-54493               | 0 | 54258688 |  |
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| 15 | ARS-BFGL-NGS-37822               | 0 | 54726718 |  |
| 15 | ARS-BFGL-NGS-17983               | 0 | 54769019 |  |
| 15 | ARS-BFGL-NGS-19286               | 0 | 54803685 |  |

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| 15 | Hapmap26652-BTA-130021         | 0 | 54861844 |          |
| 15 | BTB-00338107                   | 0 | 54898376 |          |
| 15 | ARS-BFGL-NGS-111296            | 0 | 54939673 |          |
| 15 | BTA-80846-no-rs                | 0 | 54995188 |          |
| 15 | ARS-BFGL-NGS-117833            | 0 | 55045620 |          |
| 15 | BTB-00338168                   | 0 | 55093669 |          |
| 15 | BTB-00605602                   | 0 | 55123717 |          |
| 15 | UA-IFASA-5331                  | 0 | 55185032 |          |
| 15 | ARS-BFGL-NGS-90072             | 0 | 55206099 |          |
| 15 | BTA-37105-no-rs                | 0 | 55254553 |          |
| 15 | ARS-BFGL-NGS-54040             |   | 55307660 |          |
| 15 | ARS-BFGL-NGS-30928             | 0 | 55378514 |          |
| 15 | ARS-BFGL-NGS-117345            | 0 | 55430576 |          |
| 15 | ARS-BFGL-NGS-25439             | 0 | 55456676 |          |
| 15 | ARS-BFGL-NGS-68607             | 0 | 55488319 |          |
| 15 | ARS-BFGL-NGS-102938            | 0 | 55562673 |          |
| 15 | ARS-BFGL-NGS-31679             | 0 | 55591183 |          |
| 15 | UA-IFASA-5843                  | 0 | 55642700 |          |
| 15 | ARS-BFGL-NGS-13514             | 0 | 55660429 |          |
| 15 | ARS-BFGL-NGS-88866             | 0 | 55871819 |          |
| 15 | BTA-119064-no-rs               | 0 | 55930081 |          |
| 15 | Hapmap58422-rs29021136         | 0 | 55961906 |          |
| 15 | BTB-01890938                   | 0 | 56004143 |          |
| 15 | ARS-BFGL-NGS-37797             | 0 | 56041487 |          |
| 15 | Hapmap51105-BTA-99226          | 0 | 56072487 |          |
| 15 | BTB-01506184                   | 0 | 56098230 |          |
| 15 | Hapmap34185-BES7_Contig323_940 | 0 |          | 56135629 |
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| 15 | Hapmap32097-BTA-150519         | 0 | 56302387 |          |
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| 15 | ARS-BFGL-NGS-103542            | 0 | 56383289 |          |
| 15 | Hapmap24496-BTA-155957         | 0 | 56450108 |          |
| 15 | ARS-BFGL-NGS-41239             | 0 | 56482148 |          |
| 15 | ARS-BFGL-NGS-39553             | 0 | 56571496 |          |
| 15 | Hapmap42706-BTA-85276          | 0 | 56663853 |          |
| 15 | BTA-32359-no-rs                | 0 | 56716615 |          |
| 15 | ARS-BFGL-NGS-58337             | 0 | 56782573 |          |
| 15 | ARS-BFGL-NGS-48903             | 0 | 56842162 |          |
| 15 | ARS-BFGL-NGS-19206             | 0 | 56865112 |          |
| 15 | ARS-BFGL-NGS-67343             | 0 | 56934789 |          |
| 15 | ARS-BFGL-NGS-76542             | 0 | 56998064 |          |
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| 15 | ARS-BFGL-NGS-39731             | 0 | 57284621 |          |
| 15 | Hapmap58872-ss46526606         | 0 | 57313281 |          |
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| 15 | ARS-BFGL-NGS-62049             | 0 | 57408444 |          |
| 15 | Hapmap49069-BTA-17164          | 0 | 57470559 |          |
| 15 | ARS-BFGL-BAC-19996             | 0 | 57537540 |          |
| 15 | Hapmap50339-BTA-37129          | 0 | 57566083 |          |
| 15 | ARS-BFGL-BAC-19992             | 0 | 57592823 |          |

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| 15 | ARS-BFGL-NGS-116562    | 0        | 57621211 |
| 15 | BTB-00607392           | 0        | 57802418 |
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| 15 | Hapmap27950-BTA-130038 | 0        | 57938462 |
| 15 | UA-IFASA-9071          | 0        | 57977339 |
| 15 | Hapmap50832-BTA-96262  | 0        | 58001797 |
| 15 | Hapmap39958-BTA-96258  | 0        | 58050245 |
| 15 | BTA-96265-no-rs        | 0        | 58146005 |
| 15 | BTB-01725709           | 0        | 58202197 |
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| 15 | Hapmap42158-BTA-26259  | 0        | 58361289 |
| 15 | ARS-BFGL-BAC-64890     | 58411725 |          |
| 15 | ARS-BFGL-NGS-55206     | 0        | 58502568 |
| 15 | BTA-13384-rs29018344   | 0        | 58628094 |
| 15 | ARS-BFGL-NGS-64353     | 0        | 58662790 |
| 15 | ARS-BFGL-NGS-30515     | 0        | 58709858 |
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| 15 | ARS-BFGL-NGS-111222    | 0        | 58796348 |
| 15 | Hapmap45874-BTA-37175  | 0        | 58830757 |
| 15 | BTA-121024-no-rs       | 0        | 58899665 |
| 15 | Hapmap49977-BTA-37170  | 0        | 58925799 |
| 15 | BTB-00607669           | 0        | 59020999 |
| 15 | ARS-BFGL-NGS-240       | 0        | 59053943 |
| 15 | ARS-BFGL-NGS-112654    | 0        | 59166285 |
| 15 | BTB-00608390           | 0        | 59183752 |
| 15 | ARS-BFGL-NGS-36995     | 0        | 59296431 |
| 15 | Hapmap43566-BTA-37197  | 0        | 59333016 |
| 15 | Hapmap40965-BTA-37194  | 0        | 59379134 |
| 15 | ARS-BFGL-NGS-60593     | 0        | 59387154 |
| 15 | BTB-01341235           | 0        | 59434020 |
| 15 | ARS-BFGL-BAC-20014     | 0        | 59616890 |
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| 15 | BTB-01058781           | 0        | 60221536 |
| 15 | BTB-01058800           | 0        | 60250434 |
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| 15 | Hapmap27607-BTA-149168 | 0        | 60340116 |
| 15 | Hapmap39904-BTA-26384  | 0        | 60367233 |
| 15 | BTA-91371-no-rs        | 0        | 60430884 |
| 15 | BTB-01876427           | 0        | 60466892 |
| 15 | UA-IFASA-9029          | 0        | 60510279 |
| 15 | Hapmap31733-BTA-129129 | 0        | 60548058 |

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| 15 | BTB-00566468           | 0        | 60612367 |
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| 15 | BTB-01759992           | 0        | 60807990 |
| 15 | Hapmap27213-BTA-158672 | 0        | 60833294 |
| 15 | BTA-91394-no-rs        | 0        | 60856300 |
| 15 | Hapmap42006-BTA-91398  | 0        | 60904807 |
| 15 | Hapmap25853-BTA-149175 | 0        | 60967595 |
| 15 | ARS-BFGL-BAC-20016     | 0        | 61044897 |
| 15 | BTB-01059544           | 0        | 61098317 |
| 15 | ARS-BFGL-NGS-108364    | 0        | 61167451 |
| 15 | Hapmap58738-rs29021744 | 0        | 61241418 |
| 15 | ARS-BFGL-NGS-35117     | 0        | 61287473 |
| 15 | Hapmap41522-BTA-37226  | 0        | 61320019 |
| 15 | ARS-BFGL-NGS-109859    | 0        | 61341539 |
| 15 | ARS-BFGL-NGS-30400     | 61378465 |          |
| 15 | BTA-91340-no-rs        | 0        | 61407226 |
| 15 | ARS-BFGL-NGS-75297     | 0        | 61444205 |
| 15 | BTB-00608727           | 0        | 61469754 |
| 15 | Hapmap22996-BTA-123258 | 0        | 61503101 |
| 15 | ARS-BFGL-BAC-65030     | 61528298 |          |
| 15 | BTB-01762168           | 0        | 61600685 |
| 15 | BTB-01762302           | 0        | 61634879 |
| 15 | ARS-BFGL-NGS-24892     | 0        | 61669862 |
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| 15 | BTB-00608931           | 0        | 61743112 |
| 15 | BTB-02008169           | 0        | 61780548 |
| 15 | BTA-28158-no-rs        | 0        | 61813536 |
| 15 | BTA-02893-rs29010438   | 0        | 61845029 |
| 15 | BTA-113257-no-rs       | 0        | 61871659 |
| 15 | BTA-37234-no-rs        | 0        | 61893000 |
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| 15 | ARS-BFGL-NGS-41462     | 0        | 62002976 |
| 15 | Hapmap25081-BTA-153963 | 0        | 62057421 |
| 15 | BTB-01177498           | 0        | 62116083 |
| 15 | BTB-01778967           | 0        | 62149984 |
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| 15 | BTB-01177481           | 0        | 62209712 |
| 15 | BTB-01177461           | 0        | 62236286 |
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| 15 | Hapmap49004-BTA-105180 | 0        | 62309986 |
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| 15 | ARS-BFGL-NGS-61200     | 62428148 |          |
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| 15 | ARS-BFGL-NGS-77090     | 0        | 62557254 |
| 15 | BTB-01230622           | 0        | 62600934 |
| 15 | Hapmap49365-BTA-89419  | 0        | 62647758 |
| 15 | Hapmap38148-BTA-27068  | 0        | 62672763 |
| 15 | Hapmap58607-rs29013975 | 0        | 62706301 |
| 15 | ARS-BFGL-NGS-112293    | 0        | 62823352 |
| 15 | BTB-01406897           | 0        | 62849070 |
| 15 | BTB-01788867           | 0        | 63033190 |

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| 15 | BTB-01788872           | 0        | 63056507 |
| 15 | BTB-01746743           | 0        | 63110430 |
| 15 | BTB-01280838           | 0        | 63174506 |
| 15 | BTB-01280822           | 0        | 63216353 |
| 15 | Hapmap44354-BTA-17069  | 0        | 63253454 |
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| 15 | ARS-BFGL-NGS-63905     | 0        | 63414520 |
| 15 | ARS-BFGL-NGS-117803    | 0        | 63448555 |
| 15 | ARS-BFGL-NGS-61341     | 0        | 63490623 |
| 15 | BTB-01280617           | 0        | 63517557 |
| 15 | BTA-17070-no-rs        | 0        | 63545679 |
| 15 | BTB-01508301           | 0        | 63584215 |
| 15 | ARS-BFGL-NGS-71816     | 0        | 63609332 |
| 15 | ARS-BFGL-NGS-118002    | 0        | 63871198 |
| 15 | ARS-BFGL-NGS-41765     | 0        | 63966654 |
| 15 | ARS-BFGL-NGS-82738     | 0        | 64057195 |
| 15 | BTA-18105-no-rs        | 0        | 64168198 |
| 15 | ARS-BFGL-NGS-89682     | 0        | 64214143 |
| 15 | BTA-01263-rs29012228   | 0        | 64283442 |
| 15 | ARS-BFGL-BAC-18822     | 0        | 64326873 |
| 15 | Hapmap48636-BTA-118794 | 0        | 64373612 |
| 15 | Hapmap57542-rs29012408 | 0        | 64408726 |
| 15 | BTB-01706506           | 0        | 64436323 |
| 15 | Hapmap33219-BTA-149209 | 0        | 64454641 |
| 15 | Hapmap59484-rs29019823 | 0        | 64541292 |
| 15 | BTB-01505484           | 0        | 64580476 |
| 15 | ARS-BFGL-NGS-55943     | 0        | 64628706 |
| 15 | BTA-37262-no-rs        | 0        | 64701592 |
| 15 | BTA-37252-no-rs        | 0        | 64728525 |
| 15 | ARS-BFGL-NGS-112422    | 0        | 64752653 |
| 15 | BTA-37249-no-rs        | 0        | 64779638 |
| 15 | ARS-BFGL-NGS-100198    | 0        | 64802379 |
| 15 | ARS-BFGL-NGS-113194    | 0        | 64852830 |
| 15 | ARS-BFGL-NGS-84776     | 0        | 64876840 |
| 15 | ARS-BFGL-NGS-43586     | 0        | 65006607 |
| 15 | Hapmap47273-BTA-37273  | 0        | 65052346 |
| 15 | BTB-00609706           | 0        | 65078912 |
| 15 | Hapmap41848-BTA-37274  | 0        | 65115887 |
| 15 | BTA-37280-no-rs        | 0        | 65161744 |
| 15 | BTB-00609809           | 0        | 65210880 |
| 15 | ARS-BFGL-NGS-115610    | 0        | 65235259 |
| 15 | BTB-00610177           | 0        | 65255763 |
| 15 | ARS-BFGL-NGS-59477     | 0        | 65285386 |
| 15 | BTA-37293-no-rs        | 0        | 65339226 |
| 15 | Hapmap59089-rs29024353 | 0        | 65408389 |
| 15 | ARS-BFGL-NGS-57330     | 65450724 |          |
| 15 | Hapmap56240-ss46526743 | 0        | 65496837 |
| 15 | ARS-BFGL-NGS-105277    | 0        | 65530435 |
| 15 | ARS-BFGL-NGS-109573    | 0        | 65558890 |
| 15 | ARS-BFGL-NGS-82082     | 0        | 65590902 |
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| 15 | ARS-BFGL-NGS-15460     | 0        | 65717899 |
| 15 | BTA-37316-no-rs        | 0        | 65742925 |

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| 15 | ARS-BFGL-BAC-20605     | 0        | 65768829 |
| 15 | BTA-37317-no-rs        | 0        | 65813540 |
| 15 | ARS-BFGL-NGS-16622     | 0        | 65871270 |
| 15 | BTA-37324-no-rs        | 0        | 65892060 |
| 15 | Hapmap49137-BTA-37325  | 0        | 65923853 |
| 15 | ARS-BFGL-NGS-29708     | 0        | 65946932 |
| 15 | ARS-BFGL-NGS-90062     | 0        | 65967835 |
| 15 | ARS-BFGL-NGS-65623     | 0        | 65990096 |
| 15 | Hapmap50340-BTA-37383  | 0        | 66042287 |
| 15 | BTB-00611237           | 0        | 66082534 |
| 15 | ARS-BFGL-NGS-39003     | 0        | 66127887 |
| 15 | Hapmap58710-rs29020911 | 0        | 66170427 |
| 15 | Hapmap44538-BTA-37377  | 0        | 66208675 |
| 15 | Hapmap49978-BTA-37376  | 0        | 66235937 |
| 15 | Hapmap52383-rs29020089 | 0        | 66298095 |
| 15 | Hapmap28608-BTA-130112 | 0        | 66359442 |
| 15 | ARS-BFGL-NGS-112642    | 0        | 66383907 |
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| 15 | ARS-BFGL-NGS-100339    | 0        | 66456600 |
| 15 | ARS-BFGL-NGS-102782    | 0        | 66483616 |
| 15 | Hapmap57082-ss46526507 | 0        | 66540919 |
| 15 | Hapmap39746-BTA-37358  | 0        | 66580193 |
| 15 | ARS-BFGL-NGS-53281     | 0        | 66603229 |
| 15 | BTA-37355-no-rs        | 0        | 66629434 |
| 15 | ARS-BFGL-NGS-110386    | 0        | 66653797 |
| 15 | Hapmap26360-BTA-123508 | 0        | 66681363 |
| 15 | ARS-BFGL-NGS-34095     | 0        | 66734138 |
| 15 | ARS-BFGL-NGS-58669     | 0        | 66792487 |
| 15 | ARS-BFGL-NGS-10960     | 0        | 66836559 |
| 15 | BTA-37329-no-rs        | 0        | 66868403 |
| 15 | ARS-BFGL-NGS-107810    | 0        | 67062110 |
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| 15 | ARS-BFGL-NGS-10680     | 67158145 |          |
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| 15 | ARS-BFGL-NGS-36801     | 0        | 67269656 |
| 15 | ARS-BFGL-NGS-111525    | 0        | 67323237 |
| 15 | Hapmap41218-BTA-28547  | 0        | 67358867 |
| 15 | ARS-BFGL-NGS-92508     | 0        | 67386416 |
| 15 | BTB-00611649           | 0        | 67429625 |
| 15 | Hapmap39057-BTA-37396  | 0        | 67457957 |
| 15 | BTB-00611605           | 0        | 67486632 |
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| 15 | ARS-BFGL-NGS-86665     | 0        | 67556240 |
| 15 | ARS-BFGL-NGS-14360     | 0        | 67585830 |
| 15 | BTA-37392-no-rs        | 0        | 67624095 |
| 15 | Hapmap5661-BTA-37391   | 0        | 67645253 |
| 15 | ARS-BFGL-NGS-22354     | 0        | 67682968 |
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| 15 | Hapmap54259-rs29018653 | 0        | 67816375 |
| 15 | Hapmap24143-BTA-130140 | 0        | 67884533 |
| 15 | BTB-00611819           | 0        | 67927455 |
| 15 | ARS-BFGL-NGS-116120    | 0        | 67966501 |
| 15 | Hapmap23269-BTA-147941 | 0        | 68047712 |

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| 15 | ARS-BFGL-NGS-79710     | 0 | 68557111 |
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| 15 | BTB-01279391           | 0 | 68792615 |
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| 15 | Hapmap28819-BTA-159639 | 0 | 68878278 |
| 15 | BTB-01279265           | 0 | 68988117 |
| 15 | ARS-BFGL-NGS-101744    | 0 | 69097946 |
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| 15 | BTB-01851084           | 0 | 69186266 |
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| 15 | ARS-BFGL-NGS-66069     | 0 | 69626487 |
| 15 | BTB-00613090           | 0 | 69663711 |
| 15 | Hapmap50885-BTA-121034 | 0 | 69815472 |
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| 15 | BTA-27784-no-rs        | 0 | 69951708 |
| 15 | BTA-37461-no-rs        | 0 | 69992123 |
| 15 | BTA-108811-no-rs       | 0 | 70076921 |
| 15 | BTB-01627935           | 0 | 70101697 |
| 15 | BTA-104428-no-rs       | 0 | 70139530 |
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| 15 | BTB-02093288           | 0 | 70408555 |
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| 15 | BTB-00613389           | 0 | 70479506 |
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| 15 | Hapmap23318-BTA-148682 | 0 | 70597937 |
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| 15 | BTA-89498-no-rs                  | 0 | 70850435 |          |
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| 15 | ARS-BFGL-BAC-18252               | 0 | 72001676 |          |
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| 15 | Hapmap42190-BTA-37588            | 0 | 72142927 |          |
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| 15 | ARS-BFGL-NGS-105548              | 0 | 72418250 |          |
| 15 | Hapmap26237-BTA-82223            | 0 | 72469775 |          |
| 15 | Hapmap31394-BTA-130211           | 0 | 72523980 |          |
| 15 | BTA-117758-no-rs                 | 0 | 72591774 |          |
| 15 | BTA-37592-no-rs                  | 0 | 72716471 |          |
| 15 | ARS-BFGL-NGS-955                 | 0 | 72751515 |          |
| 15 | Hapmap34688-BES2_Contig423_849   | 0 |          | 72771875 |
| 15 | Hapmap36380-SCAFFOLD145103_39605 | 0 |          | 72855395 |
| 15 | Hapmap42526-BTA-37604            | 0 | 72914738 |          |
| 15 | Hapmap45825-BTA-25376            | 0 | 72980544 |          |
| 15 | BTA-37606-no-rs                  | 0 | 73036087 |          |
| 15 | Hapmap31737-BTA-130196           | 0 | 73062894 |          |
| 15 | Hapmap42191-BTA-37608            | 0 | 73078985 |          |
| 15 | Hapmap50342-BTA-37609            | 0 | 73152353 |          |
| 15 | BTA-09436-no-rs                  | 0 | 73206484 |          |
| 15 | Hapmap43251-BTA-37612            | 0 | 73304557 |          |
| 15 | Hapmap47929-BTA-37615            | 0 | 73344746 |          |
| 15 | Hapmap40672-BTA-121035           | 0 | 73432445 |          |
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| 15 | ARS-BFGL-NGS-40765               | 0 | 73849551 |          |
| 15 | ARS-BFGL-NGS-49670               |   | 73891452 |          |

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| 15 | ARS-BFGL-NGS-17692     | 0        | 73929510 |
| 15 | ARS-BFGL-NGS-119332    | 0        | 73970486 |
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| 15 | ARS-BFGL-NGS-104771    | 0        | 74053710 |
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| 15 | Hapmap39021-BTA-37857  | 0        | 74192634 |
| 15 | ARS-BFGL-NGS-41336     | 0        | 74237858 |
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| 15 | ARS-BFGL-NGS-107160    | 0        | 75065222 |
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| 15 | Hapmap47593-BTA-37693  | 0        | 75148353 |
| 15 | ARS-BFGL-NGS-23895     | 0        | 75178820 |
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| 15 | ARS-BFGL-NGS-26950     | 0        | 75749702 |
| 15 | ARS-BFGL-NGS-13107     | 0        | 75863003 |
| 15 | ARS-BFGL-NGS-26846     | 0        | 75913958 |
| 15 | ARS-BFGL-NGS-111520    | 0        | 75937148 |
| 15 | ARS-BFGL-NGS-112176    | 0        | 76013237 |
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| 15 | ARS-BFGL-NGS-40608     | 0        | 76166896 |
| 15 | ARS-BFGL-NGS-23449     | 0        | 76215401 |
| 15 | ARS-BFGL-NGS-31754     | 0        | 76265233 |
| 15 | ARS-BFGL-NGS-23900     | 0        | 76314927 |
| 15 | ARS-BFGL-NGS-38254     | 0        | 76350223 |
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| 15 | ARS-BFGL-NGS-44706                    | 0        | 76438547 |  |
| 15 | ARS-BFGL-NGS-25994                    | 0        | 76466667 |  |
| 15 | ARS-BFGL-NGS-114766                   | 0        | 76495215 |  |
| 15 | ARS-BFGL-NGS-39449                    | 0        | 76516628 |  |
| 15 | ARS-BFGL-NGS-30535                    | 0        | 76571423 |  |
| 15 | ARS-BFGL-NGS-10450                    | 76598267 |          |  |
| 15 | BTB-00616720                          | 0        | 76635107 |  |
| 15 | ARS-BFGL-NGS-30110                    | 0        | 76675303 |  |
| 15 | INRA-736                              | 0        | 76791679 |  |
| 15 | ARS-BFGL-NGS-28379                    | 0        | 76825757 |  |
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| 15 | BTB-00616941                          | 0        | 76901012 |  |
| 15 | BTB-00616964                          | 0        | 76930018 |  |
| 15 | BTB-00616981                          | 0        | 76960713 |  |
| 15 | INRA-748                              | 0        | 77003599 |  |
| 15 | Hapmap44683-BTA-37717                 | 0        | 77046320 |  |
| 15 | ARS-BFGL-NGS-106982                   | 0        | 77142114 |  |
| 15 | BTA-37724-no-rs                       | 0        | 77169139 |  |
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| 15 | INRA-764                              | 0        | 77287071 |  |
| 15 | BTB-00617241                          | 0        | 77308264 |  |
| 15 | ARS-BFGL-NGS-74663                    | 0        | 77330405 |  |
| 15 | ARS-BFGL-NGS-77091                    | 0        | 77360934 |  |
| 15 | ARS-BFGL-NGS-12519                    | 0        | 77399486 |  |
| 15 | ARS-BFGL-NGS-115316                   | 0        | 77451913 |  |
| 15 | ARS-BFGL-NGS-109896                   | 0        | 77501955 |  |
| 15 | UA-IFASA-7303                         | 0        | 77543720 |  |
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| 15 | ARS-BFGL-NGS-21869                    | 0        | 77622594 |  |
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| 15 | ARS-BFGL-NGS-115168                   | 0        | 77675666 |  |
| 15 | ARS-BFGL-NGS-40202                    | 0        | 77707095 |  |
| 15 | ARS-BFGL-NGS-65510                    | 0        | 77934185 |  |
| 15 | ARS-BFGL-NGS-77642                    | 0        | 78180723 |  |
| 15 | Hapmap40418-BTA-37758                 | 0        | 78230054 |  |
| 15 | UA-IFASA-4359                         | 0        | 78330054 |  |
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| 15 | ARS-BFGL-NGS-17257                    | 0        | 78435283 |  |
| 15 | INRA-731                              | 0        | 78457247 |  |
| 15 | ARS-BFGL-NGS-102796                   | 0        | 78486898 |  |
| 15 | Hapmap24247-BTA-130272                | 0        | 78544866 |  |
| 15 | BTB-00617870                          | 0        | 78619447 |  |
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| 15 | Hapmap42192-BTA-37799                 | 0        | 78966608 |  |
| 15 | ARS-BFGL-NGS-41808                    | 0        | 79022266 |  |
| 15 | INRA-754                              | 0        | 79057845 |  |
| 15 | ARS-BFGL-NGS-111783                   | 0        | 79088393 |  |
| 15 | ARS-BFGL-NGS-46908                    | 0        | 79098481 |  |
| 15 | BTB-02028015                          | 0        | 79115985 |  |
| 15 | ARS-BFGL-BAC-35880                    | 79146349 |          |  |
| 15 | ARS-USMARC-Parent-DQ866818-rs29011701 | 0        | 79187295 |  |

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| 15 | ARS-BFGL-NGS-88377     | 0        | 79227512 |
| 15 | Hapmap51931-BTA-118777 | 0        | 79252846 |
| 15 | Hapmap42719-BTA-90157  | 0        | 79279851 |
| 15 | BTB-01928584           | 0        | 79343616 |
| 15 | BTA-90467-no-rs        | 0        | 79358207 |
| 15 | BTB-01740273           | 0        | 79404776 |
| 15 | BTB-01749101           | 0        | 79498504 |
| 15 | ARS-BFGL-NGS-20708     | 0        | 79531511 |
| 15 | ARS-BFGL-NGS-69079     | 0        | 79785494 |
| 15 | BTB-02096198           | 0        | 80003887 |
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| 15 | BTB-02012820           | 0        | 80097824 |
| 15 | ARS-BFGL-NGS-85785     | 0        | 80216620 |
| 15 | BTB-01690781           | 0        | 80369812 |
| 15 | ARS-BFGL-NGS-76982     | 0        | 81169903 |
| 15 | ARS-BFGL-NGS-108504    | 0        | 81255556 |
| 15 | BTA-16481-no-rs        | 0        | 81335502 |
| 15 | ARS-BFGL-NGS-11467     | 0        | 81425956 |
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| 15 | ARS-BFGL-NGS-112142    | 0        | 81619357 |
| 15 | ARS-BFGL-NGS-73835     | 0        | 81655317 |
| 15 | ARS-BFGL-NGS-32594     | 0        | 81677745 |
| 15 | ARS-BFGL-NGS-38105     | 0        | 81736304 |
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| 15 | ARS-BFGL-NGS-11210     | 82061751 |          |
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| 15 | ARS-BFGL-NGS-41418     | 0        | 82216138 |
| 15 | ARS-BFGL-NGS-28035     | 0        | 82317986 |
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| 15 | Hapmap38032-BTA-37826  | 0        | 82388156 |
| 15 | BTB-00619772           | 0        | 82412940 |
| 15 | BTB-00619826           | 0        | 82447474 |
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| 15 | ARS-BFGL-NGS-59117     | 0        | 82534584 |
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| 15 | ARS-BFGL-NGS-26681     | 0        | 82689485 |
| 15 | ARS-BFGL-NGS-28904     | 0        | 82718640 |
| 15 | ARS-BFGL-NGS-66369     | 0        | 82768398 |
| 15 | ARS-BFGL-NGS-57604     | 0        | 82803742 |
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| 15 | ARS-BFGL-NGS-16343     | 0        | 82875229 |
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| 15 | BTB-01166648                     | 0 | 82963320 |          |
| 15 | BTB-01665549                     | 0 | 82995295 |          |
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| 15 | ARS-BFGL-NGS-111758              | 0 | 83291207 |          |
| 15 | ARS-BFGL-NGS-112216              | 0 | 83360435 |          |
| 15 | BTB-00622199                     | 0 | 83410335 |          |
| 15 | ARS-BFGL-NGS-31313               | 0 | 83586289 |          |
| 15 | ARS-BFGL-NGS-19936               | 0 | 83672295 |          |
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| 15 | BTB-00622293                     | 0 | 84003126 |          |
| 15 | BTB-00622352                     | 0 | 84080790 |          |
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| 15 | ARS-BFGL-NGS-89374               | 0 | 84172568 |          |
| 15 | BTB-00622434                     | 0 | 84206387 |          |
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| 15 | ARS-BFGL-NGS-35142               | 0 | 84315488 |          |
| 15 | ARS-BFGL-NGS-116675              | 0 | 84345077 |          |
| 15 | ARS-BFGL-NGS-74183               | 0 | 84399592 |          |
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| 15 | ARS-BFGL-NGS-113051              | 0 | 85088227 |          |
| 15 | ARS-BFGL-NGS-84184               | 0 | 85112130 |          |
| 15 | Hapmap35969-SCAFFOLD125600_2589  | 0 |          | 85149373 |
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| 15 | ARS-BFGL-NGS-675                 | 0 | 85257312 |          |
| 16 | ARS-BFGL-NGS-94950               |   | 116037   |          |
| 16 | ARS-BFGL-NGS-111665              | 0 | 161606   |          |
| 16 | BTB-00623459                     | 0 | 518808   |          |
| 16 | ARS-BFGL-NGS-17641               | 0 | 555718   |          |
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| 16 | ARS-BFGL-NGS-86075               | 0 | 866294   |          |
| 16 | BTA-38756-no-rs                  | 0 | 933282   |          |
| 16 | ARS-BFGL-NGS-18860               | 0 | 950232   |          |
| 16 | ARS-BFGL-NGS-60050               |   | 992902   |          |
| 16 | ARS-BFGL-NGS-108427              | 0 | 1013052  |          |

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| 16 | ARS-BFGL-NGS-33980               | 1060317 |         |
| 16 | BTB-00625759                     | 0       | 1081370 |
| 16 | BTB-00625769                     | 0       | 1104865 |
| 16 | ARS-BFGL-NGS-110989              | 0       | 1153992 |
| 16 | Hapmap52241-rs29014076           | 0       | 1199397 |
| 16 | Hapmap40972-BTA-38862            | 0       | 1235699 |
| 16 | ARS-BFGL-NGS-21417               | 0       | 1271058 |
| 16 | Hapmap35625-SCAFFOLD312099_6800  | 0       | 1296954 |
| 16 | ARS-BFGL-NGS-96258               | 0       | 1328125 |
| 16 | BTB-00623605                     | 0       | 1392895 |
| 16 | BTB-00623664                     | 0       | 1416809 |
| 16 | BTB-00623624                     | 0       | 1446721 |
| 16 | Hapmap51407-BTA-121049           | 0       | 1476731 |
| 16 | BTB-00623817                     | 0       | 1517987 |
| 16 | Hapmap47596-BTA-38603            | 0       | 1575155 |
| 16 | BTB-01324160                     | 0       | 1608132 |
| 16 | ARS-BFGL-NGS-97259               | 0       | 1646839 |
| 16 | ARS-BFGL-NGS-10856               | 0       | 1690484 |
| 16 | ARS-BFGL-NGS-21530               | 1711445 |         |
| 16 | ARS-BFGL-NGS-19292               | 0       | 1819324 |
| 16 | ARS-BFGL-NGS-96376               | 0       | 1854268 |
| 16 | ARS-BFGL-NGS-98017               | 0       | 1903490 |
| 16 | ARS-BFGL-NGS-32184               | 0       | 1972109 |
| 16 | ARS-BFGL-NGS-53886               | 0       | 2005666 |
| 16 | ARS-BFGL-NGS-37116               | 0       | 2050487 |
| 16 | Hapmap27200-BTA-154249           | 0       | 2098881 |
| 16 | ARS-BFGL-NGS-80118               | 0       | 2134973 |
| 16 | ARS-BFGL-NGS-119694              | 0       | 2177420 |
| 16 | ARS-BFGL-NGS-49834               | 0       | 2218244 |
| 16 | ARS-BFGL-NGS-45020               | 0       | 2246201 |
| 16 | ARS-BFGL-NGS-110956              | 0       | 2329194 |
| 16 | ARS-BFGL-NGS-116811              | 0       | 2350048 |
| 16 | ARS-BFGL-NGS-35483               | 0       | 2413191 |
| 16 | ARS-BFGL-NGS-34090               | 0       | 2450107 |
| 16 | ARS-BFGL-NGS-10342               | 0       | 2566577 |
| 16 | Hapmap30213-BTA-130388           | 0       | 2606972 |
| 16 | BTA-39079-no-rs                  | 0       | 2658661 |
| 16 | BTB-00626777                     | 0       | 2685332 |
| 16 | ARS-BFGL-NGS-38266               | 0       | 2728071 |
| 16 | BTB-00626834                     | 0       | 2775425 |
| 16 | ARS-BFGL-NGS-117331              | 0       | 2813940 |
| 16 | ARS-BFGL-NGS-22732               | 0       | 2841879 |
| 16 | ARS-BFGL-NGS-35175               | 0       | 2876485 |
| 16 | Hapmap46697-BTA-38171            | 0       | 2899256 |
| 16 | ARS-BFGL-NGS-23820               | 2933483 |         |
| 16 | Hapmap33837-BES10_Contig687_1379 | 0       | 2962360 |
| 16 | ARS-BFGL-NGS-10577               | 0       | 2997101 |
| 16 | ARS-BFGL-NGS-28226               | 0       | 3035722 |
| 16 | BTA-38204-no-rs                  | 0       | 3075859 |
| 16 | ARS-BFGL-NGS-26259               | 0       | 3099778 |
| 16 | ARS-BFGL-NGS-83148               | 0       | 3177193 |
| 16 | BTB-00624652                     | 0       | 3206597 |
| 16 | ARS-BFGL-NGS-112337              | 0       | 3262322 |
| 16 | ARS-BFGL-NGS-22265               | 0       | 3287341 |

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| 16 | BTB-00623849                    | 0 | 3429932 |         |
| 16 | Hapmap35728-SCAFFOLD265480_4249 | 0 |         | 3455689 |
| 16 | ARS-BFGL-NGS-21426              | 0 | 3476878 |         |
| 16 | ARS-BFGL-NGS-92786              | 0 | 3506494 |         |
| 16 | ARS-BFGL-NGS-110702             | 0 | 3589012 |         |
| 16 | ARS-BFGL-NGS-116717             | 0 | 3621602 |         |
| 16 | ARS-BFGL-NGS-58366              | 0 | 3658676 |         |
| 16 | BTB-01175421                    | 0 | 3694117 |         |
| 16 | ARS-BFGL-NGS-116429             | 0 | 3729692 |         |
| 16 | ARS-BFGL-BAC-19450              | 0 | 3762358 |         |
| 16 | BTA-40338-no-rs                 | 0 | 3805373 |         |
| 16 | BTB-00624191                    | 0 | 3932055 |         |
| 16 | BTB-00624204                    | 0 | 3956884 |         |
| 16 | BTA-38126-no-rs                 | 0 | 3987821 |         |
| 16 | ARS-BFGL-NGS-41905              | 0 | 4021893 |         |
| 16 | Hapmap30620-BTA-39320           | 0 | 4061366 |         |
| 16 | ARS-BFGL-NGS-117941             | 0 | 4095536 |         |
| 16 | ARS-BFGL-NGS-13135              | 0 | 4116390 |         |
| 16 | ARS-BFGL-NGS-75856              | 0 | 4138735 |         |
| 16 | ARS-BFGL-NGS-115905             | 0 | 4185662 |         |
| 16 | ARS-BFGL-NGS-35802              | 0 | 4233985 |         |
| 16 | Hapmap51221-BTA-38934           | 0 | 4282058 |         |
| 16 | ARS-BFGL-NGS-27118              | 0 | 4305200 |         |
| 16 | BTA-38966-no-rs                 | 0 | 4360793 |         |
| 16 | BTA-39308-no-rs                 | 0 | 4393652 |         |
| 16 | ARS-BFGL-NGS-13919              | 0 | 4466778 |         |
| 16 | ARS-BFGL-NGS-54780              |   | 4533875 |         |
| 16 | ARS-BFGL-NGS-32254              | 0 | 4567154 |         |
| 16 | ARS-BFGL-NGS-100487             | 0 | 4610955 |         |
| 16 | Hapmap38310-BTA-39213           | 0 | 4628745 |         |
| 16 | BTB-00627143                    | 0 | 4658348 |         |
| 16 | ARS-BFGL-NGS-110175             | 0 | 4683476 |         |
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| 16 | ARS-BFGL-NGS-90544              | 0 | 4882649 |         |
| 16 | ARS-BFGL-NGS-102252             | 0 | 4937547 |         |
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| 16 | ARS-BFGL-NGS-118841             | 0 | 5059463 |         |
| 16 | BTB-01501576                    | 0 | 5132901 |         |
| 16 | BTB-01501544                    | 0 | 5152670 |         |
| 16 | ARS-BFGL-NGS-104359             | 0 | 5253637 |         |
| 16 | BTB-01927506                    | 0 | 5447029 |         |
| 16 | BTA-95363-no-rs                 | 0 | 5940330 |         |
| 16 | BTB-01975868                    | 0 | 6146432 |         |
| 16 | ARS-BFGL-NGS-89740              | 0 | 6168426 |         |
| 16 | BTB-01200020                    | 0 | 6259815 |         |
| 16 | BTB-01200008                    | 0 | 6281209 |         |
| 16 | Hapmap52413-rs29016330          | 0 | 6364246 |         |
| 16 | ARS-BFGL-NGS-13802              | 0 | 6385951 |         |
| 16 | BTA-109095-no-rs                | 0 | 6452389 |         |
| 16 | Hapmap51387-BTA-109077          | 0 | 6494072 |         |
| 16 | BTB-02010595                    | 0 | 6523545 |         |
| 16 | BTB-01199899                    | 0 | 6557355 |         |
| 16 | Hapmap33722-BTA-155362          | 0 | 6619400 |         |
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| 16 | BTB-01803292                          | 0 | 7979922  |  |  |
| 16 | Hapmap23598-BTA-151049                | 0 | 8015937  |  |  |
| 16 | BTB-01234153                          | 0 | 8051706  |  |  |
| 16 | BTB-01511566                          | 0 | 8179652  |  |  |
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| 16 | BTB-01397819                          | 0 | 8317477  |  |  |
| 16 | BTB-01921305                          | 0 | 8354209  |  |  |
| 16 | BTA-26788-no-rs                       | 0 | 8414004  |  |  |
| 16 | BTA-88251-no-rs                       | 0 | 8486467  |  |  |
| 16 | BTB-01481993                          | 0 | 8582055  |  |  |
| 16 | BTB-01481964                          | 0 | 8648376  |  |  |
| 16 | Hapmap42744-BTA-96945                 | 0 | 8721448  |  |  |
| 16 | ARS-BFGL-NGS-38249                    | 0 | 8769236  |  |  |
| 16 | Hapmap24255-BTA-152893                | 0 | 8818725  |  |  |
| 16 | BTB-01541076                          | 0 | 8868238  |  |  |
| 16 | BTB-01540999                          | 0 | 8897534  |  |  |
| 16 | ARS-BFGL-NGS-111160                   | 0 | 9054132  |  |  |
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| 16 | BTB-01764868                          | 0 | 9123015  |  |  |
| 16 | Hapmap43197-BTA-18754                 | 0 | 9148784  |  |  |
| 16 | BTB-01292547                          | 0 | 9171622  |  |  |
| 16 | BTB-01292634                          | 0 | 9237728  |  |  |
| 16 | BTB-01292787                          | 0 | 9315748  |  |  |
| 16 | BTB-01292824                          | 0 | 9329952  |  |  |
| 16 | BTB-01292956                          | 0 | 9411533  |  |  |
| 16 | Hapmap43504-BTA-18760                 | 0 | 9440097  |  |  |
| 16 | BTB-01293141                          | 0 | 9464925  |  |  |
| 16 | BTB-02039155                          | 0 | 9487711  |  |  |
| 16 | ARS-BFGL-NGS-101053                   | 0 | 9541103  |  |  |
| 16 | BTB-01222074                          | 0 | 9569249  |  |  |
| 16 | BTA-113281-no-rs                      | 0 | 9620917  |  |  |
| 16 | BTB-01221760                          | 0 | 9640741  |  |  |
| 16 | Hapmap42433-BTA-113280                | 0 | 9670453  |  |  |
| 16 | Hapmap25010-BTA-113271                | 0 | 9729773  |  |  |
| 16 | BTB-01221982                          | 0 | 9778896  |  |  |
| 16 | ARS-BFGL-NGS-60844                    | 0 | 9804295  |  |  |
| 16 | Hapmap58503-rs29017623                | 0 | 9855098  |  |  |
| 16 | ARS-USMARC-Parent-DQ846693-rs29017621 | 0 | 9855276  |  |  |
| 16 | BTA-28089-no-rs                       | 0 | 9883787  |  |  |
| 16 | BTA-15874-no-rs                       | 0 | 9941492  |  |  |
| 16 | Hapmap33213-BTA-147206                | 0 | 9997507  |  |  |
| 16 | BTB-01569285                          | 0 | 10074643 |  |  |
| 16 | Hapmap50850-BTA-104683                | 0 | 10124860 |  |  |
| 16 | BTB-00628142                          | 0 | 10165819 |  |  |
| 16 | BTA-23687-no-rs                       | 0 | 10202454 |  |  |
| 16 | Hapmap54310-rs29012181                | 0 | 10308240 |  |  |
| 16 | Hapmap49982-BTA-39672                 | 0 | 10335068 |  |  |
| 16 | BTB-00628376                          | 0 | 10358410 |  |  |
| 16 | Hapmap43402-BTA-91283                 | 0 | 10389306 |  |  |
| 16 | BTA-24867-no-rs                       | 0 | 10425712 |  |  |
| 16 | Hapmap43811-BTA-22208                 | 0 | 10474014 |  |  |
| 16 | BTB-01452873                          | 0 | 10540543 |  |  |
| 16 | Hapmap43411-BTA-94581                 | 0 | 10623189 |  |  |
| 16 | ARS-BFGL-NGS-33977                    | 0 | 10654894 |  |  |



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| 16 | BTB-01452577           | 0 | 10703464 |
| 16 | Hapmap46736-BTA-94583  | 0 | 10740538 |
| 16 | BTB-01843506           | 0 | 10770968 |
| 16 | Hapmap26204-BTA-160802 | 0 | 10805391 |
| 16 | BTA-25001-no-rs        | 0 | 10859069 |
| 16 | BTB-01691098           | 0 | 10958964 |
| 16 | BTB-01691083           | 0 | 10989690 |
| 16 | BTA-39714-no-rs        | 0 | 11064988 |
| 16 | Hapmap33576-BTA-130425 | 0 | 11096101 |
| 16 | BTB-01533537           | 0 | 11166330 |
| 16 | BTA-101442-no-rs       | 0 | 11221231 |
| 16 | ARS-BFGL-NGS-26891     | 0 | 11243599 |
| 16 | Hapmap33497-BTA-151102 | 0 | 11285573 |
| 16 | Hapmap51359-BTA-96781  | 0 | 11391026 |
| 16 | Hapmap44170-BTA-96790  | 0 | 11457289 |
| 16 | ARS-BFGL-NGS-102072    | 0 | 11478730 |
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| 16 | BTB-01373273           | 0 | 11533792 |
| 16 | Hapmap30555-BTA-147274 | 0 | 11560133 |
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| 16 | BTB-01698088           | 0 | 11847129 |
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| 16 | BTA-117723-no-rs       | 0 | 11943700 |
| 16 | ARS-BFGL-NGS-80278     | 0 | 11999500 |
| 16 | ARS-BFGL-NGS-14292     | 0 | 12024166 |
| 16 | ARS-BFGL-NGS-116165    | 0 | 12046831 |
| 16 | BTA-17762-no-rs        | 0 | 12130589 |
| 16 | BTA-17755-no-rs        | 0 | 12216824 |
| 16 | ARS-BFGL-NGS-117319    | 0 | 12238539 |
| 16 | BTB-01838743           | 0 | 12365230 |
| 16 | BTB-01697831           | 0 | 12455270 |
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| 16 | Hapmap27986-BTA-39884  | 0 | 12694384 |
| 16 | Hapmap55901-rs29024589 | 0 | 12741497 |
| 16 | ARS-BFGL-NGS-109246    | 0 | 12896391 |
| 16 | BTA-39790-no-rs        | 0 | 12929226 |
| 16 | BTA-39853-no-rs        | 0 | 13022533 |
| 16 | BTA-39870-no-rs        | 0 | 13052594 |
| 16 | ARS-BFGL-NGS-82646     | 0 | 13102367 |
| 16 | ARS-BFGL-NGS-14375     | 0 | 13215446 |
| 16 | ARS-BFGL-NGS-14865     | 0 | 13358683 |
| 16 | Hapmap60109-rs29016808 | 0 | 13436882 |
| 16 | ARS-BFGL-NGS-22382     | 0 | 13489620 |
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| 16 | ARS-BFGL-NGS-24104     | 0 | 13656858 |
| 16 | ARS-BFGL-BAC-19454     | 0 | 13695211 |
| 16 | ARS-BFGL-NGS-31483     | 0 | 13733378 |
| 16 | Hapmap59731-rs29015814 | 0 | 13796398 |
| 16 | BTA-01514-no-rs        | 0 | 13821130 |
| 16 | Hapmap52419-rs29024834 | 0 | 13944653 |
| 16 | BTA-88772-no-rs        | 0 | 13981764 |

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| 16 | ARS-BFGL-NGS-104078    | 0        | 14027394 |
| 16 | Hapmap60133-rs29023347 | 0        | 14071161 |
| 16 | ARS-BFGL-NGS-43032     | 0        | 14121257 |
| 16 | Hapmap43132-BTA-106451 | 0        | 14182644 |
| 16 | ARS-BFGL-NGS-108757    | 0        | 14214730 |
| 16 | BTA-106455-no-rs       | 0        | 14243263 |
| 16 | Hapmap57676-rs29015853 | 0        | 14272025 |
| 16 | Hapmap47848-BTA-117814 | 0        | 14327718 |
| 16 | ARS-BFGL-NGS-116657    | 0        | 14448472 |
| 16 | BTA-114646-no-rs       | 0        | 14500474 |
| 16 | Hapmap42351-BTA-88898  | 0        | 14684450 |
| 16 | BTA-88918-no-rs        | 0        | 14934067 |
| 16 | ARS-BFGL-NGS-42903     | 0        | 15018113 |
| 16 | Hapmap49361-BTA-88922  | 0        | 15045297 |
| 16 | ARS-BFGL-NGS-104830    | 0        | 15154212 |
| 16 | ARS-BFGL-NGS-17530     | 15247073 |          |
| 16 | ARS-BFGL-BAC-19449     | 0        | 15362423 |
| 16 | ARS-BFGL-NGS-111893    | 0        | 15416252 |
| 16 | BTA-40230-no-rs        | 0        | 15499049 |
| 16 | Hapmap57947-rs29016953 | 0        | 15631984 |
| 16 | BTA-40259-no-rs        | 0        | 15689319 |
| 16 | Hapmap51725-BTA-40263  | 0        | 15710360 |
| 16 | Hapmap51949-BTA-40269  | 0        | 15840762 |
| 16 | Hapmap32889-BTA-40273  | 0        | 15898820 |
| 16 | Hapmap41122-BTA-03572  | 0        | 15922964 |
| 16 | Hapmap49984-BTA-40288  | 0        | 15984208 |
| 16 | Hapmap50822-BTA-91801  | 0        | 16043178 |
| 16 | ARS-BFGL-BAC-20634     | 0        | 16117756 |
| 16 | BTA-40290-no-rs        | 0        | 16152096 |
| 16 | BTA-91792-no-rs        | 0        | 16244657 |
| 16 | ARS-BFGL-BAC-20631     | 0        | 16270589 |
| 16 | Hapmap54784-rs29010995 | 0        | 16375436 |
| 16 | BTA-122806-no-rs       | 0        | 16453639 |
| 16 | Hapmap42889-BTA-27057  | 0        | 16475491 |
| 16 | ARS-BFGL-NGS-53541     | 0        | 16498538 |
| 16 | BTA-27058-no-rs        | 0        | 16551914 |
| 16 | Hapmap55320-rs29013537 | 0        | 16577116 |
| 16 | Hapmap39617-BTA-110614 | 0        | 16614135 |
| 16 | ARS-BFGL-NGS-16527     | 0        | 16648083 |
| 16 | ARS-BFGL-BAC-19461     | 0        | 16957005 |
| 16 | Hapmap42539-BTA-40292  | 0        | 17070345 |
| 16 | Hapmap32797-BTA-130433 | 0        | 17120031 |
| 16 | BTA-86895-no-rs        | 0        | 17283997 |
| 16 | Hapmap51075-BTA-86900  | 0        | 17304547 |
| 16 | ARS-BFGL-BAC-19459     | 0        | 17540941 |
| 16 | BTA-108577-no-rs       | 0        | 17684165 |
| 16 | Hapmap39084-BTA-19524  | 0        | 17718169 |
| 16 | Hapmap33682-BTA-22091  | 0        | 17904939 |
| 16 | Hapmap57781-rs29013849 | 0        | 17931777 |
| 16 | ARS-BFGL-NGS-38270     | 17993755 |          |
| 16 | ARS-BFGL-NGS-59450     | 18026084 |          |
| 16 | ARS-BFGL-NGS-19779     | 0        | 18059649 |
| 16 | BTA-40307-no-rs        | 0        | 18152356 |
| 16 | BTA-40296-no-rs        | 0        | 18276261 |

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| 16 | ARS-BFGL-NGS-27788     | 0        | 18401696 |
| 16 | Hapmap50501-BTA-91866  | 0        | 18494934 |
| 16 | Hapmap57309-rs29014084 | 0        | 18528552 |
| 16 | ARS-BFGL-NGS-41400     | 0        | 18625014 |
| 16 | Hapmap27983-BTA-163473 | 0        | 18646636 |
| 16 | ARS-BFGL-NGS-112624    | 0        | 19127790 |
| 16 | ARS-BFGL-NGS-111288    | 0        | 19150304 |
| 16 | ARS-BFGL-NGS-68760     | 19232257 |          |
| 16 | ARS-BFGL-NGS-114049    | 0        | 19313882 |
| 16 | ARS-BFGL-NGS-41932     | 0        | 19340691 |
| 16 | Hapmap48269-BTA-26855  | 0        | 19376488 |
| 16 | Hapmap32884-BTA-26862  | 0        | 19438115 |
| 16 | ARS-BFGL-NGS-81139     | 0        | 19483245 |
| 16 | Hapmap50635-BTA-26852  | 0        | 19516867 |
| 16 | ARS-BFGL-NGS-108639    | 0        | 19576730 |
| 16 | Hapmap42200-BTA-40314  | 0        | 19712926 |
| 16 | ARS-BFGL-NGS-33988     | 0        | 19828569 |
| 16 | Hapmap40729-BTA-40319  | 0        | 19882683 |
| 16 | Hapmap60631-rs29014612 | 0        | 20056325 |
| 16 | BTA-40330-no-rs        | 0        | 20077937 |
| 16 | ARS-BFGL-NGS-60500     | 0        | 20099741 |
| 16 | ARS-BFGL-NGS-108799    | 0        | 20122425 |
| 16 | BTA-40310-no-rs        | 0        | 20182187 |
| 16 | ARS-BFGL-NGS-55834     | 0        | 20232360 |
| 16 | ARS-BFGL-NGS-23826     | 0        | 20254692 |
| 16 | Hapmap39562-BTA-40351  | 0        | 20358990 |
| 16 | BTA-113850-no-rs       | 0        | 20449555 |
| 16 | UA-IFASA-4860          | 0        | 20472340 |
| 16 | Hapmap52580-rs29010915 | 0        | 20521527 |
| 16 | ARS-BFGL-BAC-48190     | 20663521 |          |
| 16 | ARS-BFGL-NGS-69487     | 0        | 20704034 |
| 16 | ARS-BFGL-NGS-35246     | 0        | 20731806 |
| 16 | BTB-00629124           | 0        | 20816100 |
| 16 | ARS-BFGL-NGS-11805     | 0        | 20868185 |
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| 16 | BTA-91828-no-rs        | 0        | 20962779 |
| 16 | BTB-01422500           | 0        | 20985573 |
| 16 | Hapmap30015-BTA-149333 | 0        | 21019333 |
| 16 | BTB-01422437           | 0        | 21055497 |
| 16 | ARS-BFGL-NGS-26656     | 0        | 21092478 |
| 16 | Hapmap49377-BTA-91839  | 0        | 21134492 |
| 16 | Hapmap60688-rs29014090 | 0        | 21155402 |
| 16 | Hapmap58079-rs29010441 | 0        | 21212680 |
| 16 | ARS-BFGL-NGS-93130     | 0        | 21253270 |
| 16 | BTB-01475486           | 0        | 21289097 |
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| 16 | ARS-BFGL-NGS-54180     | 21529188 |          |
| 16 | ARS-BFGL-NGS-40210     | 21551688 |          |
| 16 | Hapmap52429-rs29026626 | 0        | 21613370 |

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| 16 | Hapmap60999-rs29016338          | 0        | 21652188 |          |
| 16 | BTB-00629775                    | 0        | 21708659 |          |
| 16 | ARS-BFGL-NGS-15281              | 0        | 21741980 |          |
| 16 | BTB-00629893                    | 0        | 21772991 |          |
| 16 | ARS-BFGL-NGS-55380              | 0        | 21821449 |          |
| 16 | ARS-BFGL-NGS-51106              | 0        | 21979583 |          |
| 16 | ARS-BFGL-BAC-21880              | 22014868 |          |          |
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| 16 | ARS-BFGL-NGS-89535              | 0        | 22179895 |          |
| 16 | BTA-40390-no-rs                 | 0        | 22272329 |          |
| 16 | ARS-BFGL-NGS-13508              | 0        | 22406467 |          |
| 16 | Hapmap22868-BTA-148703          | 0        | 22547469 |          |
| 16 | ARS-BFGL-NGS-112615             | 0        | 22765317 |          |
| 16 | ARS-BFGL-NGS-55935              | 0        | 22833343 |          |
| 16 | Hapmap27217-BTA-159751          | 0        | 22866281 |          |
| 16 | ARS-BFGL-NGS-17429              | 0        | 22942419 |          |
| 16 | Hapmap27783-BTA-161274          | 0        | 22980284 |          |
| 16 | Hapmap30335-BTA-26386           | 0        | 23003428 |          |
| 16 | Hapmap42077-BTA-114779          | 0        | 23037476 |          |
| 16 | Hapmap54562-rs29009834          | 0        | 23108285 |          |
| 16 | Hapmap40616-BTA-94962           | 0        | 23136618 |          |
| 16 | ARS-BFGL-NGS-118157             | 0        | 23162818 |          |
| 16 | ARS-BFGL-NGS-76705              | 0        | 23305801 |          |
| 16 | ARS-BFGL-NGS-82390              | 0        | 23328862 |          |
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| 16 | Hapmap36613-SCAFFOLD286685_4525 | 0        |          | 23703210 |
| 16 | ARS-BFGL-NGS-33165              | 0        | 23793827 |          |
| 16 | ARS-BFGL-BAC-20057              | 0        | 23830920 |          |
| 16 | ARS-BFGL-BAC-20058              | 0        | 23957117 |          |
| 16 | ARS-BFGL-NGS-90753              | 0        | 23985319 |          |
| 16 | ARS-BFGL-NGS-42691              | 0        | 24014992 |          |
| 16 | ARS-BFGL-BAC-20061              | 0        | 24084268 |          |
| 16 | ARS-BFGL-NGS-21301              | 0        | 24108481 |          |
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| 16 | UA-IFASA-2211                   | 0        | 24345227 |          |
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| 16 | Hapmap49979-BTA-38153           | 0        | 24613337 |          |
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| 16 | Hapmap54969-rs29014904          | 0        | 24874723 |          |
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| 16 | Hapmap40673-BTA-121051          | 0        | 24926022 |          |
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| 16 | ARS-BFGL-NGS-87462              | 0        | 25000153 |          |
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| 16 | ARS-BFGL-NGS-117936             | 0        | 25223828 |          |
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| 16 | ARS-BFGL-NGS-13463     | 0 25748026 |
| 16 | BTA-38177-no-rs        | 0 25915302 |
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| 16 | BTA-88802-no-rs        | 0 26613598 |
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| 16 | BTA-38207-no-rs        | 0 28319407 |
| 16 | ARS-BFGL-NGS-25159     | 0 28384914 |
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| 16 | Hapmap38078-BTA-61284  | 0 28495969 |
| 16 | ARS-BFGL-NGS-104195    | 0 28557616 |
| 16 | ARS-BFGL-NGS-116390    | 0 28586798 |
| 16 | ARS-BFGL-NGS-109990    | 0 28622486 |
| 16 | ARS-BFGL-NGS-54489     | 0 28644553 |
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| 16 | BTA-61271-no-rs        | 0 28752923 |

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| 16 | BTA-90588-no-rs        | 0 | 28968607 |
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| 16 | Hapmap42196-BTA-38351  | 0 | 29600490 |
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| 16 | ARS-BFGL-NGS-112449    | 0 | 29661958 |
| 16 | ARS-BFGL-NGS-114862    | 0 | 29689166 |
| 16 | Hapmap44646-BTA-38361  | 0 | 29768264 |
| 16 | Hapmap47933-BTA-38363  | 0 | 29812601 |
| 16 | BTA-23170-no-rs        | 0 | 29927927 |
| 16 | ARS-BFGL-BAC-33363     | 0 | 30042285 |
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| 16 | ARS-BFGL-NGS-18559     | 0 | 30165932 |
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| 16 | BTB-01274700           | 0 | 30910755 |
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| 16 | BTA-16289-no-rs        | 0 | 30962706 |
| 16 | Hapmap29538-BTA-159421 | 0 | 31011092 |
| 16 | Hapmap38203-BTA-16294  | 0 | 31093233 |
| 16 | BTB-01275036           | 0 | 31127192 |
| 16 | Hapmap50900-BTA-16300  | 0 | 31162715 |
| 16 | BTB-01634378           | 0 | 31185282 |
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| 16 | ARS-BFGL-NGS-41039     | 0 | 31316568 |
| 16 | BTB-00633720           | 0 | 31338462 |
| 16 | Hapmap42197-BTA-38529  | 0 | 31382509 |
| 16 | BTB-01937286           | 0 | 31418665 |
| 16 | Hapmap39181-BTA-122018 | 0 | 31462716 |
| 16 | ARS-BFGL-NGS-37475     | 0 | 31499868 |

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| 16 | BTA-38521-no-rs                 | 0 | 31605270 |  |
| 16 | BTB-00633561                    | 0 | 31630574 |  |
| 16 | BTB-00633646                    | 0 | 31654996 |  |
| 16 | ARS-BFGL-NGS-65660              |   | 31693254 |  |
| 16 | Hapmap51589-BTA-38571           | 0 | 31764618 |  |
| 16 | BTB-00634578                    | 0 | 31787385 |  |
| 16 | BTB-00634528                    | 0 | 31813761 |  |
| 16 | BTB-00634515                    | 0 | 31866092 |  |
| 16 | ARS-BFGL-NGS-115293             | 0 | 31933362 |  |
| 16 | BTB-00634483                    | 0 | 31970204 |  |
| 16 | ARS-BFGL-NGS-30325              | 0 | 32019139 |  |
| 16 | ARS-BFGL-NGS-86384              | 0 | 32063762 |  |
| 16 | ARS-BFGL-NGS-114448             | 0 | 32095335 |  |
| 16 | BTB-01226542                    | 0 | 32169733 |  |
| 16 | Hapmap49866-BTA-114054          | 0 | 32212983 |  |
| 16 | Hapmap44200-BTA-114052          | 0 | 32257121 |  |
| 16 | ARS-BFGL-NGS-19955              | 0 | 32341971 |  |
| 16 | ARS-BFGL-NGS-42365              | 0 | 32373410 |  |
| 16 | BTB-01226223                    | 0 | 32458840 |  |
| 16 | ARS-BFGL-NGS-116360             | 0 | 32517229 |  |
| 16 | BTB-01226007                    | 0 | 32591482 |  |
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| 16 | ARS-BFGL-NGS-21121              | 0 | 32837610 |  |
| 16 | Hapmap58643-rs29010413          | 0 | 32864171 |  |
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| 16 | Hapmap38953-BTA-38562           | 0 | 32964319 |  |
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| 16 | BTB-00634312                    | 0 | 33121540 |  |
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| 16 | Hapmap50594-BTA-121054          | 0 | 33231242 |  |
| 16 | ARS-BFGL-NGS-119095             | 0 | 33293321 |  |
| 16 | Hapmap50951-BTA-38406           | 0 | 33329767 |  |
| 16 | ARS-BFGL-NGS-114479             | 0 | 33402551 |  |
| 16 | Hapmap49902-BTA-18923           | 0 | 33433800 |  |
| 16 | Hapmap25807-BTA-130598          | 0 | 33504380 |  |
| 16 | ARS-BFGL-NGS-73658              | 0 | 33564387 |  |
| 16 | UA-IFASA-8132                   | 0 | 33607353 |  |
| 16 | Hapmap40684-BTA-16356           | 0 | 33641966 |  |
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| 16 | Hapmap47277-BTA-38408           | 0 | 33974438 |  |
| 16 | Hapmap41467-BTA-18750           | 0 | 34021608 |  |
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| 16 | BTB-00632811                    | 0 | 34181806 |          |
| 16 | BTB-00632825                    | 0 | 34211459 |          |
| 16 | Hapmap25523-BTA-130593          | 0 | 34236303 |          |
| 16 | BTB-00632953                    | 0 | 34263057 |          |
| 16 | Hapmap60111-rs29017285          | 0 | 34295245 |          |
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| 16 | ARS-BFGL-NGS-47100              |   | 34346915 |          |
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| 16 | ARS-BFGL-BAC-33387              | 0 | 34482706 |          |
| 16 | Hapmap54632-rs29021962          | 0 | 34519715 |          |
| 16 | BTB-00633305                    | 0 | 34560428 |          |
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| 16 | Hapmap35299-BES10_Contig233_397 | 0 |          | 34749032 |
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| 16 | BTB-00636189                    | 0 | 34820781 |          |
| 16 | BTB-00636172                    | 0 | 34836639 |          |
| 16 | BTB-00636004                    | 0 | 34911228 |          |
| 16 | Hapmap42533-BTA-38667           | 0 | 34938163 |          |
| 16 | Hapmap34674-BES4_Contig468_902  | 0 |          | 34964148 |
| 16 | BTB-00635702                    | 0 | 34994367 |          |
| 16 | Hapmap47935-BTA-38630           | 0 | 35082302 |          |
| 16 | Hapmap50308-BTA-29728           | 0 | 35112210 |          |
| 16 | BTB-00638318                    | 0 | 35201735 |          |
| 16 | ARS-BFGL-NGS-100932             | 0 | 35230105 |          |
| 16 | BTB-00638221                    | 0 | 35272426 |          |
| 16 | Hapmap46698-BTA-38760           | 0 | 35317388 |          |
| 16 | BTB-00638058                    | 0 | 35401543 |          |
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| 16 | ARS-BFGL-NGS-67302              | 0 | 35482273 |          |
| 16 | ARS-BFGL-NGS-66111              | 0 | 35548422 |          |
| 16 | BTB-01738204                    | 0 | 35620947 |          |
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| 16 | Hapmap45766-BTA-38696           | 0 | 35896376 |          |
| 16 | BTA-38698-no-rs                 | 0 | 35943279 |          |
| 16 | BTA-38712-no-rs                 | 0 | 36017802 |          |
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| 16 | Hapmap50346-BTA-38316           | 0 | 36197393 |          |
| 16 | Hapmap38223-BTA-38319           | 0 | 36263412 |          |
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| 16 | BTB-02038784                    | 0 | 36565106 |          |
| 16 | Hapmap42440-BTA-115489          | 0 | 36605953 |          |
| 16 | BTB-01234565                    | 0 | 36630447 |          |



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| 16 | BTA-38550-no-rs        | 0 | 36657156 |
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| 16 | ARS-BFGL-NGS-38023     | 0 | 36768083 |
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| 16 | BTB-00637815           | 0 | 36907824 |
| 16 | BTB-00637811           | 0 | 36931054 |
| 16 | BTA-38746-no-rs        | 0 | 37003329 |
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| 16 | BTA-38719-no-rs        | 0 | 37229378 |
| 16 | ARS-BFGL-NGS-97475     | 0 | 37249521 |
| 16 | Hapmap42928-BTA-38715  | 0 | 37278839 |
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| 16 | Hapmap59208-rs29014503 | 0 | 37667552 |
| 16 | BTA-08063-rs29021630   | 0 | 37710632 |
| 16 | BTB-00635473           | 0 | 37748202 |
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| 16 | BTB-00634141           | 0 | 38182476 |
| 16 | BTB-00638525           | 0 | 38221607 |
| 16 | BTA-38771-no-rs        | 0 | 38265003 |
| 16 | Hapmap30788-BTA-130706 | 0 | 38292609 |
| 16 | ARS-BFGL-NGS-118830    | 0 | 38325971 |
| 16 | ARS-BFGL-NGS-61064     | 0 | 38352595 |
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| 16 | Hapmap50852-BTA-104990 | 0 | 39310197 |
| 16 | BTB-00640200           | 0 | 39515763 |
| 16 | Hapmap47598-BTA-38857  | 0 | 39553476 |
| 16 | BTB-00639647           | 0 | 39585031 |
| 16 | Hapmap54479-rs29024702 | 0 | 39639717 |
| 16 | BTA-38825-no-rs        | 0 | 39661540 |
| 16 | BTB-00639794           | 0 | 39846669 |
| 16 | Hapmap24899-BTA-38827  | 0 | 39898049 |
| 16 | Hapmap54735-ss46526095 | 0 | 40001986 |
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| 16 | Hapmap44336-BTA-108924 | 0 | 40161072 |
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| 16 | BTA-100038-no-rs       | 0 | 40223873 |
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| 16 | BTB-00022322           | 0 | 40282077 |
| 16 | BTB-01549587           | 0 | 40309659 |
| 16 | BTB-00640216           | 0 | 40371695 |
| 16 | BTA-38861-no-rs        | 0 | 40396751 |
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| 16 | Hapmap33354-BTA-130755 | 0 | 40644254 |
| 16 | ARS-BFGL-NGS-22512     | 0 | 40814491 |
| 16 | ARS-BFGL-NGS-115743    | 0 | 40846801 |
| 16 | BTA-38871-no-rs        | 0 | 40880683 |
| 16 | BTA-38873-no-rs        | 0 | 40917399 |
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| 16 | Hapmap49592-BTA-38891  | 0 | 41016073 |
| 16 | ARS-BFGL-NGS-102860    | 0 | 41078470 |
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| 16 | BTB-01930898           | 0 | 42468099 |
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| 16 | ARS-BFGL-NGS-36317     | 0 | 42686848 |
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| 16 | BTB-00641920           | 0 | 45111648 |
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| 16 | Hapmap31376-BTA-123002 | 0 | 45793143 |
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| 16 | ARS-BFGL-NGS-114924    | 0 | 46093561 |

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| 16 | ARS-BFGL-NGS-78700     | 0        | 46625869 |
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| 16 | ARS-BFGL-NGS-110195    | 0        | 47332398 |
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| 16 | ARS-BFGL-NGS-78134     | 0        | 47528480 |
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| 16 | ARS-BFGL-NGS-13555     | 0        | 48936190 |
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| 16 | ARS-BFGL-NGS-76897     | 0        | 49568812 |
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| 16 | ARS-BFGL-NGS-91503     | 0        | 49867758 |
| 16 | BTB-01675591           | 0        | 49910530 |
| 16 | ARS-BFGL-NGS-54860     | 0        | 49946542 |
| 16 | ARS-BFGL-NGS-15747     | 0        | 49984163 |
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| 16 | ARS-BFGL-NGS-14189     | 0        | 51127861 |
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| 16 | ARS-BFGL-NGS-34195     | 0        | 51221289 |
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| 16 | ARS-BFGL-NGS-42688     | 0        | 51463842 |
| 16 | ARS-BFGL-NGS-66252     | 0        | 51486543 |
| 16 | ARS-BFGL-NGS-32604     | 0        | 51520569 |
| 16 | ARS-BFGL-NGS-62674     | 0        | 51595210 |
| 16 | ARS-BFGL-NGS-39382     | 0        | 51621826 |
| 16 | ARS-BFGL-NGS-27603     | 0        | 51661530 |
| 16 | ARS-BFGL-NGS-30451     | 0        | 51690811 |
| 16 | Hapmap39327-BTA-39134  | 0        | 51738339 |
| 16 | ARS-BFGL-NGS-40560     | 51769893 |          |
| 16 | ARS-BFGL-NGS-74373     | 0        | 51811400 |
| 16 | ARS-BFGL-NGS-17391     | 0        | 51833247 |
| 16 | UA-IFASA-9207          | 0        | 51914451 |
| 16 | ARS-BFGL-NGS-41367     | 0        | 51942323 |
| 16 | ARS-BFGL-NGS-87752     | 0        | 51966126 |
| 16 | ARS-BFGL-NGS-18487     | 0        | 52095950 |
| 16 | BTB-00646135           | 0        | 52141211 |
| 16 | BTB-00646146           | 0        | 52168565 |
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| 16 | ARS-BFGL-NGS-20017     | 0        | 52305937 |
| 16 | ARS-BFGL-NGS-105721    | 0        | 52379029 |
| 16 | ARS-BFGL-NGS-27516     | 0        | 52510377 |
| 16 | Hapmap24542-BTA-130964 | 0        | 52535473 |
| 16 | ARS-BFGL-NGS-13460     | 52695137 |          |
| 16 | ARS-BFGL-NGS-116396    | 0        | 52786297 |
| 16 | BTB-00649201           | 0        | 52822104 |
| 16 | ARS-BFGL-NGS-52990     | 52877037 |          |
| 16 | BTA-39310-no-rs        | 0        | 52927589 |
| 16 | ARS-BFGL-NGS-78363     | 0        | 52975189 |
| 16 | UA-IFASA-8741          | 0        | 53070045 |
| 16 | ARS-BFGL-NGS-112066    | 0        | 53097936 |
| 16 | ARS-BFGL-NGS-29020     | 0        | 53199787 |
| 16 | ARS-BFGL-NGS-40099     | 0        | 53279306 |
| 16 | BTA-39204-no-rs        | 0        | 53330998 |
| 16 | ARS-BFGL-NGS-81746     | 0        | 53354164 |
| 16 | BTB-00646727           | 0        | 53378432 |
| 16 | ARS-BFGL-NGS-15187     | 0        | 53399092 |
| 16 | ARS-BFGL-NGS-117470    | 0        | 53434159 |
| 16 | Hapmap40727-BTA-39195  | 0        | 53471014 |
| 16 | ARS-BFGL-NGS-33446     | 0        | 53504199 |
| 16 | ARS-BFGL-NGS-43477     | 0        | 53554791 |
| 16 | ARS-BFGL-NGS-108133    | 0        | 53578384 |
| 16 | Hapmap40529-BTA-39188  | 0        | 53606090 |
| 16 | ARS-BFGL-NGS-18068     | 0        | 53670653 |
| 16 | ARS-BFGL-NGS-63175     | 0        | 53755847 |
| 16 | BTA-39180-no-rs        | 0        | 53777067 |
| 16 | ARS-BFGL-NGS-89126     | 0        | 53803470 |
| 16 | ARS-BFGL-NGS-40240     | 0        | 53889556 |

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| 16 | ARS-BFGL-NGS-22730     | 0        | 53922176 |
| 16 | ARS-BFGL-NGS-43246     | 0        | 53953891 |
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| 16 | ARS-BFGL-NGS-111268    | 0        | 54046062 |
| 16 | ARS-BFGL-NGS-40230     | 54134054 |          |
| 16 | ARS-BFGL-NGS-16757     | 0        | 54156449 |
| 16 | BTB-00646000           | 0        | 54187160 |
| 16 | ARS-BFGL-NGS-17987     | 0        | 54220215 |
| 16 | ARS-BFGL-NGS-117525    | 0        | 54271046 |
| 16 | ARS-BFGL-NGS-32469     | 0        | 54347701 |
| 16 | ARS-BFGL-NGS-39050     | 0        | 54368248 |
| 16 | ARS-BFGL-NGS-45648     | 0        | 54536490 |
| 16 | BTB-00645876           | 0        | 54561488 |
| 16 | Hapmap25808-BTA-130944 | 0        | 54586652 |
| 16 | BTB-01825296           | 0        | 54634026 |
| 16 | BTA-39215-no-rs        | 0        | 54664681 |
| 16 | ARS-BFGL-NGS-29043     | 0        | 54691747 |
| 16 | BTB-00647119           | 0        | 54775716 |
| 16 | BTB-00647391           | 0        | 54814128 |
| 16 | ARS-BFGL-NGS-84228     | 0        | 54846459 |
| 16 | ARS-BFGL-NGS-53540     | 0        | 54853614 |
| 16 | Hapmap44067-BTA-39236  | 0        | 54886491 |
| 16 | ARS-BFGL-NGS-97162     | 0        | 54926086 |
| 16 | Hapmap30009-BTA-147535 | 0        | 55010419 |
| 16 | ARS-BFGL-NGS-117449    | 0        | 55064448 |
| 16 | ARS-BFGL-NGS-28330     | 55085247 |          |
| 16 | BTB-00648223           | 0        | 55170304 |
| 16 | Hapmap39827-BTA-39283  | 0        | 55209290 |
| 16 | ARS-BFGL-NGS-93176     | 0        | 55239686 |
| 16 | BTA-96884-no-rs        | 0        | 55261770 |
| 16 | UA-IFASA-2310          | 0        | 55326091 |
| 16 | Hapmap26379-BTA-130999 | 0        | 55397555 |
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| 16 | BTB-01780804           | 0        | 55555392 |
| 16 | ARS-BFGL-NGS-27776     | 0        | 55576782 |
| 16 | ARS-BFGL-NGS-12119     | 0        | 55597650 |
| 16 | ARS-BFGL-NGS-103170    | 0        | 55619955 |
| 16 | ARS-BFGL-NGS-112035    | 0        | 55643975 |
| 16 | ARS-BFGL-NGS-114245    | 0        | 55689680 |
| 16 | BTB-01573379           | 0        | 55784564 |
| 16 | BTB-01940243           | 0        | 55909374 |
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| 16 | BTB-00649247           | 0        | 56326065 |
| 16 | BTB-00649316           | 0        | 56340812 |
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| 16 | ARS-BFGL-NGS-62509     | 0        | 56448934 |
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| 16 | BTB-01991559           | 0        | 56601275 |
| 16 | ARS-BFGL-NGS-40776     | 0        | 56627224 |
| 16 | BTA-53124-no-rs        | 0        | 56668701 |
| 16 | UA-IFASA-4552          | 0        | 56715642 |

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| 16 | BTB-00827920                     | 0 | 56786826 |          |
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| 16 | BTB-00828197                     | 0 | 56952563 |          |
| 16 | BTB-01593521                     | 0 | 56996623 |          |
| 16 | BTB-01593511                     | 0 | 57032020 |          |
| 16 | ARS-BFGL-NGS-48960               |   | 57114068 |          |
| 16 | BTA-39561-no-rs                  | 0 | 57197935 |          |
| 16 | Hapmap48316-BTA-39565            | 0 | 57239720 |          |
| 16 | Hapmap43258-BTA-39566            | 0 | 57264184 |          |
| 16 | Hapmap27387-BTA-131087           | 0 | 57345536 |          |
| 16 | ARS-BFGL-BAC-33390               | 0 | 57380464 |          |
| 16 | ARS-BFGL-NGS-19570               | 0 | 57399441 |          |
| 16 | Hapmap51223-BTA-39572            | 0 | 57419757 |          |
| 16 | BTB-00651594                     | 0 | 57469137 |          |
| 16 | BTB-00651646                     | 0 | 57491373 |          |
| 16 | ARS-BFGL-NGS-24802               | 0 | 57521967 |          |
| 16 | BTB-00651958                     | 0 | 57545177 |          |
| 16 | ARS-BFGL-NGS-99942               | 0 | 57567317 |          |
| 16 | Hapmap41858-BTA-39601            | 0 | 57644356 |          |
| 16 | ARS-BFGL-NGS-13155               | 0 | 57675039 |          |
| 16 | UA-IFASA-9599                    | 0 | 57714658 |          |
| 16 | BTB-00652464                     | 0 | 57788263 |          |
| 16 | BTA-39611-no-rs                  | 0 | 57888452 |          |
| 16 | ARS-BFGL-NGS-34518               | 0 | 57954537 |          |
| 16 | Hapmap39561-BTA-39613            | 0 | 57991270 |          |
| 16 | BTB-00652713                     | 0 | 58033251 |          |
| 16 | ARS-BFGL-NGS-111339              | 0 | 58082382 |          |
| 16 | ARS-BFGL-NGS-18564               | 0 | 58217929 |          |
| 16 | Hapmap36690-SCAFFOLD215098_29103 | 0 |          | 58239620 |
| 16 | Hapmap29809-BTA-131065           | 0 | 58290248 |          |
| 16 | BTB-00650393                     | 0 | 58324427 |          |
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| 16 | ARS-BFGL-NGS-11534               | 0 | 58405786 |          |
| 16 | ARS-BFGL-NGS-104311              | 0 | 58431049 |          |
| 16 | ARS-BFGL-NGS-111970              | 0 | 58471410 |          |
| 16 | ARS-BFGL-NGS-108847              | 0 | 58500249 |          |
| 16 | ARS-BFGL-NGS-11520               |   | 58543206 |          |
| 16 | ARS-BFGL-NGS-113482              | 0 | 58577681 |          |
| 16 | ARS-BFGL-NGS-20426               | 0 | 58604549 |          |
| 16 | ARS-BFGL-BAC-34694               | 0 | 58650800 |          |
| 16 | Hapmap44069-BTA-39354            | 0 | 58677757 |          |
| 16 | ARS-BFGL-NGS-16390               |   | 58707106 |          |
| 16 | ARS-BFGL-NGS-116297              | 0 | 58855917 |          |
| 16 | Hapmap49101-BTA-26374            | 0 | 58941100 |          |
| 16 | BTB-01344067                     | 0 | 58997236 |          |
| 16 | BTB-01344103                     | 0 | 59021630 |          |
| 16 | Hapmap36492-SCAFFOLD70736_3033   | 0 |          | 59052006 |
| 16 | Hapmap39268-BTA-38033            | 0 | 59101134 |          |
| 16 | ARS-BFGL-NGS-70636               | 0 | 59127147 |          |
| 16 | BTB-00583289                     | 0 | 59154339 |          |
| 16 | Hapmap41703-BTA-97902            | 0 | 59188330 |          |
| 16 | ARS-BFGL-NGS-24236               | 0 | 59271825 |          |



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| 16 | BTB-01146411           | 0        | 59297710 |
| 16 | Hapmap27879-BTA-151451 | 0        | 59327719 |
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| 16 | ARS-BFGL-NGS-67433     | 0        | 59457283 |
| 16 | BTB-00648059           | 0        | 59478763 |
| 16 | BTB-00648053           | 0        | 59500854 |
| 16 | ARS-BFGL-NGS-31474     | 0        | 59522476 |
| 16 | ARS-BFGL-NGS-90598     | 0        | 59558745 |
| 16 | ARS-BFGL-NGS-18710     | 0        | 59613869 |
| 16 | BTB-00647886           | 0        | 59638184 |
| 16 | ARS-BFGL-NGS-43143     | 0        | 59661760 |
| 16 | BTA-39264-no-rs        | 0        | 59704222 |
| 16 | BTA-39256-no-rs        | 0        | 59707948 |
| 16 | BTB-00647613           | 0        | 59741713 |
| 16 | ARS-BFGL-NGS-44054     | 0        | 59778522 |
| 16 | ARS-BFGL-NGS-117400    | 0        | 59823898 |
| 16 | BTA-123154-no-rs       | 0        | 59851930 |
| 16 | ARS-BFGL-NGS-98864     | 0        | 59879095 |
| 16 | ARS-BFGL-NGS-34229     | 0        | 59918768 |
| 16 | ARS-BFGL-NGS-54990     | 59939771 |          |
| 16 | ARS-BFGL-NGS-22885     | 0        | 59971956 |
| 16 | ARS-BFGL-NGS-129       | 0        | 60009076 |
| 16 | ARS-BFGL-NGS-111532    | 0        | 60034876 |
| 16 | ARS-BFGL-NGS-97961     | 0        | 60092780 |
| 16 | ARS-BFGL-NGS-89320     | 0        | 60129846 |
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| 16 | Hapmap43591-BTA-48322  | 0        | 60181412 |
| 16 | ARS-BFGL-NGS-40851     | 0        | 60248470 |
| 16 | Hapmap50348-BTA-39557  | 0        | 60325887 |
| 16 | Hapmap39916-BTA-39556  | 0        | 60365660 |
| 16 | Hapmap58094-rs29011293 | 0        | 60387468 |
| 16 | BTB-00650697           | 0        | 60428507 |
| 16 | BTB-02032698           | 0        | 60451357 |
| 16 | ARS-BFGL-NGS-104701    | 0        | 60479768 |
| 16 | ARS-BFGL-NGS-112382    | 0        | 60496060 |
| 16 | ARS-BFGL-NGS-100490    | 0        | 60527452 |
| 16 | Hapmap47968-BTA-48335  | 0        | 60579059 |
| 16 | ARS-BFGL-NGS-68533     | 0        | 60615012 |
| 16 | ARS-BFGL-NGS-114117    | 0        | 60692918 |
| 16 | ARS-BFGL-NGS-30406     | 0        | 60722653 |
| 16 | ARS-BFGL-NGS-42305     | 0        | 60763111 |
| 16 | Hapmap30034-BTA-154964 | 0        | 60790535 |
| 16 | Hapmap38516-BTA-65820  | 0        | 61064265 |
| 16 | BTA-65815-no-rs        | 0        | 61163678 |
| 16 | BTB-01029770           | 0        | 61221637 |
| 16 | BTB-01492749           | 0        | 61276719 |
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| 16 | ARS-BFGL-NGS-38384     | 0        | 61381572 |
| 16 | ARS-BFGL-NGS-116142    | 0        | 61417656 |
| 16 | ARS-BFGL-NGS-102798    | 0        | 61477887 |
| 16 | Hapmap26502-BTA-39343  | 0        | 61531686 |
| 16 | Hapmap40728-BTA-39338  | 0        | 61573471 |
| 16 | BTB-00650039           | 0        | 61609265 |
| 16 | BTB-00650072           | 0        | 61668331 |

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| 16 | ARS-BFGL-NGS-109438    | 0 | 61759526 |
| 16 | BTB-00650214           | 0 | 61791136 |
| 16 | BTB-00650223           | 0 | 61826855 |
| 16 | ARS-BFGL-NGS-43495     | 0 | 61882477 |
| 16 | BTB-00650263           | 0 | 61932640 |
| 16 | BTB-01732320           | 0 | 61960715 |
| 16 | Hapmap56001-rs29023690 | 0 | 61995348 |
| 16 | BTB-00653779           | 0 | 62073492 |
| 16 | Hapmap48317-BTA-39702  | 0 | 62100110 |
| 16 | ARS-BFGL-NGS-21857     | 0 | 62134743 |
| 16 | BTB-00653808           | 0 | 62179726 |
| 16 | ARS-BFGL-NGS-11469     | 0 | 62220133 |
| 16 | Hapmap23841-BTA-39722  | 0 | 62250966 |
| 16 | ARS-BFGL-NGS-64237     | 0 | 62361331 |
| 16 | ARS-BFGL-NGS-12581     | 0 | 62404849 |
| 16 | BTB-00653397           | 0 | 62446752 |
| 16 | BTA-39689-no-rs        | 0 | 62555582 |
| 16 | ARS-BFGL-NGS-14570     | 0 | 62632476 |
| 16 | Hapmap32665-BTA-39699  | 0 | 62657056 |
| 16 | BTB-01686521           | 0 | 62734784 |
| 16 | ARS-BFGL-NGS-81858     | 0 | 62775973 |
| 16 | ARS-BFGL-NGS-113382    | 0 | 62839123 |
| 16 | ARS-BFGL-NGS-117800    | 0 | 62871926 |
| 16 | ARS-BFGL-NGS-33551     | 0 | 62901191 |
| 16 | ARS-BFGL-NGS-40670     | 0 | 62948497 |
| 16 | ARS-BFGL-NGS-39677     | 0 | 62993997 |
| 16 | BTA-39328-no-rs        | 0 | 63048628 |
| 16 | ARS-BFGL-NGS-18402     | 0 | 63210323 |
| 16 | BTB-01090859           | 0 | 63248646 |
| 16 | ARS-BFGL-NGS-57262     | 0 | 63283756 |
| 16 | BTB-01090742           | 0 | 63347887 |
| 16 | BTB-01090733           | 0 | 63372326 |
| 16 | BTB-01090716           | 0 | 63424839 |
| 16 | Hapmap22950-BTA-160040 | 0 | 63482782 |
| 16 | ARS-BFGL-NGS-102876    | 0 | 63521833 |
| 16 | Hapmap25615-BTA-160036 | 0 | 63549240 |
| 16 | ARS-BFGL-NGS-45195     | 0 | 63612072 |
| 16 | ARS-BFGL-NGS-116453    | 0 | 63721883 |
| 16 | ARS-BFGL-NGS-116493    | 0 | 63825968 |
| 16 | ARS-BFGL-NGS-71753     | 0 | 63872811 |
| 16 | ARS-BFGL-NGS-114299    | 0 | 63894221 |
| 16 | ARS-BFGL-NGS-30501     | 0 | 63940004 |
| 16 | BTB-01090150           | 0 | 63987694 |
| 16 | ARS-BFGL-NGS-89882     | 0 | 64019417 |
| 16 | ARS-BFGL-NGS-31199     | 0 | 64061829 |
| 16 | BTB-01547185           | 0 | 64091006 |
| 16 | ARS-BFGL-NGS-13455     | 0 | 64116934 |
| 16 | ARS-BFGL-NGS-61980     | 0 | 64194978 |
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| 16 | ARS-BFGL-NGS-91618     | 0 | 64276198 |
| 16 | ARS-BFGL-BAC-34703     | 0 | 64359255 |
| 16 | ARS-BFGL-NGS-24788     | 0 | 64387234 |
| 16 | BTB-01201135           | 0 | 64420184 |

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| 16 | Hapmap41422-BTA-109294         | 0 | 64443511 |          |
| 16 | BTA-109296-no-rs               | 0 | 64465987 |          |
| 16 | BTB-01201199                   | 0 | 64516788 |          |
| 16 | ARS-BFGL-NGS-101990            | 0 | 64566814 |          |
| 16 | Hapmap34585-BES1_Contig550_727 | 0 | 64623464 | 64623464 |
| 16 | ARS-BFGL-NGS-68429             | 0 | 64667941 |          |
| 16 | Hapmap23825-BTA-154292         | 0 | 64705320 |          |
| 16 | Hapmap58492-rs29016957         | 0 | 64731044 |          |
| 16 | BTB-01592115                   | 0 | 64764674 |          |
| 16 | ARS-BFGL-NGS-60730             | 0 | 64840902 |          |
| 16 | ARS-BFGL-NGS-16165             | 0 | 64872924 |          |
| 16 | ARS-BFGL-NGS-23497             | 0 | 64904049 |          |
| 16 | UA-IFASA-8234                  | 0 | 64928171 |          |
| 16 | Hapmap52108-ss46526959         | 0 | 64948839 |          |
| 16 | BTA-94860-no-rs                | 0 | 64971348 |          |
| 16 | ARS-BFGL-NGS-10682             | 0 | 65005571 |          |
| 16 | ARS-BFGL-NGS-23634             | 0 | 65039957 |          |
| 16 | ARS-BFGL-NGS-110773            | 0 | 65084569 |          |
| 16 | BTB-00653667                   | 0 | 65115934 |          |
| 16 | ARS-BFGL-BAC-35310             | 0 | 65144838 |          |
| 16 | ARS-BFGL-NGS-31205             | 0 | 65172819 |          |
| 16 | ARS-BFGL-NGS-38666             | 0 | 65221315 |          |
| 16 | ARS-BFGL-BAC-35312             | 0 | 65257286 |          |
| 16 | BTB-02040078                   | 0 | 65301999 |          |
| 16 | BTB-00653188                   | 0 | 65329296 |          |
| 16 | UA-IFASA-6164                  | 0 | 65386980 |          |
| 16 | BTA-119130-no-rs               | 0 | 65496350 |          |
| 16 | BTB-01649710                   | 0 | 65558089 |          |
| 16 | Hapmap58052-rs29013977         | 0 | 65635111 |          |
| 16 | Hapmap42930-BTA-39624          | 0 | 65669824 |          |
| 16 | BTB-00652797                   | 0 | 65695370 |          |
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| 16 | ARS-BFGL-NGS-84301             | 0 | 65735310 |          |
| 16 | ARS-BFGL-NGS-76566             | 0 | 65780072 |          |
| 16 | Hapmap51948-BTA-39630          | 0 | 65822387 |          |
| 16 | ARS-BFGL-NGS-22403             | 0 | 65853622 |          |
| 16 | Hapmap49595-BTA-39631          | 0 | 65875694 |          |
| 16 | ARS-BFGL-NGS-103362            | 0 | 65962281 |          |
| 16 | ARS-BFGL-NGS-22030             | 0 | 66009531 |          |
| 16 | ARS-BFGL-NGS-24777             | 0 | 66059487 |          |
| 16 | ARS-BFGL-NGS-24022             | 0 | 66080474 |          |
| 16 | BTB-00653766                   | 0 | 66112022 |          |
| 16 | ARS-BFGL-NGS-61156             | 0 | 66221857 |          |
| 16 | ARS-BFGL-NGS-90008             | 0 | 66271233 |          |
| 16 | ARS-BFGL-NGS-117128            | 0 | 66313340 |          |
| 16 | ARS-BFGL-NGS-33008             | 0 | 66365432 |          |
| 16 | ARS-BFGL-NGS-101997            | 0 | 66404619 |          |
| 16 | BTB-00220507                   | 0 | 66446261 |          |
| 16 | Hapmap39381-BTA-118849         | 0 | 66543047 |          |
| 16 | BTB-01650090                   | 0 | 66609042 |          |
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| 16 | Hapmap42869-BTA-21180          | 0 | 66676299 |          |
| 16 | Hapmap59629-rs29013680         | 0 | 66729065 |          |
| 16 | Hapmap31397-BTA-131135         | 0 | 66761708 |          |

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| 16 | ARS-BFGL-NGS-117996                   | 0 | 66831678 |   |          |
| 16 | ARS-BFGL-BAC-35318                    | 0 | 66863251 |   |          |
| 16 | BTB-00653980                          | 0 | 66927172 |   |          |
| 16 | BTB-00654034                          | 0 | 66959283 |   |          |
| 16 | BTA-39731-no-rs                       | 0 | 66993967 |   |          |
| 16 | Hapmap33660-BTA-131122                | 0 | 67027284 |   |          |
| 16 | ARS-BFGL-NGS-23235                    | 0 | 67067114 |   |          |
| 16 | ARS-BFGL-NGS-52611                    | 0 | 67128416 |   |          |
| 16 | ARS-BFGL-NGS-45685                    | 0 | 67159362 |   |          |
| 16 | BTA-39763-no-rs                       | 0 | 67192692 |   |          |
| 16 | ARS-BFGL-NGS-45607                    | 0 | 67269841 |   |          |
| 16 | ARS-BFGL-NGS-116988                   | 0 | 67321001 |   |          |
| 16 | Hapmap59190-rs29010371                | 0 | 67333187 |   |          |
| 16 | ARS-BFGL-NGS-42890                    | 0 | 67429246 |   |          |
| 16 | ARS-BFGL-BAC-22560                    |   | 67494109 |   |          |
| 16 | ARS-BFGL-NGS-29899                    | 0 | 67586827 |   |          |
| 16 | ARS-USMARC-Parent-AY857620-rs17871214 | 0 |          | 0 | 67607778 |
| 16 | ARS-BFGL-NGS-52120                    |   | 67623790 |   |          |
| 16 | ARS-BFGL-NGS-62668                    | 0 | 67653515 |   |          |
| 16 | BTA-26576-no-rs                       | 0 | 67703949 |   |          |
| 16 | BTB-01346204                          | 0 | 67740078 |   |          |
| 16 | BTB-01346111                          | 0 | 67834945 |   |          |
| 16 | BTB-01958090                          | 0 | 67951682 |   |          |
| 16 | ARS-BFGL-NGS-101250                   | 0 | 68014396 |   |          |
| 16 | BTA-39761-no-rs                       | 0 | 68039470 |   |          |
| 16 | Hapmap43259-BTA-39756                 | 0 | 68069139 |   |          |
| 16 | ARS-BFGL-BAC-35319                    | 0 | 68107424 |   |          |
| 16 | Hapmap38672-BTA-39747                 | 0 | 68159857 |   |          |
| 16 | ARS-BFGL-BAC-35323                    | 0 | 68181113 |   |          |
| 16 | BTB-00654719                          | 0 | 68212874 |   |          |
| 16 | Hapmap48318-BTA-39745                 | 0 | 68242962 |   |          |
| 16 | Hapmap50677-BTA-39741                 | 0 | 68272784 |   |          |
| 16 | ARS-BFGL-NGS-26201                    | 0 | 68305243 |   |          |
| 16 | Hapmap59847-rs29025534                | 0 | 68346747 |   |          |
| 16 | ARS-BFGL-NGS-56580                    |   | 68391483 |   |          |
| 16 | BTB-00654373                          | 0 | 68414637 |   |          |
| 16 | BTA-39735-no-rs                       | 0 | 68455943 |   |          |
| 16 | ARS-BFGL-NGS-96271                    | 0 | 68513565 |   |          |
| 16 | Hapmap52518-rs29018446                | 0 | 68557811 |   |          |
| 16 | BTA-39833-no-rs                       | 0 | 68583403 |   |          |
| 16 | ARS-BFGL-NGS-97200                    |   | 68620055 |   |          |
| 16 | BTB-00656287                          | 0 | 68663695 |   |          |
| 16 | BTB-00656206                          | 0 | 68709338 |   |          |
| 16 | BTB-00656184                          | 0 | 68732626 |   |          |
| 16 | BTB-00656135                          | 0 | 68747873 |   |          |
| 16 | Hapmap52389-rs29027509                | 0 | 68785131 |   |          |
| 16 | BTA-39826-no-rs                       | 0 | 68811897 |   |          |
| 16 | ARS-BFGL-NGS-54830                    | 0 | 68889225 |   |          |
| 16 | ARS-BFGL-NGS-89998                    | 0 | 68949196 |   |          |
| 16 | BTA-39797-no-rs                       | 0 | 68981703 |   |          |
| 16 | ARS-BFGL-NGS-53971                    | 0 | 69021106 |   |          |
| 16 | UA-IFASA-8429                         | 0 | 69037516 |   |          |
| 16 | BTA-107407-no-rs                      | 0 | 69107713 |   |          |
| 16 | BTA-39836-no-rs                       | 0 | 69167269 |   |          |

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| 16 | ARS-BFGL-NGS-81253              | 0 | 69202739 |          |
| 16 | Hapmap40306-BTA-39850           | 0 | 69323428 |          |
| 16 | ARS-BFGL-NGS-79080              | 0 | 69342974 |          |
| 16 | Hapmap39462-BTA-111304          | 0 | 69412417 |          |
| 16 | BTA-111303-no-rs                | 0 | 69445203 |          |
| 16 | ARS-BFGL-NGS-30006              | 0 | 69475845 |          |
| 16 | ARS-BFGL-BAC-35326              | 0 | 69499076 |          |
| 16 | BTA-90680-no-rs                 | 0 | 69542463 |          |
| 16 | BTB-01660545                    | 0 | 69589954 |          |
| 16 | Hapmap35209-BES8_Contig327_1499 | 0 |          | 69658690 |
| 16 | Hapmap33514-BTA-158988          | 0 | 69686453 |          |
| 16 | Hapmap30877-BTA-159004          | 0 | 69712510 |          |
| 16 | Hapmap42075-BTA-114094          | 0 | 69752797 |          |
| 16 | Hapmap46938-BTA-114095          | 0 | 69795545 |          |
| 16 | ARS-BFGL-NGS-111869             | 0 | 69816467 |          |
| 16 | ARS-BFGL-NGS-113069             | 0 | 69847424 |          |
| 16 | Hapmap59558-rs29017112          | 0 | 69911268 |          |
| 16 | BTB-01188142                    | 0 | 69937124 |          |
| 16 | Hapmap49429-BTA-107409          | 0 | 69963515 |          |
| 16 | BTB-01188274                    | 0 | 69990750 |          |
| 16 | ARS-BFGL-NGS-116637             | 0 | 70014805 |          |
| 16 | BTB-01188312                    | 0 | 70063939 |          |
| 16 | ARS-BFGL-NGS-117468             | 0 | 70107175 |          |
| 16 | ARS-BFGL-NGS-55038              | 0 | 70127523 |          |
| 16 | Hapmap51136-BTA-107420          | 0 | 70155204 |          |
| 16 | Hapmap50856-BTA-107430          | 0 | 70194181 |          |
| 16 | BTB-01891275                    | 0 | 70220110 |          |
| 16 | BTA-39971-no-rs                 | 0 | 70315528 |          |
| 16 | ARS-BFGL-NGS-103416             | 0 | 70338655 |          |
| 16 | ARS-BFGL-NGS-113249             | 0 | 70418753 |          |
| 16 | ARS-BFGL-BAC-35331              | 0 | 70494400 |          |
| 16 | BTB-00658395                    | 0 | 70519576 |          |
| 16 | BTB-00658384                    | 0 | 70547085 |          |
| 16 | Hapmap38157-BTA-39948           | 0 | 70577587 |          |
| 16 | ARS-BFGL-NGS-17698              | 0 | 70598954 |          |
| 16 | ARS-BFGL-NGS-69979              | 0 | 70621699 |          |
| 16 | ARS-BFGL-NGS-13451              | 0 | 70728849 |          |
| 16 | ARS-BFGL-NGS-19358              | 0 | 70754436 |          |
| 16 | ARS-BFGL-NGS-66559              | 0 | 70816380 |          |
| 16 | ARS-BFGL-NGS-100306             | 0 | 70882322 |          |
| 16 | ARS-BFGL-NGS-69228              | 0 | 71125864 |          |
| 16 | Hapmap51442-BTA-39855           | 0 | 71208967 |          |
| 16 | BTA-06182-rs29020546            | 0 | 71249045 |          |
| 16 | BTB-00658677                    | 0 | 71273279 |          |
| 16 | BTB-00658688                    | 0 | 71296941 |          |
| 16 | ARS-BFGL-NGS-43704              | 0 | 71349209 |          |
| 16 | BTB-00658877                    | 0 | 71387150 |          |
| 16 | ARS-BFGL-NGS-42703              | 0 | 71431541 |          |
| 16 | ARS-BFGL-NGS-30980              |   | 71485655 |          |
| 16 | BTB-00658966                    | 0 | 71516591 |          |
| 16 | Hapmap28347-BTA-131196          | 0 | 71552698 |          |
| 16 | ARS-BFGL-NGS-39075              | 0 | 71582546 |          |
| 16 | Hapmap50200-BTA-106536          | 0 | 71735866 |          |
| 16 | ARS-BFGL-BAC-35338              | 0 | 71773792 |          |

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| 16 | UA-IFASA-8339          | 0 | 71851007 |
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| 16 | ARS-BFGL-NGS-21257     | 0 | 71968734 |
| 16 | ARS-BFGL-NGS-114366    | 0 | 72019993 |
| 16 | ARS-BFGL-NGS-35728     | 0 | 72070734 |
| 16 | ARS-BFGL-NGS-17251     | 0 | 72114575 |
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| 16 | ARS-BFGL-NGS-101084    | 0 | 72322411 |
| 16 | BTB-00659445           | 0 | 72365972 |
| 16 | ARS-BFGL-NGS-22021     | 0 | 72410540 |
| 16 | Hapmap48745-BTA-40019  | 0 | 72480414 |
| 16 | ARS-BFGL-NGS-80108     | 0 | 72501362 |
| 16 | Hapmap53215-rs29019312 | 0 | 72569123 |
| 16 | ARS-BFGL-NGS-106729    | 0 | 72596191 |
| 16 | BTB-00659722           | 0 | 72633056 |
| 16 | Hapmap60338-ss46526653 | 0 | 72700904 |
| 16 | BTB-00659960           | 0 | 72730715 |
| 16 | ARS-BFGL-NGS-109968    | 0 | 72756801 |
| 16 | BTA-04076-no-rs        | 0 | 72780185 |
| 16 | BTA-40042-no-rs        | 0 | 72837597 |
| 16 | ARS-BFGL-NGS-117036    | 0 | 72878045 |
| 16 | Hapmap47281-BTA-40051  | 0 | 72931875 |
| 16 | ARS-BFGL-NGS-116266    | 0 | 72962506 |
| 16 | ARS-BFGL-NGS-35590     |   | 72983578 |
| 16 | ARS-BFGL-NGS-118515    | 0 | 73024176 |
| 16 | ARS-BFGL-NGS-35979     | 0 | 73069046 |
| 16 | Hapmap44461-BTA-40052  | 0 | 73108337 |
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| 16 | BTB-00660315           | 0 | 73226170 |
| 16 | ARS-BFGL-NGS-110639    | 0 | 73287916 |
| 16 | Hapmap47493-BTA-108616 | 0 | 73332361 |
| 16 | ARS-BFGL-NGS-36241     | 0 | 73361045 |
| 16 | BTA-40054-no-rs        | 0 | 73401266 |
| 16 | BTA-40059-no-rs        | 0 | 73425409 |
| 16 | Hapmap59098-rs29024870 | 0 | 73453453 |
| 16 | BTB-00660594           | 0 | 73486482 |
| 16 | Hapmap50350-BTA-40067  | 0 | 73527778 |
| 16 | ARS-BFGL-NGS-11990     | 0 | 73639121 |
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| 16 | ARS-BFGL-NGS-36880     | 0 | 73736551 |
| 16 | ARS-BFGL-NGS-75220     | 0 | 73765604 |
| 16 | ARS-BFGL-NGS-84624     | 0 | 73801988 |
| 16 | BTA-39866-no-rs        | 0 | 73822080 |
| 16 | Hapmap47939-BTA-39867  | 0 | 73840001 |
| 16 | ARS-BFGL-NGS-64329     | 0 | 73874593 |
| 16 | Hapmap55487-rs29023215 | 0 | 73898020 |
| 16 | ARS-BFGL-NGS-106233    | 0 | 73923140 |
| 16 | BTB-00661933           | 0 | 74003832 |
| 16 | Hapmap51565-BTA-122868 | 0 | 74046418 |

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| 16 | ARS-BFGL-NGS-15423               | 0 | 74158269 |          |
| 16 | Hapmap48746-BTA-40116            | 0 | 74283537 |          |
| 16 | BTB-00661744                     | 0 | 74307064 |          |
| 16 | ARS-BFGL-NGS-20274               | 0 | 74335322 |          |
| 16 | BTB-00661715                     | 0 | 74373476 |          |
| 16 | BTB-00661682                     | 0 | 74429897 |          |
| 16 | UA-IFASA-8461                    | 0 | 74452786 |          |
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| 16 | ARS-BFGL-BAC-27042               | 0 | 74532751 |          |
| 16 | ARS-BFGL-NGS-101590              | 0 | 74553047 |          |
| 16 | ARS-BFGL-NGS-114089              | 0 | 74581221 |          |
| 16 | BTB-00661215                     | 0 | 74618645 |          |
| 16 | ARS-BFGL-NGS-88087               | 0 | 74669187 |          |
| 16 | ARS-BFGL-NGS-70863               | 0 | 74741746 |          |
| 16 | BTB-01403623                     | 0 | 74776127 |          |
| 16 | BTB-01586733                     | 0 | 74822044 |          |
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| 16 | ARS-BFGL-NGS-99802               | 0 | 74999809 |          |
| 16 | Hapmap40214-BTA-29984            | 0 | 75067182 |          |
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| 16 | Hapmap39023-BTA-39937            | 0 | 75157698 |          |
| 16 | Hapmap34755-BES8_Contig485_491   | 0 |          | 75211979 |
| 16 | Hapmap41860-BTA-39932            | 0 | 75232924 |          |
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| 16 | ARS-BFGL-NGS-27657               | 0 | 75305757 |          |
| 16 | ARS-BFGL-NGS-39705               | 0 | 75341866 |          |
| 16 | BTB-00657957                     | 0 | 75374986 |          |
| 16 | Hapmap40287-BTA-39919            | 0 | 75407446 |          |
| 16 | ARS-BFGL-NGS-110478              | 0 | 75433212 |          |
| 16 | Hapmap29977-BTA-131179           | 0 | 75462069 |          |
| 16 | Hapmap48744-BTA-39945            | 0 | 75499010 |          |
| 16 | BTA-39939-no-rs                  | 0 | 75522046 |          |
| 16 | ARS-BFGL-NGS-112904              | 0 | 75592734 |          |
| 16 | ARS-BFGL-NGS-92942               | 0 | 75690887 |          |
| 16 | Hapmap36276-SCAFFOLD205344_10064 | 0 |          | 75747590 |
| 16 | ARS-BFGL-NGS-118270              | 0 | 75812198 |          |
| 16 | ARS-BFGL-NGS-117928              | 0 | 75847620 |          |
| 16 | BTB-00657518                     | 0 | 75868433 |          |
| 16 | ARS-BFGL-NGS-16705               | 0 | 75892097 |          |
| 16 | ARS-BFGL-NGS-67819               | 0 | 75925550 |          |
| 16 | ARS-BFGL-NGS-75819               | 0 | 75946930 |          |
| 16 | ARS-BFGL-NGS-11391               | 0 | 75999067 |          |
| 16 | ARS-BFGL-NGS-52928               | 0 | 76032497 |          |
| 16 | ARS-BFGL-NGS-119489              | 0 | 76064322 |          |
| 16 | ARS-BFGL-NGS-85980               | 0 | 76091078 |          |
| 16 | BTB-01570194                     | 0 | 76137253 |          |
| 16 | ARS-BFGL-NGS-30784               | 0 | 76160757 |          |
| 16 | BTB-00186125                     | 0 | 76184036 |          |
| 16 | BTB-01570018                     | 0 | 76224768 |          |
| 16 | ARS-BFGL-NGS-22318               | 0 | 76254851 |          |
| 16 | ARS-BFGL-NGS-80709               | 0 | 76275809 |          |
| 16 | ARS-BFGL-NGS-17574               | 0 | 76311292 |          |

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| 16 | ARS-BFGL-NGS-75315               | 0 | 76332415 |          |
| 16 | ARS-BFGL-NGS-115312              | 0 | 76369442 |          |
| 16 | BTB-01349445                     | 0 | 76394413 |          |
| 16 | ARS-BFGL-NGS-12995               | 0 | 76423682 |          |
| 16 | ARS-BFGL-NGS-97711               | 0 | 76522826 |          |
| 16 | Hapmap43538-BTA-26895            | 0 | 76546241 |          |
| 16 | ARS-BFGL-NGS-117855              | 0 | 76606285 |          |
| 16 | ARS-BFGL-NGS-37846               | 0 | 76681045 |          |
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| 16 | ARS-BFGL-NGS-113782              | 0 | 76726251 |          |
| 16 | Hapmap59722-rs29025401           | 0 | 76758969 |          |
| 16 | ARS-BFGL-NGS-17566               | 0 | 76781132 |          |
| 16 | ARS-BFGL-NGS-59645               | 0 | 76803009 |          |
| 16 | BTA-51931-no-rs                  | 0 | 76865027 |          |
| 16 | ARS-BFGL-NGS-109452              | 0 | 76887727 |          |
| 16 | ARS-BFGL-NGS-118710              | 0 | 76909654 |          |
| 16 | Hapmap47981-BTA-51932            | 0 | 76936295 |          |
| 16 | ARS-BFGL-NGS-49089               | 0 | 76966633 |          |
| 16 | ARS-BFGL-NGS-23665               | 0 | 77022173 |          |
| 16 | ARS-BFGL-NGS-102714              | 0 | 77058280 |          |
| 16 | ARS-BFGL-NGS-90340               | 0 | 77142726 |          |
| 16 | ARS-BFGL-NGS-74380               | 0 | 77170719 |          |
| 16 | BTB-00662365                     | 0 | 77202029 |          |
| 16 | ARS-BFGL-NGS-38175               | 0 | 77260672 |          |
| 16 | ARS-BFGL-NGS-103526              | 0 | 77286529 |          |
| 16 | ARS-BFGL-NGS-90489               | 0 | 77307265 |          |
| 16 | BTA-40140-no-rs                  | 0 | 77334719 |          |
| 16 | ARS-BFGL-NGS-118752              | 0 | 77400197 |          |
| 16 | ARS-BFGL-NGS-11168               | 0 | 77445261 |          |
| 16 | ARS-BFGL-NGS-26422               | 0 | 77469205 |          |
| 16 | Hapmap48320-BTA-40139            | 0 | 77494615 |          |
| 16 | UA-IFASA-9698                    | 0 | 77519512 |          |
| 16 | ARS-BFGL-NGS-59425               | 0 | 77563834 |          |
| 16 | ARS-BFGL-NGS-57054               | 0 | 77648438 |          |
| 16 | BTB-02013769                     | 0 | 77673193 |          |
| 16 | ARS-BFGL-NGS-112110              | 0 | 77719482 |          |
| 16 | ARS-BFGL-BAC-27060               | 0 | 77755027 |          |
| 16 | ARS-BFGL-NGS-83757               | 0 | 77789911 |          |
| 16 | ARS-BFGL-NGS-45653               | 0 | 77825967 |          |
| 16 | ARS-BFGL-NGS-115906              | 0 | 77900135 |          |
| 16 | BTB-01698874                     | 0 | 77939430 |          |
| 16 | ARS-BFGL-NGS-111601              | 0 | 77973026 |          |
| 16 | ARS-BFGL-NGS-73960               | 0 | 78020646 |          |
| 16 | ARS-BFGL-NGS-106184              | 0 | 78089819 |          |
| 16 | ARS-BFGL-BAC-27669               | 0 | 78118914 |          |
| 16 | Hapmap60572-rs29010980           | 0 | 78157760 |          |
| 16 | BTB-00662642                     | 0 | 78207433 |          |
| 16 | Hapmap50679-BTA-40141            | 0 | 78245301 |          |
| 16 | ARS-BFGL-NGS-115348              | 0 | 78285860 |          |
| 16 | ARS-BFGL-NGS-30589               | 0 | 78326946 |          |
| 16 | ARS-BFGL-NGS-56                  | 0 | 78356180 |          |
| 16 | Hapmap42128-BTA-19809            | 0 | 78415671 |          |
| 16 | Hapmap32879-BTA-19804            | 0 | 78463670 |          |
| 16 | BTB-01299674                     | 0 | 78508994 |          |



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| 16 | Hapmap47537-BTA-19803            | 0        | 78550797 |  |
| 16 | ARS-BFGL-NGS-60247               | 0        | 78584220 |  |
| 16 | ARS-BFGL-NGS-60465               | 0        | 78655234 |  |
| 16 | BTB-01299421                     | 0        | 78682649 |  |
| 16 | BTB-01299394                     | 0        | 78712518 |  |
| 16 | BTB-01299331                     | 0        | 78734156 |  |
| 16 | Hapmap46999-BTA-40226            | 0        | 78761696 |  |
| 16 | BTA-24933-no-rs                  | 0        | 78912226 |  |
| 16 | BTA-21401-no-rs                  | 0        | 78939515 |  |
| 16 | ARS-BFGL-NGS-100268              | 0        | 79011465 |  |
| 16 | ARS-BFGL-NGS-14263               | 0        | 79041075 |  |
| 16 | BTA-06911-no-rs                  | 0        | 79063017 |  |
| 16 | BTB-00663361                     | 0        | 79106799 |  |
| 16 | BTB-00663340                     | 0        | 79135948 |  |
| 16 | BTB-01584700                     | 0        | 79161508 |  |
| 16 | BTA-105815-no-rs                 | 0        | 79192647 |  |
| 16 | ARS-BFGL-NGS-108444              | 0        | 79214703 |  |
| 16 | ARS-BFGL-NGS-37031               | 0        | 79251050 |  |
| 16 | Hapmap26096-BTA-116451           | 0        | 79272875 |  |
| 16 | ARS-BFGL-NGS-45870               | 0        | 79292968 |  |
| 16 | ARS-BFGL-NGS-84162               | 0        | 79346744 |  |
| 16 | Hapmap39526-BTA-95520            | 0        | 79426578 |  |
| 16 | ARS-BFGL-NGS-13022               | 0        | 79449472 |  |
| 16 | ARS-BFGL-NGS-100673              | 0        | 79484939 |  |
| 16 | Hapmap47139-BTA-95567            | 0        | 79553324 |  |
| 16 | BTA-95565-no-rs                  | 0        | 79582483 |  |
| 16 | BTB-01062585                     | 0        | 79619910 |  |
| 16 | ARS-BFGL-NGS-102699              | 0        | 79658368 |  |
| 16 | ARS-BFGL-NGS-41763               | 0        | 79695579 |  |
| 16 | ARS-BFGL-NGS-116702              | 0        | 79720573 |  |
| 16 | BTB-01062167                     | 0        | 79747502 |  |
| 16 | ARS-BFGL-NGS-100851              | 0        | 79774128 |  |
| 16 | ARS-BFGL-NGS-36059               | 0        | 79896422 |  |
| 16 | BTB-01062025                     | 0        | 79926805 |  |
| 16 | Hapmap25860-BTA-150580           | 0        | 79956857 |  |
| 16 | ARS-BFGL-NGS-77702               | 0        | 80010239 |  |
| 16 | ARS-BFGL-NGS-94512               | 0        | 80044633 |  |
| 16 | BTB-01061856                     | 0        | 80103005 |  |
| 16 | ARS-BFGL-NGS-42222               | 0        | 80127630 |  |
| 16 | ARS-BFGL-NGS-12970               | 80208280 |          |  |
| 16 | Hapmap24154-BTA-150564           | 0        | 80240657 |  |
| 16 | ARS-BFGL-NGS-46460               | 80351106 |          |  |
| 16 | Hapmap41692-BTA-95532            | 0        | 80365527 |  |
| 16 | UA-IFASA-2353                    | 0        | 80375118 |  |
| 16 | BTA-95562-no-rs                  | 0        | 80407423 |  |
| 16 | ARS-BFGL-NGS-31481               | 0        | 80463041 |  |
| 16 | Hapmap47138-BTA-95559            | 0        | 80490825 |  |
| 16 | BTA-40219-no-rs                  | 0        | 80527514 |  |
| 16 | Hapmap41254-BTA-40217            | 0        | 80560294 |  |
| 16 | ARS-BFGL-NGS-24452               | 0        | 80637706 |  |
| 16 | ARS-BFGL-NGS-88184               | 0        | 80655976 |  |
| 16 | Hapmap40216-BTA-40208            | 0        | 80717601 |  |
| 16 | ARS-BFGL-NGS-72420               | 0        | 80741974 |  |
| 16 | ARS-USMARC-Parent-DQ846695-no-rs | 0        | 80747557 |  |

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| 16 | BTB-00663761                          | 0 | 80782671 |  |  |
| 16 | ARS-BFGL-NGS-93660                    | 0 | 80818462 |  |  |
| 16 | ARS-BFGL-NGS-52551                    | 0 | 80859590 |  |  |
| 16 | ARS-BFGL-NGS-21643                    | 0 | 80899831 |  |  |
| 16 | BTB-00663735                          | 0 | 80924801 |  |  |
| 16 | BTB-00663523                          | 0 | 80985485 |  |  |
| 16 | ARS-BFGL-NGS-82451                    | 0 | 81016831 |  |  |
| 16 | BTB-01294944                          | 0 | 81076768 |  |  |
| 16 | ARS-BFGL-NGS-92680                    | 0 | 81099766 |  |  |
| 16 | ARS-BFGL-NGS-115041                   | 0 | 81203143 |  |  |
| 16 | BTB-01612388                          | 0 | 81238066 |  |  |
| 16 | ARS-BFGL-NGS-103911                   | 0 | 81322588 |  |  |
| 17 | BTB-00666692                          | 0 | 81655    |  |  |
| 17 | BTB-01851867                          | 0 | 111319   |  |  |
| 17 | BTB-01927707                          | 0 | 147980   |  |  |
| 17 | ARS-BFGL-NGS-24459                    | 0 | 188233   |  |  |
| 17 | Hapmap47605-BTA-40906                 | 0 | 349718   |  |  |
| 17 | BTB-00666648                          | 0 | 373331   |  |  |
| 17 | ARS-BFGL-NGS-114185                   | 0 | 397662   |  |  |
| 17 | Hapmap41531-BTA-40863                 | 0 | 446792   |  |  |
| 17 | BTB-00666435                          | 0 | 476063   |  |  |
| 17 | Hapmap54135-rs29019936                | 0 | 562366   |  |  |
| 17 | ARS-BFGL-NGS-111865                   | 0 | 648337   |  |  |
| 17 | Hapmap41213-BTA-26249                 | 0 | 761685   |  |  |
| 17 | ARS-BFGL-NGS-38744                    | 0 | 805459   |  |  |
| 17 | ARS-BFGL-NGS-84427                    | 0 | 839869   |  |  |
| 17 | ARS-USMARC-Parent-DQ888310-rs29012422 | 0 | 887216   |  |  |
| 17 | BTB-02009238                          | 0 | 918620   |  |  |
| 17 | Hapmap49826-BTA-100596                | 0 | 954086   |  |  |
| 17 | Hapmap58330-rs29012425                | 0 | 991153   |  |  |
| 17 | ARS-BFGL-NGS-52666                    | 0 | 1041832  |  |  |
| 17 | ARS-BFGL-NGS-89152                    | 0 | 1082568  |  |  |
| 17 | BTB-01157714                          | 0 | 1113074  |  |  |
| 17 | BTB-01157586                          | 0 | 1150136  |  |  |
| 17 | ARS-BFGL-NGS-15395                    | 0 | 1180289  |  |  |
| 17 | BTB-01157439                          | 0 | 1223040  |  |  |
| 17 | ARS-BFGL-NGS-45119                    | 0 | 1261843  |  |  |
| 17 | BTB-01157350                          | 0 | 1322846  |  |  |
| 17 | ARS-BFGL-NGS-93031                    | 0 | 1346129  |  |  |
| 17 | Hapmap48602-BTA-109848                | 0 | 1398024  |  |  |
| 17 | BTA-109851-no-rs                      | 0 | 1443265  |  |  |
| 17 | BTB-01770532                          | 0 | 1486819  |  |  |
| 17 | Hapmap58958-rs29014979                | 0 | 1514342  |  |  |
| 17 | BTA-27677-no-rs                       | 0 | 1555188  |  |  |
| 17 | Hapmap43464-BTA-111790                | 0 | 1672351  |  |  |
| 17 | ARS-BFGL-BAC-33412                    | 0 | 1715231  |  |  |
| 17 | BTB-01760129                          | 0 | 1787723  |  |  |
| 17 | BTB-01855576                          | 0 | 1802505  |  |  |
| 17 | ARS-BFGL-NGS-28768                    | 0 | 1907240  |  |  |
| 17 | Hapmap60791-rs29018318                | 0 | 1970122  |  |  |
| 17 | Hapmap32094-BTA-150062                | 0 | 2026566  |  |  |
| 17 | ARS-USMARC-540                        | 0 | 2061283  |  |  |
| 17 | Hapmap27488-BTA-94224                 | 0 | 2175083  |  |  |
| 17 | Hapmap42934-BTA-40829                 | 0 | 2267680  |  |  |

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| 17 | BTB-01727358           | 0       | 2346041 |
| 17 | BTB-01868566           | 0       | 2369905 |
| 17 | BTB-02036897           | 0       | 2406734 |
| 17 | BTB-00664095           | 0       | 2432556 |
| 17 | BTB-00664072           | 0       | 2451055 |
| 17 | BTA-40708-no-rs        | 0       | 2520482 |
| 17 | ARS-BFGL-NGS-14135     | 0       | 2568413 |
| 17 | Hapmap44006-BTA-114073 | 0       | 2685801 |
| 17 | BTA-90683-no-rs        | 0       | 2728598 |
| 17 | BTA-41828-no-rs        | 0       | 2748831 |
| 17 | BTA-41981-no-rs        | 0       | 2784904 |
| 17 | BTB-00664430           | 0       | 2828028 |
| 17 | ARS-BFGL-NGS-21141     | 0       | 2881443 |
| 17 | Hapmap39997-BTA-42072  | 0       | 2904301 |
| 17 | ARS-BFGL-NGS-21149     | 0       | 2939030 |
| 17 | Hapmap51140-BTA-109607 | 0       | 2988221 |
| 17 | BTA-109611-no-rs       | 0       | 3009412 |
| 17 | ARS-BFGL-NGS-119593    | 0       | 3073472 |
| 17 | BTA-89511-no-rs        | 0       | 3099005 |
| 17 | ARS-BFGL-NGS-113197    | 0       | 3119640 |
| 17 | BTA-41640-no-rs        | 0       | 3190762 |
| 17 | ARS-BFGL-NGS-38952     | 0       | 3228062 |
| 17 | Hapmap48326-BTA-41656  | 0       | 3248434 |
| 17 | ARS-BFGL-NGS-38125     | 0       | 3311484 |
| 17 | Hapmap26200-BTA-159432 | 0       | 3332067 |
| 17 | ARS-BFGL-NGS-80569     | 0       | 3445779 |
| 17 | ARS-BFGL-NGS-17080     | 3518258 |         |
| 17 | ARS-BFGL-NGS-117668    | 0       | 3551928 |
| 17 | BTB-01782545           | 0       | 3599671 |
| 17 | ARS-BFGL-NGS-113258    | 0       | 3634631 |
| 17 | Hapmap47001-BTA-40676  | 0       | 3677489 |
| 17 | BTA-40656-no-rs        | 0       | 3720495 |
| 17 | ARS-BFGL-NGS-103975    | 0       | 3742669 |
| 17 | Hapmap31398-BTA-131255 | 0       | 3766546 |
| 17 | ARS-BFGL-NGS-108037    | 0       | 3795790 |
| 17 | ARS-BFGL-NGS-102835    | 0       | 3855180 |
| 17 | ARS-BFGL-NGS-66748     | 0       | 3879518 |
| 17 | ARS-BFGL-NGS-110681    | 0       | 3894969 |
| 17 | ARS-BFGL-NGS-107082    | 0       | 3944707 |
| 17 | ARS-BFGL-NGS-28085     | 0       | 3992458 |
| 17 | ARS-BFGL-NGS-114274    | 0       | 4019597 |
| 17 | ARS-BFGL-NGS-37528     | 0       | 4068215 |
| 17 | ARS-BFGL-NGS-69948     | 0       | 4096391 |
| 17 | ARS-BFGL-NGS-100229    | 0       | 4153159 |
| 17 | BTB-00667540           | 0       | 4186754 |
| 17 | BTB-00667579           | 0       | 4217941 |
| 17 | BTB-00667627           | 0       | 4249394 |
| 17 | BTA-41349-no-rs        | 0       | 4265936 |
| 17 | ARS-BFGL-NGS-43680     | 4306870 |         |
| 17 | ARS-BFGL-NGS-95434     | 0       | 4347226 |
| 17 | ARS-BFGL-NGS-11818     | 0       | 4393229 |
| 17 | ARS-BFGL-NGS-110680    | 0       | 4423257 |
| 17 | ARS-BFGL-NGS-113593    | 0       | 4450993 |
| 17 | ARS-BFGL-NGS-11273     | 0       | 4558069 |

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| 17 | ARS-BFGL-NGS-75113              | 0       | 4634690 |  |
| 17 | ARS-BFGL-NGS-68737              | 0       | 4675045 |  |
| 17 | BTB-00667048                    | 0       | 4700529 |  |
| 17 | UA-IFASA-5010                   | 0       | 4723675 |  |
| 17 | Hapmap49159-BTA-41147           | 0       | 4750693 |  |
| 17 | BTB-00667169                    | 0       | 4774605 |  |
| 17 | BTB-00667263                    | 0       | 4785207 |  |
| 17 | BTB-00668797                    | 0       | 4827067 |  |
| 17 | ARS-BFGL-NGS-98990              | 0       | 4868261 |  |
| 17 | BTA-41742-no-rs                 | 0       | 4893522 |  |
| 17 | ARS-BFGL-NGS-77485              | 0       | 4926550 |  |
| 17 | BTB-00669259                    | 0       | 4951011 |  |
| 17 | Hapmap47218-BTA-21816           | 0       | 4979691 |  |
| 17 | ARS-BFGL-NGS-33780              | 5056225 |         |  |
| 17 | ARS-BFGL-NGS-113108             | 0       | 5097846 |  |
| 17 | BTB-00664573                    | 0       | 5153621 |  |
| 17 | BTA-42150-no-rs                 | 0       | 5191623 |  |
| 17 | BTB-00664618                    | 0       | 5221649 |  |
| 17 | BTB-00664625                    | 0       | 5246656 |  |
| 17 | BTB-00664712                    | 0       | 5323939 |  |
| 17 | ARS-BFGL-NGS-118611             | 0       | 5357573 |  |
| 17 | Hapmap32037-BTA-131237          | 0       | 5379870 |  |
| 17 | ARS-BFGL-NGS-79821              | 0       | 5394041 |  |
| 17 | ARS-BFGL-NGS-65355              | 0       | 5416050 |  |
| 17 | ARS-BFGL-NGS-113111             | 0       | 5445294 |  |
| 17 | ARS-BFGL-NGS-104962             | 0       | 5487182 |  |
| 17 | ARS-BFGL-NGS-24849              | 0       | 5511241 |  |
| 17 | ARS-BFGL-NGS-20292              | 0       | 5546789 |  |
| 17 | Hapmap42932-BTA-40423           | 0       | 5590969 |  |
| 17 | ARS-BFGL-NGS-41164              | 0       | 5627803 |  |
| 17 | ARS-BFGL-NGS-104289             | 0       | 5663467 |  |
| 17 | ARS-BFGL-NGS-76995              | 0       | 5713015 |  |
| 17 | ARS-BFGL-NGS-104501             | 0       | 5792606 |  |
| 17 | ARS-BFGL-NGS-38059              | 0       | 5829384 |  |
| 17 | ARS-BFGL-NGS-16970              | 0       | 5852800 |  |
| 17 | BTB-01002430                    | 0       | 5881452 |  |
| 17 | ARS-BFGL-NGS-18139              | 0       | 5908640 |  |
| 17 | ARS-BFGL-NGS-39467              | 0       | 5987292 |  |
| 17 | BTA-30061-no-rs                 | 0       | 6027926 |  |
| 17 | ARS-BFGL-NGS-26906              | 0       | 6066986 |  |
| 17 | ARS-BFGL-NGS-87239              | 0       | 6106783 |  |
| 17 | ARS-BFGL-NGS-79791              | 0       | 6148697 |  |
| 17 | ARS-BFGL-NGS-40640              | 6170321 |         |  |
| 17 | ARS-BFGL-NGS-30159              | 0       | 6191683 |  |
| 17 | BTB-00669345                    | 0       | 6243273 |  |
| 17 | BTB-00669395                    | 0       | 6266432 |  |
| 17 | Hapmap47945-BTA-41852           | 0       | 6295259 |  |
| 17 | BTB-00669586                    | 0       | 6322271 |  |
| 17 | ARS-BFGL-NGS-62052              | 0       | 6348852 |  |
| 17 | Hapmap51728-BTA-41894           | 0       | 6380171 |  |
| 17 | Hapmap32996-BTA-131276          | 0       | 6436523 |  |
| 17 | BTB-01717477                    | 0       | 6483488 |  |
| 17 | Hapmap55602-rs29026096          | 0       | 6528887 |  |
| 17 | Hapmap36186-SCAFFOLD206949_1268 | 0       | 6556513 |  |

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| 17 | BTB-00670110                     | 0 | 6641738 |         |
| 17 | ARS-BFGL-NGS-20893               | 0 | 6669905 |         |
| 17 | BTA-42041-no-rs                  | 0 | 6746199 |         |
| 17 | Hapmap32304-BTA-135553           | 0 | 6787581 |         |
| 17 | ARS-BFGL-NGS-80692               | 0 | 6921190 |         |
| 17 | ARS-BFGL-NGS-111463              | 0 | 6978314 |         |
| 17 | BTA-80024-no-rs                  | 0 | 7044944 |         |
| 17 | ARS-BFGL-NGS-58800               |   | 7118768 |         |
| 17 | ARS-BFGL-BAC-27368               | 0 | 7143753 |         |
| 17 | Hapmap54786-rs29011077           | 0 | 7165500 |         |
| 17 | Hapmap47761-BTA-86120            | 0 | 7185597 |         |
| 17 | BTA-86110-no-rs                  | 0 | 7256085 |         |
| 17 | BTA-14305-no-rs                  | 0 | 7293126 |         |
| 17 | BTA-86112-no-rs                  | 0 | 7316241 |         |
| 17 | BTA-86115-no-rs                  | 0 | 7344671 |         |
| 17 | BTB-01381100                     | 0 | 7375792 |         |
| 17 | BTB-01381127                     | 0 | 7399427 |         |
| 17 | BTA-86119-no-rs                  | 0 | 7435507 |         |
| 17 | Hapmap34622-BES10_Contig518_1595 | 0 |         | 7472614 |
| 17 | BTB-01311082                     | 0 | 7527510 |         |
| 17 | ARS-BFGL-NGS-59699               | 0 | 7557992 |         |
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| 17 | ARS-BFGL-BAC-27353               | 0 | 7666676 |         |
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| 17 | ARS-BFGL-NGS-92995               | 0 | 7794593 |         |
| 17 | BTB-01298582                     | 0 | 7824118 |         |
| 17 | ARS-BFGL-NGS-114884              | 0 | 7850513 |         |
| 17 | BTB-01817680                     | 0 | 7885110 |         |
| 17 | BTB-01298431                     | 0 | 7920588 |         |
| 17 | BTB-01298415                     | 0 | 7946056 |         |
| 17 | BTA-122662-no-rs                 | 0 | 7997532 |         |
| 17 | ARS-BFGL-NGS-23297               | 0 | 8026474 |         |
| 17 | BTB-01298254                     | 0 | 8067629 |         |
| 17 | ARS-BFGL-NGS-95736               | 0 | 8098794 |         |
| 17 | BTB-01153111                     | 0 | 8170089 |         |
| 17 | BTA-111281-no-rs                 | 0 | 8297151 |         |
| 17 | ARS-BFGL-NGS-55629               | 0 | 8331053 |         |
| 17 | Hapmap27054-BTA-99245            | 0 | 8359016 |         |
| 17 | BTB-01152976                     | 0 | 8382589 |         |
| 17 | BTB-01152870                     | 0 | 8411651 |         |
| 17 | Hapmap54932-rs29013312           | 0 | 8439080 |         |
| 17 | BTA-99241-no-rs                  | 0 | 8473036 |         |
| 17 | ARS-BFGL-NGS-114713              | 0 | 8494957 |         |
| 17 | BTB-01152618                     | 0 | 8534758 |         |
| 17 | Hapmap50530-BTA-99235            | 0 | 8562796 |         |
| 17 | ARS-BFGL-NGS-101525              | 0 | 8589994 |         |
| 17 | BTB-01152492                     | 0 | 8632882 |         |
| 17 | BTA-99248-no-rs                  | 0 | 8690167 |         |
| 17 | Hapmap48328-BTA-42048            | 0 | 8720543 |         |
| 17 | Hapmap47003-BTA-42050            | 0 | 8776227 |         |
| 17 | ARS-BFGL-NGS-35055               | 0 | 8940106 |         |
| 17 | BTA-42045-no-rs                  | 0 | 9093735 |         |
| 17 | ARS-BFGL-BAC-33747               | 0 | 9128007 |         |

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| 17 | BTB-00670359                     | 0 | 9161572  |          |
| 17 | ARS-BFGL-BAC-27373               | 0 | 9186147  |          |
| 17 | ARS-BFGL-NGS-110759              | 0 | 9206816  |          |
| 17 | BTB-01908179                     | 0 | 9226268  |          |
| 17 | ARS-BFGL-NGS-118319              | 0 | 9279323  |          |
| 17 | ARS-BFGL-NGS-22496               | 0 | 9336564  |          |
| 17 | Hapmap49561-BTA-29504            | 0 | 9367019  |          |
| 17 | ARS-BFGL-NGS-43717               | 0 | 9392845  |          |
| 17 | Hapmap55983-rs29021736           | 0 | 9420287  |          |
| 17 | BTB-01831006                     | 0 | 9472973  |          |
| 17 | BTB-01339049                     | 0 | 9538768  |          |
| 17 | BTB-01339061                     | 0 | 9558819  |          |
| 17 | BTA-100207-no-rs                 | 0 | 9624970  |          |
| 17 | ARS-BFGL-NGS-40131               | 0 | 9699044  |          |
| 17 | ARS-BFGL-NGS-114953              | 0 | 9753430  |          |
| 17 | BTA-42058-no-rs                  | 0 | 9807701  |          |
| 17 | ARS-BFGL-NGS-104959              | 0 | 9874709  |          |
| 17 | BTB-00670675                     | 0 | 9898390  |          |
| 17 | ARS-BFGL-NGS-10560               | 0 | 9921157  |          |
| 17 | BTB-00670506                     | 0 | 9948887  |          |
| 17 | Hapmap6261-BTA-42054             | 0 | 9977173  |          |
| 17 | Hapmap36789-SCAFFOLD190171_16889 | 0 | 10014970 | 10014970 |
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| 17 | ARS-BFGL-BAC-34362               | 0 | 10062461 |          |
| 17 | Hapmap42209-BTA-42081            | 0 | 10140780 |          |
| 17 | Hapmap54228-rs29017541           | 0 | 10205017 |          |
| 17 | BTA-42080-no-rs                  | 0 | 10226795 |          |
| 17 | BTB-00671384                     | 0 | 10250084 |          |
| 17 | ARS-BFGL-NGS-14166               | 0 | 10283664 |          |
| 17 | BTB-00670806                     | 0 | 10307653 |          |
| 17 | ARS-BFGL-NGS-113821              | 0 | 10330387 |          |
| 17 | ARS-BFGL-NGS-51247               | 0 | 10380674 |          |
| 17 | ARS-BFGL-BAC-34372               | 0 | 10405916 |          |
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| 17 | ARS-BFGL-NGS-22126               | 0 | 10498926 |          |
| 17 | BTB-00671090                     | 0 | 10525497 |          |
| 17 | BTA-42074-no-rs                  | 0 | 10557794 |          |
| 17 | Hapmap52387-rs29021226           | 0 | 10594226 |          |
| 17 | Hapmap40124-BTA-42067            | 0 | 10671697 |          |
| 17 | ARS-BFGL-NGS-112310              | 0 | 10703771 |          |
| 17 | Hapmap2587-BTA-120526            | 0 | 10726289 |          |
| 17 | BTB-00670868                     | 0 | 10774291 |          |
| 17 | BTB-00670844                     | 0 | 10853321 |          |
| 17 | BTA-87167-no-rs                  | 0 | 10898383 |          |
| 17 | BTB-02004836                     | 0 | 10937297 |          |
| 17 | ARS-BFGL-NGS-80508               | 0 | 11001696 |          |
| 17 | BTB-01441061                     | 0 | 11029290 |          |
| 17 | BTB-01440888                     | 0 | 11049283 |          |
| 17 | BTB-01440970                     | 0 | 11072392 |          |
| 17 | BTB-01440997                     | 0 | 11116659 |          |
| 17 | BTB-01440825                     | 0 | 11202256 |          |
| 17 | Hapmap47504-BTA-111690           | 0 | 11231535 |          |
| 17 | BTA-111694-no-rs                 | 0 | 11292820 |          |
| 17 | ARS-BFGL-NGS-102126              | 0 | 11321564 |          |

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| 17 | BTA-120039-no-rs       | 0 | 11370727 |
| 17 | BTA-120038-no-rs       | 0 | 11391752 |
| 17 | ARS-BFGL-NGS-105289    | 0 | 11419944 |
| 17 | BTB-01435781           | 0 | 11466582 |
| 17 | ARS-BFGL-NGS-15402     | 0 | 11518115 |
| 17 | BTA-21866-no-rs        | 0 | 11638348 |
| 17 | BTB-01753558           | 0 | 11714043 |
| 17 | BTB-00671456           | 0 | 11751720 |
| 17 | BTB-02016067           | 0 | 11789864 |
| 17 | BTB-00671689           | 0 | 11828433 |
| 17 | Hapmap52434-rs29012066 | 0 | 11870833 |
| 17 | ARS-BFGL-NGS-80260     | 0 | 11933243 |
| 17 | ARS-BFGL-NGS-67872     | 0 | 11971465 |
| 17 | BTB-00316147           | 0 | 12137554 |
| 17 | BTB-00672157           | 0 | 12190084 |
| 17 | ARS-BFGL-BAC-31505     | 0 | 12218477 |
| 17 | ARS-BFGL-NGS-20640     | 0 | 12258111 |
| 17 | BTB-00671736           | 0 | 12288221 |
| 17 | ARS-BFGL-NGS-52820     | 0 | 12319235 |
| 17 | ARS-BFGL-NGS-31362     | 0 | 12338763 |
| 17 | ARS-BFGL-NGS-117050    | 0 | 12372640 |
| 17 | ARS-BFGL-NGS-30610     | 0 | 12394071 |
| 17 | ARS-BFGL-NGS-90590     | 0 | 12492653 |
| 17 | BTB-00673337           | 0 | 12517208 |
| 17 | ARS-BFGL-NGS-39722     | 0 | 12545331 |
| 17 | ARS-BFGL-NGS-10346     | 0 | 12567376 |
| 17 | BTA-42189-no-rs        | 0 | 12613243 |
| 17 | BTA-42193-no-rs        | 0 | 12647602 |
| 17 | ARS-BFGL-NGS-112833    | 0 | 12691014 |
| 17 | ARS-BFGL-NGS-62844     | 0 | 12715904 |
| 17 | ARS-BFGL-NGS-96040     | 0 | 12766838 |
| 17 | Hapmap52851-rs29021975 | 0 | 12819130 |
| 17 | ARS-BFGL-NGS-11383     | 0 | 12891997 |
| 17 | ARS-BFGL-NGS-73612     | 0 | 12932221 |
| 17 | BTB-00675011           | 0 | 12969438 |
| 17 | ARS-BFGL-NGS-14291     | 0 | 13031838 |
| 17 | ARS-BFGL-NGS-82911     | 0 | 13119391 |
| 17 | Hapmap41434-BTA-114995 | 0 | 13196268 |
| 17 | Hapmap30309-BTA-156845 | 0 | 13277272 |
| 17 | BTB-01225518           | 0 | 13345621 |
| 17 | Hapmap24693-BTA-156848 | 0 | 13386146 |
| 17 | Hapmap26095-BTA-113931 | 0 | 13433229 |
| 17 | Hapmap28090-BTA-113932 | 0 | 13455790 |
| 17 | Hapmap44014-BTA-119938 | 0 | 13524746 |
| 17 | Hapmap30863-BTA-156849 | 0 | 13635843 |
| 17 | BTA-113935-no-rs       | 0 | 13686681 |
| 17 | ARS-BFGL-NGS-22135     | 0 | 13800376 |
| 17 | BTB-01908398           | 0 | 13861253 |
| 17 | Hapmap57405-rs29021707 | 0 | 13889636 |
| 17 | BTA-19263-no-rs        | 0 | 13919432 |
| 17 | ARS-BFGL-NGS-22174     | 0 | 13941499 |
| 17 | ARS-BFGL-NGS-35648     | 0 | 13984972 |
| 17 | BTA-19257-no-rs        | 0 | 14020692 |
| 17 | BTB-01297598           | 0 | 14080531 |

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| 17 | BTB-01297542           | 0 | 14120288 |
| 17 | Hapmap33086-BTA-19277  | 0 | 14141384 |
| 17 | ARS-BFGL-NGS-93036     | 0 | 14167323 |
| 17 | ARS-BFGL-NGS-105993    | 0 | 14253363 |
| 17 | Hapmap39897-BTA-18318  | 0 | 14357124 |
| 17 | ARS-BFGL-NGS-14479     | 0 | 14469659 |
| 17 | ARS-BFGL-NGS-82854     | 0 | 14558961 |
| 17 | ARS-USMARC-507         | 0 | 14644005 |
| 17 | BTB-00674339           | 0 | 14681821 |
| 17 | ARS-BFGL-NGS-111363    | 0 | 14747338 |
| 17 | BTA-42221-no-rs        | 0 | 14782322 |
| 17 | BTB-00674231           | 0 | 14814012 |
| 17 | ARS-BFGL-NGS-77428     | 0 | 14840158 |
| 17 | BTB-00674040           | 0 | 14865809 |
| 17 | BTB-00674025           | 0 | 14898570 |
| 17 | Hapmap47946-BTA-42208  | 0 | 14929215 |
| 17 | Hapmap60968-rs29016935 | 0 | 14997063 |
| 17 | BTB-01963792           | 0 | 15020783 |
| 17 | BTB-00673952           | 0 | 15052590 |
| 17 | ARS-BFGL-NGS-16708     | 0 | 15107947 |
| 17 | ARS-BFGL-NGS-26864     | 0 | 15127358 |
| 17 | ARS-BFGL-NGS-87957     | 0 | 15175882 |
| 17 | ARS-BFGL-NGS-32257     | 0 | 15211563 |
| 17 | ARS-BFGL-NGS-113029    | 0 | 15247955 |
| 17 | BTA-106183-no-rs       | 0 | 15271899 |
| 17 | BTA-106195-no-rs       | 0 | 15298798 |
| 17 | BTA-05721-rs29019877   | 0 | 15340860 |
| 17 | ARS-BFGL-NGS-29973     | 0 | 15372415 |
| 17 | BTA-106214-no-rs       | 0 | 15528561 |
| 17 | ARS-BFGL-NGS-115453    | 0 | 15611409 |
| 17 | ARS-BFGL-NGS-39400     | 0 | 15655379 |
| 17 | Hapmap31365-BTA-106222 | 0 | 15660192 |
| 17 | BTA-106224-no-rs       | 0 | 15677009 |
| 17 | BTA-106235-no-rs       | 0 | 15704674 |
| 17 | Hapmap49806-BTA-95003  | 0 | 15740680 |
| 17 | ARS-BFGL-NGS-11676     | 0 | 15789785 |
| 17 | Hapmap43479-BTA-117143 | 0 | 15939261 |
| 17 | ARS-BFGL-NGS-11675     | 0 | 15973860 |
| 17 | ARS-BFGL-BAC-34029     | 0 | 16003681 |
| 17 | BTB-01082458           | 0 | 16032820 |
| 17 | ARS-BFGL-NGS-76160     | 0 | 16070807 |
| 17 | BTA-42235-no-rs        | 0 | 16094177 |
| 17 | Hapmap30759-BTA-123220 | 0 | 16415781 |
| 17 | Hapmap40231-BTA-100499 | 0 | 16441272 |
| 17 | ARS-BFGL-NGS-102555    | 0 | 16541350 |
| 17 | ARS-BFGL-NGS-116455    | 0 | 16561761 |
| 17 | BTA-04207-rs29014570   | 0 | 16671727 |
| 17 | ARS-BFGL-NGS-25938     | 0 | 16700649 |
| 17 | ARS-BFGL-NGS-106367    | 0 | 16758551 |
| 17 | ARS-BFGL-NGS-115776    | 0 | 16790563 |
| 17 | ARS-BFGL-NGS-73920     | 0 | 16817561 |
| 17 | ARS-BFGL-NGS-35794     | 0 | 16871712 |
| 17 | ARS-BFGL-NGS-40869     | 0 | 16947111 |
| 17 | ARS-BFGL-NGS-94430     | 0 | 16985065 |



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| 17 | Hapmap42201-BTA-40420                 | 0        | 17140029 |   |          |
| 17 | ARS-BFGL-NGS-17494                    | 0        | 17257975 |   |          |
| 17 | Hapmap30342-BTA-40411                 | 0        | 17378423 |   |          |
| 17 | BTA-40408-no-rs                       | 0        | 17408409 |   |          |
| 17 | ARS-BFGL-NGS-28104                    | 0        | 17430983 |   |          |
| 17 | ARS-BFGL-NGS-29011                    | 0        | 17468482 |   |          |
| 17 | BTB-00674420                          | 0        | 17504317 |   |          |
| 17 | ARS-BFGL-NGS-114223                   | 0        | 17526722 |   |          |
| 17 | ARS-USMARC-Parent-DQ381152-rs29002408 | 0        | 17616950 | 0 | 17616950 |
| 17 | ARS-BFGL-NGS-38057                    | 0        | 17625365 |   |          |
| 17 | ARS-BFGL-NGS-78120                    | 17714385 |          |   |          |
| 17 | ARS-BFGL-NGS-34258                    | 0        | 17926492 |   |          |
| 17 | ARS-BFGL-NGS-69762                    | 0        | 17947446 |   |          |
| 17 | BTA-40442-no-rs                       | 0        | 17969614 |   |          |
| 17 | Hapmap50352-BTA-40559                 | 0        | 18035977 |   |          |
| 17 | ARS-BFGL-NGS-106306                   | 0        | 18138707 |   |          |
| 17 | Hapmap44236-BTA-40569                 | 0        | 18186024 |   |          |
| 17 | ARS-BFGL-NGS-59842                    | 0        | 18243977 |   |          |
| 17 | Hapmap51085-BTA-90972                 | 0        | 18269913 |   |          |
| 17 | ARS-BFGL-NGS-11930                    | 0        | 18316220 |   |          |
| 17 | ARS-BFGL-NGS-11296                    | 0        | 18366429 |   |          |
| 17 | ARS-BFGL-NGS-38696                    | 0        | 18398611 |   |          |
| 17 | ARS-BFGL-NGS-35622                    | 0        | 18444975 |   |          |
| 17 | ARS-BFGL-BAC-34039                    | 0        | 18471053 |   |          |
| 17 | ARS-BFGL-NGS-116291                   | 0        | 18493662 |   |          |
| 17 | Hapmap39403-BTA-40429                 | 0        | 18535013 |   |          |
| 17 | ARS-BFGL-NGS-29563                    | 0        | 18574363 |   |          |
| 17 | ARS-BFGL-NGS-24805                    | 0        | 18687182 |   |          |
| 17 | Hapmap41529-BTA-40591                 | 0        | 18742163 |   |          |
| 17 | ARS-BFGL-BAC-34040                    | 0        | 18764770 |   |          |
| 17 | Hapmap51224-BTA-40595                 | 0        | 18804260 |   |          |
| 17 | BTA-25641-no-rs                       | 0        | 18857648 |   |          |
| 17 | Hapmap40057-BTA-25640                 | 0        | 18881179 |   |          |
| 17 | ARS-BFGL-NGS-66923                    | 0        | 18910914 |   |          |
| 17 | ARS-BFGL-NGS-118918                   | 0        | 18937238 |   |          |
| 17 | ARS-BFGL-NGS-118491                   | 0        | 18965447 |   |          |
| 17 | BTA-40599-no-rs                       | 0        | 19008492 |   |          |
| 17 | Hapmap34713-BES10_Contig634_914       | 0        | 19109434 | 0 | 19109434 |
| 17 | ARS-BFGL-BAC-34046                    | 0        | 19184418 |   |          |
| 17 | Hapmap31828-BTA-159336                | 0        | 19207100 |   |          |
| 17 | ARS-BFGL-BAC-35339                    | 0        | 19235731 |   |          |
| 17 | BTA-16056-no-rs                       | 0        | 19257539 |   |          |
| 17 | BTA-16055-no-rs                       | 0        | 19268461 |   |          |
| 17 | ARS-BFGL-NGS-25537                    | 0        | 19293329 |   |          |
| 17 | ARS-BFGL-NGS-102933                   | 0        | 19315294 |   |          |
| 17 | ARS-BFGL-NGS-36426                    | 0        | 19346381 |   |          |
| 17 | BTA-16045-no-rs                       | 0        | 19384978 |   |          |
| 17 | Hapmap51174-BTA-16044                 | 0        | 19441907 |   |          |
| 17 | Hapmap48663-BTA-16043                 | 0        | 19468571 |   |          |
| 17 | BTA-16035-no-rs                       | 0        | 19509066 |   |          |
| 17 | ARS-BFGL-NGS-94847                    | 0        | 19531885 |   |          |
| 17 | Hapmap36622-SCAFFOLD35509_12491       | 0        | 19559644 | 0 | 19559644 |
| 17 | Hapmap48748-BTA-40639                 | 0        | 19629297 |   |          |
| 17 | Hapmap33065-BTA-16026                 | 0        | 19750322 |   |          |

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| 17 | BTB-01087937           | 0        | 19775229 |
| 17 | ARS-BFGL-NGS-23824     | 0        | 19800248 |
| 17 | ARS-BFGL-NGS-87372     | 0        | 19823070 |
| 17 | BTA-16014-no-rs        | 0        | 19895287 |
| 17 | ARS-BFGL-BAC-35343     | 0        | 19936263 |
| 17 | Hapmap44352-BTA-16069  | 0        | 19975119 |
| 17 | BTA-91575-no-rs        | 0        | 20099837 |
| 17 | ARS-BFGL-NGS-119157    | 0        | 20275502 |
| 17 | ARS-BFGL-NGS-68373     | 0        | 20308321 |
| 17 | ARS-BFGL-NGS-110834    | 0        | 20336068 |
| 17 | ARS-BFGL-BAC-35952     | 0        | 20430382 |
| 17 | ARS-BFGL-BAC-35955     | 0        | 20455179 |
| 17 | Hapmap57633-rs29027409 | 0        | 20484740 |
| 17 | BTA-123047-no-rs       | 0        | 20512625 |
| 17 | BTA-105846-no-rs       | 0        | 20564537 |
| 17 | Hapmap42781-BTA-105847 | 0        | 20593969 |
| 17 | ARS-BFGL-NGS-59897     | 0        | 20634031 |
| 17 | Hapmap50680-BTA-40601  | 0        | 20744144 |
| 17 | BTA-40613-no-rs        | 0        | 20780387 |
| 17 | ARS-BFGL-NGS-54201     | 0        | 20871321 |
| 17 | ARS-BFGL-NGS-14591     | 0        | 20892863 |
| 17 | Hapmap61007-rs29024666 | 0        | 20940958 |
| 17 | Hapmap51443-BTA-40619  | 0        | 20996847 |
| 17 | ARS-BFGL-NGS-14850     | 21032775 |          |
| 17 | BTA-21931-no-rs        | 0        | 21055164 |
| 17 | BTA-113250-no-rs       | 0        | 21352266 |
| 17 | ARS-BFGL-NGS-18128     | 0        | 21464235 |
| 17 | BTA-113527-no-rs       | 0        | 21488452 |
| 17 | Hapmap58447-rs29021883 | 0        | 21523120 |
| 17 | ARS-BFGL-BAC-35979     | 0        | 21588649 |
| 17 | ARS-BFGL-BAC-35973     | 0        | 21665559 |
| 17 | Hapmap50279-BTA-21688  | 0        | 21705044 |
| 17 | ARS-BFGL-NGS-40216     | 0        | 21750094 |
| 17 | Hapmap48530-BTA-94531  | 0        | 21889966 |
| 17 | ARS-BFGL-NGS-28514     | 0        | 21904500 |
| 17 | ARS-BFGL-NGS-107447    | 0        | 21975287 |
| 17 | ARS-BFGL-NGS-112922    | 0        | 22013753 |
| 17 | ARS-BFGL-BAC-35962     | 0        | 22036567 |
| 17 | ARS-BFGL-NGS-45739     | 0        | 22106196 |
| 17 | ARS-BFGL-BAC-35963     | 0        | 22358699 |
| 17 | BTA-111668-no-rs       | 0        | 22398832 |
| 17 | Hapmap55890-rs29027310 | 0        | 22421753 |
| 17 | ARS-BFGL-BAC-22740     | 22511345 |          |
| 17 | Hapmap44530-BTA-19409  | 0        | 22537521 |
| 17 | Hapmap59999-rs29024254 | 0        | 22584146 |
| 17 | ARS-BFGL-BAC-35968     | 0        | 22713714 |
| 17 | ARS-BFGL-BAC-35969     | 0        | 22820344 |
| 17 | Hapmap43260-BTA-40679  | 0        | 22857773 |
| 17 | ARS-BFGL-NGS-42348     | 0        | 22878726 |
| 17 | Hapmap52011-BTA-40675  | 0        | 22972193 |
| 17 | BTA-40659-no-rs        | 0        | 23111933 |
| 17 | Hapmap54587-rs29015138 | 0        | 23150641 |
| 17 | BTA-40661-no-rs        | 0        | 23200226 |
| 17 | BTA-40652-no-rs        | 0        | 23285669 |

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| 17 | Hapmap51950-BTA-40650            | 0 | 23322903 |          |
| 17 | BTA-40649-no-rs                  | 0 | 23367681 |          |
| 17 | BTA-88834-no-rs                  | 0 | 23431642 |          |
| 17 | ARS-BFGL-NGS-16051               | 0 | 23590187 |          |
| 17 | Hapmap36431-SCAFFOLD200017_11121 | 0 |          | 23616463 |
| 17 | ARS-BFGL-BAC-35971               | 0 | 23657667 |          |
| 17 | ARS-BFGL-NGS-25840               | 0 | 23694684 |          |
| 17 | Hapmap29218-BTA-129776           | 0 | 24320366 |          |
| 17 | Hapmap60996-rs29015760           | 0 | 24345801 |          |
| 17 | ARS-BFGL-NGS-18252               | 0 | 24406498 |          |
| 17 | ARS-BFGL-NGS-88925               | 0 | 24442304 |          |
| 17 | Hapmap50579-BTA-116321           | 0 | 24486734 |          |
| 17 | Hapmap51529-BTA-98713            | 0 | 24539327 |          |
| 17 | Hapmap48970-BTA-98712            | 0 | 24654971 |          |
| 17 | ARS-BFGL-NGS-23409               | 0 | 24706081 |          |
| 17 | BTA-44072-no-rs                  | 0 | 24731346 |          |
| 17 | BTA-90024-no-rs                  | 0 | 24810915 |          |
| 17 | ARS-BFGL-BAC-48670               |   | 24848457 |          |
| 17 | ARS-BFGL-NGS-37940               | 0 | 24872748 |          |
| 17 | Hapmap49611-BTA-44077            | 0 | 24890906 |          |
| 17 | ARS-BFGL-NGS-88447               | 0 | 24945549 |          |
| 17 | ARS-BFGL-NGS-21860               | 0 | 25010293 |          |
| 17 | Hapmap33840-BES7_Contig516_781   | 0 |          | 25230088 |
| 17 | ARS-BFGL-NGS-86792               | 0 | 25251357 |          |
| 17 | BTA-31434-no-rs                  | 0 | 25339122 |          |
| 17 | ARS-BFGL-NGS-75460               |   | 25497713 |          |
| 17 | ARS-BFGL-NGS-64944               | 0 | 25625689 |          |
| 17 | BTA-22763-no-rs                  | 0 | 25654188 |          |
| 17 | BTA-22770-no-rs                  | 0 | 25676531 |          |
| 17 | Hapmap39152-BTA-27712            | 0 | 25745000 |          |
| 17 | Hapmap51101-BTA-97588            | 0 | 25851918 |          |
| 17 | ARS-BFGL-BAC-18831               | 0 | 26010339 |          |
| 17 | ARS-BFGL-NGS-40557               | 0 | 26040363 |          |
| 17 | Hapmap58142-rs29019796           | 0 | 26065857 |          |
| 17 | ARS-BFGL-NGS-100397              | 0 | 26197600 |          |
| 17 | Hapmap42541-BTA-40707            | 0 | 26228211 |          |
| 17 | ARS-BFGL-BAC-18843               | 0 | 26318464 |          |
| 17 | ARS-BFGL-NGS-107195              | 0 | 26398481 |          |
| 17 | BTA-46636-no-rs                  | 0 | 26418537 |          |
| 17 | BTA-46637-no-rs                  | 0 | 26442970 |          |
| 17 | Hapmap51732-BTA-46639            | 0 | 26519589 |          |
| 17 | BTA-20062-no-rs                  | 0 | 26555694 |          |
| 17 | BTA-46662-no-rs                  | 0 | 26712567 |          |
| 17 | Hapmap41875-BTA-46663            | 0 | 26735031 |          |
| 17 | BTA-46672-no-rs                  | 0 | 26954639 |          |
| 17 | Hapmap60105-rs29016438           | 0 | 26986219 |          |
| 17 | Hapmap43860-BTA-46675            | 0 | 27022623 |          |
| 17 | Hapmap60929-rs29023023           | 0 | 27097698 |          |
| 17 | UA-IFASA-5452                    | 0 | 27127895 |          |
| 17 | BTA-121991-no-rs                 | 0 | 27198407 |          |
| 17 | Hapmap39898-BTA-18764            | 0 | 27303135 |          |
| 17 | Hapmap33668-BTA-150833           | 0 | 27491589 |          |
| 17 | ARS-BFGL-NGS-41451               | 0 | 27516228 |          |
| 17 | Hapmap41156-BTA-112917           | 0 | 27623513 |          |

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| 17 | BTA-28350-no-rs                       | 0 | 27701281 |          |  |
| 17 | Hapmap49944-BTA-28345                 | 0 | 27721603 |          |  |
| 17 | ARS-BFGL-NGS-75185                    | 0 | 27751266 |          |  |
| 17 | BTA-40735-no-rs                       | 0 | 27808938 |          |  |
| 17 | BTA-40721-no-rs                       | 0 | 27826675 |          |  |
| 17 | Hapmap23871-BTA-131343                | 0 | 27950124 |          |  |
| 17 | Hapmap58542-rs29018933                | 0 | 27976539 |          |  |
| 17 | ARS-BFGL-NGS-99213                    | 0 | 28001895 |          |  |
| 17 | BTA-40742-no-rs                       | 0 | 28071496 |          |  |
| 17 | Hapmap55423-rs29013623                | 0 | 28168540 |          |  |
| 17 | ARS-BFGL-NGS-68295                    | 0 | 28234232 |          |  |
| 17 | ARS-BFGL-NGS-25718                    | 0 | 28254430 |          |  |
| 17 | BTB-01612776                          | 0 | 28304921 |          |  |
| 17 | Hapmap35289-BES4_Contig230_1042       | 0 |          | 28338411 |  |
| 17 | Hapmap58096-rs29011314                | 0 | 28372736 |          |  |
| 17 | ARS-BFGL-NGS-20522                    | 0 | 28430084 |          |  |
| 17 | Hapmap48604-BTA-110855                | 0 | 28477055 |          |  |
| 17 | ARS-BFGL-NGS-117518                   | 0 | 28501664 |          |  |
| 17 | BTB-01731152                          | 0 | 28566700 |          |  |
| 17 | BTA-116871-no-rs                      | 0 | 28615520 |          |  |
| 17 | BTB-00101072                          | 0 | 28653636 |          |  |
| 17 | BTB-00101173                          | 0 | 28673548 |          |  |
| 17 | Hapmap34356-BES10_Contig428_724       | 0 |          | 28695411 |  |
| 17 | ARS-BFGL-BAC-32103                    | 0 | 28753180 |          |  |
| 17 | BTB-00101401                          | 0 | 28779152 |          |  |
| 17 | BTA-47941-no-rs                       | 0 | 28816998 |          |  |
| 17 | ARS-BFGL-NGS-23063                    | 0 | 28862421 |          |  |
| 17 | ARS-BFGL-BAC-32107                    | 0 | 28923132 |          |  |
| 17 | Hapmap38834-BTA-40794                 | 0 | 29018684 |          |  |
| 17 | BTB-00676077                          | 0 | 29057538 |          |  |
| 17 | BTA-65874-no-rs                       | 0 | 29103180 |          |  |
| 17 | Hapmap39420-BTA-65875                 | 0 | 29129642 |          |  |
| 17 | ARS-BFGL-NGS-24203                    | 0 | 29318680 |          |  |
| 17 | ARS-BFGL-NGS-30992                    | 0 | 29368476 |          |  |
| 17 | ARS-BFGL-NGS-63170                    |   | 29398648 |          |  |
| 17 | ARS-BFGL-NGS-30118                    | 0 | 29440222 |          |  |
| 17 | ARS-BFGL-BAC-32712                    | 0 | 29478332 |          |  |
| 17 | BTA-120325-no-rs                      | 0 | 29523496 |          |  |
| 17 | ARS-BFGL-NGS-44538                    | 0 | 29612223 |          |  |
| 17 | ARS-BFGL-NGS-34720                    | 0 | 29636921 |          |  |
| 17 | BTA-40811-no-rs                       | 0 | 29673863 |          |  |
| 17 | Hapmap53209-rs29014879                | 0 | 29760863 |          |  |
| 17 | Hapmap54841-rs29022067                | 0 | 29881642 |          |  |
| 17 | ARS-BFGL-NGS-118057                   | 0 | 29926334 |          |  |
| 17 | ARS-USMARC-Parent-AY858890-rs29002256 | 0 |          | 29936157 |  |
| 17 | ARS-BFGL-NGS-85191                    | 0 | 29993845 |          |  |
| 17 | Hapmap51997-BTA-40805                 | 0 | 30063422 |          |  |
| 17 | ARS-BFGL-NGS-27474                    | 0 | 30173275 |          |  |
| 17 | Hapmap55008-rs29022004                | 0 | 30219083 |          |  |
| 17 | BTA-11683-no-rs                       | 0 | 30301272 |          |  |
| 17 | ARS-USMARC-583                        | 0 | 30334258 |          |  |
| 17 | ARS-USMARC-569                        | 0 | 30360942 |          |  |
| 17 | ARS-USMARC-547                        | 0 | 30404823 |          |  |
| 17 | BTB-00676303                          | 0 | 30477956 |          |  |

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| 17 | BTB-00676236                    | 0 | 30508078 |          |
| 17 | BTB-00676214                    | 0 | 30540080 |          |
| 17 | ARS-BFGL-NGS-61134              | 0 | 30676454 |          |
| 17 | BTB-02037965                    | 0 | 30707284 |          |
| 17 | BTB-00675244                    | 0 | 30778821 |          |
| 17 | BTB-01839787                    | 0 | 30813823 |          |
| 17 | BTB-01757364                    | 0 | 30870156 |          |
| 17 | Hapmap33244-BTA-158544          | 0 | 30904465 |          |
| 17 | BTB-01870009                    | 0 | 30925441 |          |
| 17 | BTB-01869986                    | 0 | 30949325 |          |
| 17 | ARS-BFGL-NGS-96366              | 0 | 31042083 |          |
| 17 | ARS-BFGL-NGS-63100              |   | 31108536 |          |
| 17 | Hapmap48525-BTA-92345           | 0 | 31159647 |          |
| 17 | BTB-01426795                    | 0 | 31182877 |          |
| 17 | Hapmap26728-BTA-153579          | 0 | 31230548 |          |
| 17 | BTA-104167-no-rs                | 0 | 31268164 |          |
| 17 | BTB-01562810                    | 0 | 31310645 |          |
| 17 | Hapmap61049-rs29026582          | 0 | 31341714 |          |
| 17 | Hapmap43461-BTA-111472          | 0 | 31392272 |          |
| 17 | BTA-111462-no-rs                | 0 | 31425897 |          |
| 17 | ARS-BFGL-NGS-37232              | 0 | 31447409 |          |
| 17 | Hapmap28180-BTA-152938          | 0 | 31516028 |          |
| 17 | BTA-102389-no-rs                | 0 | 31556203 |          |
| 17 | BTA-102388-no-rs                | 0 | 31589675 |          |
| 17 | BTB-01542763                    | 0 | 31632465 |          |
| 17 | Hapmap51554-BTA-114371          | 0 | 31670335 |          |
| 17 | BTB-01227664                    | 0 | 31719857 |          |
| 17 | BTB-01227713                    | 0 | 31790508 |          |
| 17 | BTB-01394111                    | 0 | 31937672 |          |
| 17 | BTB-01394079                    | 0 | 31966201 |          |
| 17 | Hapmap29357-BTA-147904          | 0 | 32009576 |          |
| 17 | ARS-BFGL-NGS-38157              | 0 | 32054898 |          |
| 17 | BTB-01393971                    | 0 | 32096554 |          |
| 17 | Hapmap26155-BTA-147894          | 0 | 32126563 |          |
| 17 | BTB-02074017                    | 0 | 32233437 |          |
| 17 | BTB-01811453                    | 0 | 32269727 |          |
| 17 | ARS-BFGL-NGS-74608              | 0 | 32377757 |          |
| 17 | BTB-00782224                    | 0 | 32421756 |          |
| 17 | ARS-BFGL-NGS-115574             | 0 | 32512382 |          |
| 17 | Hapmap31878-BTA-63086           | 0 | 32527297 |          |
| 17 | Hapmap58414-rs29020894          | 0 | 32601443 |          |
| 17 | BTB-00971111                    | 0 | 32645269 |          |
| 17 | ARS-BFGL-NGS-112636             | 0 | 32679701 |          |
| 17 | BTB-00782602                    | 0 | 32762909 |          |
| 17 | Hapmap33002-BTA-135175          | 0 | 32788648 |          |
| 17 | BTB-00782656                    | 0 | 32818172 |          |
| 17 | BTB-00782669                    | 0 | 32850115 |          |
| 17 | BTB-00782769                    | 0 | 32882668 |          |
| 17 | ARS-BFGL-NGS-113915             | 0 | 32911852 |          |
| 17 | BTA-50545-no-rs                 | 0 | 32943354 |          |
| 17 | ARS-BFGL-NGS-98604              | 0 | 33024168 |          |
| 17 | ARS-BFGL-NGS-40882              | 0 | 33098572 |          |
| 17 | Hapmap36050-SCAFFOLD151462_2974 | 0 |          | 33139235 |
| 17 | ARS-BFGL-NGS-24543              | 0 | 33174415 |          |

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| 17 | Hapmap42109-BTA-122067          | 0 | 33211327 |          |
| 17 | BTB-01421373                    | 0 | 33251225 |          |
| 17 | BTB-01421398                    | 0 | 33280721 |          |
| 17 | ARS-BFGL-NGS-38047              | 0 | 33317888 |          |
| 17 | Hapmap60386-rs29023534          | 0 | 33338008 |          |
| 17 | Hapmap48996-BTA-103789          | 0 | 33401754 |          |
| 17 | BTB-01557948                    | 0 | 33429390 |          |
| 17 | BTB-01557882                    | 0 | 33462719 |          |
| 17 | Hapmap34151-BES4_Contig331_734  | 0 |          | 33495581 |
| 17 | BTB-01779006                    | 0 | 33558100 |          |
| 17 | BTB-01937537                    | 0 | 33638999 |          |
| 17 | BTA-20975-no-rs                 | 0 | 33715935 |          |
| 17 | Hapmap53917-rs29022003          | 0 | 33758361 |          |
| 17 | BTB-01308307                    | 0 | 33797084 |          |
| 17 | BTB-01308199                    | 0 | 33827641 |          |
| 17 | BTB-01308172                    | 0 | 33852015 |          |
| 17 | BTB-01308098                    | 0 | 33898732 |          |
| 17 | BTB-01307961                    | 0 | 33925677 |          |
| 17 | Hapmap34868-VSWHP1E1013A_scf    | 0 |          | 33948813 |
| 17 | BTB-01786459                    | 0 | 33981761 |          |
| 17 | BTB-00855613                    | 0 | 34078461 |          |
| 17 | Hapmap45113-BTA-54994           | 0 | 34139617 |          |
| 17 | ARS-BFGL-NGS-117678             | 0 | 34198631 |          |
| 17 | ARS-BFGL-NGS-54215              | 0 | 34315609 |          |
| 17 | ARS-BFGL-BAC-32721              | 0 | 34377274 |          |
| 17 | Hapmap45911-BTA-122759          | 0 | 34409623 |          |
| 17 | BTA-24926-no-rs                 | 0 | 34429947 |          |
| 17 | Hapmap50955-BTA-40838           | 0 | 34496982 |          |
| 17 | ARS-BFGL-NGS-102063             | 0 | 34564610 |          |
| 17 | BTA-40837-no-rs                 | 0 | 34591064 |          |
| 17 | Hapmap55181-rs29024586          | 0 | 34624087 |          |
| 17 | Hapmap35672-SCAFFOLD261139_4435 | 0 |          | 34658815 |
| 17 | Hapmap48321-BTA-40830           | 0 | 34687492 |          |
| 17 | ARS-USMARC-528                  | 0 | 34752485 |          |
| 17 | Hapmap39649-BTA-40822           | 0 | 34905913 |          |
| 17 | Hapmap54079-rs29012677          | 0 | 34929776 |          |
| 17 | BTA-40817-no-rs                 | 0 | 34953139 |          |
| 17 | Hapmap51444-BTA-40815           | 0 | 34994873 |          |
| 17 | Hapmap46139-BTA-40813           | 0 | 35050237 |          |
| 17 | ARS-BFGL-NGS-34580              | 0 | 35174759 |          |
| 17 | Hapmap29086-BTA-40855           | 0 | 35229850 |          |
| 17 | ARS-BFGL-NGS-24364              | 0 | 35250836 |          |
| 17 | Hapmap59406-rs29026470          | 0 | 35300746 |          |
| 17 | ARS-BFGL-NGS-92393              | 0 | 35340553 |          |
| 17 | Hapmap41530-BTA-40859           | 0 | 35382966 |          |
| 17 | Hapmap27157-BTA-131368          | 0 | 35413944 |          |
| 17 | ARS-BFGL-NGS-77953              | 0 | 35435899 |          |
| 17 | Hapmap23395-BTA-131365          | 0 | 35461879 |          |
| 17 | BTA-40865-no-rs                 | 0 | 36275621 |          |
| 17 | ARS-BFGL-NGS-116917             | 0 | 36297178 |          |
| 17 | Hapmap33069-BTA-161042          | 0 | 36339293 |          |
| 17 | Hapmap51419-BTA-20747           | 0 | 36390393 |          |
| 17 | ARS-BFGL-NGS-118523             | 0 | 36411186 |          |
| 17 | Hapmap53822-rs29010170          | 0 | 36434056 |          |

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| 17 | UA-IFASA-2389          | 0 | 36501744 |
| 17 | Hapmap49910-BTA-20754  | 0 | 36571721 |
| 17 | BTA-20758-no-rs        | 0 | 36595026 |
| 17 | Hapmap23443-BTA-161049 | 0 | 36615502 |
| 17 | Hapmap49526-BTA-20762  | 0 | 36643872 |
| 17 | Hapmap59822-rs29020659 | 0 | 36703402 |
| 17 | ARS-BFGL-NGS-64437     | 0 | 36738179 |
| 17 | Hapmap27010-BTA-156922 | 0 | 36889694 |
| 17 | ARS-BFGL-NGS-34831     | 0 | 36941990 |
| 17 | BTA-29258-no-rs        | 0 | 37148470 |
| 17 | Hapmap24211-BTA-160060 | 0 | 37201424 |
| 17 | ARS-BFGL-NGS-94992     | 0 | 37234778 |
| 17 | Hapmap27435-BTA-154028 | 0 | 37265640 |
| 17 | ARS-BFGL-NGS-90634     | 0 | 37306252 |
| 17 | Hapmap38562-BTA-105553 | 0 | 37352127 |
| 17 | Hapmap27883-BTA-154035 | 0 | 37493844 |
| 17 | Hapmap51992-BTA-105566 | 0 | 37683478 |
| 17 | BTA-105571-no-rs       | 0 | 37709239 |
| 17 | ARS-BFGL-NGS-77988     | 0 | 37748125 |
| 17 | BTA-106947-no-rs       | 0 | 37819640 |
| 17 | Hapmap46283-BTA-119242 | 0 | 37933239 |
| 17 | Hapmap43738-BTA-99532  | 0 | 38001105 |
| 17 | ARS-BFGL-NGS-62561     | 0 | 38103567 |
| 17 | ARS-BFGL-NGS-78232     | 0 | 38144582 |
| 17 | Hapmap54444-rs29026028 | 0 | 38173381 |
| 17 | Hapmap56175-rs29013219 | 0 | 38207944 |
| 17 | BTA-111300-no-rs       | 0 | 38251362 |
| 17 | BTA-16921-no-rs        | 0 | 38275065 |
| 17 | ARS-BFGL-NGS-18350     | 0 | 38306902 |
| 17 | BTA-104059-no-rs       | 0 | 38345794 |
| 17 | Hapmap51996-BTA-26582  | 0 | 38380262 |
| 17 | BTA-104593-no-rs       | 0 | 38431805 |
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| 17 | ARS-BFGL-NGS-85197     | 0 | 39109225 |
| 17 | Hapmap30543-BTA-141219 | 0 | 39681407 |
| 17 | BTA-93234-no-rs        | 0 | 39739079 |
| 17 | Hapmap54725-rs29023184 | 0 | 39773797 |
| 17 | Hapmap43651-BTA-67415  | 0 | 39802502 |
| 17 | ARS-BFGL-NGS-118255    | 0 | 39919293 |
| 17 | ARS-BFGL-BAC-32745     | 0 | 39963957 |
| 17 | ARS-BFGL-NGS-99018     | 0 | 39987851 |
| 17 | ARS-BFGL-NGS-31619     | 0 | 40034778 |
| 17 | Hapmap44543-BTA-40914  | 0 | 40071626 |
| 17 | Hapmap48749-BTA-40913  | 0 | 40127809 |
| 17 | ARS-BFGL-NGS-95260     | 0 | 40148592 |
| 17 | BTA-18801-no-rs        | 0 | 40253505 |
| 17 | BTA-18798-no-rs        | 0 | 40275903 |
| 17 | BTA-40892-no-rs        | 0 | 40332091 |
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| 17 | ARS-BFGL-NGS-42020     | 0 | 40432574 |
| 17 | Hapmap43571-BTA-40888  | 0 | 40469093 |
| 17 | ARS-BFGL-NGS-92358     | 0 | 40489997 |
| 17 | Hapmap51591-BTA-40881  | 0 | 40535983 |
| 17 | ARS-BFGL-NGS-102428    | 0 | 40643707 |

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| 17 | Hapmap41532-BTA-40872  | 0 | 40693717 |
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| 17 | Hapmap53994-rs29024926 | 0 | 41013290 |
| 17 | ARS-BFGL-NGS-32208     | 0 | 41066514 |
| 17 | ARS-BFGL-NGS-101808    | 0 | 41089654 |
| 17 | ARS-BFGL-NGS-15818     | 0 | 41178453 |
| 17 | BTA-40927-no-rs        | 0 | 41214329 |
| 17 | ARS-BFGL-NGS-84530     |   | 41249275 |
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| 17 | ARS-BFGL-NGS-81782     | 0 | 41296951 |
| 17 | BTA-122399-no-rs       | 0 | 41342299 |
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| 17 | BTB-01151136           | 0 | 41422335 |
| 17 | Hapmap50839-BTA-98826  | 0 | 41449502 |
| 17 | ARS-BFGL-NGS-114905    | 0 | 41470591 |
| 17 | ARS-BFGL-NGS-61413     | 0 | 41514287 |
| 17 | BTB-01150969           | 0 | 41552349 |
| 17 | BTA-98802-no-rs        | 0 | 41584901 |
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| 17 | ARS-BFGL-NGS-110305    | 0 | 41650184 |
| 17 | BTB-01150784           | 0 | 41686505 |
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| 17 | ARS-BFGL-NGS-118521    | 0 | 41854313 |
| 17 | BTB-01524761           | 0 | 41939826 |
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| 17 | ARS-BFGL-BAC-34653     | 0 | 42082059 |
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| 17 | BTB-02022373           | 0 | 42129346 |
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| 17 | Hapmap28103-BTA-154966 | 0 | 42206854 |
| 17 | BTA-28795-no-rs        | 0 | 42265638 |
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| 17 | Hapmap25603-BTA-154421 | 0 | 42532618 |
| 17 | BTB-01595821           | 0 | 42567839 |
| 17 | BTB-01680332           | 0 | 42584965 |
| 17 | Hapmap42485-BTA-25566  | 0 | 42661925 |
| 17 | BTB-01914617           | 0 | 42688661 |
| 17 | BTB-01638715           | 0 | 42711744 |
| 17 | BTB-01282074           | 0 | 42783734 |
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| 17 | ARS-BFGL-NGS-12835     | 0 | 42892776 |
| 17 | Hapmap32352-BTA-153912 | 0 | 42917193 |
| 17 | Hapmap31509-BTA-159759 | 0 | 42942206 |
| 17 | BTB-01282157           | 0 | 42994249 |



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| 17 | BTA-17209-no-rs        | 0 | 43052005 |
| 17 | ARS-BFGL-NGS-96384     | 0 | 43085729 |
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| 17 | BTB-01505640           | 0 | 43232757 |
| 17 | ARS-BFGL-NGS-69129     | 0 | 43300788 |
| 17 | BTB-01904985           | 0 | 43325722 |
| 17 | BTA-117317-no-rs       | 0 | 43387939 |
| 17 | BTB-01737424           | 0 | 43412455 |
| 17 | BTB-00676802           | 0 | 43434676 |
| 17 | ARS-BFGL-NGS-114135    | 0 | 43459410 |
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| 17 | BTB-01220886           | 0 | 43597714 |
| 17 | Hapmap26742-BTA-156593 | 0 | 43621923 |
| 17 | ARS-BFGL-BAC-26997     | 0 | 43695068 |
| 17 | BTA-113152-no-rs       | 0 | 43716302 |
| 17 | BTA-113150-no-rs       | 0 | 43762526 |
| 17 | BTA-113142-no-rs       | 0 | 43801273 |
| 17 | BTB-01220555           | 0 | 43831778 |
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| 17 | BTB-01818770           | 0 | 44485292 |
| 17 | BTB-02001746           | 0 | 44532671 |
| 17 | ARS-BFGL-NGS-77504     | 0 | 44587183 |
| 17 | ARS-BFGL-NGS-15664     | 0 | 44616245 |
| 17 | Hapmap42324-BTA-78714  | 0 | 44671060 |
| 17 | ARS-BFGL-NGS-109945    | 0 | 44703759 |
| 17 | BTB-01442839           | 0 | 44733788 |
| 17 | ARS-BFGL-NGS-13528     | 0 | 44758501 |
| 17 | ARS-BFGL-NGS-73072     | 0 | 44822427 |
| 17 | BTA-105862-no-rs       | 0 | 44877430 |
| 17 | BTB-01585209           | 0 | 44910178 |
| 17 | ARS-BFGL-NGS-40391     | 0 | 44937646 |
| 17 | ARS-BFGL-NGS-109854    | 0 | 44963124 |
| 17 | ARS-BFGL-NGS-103012    | 0 | 44992963 |
| 17 | Hapmap41533-BTA-40976  | 0 | 45029111 |
| 17 | BTA-40973-no-rs        | 0 | 45065620 |
| 17 | ARS-BFGL-NGS-69554     | 0 | 45105544 |
| 17 | Hapmap40066-BTA-40952  | 0 | 45145609 |
| 17 | BTB-01715543           | 0 | 45185286 |
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| 17 | BTB-00116464           | 0 | 45258744 |

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| 17 | ARS-BFGL-NGS-78123     | 0        | 45296748 |
| 17 | BTB-00116147           | 0        | 45324619 |
| 17 | ARS-BFGL-NGS-115988    | 0        | 45356254 |
| 17 | ARS-BFGL-NGS-30681     | 0        | 45403748 |
| 17 | Hapmap29721-BTA-131409 | 0        | 45443843 |
| 17 | ARS-BFGL-NGS-24410     | 45494414 |          |
| 17 | ARS-BFGL-NGS-81828     | 0        | 45532444 |
| 17 | ARS-BFGL-NGS-27620     | 0        | 45574843 |
| 17 | ARS-BFGL-NGS-90053     | 0        | 45680965 |
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| 17 | ARS-BFGL-NGS-20061     | 0        | 45836823 |
| 17 | ARS-BFGL-NGS-74285     | 0        | 45901331 |
| 17 | ARS-BFGL-NGS-86713     | 0        | 46029765 |
| 17 | Hapmap57740-rs29026403 | 0        | 46067538 |
| 17 | ARS-BFGL-NGS-115427    | 0        | 46088305 |
| 17 | Hapmap50682-BTA-41001  | 0        | 46140152 |
| 17 | ARS-BFGL-NGS-37306     | 0        | 46169177 |
| 17 | ARS-BFGL-NGS-100015    | 0        | 46205732 |
| 17 | BTB-00678060           | 0        | 46296022 |
| 17 | BTA-41003-no-rs        | 0        | 46325733 |
| 17 | Hapmap33357-BTA-131422 | 0        | 46357742 |
| 17 | ARS-BFGL-NGS-116914    | 0        | 46391190 |
| 17 | BTB-01562387           | 0        | 46428993 |
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| 17 | Hapmap38384-BTA-117953 | 0        | 46514063 |
| 17 | ARS-BFGL-BAC-32111     | 0        | 46535046 |
| 17 | ARS-BFGL-NGS-79176     | 0        | 46558798 |
| 17 | BTB-01969338           | 0        | 46594077 |
| 17 | Hapmap28761-BTA-159815 | 0        | 46636204 |
| 17 | ARS-BFGL-BAC-27022     | 0        | 46695729 |
| 17 | BTB-02011105           | 0        | 46757291 |
| 17 | ARS-BFGL-NGS-61895     | 0        | 46791657 |
| 17 | ARS-BFGL-NGS-104548    | 0        | 46898339 |
| 17 | BTB-01656526           | 0        | 46923300 |
| 17 | ARS-BFGL-NGS-113153    | 0        | 46982228 |
| 17 | BTB-00678183           | 0        | 47015222 |
| 17 | ARS-BFGL-NGS-16934     | 0        | 47147387 |
| 17 | ARS-BFGL-NGS-15039     | 0        | 47170772 |
| 17 | ARS-BFGL-NGS-117582    | 0        | 47193174 |
| 17 | BTB-00678347           | 0        | 47226145 |
| 17 | ARS-BFGL-NGS-58500     | 47253080 |          |
| 17 | BTA-117207-no-rs       | 0        | 47268519 |
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| 17 | ARS-BFGL-NGS-89470     | 0        | 47334911 |
| 17 | ARS-BFGL-NGS-18235     | 0        | 47405668 |
| 17 | BTB-01953505           | 0        | 47436239 |
| 17 | Hapmap25919-BTA-163451 | 0        | 47462424 |
| 17 | ARS-BFGL-NGS-12510     | 0        | 47484553 |
| 17 | ARS-BFGL-NGS-109621    | 0        | 47522156 |
| 17 | ARS-BFGL-NGS-48248     | 0        | 47561475 |

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| 17 | ARS-BFGL-NGS-102186            | 0 | 47639850 |          |
| 17 | ARS-BFGL-NGS-31862             | 0 | 47664855 |          |
| 17 | BTA-27953-no-rs                | 0 | 47700237 |          |
| 17 | BTB-01796992                   | 0 | 47753340 |          |
| 17 | BTA-93763-no-rs                | 0 | 47788290 |          |
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| 17 | Hapmap34511-BES2_Contig398_735 | 0 |          | 47839446 |
| 17 | ARS-BFGL-NGS-96570             |   | 47898312 |          |
| 17 | ARS-BFGL-NGS-22143             | 0 | 47926452 |          |
| 17 | ARS-BFGL-NGS-116727            | 0 | 47971492 |          |
| 17 | ARS-BFGL-NGS-40659             | 0 | 48004067 |          |
| 17 | Hapmap38864-BTA-93656          | 0 | 48048314 |          |
| 17 | ARS-BFGL-NGS-102781            | 0 | 48084367 |          |
| 17 | ARS-BFGL-NGS-115443            | 0 | 48109979 |          |
| 17 | ARS-BFGL-NGS-13635             | 0 | 48164813 |          |
| 17 | ARS-BFGL-NGS-115236            | 0 | 48197227 |          |
| 17 | ARS-BFGL-NGS-111673            | 0 | 48263218 |          |
| 17 | ARS-BFGL-NGS-114523            | 0 | 48276271 |          |
| 17 | Hapmap50826-BTA-93744          | 0 | 48331319 |          |
| 17 | ARS-BFGL-NGS-113576            | 0 | 48397486 |          |
| 17 | ARS-BFGL-NGS-111789            | 0 | 48479069 |          |
| 17 | ARS-BFGL-NGS-101427            | 0 | 48522455 |          |
| 17 | BTA-88333-no-rs                | 0 | 48570446 |          |
| 17 | Hapmap38389-BTA-17091          | 0 | 48703634 |          |
| 17 | Hapmap42713-BTA-87646          | 0 | 48747216 |          |
| 17 | ARS-BFGL-BAC-32142             | 0 | 48765490 |          |
| 17 | ARS-BFGL-NGS-75773             | 0 | 48788398 |          |
| 17 | ARS-BFGL-BAC-32128             | 0 | 48860957 |          |
| 17 | ARS-BFGL-NGS-87412             | 0 | 48889044 |          |
| 17 | ARS-BFGL-NGS-67535             | 0 | 49044294 |          |
| 17 | ARS-BFGL-NGS-55775             | 0 | 49069809 |          |
| 17 | BTA-41023-no-rs                | 0 | 49181363 |          |
| 17 | Hapmap49157-BTA-41030          | 0 | 49227724 |          |
| 17 | Hapmap32554-BTA-131430         | 0 | 49263153 |          |
| 17 | ARS-BFGL-NGS-42950             | 0 | 49531815 |          |
| 17 | ARS-BFGL-NGS-104247            | 0 | 49578439 |          |
| 17 | Hapmap25587-BTA-150034         | 0 | 49702881 |          |
| 17 | ARS-BFGL-NGS-113061            | 0 | 49743917 |          |
| 17 | UA-IFASA-2647                  | 0 | 49791728 |          |
| 17 | ARS-BFGL-NGS-112149            | 0 | 49828442 |          |
| 17 | ARS-BFGL-NGS-17643             | 0 | 50047172 |          |
| 17 | Hapmap31199-BTA-162028         | 0 | 50083942 |          |
| 17 | Hapmap3803-BTA-21924           | 0 | 50163822 |          |
| 17 | ARS-BFGL-NGS-30619             | 0 | 50194955 |          |
| 17 | BTA-21929-no-rs                | 0 | 50256194 |          |
| 17 | Hapmap49022-BTA-111730         | 0 | 50340355 |          |
| 17 | ARS-BFGL-NGS-43660             |   | 50407079 |          |
| 17 | Hapmap41801-BTA-21911          | 0 | 50429878 |          |
| 17 | ARS-BFGL-NGS-105927            | 0 | 50467384 |          |
| 17 | Hapmap52540-rs29019474         | 0 | 50544468 |          |
| 17 | Hapmap42712-BTA-87605          | 0 | 51024797 |          |
| 17 | ARS-BFGL-BAC-34052             | 0 | 51051583 |          |
| 17 | ARS-BFGL-NGS-35058             | 0 | 51076762 |          |
| 17 | ARS-BFGL-NGS-75066             | 0 | 51097333 |          |

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| 17 | ARS-BFGL-NGS-109813    | 0        | 51746326 |
| 17 | Hapmap42354-BTA-89491  | 0        | 52156863 |
| 17 | ARS-BFGL-NGS-94380     | 52217521 |          |
| 17 | ARS-BFGL-NGS-85209     | 0        | 52276513 |
| 17 | ARS-BFGL-NGS-17507     | 0        | 52324632 |
| 17 | ARS-BFGL-NGS-58660     | 52366335 |          |
| 17 | ARS-BFGL-NGS-96193     | 0        | 52416517 |
| 17 | ARS-BFGL-NGS-96931     | 0        | 52502750 |
| 17 | BTA-09374-rs29025536   | 0        | 52544000 |
| 17 | ARS-BFGL-NGS-119434    | 0        | 52577471 |
| 17 | ARS-BFGL-NGS-99210     | 0        | 52740918 |
| 17 | ARS-BFGL-NGS-13988     | 0        | 52778195 |
| 17 | ARS-BFGL-NGS-112366    | 0        | 52809531 |
| 17 | Hapmap52863-rs29024498 | 0        | 52960684 |
| 17 | ARS-BFGL-NGS-90228     | 0        | 53021559 |
| 17 | ARS-BFGL-NGS-115019    | 0        | 53067783 |
| 17 | BTA-41066-no-rs        | 0        | 53098878 |
| 17 | ARS-BFGL-NGS-39854     | 0        | 53180044 |
| 17 | ARS-BFGL-NGS-17182     | 0        | 53338437 |
| 17 | ARS-BFGL-NGS-97857     | 0        | 53380564 |
| 17 | ARS-BFGL-NGS-91823     | 0        | 53423099 |
| 17 | Hapmap44301-BTA-85555  | 0        | 53455368 |
| 17 | ARS-BFGL-NGS-30185     | 0        | 53527870 |
| 17 | ARS-BFGL-NGS-29268     | 0        | 53551623 |
| 17 | Hapmap30366-BTA-85546  | 0        | 53577808 |
| 17 | Hapmap39519-BTA-85553  | 0        | 53620065 |
| 17 | ARS-BFGL-NGS-77566     | 0        | 53722972 |
| 17 | ARS-BFGL-NGS-16886     | 0        | 53755199 |
| 17 | ARS-BFGL-NGS-107312    | 0        | 53797095 |
| 17 | ARS-BFGL-NGS-17071     | 0        | 53851601 |
| 17 | ARS-BFGL-NGS-78006     | 0        | 53925368 |
| 17 | ARS-BFGL-BAC-34063     | 0        | 53967748 |
| 17 | ARS-BFGL-NGS-30811     | 0        | 53983467 |
| 17 | ARS-BFGL-NGS-61992     | 0        | 54025463 |
| 17 | Hapmap41256-BTA-41115  | 0        | 54052291 |
| 17 | Hapmap51226-BTA-41110  | 0        | 54120968 |
| 17 | BTA-41106-no-rs        | 0        | 54170627 |
| 17 | Hapmap32296-BTA-131448 | 0        | 54312738 |
| 17 | ARS-BFGL-NGS-116543    | 0        | 54408755 |
| 17 | ARS-BFGL-NGS-14183     | 0        | 54456978 |
| 17 | Hapmap57269-ss46526874 | 0        | 54563001 |
| 17 | BTA-41091-no-rs        | 0        | 54611931 |
| 17 | Hapmap47942-BTA-41087  | 0        | 54651938 |
| 17 | ARS-BFGL-NGS-117189    | 0        | 54783714 |
| 17 | ARS-BFGL-NGS-17680     | 0        | 54805293 |
| 17 | ARS-BFGL-BAC-34060     | 0        | 54836125 |
| 17 | ARS-BFGL-NGS-16431     | 0        | 54858337 |
| 17 | ARS-BFGL-NGS-82359     | 0        | 54945167 |
| 17 | Hapmap60750-rs29010166 | 0        | 55046617 |
| 17 | ARS-BFGL-NGS-27920     | 0        | 55076312 |
| 17 | Hapmap52137-rs29018289 | 0        | 55105554 |
| 17 | ARS-BFGL-NGS-19180     | 0        | 55192014 |
| 17 | Hapmap55514-rs29015079 | 0        | 55221058 |
| 17 | ARS-BFGL-NGS-63640     | 0        | 55248967 |

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| 17 | ARS-BFGL-NGS-23393               | 0 | 55286636 |          |
| 17 | Hapmap54487-rs29018040           | 0 | 55314133 |          |
| 17 | BTA-41195-no-rs                  | 0 | 55339623 |          |
| 17 | BTA-121093-no-rs                 | 0 | 55366744 |          |
| 17 | Hapmap54286-ss46526589           | 0 | 55417883 |          |
| 17 | ARS-BFGL-BAC-34067               | 0 | 55471494 |          |
| 17 | ARS-BFGL-NGS-61508               | 0 | 55491893 |          |
| 17 | BTA-41203-no-rs                  | 0 | 55519655 |          |
| 17 | ARS-BFGL-NGS-64029               | 0 | 55559792 |          |
| 17 | ARS-BFGL-NGS-91210               | 0 | 55595522 |          |
| 17 | ARS-BFGL-NGS-106267              | 0 | 55637193 |          |
| 17 | Hapmap32890-BTA-41181            | 0 | 55658355 |          |
| 17 | ARS-BFGL-NGS-109801              | 0 | 55713369 |          |
| 17 | ARS-BFGL-NGS-119542              | 0 | 55741625 |          |
| 17 | ARS-BFGL-NGS-21071               | 0 | 55764236 |          |
| 17 | ARS-BFGL-NGS-99108               | 0 | 55781808 |          |
| 17 | ARS-BFGL-NGS-22276               | 0 | 55816005 |          |
| 17 | Hapmap47284-BTA-41164            | 0 | 55853187 |          |
| 17 | Hapmap56365-rs29022398           | 0 | 55884612 |          |
| 17 | ARS-BFGL-NGS-36082               | 0 | 55916203 |          |
| 17 | ARS-BFGL-NGS-116817              | 0 | 55980423 |          |
| 17 | ARS-BFGL-NGS-91325               | 0 | 56023773 |          |
| 17 | Hapmap59518-rs29027553           | 0 | 56077546 |          |
| 17 | Hapmap30059-BTA-16379            | 0 | 56100282 |          |
| 17 | ARS-BFGL-NGS-106879              | 0 | 56127482 |          |
| 17 | ARS-BFGL-NGS-111753              | 0 | 56161089 |          |
| 17 | ARS-BFGL-NGS-41667               | 0 | 56181953 |          |
| 17 | Hapmap49158-BTA-41145            | 0 | 56234762 |          |
| 17 | ARS-BFGL-NGS-57149               | 0 | 56310258 |          |
| 17 | ARS-BFGL-NGS-111058              | 0 | 56344620 |          |
| 17 | Hapmap33195-BTA-131536           | 0 | 56410954 |          |
| 17 | ARS-USMARC-Parent-AY860426-no-rs | 0 |          | 56512519 |
| 17 | ARS-BFGL-NGS-105994              | 0 | 56514551 |          |
| 17 | BTA-41253-no-rs                  | 0 | 56558227 |          |
| 17 | ARS-BFGL-NGS-69085               | 0 | 56587255 |          |
| 17 | ARS-BFGL-NGS-104307              | 0 | 56625212 |          |
| 17 | BTA-41250-no-rs                  | 0 | 56658057 |          |
| 17 | BTB-00679561                     | 0 | 56729059 |          |
| 17 | Hapmap34428-BES2_Contig387_701   | 0 |          | 56823469 |
| 17 | ARS-BFGL-NGS-39930               |   | 56941968 |          |
| 17 | ARS-BFGL-NGS-118650              | 0 | 56963536 |          |
| 17 | ARS-BFGL-NGS-56960               |   | 57012156 |          |
| 17 | Hapmap43572-BTA-41227            | 0 | 57045290 |          |
| 17 | ARS-BFGL-NGS-117067              | 0 | 57068849 |          |
| 17 | ARS-BFGL-NGS-21400               | 0 | 57109193 |          |
| 17 | ARS-BFGL-NGS-100555              | 0 | 57131089 |          |
| 17 | ARS-BFGL-BAC-34676               | 0 | 57172637 |          |
| 17 | UA-IFASA-4960                    | 0 | 57203284 |          |
| 17 | ARS-BFGL-NGS-108656              | 0 | 57228766 |          |
| 17 | Hapmap34825-BES1_Contig394_854   | 0 |          | 57251180 |
| 17 | ARS-BFGL-NGS-39186               | 0 | 57284351 |          |
| 17 | ARS-BFGL-NGS-42534               | 0 | 57328483 |          |
| 17 | ARS-BFGL-NGS-73290               | 0 | 57350232 |          |
| 17 | ARS-BFGL-NGS-783                 | 0 | 57572420 |          |

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| 17 | BTB-00678784                     | 0 | 57599454 |          |
| 17 | UA-IFASA-3085                    | 0 | 57637104 |          |
| 17 | ARS-BFGL-NGS-116135              | 0 | 57732465 |          |
| 17 | BTB-00679635                     | 0 | 57885999 |          |
| 17 | Hapmap55600-rs29021810           | 0 | 57914284 |          |
| 17 | Hapmap48323-BTA-41259            | 0 | 57978830 |          |
| 17 | Hapmap48751-BTA-41232            | 0 | 58016927 |          |
| 17 | Hapmap28182-BTA-16788            | 0 | 58066971 |          |
| 17 | Hapmap43574-BTA-41267            | 0 | 58095342 |          |
| 17 | BTB-01100978                     | 0 | 58141663 |          |
| 17 | BTA-25636-no-rs                  | 0 | 58165092 |          |
| 17 | ARS-BFGL-NGS-21538               | 0 | 58257914 |          |
| 17 | Hapmap38210-BTA-25613            | 0 | 58285008 |          |
| 17 | ARS-BFGL-NGS-34592               | 0 | 58321127 |          |
| 17 | ARS-BFGL-NGS-24692               | 0 | 58374544 |          |
| 17 | Hapmap59412-ss46526180           | 0 | 58406042 |          |
| 17 | BTA-25627-no-rs                  | 0 | 58438656 |          |
| 17 | Hapmap36184-SCAFFOLD281013_11223 | 0 |          | 58471380 |
| 17 | BTA-25628-no-rs                  | 0 | 58497468 |          |
| 17 | ARS-BFGL-NGS-37449               | 0 | 58601715 |          |
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| 17 | Hapmap59353-rs29024188           | 0 | 58686592 |          |
| 17 | ARS-BFGL-NGS-54784               | 0 | 58734028 |          |
| 17 | Hapmap54759-rs29012166           | 0 | 58821993 |          |
| 17 | ARS-BFGL-NGS-116969              | 0 | 58907025 |          |
| 17 | Hapmap43749-BTA-104425           | 0 | 58966184 |          |
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| 17 | ARS-BFGL-NGS-55560               | 0 | 59043406 |          |
| 17 | ARS-BFGL-NGS-788                 | 0 | 59090672 |          |
| 17 | BTB-00679975                     | 0 | 59112241 |          |
| 17 | BTB-00680005                     | 0 | 59196656 |          |
| 17 | BTB-00680019                     | 0 | 59241175 |          |
| 17 | ARS-BFGL-NGS-17239               | 0 | 59320664 |          |
| 17 | BTB-00680057                     | 0 | 59357774 |          |
| 17 | BTA-41342-no-rs                  | 0 | 59418869 |          |
| 17 | Hapmap60554-rs29024448           | 0 | 59449631 |          |
| 17 | ARS-BFGL-NGS-22260               |   | 59493419 |          |
| 17 | Hapmap33827-BES10_Contig357_1268 | 0 |          | 59540930 |
| 17 | Hapmap50684-BTA-41345            | 0 | 59566080 |          |
| 17 | ARS-BFGL-NGS-88479               | 0 | 59633487 |          |
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| 17 | Hapmap40934-BTA-27274            | 0 | 59778912 |          |
| 17 | ARS-BFGL-NGS-116162              | 0 | 59816580 |          |
| 17 | Hapmap47197-BTA-121099           | 0 | 59864519 |          |
| 17 | BTB-01832132                     | 0 | 59879057 |          |
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| 17 | ARS-BFGL-NGS-17172               | 0 | 59930714 |          |
| 17 | ARS-BFGL-NGS-10055               | 0 | 59970299 |          |
| 17 | ARS-BFGL-NGS-30971               | 0 | 60015292 |          |
| 17 | ARS-BFGL-NGS-95598               | 0 | 60069612 |          |
| 17 | ARS-BFGL-BAC-35984               | 0 | 60094033 |          |
| 17 | BTB-00681505                     | 0 | 60165864 |          |

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| 17 | Hapmap41258-BTA-41381  | 0        | 60289891 |
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| 17 | ARS-BFGL-NGS-118636    | 0        | 60366064 |
| 17 | BTB-00681735           | 0        | 60394453 |
| 17 | ARS-BFGL-NGS-24995     | 0        | 60418182 |
| 17 | ARS-BFGL-NGS-37590     | 60561601 |          |
| 17 | ARS-BFGL-BAC-35987     | 0        | 60584522 |
| 17 | Hapmap39551-BTA-23548  | 0        | 60612635 |
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| 17 | ARS-BFGL-NGS-113171    | 0        | 60711532 |
| 17 | BTB-01327818           | 0        | 60746006 |
| 17 | BTB-00682032           | 0        | 60849321 |
| 17 | BTB-00682000           | 0        | 60881278 |
| 17 | Hapmap48324-BTA-41405  | 0        | 60931137 |
| 17 | Hapmap38836-BTA-41399  | 0        | 60975232 |
| 17 | BTB-00681880           | 0        | 60999373 |
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| 17 | Hapmap49600-BTA-41398  | 0        | 61082159 |
| 17 | BTB-00681799           | 0        | 61117532 |
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| 17 | Hapmap40696-BTA-24595  | 0        | 61269381 |
| 17 | ARS-BFGL-NGS-110404    | 0        | 61290868 |
| 17 | BTA-112642-no-rs       | 0        | 61311307 |
| 17 | ARS-BFGL-NGS-92041     | 0        | 61352459 |
| 17 | ARS-BFGL-NGS-13850     | 61401502 |          |
| 17 | ARS-BFGL-NGS-40750     | 61485853 |          |
| 17 | ARS-BFGL-NGS-26121     | 0        | 61522805 |
| 17 | ARS-BFGL-NGS-104295    | 0        | 61555800 |
| 17 | ARS-BFGL-NGS-57403     | 0        | 61592105 |
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| 17 | Hapmap48551-BTA-00714  | 0        | 61676258 |
| 17 | BTA-41446-no-rs        | 0        | 61717064 |
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| 17 | ARS-BFGL-NGS-13690     | 61817712 |          |
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| 17 | ARS-BFGL-NGS-76990     | 61979378 |          |
| 17 | ARS-BFGL-NGS-118025    | 0        | 62011781 |
| 17 | Hapmap48683-BTA-21166  | 0        | 62070942 |
| 17 | ARS-BFGL-NGS-10501     | 0        | 62100192 |
| 17 | ARS-BFGL-NGS-102905    | 0        | 62127421 |
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| 17 | BTB-01095540           | 0        | 62213889 |
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| 17 | BTA-122705-no-rs       | 0        | 62290698 |
| 17 | ARS-BFGL-NGS-118774    | 0        | 62311865 |
| 17 | ARS-BFGL-NGS-75936     | 0        | 62331085 |
| 17 | ARS-BFGL-NGS-119720    | 0        | 62373110 |
| 17 | BTA-21159-no-rs        | 0        | 62433322 |

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| 17 | Hapmap50278-BTA-21163          | 0        | 62592605 |          |
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| 17 | ARS-BFGL-NGS-11333             | 0        | 62662034 |          |
| 17 | ARS-BFGL-NGS-36014             | 0        | 62700273 |          |
| 17 | Hapmap43511-BTA-21167          | 0        | 62758681 |          |
| 17 | ARS-BFGL-NGS-113440            | 0        | 62891304 |          |
| 17 | ARS-BFGL-NGS-17397             | 0        | 62977480 |          |
| 17 | ARS-BFGL-NGS-62660             | 0        | 63012699 |          |
| 17 | ARS-BFGL-NGS-39993             | 0        | 63049154 |          |
| 17 | ARS-BFGL-NGS-76629             | 0        | 63063122 |          |
| 17 | ARS-BFGL-NGS-110646            | 0        | 63140712 |          |
| 17 | Hapmap58289-rs29023319         | 0        | 63188588 |          |
| 17 | ARS-BFGL-NGS-32210             | 63255304 |          |          |
| 17 | Hapmap50685-BTA-41728          | 0        | 63283340 |          |
| 17 | ARS-BFGL-NGS-94395             | 0        | 63325773 |          |
| 17 | ARS-BFGL-NGS-67232             | 0        | 63366584 |          |
| 17 | ARS-BFGL-NGS-32760             | 0        | 63394223 |          |
| 17 | Hapmap35908-SCAFFOLD62866_5199 | 0        |          | 63415937 |
| 17 | ARS-BFGL-NGS-111537            | 0        | 63448612 |          |
| 17 | ARS-BFGL-NGS-77442             | 0        | 63480469 |          |
| 17 | Hapmap52830-rs29014800         | 0        | 63541690 |          |
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| 17 | ARS-BFGL-NGS-65368             | 0        | 63597253 |          |
| 17 | Hapmap60900-rs29022475         | 0        | 63626189 |          |
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| 17 | ARS-BFGL-NGS-113849            | 0        | 63775109 |          |
| 17 | ARS-BFGL-NGS-68142             | 0        | 63795337 |          |
| 17 | ARS-BFGL-NGS-108546            | 0        | 63855514 |          |
| 17 | ARS-BFGL-NGS-40427             | 0        | 63939534 |          |
| 17 | Hapmap26503-BTA-41657          | 0        | 63990603 |          |
| 17 | Hapmap24163-BTA-160726         | 0        | 64011938 |          |
| 17 | BTB-01301223                   | 0        | 64049290 |          |
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| 17 | Hapmap49161-BTA-41644          | 0        | 64253473 |          |
| 17 | BTA-41643-no-rs                | 0        | 64281632 |          |
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| 17 | ARS-BFGL-NGS-107698            | 0        | 64637527 |          |
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| 17 | ARS-BFGL-NGS-23799             | 0        | 64754159 |          |
| 17 | ARS-BFGL-NGS-119741            | 0        | 64784269 |          |



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| 17 | BTB-00684828           | 0        | 64879624 |
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| 17 | ARS-BFGL-BAC-36625     | 0        | 64982245 |
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| 17 | Hapmap30344-BTA-41596  | 0        | 65297499 |
| 17 | Hapmap50355-BTA-41590  | 0        | 65321730 |
| 17 | BTB-00684047           | 0        | 65393511 |
| 17 | ARS-BFGL-NGS-104905    | 0        | 65425899 |
| 17 | Hapmap49603-BTA-41587  | 0        | 65447238 |
| 17 | ARS-BFGL-NGS-34489     | 0        | 65519800 |
| 17 | ARS-BFGL-BAC-36594     | 0        | 65547385 |
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| 17 | ARS-BFGL-NGS-105782    | 0        | 65597327 |
| 17 | ARS-BFGL-NGS-21965     | 0        | 65642547 |
| 17 | ARS-BFGL-NGS-111330    | 0        | 65700521 |
| 17 | ARS-BFGL-NGS-114253    | 0        | 65748385 |
| 17 | ARS-BFGL-NGS-112123    | 0        | 65771136 |
| 17 | ARS-BFGL-NGS-23944     | 0        | 65804551 |
| 17 | ARS-BFGL-NGS-25279     | 0        | 65833965 |
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| 17 | ARS-BFGL-NGS-115604    | 0        | 65923565 |
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| 17 | ARS-BFGL-NGS-94330     | 0        | 66115692 |
| 17 | ARS-BFGL-NGS-58480     | 66164570 |          |
| 17 | ARS-BFGL-BAC-36611     | 0        | 66206057 |
| 17 | ARS-BFGL-NGS-17192     | 0        | 66236750 |
| 17 | BTB-00682926           | 0        | 66268354 |
| 17 | ARS-BFGL-NGS-114482    | 0        | 66304866 |
| 17 | ARS-BFGL-NGS-30065     | 0        | 66368315 |
| 17 | ARS-BFGL-NGS-52965     | 0        | 66404458 |
| 17 | ARS-BFGL-NGS-22098     | 0        | 66457728 |
| 17 | Hapmap42205-BTA-41451  | 0        | 66508518 |
| 17 | ARS-BFGL-NGS-36119     | 0        | 66555864 |
| 17 | ARS-BFGL-NGS-53285     | 0        | 66577268 |
| 17 | ARS-BFGL-NGS-93580     | 0        | 66605300 |
| 17 | ARS-BFGL-NGS-34106     | 0        | 66619908 |
| 17 | Hapmap24572-BTA-154734 | 0        | 66654471 |
| 17 | Hapmap40427-BTA-41914  | 0        | 66671839 |
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| 17 | ARS-BFGL-NGS-62454     | 0        | 66751217 |
| 17 | ARS-BFGL-NGS-102695    | 0        | 66790999 |
| 17 | ARS-BFGL-NGS-36206     | 0        | 66830235 |

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| 17 | Hapmap40974-BTA-41797  | 0        | 66919563 |
| 17 | ARS-BFGL-NGS-119559    | 0        | 66971462 |
| 17 | ARS-BFGL-NGS-55840     | 66992594 |          |
| 17 | ARS-BFGL-NGS-101386    | 0        | 67017094 |
| 17 | BTA-41804-no-rs        | 0        | 67131762 |
| 17 | BTB-00686787           | 0        | 67160019 |
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| 17 | Hapmap51227-BTA-41809  | 0        | 67216420 |
| 17 | BTB-00686912           | 0        | 67245920 |
| 17 | ARS-BFGL-NGS-41791     | 0        | 67271374 |
| 17 | Hapmap51408-BTA-121104 | 0        | 67309106 |
| 17 | ARS-BFGL-NGS-20716     | 0        | 67345189 |
| 17 | ARS-BFGL-NGS-100379    | 0        | 67375320 |
| 17 | Hapmap30369-BTA-95663  | 0        | 67400232 |
| 17 | ARS-BFGL-NGS-36532     | 0        | 67438814 |
| 17 | UA-IFASA-6855          | 0        | 67481913 |
| 17 | Hapmap47558-BTA-28226  | 0        | 67505450 |
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| 17 | ARS-BFGL-NGS-72292     | 0        | 67605994 |
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| 17 | BTB-00686240           | 0        | 67661532 |
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| 17 | ARS-BFGL-NGS-118351    | 0        | 67760646 |
| 17 | BTB-01899397           | 0        | 67785072 |
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| 17 | ARS-BFGL-NGS-109870    | 0        | 67851096 |
| 17 | ARS-BFGL-NGS-92298     | 0        | 67882288 |
| 17 | ARS-BFGL-NGS-27727     | 0        | 67910146 |
| 17 | Hapmap47607-BTA-41787  | 0        | 67941337 |
| 17 | Hapmap41535-BTA-41786  | 0        | 67975896 |
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| 17 | ARS-BFGL-NGS-110275    | 0        | 68028037 |
| 17 | BTA-41779-no-rs        | 0        | 68058609 |
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| 17 | ARS-BFGL-NGS-16635     | 0        | 68143571 |
| 17 | ARS-BFGL-NGS-104430    | 0        | 68187177 |
| 17 | ARS-BFGL-NGS-30538     | 0        | 68221835 |
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| 17 | ARS-BFGL-NGS-118879    | 0        | 68356297 |
| 17 | BTA-36055-no-rs        | 0        | 68393191 |
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| 17 | Hapmap58852-rs29023414 | 0        | 68468706 |
| 17 | ARS-BFGL-NGS-37725     | 0        | 68490453 |
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| 17 | ARS-BFGL-NGS-52835     | 0        | 68545781 |
| 17 | ARS-BFGL-NGS-88726     | 0        | 68565693 |
| 17 | ARS-BFGL-NGS-117602    | 0        | 68592639 |
| 17 | BTB-01303083           | 0        | 68660499 |
| 17 | ARS-BFGL-NGS-37560     | 68702128 |          |
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| 17 | BTB-01122061           | 0        | 68786880 |
| 17 | BTB-01122011           | 0        | 68815004 |
| 17 | ARS-BFGL-NGS-63537     | 0        | 68839081 |

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| 17 | ARS-BFGL-NGS-22945             | 0 | 68977349 |          |  |
| 17 | ARS-BFGL-NGS-57507             | 0 | 69005486 |          |  |
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| 17 | ARS-BFGL-NGS-114654            | 0 | 69138161 |          |  |
| 17 | BTB-01232061                   | 0 | 69210929 |          |  |
| 17 | ARS-BFGL-NGS-13495             | 0 | 69267462 |          |  |
| 17 | ARS-BFGL-NGS-109830            | 0 | 69312539 |          |  |
| 17 | ARS-BFGL-NGS-98816             | 0 | 69389533 |          |  |
| 17 | ARS-BFGL-NGS-20761             | 0 | 69459128 |          |  |
| 17 | ARS-BFGL-NGS-33241             | 0 | 69496828 |          |  |
| 17 | BTA-102489-no-rs               | 0 | 69535278 |          |  |
| 17 | Hapmap41731-BTA-102491         | 0 | 69572942 |          |  |
| 17 | ARS-BFGL-BAC-35593             | 0 | 69703894 |          |  |
| 17 | BTB-01130340                   | 0 | 69768638 |          |  |
| 17 | BTB-01130358                   | 0 | 69832994 |          |  |
| 17 | BTB-01130451                   | 0 | 69863344 |          |  |
| 17 | BTB-01130516                   | 0 | 69967255 |          |  |
| 17 | BTB-01682471                   | 0 | 70065396 |          |  |
| 17 | Hapmap27966-BTA-149885         | 0 | 70161402 |          |  |
| 17 | BTA-93550-no-rs                | 0 | 70218915 |          |  |
| 17 | ARS-BFGL-NGS-103734            | 0 | 70290307 |          |  |
| 17 | Hapmap50686-BTA-41836          | 0 | 70329661 |          |  |
| 17 | ARS-BFGL-NGS-93586             | 0 | 70358455 |          |  |
| 17 | Hapmap47002-BTA-41821          | 0 | 70408777 |          |  |
| 17 | ARS-BFGL-NGS-78487             | 0 | 70443042 |          |  |
| 17 | ARS-BFGL-NGS-36892             | 0 | 70460874 |          |  |
| 17 | ARS-BFGL-NGS-78097             | 0 | 70498708 |          |  |
| 17 | ARS-BFGL-NGS-33819             | 0 | 70549798 |          |  |
| 17 | ARS-BFGL-NGS-110635            | 0 | 70632532 |          |  |
| 17 | BTB-00685397                   | 0 | 70699234 |          |  |
| 17 | ARS-BFGL-NGS-104070            | 0 | 70728195 |          |  |
| 17 | ARS-BFGL-NGS-11660             |   | 70755087 |          |  |
| 17 | ARS-BFGL-NGS-62271             | 0 | 70776835 |          |  |
| 17 | ARS-BFGL-NGS-14064             | 0 | 70814867 |          |  |
| 17 | ARS-BFGL-NGS-74139             | 0 | 70847622 |          |  |
| 17 | ARS-BFGL-NGS-116026            | 0 | 70918515 |          |  |
| 17 | ARS-BFGL-NGS-54034             | 0 | 70962192 |          |  |
| 17 | ARS-BFGL-NGS-20810             | 0 | 71012121 |          |  |
| 17 | ARS-BFGL-NGS-69511             | 0 | 71058543 |          |  |
| 17 | Hapmap29812-BTA-131753         | 0 | 71081308 |          |  |
| 17 | ARS-BFGL-NGS-70175             | 0 | 71120078 |          |  |
| 17 | BTA-41874-no-rs                | 0 | 71165342 |          |  |
| 17 | ARS-BFGL-NGS-72336             | 0 | 71192864 |          |  |
| 17 | ARS-BFGL-NGS-78729             | 0 | 71231159 |          |  |
| 17 | ARS-BFGL-NGS-10248             | 0 | 71260851 |          |  |
| 17 | UA-IFASA-4330                  | 0 | 71286188 |          |  |
| 17 | Hapmap36224-SCAFFOLD85606_7256 | 0 |          | 71318673 |  |
| 17 | ARS-BFGL-BAC-35623             | 0 | 71352459 |          |  |

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| 17 | ARS-BFGL-NGS-36744               | 0 | 71381577 |          |
| 17 | Hapmap36307-SCAFFOLD101087_12054 | 0 |          | 71407396 |
| 17 | ARS-BFGL-NGS-31243               | 0 | 71438234 |          |
| 17 | BTB-00688736                     | 0 | 71477252 |          |
| 17 | ARS-BFGL-NGS-116537              | 0 | 71503614 |          |
| 17 | ARS-BFGL-NGS-33332               | 0 | 71585018 |          |
| 17 | Hapmap53106-rs29017719           | 0 | 71610886 |          |
| 17 | ARS-BFGL-NGS-55673               | 0 | 71700273 |          |
| 17 | ARS-BFGL-NGS-102932              | 0 | 71740386 |          |
| 17 | BTB-00689266                     | 0 | 71764498 |          |
| 17 | Hapmap47287-BTA-41904            | 0 | 71788904 |          |
| 17 | BTB-01564517                     | 0 | 71818121 |          |
| 17 | ARS-BFGL-NGS-53690               |   | 71841734 |          |
| 17 | ARS-BFGL-NGS-42282               | 0 | 71867249 |          |
| 17 | ARS-BFGL-NGS-80663               | 0 | 71893552 |          |
| 17 | BTB-00689316                     | 0 | 71925055 |          |
| 17 | BTB-00689329                     | 0 | 71959105 |          |
| 17 | ARS-BFGL-NGS-25469               | 0 | 72005076 |          |
| 17 | ARS-BFGL-NGS-67597               | 0 | 72063677 |          |
| 17 | ARS-BFGL-NGS-112820              | 0 | 72084838 |          |
| 17 | ARS-BFGL-NGS-23779               | 0 | 72132391 |          |
| 17 | ARS-BFGL-NGS-118873              | 0 | 72180821 |          |
| 17 | ARS-BFGL-NGS-102559              | 0 | 72202151 |          |
| 17 | ARS-BFGL-NGS-32386               | 0 | 72227339 |          |
| 17 | BTA-41935-no-rs                  | 0 | 72284836 |          |
| 17 | ARS-BFGL-NGS-28077               | 0 | 72329662 |          |
| 17 | Hapmap44075-BTA-41915            | 0 | 72384103 |          |
| 17 | ARS-BFGL-NGS-39984               | 0 | 72414626 |          |
| 17 | UA-IFASA-5513                    | 0 | 72448619 |          |
| 17 | ARS-BFGL-NGS-103276              | 0 | 72481707 |          |
| 17 | ARS-BFGL-NGS-62627               | 0 | 72554429 |          |
| 17 | ARS-BFGL-NGS-17791               | 0 | 72579763 |          |
| 17 | ARS-BFGL-NGS-117330              | 0 | 72601697 |          |
| 17 | ARS-BFGL-NGS-113436              | 0 | 72710280 |          |
| 17 | Hapmap54282-ss46526199           | 0 | 72741339 |          |
| 17 | ARS-BFGL-NGS-105537              | 0 | 72790867 |          |
| 17 | ARS-BFGL-NGS-102993              | 0 | 72987826 |          |
| 17 | ARS-BFGL-NGS-99737               | 0 | 73055503 |          |
| 17 | ARS-BFGL-NGS-41599               | 0 | 73118011 |          |
| 17 | ARS-BFGL-NGS-29181               | 0 | 73206420 |          |
| 17 | ARS-BFGL-NGS-17005               | 0 | 73257794 |          |
| 17 | BTB-00687779                     | 0 | 73291697 |          |
| 17 | ARS-BFGL-NGS-117653              | 0 | 73315120 |          |
| 17 | BTB-01973064                     | 0 | 73349750 |          |
| 17 | ARS-BFGL-NGS-26126               | 0 | 73466889 |          |
| 17 | ARS-BFGL-NGS-74168               | 0 | 73488482 |          |
| 17 | ARS-BFGL-NGS-65774               | 0 | 73511787 |          |
| 17 | ARS-BFGL-NGS-74649               | 0 | 73559752 |          |
| 17 | ARS-BFGL-NGS-36545               | 0 | 73627135 |          |
| 17 | ARS-BFGL-NGS-117728              | 0 | 73678846 |          |
| 17 | ARS-BFGL-NGS-103074              | 0 | 73686552 |          |
| 17 | ARS-BFGL-NGS-14960               | 0 | 73713062 |          |
| 17 | UA-IFASA-3769                    | 0 | 73747101 |          |
| 17 | ARS-BFGL-NGS-38913               | 0 | 73773784 |          |

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| 17 | ARS-BFGL-NGS-106289                   | 0       | 73804497 |         |  |
| 17 | ARS-BFGL-NGS-103716                   | 0       | 73868185 |         |  |
| 17 | ARS-BFGL-NGS-12921                    | 0       | 73915069 |         |  |
| 17 | ARS-BFGL-NGS-113625                   | 0       | 73944911 |         |  |
| 17 | ARS-BFGL-NGS-111900                   | 0       | 73961642 |         |  |
| 17 | ARS-BFGL-NGS-23711                    | 0       | 74032690 |         |  |
| 17 | ARS-BFGL-NGS-16824                    | 0       | 74067870 |         |  |
| 17 | Hapmap49164-BTA-42015                 | 0       | 74123863 |         |  |
| 17 | ARS-BFGL-NGS-22814                    | 0       | 74154357 |         |  |
| 17 | ARS-BFGL-NGS-94657                    | 0       | 74234279 |         |  |
| 17 | UA-IFASA-6850                         | 0       | 74256192 |         |  |
| 17 | ARS-BFGL-NGS-58770                    | 0       | 74292319 |         |  |
| 17 | ARS-BFGL-NGS-115643                   | 0       | 74325363 |         |  |
| 17 | ARS-BFGL-NGS-41299                    | 0       | 74344162 |         |  |
| 17 | ARS-BFGL-NGS-22436                    | 0       | 74393620 |         |  |
| 17 | ARS-BFGL-NGS-111414                   | 0       | 74438639 |         |  |
| 17 | Hapmap48752-BTA-41973                 | 0       | 74481008 |         |  |
| 17 | ARS-BFGL-NGS-34202                    | 0       | 74508803 |         |  |
| 17 | ARS-BFGL-NGS-71269                    | 0       | 74533008 |         |  |
| 17 | ARS-BFGL-NGS-73313                    | 0       | 74598498 |         |  |
| 17 | ARS-BFGL-NGS-44494                    | 0       | 74627267 |         |  |
| 17 | ARS-BFGL-NGS-102576                   | 0       | 74666629 |         |  |
| 17 | ARS-BFGL-NGS-117289                   | 0       | 74723634 |         |  |
| 17 | ARS-BFGL-NGS-61354                    | 0       | 74748408 |         |  |
| 17 | BTA-87270-no-rs                       | 0       | 74817054 |         |  |
| 17 | UA-IFASA-6883                         | 0       | 74898756 |         |  |
| 17 | ARS-BFGL-NGS-24012                    | 0       | 74948921 |         |  |
| 17 | ARS-BFGL-NGS-109409                   | 0       | 74965918 |         |  |
| 17 | ARS-BFGL-NGS-18349                    | 0       | 74998349 |         |  |
| 18 | Hapmap31194-BTA-161621                | 0       | 468754   |         |  |
| 18 | ARS-BFGL-NGS-111927                   | 0       | 577447   |         |  |
| 18 | ARS-BFGL-NGS-26405                    | 0       | 818901   |         |  |
| 18 | ARS-BFGL-NGS-18307                    | 0       | 892087   |         |  |
| 18 | ARS-BFGL-NGS-118676                   | 0       | 934619   |         |  |
| 18 | ARS-BFGL-NGS-18516                    | 0       | 955622   |         |  |
| 18 | ARS-BFGL-NGS-112102                   | 0       | 984113   |         |  |
| 18 | ARS-BFGL-NGS-33749                    | 0       | 1038058  |         |  |
| 18 | ARS-BFGL-NGS-57978                    | 0       | 1094150  |         |  |
| 18 | ARS-BFGL-NGS-21711                    | 0       | 1137609  |         |  |
| 18 | Hapmap24810-BTA-131880                | 0       | 1170662  |         |  |
| 18 | ARS-BFGL-NGS-107899                   | 0       | 1212743  |         |  |
| 18 | ARS-BFGL-NGS-97892                    | 0       | 1363868  |         |  |
| 18 | ARS-BFGL-NGS-83593                    | 0       | 1396022  |         |  |
| 18 | Hapmap39054-BTA-16097                 | 0       | 1422084  |         |  |
| 18 | ARS-BFGL-NGS-88592                    | 0       | 1486363  |         |  |
| 18 | BTA-44168-no-rs                       | 0       | 1590981  |         |  |
| 18 | Hapmap33042-BTA-151212                | 0       | 1641185  |         |  |
| 18 | ARS-BFGL-NGS-97709                    | 0       | 1680104  |         |  |
| 18 | ARS-BFGL-NGS-37194                    | 0       | 1730833  |         |  |
| 18 | ARS-BFGL-NGS-22387                    | 0       | 1751859  |         |  |
| 18 | ARS-BFGL-NGS-54690                    | 1798615 |          |         |  |
| 18 | ARS-USMARC-Parent-EF028073-rs29014953 | 0       |          | 1839733 |  |
| 18 | ARS-BFGL-NGS-99600                    | 0       | 1875406  |         |  |
| 18 | Hapmap23684-BTA-131851                | 0       | 1953309  |         |  |

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| 18 | ARS-BFGL-BAC-36904     | 0       | 1983526 |
| 18 | ARS-BFGL-NGS-116116    | 0       | 2004632 |
| 18 | BTB-00690781           | 0       | 2047277 |
| 18 | BTA-44477-no-rs        | 0       | 2108272 |
| 18 | ARS-BFGL-NGS-88567     | 0       | 2163914 |
| 18 | ARS-BFGL-NGS-111505    | 0       | 2191562 |
| 18 | ARS-BFGL-NGS-111729    | 0       | 2220037 |
| 18 | ARS-BFGL-NGS-10300     | 2268081 |         |
| 18 | BTA-42306-no-rs        | 0       | 2310091 |
| 18 | ARS-BFGL-BAC-33133     | 0       | 2342036 |
| 18 | ARS-BFGL-NGS-65788     | 0       | 2442510 |
| 18 | ARS-BFGL-NGS-55735     | 0       | 2498031 |
| 18 | Hapmap56936-ss46526655 | 0       | 2605069 |
| 18 | ARS-BFGL-NGS-112583    | 0       | 2663666 |
| 18 | ARS-BFGL-NGS-113725    | 0       | 2685718 |
| 18 | BTA-30511-no-rs        | 0       | 2716884 |
| 18 | ARS-BFGL-NGS-16731     | 0       | 2793266 |
| 18 | Hapmap47948-BTA-42577  | 0       | 2823720 |
| 18 | Hapmap49988-BTA-42565  | 0       | 2864232 |
| 18 | BTA-42548-no-rs        | 0       | 2893861 |
| 18 | ARS-BFGL-NGS-95208     | 0       | 2921231 |
| 18 | Hapmap30219-BTA-131886 | 0       | 2946888 |
| 18 | ARS-BFGL-NGS-101829    | 0       | 2971984 |
| 18 | ARS-BFGL-NGS-117493    | 0       | 3038623 |
| 18 | BTB-01040984           | 0       | 3080400 |
| 18 | ARS-BFGL-NGS-101138    | 0       | 3114628 |
| 18 | ARS-BFGL-NGS-105924    | 0       | 3146088 |
| 18 | BTB-01040787           | 0       | 3177824 |
| 18 | BTB-01947967           | 0       | 3270677 |
| 18 | BTA-42610-no-rs        | 0       | 3316273 |
| 18 | BTB-00691673           | 0       | 3368333 |
| 18 | BTB-01590114           | 0       | 3417916 |
| 18 | BTA-106161-no-rs       | 0       | 3471458 |
| 18 | Hapmap52899-rs29009847 | 0       | 3499387 |
| 18 | ARS-BFGL-NGS-50848     | 0       | 3783818 |
| 18 | Hapmap24573-BTA-155214 | 0       | 3809955 |
| 18 | ARS-BFGL-NGS-24718     | 0       | 3869297 |
| 18 | ARS-BFGL-NGS-95777     | 0       | 3916489 |
| 18 | Hapmap27632-BTA-157047 | 0       | 3959216 |
| 18 | ARS-BFGL-NGS-17831     | 0       | 3979781 |
| 18 | Hapmap32355-BTA-154136 | 0       | 4146848 |
| 18 | ARS-BFGL-NGS-34074     | 0       | 4232138 |
| 18 | Hapmap43580-BTA-43969  | 0       | 4271633 |
| 18 | BTB-01617999           | 0       | 4310615 |
| 18 | BTB-01617957           | 0       | 4346736 |
| 18 | Hapmap30033-BTA-154948 | 0       | 4373037 |
| 18 | ARS-BFGL-NGS-35513     | 0       | 4397257 |
| 18 | Hapmap57004-rs29011610 | 0       | 4463083 |
| 18 | Hapmap47619-BTA-43853  | 0       | 4525324 |
| 18 | Hapmap26380-BTA-131940 | 0       | 4572593 |
| 18 | ARS-BFGL-NGS-52733     | 0       | 4598036 |
| 18 | BTA-05945-rs29020096   | 0       | 4620481 |
| 18 | BTA-43822-no-rs        | 0       | 4641428 |
| 18 | ARS-BFGL-NGS-29837     | 0       | 4723911 |

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| 18 | BTA-43768-no-rs        | 0       | 4820101 |
| 18 | ARS-BFGL-NGS-26589     | 0       | 4852600 |
| 18 | Hapmap40735-BTA-43736  | 0       | 4899308 |
| 18 | ARS-BFGL-NGS-107913    | 0       | 4941799 |
| 18 | ARS-BFGL-NGS-114894    | 0       | 4986492 |
| 18 | ARS-BFGL-NGS-89598     | 0       | 5050930 |
| 18 | ARS-BFGL-NGS-76223     | 0       | 5101055 |
| 18 | ARS-BFGL-NGS-79168     | 0       | 5124435 |
| 18 | BTA-43624-no-rs        | 0       | 5146517 |
| 18 | ARS-BFGL-NGS-33650     | 0       | 5168119 |
| 18 | Hapmap48340-BTA-43615  | 0       | 5197235 |
| 18 | Hapmap32555-BTA-131924 | 0       | 5244976 |
| 18 | ARS-BFGL-NGS-85483     | 0       | 5274463 |
| 18 | ARS-BFGL-NGS-16075     | 0       | 5383748 |
| 18 | ARS-BFGL-NGS-100294    | 0       | 5405616 |
| 18 | ARS-BFGL-NGS-100029    | 0       | 5473290 |
| 18 | ARS-BFGL-NGS-24934     | 0       | 5545560 |
| 18 | ARS-BFGL-NGS-109351    | 0       | 5593975 |
| 18 | ARS-BFGL-NGS-62981     | 0       | 5655435 |
| 18 | ARS-BFGL-NGS-70300     | 0       | 5684886 |
| 18 | ARS-BFGL-NGS-34440     | 5721529 |         |
| 18 | ARS-BFGL-NGS-100805    | 0       | 5756823 |
| 18 | ARS-BFGL-NGS-57790     | 5797790 |         |
| 18 | BTA-121111-no-rs       | 0       | 6167367 |
| 18 | ARS-BFGL-NGS-58073     | 0       | 6197490 |
| 18 | ARS-BFGL-NGS-113984    | 0       | 6218264 |
| 18 | ARS-BFGL-NGS-115549    | 0       | 6246055 |
| 18 | ARS-BFGL-NGS-33562     | 0       | 6278975 |
| 18 | ARS-BFGL-NGS-29594     | 0       | 6331293 |
| 18 | ARS-BFGL-NGS-41987     | 0       | 6352441 |
| 18 | ARS-BFGL-NGS-19328     | 0       | 6372346 |
| 18 | ARS-BFGL-NGS-38945     | 0       | 6397483 |
| 18 | ARS-BFGL-NGS-106794    | 0       | 6440525 |
| 18 | Hapmap25247-BTA-131903 | 0       | 6481097 |
| 18 | ARS-BFGL-BAC-36898     | 0       | 6501699 |
| 18 | ARS-BFGL-NGS-48600     | 6523067 |         |
| 18 | ARS-BFGL-NGS-85872     | 0       | 6543445 |
| 18 | ARS-BFGL-NGS-100633    | 0       | 6569028 |
| 18 | ARS-BFGL-NGS-58546     | 0       | 6601312 |
| 18 | Hapmap49002-BTA-104805 | 0       | 6621405 |
| 18 | ARS-BFGL-NGS-101349    | 0       | 6656191 |
| 18 | ARS-BFGL-NGS-25040     | 6690700 |         |
| 18 | BTA-03029-rs29010796   | 0       | 6752552 |
| 18 | Hapmap54020-rs29023153 | 0       | 6776532 |
| 18 | Hapmap23072-BTA-131895 | 0       | 6816107 |
| 18 | ARS-BFGL-NGS-31035     | 0       | 6858136 |
| 18 | BTA-42870-no-rs        | 0       | 6894368 |
| 18 | ARS-BFGL-NGS-109552    | 0       | 6934625 |
| 18 | ARS-BFGL-NGS-93178     | 0       | 6961838 |
| 18 | ARS-BFGL-NGS-112554    | 0       | 7014208 |
| 18 | Hapmap46814-BTA-42768  | 0       | 7100339 |
| 18 | ARS-BFGL-NGS-44254     | 0       | 7125638 |
| 18 | ARS-BFGL-BAC-35628     | 0       | 7152273 |
| 18 | ARS-BFGL-NGS-13478     | 0       | 7181692 |

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| 18 | Hapmap58215-rs29015804           | 0 | 7232363 |  |
| 18 | ARS-BFGL-NGS-14811               | 0 | 7277738 |  |
| 18 | ARS-BFGL-NGS-115092              | 0 | 7332011 |  |
| 18 | ARS-BFGL-NGS-70903               | 0 | 7386505 |  |
| 18 | BTB-00695596                     | 0 | 7425496 |  |
| 18 | ARS-BFGL-NGS-101968              | 0 | 7468305 |  |
| 18 | BTB-01874436                     | 0 | 7552426 |  |
| 18 | ARS-BFGL-NGS-54767               | 0 | 7605307 |  |
| 18 | Hapmap52589-rs29020496           | 0 | 7630875 |  |
| 18 | ARS-BFGL-BAC-28014               | 0 | 7669094 |  |
| 18 | ARS-BFGL-NGS-33807               | 0 | 7704404 |  |
| 18 | BTA-44411-no-rs                  | 0 | 7725422 |  |
| 18 | ARS-BFGL-NGS-114129              | 0 | 7819498 |  |
| 18 | Hapmap40737-BTA-44406            | 0 | 7840467 |  |
| 18 | ARS-BFGL-NGS-12019               | 0 | 7868943 |  |
| 18 | ARS-BFGL-NGS-116350              | 0 | 7914040 |  |
| 18 | ARS-BFGL-BAC-36069               | 0 | 7972387 |  |
| 18 | ARS-BFGL-NGS-31043               | 0 | 8006133 |  |
| 18 | ARS-BFGL-NGS-73708               | 0 | 8037156 |  |
| 18 | BTA-44392-no-rs                  | 0 | 8061697 |  |
| 18 | ARS-BFGL-NGS-77120               | 0 | 8099896 |  |
| 18 | ARS-BFGL-NGS-56265               | 0 | 8163550 |  |
| 18 | ARS-BFGL-NGS-30750               | 0 | 8194300 |  |
| 18 | ARS-BFGL-NGS-15848               | 0 | 8234025 |  |
| 18 | ARS-BFGL-NGS-27203               | 0 | 8262213 |  |
| 18 | ARS-BFGL-NGS-39721               | 0 | 8288461 |  |
| 18 | ARS-BFGL-NGS-11620               | 0 | 8326812 |  |
| 18 | ARS-BFGL-NGS-111477              | 0 | 8349174 |  |
| 18 | ARS-BFGL-NGS-34817               | 0 | 8384452 |  |
| 18 | ARS-BFGL-NGS-92227               | 0 | 8410770 |  |
| 18 | ARS-BFGL-NGS-111124              | 0 | 8467054 |  |
| 18 | ARS-BFGL-NGS-85724               | 0 | 8500285 |  |
| 18 | ARS-BFGL-NGS-64628               | 0 | 8592912 |  |
| 18 | BTA-44437-no-rs                  | 0 | 8729030 |  |
| 18 | ARS-BFGL-NGS-103372              | 0 | 8765998 |  |
| 18 | BTB-00698623                     | 0 | 8805310 |  |
| 18 | Hapmap24845-BTA-147038           | 0 | 8849584 |  |
| 18 | ARS-BFGL-NGS-110670              | 0 | 8916401 |  |
| 18 | ARS-BFGL-NGS-11010               | 0 | 8961520 |  |
| 18 | ARS-BFGL-NGS-41847               | 0 | 9033298 |  |
| 18 | ARS-BFGL-NGS-31971               | 0 | 9060482 |  |
| 18 | Hapmap54730-rs29023634           | 0 | 9082526 |  |
| 18 | ARS-BFGL-NGS-107806              | 0 | 9118293 |  |
| 18 | BTA-44443-no-rs                  | 0 | 9144268 |  |
| 18 | ARS-BFGL-NGS-101113              | 0 | 9172680 |  |
| 18 | Hapmap23585-BTA-131987           | 0 | 9205614 |  |
| 18 | Hapmap35184-BES10_Contig401_1149 | 0 | 9266777 |  |
| 18 | BTA-44438-no-rs                  | 0 | 9290487 |  |
| 18 | BTA-120677-no-rs                 | 0 | 9328369 |  |
| 18 | BTA-119338-no-rs                 | 0 | 9403168 |  |
| 18 | BTB-00698737                     | 0 | 9449207 |  |
| 18 | BTA-44488-no-rs                  | 0 | 9487375 |  |
| 18 | BTA-44490-no-rs                  | 0 | 9515675 |  |
| 18 | ARS-BFGL-NGS-11160               | 0 | 9539002 |  |



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| 18 | ARS-BFGL-NGS-113664              | 0        | 9582369  |  |
| 18 | ARS-BFGL-NGS-111796              | 0        | 9606800  |  |
| 18 | BTB-00699765                     | 0        | 9652359  |  |
| 18 | ARS-BFGL-NGS-40042               | 0        | 9699892  |  |
| 18 | ARS-BFGL-NGS-23434               | 0        | 9731259  |  |
| 18 | Hapmap58843-rs29022852           | 0        | 9752287  |  |
| 18 | Hapmap30623-BTA-42266            | 0        | 9842251  |  |
| 18 | Hapmap59947-rs29015120           | 0        | 9867308  |  |
| 18 | ARS-BFGL-NGS-27219               | 0        | 9891406  |  |
| 18 | ARS-BFGL-NGS-39549               | 0        | 9915057  |  |
| 18 | ARS-BFGL-NGS-85875               | 0        | 9948949  |  |
| 18 | ARS-BFGL-NGS-29564               | 0        | 9978547  |  |
| 18 | ARS-BFGL-NGS-115466              | 0        | 10002426 |  |
| 18 | ARS-BFGL-NGS-43282               | 0        | 10041432 |  |
| 18 | ARS-BFGL-NGS-36710               | 10075856 |          |  |
| 18 | Hapmap39226-BTA-42295            | 0        | 10117349 |  |
| 18 | ARS-BFGL-NGS-27130               | 0        | 10210942 |  |
| 18 | ARS-BFGL-NGS-288                 | 0        | 10257186 |  |
| 18 | ARS-BFGL-NGS-64834               | 0        | 10289114 |  |
| 18 | Hapmap53277-rs29025667           | 0        | 10316510 |  |
| 18 | ARS-BFGL-NGS-103449              | 0        | 10351779 |  |
| 18 | ARS-BFGL-NGS-14442               | 0        | 10491005 |  |
| 18 | ARS-BFGL-NGS-45350               | 10523212 |          |  |
| 18 | ARS-BFGL-NGS-41026               | 0        | 10556123 |  |
| 18 | ARS-BFGL-NGS-20480               | 10610011 |          |  |
| 18 | ARS-BFGL-NGS-53926               | 0        | 10642175 |  |
| 18 | ARS-BFGL-NGS-311                 | 0        | 10664913 |  |
| 18 | ARS-BFGL-NGS-109912              | 0        | 10748965 |  |
| 18 | ARS-BFGL-NGS-38530               | 10783360 |          |  |
| 18 | Hapmap30624-BTA-42324            | 0        | 10805833 |  |
| 18 | Hapmap48755-BTA-42320            | 0        | 10890595 |  |
| 18 | ARS-BFGL-NGS-77590               | 0        | 10931741 |  |
| 18 | Hapmap40333-BTA-10479            | 0        | 10994466 |  |
| 18 | Hapmap36626-SCAFFOLD265042_14918 | 0        | 11087325 |  |
| 18 | ARS-BFGL-NGS-95752               | 0        | 11121144 |  |
| 18 | ARS-BFGL-NGS-96842               | 0        | 11148073 |  |
| 18 | ARS-BFGL-NGS-59028               | 0        | 11171356 |  |
| 18 | ARS-BFGL-NGS-69002               | 0        | 11200241 |  |
| 18 | ARS-BFGL-NGS-56801               | 0        | 11245392 |  |
| 18 | ARS-BFGL-NGS-86593               | 0        | 11377350 |  |
| 18 | ARS-BFGL-NGS-32712               | 0        | 11537285 |  |
| 18 | ARS-BFGL-NGS-116475              | 0        | 11598870 |  |
| 18 | ARS-BFGL-NGS-78423               | 0        | 11620017 |  |
| 18 | ARS-BFGL-NGS-101538              | 0        | 11652352 |  |
| 18 | ARS-BFGL-NGS-62316               | 0        | 11675551 |  |
| 18 | ARS-BFGL-NGS-36233               | 0        | 11724466 |  |
| 18 | ARS-BFGL-NGS-102077              | 0        | 11774889 |  |
| 18 | Hapmap47011-BTA-44425            | 0        | 11813752 |  |
| 18 | ARS-BFGL-NGS-14524               | 0        | 11836226 |  |
| 18 | ARS-BFGL-NGS-22072               | 0        | 11862574 |  |
| 18 | ARS-BFGL-NGS-109473              | 0        | 11886274 |  |
| 18 | ARS-BFGL-NGS-55307               | 0        | 11948430 |  |
| 18 | ARS-BFGL-BAC-33114               | 0        | 11991992 |  |
| 18 | ARS-BFGL-NGS-22066               | 0        | 12045338 |  |

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| 18 | ARS-BFGL-NGS-111013    | 0        | 12102021 |
| 18 | ARS-BFGL-NGS-13427     | 0        | 12268519 |
| 18 | ARS-BFGL-NGS-113327    | 0        | 12295233 |
| 18 | ARS-BFGL-NGS-57897     | 0        | 12316620 |
| 18 | ARS-BFGL-NGS-54734     | 0        | 12355213 |
| 18 | ARS-BFGL-NGS-112870    | 0        | 12376984 |
| 18 | ARS-BFGL-BAC-33119     | 0        | 12399824 |
| 18 | ARS-BFGL-NGS-107789    | 0        | 12455560 |
| 18 | ARS-BFGL-NGS-116678    | 0        | 12491673 |
| 18 | ARS-BFGL-NGS-117469    | 0        | 12528768 |
| 18 | Hapmap47624-BTA-44484  | 0        | 12620198 |
| 18 | ARS-BFGL-NGS-103838    | 0        | 12675262 |
| 18 | ARS-BFGL-NGS-42866     | 0        | 12722992 |
| 18 | ARS-BFGL-NGS-118490    | 0        | 12763652 |
| 18 | ARS-BFGL-NGS-64457     | 0        | 12784439 |
| 18 | ARS-BFGL-NGS-45337     | 0        | 12805758 |
| 18 | ARS-BFGL-NGS-110287    | 0        | 12947633 |
| 18 | Hapmap48757-BTA-42449  | 0        | 12988265 |
| 18 | ARS-BFGL-NGS-107817    | 0        | 13061132 |
| 18 | Hapmap58715-rs29021176 | 0        | 13109858 |
| 18 | ARS-BFGL-NGS-115234    | 0        | 13136171 |
| 18 | ARS-BFGL-NGS-77500     | 13197861 |          |
| 18 | ARS-BFGL-NGS-19825     | 0        | 13276830 |
| 18 | Hapmap48331-BTA-42464  | 0        | 13305495 |
| 18 | UA-IFASA-8043          | 0        | 13346768 |
| 18 | ARS-BFGL-NGS-36246     | 0        | 13396915 |
| 18 | ARS-BFGL-NGS-114438    | 0        | 13455012 |
| 18 | ARS-BFGL-NGS-61950     | 13486389 |          |
| 18 | ARS-BFGL-NGS-101491    | 0        | 13839646 |
| 18 | Hapmap47004-BTA-42343  | 0        | 13857900 |
| 18 | ARS-BFGL-NGS-93701     | 0        | 13901770 |
| 18 | ARS-BFGL-NGS-12799     | 0        | 13934856 |
| 18 | ARS-BFGL-NGS-23632     | 0        | 13974114 |
| 18 | ARS-BFGL-NGS-17281     | 0        | 14008845 |
| 18 | ARS-BFGL-NGS-28825     | 0        | 14058919 |
| 18 | ARS-BFGL-NGS-118298    | 0        | 14080722 |
| 18 | ARS-BFGL-NGS-49960     | 14115136 |          |
| 18 | ARS-BFGL-NGS-39953     | 0        | 14146373 |
| 18 | ARS-BFGL-NGS-103634    | 0        | 14184741 |
| 18 | ARS-BFGL-NGS-31386     | 0        | 14208633 |
| 18 | ARS-BFGL-NGS-107284    | 0        | 14302556 |
| 18 | ARS-BFGL-NGS-86599     | 0        | 14359452 |
| 18 | Hapmap44238-BTA-42338  | 0        | 14401871 |
| 18 | ARS-BFGL-NGS-24837     | 0        | 14503218 |
| 18 | ARS-BFGL-NGS-13803     | 0        | 14526709 |
| 18 | ARS-BFGL-NGS-72034     | 0        | 14626788 |
| 18 | ARS-BFGL-NGS-59310     | 14988936 |          |
| 18 | BTA-42522-no-rs        | 0        | 15039844 |
| 18 | BTA-121118-no-rs       | 0        | 15069718 |
| 18 | ARS-BFGL-NGS-114211    | 0        | 15099438 |
| 18 | Hapmap39332-BTA-42501  | 0        | 15136819 |
| 18 | Hapmap42446-BTA-118372 | 0        | 15199711 |
| 18 | UA-IFASA-6050          | 0        | 15225943 |
| 18 | ARS-BFGL-NGS-118667    | 0        | 15265978 |

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| 18 | ARS-BFGL-NGS-10007              | 0        | 15483066 |  |
| 18 | ARS-BFGL-NGS-54662              | 0        | 15514075 |  |
| 18 | Hapmap42939-BTA-42498           | 0        | 15594562 |  |
| 18 | ARS-BFGL-BAC-33134              | 0        | 15634733 |  |
| 18 | Hapmap55003-rs29021758          | 0        | 15834073 |  |
| 18 | ARS-BFGL-BAC-33135              | 0        | 15883183 |  |
| 18 | ARS-BFGL-NGS-38398              | 0        | 15931700 |  |
| 18 | BTB-01315362                    | 0        | 15977024 |  |
| 18 | ARS-BFGL-NGS-53095              | 0        | 16028803 |  |
| 18 | Hapmap27031-BTA-161389          | 0        | 16070657 |  |
| 18 | BTB-00702722                    | 0        | 16119985 |  |
| 18 | ARS-BFGL-NGS-100155             | 0        | 16166360 |  |
| 18 | ARS-BFGL-NGS-19011              | 0        | 16261262 |  |
| 18 | Hapmap51593-BTA-42524           | 0        | 16355716 |  |
| 18 | BTA-42525-no-rs                 | 0        | 16379647 |  |
| 18 | Hapmap49167-BTA-42531           | 0        | 16402220 |  |
| 18 | ARS-BFGL-NGS-117671             | 0        | 16438995 |  |
| 18 | ARS-BFGL-NGS-28958              | 0        | 16488570 |  |
| 18 | ARS-BFGL-NGS-23457              | 0        | 16515915 |  |
| 18 | ARS-BFGL-NGS-41174              | 0        | 16594926 |  |
| 18 | BTB-00703990                    | 0        | 16654560 |  |
| 18 | BTA-97570-no-rs                 | 0        | 16671415 |  |
| 18 | Hapmap24479-BTA-132095          | 0        | 16693956 |  |
| 18 | ARS-BFGL-NGS-80528              | 0        | 16709582 |  |
| 18 | ARS-BFGL-NGS-24006              | 0        | 16736436 |  |
| 18 | BTA-42571-no-rs                 | 0        | 16806560 |  |
| 18 | ARS-BFGL-NGS-64629              | 0        | 16836655 |  |
| 18 | ARS-BFGL-NGS-55981              | 0        | 16869103 |  |
| 18 | ARS-BFGL-NGS-34088              | 0        | 16900337 |  |
| 18 | ARS-BFGL-NGS-84061              | 0        | 16968932 |  |
| 18 | Hapmap39919-BTA-42561           | 0        | 16991322 |  |
| 18 | ARS-BFGL-NGS-116414             | 0        | 17012755 |  |
| 18 | BTB-00703354                    | 0        | 17048434 |  |
| 18 | ARS-BFGL-NGS-94288              | 0        | 17098259 |  |
| 18 | ARS-BFGL-NGS-109919             | 0        | 17159355 |  |
| 18 | ARS-BFGL-NGS-81231              | 0        | 17234805 |  |
| 18 | ARS-BFGL-NGS-99590              | 0        | 17295414 |  |
| 18 | ARS-BFGL-NGS-89344              | 0        | 17319650 |  |
| 18 | ARS-BFGL-NGS-107392             | 0        | 17343527 |  |
| 18 | Hapmap36367-SCAFFOLD205017_9206 | 0        | 17380202 |  |
| 18 | Hapmap59342-rs29017390          | 0        | 17419465 |  |
| 18 | ARS-BFGL-NGS-39730              | 0        | 17454837 |  |
| 18 | ARS-BFGL-NGS-26380              | 17497121 |          |  |
| 18 | Hapmap39998-BTA-42612           | 0        | 17540948 |  |
| 18 | BTB-00704089                    | 0        | 17579917 |  |
| 18 | ARS-BFGL-BAC-33749              | 0        | 17659879 |  |
| 18 | ARS-BFGL-NGS-60919              | 0        | 17826528 |  |
| 18 | ARS-BFGL-NGS-113461             | 0        | 17913757 |  |
| 18 | ARS-BFGL-NGS-119270             | 0        | 17988032 |  |
| 18 | ARS-BFGL-NGS-298                | 0        | 18050574 |  |
| 18 | ARS-BFGL-NGS-82040              | 18093362 |          |  |
| 18 | ARS-BFGL-NGS-74170              | 0        | 18113920 |  |
| 18 | ARS-BFGL-NGS-82445              | 0        | 18128677 |  |
| 18 | ARS-BFGL-NGS-321                | 0        | 18145718 |  |

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| 18 | ARS-BFGL-NGS-114779    | 0        | 18192027 |
| 18 | ARS-BFGL-NGS-95291     | 0        | 18238978 |
| 18 | ARS-BFGL-NGS-112592    | 0        | 18267940 |
| 18 | ARS-BFGL-NGS-99436     | 0        | 18294473 |
| 18 | ARS-BFGL-NGS-53913     | 0        | 18344555 |
| 18 | ARS-BFGL-NGS-69768     | 0        | 18368327 |
| 18 | ARS-BFGL-NGS-115886    | 0        | 18403181 |
| 18 | ARS-BFGL-NGS-84142     | 0        | 18449746 |
| 18 | ARS-BFGL-NGS-65730     | 18509406 |          |
| 18 | ARS-BFGL-NGS-65608     | 0        | 18575792 |
| 18 | ARS-BFGL-NGS-56541     | 0        | 18599268 |
| 18 | Hapmap47005-BTA-42576  | 0        | 18749105 |
| 18 | ARS-BFGL-NGS-21074     | 0        | 18772590 |
| 18 | Hapmap51448-BTA-42579  | 0        | 18822874 |
| 18 | Hapmap47611-BTA-42580  | 0        | 18863162 |
| 18 | ARS-BFGL-NGS-25900     | 18889566 |          |
| 18 | ARS-BFGL-NGS-27549     | 0        | 18918903 |
| 18 | ARS-BFGL-NGS-106191    | 0        | 18997878 |
| 18 | Hapmap54321-rs29009603 | 0        | 19037363 |
| 18 | ARS-BFGL-NGS-41137     | 0        | 19074184 |
| 18 | ARS-BFGL-NGS-11252     | 0        | 19110324 |
| 18 | ARS-BFGL-NGS-30634     | 0        | 19135958 |
| 18 | ARS-BFGL-NGS-106722    | 0        | 19196022 |
| 18 | ARS-BFGL-NGS-39866     | 0        | 19224815 |
| 18 | ARS-BFGL-BAC-35698     | 0        | 19264846 |
| 18 | ARS-BFGL-NGS-23186     | 0        | 19312601 |
| 18 | ARS-BFGL-NGS-98964     | 0        | 19412506 |
| 18 | ARS-BFGL-NGS-106845    | 0        | 19492608 |
| 18 | Hapmap40350-BTA-42599  | 0        | 19523182 |
| 18 | ARS-BFGL-NGS-98352     | 0        | 19553485 |
| 18 | Hapmap48759-BTA-42602  | 0        | 19602600 |
| 18 | BTA-42606-no-rs        | 0        | 19698301 |
| 18 | Hapmap48245-BTA-20441  | 0        | 19837400 |
| 18 | ARS-BFGL-NGS-78436     | 0        | 19891006 |
| 18 | ARS-BFGL-NGS-12314     | 0        | 19918697 |
| 18 | Hapmap44501-BTA-94662  | 0        | 19939808 |
| 18 | BTA-94677-no-rs        | 0        | 19979748 |
| 18 | ARS-BFGL-NGS-20054     | 0        | 20150966 |
| 18 | Hapmap25328-BTA-159534 | 0        | 20197289 |
| 18 | ARS-BFGL-NGS-14417     | 0        | 20248620 |
| 18 | BTB-01276789           | 0        | 20386465 |
| 18 | BTA-120109-no-rs       | 0        | 20429741 |
| 18 | Hapmap48667-BTA-16502  | 0        | 20531300 |
| 18 | ARS-BFGL-BAC-33576     | 0        | 20608941 |
| 18 | BTB-00706573           | 0        | 20649046 |
| 18 | BTB-00706533           | 0        | 20686738 |
| 18 | Hapmap57194-rs29021671 | 0        | 20736454 |
| 18 | BTA-42769-no-rs        | 0        | 20765346 |
| 18 | ARS-BFGL-NGS-107400    | 0        | 20890089 |
| 18 | BTA-42767-no-rs        | 0        | 20947807 |
| 18 | ARS-BFGL-NGS-119693    | 0        | 20975889 |
| 18 | BTA-42764-no-rs        | 0        | 21046339 |
| 18 | BTA-42763-no-rs        | 0        | 21077410 |
| 18 | ARS-BFGL-NGS-119510    | 0        | 21115815 |

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| 18 | ARS-BFGL-NGS-67638                    | 0        | 21215067 |          |
| 18 | Hapmap41864-BTA-42761                 | 0        | 21237887 |          |
| 18 | ARS-BFGL-BAC-33579                    | 0        | 21250173 |          |
| 18 | BTB-00705849                          | 0        | 21310497 |          |
| 18 | ARS-BFGL-NGS-10741                    | 0        | 21445730 |          |
| 18 | Hapmap46385-BTA-90833                 | 0        | 21471412 |          |
| 18 | Hapmap35049-BES5_Contig425_820        | 0        |          | 21509622 |
| 18 | Hapmap42359-BTA-90829                 | 0        | 21534397 |          |
| 18 | ARS-BFGL-NGS-106934                   | 0        | 21562601 |          |
| 18 | Hapmap49904-BTA-19486                 | 0        | 21584927 |          |
| 18 | ARS-BFGL-BAC-36239                    | 0        | 21605891 |          |
| 18 | ARS-BFGL-NGS-43902                    | 0        | 21634314 |          |
| 18 | BTB-01627667                          | 0        | 21675881 |          |
| 18 | ARS-BFGL-BAC-36240                    | 0        | 21714679 |          |
| 18 | Hapmap51594-BTA-42721                 | 0        | 21776593 |          |
| 18 | Hapmap42547-BTA-42724                 | 0        | 21869056 |          |
| 18 | BTA-42733-no-rs                       | 0        | 21895177 |          |
| 18 | BTA-42735-no-rs                       | 0        | 21929721 |          |
| 18 | ARS-BFGL-NGS-34611                    | 0        | 21954625 |          |
| 18 | Hapmap36010-SCAFFOLD50294_19187       | 0        |          | 21993542 |
| 18 | ARS-BFGL-NGS-41145                    | 0        | 22064133 |          |
| 18 | Hapmap39651-BTA-42671                 | 0        | 22124137 |          |
| 18 | Hapmap49170-BTA-42666                 | 0        | 22201521 |          |
| 18 | ARS-BFGL-NGS-28677                    | 0        | 22256619 |          |
| 18 | Hapmap51449-BTA-42665                 | 0        | 22300133 |          |
| 18 | Hapmap49169-BTA-42663                 | 0        | 22339904 |          |
| 18 | ARS-BFGL-NGS-17185                    | 0        | 22379853 |          |
| 18 | ARS-BFGL-NGS-77651                    | 0        | 22437134 |          |
| 18 | BTA-42645-no-rs                       | 0        | 22510315 |          |
| 18 | ARS-BFGL-NGS-13888                    | 0        | 22544250 |          |
| 18 | ARS-BFGL-NGS-106854                   | 0        | 22574534 |          |
| 18 | ARS-BFGL-NGS-23701                    | 0        | 22599071 |          |
| 18 | ARS-BFGL-NGS-19178                    | 0        | 22610574 |          |
| 18 | ARS-BFGL-BAC-36256                    | 0        | 22687235 |          |
| 18 | Hapmap52930-rs29019965                | 0        | 22728849 |          |
| 18 | ARS-BFGL-NGS-24172                    | 0        | 22760455 |          |
| 18 | UA-IFASA-3993                         | 0        | 22858309 |          |
| 18 | ARS-BFGL-NGS-25646                    | 0        | 22889138 |          |
| 18 | BTA-31073-no-rs                       | 0        | 22956535 |          |
| 18 | Hapmap51823-BTA-31074                 | 0        | 23025804 |          |
| 18 | BTA-04489-rs29014848                  | 0        | 23046748 |          |
| 18 | ARS-BFGL-NGS-10420                    | 23078940 |          |          |
| 18 | Hapmap28064-BTA-31076                 | 0        | 23123924 |          |
| 18 | ARS-BFGL-NGS-114478                   | 0        | 23159589 |          |
| 18 | Hapmap36168-SCAFFOLD82588_4972        | 0        |          | 23196347 |
| 18 | ARS-BFGL-NGS-112550                   | 0        | 23224334 |          |
| 18 | ARS-BFGL-NGS-25120                    | 23253048 |          |          |
| 18 | Hapmap46816-BTA-42887                 | 0        | 23330707 |          |
| 18 | ARS-BFGL-NGS-119681                   | 0        | 23363011 |          |
| 18 | ARS-USMARC-Parent-DQ916059-rs29009907 | 0        |          | 23426214 |
| 18 | ARS-BFGL-NGS-113719                   | 0        | 23436682 |          |
| 18 | ARS-BFGL-NGS-13105                    | 0        | 23468316 |          |
| 18 | ARS-BFGL-NGS-91355                    | 0        | 23488631 |          |
| 18 | Hapmap38205-BTA-17257                 | 0        | 23559322 |          |

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| 18 | BTA-42912-no-rs        | 0 | 23618684 |
| 18 | ARS-BFGL-NGS-99085     | 0 | 23628711 |
| 18 | BTA-42909-no-rs        | 0 | 23662224 |
| 18 | ARS-BFGL-NGS-105793    | 0 | 23688662 |
| 18 | ARS-BFGL-NGS-24910     |   | 23734876 |
| 18 | Hapmap55331-rs29012854 | 0 | 23762816 |
| 18 | ARS-BFGL-NGS-37670     |   | 23792727 |
| 18 | UA-IFASA-4518          | 0 | 23841383 |
| 18 | ARS-BFGL-NGS-15436     | 0 | 23878651 |
| 18 | ARS-BFGL-NGS-38367     | 0 | 23916486 |
| 18 | ARS-BFGL-NGS-112231    | 0 | 23949849 |
| 18 | ARS-BFGL-NGS-27120     |   | 23966401 |
| 18 | Hapmap22859-BTA-132194 | 0 | 23989701 |
| 18 | ARS-BFGL-NGS-55426     | 0 | 24030749 |
| 18 | ARS-BFGL-NGS-79157     | 0 | 24099523 |
| 18 | ARS-BFGL-NGS-65767     | 0 | 24166872 |
| 18 | ARS-BFGL-NGS-119779    | 0 | 24204307 |
| 18 | BTA-42865-no-rs        | 0 | 24233826 |
| 18 | ARS-BFGL-NGS-94891     | 0 | 24286893 |
| 18 | ARS-BFGL-NGS-71314     | 0 | 24328377 |
| 18 | ARS-BFGL-NGS-64156     | 0 | 24359982 |
| 18 | ARS-BFGL-NGS-32550     | 0 | 24474645 |
| 18 | ARS-BFGL-NGS-101666    | 0 | 24496630 |
| 18 | ARS-BFGL-NGS-54947     | 0 | 24597453 |
| 18 | ARS-BFGL-NGS-14017     | 0 | 24624964 |
| 18 | ARS-BFGL-NGS-39394     | 0 | 24738457 |
| 18 | Hapmap59532-rs29022382 | 0 | 24782395 |
| 18 | Hapmap58965-rs29015249 | 0 | 24862274 |
| 18 | Hapmap58351-rs29010900 | 0 | 24897738 |
| 18 | Hapmap58748-rs29022374 | 0 | 24959879 |
| 18 | Hapmap52077-ss46526963 | 0 | 24980984 |
| 18 | ARS-BFGL-NGS-24004     | 0 | 25022927 |
| 18 | ARS-BFGL-NGS-107737    | 0 | 25046677 |
| 18 | BTA-27643-no-rs        | 0 | 25067681 |
| 18 | ARS-BFGL-NGS-22813     | 0 | 25090118 |
| 18 | ARS-BFGL-NGS-43341     | 0 | 25135667 |
| 18 | ARS-BFGL-NGS-113937    | 0 | 25191690 |
| 18 | ARS-BFGL-NGS-101742    | 0 | 25228413 |
| 18 | ARS-BFGL-NGS-86300     |   | 25345775 |
| 18 | BTA-106245-no-rs       | 0 | 25427958 |
| 18 | ARS-BFGL-NGS-110669    | 0 | 25471374 |
| 18 | ARS-BFGL-NGS-44375     | 0 | 25504174 |
| 18 | ARS-BFGL-NGS-32372     | 0 | 25533545 |
| 18 | ARS-BFGL-NGS-34877     | 0 | 25587174 |
| 18 | ARS-BFGL-NGS-12625     | 0 | 25624516 |
| 18 | ARS-BFGL-NGS-11936     | 0 | 25653308 |
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| 18 | ARS-BFGL-NGS-63156     | 0 | 25709879 |
| 18 | ARS-BFGL-BAC-23230     |   | 25743634 |
| 18 | ARS-BFGL-NGS-99088     | 0 | 25766247 |
| 18 | ARS-BFGL-NGS-35818     | 0 | 25832665 |
| 18 | ARS-BFGL-NGS-44657     | 0 | 25906797 |
| 18 | ARS-BFGL-NGS-33604     | 0 | 25956387 |
| 18 | ARS-BFGL-NGS-109756    | 0 | 25981472 |

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| 18 | ARS-BFGL-NGS-66258              | 0 | 26045554 |          |
| 18 | Hapmap30221-BTA-132169          | 0 | 26075864 |          |
| 18 | Hapmap34893-BES8_Contig374_1433 | 0 |          | 26108982 |
| 18 | ARS-BFGL-NGS-108036             | 0 | 26130014 |          |
| 18 | ARS-BFGL-NGS-72521              | 0 | 26232914 |          |
| 18 | ARS-BFGL-NGS-103413             | 0 | 26282010 |          |
| 18 | ARS-BFGL-NGS-117107             | 0 | 26315856 |          |
| 18 | ARS-BFGL-NGS-69980              |   | 26337295 |          |
| 18 | Hapmap39748-BTA-42827           | 0 | 26358647 |          |
| 18 | ARS-BFGL-NGS-20779              | 0 | 26380950 |          |
| 18 | UA-IFASA-4931                   | 0 | 26406184 |          |
| 18 | ARS-BFGL-NGS-118855             | 0 | 26527686 |          |
| 18 | ARS-BFGL-NGS-106132             | 0 | 26562050 |          |
| 18 | ARS-BFGL-NGS-28154              | 0 | 26586194 |          |
| 18 | ARS-BFGL-NGS-80672              | 0 | 26630875 |          |
| 18 | Hapmap39026-BTA-42843           | 0 | 26658261 |          |
| 18 | Hapmap25035-BTA-132170          | 0 | 26755820 |          |
| 18 | Hapmap51228-BTA-42851           | 0 | 26794634 |          |
| 18 | ARS-BFGL-BAC-34195              | 0 | 26822971 |          |
| 18 | ARS-BFGL-NGS-118340             | 0 | 26844474 |          |
| 18 | Hapmap39333-BTA-42858           | 0 | 26870746 |          |
| 18 | ARS-BFGL-NGS-22368              | 0 | 26901454 |          |
| 18 | Hapmap55097-rs29010952          | 0 | 26970041 |          |
| 18 | UA-IFASA-7519                   | 0 | 26997723 |          |
| 18 | ARS-BFGL-NGS-28297              | 0 | 27051794 |          |
| 18 | ARS-BFGL-NGS-12130              | 0 | 27083604 |          |
| 18 | BTA-19724-no-rs                 | 0 | 27121621 |          |
| 18 | Hapmap52207-rs29021316          | 0 | 27144071 |          |
| 18 | ARS-BFGL-BAC-34194              | 0 | 27235807 |          |
| 18 | Hapmap23161-BTA-162019          | 0 | 27281676 |          |
| 18 | ARS-BFGL-NGS-29803              | 0 | 27374063 |          |
| 18 | Hapmap50199-BTA-106275          | 0 | 27449999 |          |
| 18 | Hapmap33051-BTA-154275          | 0 | 27529633 |          |
| 18 | ARS-BFGL-BAC-34193              | 0 | 27555747 |          |
| 18 | ARS-BFGL-NGS-52830              |   | 27578257 |          |
| 18 | ARS-BFGL-NGS-37661              | 0 | 27615352 |          |
| 18 | BTA-106270-no-rs                | 0 | 27645973 |          |
| 18 | ARS-BFGL-NGS-36647              | 0 | 27965784 |          |
| 18 | ARS-BFGL-NGS-101461             | 0 | 28030835 |          |
| 18 | ARS-BFGL-NGS-110709             | 0 | 28139889 |          |
| 18 | ARS-BFGL-NGS-59857              | 0 | 28213777 |          |
| 18 | ARS-BFGL-NGS-73644              | 0 | 28286346 |          |
| 18 | ARS-BFGL-NGS-108426             | 0 | 28324801 |          |
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| 18 | ARS-BFGL-NGS-19431              | 0 | 28487717 |          |
| 18 | ARS-BFGL-NGS-99463              | 0 | 28583048 |          |
| 18 | ARS-BFGL-NGS-23101              | 0 | 28608495 |          |
| 18 | Hapmap50142-BTA-88392           | 0 | 28670292 |          |
| 18 | BTA-88403-no-rs                 | 0 | 28710334 |          |
| 18 | ARS-BFGL-BAC-33583              | 0 | 28734924 |          |
| 18 | BTA-61073-no-rs                 | 0 | 28843447 |          |
| 18 | BTA-113658-no-rs                | 0 | 28999193 |          |
| 18 | Hapmap49026-BTA-113661          | 0 | 29078437 |          |
| 18 | ARS-BFGL-NGS-45070              | 0 | 29106701 |          |

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| 18 | ARS-BFGL-NGS-117693             | 0 | 29181633 |          |
| 18 | Hapmap38811-BTA-113622          | 0 | 29228499 |          |
| 18 | Hapmap45469-BTA-113627          | 0 | 29290699 |          |
| 18 | Hapmap25091-BTA-157797          | 0 | 29332440 |          |
| 18 | Hapmap51157-BTA-116869          | 0 | 29362150 |          |
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| 18 | ARS-BFGL-NGS-16967              | 0 | 29583082 |          |
| 18 | Hapmap48531-BTA-95258           | 0 | 29610795 |          |
| 18 | Hapmap53786-rs29014011          | 0 | 29650288 |          |
| 18 | Hapmap36782-SCAFFOLD167149_2583 | 0 |          | 29679174 |
| 18 | BTA-95254-no-rs                 | 0 | 29722853 |          |
| 18 | BTA-95249-no-rs                 | 0 | 29795214 |          |
| 18 | Hapmap35555-SCAFFOLD20017_21254 | 0 |          | 29882606 |
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| 18 | ARS-BFGL-NGS-82506              | 0 | 30608830 |          |
| 18 | ARS-BFGL-NGS-61510              |   | 30702967 |          |
| 18 | ARS-BFGL-NGS-37442              | 0 | 30812669 |          |
| 18 | ARS-BFGL-NGS-60986              | 0 | 30878192 |          |
| 18 | Hapmap49989-BTA-42921           | 0 | 30929829 |          |
| 18 | Hapmap42153-BTA-25364           | 0 | 31226355 |          |
| 18 | BTA-121123-no-rs                | 0 | 31280444 |          |
| 18 | Hapmap58507-rs29024090          | 0 | 31396856 |          |
| 18 | Hapmap32144-BTA-163981          | 0 | 31532479 |          |
| 18 | ARS-BFGL-NGS-29922              | 0 | 31587185 |          |
| 18 | Hapmap24446-BTA-162048          | 0 | 31630916 |          |
| 18 | Hapmap26767-BTA-162049          | 0 | 31662433 |          |
| 18 | Hapmap44357-BTA-24055           | 0 | 31726094 |          |
| 18 | Hapmap42880-BTA-24056           | 0 | 31818445 |          |
| 18 | ARS-BFGL-NGS-88357              | 0 | 31925240 |          |
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| 18 | BTB-01443335                    | 0 | 32017410 |          |
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| 18 | ARS-BFGL-BAC-36257              | 0 | 32132374 |          |
| 18 | BTB-00707200                    | 0 | 32182501 |          |
| 18 | Hapmap26655-BTA-132218          | 0 | 32234943 |          |
| 18 | Hapmap59101-rs29024885          | 0 | 32300425 |          |
| 18 | UA-IFASA-4711                   | 0 | 32335701 |          |
| 18 | BTB-00707941                    | 0 | 32446149 |          |
| 18 | BTA-42979-no-rs                 | 0 | 32517821 |          |
| 18 | BTB-00707771                    | 0 | 32565376 |          |
| 18 | Hapmap40535-BTA-42974           | 0 | 32624899 |          |
| 18 | ARS-BFGL-NGS-82274              | 0 | 32756408 |          |
| 18 | Hapmap50689-BTA-42970           | 0 | 32788809 |          |
| 18 | Hapmap39488-BTA-42969           | 0 | 32828509 |          |
| 18 | Hapmap41865-BTA-42966           | 0 | 32887225 |          |
| 18 | BTA-24218-no-rs                 | 0 | 32925593 |          |
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| 18 | ARS-BFGL-NGS-23057              | 0 | 33079046 |          |
| 18 | Hapmap60481-rs29012614          | 0 | 33106153 |          |
| 18 | Hapmap55289-rs29026039          | 0 | 33167374 |          |
| 18 | BTB-00707402                    | 0 | 33206326 |          |



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| 18 | Hapmap51229-BTA-42956 | 0        | 33262180 |
| 18 | ARS-BFGL-NGS-69746    | 0        | 33305793 |
| 18 | ARS-BFGL-NGS-15850    | 0        | 33370191 |
| 18 | Hapmap50690-BTA-43010 | 0        | 33447591 |
| 18 | ARS-BFGL-NGS-18330    | 0        | 33511518 |
| 18 | ARS-BFGL-NGS-92089    | 0        | 33542286 |
| 18 | ARS-BFGL-NGS-31705    | 0        | 33566059 |
| 18 | ARS-BFGL-NGS-14182    | 0        | 33602408 |
| 18 | ARS-BFGL-NGS-37300    | 33640224 |          |
| 18 | ARS-BFGL-NGS-11343    | 0        | 33664592 |
| 18 | ARS-BFGL-NGS-115751   | 0        | 33718299 |
| 18 | ARS-BFGL-NGS-48194    | 0        | 33749406 |
| 18 | ARS-BFGL-NGS-118084   | 0        | 33779427 |
| 18 | ARS-BFGL-NGS-62857    | 0        | 33804536 |
| 18 | Hapmap23714-BTA-43016 | 0        | 33814509 |
| 18 | ARS-BFGL-NGS-22634    | 0        | 33856062 |
| 18 | Hapmap38675-BTA-43020 | 0        | 33891066 |
| 18 | ARS-BFGL-NGS-63965    | 0        | 33923801 |
| 18 | ARS-BFGL-NGS-20030    | 0        | 33946444 |
| 18 | ARS-BFGL-NGS-107749   | 0        | 33986486 |
| 18 | Hapmap47615-BTA-43035 | 0        | 34022352 |
| 18 | ARS-BFGL-NGS-76555    | 0        | 34049189 |
| 18 | BTA-43023-no-rs       | 0        | 34087311 |
| 18 | ARS-BFGL-NGS-119782   | 0        | 34126956 |
| 18 | ARS-BFGL-NGS-32691    | 0        | 34159637 |
| 18 | ARS-BFGL-NGS-43220    | 0        | 34208415 |
| 18 | ARS-BFGL-NGS-67296    | 0        | 34243800 |
| 18 | ARS-BFGL-BAC-36869    | 0        | 34321044 |
| 18 | ARS-BFGL-NGS-107813   | 0        | 34379769 |
| 18 | ARS-BFGL-NGS-117369   | 0        | 34427771 |
| 18 | ARS-BFGL-BAC-23440    | 34456603 |          |
| 18 | ARS-BFGL-NGS-46660    | 34505448 |          |
| 18 | Hapmap51729-BTA-42955 | 0        | 34627557 |
| 18 | BTB-00708261          | 0        | 34666281 |
| 18 | ARS-BFGL-NGS-112014   | 0        | 34794005 |
| 18 | ARS-BFGL-NGS-93226    | 0        | 34817149 |
| 18 | ARS-BFGL-NGS-12773    | 0        | 34878765 |
| 18 | ARS-BFGL-NGS-44400    | 34940982 |          |
| 18 | ARS-BFGL-NGS-112943   | 0        | 34969223 |
| 18 | ARS-BFGL-NGS-52708    | 0        | 34992628 |
| 18 | UA-IFASA-5348         | 0        | 35027876 |
| 18 | BTA-42999-no-rs       | 0        | 35085008 |
| 18 | BTA-43000-no-rs       | 0        | 35108699 |
| 18 | ARS-BFGL-NGS-34848    | 0        | 35130634 |
| 18 | ARS-BFGL-NGS-29060    | 0        | 35163513 |
| 18 | BTA-42491-no-rs       | 0        | 35218494 |
| 18 | BTB-00701972          | 0        | 35294024 |
| 18 | ARS-BFGL-NGS-61296    | 0        | 35306248 |
| 18 | ARS-BFGL-NGS-23693    | 0        | 35354921 |
| 18 | ARS-BFGL-NGS-28733    | 0        | 35388791 |
| 18 | ARS-BFGL-NGS-61670    | 0        | 35418613 |
| 18 | ARS-BFGL-NGS-40138    | 0        | 35501902 |
| 18 | ARS-BFGL-NGS-98832    | 0        | 35529313 |
| 18 | BTA-42486-no-rs       | 0        | 35550752 |

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| 18 | Hapmap34397-BES7_Contig335_1167 | 0 | 35583594 |
| 18 | ARS-BFGL-NGS-43737              | 0 | 35638202 |
| 18 | ARS-BFGL-NGS-55550              | 0 | 35761850 |
| 18 | Hapmap47947-BTA-42483           | 0 | 35793633 |
| 18 | BTB-00701726                    | 0 | 35829905 |
| 18 | Hapmap48332-BTA-42482           | 0 | 35875359 |
| 18 | BTB-00701663                    | 0 | 35921254 |
| 18 | ARS-BFGL-NGS-113568             | 0 | 35971459 |
| 18 | ARS-BFGL-NGS-116891             | 0 | 36146356 |
| 18 | ARS-BFGL-NGS-111112             | 0 | 36178690 |
| 18 | Hapmap48758-BTA-42474           | 0 | 36207061 |
| 18 | ARS-BFGL-NGS-102206             | 0 | 36250231 |
| 18 | ARS-BFGL-NGS-119119             | 0 | 36308037 |
| 18 | Hapmap39747-BTA-42470           | 0 | 36432725 |
| 18 | BTA-42468-no-rs                 | 0 | 36483974 |
| 18 | ARS-BFGL-NGS-37856              | 0 | 36509090 |
| 18 | ARS-BFGL-NGS-102865             | 0 | 36594231 |
| 18 | ARS-BFGL-NGS-53307              | 0 | 36674600 |
| 18 | ARS-BFGL-NGS-18712              | 0 | 36751716 |
| 18 | BTB-01919503                    | 0 | 36785457 |
| 18 | BTB-00710724                    | 0 | 36895563 |
| 18 | Hapmap59773-ss46526196          | 0 | 36939147 |
| 18 | Hapmap51998-BTA-43053           | 0 | 36985552 |
| 18 | Hapmap40351-BTA-43058           | 0 | 37016151 |
| 18 | BTA-43059-no-rs                 | 0 | 37054197 |
| 18 | ARS-BFGL-NGS-41310              | 0 | 37085111 |
| 18 | BTA-43062-no-rs                 | 0 | 37105353 |
| 18 | ARS-BFGL-NGS-67111              | 0 | 37135403 |
| 18 | ARS-BFGL-NGS-91477              | 0 | 37166881 |
| 18 | ARS-BFGL-NGS-114937             | 0 | 37188964 |
| 18 | BTB-02003573                    | 0 | 37220279 |
| 18 | BTB-00710926                    | 0 | 37296167 |
| 18 | Hapmap49605-BTA-43064           | 0 | 37328355 |
| 18 | ARS-BFGL-NGS-24323              | 0 | 37374521 |
| 18 | ARS-BFGL-NGS-54131              | 0 | 37420230 |
| 18 | Hapmap35356-BES7_Contig368_825  | 0 | 37461150 |
| 18 | Hapmap58263-rs29024924          | 0 | 37506285 |
| 18 | ARS-BFGL-BAC-31822              | 0 | 37562472 |
| 18 | ARS-BFGL-NGS-33204              | 0 | 37596521 |
| 18 | ARS-BFGL-BAC-23450              | 0 | 37653387 |
| 18 | ARS-BFGL-NGS-29629              | 0 | 37692447 |
| 18 | ARS-BFGL-BAC-31823              | 0 | 37745427 |
| 18 | BTA-43073-no-rs                 | 0 | 37783787 |
| 18 | ARS-BFGL-NGS-110268             | 0 | 37826773 |
| 18 | BTB-00711650                    | 0 | 37869243 |
| 18 | ARS-BFGL-NGS-31533              | 0 | 37927789 |
| 18 | Hapmap49173-BTA-43091           | 0 | 37958338 |
| 18 | Hapmap32998-BTA-132256          | 0 | 37977789 |
| 18 | UA-IFASA-4191                   | 0 | 38027659 |
| 18 | ARS-BFGL-NGS-111123             | 0 | 38089633 |
| 18 | ARS-BFGL-NGS-71526              | 0 | 38121467 |
| 18 | ARS-BFGL-NGS-115519             | 0 | 38147823 |
| 18 | ARS-BFGL-NGS-101684             | 0 | 38230952 |
| 18 | BTA-101546-no-rs                | 0 | 38321858 |

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| 18 | BTA-101550-no-rs               | 0 | 38357061 |  |
| 18 | Hapmap48151-BTA-101548         | 0 | 38394166 |  |
| 18 | ARS-BFGL-NGS-12047             | 0 | 38471116 |  |
| 18 | Hapmap40105-BTA-116218         | 0 | 38543236 |  |
| 18 | Hapmap43850-BTA-43155          | 0 | 38621084 |  |
| 18 | BTA-43158-no-rs                | 0 | 38645105 |  |
| 18 | BTA-43160-no-rs                | 0 | 38657958 |  |
| 18 | BTA-43161-no-rs                | 0 | 38688096 |  |
| 18 | BTB-00713661                   | 0 | 38756763 |  |
| 18 | Hapmap58822-rs29018153         | 0 | 38815705 |  |
| 18 | ARS-BFGL-BAC-61880             | 0 | 38850678 |  |
| 18 | BTA-117976-no-rs               | 0 | 38883296 |  |
| 18 | BTA-117977-no-rs               | 0 | 38929545 |  |
| 18 | ARS-BFGL-NGS-96821             | 0 | 39128722 |  |
| 18 | ARS-BFGL-NGS-108025            | 0 | 39204491 |  |
| 18 | Hapmap58097-rs29011337         | 0 | 39247450 |  |
| 18 | ARS-BFGL-NGS-114947            | 0 | 39268365 |  |
| 18 | BTB-01915527                   | 0 | 39480387 |  |
| 18 | Hapmap51166-BTA-121131         | 0 | 39521360 |  |
| 18 | ARS-BFGL-NGS-23924             | 0 | 39549809 |  |
| 18 | BTA-90174-no-rs                | 0 | 39576494 |  |
| 18 | BTA-18121-no-rs                | 0 | 39603232 |  |
| 18 | Hapmap60613-ss46526529         | 0 | 39624096 |  |
| 18 | BTB-01838174                   | 0 | 39666239 |  |
| 18 | ARS-BFGL-NGS-117852            | 0 | 39728567 |  |
| 18 | ARS-BFGL-NGS-104890            | 0 | 39772580 |  |
| 18 | ARS-BFGL-NGS-56179             | 0 | 39793889 |  |
| 18 | ARS-BFGL-NGS-101288            | 0 | 39825584 |  |
| 18 | ARS-BFGL-NGS-113001            | 0 | 39860794 |  |
| 18 | Hapmap34022-BES9_Contig440_780 | 0 | 39903328 |  |
| 18 | BTB-00712901                   | 0 | 39961400 |  |
| 18 | ARS-BFGL-NGS-101103            | 0 | 40002413 |  |
| 18 | BTB-00712894                   | 0 | 40041803 |  |
| 18 | ARS-BFGL-NGS-93994             | 0 | 40077524 |  |
| 18 | BTB-00712788                   | 0 | 40116972 |  |
| 18 | ARS-BFGL-NGS-72885             | 0 | 40158239 |  |
| 18 | ARS-BFGL-NGS-55014             | 0 | 40225738 |  |
| 18 | ARS-BFGL-NGS-60750             | 0 | 40246397 |  |
| 18 | ARS-BFGL-NGS-62526             | 0 | 40288309 |  |
| 18 | ARS-BFGL-NGS-35784             | 0 | 40330828 |  |
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| 18 | ARS-BFGL-NGS-114116            | 0 | 40380553 |  |
| 18 | BTB-00710668                   | 0 | 40426150 |  |
| 18 | BTB-00710625                   | 0 | 40464954 |  |
| 18 | ARS-BFGL-NGS-79228             | 0 | 40502223 |  |
| 18 | ARS-BFGL-NGS-17343             | 0 | 40530775 |  |
| 18 | Hapmap30518-BTA-132243         | 0 | 40587048 |  |
| 18 | ARS-BFGL-NGS-37756             | 0 | 40690801 |  |
| 18 | BTA-43145-no-rs                | 0 | 40714061 |  |
| 18 | ARS-BFGL-BAC-32435             | 0 | 40738568 |  |
| 18 | ARS-BFGL-NGS-110869            | 0 | 40816057 |  |
| 18 | ARS-BFGL-NGS-88483             | 0 | 40843328 |  |
| 18 | ARS-BFGL-NGS-107479            | 0 | 40871506 |  |
| 18 | ARS-BFGL-NGS-115366            | 0 | 40905255 |  |

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| 18 | ARS-BFGL-NGS-84358              | 0        | 40960722 |          |
| 18 | ARS-BFGL-NGS-19758              | 0        | 40994643 |          |
| 18 | Hapmap58839-rs29018797          | 0        | 41081838 |          |
| 18 | ARS-BFGL-NGS-63395              | 0        | 41116256 |          |
| 18 | ARS-BFGL-NGS-27376              | 0        | 41184713 |          |
| 18 | ARS-BFGL-NGS-34617              | 0        | 41217520 |          |
| 18 | ARS-BFGL-NGS-119441             | 0        | 41255257 |          |
| 18 | ARS-BFGL-NGS-37079              | 0        | 41289132 |          |
| 18 | ARS-BFGL-NGS-116652             | 0        | 41323241 |          |
| 18 | Hapmap35516-SCAFFOLD70087_15055 | 0        |          | 41533147 |
| 18 | ARS-BFGL-NGS-26944              | 0        | 41595185 |          |
| 18 | Hapmap42198-BTA-39980           | 0        | 41617350 |          |
| 18 | ARS-BFGL-NGS-35801              | 0        | 41650216 |          |
| 18 | Hapmap25527-BTA-132303          | 0        | 41722611 |          |
| 18 | ARS-BFGL-NGS-63087              | 0        | 41860965 |          |
| 18 | BTA-43188-no-rs                 | 0        | 41890414 |          |
| 18 | BTA-43186-no-rs                 | 0        | 41934200 |          |
| 18 | ARS-BFGL-NGS-119421             | 0        | 42003247 |          |
| 18 | Hapmap43579-BTA-43185           | 0        | 42033662 |          |
| 18 | Hapmap60430-rs29016898          | 0        | 42107661 |          |
| 18 | ARS-BFGL-NGS-117818             | 0        | 42187823 |          |
| 18 | ARS-BFGL-NGS-26718              | 0        | 42223365 |          |
| 18 | ARS-BFGL-NGS-112357             | 0        | 42254799 |          |
| 18 | BTB-00714276                    | 0        | 42292172 |          |
| 18 | Hapmap47614-BTA-42987           | 0        | 42346555 |          |
| 18 | BTA-42967-no-rs                 | 0        | 42407639 |          |
| 18 | Hapmap54118-rs29014623          | 0        | 42435476 |          |
| 18 | BTA-23408-no-rs                 | 0        | 42461953 |          |
| 18 | ARS-BFGL-BAC-34996              | 0        | 42490530 |          |
| 18 | Hapmap43267-BTA-43255           | 0        | 42540983 |          |
| 18 | BTA-43248-no-rs                 | 0        | 42562359 |          |
| 18 | BTA-43239-no-rs                 | 0        | 42618843 |          |
| 18 | ARS-BFGL-NGS-28822              | 0        | 42659289 |          |
| 18 | ARS-BFGL-NGS-29914              | 0        | 42706451 |          |
| 18 | ARS-BFGL-NGS-112414             | 0        | 42750230 |          |
| 18 | Hapmap40976-BTA-43213           | 0        | 42805400 |          |
| 18 | ARS-BFGL-NGS-37980              | 0        | 42826428 |          |
| 18 | Hapmap59019-rs29021918          | 0        | 42856641 |          |
| 18 | ARS-BFGL-NGS-114839             | 0        | 42913313 |          |
| 18 | ARS-BFGL-NGS-36501              | 0        | 42941446 |          |
| 18 | ARS-BFGL-NGS-75318              | 0        | 42970188 |          |
| 18 | BTA-43207-no-rs                 | 0        | 43024125 |          |
| 18 | BTB-00715505                    | 0        | 43098071 |          |
| 18 | BTA-43205-no-rs                 | 0        | 43134153 |          |
| 18 | ARS-BFGL-NGS-113068             | 0        | 43165294 |          |
| 18 | ARS-BFGL-NGS-68452              | 0        | 43264642 |          |
| 18 | Hapmap52325-rs29020544          | 0        | 43327273 |          |
| 18 | ARS-BFGL-NGS-57076              | 0        | 43379174 |          |
| 18 | ARS-BFGL-NGS-21227              | 0        | 43401011 |          |
| 18 | ARS-BFGL-NGS-91567              | 0        | 43470260 |          |
| 18 | BTA-43256-no-rs                 | 0        | 43502109 |          |
| 18 | ARS-BFGL-NGS-97128              | 0        | 43568128 |          |
| 18 | ARS-BFGL-NGS-50740              | 43588701 |          |          |
| 18 | ARS-BFGL-NGS-41745              | 0        | 43614762 |          |

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| 18 | Hapmap38317-BTA-43262  | 0        | 43666425 |
| 18 | ARS-BFGL-NGS-63540     | 43691383 |          |
| 18 | ARS-BFGL-NGS-57914     | 0        | 43726997 |
| 18 | ARS-BFGL-NGS-112457    | 0        | 43766368 |
| 18 | ARS-BFGL-NGS-105692    | 0        | 43892356 |
| 18 | ARS-BFGL-NGS-21339     | 0        | 43924130 |
| 18 | BTA-43268-no-rs        | 0        | 43944803 |
| 18 | ARS-BFGL-NGS-104171    | 0        | 43966013 |
| 18 | UA-IFASA-8905          | 0        | 44019061 |
| 18 | ARS-BFGL-NGS-97080     | 44064689 |          |
| 18 | ARS-BFGL-NGS-113354    | 0        | 44102900 |
| 18 | ARS-BFGL-NGS-17039     | 0        | 44135838 |
| 18 | ARS-BFGL-NGS-55212     | 0        | 44169233 |
| 18 | ARS-BFGL-NGS-30259     | 0        | 44208859 |
| 18 | ARS-BFGL-NGS-19902     | 0        | 44238908 |
| 18 | ARS-BFGL-NGS-44774     | 0        | 44302099 |
| 18 | BTA-43396-no-rs        | 0        | 44325867 |
| 18 | ARS-BFGL-NGS-32580     | 44361357 |          |
| 18 | ARS-BFGL-NGS-75672     | 0        | 44392765 |
| 18 | ARS-BFGL-NGS-32699     | 0        | 44427437 |
| 18 | BTA-43401-no-rs        | 0        | 44454179 |
| 18 | Hapmap39334-BTA-43402  | 0        | 44488949 |
| 18 | Hapmap47949-BTA-43407  | 0        | 44524702 |
| 18 | Hapmap55149-rs29025570 | 0        | 44562069 |
| 18 | BTA-11776-rs29017530   | 0        | 44593191 |
| 18 | Hapmap40353-BTA-43430  | 0        | 44652356 |
| 18 | BTB-00718231           | 0        | 44801596 |
| 18 | Hapmap30625-BTA-43445  | 0        | 44840375 |
| 18 | BTA-85655-no-rs        | 0        | 44939737 |
| 18 | Hapmap30222-BTA-132356 | 0        | 44969809 |
| 18 | Hapmap22741-BTA-132359 | 0        | 44998301 |
| 18 | BTB-00718606           | 0        | 45044333 |
| 18 | ARS-BFGL-NGS-100497    | 0        | 45085854 |
| 18 | Hapmap47455-BTA-97830  | 0        | 45194522 |
| 18 | ARS-BFGL-NGS-110142    | 0        | 45412266 |
| 18 | BTB-01588251           | 0        | 45474850 |
| 18 | ARS-BFGL-NGS-115680    | 0        | 45758759 |
| 18 | Hapmap41538-BTA-43550  | 0        | 45815598 |
| 18 | ARS-BFGL-NGS-79618     | 0        | 45870264 |
| 18 | Hapmap51595-BTA-43547  | 0        | 45929303 |
| 18 | ARS-BFGL-NGS-18897     | 0        | 45978986 |
| 18 | ARS-BFGL-NGS-117589    | 0        | 45999702 |
| 18 | ARS-BFGL-NGS-44321     | 0        | 46033080 |
| 18 | ARS-BFGL-NGS-115785    | 0        | 46063097 |
| 18 | Hapmap48338-BTA-43544  | 0        | 46097906 |
| 18 | BTA-43543-no-rs        | 0        | 46124864 |
| 18 | Hapmap40430-BTA-43542  | 0        | 46151292 |
| 18 | ARS-BFGL-NGS-30493     | 0        | 46191012 |
| 18 | BTA-43532-no-rs        | 0        | 46232817 |
| 18 | BTA-43529-no-rs        | 0        | 46264425 |
| 18 | ARS-BFGL-NGS-93032     | 0        | 46288098 |
| 18 | ARS-BFGL-NGS-50100     | 0        | 46341055 |
| 18 | ARS-BFGL-NGS-110865    | 0        | 46373028 |
| 18 | Hapmap50691-BTA-43520  | 0        | 46465518 |

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| 18 | Hapmap52166-rs29025315                | 0        | 46552279 |   |          |
| 18 | ARS-BFGL-NGS-114161                   | 0        | 46584203 |   |          |
| 18 | ARS-BFGL-NGS-44010                    | 46611338 |          |   |          |
| 18 | UA-IFASA-9215                         | 0        | 46641574 |   |          |
| 18 | ARS-USMARC-Parent-AY863214-rs17871744 | 0        | 46647177 | 0 | 46647177 |
| 18 | ARS-BFGL-NGS-14927                    | 0        | 46677643 |   |          |
| 18 | ARS-BFGL-NGS-104362                   | 0        | 46697670 |   |          |
| 18 | ARS-BFGL-NGS-54266                    | 0        | 46757466 |   |          |
| 18 | ARS-BFGL-NGS-102172                   | 0        | 46826215 |   |          |
| 18 | UA-IFASA-2345                         | 0        | 46875864 |   |          |
| 18 | ARS-BFGL-NGS-92859                    | 0        | 46915673 |   |          |
| 18 | ARS-BFGL-NGS-16089                    | 0        | 46936044 |   |          |
| 18 | ARS-BFGL-NGS-29664                    | 0        | 47054361 |   |          |
| 18 | Hapmap50867-BTA-110561                | 0        | 47089076 |   |          |
| 18 | Hapmap41539-BTA-43637                 | 0        | 47154726 |   |          |
| 18 | ARS-BFGL-NGS-11286                    | 0        | 47180292 |   |          |
| 18 | BTB-00722103                          | 0        | 47212964 |   |          |
| 18 | BTB-00722093                          | 0        | 47259533 |   |          |
| 18 | Hapmap43853-BTA-43626                 | 0        | 47292259 |   |          |
| 18 | ARS-BFGL-NGS-62218                    | 0        | 47443804 |   |          |
| 18 | ARS-BFGL-NGS-54821                    | 0        | 47563494 |   |          |
| 18 | Hapmap43800-BTA-18099                 | 0        | 47627016 |   |          |
| 18 | ARS-BFGL-NGS-75725                    | 0        | 47698729 |   |          |
| 18 | BTA-107911-no-rs                      | 0        | 47719325 |   |          |
| 18 | Hapmap42792-BTA-107917                | 0        | 47781264 |   |          |
| 18 | Hapmap55285-rs29025730                | 0        | 47833734 |   |          |
| 18 | BTA-43699-no-rs                       | 0        | 47862193 |   |          |
| 18 | ARS-BFGL-NGS-73872                    | 0        | 47960779 |   |          |
| 18 | ARS-BFGL-NGS-119482                   | 0        | 47983685 |   |          |
| 18 | ARS-BFGL-NGS-115349                   | 0        | 47995842 |   |          |
| 18 | ARS-BFGL-BAC-35025                    | 0        | 48038041 |   |          |
| 18 | ARS-BFGL-NGS-115550                   | 0        | 48082842 |   |          |
| 18 | ARS-BFGL-NGS-42664                    | 0        | 48129174 |   |          |
| 18 | ARS-BFGL-BAC-35026                    | 0        | 48150900 |   |          |
| 18 | ARS-BFGL-NGS-33879                    | 0        | 48172057 |   |          |
| 18 | ARS-BFGL-NGS-103183                   | 0        | 48217729 |   |          |
| 18 | BTA-121138-no-rs                      | 0        | 48241428 |   |          |
| 18 | ARS-BFGL-NGS-39590                    | 0        | 48294173 |   |          |
| 18 | ARS-BFGL-NGS-110180                   | 0        | 48327929 |   |          |
| 18 | ARS-BFGL-NGS-59215                    | 0        | 48398652 |   |          |
| 18 | Hapmap60587-rs29022095                | 0        | 48505668 |   |          |
| 18 | ARS-BFGL-NGS-18019                    | 0        | 48538054 |   |          |
| 18 | Hapmap35421-SCAFFOLD98325_1119        | 0        | 48616951 | 0 | 48616951 |
| 18 | ARS-BFGL-NGS-77973                    | 0        | 48644344 |   |          |
| 18 | ARS-BFGL-NGS-29923                    | 0        | 48719962 |   |          |
| 18 | ARS-BFGL-NGS-119814                   | 0        | 48747276 |   |          |
| 18 | UA-IFASA-6796                         | 0        | 48793660 |   |          |
| 18 | ARS-USMARC-Parent-AY914316-rs17871403 | 0        | 48812014 | 0 | 48812014 |
| 18 | ARS-BFGL-NGS-64415                    | 0        | 48818621 |   |          |
| 18 | ARS-BFGL-NGS-55740                    | 0        | 48854752 |   |          |
| 18 | ARS-BFGL-NGS-22956                    | 0        | 48876762 |   |          |
| 18 | ARS-BFGL-NGS-43070                    | 48914799 |          |   |          |
| 18 | ARS-BFGL-NGS-118846                   | 0        | 49032516 |   |          |
| 18 | Hapmap39652-BTA-43608                 | 0        | 49090018 |   |          |

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| 18 | BTA-43602-no-rs                | 0 | 49110869 |          |
| 18 | ARS-BFGL-NGS-44630             |   | 49167271 |          |
| 18 | ARS-BFGL-NGS-113564            | 0 | 49396303 |          |
| 18 | ARS-BFGL-NGS-90115             | 0 | 49425130 |          |
| 18 | ARS-BFGL-NGS-103675            | 0 | 49446631 |          |
| 18 | Hapmap24498-BTA-43662          | 0 | 49495460 |          |
| 18 | Hapmap47950-BTA-43792          | 0 | 49611296 |          |
| 18 | ARS-BFGL-BAC-35461             | 0 | 49655877 |          |
| 18 | Hapmap54289-ss46526948         | 0 | 49690172 |          |
| 18 | ARS-BFGL-NGS-32320             | 0 | 49735884 |          |
| 18 | ARS-BFGL-NGS-116476            | 0 | 49758619 |          |
| 18 | ARS-BFGL-NGS-37708             | 0 | 49928003 |          |
| 18 | ARS-BFGL-NGS-63460             | 0 | 49966162 |          |
| 18 | ARS-BFGL-NGS-24233             | 0 | 50118299 |          |
| 18 | ARS-BFGL-NGS-39994             | 0 | 50160561 |          |
| 18 | ARS-BFGL-NGS-112003            | 0 | 50233023 |          |
| 18 | ARS-BFGL-NGS-19467             | 0 | 50261823 |          |
| 18 | BTA-43728-no-rs                | 0 | 50282458 |          |
| 18 | Hapmap49176-BTA-43744          | 0 | 50388296 |          |
| 18 | ARS-BFGL-NGS-34276             | 0 | 50465387 |          |
| 18 | Hapmap36462-SCAFFOLD15048_5152 | 0 |          | 50581375 |
| 18 | ARS-BFGL-NGS-13393             | 0 | 50616688 |          |
| 18 | ARS-BFGL-NGS-15707             | 0 | 50662553 |          |
| 18 | BTA-23545-no-rs                | 0 | 50686020 |          |
| 18 | ARS-BFGL-NGS-35499             | 0 | 50727653 |          |
| 18 | ARS-BFGL-NGS-42247             | 0 | 50748739 |          |
| 18 | Hapmap52049-ss46526423         | 0 | 50793970 |          |
| 18 | ARS-BFGL-NGS-110552            | 0 | 50813218 |          |
| 18 | ARS-BFGL-NGS-12344             | 0 | 50870670 |          |
| 18 | Hapmap45491-BTA-43726          | 0 | 51153494 |          |
| 18 | ARS-BFGL-NGS-51636             | 0 | 51192008 |          |
| 18 | ARS-BFGL-NGS-24440             |   | 51218571 |          |
| 18 | ARS-BFGL-NGS-10839             | 0 | 51321651 |          |
| 18 | ARS-BFGL-NGS-71370             |   | 51369666 |          |
| 18 | BTA-43725-no-rs                | 0 | 51413827 |          |
| 18 | ARS-BFGL-NGS-33511             | 0 | 51428990 |          |
| 18 | ARS-BFGL-NGS-38350             |   | 51503668 |          |
| 18 | Hapmap47294-BTA-43719          | 0 | 51546064 |          |
| 18 | ARS-BFGL-NGS-54290             | 0 | 51571629 |          |
| 18 | ARS-BFGL-NGS-117685            | 0 | 51592949 |          |
| 18 | BTA-43712-no-rs                | 0 | 51619660 |          |
| 18 | ARS-BFGL-NGS-22987             | 0 | 51644121 |          |
| 18 | Hapmap57492-ss46526490         | 0 | 51681243 |          |
| 18 | ARS-BFGL-NGS-72092             | 0 | 51703749 |          |
| 18 | Hapmap49609-BTA-43790          | 0 | 51727750 |          |
| 18 | ARS-BFGL-NGS-117698            | 0 | 51788596 |          |
| 18 | ARS-BFGL-NGS-37312             | 0 | 51826636 |          |
| 18 | ARS-BFGL-NGS-47731             | 0 | 51859472 |          |
| 18 | ARS-BFGL-NGS-34874             | 0 | 51896291 |          |
| 18 | Hapmap42167-BTA-28651          | 0 | 51917582 |          |
| 18 | Hapmap53843-rs29014653         | 0 | 51939973 |          |
| 18 | ARS-BFGL-BAC-28016             | 0 | 52003816 |          |
| 18 | BTA-118931-no-rs               | 0 | 52024379 |          |
| 18 | ARS-BFGL-NGS-116222            | 0 | 52045889 |          |

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| 18 | ARS-BFGL-NGS-103662             | 0        | 52087186 |          |
| 18 | Hapmap52186-ss46527081          | 0        | 52156425 |          |
| 18 | ARS-BFGL-NGS-75110              | 52185292 |          |          |
| 18 | ARS-BFGL-NGS-17797              | 0        | 52304421 |          |
| 18 | ARS-BFGL-NGS-17369              | 0        | 52400162 |          |
| 18 | ARS-BFGL-NGS-99872              | 0        | 52434006 |          |
| 18 | ARS-BFGL-NGS-17754              | 0        | 52453472 |          |
| 18 | ARS-BFGL-NGS-56579              | 0        | 52486964 |          |
| 18 | ARS-BFGL-NGS-112862             | 0        | 52520013 |          |
| 18 | BTA-12313-rs29024268            | 0        | 52578174 |          |
| 18 | ARS-BFGL-NGS-35419              | 0        | 52664641 |          |
| 18 | Hapmap39738-BTA-29795           | 0        | 52685927 |          |
| 18 | ARS-BFGL-NGS-114962             | 0        | 52716347 |          |
| 18 | ARS-BFGL-NGS-113639             | 0        | 52739093 |          |
| 18 | ARS-BFGL-NGS-99572              | 0        | 52852305 |          |
| 18 | BTA-43475-no-rs                 | 0        | 52945257 |          |
| 18 | UA-IFASA-9064                   | 0        | 52971233 |          |
| 18 | Hapmap36162-SCAFFOLD261827_5746 | 0        |          | 53013208 |
| 18 | ARS-BFGL-NGS-116944             | 0        | 53071113 |          |
| 18 | ARS-BFGL-NGS-50320              | 53132012 |          |          |
| 18 | ARS-BFGL-NGS-15438              | 0        | 53224638 |          |
| 18 | ARS-BFGL-BAC-33779              | 0        | 53281931 |          |
| 18 | ARS-BFGL-NGS-57110              | 53308339 |          |          |
| 18 | BTA-43458-no-rs                 | 0        | 53333566 |          |
| 18 | ARS-BFGL-BAC-34398              | 0        | 53393358 |          |
| 18 | ARS-BFGL-BAC-36969              | 0        | 53498385 |          |
| 18 | ARS-BFGL-BAC-36979              | 0        | 53571368 |          |
| 18 | BTB-00718827                    | 0        | 53651293 |          |
| 18 | ARS-BFGL-NGS-10036              | 0        | 53717725 |          |
| 18 | ARS-BFGL-NGS-116232             | 0        | 53790007 |          |
| 18 | Hapmap40977-BTA-43450           | 0        | 53838341 |          |
| 18 | ARS-BFGL-NGS-110048             | 0        | 53894172 |          |
| 18 | ARS-BFGL-NGS-117985             | 0        | 53948569 |          |
| 18 | Hapmap41540-BTA-43915           | 0        | 53970861 |          |
| 18 | ARS-BFGL-NGS-17290              | 0        | 54028686 |          |
| 18 | ARS-BFGL-NGS-36626              | 0        | 54052117 |          |
| 18 | ARS-BFGL-NGS-86840              | 54079466 |          |          |
| 18 | ARS-BFGL-NGS-42678              | 0        | 54112530 |          |
| 18 | Hapmap23685-BTA-132541          | 0        | 54271729 |          |
| 18 | UA-IFASA-7471                   | 0        | 54311149 |          |
| 18 | ARS-BFGL-NGS-13599              | 0        | 54351996 |          |
| 18 | ARS-BFGL-NGS-89650              | 0        | 54376451 |          |
| 18 | BTA-22684-no-rs                 | 0        | 54450227 |          |
| 18 | Hapmap52308-rs29009652          | 0        | 54470798 |          |
| 18 | ARS-BFGL-NGS-107108             | 0        | 54492931 |          |
| 18 | ARS-BFGL-NGS-62151              | 0        | 54532193 |          |
| 18 | ARS-BFGL-NGS-52477              | 0        | 54556209 |          |
| 18 | Hapmap47295-BTA-43799           | 0        | 54639985 |          |
| 18 | ARS-BFGL-NGS-108618             | 0        | 54704168 |          |
| 18 | Hapmap24544-BTA-132510          | 0        | 54832091 |          |
| 18 | BTB-00726211                    | 0        | 54863147 |          |
| 18 | ARS-BFGL-NGS-100074             | 0        | 54934460 |          |
| 18 | Hapmap38225-BTA-43804           | 0        | 54965977 |          |
| 18 | ARS-BFGL-NGS-82046              | 0        | 54987510 |          |



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| 18 | ARS-BFGL-NGS-10623              | 0 | 55028139 |          |
| 18 | ARS-BFGL-NGS-13667              | 0 | 55099575 |          |
| 18 | ARS-BFGL-NGS-70161              | 0 | 55224848 |          |
| 18 | BTA-43816-no-rs                 | 0 | 55256431 |          |
| 18 | ARS-BFGL-NGS-116541             | 0 | 55309510 |          |
| 18 | ARS-BFGL-NGS-117758             | 0 | 55353898 |          |
| 18 | ARS-BFGL-NGS-77376              | 0 | 55552981 |          |
| 18 | ARS-BFGL-NGS-74580              |   | 55590144 |          |
| 18 | ARS-BFGL-NGS-31529              | 0 | 55621823 |          |
| 18 | ARS-BFGL-NGS-18265              | 0 | 55665518 |          |
| 18 | BTA-43890-no-rs                 | 0 | 55779877 |          |
| 18 | ARS-BFGL-NGS-93837              | 0 | 55807264 |          |
| 18 | ARS-BFGL-NGS-40328              | 0 | 55867916 |          |
| 18 | Hapmap47618-BTA-43817           | 0 | 55892476 |          |
| 18 | ARS-BFGL-NGS-60829              | 0 | 55956772 |          |
| 18 | BTB-00727071                    | 0 | 56065299 |          |
| 18 | Hapmap36420-SCAFFOLD190338_7279 | 0 |          | 56121920 |
| 18 | BTA-43831-no-rs                 | 0 | 56179705 |          |
| 18 | BTA-43837-no-rs                 | 0 | 56238540 |          |
| 18 | ARS-BFGL-NGS-38516              | 0 | 56280702 |          |
| 18 | Hapmap49610-BTA-43828           | 0 | 56319394 |          |
| 18 | ARS-BFGL-NGS-25104              | 0 | 56364657 |          |
| 18 | ARS-BFGL-NGS-114202             | 0 | 56397946 |          |
| 18 | Hapmap56958-ss46526466          | 0 | 56420153 |          |
| 18 | ARS-BFGL-NGS-26305              | 0 | 56521734 |          |
| 18 | ARS-BFGL-NGS-104774             | 0 | 56561695 |          |
| 18 | ARS-BFGL-NGS-15481              | 0 | 56611355 |          |
| 18 | Hapmap39335-BTA-43845           | 0 | 56642741 |          |
| 18 | Hapmap43854-BTA-43847           | 0 | 56702312 |          |
| 18 | ARS-BFGL-NGS-39575              | 0 | 56775122 |          |
| 18 | ARS-BFGL-NGS-85825              | 0 | 56797271 |          |
| 18 | ARS-BFGL-BAC-36087              | 0 | 56824366 |          |
| 18 | ARS-BFGL-NGS-42870              |   | 56894807 |          |
| 18 | ARS-BFGL-NGS-35840              |   | 56916895 |          |
| 18 | ARS-BFGL-NGS-38866              | 0 | 56963820 |          |
| 18 | ARS-BFGL-NGS-64898              | 0 | 57051655 |          |
| 18 | BTA-43856-no-rs                 | 0 | 57115739 |          |
| 18 | ARS-BFGL-NGS-71741              | 0 | 57137345 |          |
| 18 | ARS-BFGL-NGS-98028              | 0 | 57174711 |          |
| 18 | ARS-BFGL-NGS-25117              | 0 | 57238311 |          |
| 18 | ARS-BFGL-NGS-65190              |   | 57287445 |          |
| 18 | BTB-00731236                    | 0 | 57332964 |          |
| 18 | Hapmap25531-BTA-132582          | 0 | 57463530 |          |
| 18 | BTA-97501-no-rs                 | 0 | 57565406 |          |
| 18 | ARS-BFGL-NGS-109285             | 0 | 57589121 |          |
| 18 | ARS-BFGL-NGS-63800              |   | 57788407 |          |
| 18 | ARS-BFGL-NGS-24019              | 0 | 57829095 |          |
| 18 | ARS-BFGL-NGS-23169              | 0 | 57855715 |          |
| 18 | ARS-BFGL-NGS-57287              | 0 | 57875874 |          |
| 18 | ARS-BFGL-NGS-100080             | 0 | 57902491 |          |
| 18 | ARS-BFGL-NGS-25317              | 0 | 57949128 |          |
| 18 | ARS-BFGL-NGS-53433              | 0 | 57969493 |          |
| 18 | ARS-BFGL-BAC-23330              |   | 58067310 |          |
| 18 | Hapmap26946-BTA-132561          | 0 | 58090087 |          |

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| 18 | BTB-00729025           | 0 | 58157343 |
| 18 | Hapmap42211-BTA-43910  | 0 | 58203733 |
| 18 | ARS-BFGL-NGS-54181     | 0 | 58288756 |
| 18 | ARS-BFGL-NGS-112752    | 0 | 58352626 |
| 18 | Hapmap45189-BTA-43948  | 0 | 58404041 |
| 18 | Hapmap23557-BTA-132578 | 0 | 58478126 |
| 18 | ARS-BFGL-NGS-38212     | 0 | 58496609 |
| 18 | Hapmap40906-BTA-121147 | 0 | 58551307 |
| 18 | BTB-00730867           | 0 | 58622568 |
| 18 | Hapmap40537-BTA-43945  | 0 | 58666276 |
| 18 | BTA-29287-no-rs        | 0 | 58696066 |
| 18 | BTB-01425816           | 0 | 59662778 |
| 18 | ARS-BFGL-NGS-116069    | 0 | 59802319 |
| 18 | ARS-BFGL-NGS-74767     | 0 | 59835694 |
| 18 | BTB-01425695           | 0 | 59971609 |
| 18 | ARS-BFGL-NGS-118325    | 0 | 60103953 |
| 18 | ARS-BFGL-NGS-39594     | 0 | 60135318 |
| 18 | Hapmap44043-BTA-24219  | 0 | 60205583 |
| 18 | BTB-00730899           | 0 | 60281443 |
| 18 | Hapmap39566-BTA-43960  | 0 | 60319267 |
| 18 | ARS-BFGL-NGS-17877     | 0 | 60377508 |
| 18 | BTB-01438985           | 0 | 60409006 |
| 18 | ARS-BFGL-NGS-113553    | 0 | 60525615 |
| 18 | BTB-01458106           | 0 | 60854919 |
| 18 | Hapmap50515-BTA-94967  | 0 | 60978019 |
| 18 | ARS-BFGL-NGS-107318    | 0 | 61024520 |
| 18 | BTB-01960462           | 0 | 61054591 |
| 18 | ARS-BFGL-NGS-113023    | 0 | 61156737 |
| 18 | ARS-BFGL-NGS-102196    | 0 | 61182535 |
| 18 | ARS-BFGL-NGS-49873     | 0 | 61267887 |
| 18 | Hapmap40847-BTA-98475  | 0 | 61438125 |
| 18 | ARS-BFGL-NGS-98851     | 0 | 61597742 |
| 18 | BTA-106398-no-rs       | 0 | 61644854 |
| 18 | Hapmap40935-BTA-27343  | 0 | 61920892 |
| 18 | BTB-00732576           | 0 | 61982105 |
| 18 | ARS-BFGL-NGS-28328     | 0 | 62039345 |
| 18 | ARS-BFGL-NGS-15530     | 0 | 62065073 |
| 18 | ARS-BFGL-NGS-13972     | 0 | 62133252 |
| 18 | BTA-03959-no-rs        | 0 | 62221442 |
| 18 | BTA-44020-no-rs        | 0 | 62340260 |
| 18 | ARS-BFGL-NGS-110490    | 0 | 62375495 |
| 18 | ARS-BFGL-NGS-34007     | 0 | 62396664 |
| 18 | ARS-BFGL-NGS-84356     | 0 | 62427814 |
| 18 | ARS-BFGL-NGS-35636     | 0 | 62467006 |
| 18 | ARS-BFGL-NGS-25758     | 0 | 62512168 |
| 18 | BTA-44079-no-rs        | 0 | 62537136 |
| 18 | ARS-BFGL-NGS-17860     | 0 | 62571431 |
| 18 | ARS-BFGL-NGS-15837     | 0 | 62591127 |
| 18 | ARS-BFGL-NGS-18093     | 0 | 62622155 |
| 18 | ARS-BFGL-NGS-20095     | 0 | 62658789 |
| 18 | ARS-BFGL-NGS-25963     | 0 | 62695412 |
| 18 | ARS-BFGL-NGS-109959    | 0 | 62726859 |
| 18 | ARS-BFGL-NGS-71133     | 0 | 62751093 |
| 18 | ARS-BFGL-NGS-73221     | 0 | 62804417 |

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| 18 | ARS-BFGL-NGS-38846               | 0 | 62999282 |          |
| 18 | ARS-BFGL-NGS-111782              | 0 | 63029071 |          |
| 18 | ARS-BFGL-NGS-21979               | 0 | 63037062 |          |
| 18 | ARS-BFGL-NGS-34430               | 0 | 63057989 |          |
| 18 | ARS-BFGL-NGS-103214              | 0 | 63096692 |          |
| 18 | ARS-BFGL-NGS-78563               | 0 | 63119361 |          |
| 18 | BTA-121152-no-rs                 | 0 | 63142369 |          |
| 18 | Hapmap34314-BES10_Contig737_1144 | 0 |          | 63167945 |
| 18 | ARS-BFGL-NGS-94482               | 0 | 63380099 |          |
| 18 | ARS-BFGL-NGS-41595               | 0 | 63400996 |          |
| 18 | ARS-BFGL-BAC-31665               | 0 | 63479109 |          |
| 18 | ARS-BFGL-NGS-33663               | 0 | 63512359 |          |
| 18 | ARS-BFGL-NGS-35793               | 0 | 63632070 |          |
| 18 | ARS-BFGL-NGS-74592               | 0 | 63672441 |          |
| 18 | ARS-BFGL-NGS-88891               | 0 | 63727709 |          |
| 18 | ARS-BFGL-NGS-100532              | 0 | 63878550 |          |
| 18 | ARS-BFGL-NGS-11456               | 0 | 63913936 |          |
| 18 | ARS-BFGL-NGS-110088              | 0 | 63960153 |          |
| 18 | BTB-01631910                     | 0 | 64045527 |          |
| 18 | Hapmap49091-BTA-24678            | 0 | 64108397 |          |
| 18 | ARS-BFGL-NGS-70239               | 0 | 64133299 |          |
| 18 | BTA-44117-no-rs                  | 0 | 64188147 |          |
| 18 | ARS-BFGL-NGS-113896              | 0 | 64231273 |          |
| 18 | ARS-BFGL-NGS-95955               | 0 | 64250880 |          |
| 18 | ARS-BFGL-NGS-17826               | 0 | 64286141 |          |
| 18 | ARS-BFGL-NGS-77425               | 0 | 64316116 |          |
| 18 | ARS-BFGL-NGS-38620               | 0 | 64382705 |          |
| 18 | ARS-BFGL-NGS-43378               | 0 | 64411799 |          |
| 18 | BTB-00735179                     | 0 | 64494781 |          |
| 18 | ARS-BFGL-NGS-112365              | 0 | 64548360 |          |
| 18 | ARS-BFGL-NGS-98480               |   | 64610767 |          |
| 18 | ARS-BFGL-NGS-36598               | 0 | 64647807 |          |
| 18 | ARS-BFGL-NGS-31954               | 0 | 64668829 |          |
| 18 | ARS-BFGL-NGS-77889               | 0 | 64692962 |          |
| 18 | ARS-BFGL-NGS-27370               | 0 | 64724506 |          |
| 18 | Hapmap38226-BTA-44032            | 0 | 64758244 |          |
| 18 | BTB-01703346                     | 0 | 64901743 |          |
| 18 | ARS-BFGL-NGS-42788               | 0 | 64938786 |          |
| 18 | ARS-BFGL-NGS-107405              | 0 | 64976706 |          |
| 18 | BTB-01712706                     | 0 | 65021264 |          |
| 18 | ARS-BFGL-NGS-32605               | 0 | 65063534 |          |
| 18 | ARS-BFGL-NGS-41524               | 0 | 65100461 |          |
| 18 | BTB-00733511                     | 0 | 65142245 |          |
| 18 | Hapmap32869-BTA-161633           | 0 | 65174876 |          |
| 18 | ARS-BFGL-NGS-102143              | 0 | 65207570 |          |
| 18 | ARS-BFGL-NGS-65602               | 0 | 65231440 |          |
| 18 | Hapmap51570-BTA-17962            | 0 | 65269893 |          |
| 18 | ARS-BFGL-NGS-43267               | 0 | 65326585 |          |
| 18 | BTA-44155-no-rs                  | 0 | 65370372 |          |
| 18 | ARS-BFGL-NGS-110637              | 0 | 65404530 |          |
| 18 | ARS-BFGL-NGS-110521              | 0 | 65447640 |          |
| 18 | ARS-BFGL-NGS-60589               | 0 | 65505257 |          |
| 18 | ARS-BFGL-NGS-19022               | 0 | 65551047 |          |
| 18 | ARS-BFGL-NGS-100207              | 0 | 65579737 |          |

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| 18 | ARS-BFGL-NGS-58016              | 0 | 65604707 |  |
| 18 | Hapmap59667-rs29014989          | 0 | 65672008 |  |
| 18 | ARS-BFGL-NGS-71812              | 0 | 65819321 |  |
| 18 | ARS-BFGL-NGS-66086              | 0 | 65871032 |  |
| 18 | ARS-BFGL-NGS-111067             | 0 | 65978584 |  |
| 19 | ARS-BFGL-NGS-90502              | 0 | 465815   |  |
| 19 | ARS-BFGL-NGS-67838              | 0 | 501225   |  |
| 19 | Hapmap26455-BTA-156640          | 0 | 758595   |  |
| 19 | Hapmap31820-BTA-156643          | 0 | 815671   |  |
| 19 | ARS-BFGL-NGS-92544              | 0 | 1176372  |  |
| 19 | BTA-45069-no-rs                 | 0 | 1439012  |  |
| 19 | Hapmap50143-BTA-88782           | 0 | 1549722  |  |
| 19 | Hapmap52222-rs29024210          | 0 | 1664089  |  |
| 19 | ARS-BFGL-NGS-43028              | 0 | 1706305  |  |
| 19 | BTA-88777-no-rs                 | 0 | 1727832  |  |
| 19 | ARS-BFGL-NGS-111231             | 0 | 1751396  |  |
| 19 | ARS-BFGL-NGS-102974             | 0 | 1822133  |  |
| 19 | BTA-18278-no-rs                 | 0 | 1872426  |  |
| 19 | ARS-BFGL-NGS-92522              | 0 | 1948292  |  |
| 19 | Hapmap39832-BTA-46468           | 0 | 2093500  |  |
| 19 | Hapmap42484-BTA-25113           | 0 | 2171322  |  |
| 19 | BTA-25112-no-rs                 | 0 | 2192606  |  |
| 19 | Hapmap27040-BTA-25119           | 0 | 2270929  |  |
| 19 | ARS-BFGL-NGS-101936             | 0 | 2321350  |  |
| 19 | ARS-BFGL-BAC-33075              | 0 | 2484709  |  |
| 19 | ARS-BFGL-NGS-61214              | 0 | 2526899  |  |
| 19 | BTA-116804-no-rs                | 0 | 2694680  |  |
| 19 | BTA-13162-no-rs                 | 0 | 2791995  |  |
| 19 | ARS-BFGL-NGS-24753              | 0 | 3024589  |  |
| 19 | Hapmap50697-BTA-44862           | 0 | 3071686  |  |
| 19 | ARS-BFGL-NGS-18180              | 0 | 3212643  |  |
| 19 | ARS-BFGL-NGS-99246              | 0 | 3247474  |  |
| 19 | Hapmap52466-rs29015577          | 0 | 3617183  |  |
| 19 | BTA-110817-no-rs                | 0 | 3674493  |  |
| 19 | ARS-BFGL-NGS-75560              | 0 | 3710275  |  |
| 19 | ARS-BFGL-NGS-42215              | 0 | 3793023  |  |
| 19 | ARS-BFGL-NGS-96542              | 0 | 3816052  |  |
| 19 | BTA-22164-no-rs                 | 0 | 3992347  |  |
| 19 | UA-IFASA-8818                   | 0 | 4213966  |  |
| 19 | ARS-BFGL-NGS-75390              | 0 | 4286783  |  |
| 19 | Hapmap43990-BTA-102443          | 0 | 4346346  |  |
| 19 | Hapmap42767-BTA-102444          | 0 | 4372145  |  |
| 19 | ARS-BFGL-NGS-16174              | 0 | 4445885  |  |
| 19 | BTA-22151-no-rs                 | 0 | 4469266  |  |
| 19 | ARS-BFGL-NGS-42292              | 0 | 4626856  |  |
| 19 | Hapmap50598-BTA-122724          | 0 | 4670556  |  |
| 19 | BTA-28147-no-rs                 | 0 | 4699197  |  |
| 19 | BTA-28144-no-rs                 | 0 | 4760179  |  |
| 19 | Hapmap25957-BTA-96246           | 0 | 4815788  |  |
| 19 | UA-IFASA-7543                   | 0 | 5057128  |  |
| 19 | Hapmap34054-BES9_Contig444_1181 | 0 | 5083994  |  |
| 19 | ARS-BFGL-NGS-111654             | 0 | 5172239  |  |
| 19 | BTA-02315-rs29009872            | 0 | 5228324  |  |
| 19 | ARS-BFGL-NGS-80189              | 0 | 5257592  |  |

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| 19 | UA-IFASA-6791          | 0       | 5311065 |
| 19 | Hapmap49106-BTA-28140  | 0       | 5373415 |
| 19 | Hapmap41273-BTA-46442  | 0       | 5478122 |
| 19 | ARS-BFGL-NGS-114249    | 0       | 5581361 |
| 19 | ARS-BFGL-NGS-56986     | 0       | 5645237 |
| 19 | ARS-BFGL-NGS-21060     | 5681215 |         |
| 19 | ARS-BFGL-NGS-10835     | 0       | 5718616 |
| 19 | ARS-BFGL-NGS-102316    | 0       | 5740371 |
| 19 | ARS-BFGL-NGS-102180    | 0       | 5763142 |
| 19 | ARS-BFGL-NGS-37417     | 0       | 5825105 |
| 19 | ARS-BFGL-NGS-31370     | 0       | 5912553 |
| 19 | ARS-BFGL-NGS-114778    | 0       | 5934293 |
| 19 | Hapmap32837-BTA-149843 | 0       | 6106937 |
| 19 | ARS-BFGL-NGS-40628     | 0       | 6241437 |
| 19 | ARS-BFGL-NGS-88208     | 0       | 6454113 |
| 19 | ARS-BFGL-NGS-30160     | 6475597 |         |
| 19 | UA-IFASA-9731          | 0       | 6523398 |
| 19 | ARS-BFGL-NGS-117526    | 0       | 6598719 |
| 19 | BTA-92359-no-rs        | 0       | 6677581 |
| 19 | ARS-BFGL-BAC-32481     | 0       | 6709868 |
| 19 | Hapmap50607-BTA-17724  | 0       | 6768232 |
| 19 | ARS-BFGL-NGS-115601    | 0       | 6822436 |
| 19 | ARS-BFGL-NGS-47431     | 0       | 6854840 |
| 19 | ARS-BFGL-NGS-48930     | 6895198 |         |
| 19 | ARS-BFGL-NGS-34893     | 0       | 6949761 |
| 19 | Hapmap41466-BTA-17729  | 0       | 6972003 |
| 19 | ARS-BFGL-NGS-37830     | 6999086 |         |
| 19 | ARS-BFGL-NGS-97148     | 0       | 7028893 |
| 19 | Hapmap51232-BTA-44651  | 0       | 7059645 |
| 19 | ARS-BFGL-NGS-25347     | 0       | 7089496 |
| 19 | UA-IFASA-5442          | 0       | 7163882 |
| 19 | ARS-BFGL-NGS-20801     | 0       | 7203327 |
| 19 | ARS-BFGL-BAC-32502     | 0       | 7231838 |
| 19 | Hapmap51233-BTA-44716  | 0       | 7273862 |
| 19 | ARS-BFGL-NGS-117325    | 0       | 7348652 |
| 19 | UA-IFASA-7520          | 0       | 7376840 |
| 19 | Hapmap57610-rs29021008 | 0       | 7435415 |
| 19 | UA-IFASA-8401          | 0       | 7461446 |
| 19 | Hapmap40983-BTA-44816  | 0       | 7511302 |
| 19 | ARS-BFGL-NGS-10718     | 0       | 7544603 |
| 19 | ARS-BFGL-NGS-48084     | 0       | 7615419 |
| 19 | UA-IFASA-9259          | 0       | 7637962 |
| 19 | ARS-BFGL-NGS-30808     | 0       | 7682826 |
| 19 | UA-IFASA-7951          | 0       | 7730695 |
| 19 | ARS-BFGL-NGS-87368     | 0       | 7762820 |
| 19 | ARS-BFGL-NGS-54320     | 7833508 |         |
| 19 | ARS-BFGL-NGS-53296     | 0       | 7875822 |
| 19 | ARS-BFGL-NGS-14867     | 0       | 7940557 |
| 19 | Hapmap25072-BTA-149354 | 0       | 7996371 |
| 19 | ARS-BFGL-NGS-114974    | 0       | 8028175 |
| 19 | Hapmap57074-ss46526213 | 0       | 8052163 |
| 19 | BTB-01423279           | 0       | 8102774 |
| 19 | UA-IFASA-7338          | 0       | 8200102 |
| 19 | ARS-BFGL-NGS-35514     | 0       | 8216070 |

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| 19 | ARS-BFGL-NGS-102977                   | 0        | 8240893  |   |         |
| 19 | BTB-00736933                          | 0        | 8280552  |   |         |
| 19 | ARS-BFGL-NGS-78058                    | 0        | 8307212  |   |         |
| 19 | Hapmap41149-BTA-109052                | 0        | 8334112  |   |         |
| 19 | ARS-BFGL-NGS-106024                   | 0        | 8363016  |   |         |
| 19 | ARS-BFGL-NGS-97639                    | 0        | 8483490  |   |         |
| 19 | ARS-USMARC-Parent-DQ888311-rs29017313 | 0        | 8505317  | 0 | 8505317 |
| 19 | ARS-BFGL-NGS-78571                    | 0        | 8527962  |   |         |
| 19 | Hapmap40989-BTA-45649                 | 0        | 8560848  |   |         |
| 19 | UA-IFASA-6719                         | 0        | 8597725  |   |         |
| 19 | ARS-BFGL-NGS-22909                    | 0        | 8622586  |   |         |
| 19 | Hapmap40545-BTA-45608                 | 0        | 8648705  |   |         |
| 19 | ARS-BFGL-NGS-116187                   | 0        | 8696817  |   |         |
| 19 | Hapmap40740-BTA-45574                 | 0        | 8770836  |   |         |
| 19 | ARS-BFGL-NGS-119435                   | 0        | 8824023  |   |         |
| 19 | Hapmap24657-BTA-132711                | 0        | 8874201  |   |         |
| 19 | ARS-BFGL-NGS-22031                    | 0        | 8930715  |   |         |
| 19 | Hapmap25532-BTA-132698                | 0        | 8968428  |   |         |
| 19 | UA-IFASA-7142                         | 0        | 9026978  |   |         |
| 19 | Hapmap42218-BTA-45703                 | 0        | 9079748  |   |         |
| 19 | ARS-BFGL-NGS-65940                    | 9115265  |          |   |         |
| 19 | ARS-BFGL-NGS-104593                   | 0        | 9135319  |   |         |
| 19 | ARS-BFGL-NGS-26031                    | 0        | 9146052  |   |         |
| 19 | ARS-BFGL-NGS-103755                   | 0        | 9172300  |   |         |
| 19 | Hapmap51888-BTA-16242                 | 0        | 9254757  |   |         |
| 19 | UA-IFASA-5845                         | 0        | 9352943  |   |         |
| 19 | Hapmap25248-BTA-132715                | 0        | 9354310  |   |         |
| 19 | ARS-BFGL-BAC-24350                    | 9417473  |          |   |         |
| 19 | UA-IFASA-7223                         | 0        | 9485862  |   |         |
| 19 | ARS-BFGL-NGS-77925                    | 0        | 9528648  |   |         |
| 19 | ARS-BFGL-NGS-102856                   | 0        | 9591508  |   |         |
| 19 | ARS-BFGL-NGS-76833                    | 0        | 9678313  |   |         |
| 19 | ARS-BFGL-NGS-107174                   | 0        | 9786918  |   |         |
| 19 | UA-IFASA-6732                         | 0        | 9896033  |   |         |
| 19 | Hapmap41463-BTA-16302                 | 0        | 10085159 |   |         |
| 19 | Hapmap48998-BTA-104140                | 0        | 10140328 |   |         |
| 19 | ARS-BFGL-NGS-101648                   | 0        | 10171715 |   |         |
| 19 | ARS-BFGL-BAC-33077                    | 0        | 10198335 |   |         |
| 19 | ARS-BFGL-NGS-118864                   | 0        | 10221425 |   |         |
| 19 | ARS-BFGL-NGS-107289                   | 0        | 10305065 |   |         |
| 19 | BTA-10072-rs29015638                  | 0        | 10328265 |   |         |
| 19 | ARS-BFGL-NGS-76050                    | 10367765 |          |   |         |
| 19 | Hapmap50969-BTA-45810                 | 0        | 10426372 |   |         |
| 19 | ARS-BFGL-NGS-44096                    | 0        | 10519611 |   |         |
| 19 | ARS-BFGL-NGS-33000                    | 0        | 10542886 |   |         |
| 19 | ARS-BFGL-NGS-117486                   | 0        | 10617246 |   |         |
| 19 | BTA-46439-no-rs                       | 0        | 10694269 |   |         |
| 19 | Hapmap58269-rs29018185                | 0        | 10897581 |   |         |
| 19 | UA-IFASA-6593                         | 0        | 10920596 |   |         |
| 19 | UA-IFASA-6335                         | 0        | 11049355 |   |         |
| 19 | UA-IFASA-6667                         | 0        | 11199299 |   |         |
| 19 | Hapmap30007-BTA-147050                | 0        | 11238727 |   |         |
| 19 | ARS-BFGL-NGS-102654                   | 0        | 11401381 |   |         |
| 19 | UA-IFASA-9374                         | 0        | 11435269 |   |         |

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| 19 | UA-IFASA-5866                  | 0 | 11726846 |          |
| 19 | ARS-BFGL-NGS-101261            | 0 | 11833182 |          |
| 19 | Hapmap41183-BTA-121162         | 0 | 11904961 |          |
| 19 | ARS-BFGL-NGS-19756             | 0 | 11943620 |          |
| 19 | ARS-BFGL-NGS-88296             | 0 | 11970132 |          |
| 19 | ARS-BFGL-NGS-40746             | 0 | 11998872 |          |
| 19 | UA-IFASA-6320                  | 0 | 12032389 |          |
| 19 | ARS-BFGL-NGS-28151             | 0 | 12124893 |          |
| 19 | Hapmap27603-BTA-147419         | 0 | 12189952 |          |
| 19 | Hapmap43381-BTA-86488          | 0 | 12242221 |          |
| 19 | Hapmap43382-BTA-86490          | 0 | 12282205 |          |
| 19 | Hapmap26973-BTA-147422         | 0 | 12340926 |          |
| 19 | Hapmap59625-rs29013473         | 0 | 12388124 |          |
| 19 | BTA-93483-no-rs                | 0 | 12515399 |          |
| 19 | ARS-BFGL-NGS-60627             | 0 | 12669286 |          |
| 19 | ARS-BFGL-NGS-45360             |   | 12717726 |          |
| 19 | Hapmap51662-BTA-93469          | 0 | 12772309 |          |
| 19 | ARS-BFGL-BAC-32986             | 0 | 12794836 |          |
| 19 | UA-IFASA-6180                  | 0 | 12920699 |          |
| 19 | ARS-BFGL-BAC-27907             | 0 | 12968297 |          |
| 19 | Hapmap35067-BES1_Contig631_717 | 0 |          | 13013418 |
| 19 | BTA-118330-no-rs               | 0 | 13042183 |          |
| 19 | ARS-BFGL-NGS-92335             | 0 | 13098361 |          |
| 19 | ARS-BFGL-NGS-37177             | 0 | 13154786 |          |
| 19 | ARS-BFGL-NGS-101272            | 0 | 13180506 |          |
| 19 | Hapmap33494-BTA-149861         | 0 | 13224623 |          |
| 19 | ARS-BFGL-NGS-22804             | 0 | 13247857 |          |
| 19 | ARS-BFGL-NGS-26874             | 0 | 13274918 |          |
| 19 | ARS-BFGL-NGS-33447             | 0 | 13313876 |          |
| 19 | UA-IFASA-6139                  | 0 | 13340676 |          |
| 19 | ARS-BFGL-NGS-107267            | 0 | 13378259 |          |
| 19 | ARS-BFGL-NGS-87171             | 0 | 13425388 |          |
| 19 | UA-IFASA-5958                  | 0 | 13457401 |          |
| 19 | ARS-BFGL-NGS-74470             |   | 13492031 |          |
| 19 | ARS-BFGL-NGS-99672             | 0 | 13534451 |          |
| 19 | Hapmap46823-BTA-46508          | 0 | 13634621 |          |
| 19 | Hapmap43584-BTA-46507          | 0 | 13649935 |          |
| 19 | ARS-BFGL-NGS-24612             | 0 | 13678700 |          |
| 19 | BTA-45897-no-rs                | 0 | 13783550 |          |
| 19 | UA-IFASA-8430                  | 0 | 13831090 |          |
| 19 | UA-IFASA-7601                  | 0 | 13887927 |          |
| 19 | UA-IFASA-8072                  | 0 | 13944508 |          |
| 19 | ARS-BFGL-NGS-114182            | 0 | 14008574 |          |
| 19 | BTA-12217-no-rs                | 0 | 14033780 |          |
| 19 | BTA-03693-no-rs                | 0 | 14090834 |          |
| 19 | UA-IFASA-7392                  | 0 | 14121650 |          |
| 19 | ARS-BFGL-NGS-103640            | 0 | 14155308 |          |
| 19 | ARS-BFGL-NGS-97881             | 0 | 14206428 |          |
| 19 | Hapmap23682-BTA-123103         | 0 | 14305612 |          |
| 19 | UA-IFASA-7616                  | 0 | 14326037 |          |
| 19 | Hapmap47635-BTA-46465          | 0 | 14373409 |          |
| 19 | UA-IFASA-8095                  | 0 | 14409010 |          |
| 19 | ARS-BFGL-NGS-42624             | 0 | 14515404 |          |
| 19 | ARS-BFGL-NGS-30368             | 0 | 14548101 |          |

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| 19 | UA-IFASA-5439                         | 0 | 14579657 |   |          |
| 19 | ARS-BFGL-NGS-116685                   | 0 | 14622872 |   |          |
| 19 | ARS-BFGL-NGS-113158                   | 0 | 14673538 |   |          |
| 19 | ARS-BFGL-NGS-21921                    | 0 | 14715567 |   |          |
| 19 | ARS-BFGL-NGS-30310                    | 0 | 14763072 |   |          |
| 19 | Hapmap59291-rs29022102                | 0 | 14815755 |   |          |
| 19 | ARS-BFGL-BAC-33086                    | 0 | 14853169 |   |          |
| 19 | ARS-BFGL-NGS-57566                    | 0 | 14923593 |   |          |
| 19 | Hapmap40357-BTA-46514                 | 0 | 15000767 |   |          |
| 19 | Hapmap41549-BTA-46518                 | 0 | 15038933 |   |          |
| 19 | UA-IFASA-6550                         | 0 | 15060100 |   |          |
| 19 | ARS-BFGL-NGS-40104                    | 0 | 15107270 |   |          |
| 19 | ARS-BFGL-NGS-52760                    |   | 15137581 |   |          |
| 19 | ARS-BFGL-NGS-99797                    | 0 | 15170598 |   |          |
| 19 | ARS-BFGL-NGS-52513                    | 0 | 15230115 |   |          |
| 19 | ARS-BFGL-NGS-110713                   | 0 | 15255191 |   |          |
| 19 | ARS-BFGL-NGS-45350                    | 0 | 15280834 |   |          |
| 19 | Hapmap48773-BTA-46569                 | 0 | 15321899 |   |          |
| 19 | ARS-USMARC-Parent-EF026084-rs29025380 | 0 |          | 0 | 15345312 |
| 19 | UA-IFASA-5783                         | 0 | 15362361 |   |          |
| 19 | Hapmap40995-BTA-46564                 | 0 | 15408238 |   |          |
| 19 | UA-IFASA-5295                         | 0 | 15429169 |   |          |
| 19 | ARS-BFGL-NGS-37692                    | 0 | 15459702 |   |          |
| 19 | Hapmap38895-BTA-46550                 | 0 | 15485941 |   |          |
| 19 | UA-IFASA-7088                         | 0 | 15506868 |   |          |
| 19 | Hapmap54814-rs29020060                | 0 | 15534654 |   |          |
| 19 | ARS-BFGL-NGS-44790                    | 0 | 15568242 |   |          |
| 19 | ARS-BFGL-NGS-35416                    | 0 | 15594378 |   |          |
| 19 | ARS-BFGL-NGS-26918                    | 0 | 15621300 |   |          |
| 19 | ARS-BFGL-NGS-26114                    | 0 | 15654722 |   |          |
| 19 | ARS-BFGL-NGS-39131                    | 0 | 15684189 |   |          |
| 19 | ARS-BFGL-NGS-34500                    | 0 | 15710458 |   |          |
| 19 | ARS-BFGL-NGS-56449                    | 0 | 15768658 |   |          |
| 19 | Hapmap47018-BTA-46530                 | 0 | 15841374 |   |          |
| 19 | ARS-BFGL-NGS-107729                   | 0 | 15863515 |   |          |
| 19 | UA-IFASA-6239                         | 0 | 15895849 |   |          |
| 19 | ARS-BFGL-NGS-106264                   | 0 | 15926681 |   |          |
| 19 | ARS-BFGL-NGS-112774                   | 0 | 15980813 |   |          |
| 19 | UA-IFASA-7130                         | 0 | 15997977 |   |          |
| 19 | BTA-05286-rs29019447                  | 0 | 16107189 |   |          |
| 19 | ARS-BFGL-NGS-32552                    | 0 | 16158018 |   |          |
| 19 | ARS-BFGL-NGS-118126                   | 0 | 16192170 |   |          |
| 19 | ARS-BFGL-NGS-77575                    | 0 | 16239666 |   |          |
| 19 | ARS-BFGL-NGS-44497                    | 0 | 16291240 |   |          |
| 19 | ARS-BFGL-NGS-71978                    | 0 | 16362477 |   |          |
| 19 | BTB-00738813                          | 0 | 16400722 |   |          |
| 19 | ARS-BFGL-NGS-23350                    |   | 16437725 |   |          |
| 19 | ARS-BFGL-NGS-101716                   | 0 | 16487404 |   |          |
| 19 | UA-IFASA-8305                         | 0 | 16512768 |   |          |
| 19 | ARS-BFGL-NGS-26149                    | 0 | 16539982 |   |          |
| 19 | ARS-BFGL-NGS-40679                    | 0 | 16578349 |   |          |
| 19 | ARS-BFGL-NGS-109221                   | 0 | 16598801 |   |          |
| 19 | Hapmap48766-BTA-44540                 | 0 | 16625451 |   |          |
| 19 | Hapmap53971-rs29017666                | 0 | 16649459 |   |          |



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| 19 | ARS-BFGL-NGS-62980     |   | 16779459 |
| 19 | UA-IFASA-9514          | 0 | 16810968 |
| 19 | UA-IFASA-5477          | 0 | 16838230 |
| 19 | ARS-BFGL-NGS-115774    | 0 | 16874635 |
| 19 | ARS-BFGL-NGS-17597     | 0 | 17035062 |
| 19 | ARS-BFGL-NGS-71648     | 0 | 17189453 |
| 19 | ARS-BFGL-NGS-36513     | 0 | 17236707 |
| 19 | ARS-BFGL-NGS-61329     | 0 | 17276048 |
| 19 | ARS-BFGL-BAC-33094     | 0 | 17298218 |
| 19 | ARS-BFGL-NGS-42338     | 0 | 17326249 |
| 19 | ARS-BFGL-NGS-117502    | 0 | 17416775 |
| 19 | ARS-BFGL-NGS-10027     | 0 | 17446989 |
| 19 | ARS-BFGL-NGS-15190     | 0 | 17467854 |
| 19 | ARS-BFGL-NGS-75651     | 0 | 17495652 |
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| 19 | ARS-BFGL-NGS-11665     | 0 | 17597495 |
| 19 | ARS-BFGL-NGS-15194     | 0 | 17650637 |
| 19 | Hapmap50362-BTA-44583  | 0 | 17701476 |
| 19 | BTB-00740579           | 0 | 17737370 |
| 19 | ARS-BFGL-NGS-58978     | 0 | 17760122 |
| 19 | ARS-BFGL-NGS-19462     | 0 | 17811655 |
| 19 | ARS-BFGL-NGS-26897     | 0 | 17859454 |
| 19 | ARS-BFGL-NGS-112779    | 0 | 17888348 |
| 19 | ARS-BFGL-NGS-22914     | 0 | 17923922 |
| 19 | Hapmap39489-BTA-44619  | 0 | 17964542 |
| 19 | UA-IFASA-4457          | 0 | 18016729 |
| 19 | BTB-00740910           | 0 | 18054584 |
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| 19 | UA-IFASA-6519          | 0 | 18136211 |
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| 19 | ARS-BFGL-NGS-35193     | 0 | 18187824 |
| 19 | ARS-BFGL-NGS-112753    | 0 | 18232821 |
| 19 | Hapmap47954-BTA-44607  | 0 | 18255042 |
| 19 | Hapmap52718-rs29026497 | 0 | 18294196 |
| 19 | ARS-BFGL-NGS-42568     | 0 | 18330218 |
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| 19 | UA-IFASA-5746          | 0 | 18384729 |
| 19 | UA-IFASA-5523          | 0 | 18427893 |
| 19 | BTA-07407-no-rs        | 0 | 18453832 |
| 19 | BTB-00738654           | 0 | 18467274 |
| 19 | Hapmap42212-BTA-44515  | 0 | 18494850 |
| 19 | Hapmap54604-rs29019767 | 0 | 18539339 |
| 19 | Hapmap40355-BTA-44508  | 0 | 18583031 |
| 19 | ARS-BFGL-NGS-110160    | 0 | 18637678 |
| 19 | UA-IFASA-4964          | 0 | 18700829 |
| 19 | ARS-BFGL-BAC-35648     | 0 | 18737297 |
| 19 | ARS-BFGL-NGS-54750     | 0 | 18775014 |
| 19 | UA-IFASA-7987          | 0 | 18799689 |
| 19 | ARS-BFGL-NGS-20476     | 0 | 18860268 |
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| 19 | BTA-46589-no-rs        | 0 | 19003601 |
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| 19 | Hapmap40170-BTA-20573           | 0 | 19175183 |          |
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| 19 | ARS-BFGL-NGS-40743              | 0 | 19295281 |          |
| 19 | Hapmap38409-BTA-46586           | 0 | 19373322 |          |
| 19 | ARS-BFGL-NGS-82757              | 0 | 19400402 |          |
| 19 | UA-IFASA-5339                   | 0 | 19434437 |          |
| 19 | ARS-BFGL-NGS-620                | 0 | 19462742 |          |
| 19 | Hapmap38160-BTA-46571           | 0 | 19534658 |          |
| 19 | Hapmap24813-BTA-132803          | 0 | 19566531 |          |
| 19 | ARS-BFGL-NGS-73727              | 0 | 19587050 |          |
| 19 | ARS-BFGL-NGS-39671              | 0 | 19611880 |          |
| 19 | ARS-BFGL-NGS-10750              | 0 | 19637405 |          |
| 19 | ARS-BFGL-NGS-59659              | 0 | 19669849 |          |
| 19 | ARS-BFGL-NGS-107725             | 0 | 19718709 |          |
| 19 | UA-IFASA-6841                   | 0 | 19789422 |          |
| 19 | ARS-BFGL-NGS-109169             | 0 | 20066365 |          |
| 19 | ARS-BFGL-NGS-106227             | 0 | 20089776 |          |
| 19 | ARS-BFGL-NGS-90414              | 0 | 20118208 |          |
| 19 | ARS-BFGL-NGS-24219              | 0 | 20138445 |          |
| 19 | ARS-BFGL-NGS-14316              | 0 | 20171223 |          |
| 19 | Hapmap60292-rs29022330          | 0 | 20209602 |          |
| 19 | Hapmap41541-BTA-44653           | 0 | 20293612 |          |
| 19 | Hapmap60068-rs29019325          | 0 | 20372100 |          |
| 19 | ARS-BFGL-NGS-21670              | 0 | 20439349 |          |
| 19 | ARS-BFGL-NGS-20809              | 0 | 20517776 |          |
| 19 | ARS-BFGL-NGS-27571              | 0 | 20562046 |          |
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| 19 | ARS-BFGL-NGS-67451              | 0 | 20610643 |          |
| 19 | ARS-BFGL-NGS-63687              | 0 | 20635700 |          |
| 19 | ARS-BFGL-NGS-31909              | 0 | 20811074 |          |
| 19 | Hapmap40539-BTA-44669           | 0 | 20878990 |          |
| 19 | Hapmap34814-BES8_Contig361_961  | 0 |          | 20945594 |
| 19 | ARS-BFGL-NGS-32894              | 0 | 20974167 |          |
| 19 | ARS-BFGL-NGS-103531             | 0 | 21006570 |          |
| 19 | ARS-BFGL-NGS-112012             | 0 | 21031267 |          |
| 19 | ARS-BFGL-NGS-34770              | 0 | 21145204 |          |
| 19 | ARS-BFGL-NGS-115899             | 0 | 21388415 |          |
| 19 | ARS-BFGL-NGS-91812              | 0 | 21453482 |          |
| 19 | UA-IFASA-7043                   | 0 | 21569741 |          |
| 19 | Hapmap34616-BES1_Contig517_1400 | 0 |          | 21597621 |
| 19 | Hapmap53206-rs29014774          | 0 | 21686395 |          |
| 19 | BTA-118486-no-rs                | 0 | 21716537 |          |
| 19 | ARS-BFGL-NGS-309                | 0 | 21733030 |          |
| 19 | Hapmap55122-rs29020857          | 0 | 21840791 |          |
| 19 | Hapmap47625-BTA-44726           | 0 | 21878635 |          |
| 19 | Hapmap38959-BTA-44727           | 0 | 21950487 |          |
| 19 | ARS-BFGL-NGS-14641              | 0 | 22011112 |          |
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| 19 | Hapmap60163-rs29015084          | 0 | 22120443 |          |
| 19 | ARS-BFGL-NGS-105622             | 0 | 22157176 |          |
| 19 | ARS-BFGL-NGS-32897              | 0 | 22193401 |          |
| 19 | Hapmap41542-BTA-44740           | 0 | 22223293 |          |
| 19 | ARS-BFGL-NGS-71746              | 0 | 22265346 |          |

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| 19 | BTA-44751-no-rs        | 0        | 22300584 |
| 19 | ARS-BFGL-NGS-32769     | 0        | 22346456 |
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| 19 | ARS-BFGL-NGS-10318     | 0        | 22841439 |
| 19 | Hapmap57985-rs29018792 | 0        | 22864442 |
| 19 | ARS-BFGL-NGS-82690     | 0        | 22901879 |
| 19 | Hapmap40432-BTA-44778  | 0        | 22941925 |
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| 19 | ARS-BFGL-NGS-43245     | 0        | 23042156 |
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| 19 | Hapmap55005-rs29021777 | 0        | 23220366 |
| 19 | ARS-BFGL-NGS-114815    | 0        | 23267912 |
| 19 | ARS-BFGL-NGS-15792     | 0        | 23291700 |
| 19 | ARS-BFGL-NGS-15111     | 0        | 23314971 |
| 19 | ARS-BFGL-NGS-60141     | 0        | 23349878 |
| 19 | ARS-BFGL-NGS-80289     | 0        | 23397071 |
| 19 | ARS-BFGL-NGS-118070    | 0        | 23477516 |
| 19 | ARS-BFGL-NGS-54135     | 0        | 23519485 |
| 19 | ARS-BFGL-NGS-20165     | 0        | 23561900 |
| 19 | ARS-BFGL-NGS-106886    | 0        | 23605621 |
| 19 | UA-IFASA-7071          | 0        | 23628220 |
| 19 | ARS-BFGL-NGS-44110     | 23701216 |          |
| 19 | BTB-00743148           | 0        | 23732618 |
| 19 | ARS-BFGL-NGS-21038     | 0        | 23761130 |
| 19 | ARS-BFGL-NGS-104352    | 0        | 23798617 |
| 19 | Hapmap27159-BTA-132911 | 0        | 23829902 |
| 19 | Hapmap47955-BTA-44807  | 0        | 23877748 |
| 19 | ARS-BFGL-NGS-17150     | 23944091 |          |
| 19 | Hapmap41868-BTA-44809  | 0        | 23965422 |
| 19 | Hapmap51234-BTA-44811  | 0        | 24039732 |
| 19 | Hapmap57045-rs29017091 | 0        | 24070908 |
| 19 | Hapmap51451-BTA-44812  | 0        | 24136906 |
| 19 | ARS-BFGL-NGS-27085     | 0        | 24143506 |
| 19 | UA-IFASA-8819          | 0        | 24170529 |
| 19 | UA-IFASA-8469          | 0        | 24245251 |
| 19 | ARS-BFGL-NGS-18213     | 0        | 24307384 |
| 19 | BTB-00743564           | 0        | 24325647 |
| 19 | ARS-BFGL-NGS-68648     | 0        | 24357241 |
| 19 | ARS-BFGL-NGS-44180     | 24401822 |          |
| 19 | ARS-BFGL-NGS-49620     | 24426919 |          |
| 19 | ARS-BFGL-NGS-21592     | 0        | 24457274 |
| 19 | UA-IFASA-6091          | 0        | 24521970 |
| 19 | ARS-BFGL-NGS-61713     | 0        | 24569440 |
| 19 | UA-IFASA-2406          | 0        | 24692211 |
| 19 | ARS-BFGL-BAC-31839     | 0        | 24812617 |
| 19 | Hapmap24469-BTA-157506 | 0        | 24847198 |
| 19 | ARS-BFGL-NGS-47440     | 24874614 |          |
| 19 | ARS-BFGL-NGS-81462     | 0        | 24917540 |
| 19 | Hapmap58587-ss46526997 | 0        | 24972085 |

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| 19 | ARS-BFGL-NGS-26976              | 0        | 24995142 |          |
| 19 | ARS-BFGL-NGS-84618              | 0        | 25016881 |          |
| 19 | ARS-BFGL-NGS-32810              | 25047166 |          |          |
| 19 | Hapmap40985-BTA-44868           | 0        | 25069933 |          |
| 19 | ARS-BFGL-NGS-27564              | 0        | 25111769 |          |
| 19 | ARS-BFGL-NGS-49040              | 25143523 |          |          |
| 19 | ARS-BFGL-NGS-14187              | 0        | 25165920 |          |
| 19 | ARS-BFGL-NGS-81994              | 0        | 25205698 |          |
| 19 | Hapmap56964-ss46526628          | 0        | 25228270 |          |
| 19 | Hapmap35171-BES8_Contig573_3337 | 0        |          | 25260008 |
| 19 | ARS-BFGL-NGS-73091              | 0        | 25290738 |          |
| 19 | ARS-BFGL-NGS-106007             | 0        | 25322120 |          |
| 19 | UA-IFASA-8851                   | 0        | 25342668 |          |
| 19 | ARS-BFGL-NGS-84526              | 0        | 25365606 |          |
| 19 | ARS-BFGL-NGS-96911              | 0        | 25399398 |          |
| 19 | Hapmap35043-BES8_Contig175_603  | 0        |          | 25426630 |
| 19 | Hapmap49615-BTA-44891           | 0        | 25458074 |          |
| 19 | ARS-BFGL-NGS-117796             | 0        | 25529363 |          |
| 19 | ARS-BFGL-NGS-103353             | 0        | 25585857 |          |
| 19 | ARS-BFGL-NGS-110331             | 0        | 25622131 |          |
| 19 | ARS-BFGL-NGS-110373             | 0        | 25654960 |          |
| 19 | ARS-BFGL-NGS-27718              | 0        | 25710402 |          |
| 19 | Hapmap47012-BTA-44901           | 0        | 25743113 |          |
| 19 | ARS-BFGL-NGS-97673              | 0        | 25772789 |          |
| 19 | ARS-BFGL-NGS-61473              | 0        | 25837047 |          |
| 19 | BTA-44912-no-rs                 | 0        | 25861955 |          |
| 19 | Hapmap47299-BTA-44913           | 0        | 25898366 |          |
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| 19 | ARS-BFGL-NGS-93006              | 0        | 25987020 |          |
| 19 | ARS-BFGL-NGS-71904              | 0        | 26015315 |          |
| 19 | ARS-BFGL-NGS-117248             | 0        | 26039760 |          |
| 19 | ARS-BFGL-NGS-101545             | 0        | 26066452 |          |
| 19 | BTB-01624106                    | 0        | 26135182 |          |
| 19 | Hapmap46758-BTA-108921          | 0        | 26182297 |          |
| 19 | ARS-BFGL-NGS-81882              | 0        | 26238708 |          |
| 19 | ARS-BFGL-NGS-44106              | 0        | 26264145 |          |
| 19 | ARS-BFGL-NGS-116909             | 0        | 26285867 |          |
| 19 | UA-IFASA-6192                   | 0        | 26331593 |          |
| 19 | ARS-BFGL-NGS-112916             | 0        | 26398385 |          |
| 19 | ARS-BFGL-NGS-83272              | 0        | 26434481 |          |
| 19 | Hapmap59765-rs29022944          | 0        | 26456085 |          |
| 19 | BTB-01661503                    | 0        | 26488903 |          |
| 19 | ARS-BFGL-NGS-18370              | 26556279 |          |          |
| 19 | ARS-BFGL-NGS-119469             | 0        | 26582764 |          |
| 19 | ARS-BFGL-NGS-27750              | 26609020 |          |          |
| 19 | ARS-BFGL-NGS-50380              | 26629173 |          |          |
| 19 | ARS-BFGL-NGS-117973             | 0        | 26656773 |          |
| 19 | Hapmap41456-BTA-121177          | 0        | 26700849 |          |
| 19 | BTB-00742148                    | 0        | 26820142 |          |
| 19 | Hapmap50965-BTA-44702           | 0        | 26848767 |          |
| 19 | ARS-BFGL-NGS-31311              | 0        | 26881051 |          |
| 19 | ARS-BFGL-NGS-76261              | 0        | 26926279 |          |
| 19 | BTB-00742000                    | 0        | 26950041 |          |
| 19 | ARS-BFGL-NGS-17554              | 0        | 27099600 |          |

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| 19 | ARS-BFGL-NGS-21327     | 0        | 27131960 |
| 19 | ARS-BFGL-NGS-14612     | 0        | 27181075 |
| 19 | BTB-00741582           | 0        | 27251398 |
| 19 | ARS-BFGL-NGS-117046    | 0        | 27326573 |
| 19 | ARS-BFGL-NGS-113401    | 0        | 27369763 |
| 19 | ARS-BFGL-NGS-37715     | 0        | 27491890 |
| 19 | ARS-BFGL-NGS-117208    | 0        | 27529791 |
| 19 | ARS-BFGL-NGS-114201    | 0        | 27576066 |
| 19 | Hapmap58028-ss46526484 | 0        | 27602402 |
| 19 | Hapmap51730-BTA-44937  | 0        | 27643677 |
| 19 | BTB-00745265           | 0        | 27674629 |
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| 19 | ARS-BFGL-BAC-36717     | 0        | 27887581 |
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| 19 | ARS-BFGL-BAC-27403     | 0        | 28015075 |
| 19 | ARS-BFGL-BAC-32291     | 0        | 28060683 |
| 19 | ARS-BFGL-NGS-100899    | 0        | 28095023 |
| 19 | ARS-BFGL-BAC-27962     | 0        | 28155641 |
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| 19 | ARS-BFGL-NGS-119468    | 0        | 28342107 |
| 19 | ARS-BFGL-NGS-101671    | 0        | 28366979 |
| 19 | ARS-BFGL-NGS-95155     | 0        | 28450297 |
| 19 | BTB-01692321           | 0        | 28484744 |
| 19 | ARS-BFGL-NGS-31543     | 0        | 28545943 |
| 19 | ARS-BFGL-NGS-103553    | 0        | 28595703 |
| 19 | ARS-BFGL-NGS-109195    | 0        | 28629120 |
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| 19 | BTB-00745347           | 0        | 28768067 |
| 19 | BTB-00745391           | 0        | 28804007 |
| 19 | ARS-BFGL-NGS-14338     | 0        | 28839436 |
| 19 | ARS-BFGL-NGS-66200     | 0        | 28886635 |
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| 19 | ARS-BFGL-NGS-81552     | 0        | 28984588 |
| 19 | ARS-BFGL-NGS-73716     | 0        | 29020067 |
| 19 | ARS-BFGL-NGS-115178    | 0        | 29048973 |
| 19 | ARS-BFGL-NGS-43359     | 0        | 29152662 |
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| 19 | ARS-BFGL-NGS-18515     | 0        | 29219211 |
| 19 | ARS-BFGL-NGS-79203     | 0        | 29279305 |
| 19 | ARS-BFGL-NGS-105454    | 0        | 29325678 |
| 19 | ARS-BFGL-NGS-17187     | 0        | 29349255 |
| 19 | ARS-BFGL-NGS-111936    | 0        | 29383514 |
| 19 | ARS-BFGL-NGS-62690     | 29411883 |          |
| 19 | ARS-BFGL-NGS-14725     | 0        | 29441262 |
| 19 | BTB-00745875           | 0        | 29483931 |
| 19 | ARS-BFGL-NGS-28940     | 0        | 29518519 |
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| 19 | BTB-00745902           | 0        | 29586445 |
| 19 | ARS-BFGL-NGS-25991     | 0        | 29655745 |
| 19 | ARS-BFGL-NGS-279       | 0        | 29693314 |
| 19 | ARS-BFGL-NGS-22694     | 0        | 29729113 |

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| 19 | ARS-BFGL-NGS-111861             | 0 | 29767462 |          |
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| 19 | Hapmap42408-BTA-104726          | 0 | 29890136 |          |
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| 19 | ARS-BFGL-NGS-24127              | 0 | 30022677 |          |
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| 19 | ARS-BFGL-BAC-33719              | 0 | 30108582 |          |
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| 19 | ARS-BFGL-NGS-77790              | 0 | 30300498 |          |
| 19 | BTB-01316060                    | 0 | 30340650 |          |
| 19 | ARS-BFGL-NGS-64718              | 0 | 30380433 |          |
| 19 | ARS-BFGL-NGS-101807             | 0 | 30413271 |          |
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| 19 | ARS-BFGL-NGS-71268              | 0 | 30479118 |          |
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| 19 | ARS-BFGL-NGS-31404              | 0 | 30783257 |          |
| 19 | ARS-BFGL-NGS-33419              | 0 | 30834957 |          |
| 19 | BTA-45019-no-rs                 | 0 | 30948442 |          |
| 19 | ARS-BFGL-NGS-43932              | 0 | 30985781 |          |
| 19 | ARS-BFGL-NGS-35919              | 0 | 31033153 |          |
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| 19 | ARS-BFGL-NGS-42430              | 0 | 31087581 |          |
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| 19 | ARS-BFGL-NGS-39378              | 0 | 31188595 |          |
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| 19 | Hapmap50363-BTA-45061           | 0 | 31269659 |          |
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| 19 | ARS-BFGL-NGS-38700              |   | 31350124 |          |
| 19 | ARS-BFGL-NGS-36291              | 0 | 31382204 |          |
| 19 | ARS-BFGL-NGS-69851              | 0 | 31500451 |          |
| 19 | ARS-BFGL-NGS-119388             | 0 | 31592333 |          |
| 19 | Hapmap49181-BTA-45080           | 0 | 31638453 |          |
| 19 | ARS-BFGL-BAC-23840              |   | 31733572 |          |
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| 19 | ARS-BFGL-NGS-17405              | 0 | 31870834 |          |
| 19 | ARS-BFGL-NGS-76772              | 0 | 31888735 |          |
| 19 | ARS-BFGL-NGS-10018              | 0 | 31949573 |          |
| 19 | ARS-BFGL-NGS-70632              | 0 | 32003877 |          |
| 19 | ARS-BFGL-NGS-87461              | 0 | 32055843 |          |
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| 19 | BTA-05960-no-rs                 | 0 | 32214521 |          |
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| 19 | ARS-BFGL-NGS-60710              | 32348116 |          |
| 19 | ARS-BFGL-NGS-34758              | 0        | 32390042 |
| 19 | ARS-BFGL-NGS-103323             | 0        | 32420816 |
| 19 | ARS-BFGL-NGS-37850              | 0        | 32468831 |
| 19 | ARS-BFGL-NGS-29037              | 0        | 32494825 |
| 19 | UA-IFASA-9813                   | 0        | 32508700 |
| 19 | Hapmap48228-BTA-122803          | 0        | 32535308 |
| 19 | ARS-BFGL-NGS-35640              | 0        | 32604521 |
| 19 | ARS-BFGL-NGS-72139              | 0        | 32741678 |
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| 19 | ARS-BFGL-NGS-11772              | 0        | 32811401 |
| 19 | ARS-BFGL-NGS-85516              | 0        | 32845346 |
| 19 | ARS-BFGL-NGS-13538              | 0        | 32867556 |
| 19 | ARS-BFGL-NGS-90275              | 0        | 32961132 |
| 19 | UA-IFASA-7101                   | 0        | 32994382 |
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| 19 | Hapmap32298-BTA-133053          | 0        | 33144252 |
| 19 | Hapmap47628-BTA-45090           | 0        | 33219146 |
| 19 | UA-IFASA-8465                   | 0        | 33279300 |
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| 19 | ARS-BFGL-NGS-53562              | 0        | 33381109 |
| 19 | ARS-BFGL-NGS-381                | 0        | 33450891 |
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| 19 | ARS-BFGL-NGS-115387             | 0        | 33533491 |
| 19 | ARS-BFGL-NGS-116379             | 0        | 33598629 |
| 19 | ARS-BFGL-NGS-110037             | 0        | 33653637 |
| 19 | ARS-BFGL-NGS-60971              | 0        | 33790356 |
| 19 | ARS-BFGL-NGS-29120              | 33811153 |          |
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| 19 | Hapmap50966-BTA-45035           | 0        | 33895220 |
| 19 | ARS-BFGL-BAC-33744              | 0        | 33941547 |
| 19 | ARS-BFGL-NGS-15878              | 0        | 33980233 |
| 19 | BTA-45041-no-rs                 | 0        | 34029491 |
| 19 | ARS-BFGL-NGS-29171              | 0        | 34053041 |
| 19 | ARS-BFGL-NGS-38648              | 0        | 34120456 |
| 19 | ARS-BFGL-NGS-60277              | 0        | 34156668 |
| 19 | ARS-BFGL-NGS-34632              | 0        | 34183546 |
| 19 | ARS-BFGL-BAC-36285              | 0        | 34229311 |
| 19 | ARS-BFGL-NGS-93931              | 0        | 34264091 |
| 19 | ARS-BFGL-NGS-41680              | 0        | 34286424 |
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| 19 | Hapmap35517-SCAFFOLD30611_18172 | 0        | 34608965 |
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| 19 | ARS-BFGL-NGS-41066              | 0        | 34715747 |
| 19 | ARS-BFGL-NGS-74800              | 0        | 34802725 |
| 19 | ARS-BFGL-NGS-10970              | 34836416 |          |
| 19 | ARS-BFGL-NGS-82204              | 0        | 35003592 |
| 19 | ARS-BFGL-NGS-118018             | 0        | 35061702 |
| 19 | ARS-BFGL-NGS-68563              | 0        | 35102613 |
| 19 | ARS-BFGL-NGS-109844             | 0        | 35167831 |
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| 19 | ARS-BFGL-NGS-47590                    | 35253851 |          |  |
| 19 | ARS-BFGL-NGS-23022                    | 0        | 35286010 |  |
| 19 | ARS-BFGL-NGS-100460                   | 0        | 35308991 |  |
| 19 | ARS-BFGL-NGS-47410                    | 35349266 |          |  |
| 19 | ARS-BFGL-NGS-77409                    | 0        | 35392919 |  |
| 19 | ARS-BFGL-NGS-112923                   | 0        | 35419429 |  |
| 19 | BTB-00747541                          | 0        | 35494190 |  |
| 19 | ARS-BFGL-NGS-105337                   | 0        | 35528889 |  |
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| 19 | ARS-BFGL-NGS-83644                    | 0        | 35585081 |  |
| 19 | ARS-BFGL-NGS-43388                    | 0        | 35619269 |  |
| 19 | ARS-BFGL-NGS-86600                    | 0        | 35685507 |  |
| 19 | UA-IFASA-8237                         | 0        | 35714202 |  |
| 19 | ARS-BFGL-NGS-25445                    | 0        | 35735450 |  |
| 19 | ARS-BFGL-NGS-42120                    | 0        | 35755815 |  |
| 19 | UA-IFASA-7046                         | 0        | 35851319 |  |
| 19 | Hapmap42945-BTA-45128                 | 0        | 35886262 |  |
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| 19 | ARS-BFGL-NGS-33927                    | 0        | 35965938 |  |
| 19 | Hapmap48343-BTA-45133                 | 0        | 36004097 |  |
| 19 | Hapmap41268-BTA-45136                 | 0        | 36030793 |  |
| 19 | BTA-121181-no-rs                      | 0        | 36058250 |  |
| 19 | BTB-00749083                          | 0        | 36089458 |  |
| 19 | ARS-BFGL-NGS-111434                   | 0        | 36121678 |  |
| 19 | BTA-45158-no-rs                       | 0        | 36209593 |  |
| 19 | BTA-45152-no-rs                       | 0        | 36312509 |  |
| 19 | BTB-00748733                          | 0        | 36364555 |  |
| 19 | Hapmap44379-BTA-45149                 | 0        | 36395869 |  |
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| 19 | ARS-BFGL-NGS-114136                   | 0        | 36463305 |  |
| 19 | ARS-BFGL-NGS-117124                   | 0        | 36554144 |  |
| 19 | Hapmap55938-rs29026887                | 0        | 36634123 |  |
| 19 | ARS-BFGL-NGS-75816                    | 0        | 36674728 |  |
| 19 | ARS-BFGL-NGS-106336                   | 0        | 36736261 |  |
| 19 | ARS-BFGL-NGS-51870                    | 36773867 |          |  |
| 19 | ARS-BFGL-NGS-83929                    | 0        | 36808032 |  |
| 19 | ARS-BFGL-NGS-104611                   | 0        | 36833660 |  |
| 19 | ARS-BFGL-NGS-68020                    | 36855208 |          |  |
| 19 | ARS-BFGL-NGS-80430                    | 0        | 36885660 |  |
| 19 | ARS-BFGL-NGS-72356                    | 0        | 36915204 |  |
| 19 | ARS-BFGL-NGS-45613                    | 0        | 36945230 |  |
| 19 | ARS-BFGL-NGS-10792                    | 0        | 36992354 |  |
| 19 | ARS-BFGL-NGS-102492                   | 0        | 37099312 |  |
| 19 | ARS-BFGL-NGS-26590                    | 37121888 |          |  |
| 19 | ARS-BFGL-NGS-66330                    | 37217989 |          |  |
| 19 | ARS-BFGL-NGS-19362                    | 0        | 37360469 |  |
| 19 | BTB-00749791                          | 0        | 37406202 |  |
| 19 | UA-IFASA-6106                         | 0        | 37437821 |  |
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| 19 | BTB-00749898                          | 0        | 37520214 |  |
| 19 | Hapmap58303-ss46526468                | 0        | 37552530 |  |
| 19 | BTA-12760-no-rs                       | 0        | 37582865 |  |
| 19 | Hapmap53086-rs29025958                | 0        | 37626478 |  |



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| 19 | ARS-BFGL-NGS-105181             | 0 | 37670702 |          |
| 19 | ARS-BFGL-NGS-111273             | 0 | 37699961 |          |
| 19 | ARS-BFGL-NGS-24656              | 0 | 37732974 |          |
| 19 | ARS-BFGL-NGS-54782              | 0 | 37786889 |          |
| 19 | BTA-45324-no-rs                 | 0 | 37817322 |          |
| 19 | ARS-BFGL-NGS-116815             | 0 | 37845999 |          |
| 19 | Hapmap26504-BTA-45326           | 0 | 37866237 |          |
| 19 | ARS-BFGL-NGS-35498              | 0 | 37955066 |          |
| 19 | ARS-BFGL-NGS-112209             | 0 | 37994541 |          |
| 19 | Hapmap39272-BTA-45334           | 0 | 38018129 |          |
| 19 | ARS-BFGL-NGS-39738              | 0 | 38059659 |          |
| 19 | ARS-BFGL-NGS-55023              | 0 | 38126211 |          |
| 19 | Hapmap35693-SCAFFOLD203067_5292 | 0 |          | 38157880 |
| 19 | UA-IFASA-7175                   | 0 | 38313572 |          |
| 19 | ARS-BFGL-NGS-20183              | 0 | 38365974 |          |
| 19 | Hapmap49617-BTA-45355           | 0 | 38466576 |          |
| 19 | ARS-BFGL-NGS-61                 | 0 | 38519698 |          |
| 19 | ARS-BFGL-NGS-110844             | 0 | 38546855 |          |
| 19 | ARS-BFGL-NGS-65339              | 0 | 38591843 |          |
| 19 | BTB-01941088                    | 0 | 38752116 |          |
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| 19 | Hapmap28098-BTA-150233          | 0 | 38917060 |          |
| 19 | Hapmap43412-BTA-94634           | 0 | 38939173 |          |
| 19 | UA-IFASA-6016                   | 0 | 38977112 |          |
| 19 | BTB-00756676                    | 0 | 39049389 |          |
| 19 | UA-IFASA-5686                   | 0 | 39093260 |          |
| 19 | ARS-BFGL-NGS-27297              | 0 | 39152945 |          |
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| 19 | ARS-BFGL-NGS-39315              | 0 | 39239455 |          |
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| 19 | UA-IFASA-5400                   | 0 | 39298558 |          |
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| 19 | Hapmap34463-BES1_Contig469_977  | 0 |          | 39412384 |
| 19 | ARS-BFGL-NGS-38159              | 0 | 39454273 |          |
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| 19 | ARS-BFGL-NGS-78516              | 0 | 39538298 |          |
| 19 | ARS-BFGL-NGS-75761              | 0 | 39642202 |          |
| 19 | ARS-BFGL-NGS-88746              | 0 | 39706180 |          |
| 19 | Hapmap30057-BTA-162411          | 0 | 39742816 |          |
| 19 | ARS-BFGL-NGS-10191              | 0 | 39793839 |          |
| 19 | Hapmap51115-BTA-100287          | 0 | 39879398 |          |
| 19 | Hapmap29069-BTA-45382           | 0 | 39932816 |          |
| 19 | ARS-BFGL-NGS-119404             | 0 | 39955980 |          |
| 19 | Hapmap47960-BTA-45498           | 0 | 39999629 |          |
| 19 | BTB-00752956                    | 0 | 40039590 |          |
| 19 | ARS-BFGL-NGS-79786              | 0 | 40081544 |          |
| 19 | ARS-BFGL-NGS-86744              | 0 | 40108101 |          |
| 19 | BTA-45495-no-rs                 | 0 | 40149406 |          |
| 19 | ARS-BFGL-NGS-73677              | 0 | 40216403 |          |
| 19 | ARS-BFGL-NGS-113385             | 0 | 40261337 |          |
| 19 | ARS-BFGL-NGS-26417              | 0 | 40290103 |          |
| 19 | ARS-BFGL-NGS-14754              | 0 | 40362520 |          |
| 19 | Hapmap47855-BTA-119202          | 0 | 40596108 |          |
| 19 | ARS-BFGL-NGS-57711              | 0 | 40692429 |          |

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| 19 | ARS-BFGL-NGS-32460     | 0        | 40716234 |
| 19 | ARS-BFGL-NGS-21990     | 40733516 |          |
| 19 | Hapmap26505-BTA-45405  | 0        | 40875464 |
| 19 | ARS-BFGL-NGS-118402    | 0        | 40927644 |
| 19 | ARS-BFGL-NGS-32711     | 0        | 40968107 |
| 19 | BTA-45471-no-rs        | 0        | 40989607 |
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| 19 | BTB-00752386           | 0        | 41061589 |
| 19 | Hapmap32043-BTA-133166 | 0        | 41103771 |
| 19 | ARS-BFGL-NGS-75238     | 0        | 41135356 |
| 19 | ARS-BFGL-NGS-104828    | 0        | 41156709 |
| 19 | ARS-BFGL-NGS-12214     | 0        | 41204591 |
| 19 | ARS-BFGL-NGS-111180    | 0        | 41245524 |
| 19 | Hapmap26121-BTA-133160 | 0        | 41291240 |
| 19 | BTB-00752230           | 0        | 41341636 |
| 19 | ARS-BFGL-NGS-15554     | 0        | 41372598 |
| 19 | Hapmap51235-BTA-45458  | 0        | 41447971 |
| 19 | Hapmap54523-ss46526232 | 0        | 41488860 |
| 19 | ARS-BFGL-NGS-25136     | 0        | 41540643 |
| 19 | BTA-45452-no-rs        | 0        | 41570503 |
| 19 | Hapmap33358-BTA-133130 | 0        | 41716159 |
| 19 | ARS-BFGL-NGS-116964    | 0        | 41759425 |
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| 19 | Hapmap54629-rs29021711 | 0        | 41834850 |
| 19 | ARS-BFGL-NGS-36183     | 0        | 41926734 |
| 19 | BTA-123276-no-rs       | 0        | 41950232 |
| 19 | BTB-00860508           | 0        | 42089455 |
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| 19 | Hapmap54661-rs29015754 | 0        | 42252751 |
| 19 | ARS-BFGL-NGS-111199    | 0        | 42289012 |
| 19 | UA-IFASA-9304          | 0        | 42323361 |
| 19 | ARS-BFGL-NGS-38784     | 0        | 42393606 |
| 19 | ARS-BFGL-NGS-111247    | 0        | 42425855 |
| 19 | ARS-BFGL-NGS-10320     | 42473919 |          |
| 19 | ARS-BFGL-NGS-106239    | 0        | 42560642 |
| 19 | ARS-BFGL-NGS-11174     | 0        | 42613950 |
| 19 | ARS-BFGL-NGS-82930     | 0        | 42636853 |
| 19 | Hapmap54526-ss46526755 | 0        | 42660383 |
| 19 | Hapmap25044-BTA-136851 | 0        | 42696815 |
| 19 | ARS-BFGL-NGS-58157     | 0        | 42718662 |
| 19 | Hapmap26125-BTA-136847 | 0        | 42752348 |
| 19 | UA-IFASA-3438          | 0        | 42776646 |
| 19 | Hapmap56957-ss46526454 | 0        | 42902904 |
| 19 | ARS-BFGL-NGS-18327     | 0        | 42924825 |
| 19 | ARS-BFGL-NGS-34272     | 0        | 42949792 |
| 19 | ARS-BFGL-NGS-28901     | 0        | 42976859 |
| 19 | BTB-00753702           | 0        | 43016296 |
| 19 | ARS-BFGL-NGS-111365    | 0        | 43068079 |
| 19 | BTA-45515-no-rs        | 0        | 43170256 |
| 19 | ARS-BFGL-NGS-22409     | 0        | 43295532 |
| 19 | Hapmap52998-ss46526120 | 0        | 43296546 |
| 19 | ARS-BFGL-NGS-26101     | 0        | 43376032 |
| 19 | BTB-00755049           | 0        | 43392581 |

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| 19 | ARS-BFGL-NGS-94100               | 0 | 43441993 |          |
| 19 | BTA-95342-no-rs                  | 0 | 43610147 |          |
| 19 | BTB-01463265                     | 0 | 43656050 |          |
| 19 | ARS-BFGL-NGS-115662              | 0 | 43688988 |          |
| 19 | BTB-01463315                     | 0 | 43716860 |          |
| 19 | BTB-01463330                     | 0 | 43749431 |          |
| 19 | BTA-108326-no-rs                 | 0 | 43804606 |          |
| 19 | BTA-108328-no-rs                 | 0 | 43856171 |          |
| 19 | ARS-BFGL-NGS-111480              | 0 | 43885395 |          |
| 19 | ARS-BFGL-NGS-20682               | 0 | 43904899 |          |
| 19 | ARS-BFGL-NGS-27742               | 0 | 43948803 |          |
| 19 | UA-IFASA-5789                    | 0 | 44033310 |          |
| 19 | ARS-BFGL-NGS-67567               | 0 | 44062337 |          |
| 19 | Hapmap24815-BTA-133210           | 0 | 44099234 |          |
| 19 | BTB-00754892                     | 0 | 44137978 |          |
| 19 | BTB-00754877                     | 0 | 44174487 |          |
| 19 | ARS-BFGL-NGS-17312               | 0 | 44216479 |          |
| 19 | Hapmap48346-BTA-45564            | 0 | 44240337 |          |
| 19 | BTB-00754797                     | 0 | 44270154 |          |
| 19 | Hapmap6744-BTA-45557             | 0 | 44303116 |          |
| 19 | ARS-BFGL-BAC-32484               | 0 | 44345164 |          |
| 19 | ARS-BFGL-NGS-28504               | 0 | 44403315 |          |
| 19 | ARS-BFGL-NGS-113106              | 0 | 44431617 |          |
| 19 | ARS-BFGL-NGS-42872               | 0 | 44500975 |          |
| 19 | ARS-BFGL-NGS-19774               | 0 | 44547216 |          |
| 19 | BTA-45551-no-rs                  | 0 | 44597888 |          |
| 19 | ARS-BFGL-NGS-53450               |   | 44632448 |          |
| 19 | ARS-BFGL-NGS-55902               | 0 | 44711355 |          |
| 19 | Hapmap24545-BTA-133190           | 0 | 44743980 |          |
| 19 | ARS-USMARC-Parent-AY916666-no-rs | 0 |          | 44799390 |
| 19 | ARS-BFGL-NGS-116856              | 0 | 44808197 |          |
| 19 | ARS-BFGL-BAC-32488               | 0 | 44843763 |          |
| 19 | Hapmap44079-BTA-45543            | 0 | 44899442 |          |
| 19 | ARS-BFGL-NGS-118124              | 0 | 44935101 |          |
| 19 | ARS-BFGL-NGS-23574               | 0 | 44958957 |          |
| 19 | ARS-BFGL-NGS-109970              | 0 | 44983338 |          |
| 19 | ARS-BFGL-NGS-103549              | 0 | 45005031 |          |
| 19 | BTB-00754259                     | 0 | 45059169 |          |
| 19 | ARS-BFGL-NGS-24479               | 0 | 45109206 |          |
| 19 | ARS-BFGL-NGS-113693              | 0 | 45122089 |          |
| 19 | ARS-BFGL-NGS-73579               | 0 | 45164235 |          |
| 19 | ARS-BFGL-NGS-114231              | 0 | 45213666 |          |
| 19 | ARS-BFGL-NGS-32958               | 0 | 45238884 |          |
| 19 | ARS-BFGL-NGS-10986               | 0 | 45260722 |          |
| 19 | ARS-BFGL-NGS-116441              | 0 | 45317867 |          |
| 19 | Hapmap40434-BTA-45533            | 0 | 45349793 |          |
| 19 | BTB-00753901                     | 0 | 45380797 |          |
| 19 | UA-IFASA-7546                    | 0 | 45422069 |          |
| 19 | ARS-BFGL-NGS-20244               | 0 | 45456828 |          |
| 19 | ARS-BFGL-NGS-111666              | 0 | 45501147 |          |
| 19 | ARS-BFGL-NGS-116240              | 0 | 45560806 |          |
| 19 | ARS-BFGL-NGS-38103               | 0 | 45591856 |          |
| 19 | ARS-BFGL-NGS-10952               | 0 | 45615664 |          |
| 19 | BTB-00753768                     | 0 | 45643563 |          |

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| 19 | ARS-BFGL-NGS-31468     | 0        | 45688143 |
| 19 | BTA-25043-no-rs        | 0        | 45705901 |
| 19 | ARS-BFGL-NGS-112936    | 0        | 45731306 |
| 19 | ARS-BFGL-NGS-36780     | 0        | 45752543 |
| 19 | ARS-BFGL-NGS-54889     | 0        | 45793438 |
| 19 | BTA-45668-no-rs        | 0        | 45865387 |
| 19 | BTB-00756923           | 0        | 45902110 |
| 19 | Hapmap42216-BTA-45665  | 0        | 45934555 |
| 19 | ARS-BFGL-NGS-32338     | 0        | 45976816 |
| 19 | ARS-BFGL-BAC-23640     | 45997313 |          |
| 19 | UA-IFASA-6117          | 0        | 46075773 |
| 19 | ARS-BFGL-NGS-114067    | 0        | 46117735 |
| 19 | BTA-45655-no-rs        | 0        | 46202442 |
| 19 | ARS-BFGL-NGS-110481    | 0        | 46279422 |
| 19 | ARS-BFGL-NGS-102317    | 0        | 46343001 |
| 19 | UA-IFASA-8333          | 0        | 46396064 |
| 19 | UA-IFASA-8910          | 0        | 46450230 |
| 19 | ARS-BFGL-NGS-85003     | 0        | 46478368 |
| 19 | ARS-BFGL-NGS-19397     | 0        | 46552691 |
| 19 | ARS-BFGL-NGS-39129     | 0        | 46602301 |
| 19 | ARS-BFGL-BAC-32500     | 0        | 46723662 |
| 19 | Hapmap26385-BTA-133250 | 0        | 46770465 |
| 19 | ARS-BFGL-NGS-27303     | 0        | 46941284 |
| 19 | UA-IFASA-2616          | 0        | 46986075 |
| 19 | ARS-BFGL-NGS-116606    | 0        | 47010170 |
| 19 | BTB-01433589           | 0        | 47055470 |
| 19 | Hapmap41682-BTA-92866  | 0        | 47071991 |
| 19 | ARS-BFGL-NGS-56312     | 0        | 47109588 |
| 19 | ARS-BFGL-BAC-32504     | 0        | 47160278 |
| 19 | BTA-21339-no-rs        | 0        | 47200732 |
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| 19 | ARS-BFGL-NGS-61800     | 0        | 47270773 |
| 19 | BTA-23253-no-rs        | 0        | 47323459 |
| 19 | Hapmap31529-BTA-18057  | 0        | 47351738 |
| 19 | Hapmap48676-BTA-18047  | 0        | 47374363 |
| 19 | UA-IFASA-8658          | 0        | 47415500 |
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| 19 | ARS-BFGL-NGS-42914     | 0        | 47525998 |
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| 19 | BTB-00755360           | 0        | 47661866 |
| 19 | ARS-BFGL-NGS-114383    | 0        | 47725481 |
| 19 | ARS-BFGL-NGS-25983     | 0        | 47747001 |
| 19 | ARS-BFGL-NGS-117004    | 0        | 47798697 |
| 19 | UA-IFASA-8219          | 0        | 47842356 |
| 19 | ARS-BFGL-NGS-414       | 0        | 47927722 |
| 19 | BTB-00755453           | 0        | 48007453 |
| 19 | Hapmap50968-BTA-45597  | 0        | 48050643 |
| 19 | Hapmap32556-BTA-133226 | 0        | 48135309 |
| 19 | ARS-BFGL-BAC-35051     | 0        | 48209594 |
| 19 | BTB-00755526           | 0        | 48239722 |
| 19 | ARS-BFGL-BAC-35052     | 0        | 48280175 |
| 19 | UA-IFASA-9455          | 0        | 48368103 |
| 19 | UA-IFASA-6363          | 0        | 48405523 |
| 19 | ARS-BFGL-NGS-29103     | 0        | 48536450 |

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| 19 | UA-IFASA-6353          | 0 | 48598256 |
| 19 | UA-IFASA-6003          | 0 | 48630588 |
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| 19 | ARS-BFGL-NGS-73805     | 0 | 48761018 |
| 19 | ARS-BFGL-NGS-115719    | 0 | 48801884 |
| 19 | ARS-BFGL-NGS-67910     |   | 48933619 |
| 19 | ARS-BFGL-NGS-43680     | 0 | 48957541 |
| 19 | UA-IFASA-5057          | 0 | 48988244 |
| 19 | ARS-BFGL-NGS-107345    | 0 | 49013784 |
| 19 | ARS-BFGL-NGS-98867     | 0 | 49037959 |
| 19 | ARS-BFGL-NGS-46927     | 0 | 49069727 |
| 19 | ARS-BFGL-NGS-33600     |   | 49138567 |
| 19 | ARS-BFGL-NGS-17108     | 0 | 49173286 |
| 19 | ARS-BFGL-NGS-118951    | 0 | 49219863 |
| 19 | ARS-BFGL-NGS-111142    | 0 | 49247372 |
| 19 | ARS-BFGL-NGS-102058    | 0 | 49308657 |
| 19 | ARS-BFGL-NGS-102154    | 0 | 49329111 |
| 19 | UA-IFASA-7593          | 0 | 49375655 |
| 19 | ARS-BFGL-BAC-35063     | 0 | 49398678 |
| 19 | UA-IFASA-7562          | 0 | 49438164 |
| 19 | Hapmap43270-BTA-45709  | 0 | 49473960 |
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| 19 | ARS-BFGL-BAC-35672     | 0 | 49627477 |
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| 19 | ARS-BFGL-NGS-12401     | 0 | 49727374 |
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| 19 | ARS-BFGL-NGS-117746    | 0 | 49784054 |
| 19 | Hapmap31094-BTA-133271 | 0 | 49897165 |
| 19 | UA-IFASA-5415          | 0 | 49930085 |
| 19 | Hapmap41874-BTA-45732  | 0 | 49972344 |
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| 19 | ARS-BFGL-NGS-16680     | 0 | 50087148 |
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| 19 | ARS-BFGL-NGS-78927     | 0 | 50191355 |
| 19 | ARS-BFGL-NGS-31418     | 0 | 50295947 |
| 19 | ARS-BFGL-NGS-104238    | 0 | 50336021 |
| 19 | ARS-BFGL-NGS-29119     | 0 | 50364787 |
| 19 | ARS-BFGL-NGS-22742     | 0 | 50395622 |
| 19 | ARS-BFGL-NGS-77060     | 0 | 50421201 |
| 19 | ARS-BFGL-NGS-101611    | 0 | 50447799 |
| 19 | ARS-BFGL-NGS-116929    | 0 | 50478941 |
| 19 | ARS-BFGL-NGS-118603    | 0 | 50504976 |
| 19 | ARS-BFGL-NGS-81178     | 0 | 50547082 |
| 19 | Hapmap47962-BTA-45750  | 0 | 50567992 |
| 19 | BTA-45898-no-rs        | 0 | 50696008 |
| 19 | ARS-BFGL-NGS-12042     | 0 | 50768336 |
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| 19 | ARS-BFGL-NGS-102298    | 0 | 50848144 |
| 19 | ARS-BFGL-NGS-68861     | 0 | 51148913 |
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| 19 | ARS-BFGL-NGS-79340     | 51269027   |
| 19 | ARS-BFGL-NGS-39328     | 0 51326750 |
| 19 | ARS-BFGL-NGS-20701     | 0 51371815 |
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| 19 | ARS-BFGL-NGS-73980     | 0 51419352 |
| 19 | Hapmap42556-BTA-45815  | 0 51445450 |
| 19 | ARS-BFGL-NGS-15454     | 0 51478494 |
| 19 | ARS-BFGL-NGS-35888     | 0 51507347 |
| 19 | ARS-BFGL-NGS-104734    | 0 51538272 |
| 19 | ARS-BFGL-NGS-90673     | 0 51581082 |
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| 19 | ARS-BFGL-NGS-117290    | 0 51680150 |
| 19 | ARS-BFGL-NGS-112313    | 0 51767413 |
| 19 | UA-IFASA-8764 0        | 51796076   |
| 19 | ARS-BFGL-NGS-47995     | 0 51816153 |
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| 19 | ARS-BFGL-NGS-38820     | 0 51912354 |
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| 19 | ARS-BFGL-NGS-19926     | 0 51956162 |
| 19 | ARS-BFGL-BAC-35684     | 0 52014996 |
| 19 | ARS-BFGL-NGS-22719     | 0 52036030 |
| 19 | ARS-BFGL-NGS-111298    | 0 52096701 |
| 19 | ARS-BFGL-NGS-68655     | 0 52152670 |
| 19 | ARS-BFGL-NGS-44098     | 0 52204367 |
| 19 | ARS-BFGL-NGS-77313     | 0 52234974 |
| 19 | ARS-BFGL-NGS-105532    | 0 52264019 |
| 19 | ARS-BFGL-NGS-117951    | 0 52296011 |
| 19 | Hapmap39750-BTA-45775  | 0 52334083 |
| 19 | Hapmap42219-BTA-45770  | 0 52392996 |
| 19 | UA-IFASA-5300 0        | 52436005   |
| 19 | ARS-BFGL-NGS-112589    | 0 52481850 |
| 19 | BTB-00760167 0         | 52512166   |
| 19 | ARS-BFGL-NGS-52810     | 0 52557638 |
| 19 | ARS-BFGL-NGS-37450     | 52596925   |
| 19 | Hapmap53630-rs29015133 | 0 52648529 |
| 19 | ARS-BFGL-NGS-18720     | 52712797   |
| 19 | ARS-BFGL-NGS-29115     | 0 52740740 |
| 19 | Hapmap45689-BTA-91003  | 0 52799844 |
| 19 | ARS-BFGL-NGS-116491    | 0 52855192 |
| 19 | BTB-01416331 0         | 52878628   |
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| 19 | ARS-BFGL-NGS-66978     | 0 53038373 |
| 19 | ARS-BFGL-BAC-27164     | 0 53063966 |
| 19 | BTA-45894-no-rs 0      | 53169302   |
| 19 | ARS-BFGL-NGS-100910    | 0 53208781 |
| 19 | ARS-BFGL-NGS-11938     | 0 53239903 |
| 19 | UA-IFASA-8199 0        | 53267510   |
| 19 | ARS-BFGL-NGS-94605     | 0 53332410 |
| 19 | ARS-BFGL-NGS-96322     | 0 53373533 |
| 19 | ARS-BFGL-NGS-113729    | 0 53408428 |
| 19 | ARS-BFGL-NGS-110456    | 0 53441712 |
| 19 | ARS-BFGL-NGS-103691    | 0 53473744 |
| 19 | ARS-BFGL-NGS-39525     | 0 53499697 |

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| 19 | ARS-BFGL-NGS-92268                    | 0 | 53537772 |   |          |
| 19 | ARS-BFGL-NGS-28670                    | 0 | 53568928 |   |          |
| 19 | ARS-BFGL-NGS-101995                   | 0 | 53606174 |   |          |
| 19 | ARS-BFGL-NGS-83634                    | 0 | 53646934 |   |          |
| 19 | UA-IFASA-5831                         | 0 | 53668468 |   |          |
| 19 | BTA-45865-no-rs                       | 0 | 53696050 |   |          |
| 19 | ARS-BFGL-NGS-18466                    | 0 | 53734338 |   |          |
| 19 | ARS-BFGL-NGS-111977                   | 0 | 53773783 |   |          |
| 19 | ARS-BFGL-NGS-105904                   | 0 | 53801963 |   |          |
| 19 | ARS-BFGL-NGS-36573                    | 0 | 53831725 |   |          |
| 19 | ARS-BFGL-NGS-86346                    | 0 | 53871632 |   |          |
| 19 | ARS-BFGL-NGS-113058                   | 0 | 53932846 |   |          |
| 19 | UA-IFASA-7781                         | 0 | 53963109 |   |          |
| 19 | ARS-BFGL-NGS-114192                   | 0 | 54004867 |   |          |
| 19 | Hapmap53154-ss46527107                | 0 | 54044562 |   |          |
| 19 | Hapmap40990-BTA-45853                 | 0 | 54078160 |   |          |
| 19 | ARS-BFGL-NGS-30893                    | 0 | 54116596 |   |          |
| 19 | ARS-BFGL-NGS-13344                    | 0 | 54148230 |   |          |
| 19 | BTA-45845-no-rs                       | 0 | 54173703 |   |          |
| 19 | Hapmap54297-rs29013561                | 0 | 54239006 |   |          |
| 19 | ARS-BFGL-NGS-96997                    | 0 | 54306610 |   |          |
| 19 | ARS-BFGL-NGS-89323                    | 0 | 54332392 |   |          |
| 19 | ARS-BFGL-NGS-28507                    | 0 | 54356852 |   |          |
| 19 | ARS-BFGL-NGS-113162                   | 0 | 54380283 |   |          |
| 19 | ARS-BFGL-NGS-36342                    | 0 | 54446207 |   |          |
| 19 | ARS-BFGL-NGS-117622                   | 0 | 54488129 |   |          |
| 19 | ARS-BFGL-NGS-18146                    | 0 | 54539527 |   |          |
| 19 | ARS-BFGL-NGS-53345                    | 0 | 54586136 |   |          |
| 19 | ARS-BFGL-NGS-67396                    | 0 | 54645063 |   |          |
| 19 | ARS-BFGL-NGS-104263                   | 0 | 54674498 |   |          |
| 19 | Hapmap49620-BTA-45922                 | 0 | 54756421 |   |          |
| 19 | ARS-BFGL-NGS-16348                    | 0 | 54852003 |   |          |
| 19 | UA-IFASA-6029                         | 0 | 54880876 |   |          |
| 19 | ARS-BFGL-NGS-25156                    | 0 | 54920324 |   |          |
| 19 | ARS-BFGL-NGS-62204                    | 0 | 54947863 |   |          |
| 19 | ARS-BFGL-NGS-47707                    | 0 | 54999876 |   |          |
| 19 | ARS-BFGL-NGS-116713                   | 0 | 55024753 |   |          |
| 19 | ARS-BFGL-NGS-25599                    | 0 | 55075249 |   |          |
| 19 | ARS-BFGL-NGS-12595                    | 0 | 55101341 |   |          |
| 19 | ARS-BFGL-NGS-115958                   | 0 | 55136333 |   |          |
| 19 | ARS-BFGL-NGS-118329                   | 0 | 55168433 |   |          |
| 19 | ARS-USMARC-Parent-EF164803-rs29011141 | 0 | 55174260 | 0 | 55174260 |
| 19 | ARS-BFGL-NGS-20184                    | 0 | 55191677 |   |          |
| 19 | Hapmap41778-BTA-14420                 | 0 | 55212508 |   |          |
| 19 | ARS-BFGL-NGS-88651                    | 0 | 55235501 |   |          |
| 19 | ARS-BFGL-NGS-43623                    | 0 | 55257191 |   |          |
| 19 | Hapmap49184-BTA-45954                 | 0 | 55295443 |   |          |
| 19 | ARS-BFGL-NGS-38027                    | 0 | 55332376 |   |          |
| 19 | Hapmap29819-BTA-133320                | 0 | 55379112 |   |          |
| 19 | ARS-BFGL-NGS-79637                    | 0 | 55421399 |   |          |
| 19 | ARS-BFGL-NGS-66213                    | 0 | 55456769 |   |          |
| 19 | ARS-BFGL-NGS-112332                   | 0 | 55479408 |   |          |
| 19 | ARS-BFGL-NGS-111549                   | 0 | 55548825 |   |          |
| 19 | ARS-BFGL-NGS-21220                    | 0 | 55569727 |   |          |

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| 19 | ARS-BFGL-NGS-114189    | 0 | 55590126 |
| 19 | ARS-BFGL-BAC-27792     | 0 | 55619154 |
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| 19 | ARS-BFGL-NGS-30781     | 0 | 55765531 |
| 19 | ARS-BFGL-NGS-13885     | 0 | 55820166 |
| 19 | ARS-BFGL-BAC-32937     | 0 | 55871365 |
| 19 | ARS-BFGL-NGS-110875    | 0 | 55937483 |
| 19 | ARS-BFGL-NGS-16504     | 0 | 55967853 |
| 19 | Hapmap57073-ss46526204 | 0 | 56072306 |
| 19 | ARS-BFGL-NGS-88285     | 0 | 56104218 |
| 19 | BTA-08388-no-rs        | 0 | 56132884 |
| 19 | Hapmap24709-BTA-45988  | 0 | 56165607 |
| 19 | ARS-BFGL-NGS-52939     | 0 | 56244442 |
| 19 | ARS-BFGL-NGS-13404     | 0 | 56279907 |
| 19 | ARS-BFGL-NGS-46941     | 0 | 56300082 |
| 19 | ARS-BFGL-NGS-112392    | 0 | 56341205 |
| 19 | Hapmap32044-BTA-133329 | 0 | 56401302 |
| 19 | UA-IFASA-5818          | 0 | 56426090 |
| 19 | ARS-BFGL-NGS-117484    | 0 | 56495427 |
| 19 | ARS-BFGL-NGS-114597    | 0 | 56533680 |
| 19 | ARS-BFGL-NGS-33925     | 0 | 56558475 |
| 19 | ARS-BFGL-NGS-50779     | 0 | 56607168 |
| 19 | ARS-BFGL-NGS-42405     | 0 | 56629783 |
| 19 | ARS-BFGL-NGS-89862     | 0 | 56660567 |
| 19 | ARS-BFGL-NGS-114414    | 0 | 56695441 |
| 19 | ARS-BFGL-NGS-22449     | 0 | 56754737 |
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| 19 | Hapmap48769-BTA-46039  | 0 | 56861094 |
| 19 | Hapmap42220-BTA-46040  | 0 | 56889902 |
| 19 | BTB-00762122           | 0 | 56928376 |
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| 19 | ARS-BFGL-NGS-29040     | 0 | 56983121 |
| 19 | ARS-BFGL-NGS-72723     | 0 | 56993243 |
| 19 | ARS-BFGL-BAC-33563     | 0 | 57017362 |
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| 19 | ARS-BFGL-NGS-42506     | 0 | 57075809 |
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| 19 | ARS-BFGL-BAC-36123     | 0 | 57149037 |
| 19 | ARS-BFGL-NGS-80940     | 0 | 57174792 |
| 19 | ARS-BFGL-BAC-36754     | 0 | 57213764 |
| 19 | ARS-BFGL-NGS-108886    | 0 | 57293857 |
| 19 | ARS-BFGL-NGS-31820     | 0 | 57330068 |
| 19 | ARS-BFGL-NGS-36727     | 0 | 57397180 |
| 19 | ARS-BFGL-NGS-39252     | 0 | 57422012 |
| 19 | ARS-BFGL-NGS-28678     | 0 | 57454104 |
| 19 | ARS-BFGL-NGS-44006     | 0 | 57592897 |
| 19 | ARS-BFGL-NGS-94291     | 0 | 57615715 |
| 19 | ARS-BFGL-NGS-27636     | 0 | 57655339 |
| 19 | BTA-103355-no-rs       | 0 | 57694213 |
| 19 | ARS-BFGL-NGS-71052     | 0 | 57714094 |
| 19 | UA-IFASA-6080          | 0 | 57748552 |



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| 19 | UA-IFASA-6546          | 0        | 57770336 |
| 19 | ARS-BFGL-NGS-115987    | 0        | 57797006 |
| 19 | ARS-BFGL-NGS-33946     | 0        | 57832194 |
| 19 | ARS-BFGL-NGS-27758     | 0        | 57876833 |
| 19 | UA-IFASA-7954          | 0        | 57946240 |
| 19 | ARS-BFGL-NGS-28163     | 0        | 57980697 |
| 19 | ARS-BFGL-NGS-29724     | 0        | 58024390 |
| 19 | UA-IFASA-7571          | 0        | 58038747 |
| 19 | ARS-BFGL-NGS-21414     | 0        | 58059730 |
| 19 | ARS-BFGL-NGS-33473     | 0        | 58091668 |
| 19 | ARS-BFGL-NGS-56333     | 0        | 58132528 |
| 19 | ARS-BFGL-NGS-31440     | 0        | 58167507 |
| 19 | ARS-BFGL-NGS-81995     | 0        | 58188793 |
| 19 | ARS-BFGL-NGS-15995     | 0        | 58226592 |
| 19 | ARS-BFGL-NGS-72850     | 58270268 |          |
| 19 | Hapmap58101-rs29011415 | 0        | 58290627 |
| 19 | Hapmap46962-BTA-19170  | 0        | 58318121 |
| 19 | ARS-BFGL-NGS-108439    | 0        | 58336787 |
| 19 | ARS-BFGL-NGS-43806     | 0        | 58400613 |
| 19 | ARS-BFGL-NGS-39991     | 0        | 58416325 |
| 19 | ARS-BFGL-NGS-72084     | 0        | 58551913 |
| 19 | ARS-BFGL-NGS-22221     | 0        | 58591027 |
| 19 | ARS-BFGL-NGS-94443     | 0        | 58618560 |
| 19 | Hapmap30525-BTA-133378 | 0        | 58642115 |
| 19 | ARS-BFGL-NGS-81636     | 0        | 58687075 |
| 19 | ARS-BFGL-NGS-115272    | 0        | 58728445 |
| 19 | ARS-BFGL-NGS-37810     | 58875702 |          |
| 19 | ARS-BFGL-NGS-12380     | 0        | 58895961 |
| 19 | ARS-BFGL-NGS-116479    | 0        | 58919657 |
| 19 | Hapmap22795-BTA-133410 | 0        | 58947506 |
| 19 | ARS-BFGL-NGS-110654    | 0        | 58989919 |
| 19 | ARS-BFGL-NGS-12196     | 0        | 59015012 |
| 19 | ARS-BFGL-NGS-113245    | 0        | 59068269 |
| 19 | UA-IFASA-5934          | 0        | 59147851 |
| 19 | UA-IFASA-8385          | 0        | 59276357 |
| 19 | UA-IFASA-9045          | 0        | 59300925 |
| 19 | ARS-BFGL-NGS-100464    | 0        | 59360869 |
| 19 | UA-IFASA-6767          | 0        | 59393627 |
| 19 | BTA-121196-no-rs       | 0        | 59441263 |
| 19 | ARS-BFGL-NGS-28682     | 0        | 59479510 |
| 19 | ARS-BFGL-NGS-72354     | 0        | 59529556 |
| 19 | UA-IFASA-6929          | 0        | 59688696 |
| 19 | UA-IFASA-6210          | 0        | 59715027 |
| 19 | ARS-BFGL-NGS-31164     | 0        | 59742080 |
| 19 | UA-IFASA-5305          | 0        | 59785045 |
| 19 | UA-IFASA-8216          | 0        | 59817808 |
| 19 | ARS-BFGL-NGS-10846     | 0        | 59855522 |
| 19 | UA-IFASA-8495          | 0        | 59879433 |
| 19 | ARS-BFGL-NGS-100738    | 0        | 59902586 |
| 19 | UA-IFASA-8477          | 0        | 59936906 |
| 19 | ARS-BFGL-NGS-22646     | 0        | 59984238 |
| 19 | UA-IFASA-6126          | 0        | 60009650 |
| 19 | UA-IFASA-8994          | 0        | 60044907 |
| 19 | Hapmap32800-BTA-133450 | 0        | 60120044 |

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| 19 | ARS-BFGL-NGS-111065    | 0 | 60224397 |
| 19 | Hapmap52490-rs29011071 | 0 | 60247211 |
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| 19 | ARS-BFGL-NGS-64451     | 0 | 60407194 |
| 19 | ARS-BFGL-NGS-23292     | 0 | 60444847 |
| 19 | UA-IFASA-5967          | 0 | 60485875 |
| 19 | UA-IFASA-9535          | 0 | 60637541 |
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| 19 | Hapmap27002-BTA-153788 | 0 | 60920828 |
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| 19 | ARS-BFGL-BAC-24310     | 0 | 60981059 |
| 19 | ARS-BFGL-NGS-119228    | 0 | 61055984 |
| 19 | ARS-BFGL-NGS-32289     | 0 | 61083105 |
| 19 | Hapmap40033-BTA-93880  | 0 | 61125348 |
| 19 | ARS-BFGL-NGS-114474    | 0 | 61166436 |
| 19 | ARS-BFGL-NGS-27414     | 0 | 61205726 |
| 19 | ARS-BFGL-NGS-76465     | 0 | 61247220 |
| 19 | Hapmap26387-BTA-133345 | 0 | 61323109 |
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| 19 | ARS-BFGL-NGS-116261    | 0 | 61478388 |
| 19 | Hapmap43271-BTA-46356  | 0 | 61503930 |
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| 19 | ARS-BFGL-NGS-64717     | 0 | 61784840 |
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| 19 | ARS-BFGL-BAC-32334     | 0 | 61883645 |
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| 19 | ARS-BFGL-NGS-27079     | 0 | 61986430 |
| 19 | UA-IFASA-2104          | 0 | 62064018 |
| 19 | ARS-BFGL-NGS-88748     | 0 | 62087156 |
| 19 | ARS-BFGL-NGS-31267     | 0 | 62113537 |
| 19 | BTB-00766881           | 0 | 62144933 |
| 19 | Hapmap53874-rs29020139 | 0 | 62177834 |
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| 19 | UA-IFASA-9580          | 0 | 62314941 |
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| 19 | ARS-BFGL-NGS-78786     | 0 | 62455237 |
| 19 | ARS-BFGL-NGS-45547     | 0 | 62478817 |
| 19 | ARS-BFGL-NGS-39527     | 0 | 62533475 |
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| 19 | ARS-BFGL-NGS-90100     | 0 | 62739540 |
| 19 | UA-IFASA-8578          | 0 | 62760617 |
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| 19 | ARS-BFGL-NGS-31729                    | 0       | 62829939 |  |  |
| 19 | ARS-BFGL-NGS-106739                   | 0       | 62872243 |  |  |
| 19 | ARS-BFGL-BAC-32338                    | 0       | 62894259 |  |  |
| 19 | ARS-BFGL-NGS-44940                    | 0       | 62944732 |  |  |
| 19 | BTB-01580865                          | 0       | 63103689 |  |  |
| 19 | ARS-BFGL-NGS-106390                   | 0       | 63140551 |  |  |
| 19 | BTB-01987097                          | 0       | 63166388 |  |  |
| 19 | ARS-BFGL-NGS-101226                   | 0       | 63191482 |  |  |
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| 19 | BTB-01884176                          | 0       | 63309223 |  |  |
| 19 | ARS-BFGL-NGS-54958                    | 0       | 63354178 |  |  |
| 19 | BTA-46009-no-rs                       | 0       | 63402260 |  |  |
| 19 | ARS-BFGL-NGS-43321                    | 0       | 63424825 |  |  |
| 19 | ARS-BFGL-NGS-72483                    | 0       | 63501603 |  |  |
| 19 | ARS-BFGL-NGS-108629                   | 0       | 63530174 |  |  |
| 19 | ARS-BFGL-NGS-32846                    | 0       | 63560230 |  |  |
| 19 | ARS-BFGL-NGS-81228                    | 0       | 63625695 |  |  |
| 19 | ARS-BFGL-NGS-102011                   | 0       | 63646530 |  |  |
| 19 | ARS-BFGL-NGS-100909                   | 0       | 63734072 |  |  |
| 19 | UA-IFASA-8331                         | 0       | 63798259 |  |  |
| 19 | ARS-BFGL-NGS-101228                   | 0       | 63826890 |  |  |
| 19 | ARS-BFGL-NGS-18449                    | 0       | 63932125 |  |  |
| 19 | ARS-BFGL-NGS-119772                   | 0       | 63979662 |  |  |
| 19 | ARS-BFGL-NGS-82888                    | 0       | 64007021 |  |  |
| 20 | Hapmap51158-BTA-117076                | 0       | 199074   |  |  |
| 20 | BTA-117074-no-rs                      | 0       | 247319   |  |  |
| 20 | ARS-BFGL-NGS-114335                   | 0       | 269964   |  |  |
| 20 | Hapmap54573-rs29011133                | 0       | 314607   |  |  |
| 20 | ARS-BFGL-NGS-34773                    | 0       | 401466   |  |  |
| 20 | ARS-BFGL-NGS-17392                    | 0       | 427798   |  |  |
| 20 | Hapmap53640-rs29019727                | 0       | 460064   |  |  |
| 20 | Hapmap40826-BTA-87264                 | 0       | 496304   |  |  |
| 20 | ARS-BFGL-BAC-33065                    | 0       | 527561   |  |  |
| 20 | ARS-BFGL-NGS-104829                   | 0       | 571472   |  |  |
| 20 | ARS-BFGL-NGS-65452                    | 0       | 593947   |  |  |
| 20 | ARS-BFGL-NGS-28987                    | 0       | 654738   |  |  |
| 20 | ARS-USMARC-Parent-DQ984828-rs29010004 | 0       | 676757   |  |  |
| 20 | ARS-BFGL-NGS-27058                    | 0       | 712232   |  |  |
| 20 | Hapmap30528-BTA-134791                | 0       | 741839   |  |  |
| 20 | Hapmap48367-BTA-50266                 | 0       | 770272   |  |  |
| 20 | ARS-BFGL-NGS-74477                    | 0       | 808587   |  |  |
| 20 | ARS-BFGL-NGS-55320                    | 0       | 829627   |  |  |
| 20 | ARS-BFGL-NGS-99128                    | 0       | 861460   |  |  |
| 20 | ARS-BFGL-NGS-109784                   | 0       | 909076   |  |  |
| 20 | ARS-BFGL-NGS-107554                   | 0       | 999863   |  |  |
| 20 | ARS-BFGL-NGS-114602                   | 0       | 1052840  |  |  |
| 20 | ARS-BFGL-NGS-101925                   | 0       | 1202954  |  |  |
| 20 | ARS-BFGL-NGS-100318                   | 0       | 1314015  |  |  |
| 20 | ARS-BFGL-NGS-81283                    | 0       | 1365969  |  |  |
| 20 | ARS-BFGL-NGS-16554                    | 0       | 1435192  |  |  |
| 20 | ARS-BFGL-NGS-113052                   | 0       | 1507533  |  |  |
| 20 | ARS-BFGL-NGS-109022                   | 0       | 1561788  |  |  |
| 20 | ARS-BFGL-NGS-20999                    | 0       | 1596434  |  |  |
| 20 | ARS-BFGL-NGS-18750                    | 1627053 |          |  |  |

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| 20 | BTB-00767807                   | 0 | 1657499 |         |
| 20 | Hapmap58121-rs29014810         | 0 | 1685469 |         |
| 20 | ARS-BFGL-NGS-101085            | 0 | 1718702 |         |
| 20 | ARS-BFGL-NGS-81090             |   | 1741145 |         |
| 20 | Hapmap22630-BTA-50209          | 0 | 1828374 |         |
| 20 | ARS-BFGL-NGS-79576             | 0 | 1861177 |         |
| 20 | ARS-BFGL-NGS-117575            | 0 | 1900204 |         |
| 20 | BTB-00767476                   | 0 | 1925206 |         |
| 20 | ARS-BFGL-BAC-34277             | 0 | 1961868 |         |
| 20 | Hapmap48789-BTA-50012          | 0 | 1985423 |         |
| 20 | ARS-BFGL-NGS-105473            | 0 | 2021826 |         |
| 20 | Hapmap59901-rs29013220         | 0 | 2049582 |         |
| 20 | ARS-BFGL-NGS-35804             | 0 | 2159884 |         |
| 20 | ARS-BFGL-NGS-117395            | 0 | 2200937 |         |
| 20 | BTA-27853-no-rs                | 0 | 2239940 |         |
| 20 | Hapmap49104-BTA-27856          | 0 | 2265566 |         |
| 20 | Hapmap36588-SCAFFOLD90561_9460 | 0 |         | 2289049 |
| 20 | BTB-01355934                   | 0 | 2322919 |         |
| 20 | ARS-BFGL-NGS-13104             | 0 | 2354412 |         |
| 20 | ARS-BFGL-NGS-85031             | 0 | 2389754 |         |
| 20 | ARS-BFGL-NGS-32350             |   | 2415716 |         |
| 20 | ARS-BFGL-NGS-107987            | 0 | 2452442 |         |
| 20 | BTB-01356178                   | 0 | 2491375 |         |
| 20 | BTB-01356219                   | 0 | 2539179 |         |
| 20 | ARS-BFGL-NGS-25164             | 0 | 2557876 |         |
| 20 | ARS-BFGL-NGS-12728             | 0 | 2585844 |         |
| 20 | BTB-01400776                   | 0 | 2695880 |         |
| 20 | BTA-88576-no-rs                | 0 | 2719762 |         |
| 20 | BTB-01393816                   | 0 | 2754521 |         |
| 20 | ARS-BFGL-NGS-46098             | 0 | 2951322 |         |
| 20 | ARS-BFGL-BAC-27938             | 0 | 2997285 |         |
| 20 | ARS-BFGL-NGS-57239             | 0 | 3037520 |         |
| 20 | ARS-BFGL-NGS-114238            | 0 | 3060966 |         |
| 20 | ARS-BFGL-NGS-89521             | 0 | 3085726 |         |
| 20 | Hapmap51392-BTA-112982         | 0 | 3114651 |         |
| 20 | ARS-BFGL-BAC-27945             | 0 | 3136329 |         |
| 20 | ARS-BFGL-NGS-117057            | 0 | 3227420 |         |
| 20 | ARS-BFGL-BAC-31749             | 0 | 3253977 |         |
| 20 | ARS-BFGL-NGS-23863             | 0 | 3321125 |         |
| 20 | ARS-BFGL-NGS-118339            | 0 | 3347138 |         |
| 20 | ARS-BFGL-NGS-67764             | 0 | 3389367 |         |
| 20 | ARS-BFGL-NGS-86317             | 0 | 3420251 |         |
| 20 | ARS-BFGL-NGS-105192            | 0 | 3456844 |         |
| 20 | ARS-BFGL-NGS-74737             | 0 | 3489847 |         |
| 20 | ARS-BFGL-NGS-31686             | 0 | 3532931 |         |
| 20 | Hapmap47644-BTA-50262          | 0 | 3558883 |         |
| 20 | Hapmap56909-rs29019643         | 0 | 3767554 |         |
| 20 | BTA-50642-no-rs                | 0 | 3794030 |         |
| 20 | ARS-BFGL-NGS-87772             | 0 | 3849284 |         |
| 20 | ARS-BFGL-NGS-32376             | 0 | 3876182 |         |
| 20 | Hapmap44434-BTA-99903          | 0 | 3917371 |         |
| 20 | ARS-BFGL-NGS-116843            | 0 | 3984992 |         |
| 20 | ARS-BFGL-NGS-39505             | 0 | 4043933 |         |
| 20 | ARS-BFGL-NGS-20128             | 0 | 4073020 |         |

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| 20 | ARS-BFGL-NGS-23890     | 0       | 4145679 |
| 20 | ARS-BFGL-NGS-15805     | 0       | 4205037 |
| 20 | ARS-BFGL-NGS-117684    | 0       | 4238552 |
| 20 | ARS-BFGL-BAC-24460     | 4267775 |         |
| 20 | ARS-BFGL-NGS-40186     | 0       | 4298545 |
| 20 | ARS-BFGL-NGS-108087    | 0       | 4330250 |
| 20 | ARS-BFGL-NGS-25982     | 0       | 4366134 |
| 20 | Hapmap54098-rs29010434 | 0       | 4395656 |
| 20 | ARS-BFGL-NGS-28479     | 0       | 4425557 |
| 20 | ARS-BFGL-NGS-48030     | 0       | 4496376 |
| 20 | ARS-BFGL-NGS-102165    | 0       | 4518051 |
| 20 | ARS-BFGL-NGS-25266     | 0       | 4542536 |
| 20 | Hapmap57038-rs29015626 | 0       | 4567765 |
| 20 | ARS-BFGL-NGS-106445    | 0       | 4597488 |
| 20 | Hapmap42635-BTA-68718  | 0       | 4618689 |
| 20 | ARS-BFGL-NGS-100668    | 0       | 4684578 |
| 20 | BTB-00144202           | 0       | 4713452 |
| 20 | BTB-00144185           | 0       | 4746836 |
| 20 | Hapmap48851-BTA-68711  | 0       | 4788269 |
| 20 | ARS-BFGL-NGS-19610     | 0       | 4845639 |
| 20 | ARS-BFGL-NGS-109135    | 0       | 4886018 |
| 20 | ARS-BFGL-NGS-31292     | 0       | 4907906 |
| 20 | BTB-01546179           | 0       | 4935191 |
| 20 | BTB-01546164           | 0       | 4962725 |
| 20 | BTB-01988115           | 0       | 4989460 |
| 20 | ARS-BFGL-NGS-18420     | 0       | 5015135 |
| 20 | Hapmap43222-BTA-27738  | 0       | 5065516 |
| 20 | Hapmap46790-BTA-27737  | 0       | 5140665 |
| 20 | Hapmap42164-BTA-27725  | 0       | 5173580 |
| 20 | ARS-BFGL-BAC-32991     | 0       | 5194729 |
| 20 | ARS-BFGL-NGS-112219    | 0       | 5216847 |
| 20 | ARS-BFGL-NGS-38856     | 0       | 5303950 |
| 20 | ARS-BFGL-NGS-111331    | 0       | 5347594 |
| 20 | ARS-BFGL-NGS-34264     | 0       | 5392124 |
| 20 | ARS-BFGL-NGS-39423     | 0       | 5444845 |
| 20 | Hapmap48273-BTA-27740  | 0       | 5478758 |
| 20 | BTB-01104158           | 0       | 5508730 |
| 20 | BTB-01104181           | 0       | 5539268 |
| 20 | BTB-01104222           | 0       | 5571399 |
| 20 | ARS-BFGL-NGS-18943     | 0       | 5601132 |
| 20 | BTB-01104259           | 0       | 5618204 |
| 20 | Hapmap24706-BTA-27750  | 0       | 5660561 |
| 20 | BTB-01104447           | 0       | 5701965 |
| 20 | ARS-BFGL-NGS-28240     | 0       | 5730532 |
| 20 | BTA-122828-no-rs       | 0       | 5774749 |
| 20 | ARS-BFGL-NGS-51450     | 5840799 |         |
| 20 | Hapmap48214-BTA-121272 | 0       | 5884846 |
| 20 | Hapmap47029-BTA-50873  | 0       | 5929182 |
| 20 | ARS-BFGL-NGS-35576     | 0       | 5959578 |
| 20 | Hapmap53870-rs29020081 | 0       | 5987334 |
| 20 | ARS-BFGL-NGS-26474     | 0       | 6029026 |
| 20 | BTA-87478-no-rs        | 0       | 6103096 |
| 20 | ARS-BFGL-NGS-80480     | 6123908 |         |
| 20 | ARS-BFGL-NGS-32296     | 0       | 6157936 |

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| 20 | ARS-BFGL-NGS-101877              | 0 | 6206683 |  |
| 20 | Hapmap59243-rs29019948           | 0 | 6233716 |  |
| 20 | ARS-BFGL-NGS-118422              | 0 | 6310930 |  |
| 20 | BTB-00252370                     | 0 | 6360647 |  |
| 20 | BTB-00252389                     | 0 | 6385223 |  |
| 20 | ARS-BFGL-NGS-105013              | 0 | 6445208 |  |
| 20 | ARS-BFGL-NGS-56555               | 0 | 6477168 |  |
| 20 | BTB-00252636                     | 0 | 6505111 |  |
| 20 | ARS-BFGL-NGS-42920               | 0 | 6534735 |  |
| 20 | BTB-00769424                     | 0 | 6605865 |  |
| 20 | BTB-00769318                     | 0 | 6638385 |  |
| 20 | ARS-BFGL-BAC-32398               | 0 | 6699756 |  |
| 20 | Hapmap38898-BTA-51152            | 0 | 6736039 |  |
| 20 | ARS-BFGL-NGS-108897              | 0 | 6832903 |  |
| 20 | BTB-00897454                     | 0 | 6871680 |  |
| 20 | ARS-BFGL-NGS-20134               | 0 | 6912492 |  |
| 20 | ARS-BFGL-NGS-54249               | 0 | 6935534 |  |
| 20 | Hapmap41747-BTA-108856           | 0 | 6966760 |  |
| 20 | ARS-BFGL-NGS-14107               | 0 | 7007017 |  |
| 20 | Hapmap51088-BTA-92505            | 0 | 7025830 |  |
| 20 | Hapmap48598-BTA-108852           | 0 | 7050201 |  |
| 20 | ARS-BFGL-NGS-98789               | 0 | 7103987 |  |
| 20 | Hapmap39533-BTA-108830           | 0 | 7143287 |  |
| 20 | ARS-BFGL-NGS-59713               | 0 | 7166494 |  |
| 20 | BTB-01197585                     | 0 | 7204354 |  |
| 20 | ARS-BFGL-NGS-10405               | 0 | 7296768 |  |
| 20 | Hapmap46926-BTA-108823           | 0 | 7327625 |  |
| 20 | BTB-01197460                     | 0 | 7351732 |  |
| 20 | Hapmap38283-BTA-108862           | 0 | 7389088 |  |
| 20 | ARS-BFGL-NGS-100237              | 0 | 7409378 |  |
| 20 | Hapmap32623-BTA-155197           | 0 | 7456042 |  |
| 20 | ARS-BFGL-NGS-17028               | 0 | 7491951 |  |
| 20 | BTB-01756433                     | 0 | 7516842 |  |
| 20 | ARS-BFGL-NGS-91235               | 0 | 7543450 |  |
| 20 | Hapmap25570-BTA-147074           | 0 | 7571374 |  |
| 20 | ARS-BFGL-BAC-32391               | 0 | 7601770 |  |
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| 20 | ARS-BFGL-NGS-14764               | 0 | 7661649 |  |
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| 20 | Hapmap49207-BTA-51446            | 0 | 7770495 |  |
| 20 | BTA-51115-no-rs                  | 0 | 7809958 |  |
| 20 | BTA-51080-no-rs                  | 0 | 7881875 |  |
| 20 | Hapmap47976-BTA-51074            | 0 | 7917198 |  |
| 20 | Hapmap36217-SCAFFOLD290026_21689 | 0 | 7954374 |  |
| 20 | Hapmap25537-BTA-134848           | 0 | 7993223 |  |
| 20 | ARS-BFGL-NGS-35251               | 0 | 8021456 |  |
| 20 | ARS-BFGL-NGS-101215              | 0 | 8042175 |  |
| 20 | ARS-BFGL-NGS-29145               | 0 | 8111091 |  |
| 20 | ARS-BFGL-NGS-87966               | 0 | 8164878 |  |
| 20 | Hapmap53674-rs29025319           | 0 | 8237137 |  |
| 20 | ARS-BFGL-NGS-42369               | 0 | 8284256 |  |
| 20 | ARS-BFGL-NGS-44829               | 0 | 8327825 |  |
| 20 | BTB-00771463                     | 0 | 8366001 |  |
| 20 | BTA-51455-no-rs                  | 0 | 8395835 |  |

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| 20 | BTB-00771409           | 0       | 8410156  |
| 20 | BTB-00771394           | 0       | 8439673  |
| 20 | BTB-00771346           | 0       | 8475414  |
| 20 | BTB-00771335           | 0       | 8499399  |
| 20 | BTB-00771308           | 0       | 8539206  |
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| 20 | Hapmap25538-BTA-134885 | 0       | 8757679  |
| 20 | ARS-BFGL-NGS-32005     | 0       | 8804216  |
| 20 | Hapmap59077-rs29017458 | 0       | 8861019  |
| 20 | BTB-01482697           | 0       | 8897859  |
| 20 | Hapmap49640-BTA-51449  | 0       | 8928445  |
| 20 | BTA-51494-no-rs        | 0       | 8995764  |
| 20 | ARS-BFGL-NGS-70354     | 0       | 9028131  |
| 20 | BTA-51491-no-rs        | 0       | 9078872  |
| 20 | ARS-BFGL-BAC-32400     | 0       | 9104042  |
| 20 | ARS-BFGL-NGS-10310     | 9136547 |          |
| 20 | ARS-BFGL-NGS-105879    | 0       | 9172033  |
| 20 | ARS-BFGL-NGS-111051    | 0       | 9230232  |
| 20 | BTB-00772171           | 0       | 9270217  |
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| 20 | ARS-BFGL-NGS-29791     | 0       | 9344675  |
| 20 | ARS-BFGL-NGS-117139    | 0       | 9377909  |
| 20 | ARS-BFGL-NGS-41186     | 0       | 9415902  |
| 20 | ARS-BFGL-NGS-29910     | 0       | 9468693  |
| 20 | ARS-BFGL-NGS-32753     | 0       | 9490782  |
| 20 | ARS-BFGL-BAC-31727     | 0       | 9514679  |
| 20 | ARS-BFGL-NGS-63158     | 0       | 9549377  |
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| 20 | BTA-51479-no-rs        | 0       | 9606971  |
| 20 | ARS-BFGL-NGS-114315    | 0       | 9627990  |
| 20 | BTA-91129-no-rs        | 0       | 9651103  |
| 20 | ARS-BFGL-NGS-109851    | 0       | 9695509  |
| 20 | Hapmap49641-BTA-51476  | 0       | 9732487  |
| 20 | ARS-BFGL-NGS-45127     | 0       | 9919863  |
| 20 | ARS-BFGL-NGS-100777    | 0       | 9965585  |
| 20 | Hapmap54493-rs29018712 | 0       | 9990379  |
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| 20 | BTB-00770572           | 0       | 10070352 |
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| 20 | Hapmap33691-BTA-89291  | 0       | 10295382 |
| 20 | BTB-00772723           | 0       | 10341920 |
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| 20 | BTB-00773645           | 0       | 10801068 |
| 20 | ARS-BFGL-NGS-58314     | 0       | 10871544 |
| 20 | ARS-BFGL-NGS-22729     | 0       | 10909434 |

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| 20 | ARS-BFGL-NGS-71611     | 0        | 11035444 |
| 20 | ARS-BFGL-NGS-19010     | 11070362 |          |
| 20 | Hapmap54291-rs29013179 | 0        | 11118472 |
| 20 | Hapmap52814-rs29013174 | 0        | 11139158 |
| 20 | BTA-95187-no-rs        | 0        | 11169481 |
| 20 | ARS-BFGL-NGS-101506    | 0        | 11199953 |
| 20 | ARS-BFGL-NGS-87256     | 0        | 11228271 |
| 20 | BTB-01863228           | 0        | 11259370 |
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| 20 | BTA-118245-no-rs       | 0        | 12158936 |
| 20 | Hapmap42086-BTA-118249 | 0        | 12196401 |
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| 20 | BTB-00549845           | 0        | 13130283 |
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| 20 | Hapmap43874-BTA-51544  | 0 | 13363297 |
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| 20 | Hapmap41890-BTA-51549  | 0 | 13920520 |
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| 20 | Hapmap50995-BTA-51556  | 0 | 14223042 |
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| 20 | BTB-01300665           | 0 | 15454163 |
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| 20 | Hapmap50930-BTA-29913  | 0 | 15749722 |
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| 20 | ARS-BFGL-BAC-24450     |   | 15870897 |
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| 20 | Hapmap48105-BTA-86831  | 0 | 15999470 |
| 20 | BTA-86837-no-rs        | 0 | 16044811 |
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| 20 | BTA-19381-no-rs        | 0 | 16298635 |
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| 20 | ARS-BFGL-NGS-20300     | 0 | 16402419 |
| 20 | Hapmap55420-rs29013325 | 0 | 16448784 |
| 20 | ARS-BFGL-NGS-10033     | 0 | 16474647 |
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| 20 | ARS-BFGL-NGS-115829    | 0 | 16581274 |
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| 20 | ARS-BFGL-NGS-114288              | 0 | 16672270 |          |
| 20 | BTA-57175-no-rs                  | 0 | 16756975 |          |
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| 20 | BTB-01773207                     | 0 | 16813539 |          |
| 20 | Hapmap26197-BTA-158977           | 0 | 16852482 |          |
| 20 | Hapmap52424-rs29022982           | 0 | 16893738 |          |
| 20 | Hapmap51603-BTA-51283            | 0 | 16916943 |          |
| 20 | Hapmap29660-BTA-51301            | 0 | 16939858 |          |
| 20 | Hapmap51247-BTA-51313            | 0 | 16978201 |          |
| 20 | ARS-BFGL-NGS-13160               | 0 | 17078414 |          |
| 20 | ARS-BFGL-NGS-42686               | 0 | 17110706 |          |
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| 20 | BTB-00770554                     | 0 | 17175071 |          |
| 20 | Hapmap47909-BTA-29658            | 0 | 17203442 |          |
| 20 | ARS-BFGL-NGS-108015              | 0 | 17240999 |          |
| 20 | ARS-BFGL-NGS-101394              | 0 | 17281716 |          |
| 20 | BTA-96644-no-rs                  | 0 | 17324265 |          |
| 20 | BTB-01478363                     | 0 | 17370437 |          |
| 20 | ARS-BFGL-NGS-17510               |   | 17412441 |          |
| 20 | Hapmap47978-BTA-51560            | 0 | 17462836 |          |
| 20 | Hapmap24820-BTA-134931           | 0 | 17577371 |          |
| 20 | BTB-00774490                     | 0 | 17617134 |          |
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| 20 | ARS-BFGL-NGS-71000               | 0 | 17742195 |          |
| 20 | ARS-BFGL-NGS-16535               | 0 | 17789854 |          |
| 20 | BTB-00774522                     | 0 | 17813770 |          |
| 20 | ARS-USMARC-Parent-DQ888313-no-rs | 0 |          | 17837675 |
| 20 | Hapmap42957-BTA-49949            | 0 | 17885515 |          |
| 20 | BTA-49952-no-rs                  | 0 | 17915319 |          |
| 20 | BTB-00774644                     | 0 | 17946080 |          |
| 20 | BTB-00774670                     | 0 | 17986264 |          |
| 20 | BTB-00774691                     | 0 | 18021781 |          |
| 20 | BTA-49956-no-rs                  | 0 | 18053172 |          |
| 20 | BTA-49967-no-rs                  | 0 | 18099389 |          |
| 20 | ARS-BFGL-NGS-17910               | 0 | 18123930 |          |
| 20 | ARS-BFGL-NGS-39954               | 0 | 18144703 |          |
| 20 | Hapmap34413-BES11_Contig509_1565 | 0 |          | 18176797 |
| 20 | ARS-BFGL-NGS-30929               | 0 | 18258856 |          |
| 20 | BTB-01133599                     | 0 | 18286048 |          |
| 20 | Hapmap60659-rs29015849           | 0 | 18312925 |          |
| 20 | ARS-BFGL-BAC-33645               | 0 | 18413770 |          |
| 20 | ARS-BFGL-BAC-33648               | 0 | 18442538 |          |
| 20 | BTA-115951-no-rs                 | 0 | 18498959 |          |
| 20 | ARS-BFGL-NGS-25782               | 0 | 18537789 |          |
| 20 | Hapmap50241-BTA-115966           | 0 | 18575275 |          |
| 20 | BTA-115956-no-rs                 | 0 | 18631431 |          |
| 20 | BTA-115955-no-rs                 | 0 | 18663206 |          |
| 20 | BTB-01524822                     | 0 | 18719808 |          |
| 20 | ARS-BFGL-NGS-13902               | 0 | 18743927 |          |
| 20 | BTB-01524870                     | 0 | 18773189 |          |
| 20 | ARS-BFGL-BAC-33650               | 0 | 18816950 |          |
| 20 | ARS-BFGL-NGS-113376              | 0 | 18849217 |          |
| 20 | Hapmap51681-BTA-110411           | 0 | 18882445 |          |
| 20 | BTA-110416-no-rs                 | 0 | 18913278 |          |

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| 20 | ARS-BFGL-NGS-44760              | 18950015 |          |
| 20 | BTA-110421-no-rs                | 0        | 18974803 |
| 20 | ARS-BFGL-NGS-25836              | 0        | 19040448 |
| 20 | BTB-00775794                    | 0        | 19067657 |
| 20 | BTB-00775799                    | 0        | 19093668 |
| 20 | ARS-BFGL-BAC-33651              | 0        | 19145580 |
| 20 | BTB-00775883                    | 0        | 19187276 |
| 20 | BTA-49983-no-rs                 | 0        | 19231361 |
| 20 | BTB-01501284                    | 0        | 19262754 |
| 20 | ARS-BFGL-NGS-65705              | 0        | 19291232 |
| 20 | BTA-98656-no-rs                 | 0        | 19333137 |
| 20 | Hapmap60719-rs29027054          | 0        | 19369507 |
| 20 | ARS-BFGL-NGS-29849              | 0        | 19464441 |
| 20 | Hapmap50711-BTA-49985           | 0        | 19520788 |
| 20 | ARS-BFGL-BAC-33654              | 0        | 19587484 |
| 20 | Hapmap49632-BTA-49997           | 0        | 19688068 |
| 20 | ARS-BFGL-NGS-18991              | 0        | 19710624 |
| 20 | Hapmap39836-BTA-50001           | 0        | 19757303 |
| 20 | Hapmap25816-BTA-134979          | 0        | 19792908 |
| 20 | ARS-BFGL-NGS-89742              | 0        | 19886708 |
| 20 | Hapmap28040-BTA-134983          | 0        | 19917959 |
| 20 | Hapmap49633-BTA-50009           | 0        | 19991233 |
| 20 | Hapmap33609-BTA-50013           | 0        | 20047780 |
| 20 | Hapmap46143-BTA-50023           | 0        | 20090288 |
| 20 | ARS-BFGL-NGS-38813              | 0        | 20256131 |
| 20 | Hapmap58153-rs29020764          | 0        | 20392520 |
| 20 | ARS-BFGL-NGS-110667             | 0        | 20431511 |
| 20 | ARS-BFGL-NGS-118577             | 0        | 20489335 |
| 20 | Hapmap34321-BES11_Contig492_674 | 0        | 20564659 |
| 20 | BTA-106532-no-rs                | 0        | 20585395 |
| 20 | Hapmap34052-BES5_Contig242_347  | 0        | 20764625 |
| 20 | Hapmap41764-BTA-118043          | 0        | 20796717 |
| 20 | ARS-BFGL-NGS-10870              | 20925820 |          |
| 20 | ARS-BFGL-NGS-33748              | 0        | 20974430 |
| 20 | ARS-BFGL-NGS-55928              | 0        | 21048672 |
| 20 | ARS-BFGL-NGS-78095              | 0        | 21073349 |
| 20 | Hapmap48634-BTA-118065          | 0        | 21107750 |
| 20 | Hapmap54326-rs29009836          | 0        | 21160226 |
| 20 | Hapmap48199-BTA-118079          | 0        | 21213044 |
| 20 | ARS-BFGL-NGS-119721             | 0        | 21322442 |
| 20 | ARS-BFGL-NGS-113813             | 0        | 21343153 |
| 20 | BTA-26345-no-rs                 | 0        | 21461148 |
| 20 | Hapmap26773-BTA-162886          | 0        | 21489104 |
| 20 | BTA-24401-no-rs                 | 0        | 21571500 |
| 20 | Hapmap41681-BTA-92164           | 0        | 21606396 |
| 20 | Hapmap24308-BTA-161294          | 0        | 21650376 |
| 20 | ARS-BFGL-NGS-20706              | 0        | 21674110 |
| 20 | ARS-BFGL-NGS-28884              | 0        | 21764593 |
| 20 | Hapmap25866-BTA-152370          | 0        | 21796393 |
| 20 | ARS-BFGL-NGS-90295              | 0        | 21859742 |
| 20 | ARS-BFGL-NGS-110975             | 0        | 21938158 |
| 20 | ARS-BFGL-NGS-32306              | 0        | 21967184 |
| 20 | ARS-BFGL-NGS-34923              | 0        | 22093001 |
| 20 | ARS-BFGL-NGS-59920              | 22114399 |          |

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| 20 | Hapmap39254-BTA-119282 | 0        | 22165165 |
| 20 | Hapmap43594-BTA-50052  | 0        | 22429967 |
| 20 | ARS-BFGL-BAC-35584     | 0        | 22542386 |
| 20 | Hapmap46111-BTA-95461  | 0        | 22575532 |
| 20 | Hapmap46226-BTA-50067  | 0        | 22598594 |
| 20 | Hapmap50712-BTA-50068  | 0        | 22641142 |
| 20 | BTA-95455-no-rs        | 0        | 22670366 |
| 20 | ARS-BFGL-NGS-22775     | 0        | 22698208 |
| 20 | ARS-BFGL-NGS-52704     | 0        | 22735390 |
| 20 | Hapmap22627-BTA-134992 | 0        | 22792603 |
| 20 | BTA-50044-no-rs        | 0        | 22823334 |
| 20 | ARS-BFGL-NGS-17077     | 0        | 22907088 |
| 20 | Hapmap49634-BTA-50049  | 0        | 22985128 |
| 20 | Hapmap54749-rs29013716 | 0        | 23029920 |
| 20 | ARS-BFGL-NGS-32310     | 23052519 |          |
| 20 | ARS-BFGL-NGS-51310     | 23085736 |          |
| 20 | ARS-BFGL-NGS-47493     | 0        | 23162992 |
| 20 | ARS-BFGL-NGS-118381    | 0        | 23201226 |
| 20 | ARS-BFGL-NGS-83738     | 0        | 23286971 |
| 20 | Hapmap57436-rs29017098 | 0        | 23308640 |
| 20 | Hapmap55628-rs29011426 | 0        | 23333568 |
| 20 | Hapmap47230-BTA-27297  | 0        | 23593803 |
| 20 | Hapmap48670-BTA-16740  | 0        | 23717482 |
| 20 | BTA-88011-no-rs        | 0        | 23843046 |
| 20 | BTA-88016-no-rs        | 0        | 23864571 |
| 20 | BTA-88001-no-rs        | 0        | 23886196 |
| 20 | Hapmap41393-BTA-96579  | 0        | 23991821 |
| 20 | Hapmap31141-BTA-150972 | 0        | 24031442 |
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| 20 | Hapmap46265-BTA-96586  | 0        | 24079007 |
| 20 | Hapmap54419-rs29027617 | 0        | 24108117 |
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| 20 | BTA-80343-no-rs        | 0        | 24445359 |
| 20 | Hapmap53329-rs29023196 | 0        | 24503970 |
| 20 | Hapmap48627-BTA-116578 | 0        | 24544146 |
| 20 | ARS-BFGL-NGS-108866    | 0        | 24587055 |
| 20 | Hapmap57997-rs29022923 | 0        | 24670287 |
| 20 | ARS-BFGL-NGS-30073     | 0        | 24697526 |
| 20 | Hapmap41280-BTA-50090  | 0        | 24744585 |
| 20 | BTA-50087-no-rs        | 0        | 24768085 |
| 20 | Hapmap53904-rs29027565 | 0        | 24797067 |
| 20 | ARS-BFGL-NGS-46387     | 0        | 24831468 |
| 20 | ARS-BFGL-NGS-113565    | 0        | 24861992 |
| 20 | ARS-BFGL-NGS-18978     | 0        | 24884879 |
| 20 | ARS-BFGL-NGS-89404     | 0        | 24910653 |
| 20 | BTA-50084-no-rs        | 0        | 24970604 |
| 20 | Hapmap43278-BTA-50082  | 0        | 25185940 |
| 20 | Hapmap48366-BTA-50080  | 0        | 25255282 |
| 20 | ARS-BFGL-NGS-107555    | 0        | 25296510 |
| 20 | ARS-BFGL-NGS-38132     | 0        | 25328769 |
| 20 | ARS-BFGL-NGS-93510     | 0        | 25429674 |

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| 20 | BTA-50076-no-rs                  | 0 | 25463818 |          |
| 20 | Hapmap56230-rs29025779           | 0 | 25535571 |          |
| 20 | ARS-BFGL-NGS-42157               | 0 | 25597446 |          |
| 20 | ARS-BFGL-NGS-42028               | 0 | 25643166 |          |
| 20 | ARS-BFGL-NGS-110286              | 0 | 25689084 |          |
| 20 | ARS-BFGL-NGS-107265              | 0 | 25760711 |          |
| 20 | ARS-BFGL-BAC-36198               | 0 | 25850728 |          |
| 20 | ARS-BFGL-NGS-20700               | 0 | 25952767 |          |
| 20 | ARS-BFGL-NGS-109046              | 0 | 26019855 |          |
| 20 | ARS-BFGL-NGS-14398               | 0 | 26302807 |          |
| 20 | ARS-BFGL-NGS-12319               | 0 | 26330033 |          |
| 20 | Hapmap35442-SCAFFOLD130042_46213 | 0 |          | 26362752 |
| 20 | ARS-BFGL-NGS-58033               | 0 | 26397183 |          |
| 20 | ARS-BFGL-NGS-100888              | 0 | 26560397 |          |
| 20 | ARS-BFGL-NGS-31361               | 0 | 26602523 |          |
| 20 | ARS-BFGL-NGS-86764               | 0 | 26629503 |          |
| 20 | Hapmap33504-BTA-154919           | 0 | 26733496 |          |
| 20 | Hapmap39752-BTA-50132            | 0 | 26917749 |          |
| 20 | BTA-50131-no-rs                  | 0 | 26942991 |          |
| 20 | Hapmap26391-BTA-135045           | 0 | 27170720 |          |
| 20 | BTA-50152-no-rs                  | 0 | 27257473 |          |
| 20 | ARS-BFGL-NGS-12870               |   | 27321645 |          |
| 20 | Hapmap43595-BTA-50145            | 0 | 27401701 |          |
| 20 | BTA-50144-no-rs                  | 0 | 27422842 |          |
| 20 | ARS-BFGL-BAC-36217               | 0 | 27503083 |          |
| 20 | Hapmap50988-BTA-50138            | 0 | 27531454 |          |
| 20 | Hapmap51687-BTA-114691           | 0 | 27659771 |          |
| 20 | ARS-BFGL-NGS-111823              | 0 | 27778071 |          |
| 20 | Hapmap50009-BTA-50200            | 0 | 27833489 |          |
| 20 | ARS-BFGL-BAC-36220               | 0 | 27928617 |          |
| 20 | ARS-BFGL-NGS-17586               | 0 | 27970417 |          |
| 20 | Hapmap51840-BTA-50193            | 0 | 27997551 |          |
| 20 | BTA-50190-no-rs                  | 0 | 28075415 |          |
| 20 | ARS-BFGL-NGS-54785               | 0 | 28148900 |          |
| 20 | Hapmap39753-BTA-50189            | 0 | 28186842 |          |
| 20 | Hapmap53513-rs29024419           | 0 | 28244515 |          |
| 20 | Hapmap50008-BTA-50183            | 0 | 28299434 |          |
| 20 | ARS-BFGL-NGS-31598               | 0 | 28329720 |          |
| 20 | ARS-BFGL-BAC-27914               | 0 | 28364284 |          |
| 20 | BTA-50178-no-rs                  | 0 | 28442075 |          |
| 20 | ARS-BFGL-BAC-27915               | 0 | 28463308 |          |
| 20 | ARS-BFGL-NGS-70916               | 0 | 28538251 |          |
| 20 | Hapmap51975-BTA-23912            | 0 | 28773049 |          |
| 20 | BTB-01328684                     | 0 | 28850177 |          |
| 20 | BTB-01328740                     | 0 | 28957856 |          |
| 20 | BTA-73449-no-rs                  | 0 | 29054106 |          |
| 20 | BTB-00216618                     | 0 | 29079176 |          |
| 20 | BTA-121669-no-rs                 | 0 | 29102840 |          |
| 20 | BTA-90616-no-rs                  | 0 | 29169941 |          |
| 20 | BTB-01122480                     | 0 | 29228376 |          |
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| 20 | ARS-BFGL-NGS-14378               | 0 | 29322034 |          |
| 20 | BTB-01122716                     | 0 | 29347831 |          |
| 20 | ARS-BFGL-BAC-27930               | 0 | 29373244 |          |

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| 20 | BTB-01122856           | 0        | 29416403 |
| 20 | BTB-01122883           | 0        | 29452652 |
| 20 | Hapmap23319-BTA-148981 | 0        | 29488341 |
| 20 | BTA-90636-no-rs        | 0        | 29545545 |
| 20 | ARS-BFGL-NGS-62570     | 0        | 29610780 |
| 20 | Hapmap39361-BTA-90642  | 0        | 29684981 |
| 20 | Hapmap32390-BTA-162568 | 0        | 29758994 |
| 20 | Hapmap40699-BTA-25160  | 0        | 29785475 |
| 20 | BTB-01336444           | 0        | 29803657 |
| 20 | BTA-25164-no-rs        | 0        | 29829314 |
| 20 | ARS-BFGL-NGS-96508     | 0        | 29899438 |
| 20 | ARS-BFGL-BAC-27933     | 0        | 29944792 |
| 20 | ARS-BFGL-NGS-16297     | 0        | 29998448 |
| 20 | Hapmap32374-BTA-158494 | 0        | 30031937 |
| 20 | Hapmap48202-BTA-118947 | 0        | 30079775 |
| 20 | ARS-BFGL-NGS-14616     | 0        | 30116920 |
| 20 | BTB-01538332           | 0        | 30161777 |
| 20 | ARS-BFGL-NGS-43307     | 0        | 30216498 |
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| 20 | Hapmap52697-rs29009635 | 0        | 30323691 |
| 20 | ARS-BFGL-NGS-49160     | 30359018 |          |
| 20 | Hapmap43714-BTA-86903  | 0        | 30398960 |
| 20 | Hapmap32133-BTA-159203 | 0        | 30625104 |
| 20 | Hapmap46550-BTA-103548 | 0        | 30928803 |
| 20 | BTA-103550-no-rs       | 0        | 31051302 |
| 20 | Hapmap59121-rs29022980 | 0        | 31085834 |
| 20 | Hapmap54258-rs29018641 | 0        | 31151035 |
| 20 | UA-IFASA-9183          | 0        | 31195125 |
| 20 | BTA-50161-no-rs        | 0        | 31293350 |
| 20 | ARS-BFGL-NGS-114946    | 0        | 31393193 |
| 20 | BTA-50225-no-rs        | 0        | 31443102 |
| 20 | Hapmap56889-rs29016097 | 0        | 31468943 |
| 20 | BTA-84181-no-rs        | 0        | 31552475 |
| 20 | Hapmap49340-BTA-84175  | 0        | 31568518 |
| 20 | ARS-BFGL-NGS-60692     | 0        | 31704692 |
| 20 | ARS-BFGL-NGS-74334     | 0        | 31752546 |
| 20 | ARS-BFGL-NGS-10108     | 0        | 31848979 |
| 20 | UA-IFASA-7069          | 0        | 31933394 |
| 20 | ARS-BFGL-NGS-118998    | 0        | 32030332 |
| 20 | ARS-BFGL-NGS-97963     | 0        | 32074342 |
| 20 | Hapmap47975-BTA-50226  | 0        | 32293167 |
| 20 | BTA-50232-no-rs        | 0        | 32360404 |
| 20 | Hapmap49198-BTA-50234  | 0        | 32399362 |
| 20 | ARS-BFGL-BAC-27941     | 0        | 32511430 |
| 20 | Hapmap39724-BTA-122305 | 0        | 32848645 |
| 20 | ARS-BFGL-NGS-89478     | 0        | 32878037 |
| 20 | ARS-BFGL-NGS-19906     | 0        | 32928278 |
| 20 | ARS-BFGL-NGS-18037     | 0        | 32970200 |
| 20 | BTB-01175381           | 0        | 33007835 |
| 20 | ARS-BFGL-NGS-97470     | 0        | 33048635 |
| 20 | ARS-BFGL-NGS-26979     | 0        | 33152115 |
| 20 | ARS-BFGL-BAC-27946     | 0        | 33223973 |
| 20 | BTA-113191-no-rs       | 0        | 33256096 |
| 20 | BTB-01220948           | 0        | 33285352 |

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| 20 | Hapmap39811-BTA-122745           | 0 | 33311925 |          |
| 20 | BTB-01888575                     | 0 | 33336375 |          |
| 20 | ARS-BFGL-NGS-95663               | 0 | 33367057 |          |
| 20 | Hapmap40070-BTA-50239            | 0 | 33409629 |          |
| 20 | ARS-BFGL-BAC-24690               |   | 33433160 |          |
| 20 | ARS-BFGL-NGS-76756               | 0 | 33491273 |          |
| 20 | ARS-BFGL-NGS-114772              | 0 | 33524321 |          |
| 20 | ARS-BFGL-NGS-26909               | 0 | 33551316 |          |
| 20 | ARS-BFGL-NGS-47808               | 0 | 33583067 |          |
| 20 | ARS-BFGL-NGS-44343               | 0 | 33641101 |          |
| 20 | Hapmap44649-BTA-50236            | 0 | 33709221 |          |
| 20 | BTA-50235-no-rs                  | 0 | 33731804 |          |
| 20 | ARS-BFGL-NGS-19878               | 0 | 33773531 |          |
| 20 | ARS-BFGL-NGS-13632               | 0 | 33852227 |          |
| 20 | Hapmap50583-BTA-117950           | 0 | 33898976 |          |
| 20 | Hapmap26456-BTA-158255           | 0 | 33942751 |          |
| 20 | BTB-00777571                     | 0 | 34017024 |          |
| 20 | Hapmap35679-SCAFFOLD165003_41555 | 0 |          | 34051201 |
| 20 | BTB-00777615                     | 0 | 34079970 |          |
| 20 | BTB-00777678                     | 0 | 34110282 |          |
| 20 | ARS-BFGL-NGS-94020               | 0 | 34158865 |          |
| 20 | Hapmap54938-rs29013720           | 0 | 34241862 |          |
| 20 | Hapmap50989-BTA-50241            | 0 | 34264853 |          |
| 20 | BTA-50244-no-rs                  | 0 | 34314015 |          |
| 20 | ARS-BFGL-NGS-32425               | 0 | 34343011 |          |
| 20 | BTB-01417672                     | 0 | 34367833 |          |
| 20 | ARS-BFGL-NGS-100724              | 0 | 34387298 |          |
| 20 | ARS-BFGL-NGS-116460              | 0 | 34416396 |          |
| 20 | BTA-50402-no-rs                  | 0 | 34451383 |          |
| 20 | BTA-50400-no-rs                  | 0 | 34474873 |          |
| 20 | BTB-00778960                     | 0 | 34499556 |          |
| 20 | Hapmap26466-BTA-160199           | 0 | 34576449 |          |
| 20 | ARS-BFGL-NGS-69521               | 0 | 34630543 |          |
| 20 | BTA-50386-no-rs                  | 0 | 34667591 |          |
| 20 | BTA-15204-no-rs                  | 0 | 34728244 |          |
| 20 | Hapmap44088-BTA-50383            | 0 | 34743583 |          |
| 20 | BTA-50376-no-rs                  | 0 | 34777599 |          |
| 20 | Hapmap57531-rs29013890           | 0 | 34817221 |          |
| 20 | BTB-00778473                     | 0 | 34876076 |          |
| 20 | BTB-00778405                     | 0 | 34902057 |          |
| 20 | Hapmap47027-BTA-50369            | 0 | 34928482 |          |
| 20 | ARS-BFGL-BAC-31754               | 0 | 34981347 |          |
| 20 | BTB-00778209                     | 0 | 35012179 |          |
| 20 | Hapmap23263-BTA-135112           | 0 | 35064475 |          |
| 20 | Hapmap49488-BTA-121277           | 0 | 35102203 |          |
| 20 | BTB-00778154                     | 0 | 35169183 |          |
| 20 | BTB-00778141                     | 0 | 35212987 |          |
| 20 | ARS-BFGL-NGS-34049               | 0 | 35249040 |          |
| 20 | Hapmap51735-BTA-50264            | 0 | 35334580 |          |
| 20 | ARS-BFGL-NGS-96692               | 0 | 35391012 |          |
| 20 | BTA-50263-no-rs                  | 0 | 35440215 |          |
| 20 | ARS-BFGL-NGS-38482               | 0 | 35479220 |          |
| 20 | BTB-00777979                     | 0 | 35511396 |          |
| 20 | ARS-BFGL-NGS-84088               | 0 | 35557902 |          |

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| 20 | BTA-50457-no-rs                       | 0 | 35595795 |   |          |
| 20 | Hapmap39660-BTA-50453                 | 0 | 35639448 |   |          |
| 20 | ARS-BFGL-NGS-34478                    | 0 | 35684389 |   |          |
| 20 | BTB-00779241                          | 0 | 35720280 |   |          |
| 20 | BTB-00780234                          | 0 | 35775455 |   |          |
| 20 | BTA-01966-rs29012919                  | 0 | 35812416 |   |          |
| 20 | Hapmap45498-BTA-50448                 | 0 | 35888849 |   |          |
| 20 | Hapmap53327-rs29023104                | 0 | 35912418 |   |          |
| 20 | BTB-00779848                          | 0 | 35940949 |   |          |
| 20 | Hapmap52690-ss46526609                | 0 | 35973199 |   |          |
| 20 | BTA-50420-no-rs                       | 0 | 36067867 |   |          |
| 20 | Hapmap40359-BTA-50418                 | 0 | 36097136 |   |          |
| 20 | BTB-01912756                          | 0 | 36152608 |   |          |
| 20 | Hapmap24145-BTA-135146                | 0 | 36197585 |   |          |
| 20 | ARS-BFGL-NGS-98321                    | 0 | 36240997 |   |          |
| 20 | ARS-BFGL-NGS-13317                    | 0 | 36290931 |   |          |
| 20 | ARS-BFGL-NGS-11884                    | 0 | 36311419 |   |          |
| 20 | BTA-50482-no-rs                       | 0 | 36336225 |   |          |
| 20 | ARS-BFGL-NGS-63936                    | 0 | 36364496 |   |          |
| 20 | ARS-BFGL-NGS-116806                   | 0 | 36450009 |   |          |
| 20 | ARS-BFGL-NGS-28600                    |   | 36513431 |   |          |
| 20 | ARS-BFGL-NGS-14031                    | 0 | 36561330 |   |          |
| 20 | ARS-USMARC-Parent-DQ990835-rs29012811 |   |          | 0 | 36570529 |
| 20 | Hapmap36238-SCAFFOLD6393_4411         |   | 0        |   | 36589334 |
| 20 | ARS-BFGL-NGS-37317                    | 0 | 36613401 |   |          |
| 20 | ARS-BFGL-NGS-22355                    | 0 | 36674340 |   |          |
| 20 | Hapmap51600-BTA-50467                 | 0 | 36710965 |   |          |
| 20 | BTB-00780480                          | 0 | 36757600 |   |          |
| 20 | BTA-115321-no-rs                      | 0 | 36840675 |   |          |
| 20 | BTA-50525-no-rs                       | 0 | 36917645 |   |          |
| 20 | BTB-00782061                          | 0 | 36957716 |   |          |
| 20 | Hapmap27583-BTA-135160                | 0 | 37024303 |   |          |
| 20 | ARS-BFGL-NGS-29468                    | 0 | 37066726 |   |          |
| 20 | BTB-00781976                          | 0 | 37119771 |   |          |
| 20 | Hapmap53150-ss46526297                | 0 | 37173538 |   |          |
| 20 | Hapmap50011-BTA-50535                 | 0 | 37237425 |   |          |
| 20 | BTB-00782435                          | 0 | 37264477 |   |          |
| 20 | BTA-13793-rs29018751                  | 0 | 37297072 |   |          |
| 20 | BTA-50529-no-rs                       | 0 | 37333000 |   |          |
| 20 | BTB-01842107                          | 0 | 37374576 |   |          |
| 20 | Hapmap53888-rs29021190                | 0 | 37412305 |   |          |
| 20 | INRA-620                              | 0 | 37440474 |   |          |
| 20 | Hapmap38412-BTA-50496                 | 0 | 37468100 |   |          |
| 20 | Hapmap53199-rs29014437                | 0 | 37498331 |   |          |
| 20 | ARS-BFGL-NGS-111420                   | 0 | 37553988 |   |          |
| 20 | Hapmap57276-ss46526009                | 0 | 37596667 |   |          |
| 20 | Hapmap42572-BTA-50505                 | 0 | 37630456 |   |          |
| 20 | BTA-50515-no-rs                       | 0 | 37721846 |   |          |
| 20 | BTB-00781699                          | 0 | 37777328 |   |          |
| 20 | BTB-01888691                          | 0 | 37808047 |   |          |
| 20 | ARS-BFGL-NGS-54300                    |   | 37838938 |   |          |
| 20 | BTB-01566038                          | 0 | 37891152 |   |          |
| 20 | BTB-01565998                          | 0 | 37915840 |   |          |
| 20 | Hapmap49835-BTA-104494                | 0 | 37939597 |   |          |



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| 20 | Hapmap49011-BTA-107796 | 0 | 38008347 |
| 20 | BTA-107810-no-rs       | 0 | 38034106 |
| 20 | ARS-BFGL-NGS-73952     | 0 | 38059359 |
| 20 | BTA-107791-no-rs       | 0 | 38108826 |
| 20 | BTB-01189780           | 0 | 38139761 |
| 20 | BTA-107792-no-rs       | 0 | 38192514 |
| 20 | BTB-01189862           | 0 | 38223488 |
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| 20 | ARS-BFGL-NGS-38574     | 0 | 38291179 |
| 20 | BTB-01189922           | 0 | 38341293 |
| 20 | ARS-BFGL-NGS-91540     | 0 | 38397256 |
| 20 | ARS-BFGL-BAC-33053     | 0 | 38429784 |
| 20 | BTB-01189967           | 0 | 38453649 |
| 20 | BTB-01423653           | 0 | 38578200 |
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| 20 | BTB-01423688           | 0 | 38675350 |
| 20 | Hapmap30570-BTA-152778 | 0 | 38761711 |
| 20 | BTB-01163568           | 0 | 38794140 |
| 20 | BTB-01163526           | 0 | 38815873 |
| 20 | Hapmap42161-BTA-26363  | 0 | 38892683 |
| 20 | BTA-92644-no-rs        | 0 | 38920878 |
| 20 | ARS-BFGL-NGS-44135     | 0 | 38960231 |
| 20 | ARS-BFGL-NGS-44900     |   | 38989299 |
| 20 | ARS-BFGL-NGS-17676     | 0 | 39017985 |
| 20 | BTB-01163430           | 0 | 39046015 |
| 20 | ARS-BFGL-NGS-13426     | 0 | 39071965 |
| 20 | ARS-BFGL-NGS-116981    | 0 | 39100174 |
| 20 | ARS-BFGL-NGS-59366     | 0 | 39141815 |
| 20 | ARS-BFGL-NGS-109874    | 0 | 39194261 |
| 20 | ARS-BFGL-NGS-115190    | 0 | 39218755 |
| 20 | ARS-BFGL-NGS-111218    | 0 | 39242226 |
| 20 | ARS-BFGL-NGS-65409     | 0 | 39275917 |
| 20 | ARS-BFGL-NGS-93652     | 0 | 39326031 |
| 20 | BTA-110053-no-rs       | 0 | 39350230 |
| 20 | Hapmap31493-BTA-155702 | 0 | 39404717 |
| 20 | ARS-BFGL-BAC-34879     | 0 | 39422828 |
| 20 | ARS-BFGL-NGS-36606     | 0 | 39484887 |
| 20 | BTA-102910-no-rs       | 0 | 39509383 |
| 20 | Hapmap42401-BTA-102906 | 0 | 39538676 |
| 20 | BTB-01898603           | 0 | 39576637 |
| 20 | Hapmap42362-BTA-91666  | 0 | 39625124 |
| 20 | BTB-01727492           | 0 | 39658427 |
| 20 | ARS-BFGL-NGS-14869     | 0 | 39691234 |
| 20 | Hapmap47541-BTA-22031  | 0 | 39727100 |
| 20 | ARS-BFGL-NGS-73590     | 0 | 39761822 |
| 20 | ARS-BFGL-NGS-55739     | 0 | 39787788 |
| 20 | ARS-BFGL-NGS-42798     | 0 | 39850503 |
| 20 | ARS-BFGL-BAC-35519     | 0 | 39878312 |
| 20 | BTA-50559-no-rs        | 0 | 39902763 |
| 20 | ARS-BFGL-NGS-117457    | 0 | 39927454 |
| 20 | ARS-BFGL-BAC-27243     | 0 | 39950657 |
| 20 | ARS-BFGL-NGS-103261    | 0 | 40004925 |
| 20 | ARS-BFGL-NGS-41834     | 0 | 40035916 |
| 20 | BTA-115200-no-rs       | 0 | 40069198 |

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| 20 | ARS-BFGL-NGS-44763             | 0 | 40100111 |  |
| 20 | ARS-BFGL-NGS-20739             | 0 | 40145270 |  |
| 20 | ARS-BFGL-BAC-33668             | 0 | 40301530 |  |
| 20 | Hapmap40739-BTA-44919          | 0 | 40329484 |  |
| 20 | Hapmap39921-BTA-44918          | 0 | 40384206 |  |
| 20 | BTA-44917-no-rs                | 0 | 40437346 |  |
| 20 | BTA-122062-no-rs               | 0 | 40483248 |  |
| 20 | ARS-BFGL-NGS-56135             | 0 | 40592909 |  |
| 20 | ARS-BFGL-NGS-26986             | 0 | 40666822 |  |
| 20 | BTB-01410122                   | 0 | 40728408 |  |
| 20 | Hapmap26422-BTA-148751         | 0 | 40754324 |  |
| 20 | ARS-BFGL-NGS-53851             | 0 | 40799554 |  |
| 20 | Hapmap47213-BTA-19985          | 0 | 40831029 |  |
| 20 | ARS-BFGL-NGS-50922             | 0 | 40852304 |  |
| 20 | BTA-110775-no-rs               | 0 | 40879412 |  |
| 20 | ARS-BFGL-NGS-20488             | 0 | 40960672 |  |
| 20 | ARS-BFGL-NGS-68808             | 0 | 40986540 |  |
| 20 | ARS-BFGL-NGS-97267             | 0 | 41016884 |  |
| 20 | ARS-BFGL-NGS-33592             | 0 | 41043205 |  |
| 20 | ARS-BFGL-NGS-63070             | 0 | 41072335 |  |
| 20 | BTB-00783355                   | 0 | 41124297 |  |
| 20 | Hapmap43599-BTA-50578          | 0 | 41158406 |  |
| 20 | BTB-00783271                   | 0 | 41201777 |  |
| 20 | ARS-BFGL-NGS-78613             | 0 | 41239866 |  |
| 20 | BTB-00783208                   | 0 | 41331921 |  |
| 20 | BTB-01913569                   | 0 | 41368301 |  |
| 20 | BTB-00918000                   | 0 | 41411040 |  |
| 20 | ARS-BFGL-NGS-20427             | 0 | 41447098 |  |
| 20 | ARS-BFGL-NGS-97482             | 0 | 41478242 |  |
| 20 | ARS-BFGL-BAC-33670             | 0 | 41524528 |  |
| 20 | Hapmap39837-BTA-50597          | 0 | 41596325 |  |
| 20 | ARS-BFGL-BAC-33672             | 0 | 41652239 |  |
| 20 | Hapmap25818-BTA-135194         | 0 | 41674288 |  |
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| 20 | ARS-BFGL-NGS-114097            | 0 | 41742228 |  |
| 20 | Hapmap51736-BTA-50602          | 0 | 41777888 |  |
| 20 | BTA-50605-no-rs                | 0 | 41855415 |  |
| 20 | ARS-BFGL-NGS-42065             | 0 | 41877599 |  |
| 20 | ARS-BFGL-NGS-87790             | 0 | 41914276 |  |
| 20 | ARS-BFGL-NGS-114295            | 0 | 41936114 |  |
| 20 | BTB-00783964                   | 0 | 41985272 |  |
| 20 | ARS-BFGL-NGS-19230             | 0 | 42153578 |  |
| 20 | Hapmap35044-BES8_Contig309_741 | 0 | 42174731 |  |
| 20 | Hapmap42236-BTA-50618          | 0 | 42195463 |  |
| 20 | BTB-00784141                   | 0 | 42272251 |  |
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| 20 | BTB-01263022                   | 0 | 42835851 |  |
| 20 | Hapmap55998-rs29018913         | 0 | 42868638 |  |

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| 20 | ARS-BFGL-NGS-19469              | 0 | 42937884 |          |
| 20 | BTB-01263230                    | 0 | 43004103 |          |
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| 20 | BTA-50635-no-rs                 | 0 | 43243387 |          |
| 20 | BTB-02082151                    | 0 | 43289855 |          |
| 20 | BTB-00784317                    | 0 | 43313427 |          |
| 20 | Hapmap42237-BTA-50641           | 0 | 43343539 |          |
| 20 | BTB-00784470                    | 0 | 43381899 |          |
| 20 | BTB-02019272                    | 0 | 43418343 |          |
| 20 | Hapmap26424-BTA-149429          | 0 | 43453092 |          |
| 20 | Hapmap51988-BTA-92052           | 0 | 43489592 |          |
| 20 | ARS-BFGL-BAC-34877              | 0 | 43511650 |          |
| 20 | BTA-92047-no-rs                 | 0 | 43535043 |          |
| 20 | ARS-BFGL-BAC-33692              | 0 | 43568636 |          |
| 20 | BTA-92057-no-rs                 | 0 | 43589165 |          |
| 20 | BTA-92055-no-rs                 | 0 | 43612963 |          |
| 20 | BTB-01424374                    | 0 | 43651941 |          |
| 20 | ARS-BFGL-NGS-98332              | 0 | 43757926 |          |
| 20 | BTB-01441367                    | 0 | 43912903 |          |
| 20 | BTB-01441411                    | 0 | 43963943 |          |
| 20 | Hapmap28978-BTA-149870          | 0 | 44040879 |          |
| 20 | BTB-01441573                    | 0 | 44077306 |          |
| 20 | ARS-BFGL-NGS-43593              | 0 | 44188479 |          |
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| 20 | Hapmap48794-BTA-50650           | 0 | 44381243 |          |
| 20 | Hapmap32561-BTA-135198          | 0 | 44414152 |          |
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| 20 | BTB-00785107                    | 0 | 44473618 |          |
| 20 | Hapmap43281-BTA-50657           | 0 | 44498518 |          |
| 20 | BTA-50669-no-rs                 | 0 | 44546300 |          |
| 20 | BTA-50676-no-rs                 | 0 | 44694564 |          |
| 20 | BTB-00785568                    | 0 | 44804131 |          |
| 20 | ARS-BFGL-BAC-27254              | 0 | 44861949 |          |
| 20 | ARS-BFGL-NGS-35315              | 0 | 44892168 |          |
| 20 | BTA-10117-rs29015683            | 0 | 44916116 |          |
| 20 | ARS-BFGL-BAC-27249              | 0 | 44950378 |          |
| 20 | Hapmap22811-BTA-159298          | 0 | 44963022 |          |
| 20 | BTB-01785140                    | 0 | 44991729 |          |
| 20 | Hapmap34646-BES7_Contig376_1523 | 0 |          | 45021128 |
| 20 | BTB-02080594                    | 0 | 45052283 |          |
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| 20 | Hapmap27368-BTA-110209          | 0 | 45192358 |          |
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| 20 | BTB-01942525                    | 0 | 45323325 |          |
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| 20 | Hapmap35695-SCAFFOLD130061_3178 | 0 |          | 45456425 |
| 20 | BTB-00785673                    | 0 | 45531922 |          |

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| 20 | Hapmap51381-BTA-107547                | 0 | 45641383 |   |          |
| 20 | ARS-BFGL-NGS-37203                    | 0 | 45677276 |   |          |
| 20 | Hapmap32803-BTA-135212                | 0 | 45734507 |   |          |
| 20 | BTB-00785931                          | 0 | 45775101 |   |          |
| 20 | Hapmap43873-BTA-50695                 | 0 | 45819524 |   |          |
| 20 | ARS-BFGL-NGS-57668                    | 0 | 45887870 |   |          |
| 20 | BTA-119412-no-rs                      | 0 | 45940447 |   |          |
| 20 | BTB-01763089                          | 0 | 45966446 |   |          |
| 20 | Hapmap58446-rs29021863                | 0 | 45994678 |   |          |
| 20 | BTB-00786292                          | 0 | 46035562 |   |          |
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| 20 | BTA-123538-no-rs                      | 0 | 46121445 |   |          |
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| 20 | BTB-00786048                          | 0 | 46179978 |   |          |
| 20 | BTA-50683-no-rs                       | 0 | 46209952 |   |          |
| 20 | ARS-BFGL-BAC-32350                    | 0 | 46272249 |   |          |
| 20 | Hapmap43208-BTA-22429                 | 0 | 46296840 |   |          |
| 20 | BTA-50697-no-rs                       | 0 | 46346416 |   |          |
| 20 | BTA-50702-no-rs                       | 0 | 46405056 |   |          |
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| 20 | Hapmap52273-rs29016521                | 0 | 46555323 |   |          |
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| 20 | ARS-BFGL-BAC-32352                    | 0 | 46639197 |   |          |
| 20 | Hapmap51592-BTA-41521                 | 0 | 46709345 |   |          |
| 20 | BTB-00041743                          | 0 | 46735404 |   |          |
| 20 | Hapmap39563-BTA-41519                 | 0 | 46787179 |   |          |
| 20 | Hapmap35236-BES3_Contig374_812        | 0 | 46812147 | 0 | 46812147 |
| 20 | BTA-17135-no-rs                       | 0 | 46834806 |   |          |
| 20 | BTA-41516-no-rs                       | 0 | 46869946 |   |          |
| 20 | BTB-00041403                          | 0 | 46900120 |   |          |
| 20 | Hapmap36599-SCAFFOLD120897_8821       | 0 | 46941646 | 0 | 46941646 |
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| 20 | BTA-41513-no-rs                       | 0 | 47056652 |   |          |
| 20 | ARS-BFGL-BAC-32359                    | 0 | 47096473 |   |          |
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| 20 | Hapmap42141-BTA-22618                 | 0 | 47169145 |   |          |
| 20 | BTB-01951543                          | 0 | 47192877 |   |          |
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| 20 | ARS-BFGL-NGS-85369                    | 0 | 47410881 |   |          |
| 20 | BTA-93424-no-rs                       | 0 | 47448017 |   |          |
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| 20 | Hapmap24441-BTA-118024                | 0 | 47542648 |   |          |
| 20 | BTA-93427-no-rs                       | 0 | 47570723 |   |          |
| 20 | BTB-01251535                          | 0 | 47626484 |   |          |
| 20 | ARS-BFGL-BAC-24540                    | 0 | 47664349 |   |          |
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| 20 | BTA-27302-no-rs                       | 0 | 47750656 |   |          |
| 20 | ARS-BFGL-BAC-32364                    | 0 | 47813523 |   |          |
| 20 | Hapmap54884-rs29017180                | 0 | 47839336 |   |          |
| 20 | BTB-00411617                          | 0 | 47892261 |   |          |
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| 20 | Hapmap26766-BTA-161730           | 0 | 48046246 |          |
| 20 | Hapmap47815-BTA-104066           | 0 | 48114351 |          |
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| 20 | ARS-BFGL-NGS-100197              | 0 | 48450702 |          |
| 20 | BTA-91483-no-rs                  | 0 | 48510710 |          |
| 20 | Hapmap36591-SCAFFOLD270550_10562 | 0 |          | 48655169 |
| 20 | BTA-50728-no-rs                  | 0 | 48749320 |          |
| 20 | Hapmap61109-rs29012067           | 0 | 48772205 |          |
| 20 | ARS-BFGL-NGS-65952               | 0 | 48821406 |          |
| 20 | ARS-BFGL-NGS-116076              | 0 | 48903795 |          |
| 20 | ARS-BFGL-NGS-59274               | 0 | 48937082 |          |
| 20 | Hapmap49201-BTA-50716            | 0 | 48980000 |          |
| 20 | Hapmap46285-BTA-121281           | 0 | 49029369 |          |
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| 20 | ARS-BFGL-NGS-101678              | 0 | 49111029 |          |
| 20 | BTA-50707-no-rs                  | 0 | 49149560 |          |
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| 20 | Hapmap55468-rs29016426           | 0 | 49251437 |          |
| 20 | BTB-01045774                     | 0 | 49339693 |          |
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| 20 | BTB-01953992                     | 0 | 49529972 |          |
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| 20 | ARS-BFGL-BAC-32381               | 0 | 49778758 |          |
| 20 | Hapmap48608-BTA-111028           | 0 | 49810675 |          |
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| 20 | ARS-BFGL-NGS-115238              | 0 | 49916075 |          |
| 20 | Hapmap42428-BTA-111118           | 0 | 49959672 |          |
| 20 | Hapmap33054-BTA-156049           | 0 | 50001881 |          |
| 20 | BTB-01529431                     | 0 | 50044555 |          |
| 20 | ARS-BFGL-NGS-31163               | 0 | 50086666 |          |
| 20 | BTB-01529366                     | 0 | 50128719 |          |
| 20 | BTB-01930212                     | 0 | 50165576 |          |
| 20 | BTB-01988839                     | 0 | 50197562 |          |
| 20 | BTB-01298102                     | 0 | 50265235 |          |
| 20 | BTA-111516-no-rs                 | 0 | 50347483 |          |
| 20 | UA-IFASA-2994                    | 0 | 50407500 |          |
| 20 | Hapmap54729-rs29023630           | 0 | 50443672 |          |
| 20 | Hapmap59835-rs29021824           | 0 | 50609613 |          |
| 20 | Hapmap50993-BTA-50781            | 0 | 50676182 |          |
| 20 | Hapmap47647-BTA-50780            | 0 | 50718981 |          |
| 20 | Hapmap42573-BTA-50774            | 0 | 50793792 |          |
| 20 | ARS-BFGL-NGS-113078              | 0 | 50828117 |          |
| 20 | ARS-BFGL-NGS-116034              | 0 | 50885247 |          |
| 20 | Hapmap39571-BTA-50761            | 0 | 50935019 |          |
| 20 | BTB-00787483                     | 0 | 50969848 |          |

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| 20 | Hapmap32669-BTA-50759  | 0 | 50999239 |
| 20 | BTB-00787417           | 0 | 51044020 |
| 20 | ARS-BFGL-NGS-111676    | 0 | 51073910 |
| 20 | ARS-BFGL-NGS-70574     | 0 | 51118749 |
| 20 | BTB-00787333           | 0 | 51143018 |
| 20 | ARS-BFGL-NGS-21662     | 0 | 51174970 |
| 20 | BTA-50740-no-rs        | 0 | 51205535 |
| 20 | BTB-00787258           | 0 | 51246922 |
| 20 | BTB-00787244           | 0 | 51280632 |
| 20 | BTB-00787214           | 0 | 51314617 |
| 20 | Hapmap38413-BTA-50732  | 0 | 51394928 |
| 20 | BTB-00787134           | 0 | 51422910 |
| 20 | BTB-00787104           | 0 | 51449833 |
| 20 | BTB-00787024           | 0 | 51480878 |
| 20 | Hapmap52570-rs29024651 | 0 | 51511878 |
| 20 | BTA-24296-no-rs        | 0 | 51537785 |
| 20 | BTA-19680-no-rs        | 0 | 51569900 |
| 20 | BTB-01474881           | 0 | 51646555 |
| 20 | BTB-01474917           | 0 | 51685293 |
| 20 | ARS-BFGL-NGS-79994     | 0 | 51732785 |
| 20 | ARS-BFGL-BAC-34291     | 0 | 51817120 |
| 20 | BTB-01475042           | 0 | 51845309 |
| 20 | BTA-19096-no-rs        | 0 | 51870516 |
| 20 | BTB-01603303           | 0 | 51940977 |
| 20 | BTA-107123-no-rs       | 0 | 51970252 |
| 20 | BTB-01748945           | 0 | 52011466 |
| 20 | Hapmap56784-rs29012419 | 0 | 52124199 |
| 20 | BTB-01132138           | 0 | 52183095 |
| 20 | BTB-02040655           | 0 | 52271324 |
| 20 | Hapmap26426-BTA-150179 | 0 | 52398914 |
| 20 | BTB-01216169           | 0 | 52674980 |
| 20 | BTA-112190-no-rs       | 0 | 52738182 |
| 20 | BTA-112164-no-rs       | 0 | 52777079 |
| 20 | ARS-BFGL-NGS-51112     | 0 | 52816141 |
| 20 | Hapmap42429-BTA-112171 | 0 | 52840239 |
| 20 | BTB-01216319           | 0 | 52897607 |
| 20 | BTB-01554875           | 0 | 53005335 |
| 20 | BTA-103488-no-rs       | 0 | 53043151 |
| 20 | Hapmap24428-BTA-112183 | 0 | 53097198 |
| 20 | Hapmap46554-BTA-114653 | 0 | 53138554 |
| 20 | Hapmap24011-BTA-157059 | 0 | 53171907 |
| 20 | BTB-01699837           | 0 | 53201978 |
| 20 | ARS-BFGL-NGS-63553     | 0 | 53256617 |
| 20 | Hapmap53927-rs29025287 | 0 | 53303717 |
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| 20 | ARS-BFGL-NGS-100674    | 0 | 53364573 |
| 20 | BTA-50788-no-rs        | 0 | 53387524 |
| 20 | UA-IFASA-4131          | 0 | 53424203 |
| 20 | Hapmap52456-rs29021984 | 0 | 53449585 |
| 20 | Hapmap40003-BTA-50839  | 0 | 53483157 |
| 20 | ARS-BFGL-NGS-21193     | 0 | 53493724 |
| 20 | BTB-00788976           | 0 | 53521282 |
| 20 | ARS-BFGL-NGS-95328     | 0 | 53549515 |
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| 20 | Hapmap46144-BTA-50802            | 0 | 53604827 |          |
| 20 | ARS-BFGL-NGS-114719              | 0 | 53635068 |          |
| 20 | BTA-50817-no-rs                  | 0 | 53674655 |          |
| 20 | Hapmap51737-BTA-50812            | 0 | 53757088 |          |
| 20 | BTB-00788635                     | 0 | 53798275 |          |
| 20 | ARS-BFGL-NGS-100519              | 0 | 53855915 |          |
| 20 | BTB-00788621                     | 0 | 53906202 |          |
| 20 | Hapmap34886-BES10_Contig414_1241 | 0 |          | 53957730 |
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| 20 | BTB-01435027                     | 0 | 54052768 |          |
| 20 | BTA-116325-no-rs                 | 0 | 54060327 |          |
| 20 | Hapmap50012-BTA-50809            | 0 | 54131278 |          |
| 20 | ARS-BFGL-NGS-65037               | 0 | 54151869 |          |
| 20 | Hapmap57243-rs29018206           | 0 | 54180787 |          |
| 20 | BTB-00788444                     | 0 | 54205661 |          |
| 20 | BTA-92600-no-rs                  | 0 | 54239646 |          |
| 20 | BTB-01127511                     | 0 | 54270689 |          |
| 20 | BTB-02058060                     | 0 | 54329189 |          |
| 20 | ARS-BFGL-NGS-38569               | 0 | 54337360 |          |
| 20 | Hapmap42355-BTA-89603            | 0 | 54358268 |          |
| 20 | BTA-89598-no-rs                  | 0 | 54379575 |          |
| 20 | BTA-89573-no-rs                  | 0 | 54443531 |          |
| 20 | BTB-01127950                     | 0 | 54470397 |          |
| 20 | BTB-02043848                     | 0 | 54507750 |          |
| 20 | BTB-01128208                     | 0 | 54586441 |          |
| 20 | BTB-01128234                     | 0 | 54630287 |          |
| 20 | BTA-92605-no-rs                  | 0 | 54722469 |          |
| 20 | BTA-92608-no-rs                  | 0 | 54754012 |          |
| 20 | ARS-BFGL-BAC-32379               | 0 | 54785723 |          |
| 20 | BTA-17143-no-rs                  | 0 | 54888277 |          |
| 20 | Hapmap61091-rs29015324           | 0 | 54915924 |          |
| 20 | BTB-01281598                     | 0 | 54965589 |          |
| 20 | BTB-01281578                     | 0 | 55033584 |          |
| 20 | ARS-BFGL-NGS-21992               | 0 | 55083143 |          |
| 20 | BTB-01281500                     | 0 | 55130918 |          |
| 20 | ARS-BFGL-NGS-115498              | 0 | 55238902 |          |
| 20 | Hapmap59548-rs29015794           | 0 | 55276362 |          |
| 20 | Hapmap38444-BTA-88690            | 0 | 55306754 |          |
| 20 | BTA-91632-no-rs                  | 0 | 55372193 |          |
| 20 | ARS-BFGL-BAC-36842               | 0 | 55395520 |          |
| 20 | BTB-01583562                     | 0 | 55425112 |          |
| 20 | BTB-01583544                     | 0 | 55451072 |          |
| 20 | BTB-01705150                     | 0 | 55554731 |          |
| 20 | Hapmap35564-SCAFFOLD115952_737   | 0 |          | 55585694 |
| 20 | BTB-01304704                     | 0 | 55640082 |          |
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| 20 | BTB-01305017                     | 0 | 55865295 |          |
| 20 | ARS-BFGL-NGS-58915               | 0 | 55895768 |          |
| 20 | UA-IFASA-3102                    | 0 | 55940115 |          |
| 20 | Hapmap26756-BTA-159199           | 0 | 55992767 |          |
| 20 | ARS-BFGL-NGS-55465               | 0 | 56035015 |          |
| 20 | ARS-BFGL-NGS-61945               | 0 | 56061960 |          |

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| 20 | Hapmap39386-BTA-15643  | 0 | 56088253 |
| 20 | Hapmap38939-BTA-15642  | 0 | 56118820 |
| 20 | BTA-15641-no-rs        | 0 | 56161783 |
| 20 | Hapmap43377-BTA-85612  | 0 | 56196291 |
| 20 | ARS-BFGL-NGS-110428    | 0 | 56291700 |
| 20 | ARS-BFGL-NGS-87595     | 0 | 56327706 |
| 20 | ARS-BFGL-NGS-67171     | 0 | 56351713 |
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| 20 | ARS-BFGL-NGS-20692     | 0 | 56438458 |
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| 20 | ARS-BFGL-NGS-46949     | 0 | 56609171 |
| 20 | ARS-BFGL-NGS-115587    | 0 | 56662612 |
| 20 | BTA-50848-no-rs        | 0 | 56685563 |
| 20 | ARS-BFGL-NGS-38258     | 0 | 56721394 |
| 20 | BTA-50852-no-rs        | 0 | 56743148 |
| 20 | Hapmap49203-BTA-50855  | 0 | 56789221 |
| 20 | BTA-91589-no-rs        | 0 | 56824862 |
| 20 | BTA-50861-no-rs        | 0 | 56867611 |
| 20 | Hapmap29985-BTA-135269 | 0 | 56869138 |
| 20 | Hapmap51244-BTA-50863  | 0 | 56920873 |
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| 20 | ARS-BFGL-NGS-16728     | 0 | 58071204 |
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| 20 | Hapmap38462-BTA-110556 | 0 | 58292591 |



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| 20 | ARS-BFGL-NGS-110091    | 0 58362004 |
| 20 | ARS-BFGL-NGS-111931    | 0 58405641 |
| 20 | ARS-BFGL-NGS-96125     | 0 58449212 |
| 20 | ARS-BFGL-NGS-20531     | 0 58485605 |
| 20 | ARS-BFGL-NGS-41120     | 58555348   |
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| 20 | ARS-BFGL-NGS-79670     | 58758614   |
| 20 | Hapmap49205-BTA-50954  | 0 58812864 |
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| 20 | ARS-BFGL-NGS-71622     | 0 58928800 |
| 20 | BTA-50951-no-rs 0      | 58950986   |
| 20 | ARS-BFGL-NGS-42567     | 0 58976616 |
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| 20 | ARS-BFGL-NGS-22216     | 0 59182687 |
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| 20 | Hapmap27745-BTA-135285 | 0 59371309 |
| 20 | ARS-BFGL-NGS-119072    | 0 59419115 |
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| 20 | ARS-BFGL-NGS-55956     | 0 59881131 |
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| 20 | BTB-01341164 0         | 60473408   |
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| 20 | BTB-01899482 0         | 60928704   |
| 20 | ARS-BFGL-BAC-34303     | 0 60954990 |
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| 20 | ARS-BFGL-NGS-115561    | 0 | 61280458 |
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| 20 | ARS-BFGL-NGS-85952     | 0 | 61368103 |
| 20 | BTB-00793802           | 0 | 61402228 |
| 20 | ARS-BFGL-NGS-24454     | 0 | 61432368 |
| 20 | Hapmap51796-BTA-107866 | 0 | 61477070 |
| 20 | BTA-13506-no-rs        | 0 | 61537001 |
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| 20 | ARS-BFGL-NGS-15533     | 0 | 61609342 |
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| 20 | Hapmap43601-BTA-50976  | 0 | 61704855 |
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| 20 | Hapmap48221-BTA-122033 | 0 | 62315478 |
| 20 | ARS-BFGL-NGS-117915    | 0 | 62337862 |
| 20 | Hapmap22706-BTA-135322 | 0 | 62374679 |
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| 20 | ARS-BFGL-NGS-69163     | 0 | 62537847 |
| 20 | ARS-BFGL-BAC-36223     | 0 | 62565157 |
| 20 | ARS-BFGL-NGS-33139     | 0 | 62593419 |
| 20 | ARS-BFGL-NGS-112060    | 0 | 62654400 |
| 20 | BTB-01723725           | 0 | 62736738 |
| 20 | ARS-BFGL-NGS-81898     | 0 | 62787912 |
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| 20 | Hapmap39839-BTA-51097  | 0 | 62884939 |
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| 20 | ARS-BFGL-NGS-25660     | 0 | 63026296 |
| 20 | ARS-BFGL-NGS-32105     | 0 | 63046913 |
| 20 | ARS-BFGL-NGS-17058     | 0 | 63083721 |
| 20 | Hapmap48796-BTA-51083  | 0 | 63120443 |
| 20 | ARS-BFGL-NGS-104203    | 0 | 63185279 |
| 20 | ARS-BFGL-NGS-112417    | 0 | 63211629 |

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| 20 | ARS-BFGL-NGS-37649     | 0 | 63263674 |
| 20 | BTB-01138585           | 0 | 63294438 |
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| 20 | ARS-BFGL-NGS-118815    | 0 | 63499477 |
| 20 | BTA-96274-no-rs        | 0 | 63519841 |
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| 20 | Hapmap60255-rs29015880 | 0 | 63639995 |
| 20 | Hapmap40095-BTA-96280  | 0 | 63702307 |
| 20 | ARS-BFGL-NGS-110376    | 0 | 63739292 |
| 20 | ARS-BFGL-NGS-40385     | 0 | 63771728 |
| 20 | Hapmap38992-BTA-96283  | 0 | 63795631 |
| 20 | ARS-BFGL-NGS-112425    | 0 | 63832437 |
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| 20 | Hapmap39838-BTA-51076  | 0 | 63925955 |
| 20 | ARS-BFGL-NGS-79911     | 0 | 63976922 |
| 20 | ARS-BFGL-NGS-22583     | 0 | 64002006 |
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| 20 | BTB-00795527           | 0 | 64084187 |
| 20 | ARS-BFGL-NGS-36042     | 0 | 64139627 |
| 20 | BTB-00795368           | 0 | 64169690 |
| 20 | ARS-BFGL-NGS-69670     | 0 | 64185456 |
| 20 | BTB-00795326           | 0 | 64229275 |
| 20 | ARS-BFGL-NGS-26451     | 0 | 64271255 |
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| 20 | ARS-BFGL-NGS-69530     | 0 | 64423007 |
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| 20 | Hapmap49387-BTA-96039  | 0 | 64868102 |
| 20 | ARS-BFGL-NGS-111832    | 0 | 64889371 |
| 20 | Hapmap40051-BTA-122171 | 0 | 64930710 |
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| 20 | Hapmap49039-BTA-116356 | 0 | 65369686 |

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| 20 | ARS-BFGL-NGS-112289    | 0        | 65437677 |
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| 20 | ARS-BFGL-NGS-117373    | 0        | 65498794 |
| 20 | Hapmap38839-BTA-51129  | 0        | 65528353 |
| 20 | ARS-BFGL-NGS-53579     | 0        | 65584868 |
| 20 | ARS-BFGL-NGS-38061     | 0        | 65637410 |
| 20 | ARS-BFGL-NGS-24736     | 0        | 65661986 |
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| 20 | Hapmap39840-BTA-51148  | 0        | 65773057 |
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| 20 | ARS-BFGL-NGS-112054    | 0        | 65907486 |
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| 20 | Hapmap25540-BTA-135353 | 0        | 65998486 |
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| 20 | Hapmap51245-BTA-51165  | 0        | 66200409 |
| 20 | BTA-51167-no-rs        | 0        | 66230840 |
| 20 | BTA-51172-no-rs        | 0        | 66256730 |
| 20 | ARS-BFGL-NGS-28789     | 0        | 66342801 |
| 20 | ARS-BFGL-NGS-103819    | 0        | 66372306 |
| 20 | BTA-51187-no-rs        | 0        | 66418024 |
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| 20 | ARS-BFGL-NGS-116860    | 0        | 66515196 |
| 20 | BTA-51196-no-rs        | 0        | 66550796 |
| 20 | Hapmap39320-BTA-27332  | 0        | 66628176 |
| 20 | Hapmap47524-BTA-121298 | 0        | 66654415 |
| 20 | ARS-BFGL-NGS-118449    | 0        | 66697971 |
| 20 | ARS-BFGL-NGS-22607     | 0        | 66722151 |
| 20 | ARS-BFGL-NGS-108091    | 0        | 66762538 |
| 20 | ARS-BFGL-NGS-77784     | 0        | 66862841 |
| 20 | Hapmap32108-BTA-153417 | 0        | 66898332 |
| 20 | BTB-01617409           | 0        | 66926929 |
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| 20 | ARS-BFGL-NGS-73470     | 67090770 |          |
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| 20 | ARS-BFGL-NGS-10740     | 67576765 |          |
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| 20 | BTB-00797414           | 0        | 67870623 |

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| 20 | ARS-BFGL-NGS-77683     | 0 68815875 |
| 20 | ARS-BFGL-NGS-119310    | 0 68846321 |
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| 20 | ARS-BFGL-NGS-63132     | 0 68965151 |
| 20 | ARS-BFGL-NGS-48950     | 69020321   |
| 20 | BTB-00799191           | 0 69045941 |
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| 20 | ARS-BFGL-NGS-17795     | 0 69129690 |
| 20 | ARS-BFGL-NGS-76979     | 0 69167111 |
| 20 | ARS-BFGL-NGS-19250     | 0 69237511 |
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| 20 | BTB-00798805           | 0 69316792 |
| 20 | ARS-BFGL-NGS-14372     | 0 69343823 |
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| 20 | Hapmap51246-BTA-51263  | 0 69504928 |
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| 20 | ARS-BFGL-NGS-100393    | 0 69554351 |
| 20 | ARS-BFGL-NGS-53156     | 0 69588130 |
| 20 | Hapmap40393-BTA-112315 | 0 69615449 |
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| 20 | ARS-BFGL-NGS-113999    | 0 69690852 |
| 20 | ARS-BFGL-NGS-117598    | 0 69725722 |
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| 20 | ARS-BFGL-NGS-75636     | 0 69893541 |

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| 20 | ARS-BFGL-NGS-43508     | 0 | 69951709 |
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| 20 | ARS-BFGL-NGS-95318     | 0 | 71094690 |
| 20 | Hapmap39265-BTA-34996  | 0 | 71117109 |
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| 20 | ARS-BFGL-BAC-31783     | 0 | 71173030 |
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| 20 | ARS-BFGL-NGS-106384    | 0 | 71531915 |
| 20 | ARS-BFGL-NGS-112221    | 0 | 71535445 |
| 20 | ARS-BFGL-NGS-113227    | 0 | 71612933 |
| 20 | ARS-BFGL-NGS-71536     | 0 | 71735324 |
| 20 | ARS-BFGL-NGS-118166    | 0 | 71793734 |
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| 21 | BTB-01171128           | 0 | 802673   |
| 21 | BTB-01171141           | 0 | 828905   |
| 21 | ARS-BFGL-NGS-88538     | 0 | 1812876  |
| 21 | ARS-BFGL-NGS-53975     | 0 | 2151256  |
| 21 | Hapmap52072-rs29018920 | 0 | 2333804  |
| 21 | ARS-BFGL-NGS-114372    | 0 | 2381941  |
| 21 | ARS-BFGL-NGS-108925    | 0 | 2461217  |
| 21 | BTA-16693-no-rs        | 0 | 2494164  |
| 21 | ARS-BFGL-NGS-31507     | 0 | 2592694  |

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| 21 | ARS-BFGL-NGS-73082               | 0 | 2642904 |         |
| 21 | ARS-BFGL-NGS-10260               | 0 | 2690162 |         |
| 21 | BTA-54983-no-rs                  | 0 | 2710462 |         |
| 21 | ARS-BFGL-NGS-70221               | 0 | 2749974 |         |
| 21 | ARS-BFGL-NGS-60326               | 0 | 2833842 |         |
| 21 | Hapmap47036-BTA-52529            | 0 | 2862075 |         |
| 21 | ARS-BFGL-NGS-104603              | 0 | 2918184 |         |
| 21 | ARS-BFGL-NGS-92774               | 0 | 2938326 |         |
| 21 | ARS-BFGL-NGS-37987               | 0 | 2985827 |         |
| 21 | ARS-BFGL-NGS-110123              | 0 | 3061993 |         |
| 21 | ARS-USMARC-Parent-DQ995976-no-rs | 0 |         | 3088886 |
| 21 | ARS-BFGL-NGS-102425              | 0 | 3089789 |         |
| 21 | ARS-BFGL-NGS-47451               | 0 | 3345232 |         |
| 21 | BTA-96370-no-rs                  | 0 | 3456805 |         |
| 21 | ARS-BFGL-NGS-13790               | 0 | 3606166 |         |
| 21 | ARS-BFGL-BAC-60290               |   | 3809287 |         |
| 21 | Hapmap40822-BTA-86024            | 0 | 3862716 |         |
| 21 | ARS-BFGL-NGS-80946               | 0 | 3977414 |         |
| 21 | Hapmap46685-BTA-105714           | 0 | 4001747 |         |
| 21 | ARS-BFGL-NGS-118735              | 0 | 4048483 |         |
| 21 | ARS-BFGL-NGS-19115               | 0 | 4107948 |         |
| 21 | Hapmap57262-rs29023646           | 0 | 4145496 |         |
| 21 | ARS-BFGL-NGS-112210              | 0 | 4193189 |         |
| 21 | BTA-21042-no-rs                  | 0 | 4240549 |         |
| 21 | Hapmap53880-rs29020517           | 0 | 4281411 |         |
| 21 | BTA-105737-no-rs                 | 0 | 4441252 |         |
| 21 | ARS-BFGL-NGS-36921               | 0 | 4482429 |         |
| 21 | ARS-BFGL-BAC-30337               | 0 | 4558974 |         |
| 21 | ARS-BFGL-NGS-18711               | 0 | 4638691 |         |
| 21 | ARS-BFGL-NGS-12690               | 0 | 4671448 |         |
| 21 | Hapmap39215-BTA-105710           | 0 | 4706119 |         |
| 21 | ARS-BFGL-BAC-30335               | 0 | 4727137 |         |
| 21 | Hapmap51927-BTA-105778           | 0 | 4790540 |         |
| 21 | ARS-BFGL-NGS-57390               |   | 4825612 |         |
| 21 | ARS-BFGL-NGS-30167               | 0 | 5087688 |         |
| 21 | ARS-BFGL-NGS-115386              | 0 | 5293149 |         |
| 21 | UA-IFASA-4137                    | 0 | 5335492 |         |
| 21 | Hapmap49208-BTA-52223            | 0 | 5358277 |         |
| 21 | ARS-BFGL-NGS-114596              | 0 | 5378328 |         |
| 21 | BTA-52244-no-rs                  | 0 | 5478138 |         |
| 21 | Hapmap31751-BTA-135547           | 0 | 5503392 |         |
| 21 | ARS-BFGL-NGS-23980               |   | 5551876 |         |
| 21 | ARS-BFGL-NGS-116765              | 0 | 5586515 |         |
| 21 | ARS-BFGL-NGS-103847              | 0 | 5660254 |         |
| 21 | ARS-BFGL-NGS-103866              | 0 | 5690539 |         |
| 21 | ARS-BFGL-NGS-14980               |   | 5742682 |         |
| 21 | ARS-BFGL-NGS-79824               | 0 | 5821878 |         |
| 21 | Hapmap26660-BTA-135566           | 0 | 5854439 |         |
| 21 | Hapmap50019-BTA-52721            | 0 | 5892594 |         |
| 21 | BTA-52775-no-rs                  | 0 | 5944033 |         |
| 21 | Hapmap43286-BTA-52790            | 0 | 5963823 |         |
| 21 | ARS-BFGL-NGS-44523               | 0 | 6035370 |         |
| 21 | ARS-BFGL-NGS-34864               | 0 | 6129342 |         |
| 21 | ARS-BFGL-NGS-116425              | 0 | 6208006 |         |

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| 21 | Hapmap40553-BTA-52668          | 0       | 6241052 |         |
| 21 | Hapmap32084-BTA-147824         | 0       | 6278164 |         |
| 21 | ARS-BFGL-NGS-14736             | 0       | 6378953 |         |
| 21 | Hapmap50020-BTA-53134          | 0       | 6550276 |         |
| 21 | ARS-BFGL-NGS-63474             | 0       | 6584332 |         |
| 21 | ARS-BFGL-NGS-112919            | 0       | 6605641 |         |
| 21 | ARS-BFGL-NGS-114045            | 0       | 6668348 |         |
| 21 | ARS-BFGL-NGS-10533             | 0       | 6692583 |         |
| 21 | ARS-BFGL-NGS-77061             | 0       | 6900116 |         |
| 21 | ARS-BFGL-NGS-108106            | 0       | 6940153 |         |
| 21 | Hapmap50385-BTA-53111          | 0       | 7022598 |         |
| 21 | ARS-BFGL-NGS-55680             | 7070882 |         |         |
| 21 | BTA-53043-no-rs                | 0       | 7249456 |         |
| 21 | ARS-BFGL-NGS-62108             | 0       | 7283843 |         |
| 21 | ARS-BFGL-NGS-45644             | 0       | 7311519 |         |
| 21 | ARS-BFGL-NGS-23740             | 0       | 7337506 |         |
| 21 | BTA-52945-no-rs                | 0       | 7369556 |         |
| 21 | BTA-52906-no-rs                | 0       | 7491598 |         |
| 21 | Hapmap44255-BTA-52888          | 0       | 7526820 |         |
| 21 | ARS-BFGL-BAC-63670             | 7594157 |         |         |
| 21 | Hapmap52397-rs29025170         | 0       | 7694470 |         |
| 21 | ARS-BFGL-NGS-56700             | 7723418 |         |         |
| 21 | BTA-52128-no-rs                | 0       | 7755949 |         |
| 21 | ARS-BFGL-BAC-34543             | 0       | 7784939 |         |
| 21 | ARS-BFGL-NGS-46597             | 0       | 7861393 |         |
| 21 | ARS-BFGL-NGS-16681             | 0       | 7897243 |         |
| 21 | ARS-BFGL-NGS-115411            | 0       | 7931963 |         |
| 21 | ARS-BFGL-NGS-43150             | 0       | 8010894 |         |
| 21 | ARS-BFGL-NGS-86900             | 0       | 8031396 |         |
| 21 | ARS-BFGL-BAC-34544             | 0       | 8060649 |         |
| 21 | ARS-BFGL-NGS-111433            | 0       | 8095577 |         |
| 21 | ARS-BFGL-NGS-16316             | 0       | 8128853 |         |
| 21 | ARS-BFGL-NGS-15702             | 0       | 8161284 |         |
| 21 | Hapmap35256-BES3_Contig435_690 | 0       |         | 8204919 |
| 21 | ARS-BFGL-NGS-23160             | 0       | 8231966 |         |
| 21 | ARS-BFGL-NGS-24429             | 0       | 8255910 |         |
| 21 | Hapmap39413-BTA-51926          | 0       | 8284178 |         |
| 21 | ARS-BFGL-NGS-67514             | 0       | 8312779 |         |
| 21 | BTB-00801572                   | 0       | 8370903 |         |
| 21 | Hapmap30232-BTA-135527         | 0       | 8455104 |         |
| 21 | ARS-BFGL-NGS-66435             | 0       | 8495666 |         |
| 21 | Hapmap51250-BTA-51833          | 0       | 8519331 |         |
| 21 | Hapmap27394-BTA-135513         | 0       | 8550350 |         |
| 21 | BTB-00801273                   | 0       | 8578433 |         |
| 21 | ARS-BFGL-NGS-117655            | 0       | 8650559 |         |
| 21 | Hapmap41815-BTA-28879          | 0       | 8722457 |         |
| 21 | ARS-BFGL-NGS-105498            | 0       | 8745180 |         |
| 21 | ARS-BFGL-NGS-107681            | 0       | 8781188 |         |
| 21 | ARS-BFGL-NGS-33260             | 0       | 8882276 |         |
| 21 | BTB-01106755                   | 0       | 8927671 |         |
| 21 | ARS-BFGL-NGS-100241            | 0       | 8955497 |         |
| 21 | ARS-BFGL-NGS-38748             | 0       | 9004082 |         |
| 21 | ARS-BFGL-NGS-10704             | 0       | 9037431 |         |
| 21 | ARS-BFGL-NGS-118162            | 0       | 9064794 |         |



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| 21 | ARS-BFGL-NGS-86740              | 0        | 9097550  |         |
| 21 | ARS-BFGL-NGS-44686              | 0        | 9190518  |         |
| 21 | ARS-BFGL-NGS-40040              | 9233345  |          |         |
| 21 | ARS-BFGL-NGS-53798              | 0        | 9263695  |         |
| 21 | Hapmap53602-rs29011081          | 0        | 9318083  |         |
| 21 | ARS-BFGL-NGS-118623             | 0        | 9352833  |         |
| 21 | BTA-12468-no-rs                 | 0        | 9375095  |         |
| 21 | Hapmap42495-BTA-28432           | 0        | 9412024  |         |
| 21 | Hapmap34392-BES8_Contig590_1341 | 0        |          | 9465131 |
| 21 | BTA-76414-no-rs                 | 0        | 9528223  |         |
| 21 | Hapmap47860-BTA-120557          | 0        | 9600154  |         |
| 21 | ARS-BFGL-NGS-21637              | 0        | 9687285  |         |
| 21 | BTB-00828430                    | 0        | 9715283  |         |
| 21 | BTA-20615-no-rs                 | 0        | 9741507  |         |
| 21 | BTB-01988753                    | 0        | 9784549  |         |
| 21 | Hapmap43515-BTA-22266           | 0        | 9831005  |         |
| 21 | Hapmap47457-BTA-98181           | 0        | 9867975  |         |
| 21 | ARS-BFGL-NGS-11110              | 9888915  |          |         |
| 21 | Hapmap40036-BTA-04610           | 0        | 9918220  |         |
| 21 | ARS-BFGL-NGS-58776              | 0        | 9959262  |         |
| 21 | BTB-01714719                    | 0        | 10042947 |         |
| 21 | BTB-01714745                    | 0        | 10087575 |         |
| 21 | BTB-01845506                    | 0        | 10125791 |         |
| 21 | BTB-00803496                    | 0        | 10171581 |         |
| 21 | BTA-53417-no-rs                 | 0        | 10197137 |         |
| 21 | Hapmap44092-BTA-53416           | 0        | 10234548 |         |
| 21 | BTB-01825397                    | 0        | 10283705 |         |
| 21 | Hapmap41791-BTA-18742           | 0        | 10307506 |         |
| 21 | Hapmap53918-rs29022295          | 0        | 10380707 |         |
| 21 | BTB-00803276                    | 0        | 10417947 |         |
| 21 | ARS-BFGL-NGS-39734              | 0        | 10456995 |         |
| 21 | ARS-BFGL-NGS-83518              | 0        | 10501180 |         |
| 21 | ARS-BFGL-NGS-119201             | 0        | 10521228 |         |
| 21 | Hapmap42245-BTA-53403           | 0        | 10565190 |         |
| 21 | BTA-53402-no-rs                 | 0        | 10585911 |         |
| 21 | ARS-BFGL-NGS-32642              | 0        | 10621376 |         |
| 21 | Hapmap27586-BTA-135603          | 0        | 10667701 |         |
| 21 | ARS-BFGL-NGS-106313             | 0        | 10761902 |         |
| 21 | ARS-BFGL-NGS-107139             | 0        | 10788801 |         |
| 21 | BTB-00803008                    | 0        | 10817206 |         |
| 21 | ARS-BFGL-NGS-100390             | 0        | 10869559 |         |
| 21 | Hapmap7748-BTA-53394            | 0        | 10898700 |         |
| 21 | ARS-BFGL-NGS-16249              | 0        | 10944434 |         |
| 21 | ARS-BFGL-NGS-80690              | 10987401 |          |         |
| 21 | ARS-BFGL-NGS-110509             | 0        | 11033086 |         |
| 21 | ARS-BFGL-NGS-22971              | 0        | 11067328 |         |
| 21 | UA-IFASA-2672                   | 0        | 11119797 |         |
| 21 | ARS-BFGL-NGS-70868              | 0        | 11144985 |         |
| 21 | BTB-01718760                    | 0        | 11190007 |         |
| 21 | ARS-BFGL-NGS-77855              | 0        | 11219294 |         |
| 21 | ARS-BFGL-NGS-25497              | 0        | 11245647 |         |
| 21 | ARS-BFGL-NGS-108136             | 0        | 11303069 |         |
| 21 | Hapmap41291-BTA-53265           | 0        | 11329938 |         |
| 21 | ARS-BFGL-NGS-41500              | 11375431 |          |         |

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| 21 | ARS-BFGL-NGS-108542            | 0 | 11578684 |  |
| 21 | BTA-53421-no-rs                | 0 | 11613771 |  |
| 21 | Hapmap41292-BTA-53427          | 0 | 11640272 |  |
| 21 | ARS-BFGL-NGS-22854             | 0 | 11680036 |  |
| 21 | BTA-00624-rs29013778           | 0 | 11715137 |  |
| 21 | Hapmap59117-rs29018906         | 0 | 11791560 |  |
| 21 | Hapmap55337-rs29009998         | 0 | 11981034 |  |
| 21 | ARS-BFGL-NGS-118231            | 0 | 12018140 |  |
| 21 | Hapmap44009-BTA-114471         | 0 | 12051183 |  |
| 21 | BTA-12959-no-rs                | 0 | 12095049 |  |
| 21 | ARS-BFGL-NGS-42021             | 0 | 12121273 |  |
| 21 | BTA-114462-no-rs               | 0 | 12176046 |  |
| 21 | Hapmap49030-BTA-114484         | 0 | 12235777 |  |
| 21 | ARS-BFGL-NGS-116037            | 0 | 12274945 |  |
| 21 | BTA-114463-no-rs               | 0 | 12303973 |  |
| 21 | Hapmap41761-BTA-117102         | 0 | 12342315 |  |
| 21 | BTA-117103-no-rs               | 0 | 12381451 |  |
| 21 | BTA-100458-no-rs               | 0 | 12408772 |  |
| 21 | ARS-BFGL-NGS-94580             | 0 | 12429328 |  |
| 21 | Hapmap43432-BTA-100460         | 0 | 12460660 |  |
| 21 | ARS-BFGL-NGS-109907            | 0 | 12539191 |  |
| 21 | Hapmap26790-BTA-53469          | 0 | 12590429 |  |
| 21 | ARS-BFGL-NGS-119424            | 0 | 12684633 |  |
| 21 | Hapmap41293-BTA-53465          | 0 | 12712258 |  |
| 21 | ARS-BFGL-NGS-112283            | 0 | 12747638 |  |
| 21 | ARS-BFGL-NGS-87431             | 0 | 12793997 |  |
| 21 | BTA-53454-no-rs                | 0 | 12814108 |  |
| 21 | Hapmap47654-BTA-53452          | 0 | 12882363 |  |
| 21 | ARS-BFGL-NGS-58825             | 0 | 12917017 |  |
| 21 | Hapmap51253-BTA-53448          | 0 | 12970324 |  |
| 21 | Hapmap34873-BES4_Contig386_675 | 0 | 12992457 |  |
| 21 | BTA-53438-no-rs                | 0 | 13052680 |  |
| 21 | BTA-53433-no-rs                | 0 | 13173337 |  |
| 21 | Hapmap58285-rs29022862         | 0 | 13633071 |  |
| 21 | BTA-19582-no-rs                | 0 | 13691642 |  |
| 21 | ARS-BFGL-NGS-109184            | 0 | 13735164 |  |
| 21 | BTB-01954380                   | 0 | 13761231 |  |
| 21 | ARS-BFGL-NGS-67381             | 0 | 13796869 |  |
| 21 | ARS-BFGL-NGS-45990             | 0 | 13937115 |  |
| 21 | ARS-BFGL-NGS-59613             | 0 | 13961617 |  |
| 21 | ARS-BFGL-NGS-101699            | 0 | 14000867 |  |
| 21 | ARS-BFGL-NGS-27377             | 0 | 14127028 |  |
| 21 | ARS-BFGL-NGS-66073             | 0 | 14240434 |  |
| 21 | Hapmap42965-BTA-53492          | 0 | 14280156 |  |
| 21 | Hapmap30803-BTA-135661         | 0 | 14304199 |  |
| 21 | BTB-00803804                   | 0 | 14337380 |  |
| 21 | ARS-BFGL-NGS-45555             | 0 | 14457772 |  |
| 21 | ARS-BFGL-NGS-92056             | 0 | 14477836 |  |
| 21 | ARS-BFGL-NGS-101450            | 0 | 14543748 |  |
| 21 | BTB-01258471                   | 0 | 14580754 |  |
| 21 | ARS-BFGL-NGS-86644             | 0 | 14605574 |  |
| 21 | ARS-BFGL-NGS-101083            | 0 | 14654478 |  |
| 21 | ARS-BFGL-NGS-110657            | 0 | 14754619 |  |
| 21 | Hapmap39722-BTA-119704         | 0 | 14800548 |  |

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| 21 | Hapmap55683-rs29009698           | 0 | 14831844 |          |
| 21 | ARS-BFGL-NGS-31918               | 0 | 14915708 |          |
| 21 | ARS-BFGL-NGS-103247              | 0 | 15006863 |          |
| 21 | ARS-BFGL-NGS-26671               | 0 | 15031948 |          |
| 21 | BTA-98011-no-rs                  | 0 | 15055770 |          |
| 21 | Hapmap50175-BTA-97987            | 0 | 15091986 |          |
| 21 | BTA-97988-no-rs                  | 0 | 15132192 |          |
| 21 | ARS-BFGL-NGS-78560               |   | 15226726 |          |
| 21 | Hapmap48457-BTA-75505            | 0 | 15265826 |          |
| 21 | ARS-BFGL-NGS-118245              | 0 | 15304102 |          |
| 21 | ARS-BFGL-NGS-10830               | 0 | 15345488 |          |
| 21 | ARS-BFGL-NGS-21728               | 0 | 15368661 |          |
| 21 | ARS-BFGL-NGS-100506              | 0 | 15404665 |          |
| 21 | ARS-BFGL-BAC-32427               | 0 | 15428801 |          |
| 21 | ARS-BFGL-NGS-18920               | 0 | 15451108 |          |
| 21 | BTB-00872594                     | 0 | 15460680 |          |
| 21 | ARS-BFGL-NGS-115704              | 0 | 15501970 |          |
| 21 | ARS-BFGL-NGS-81580               | 0 | 15522832 |          |
| 21 | ARS-BFGL-NGS-103854              | 0 | 15563937 |          |
| 21 | Hapmap35433-SCAFFOLD255531_13677 | 0 |          | 15601452 |
| 21 | BTB-00222111                     | 0 | 15659059 |          |
| 21 | Hapmap35954-SCAFFOLD35134_27036  | 0 |          | 15682657 |
| 21 | ARS-BFGL-NGS-100582              | 0 | 15705393 |          |
| 21 | ARS-BFGL-NGS-15584               | 0 | 15751412 |          |
| 21 | ARS-BFGL-NGS-31970               |   | 15770257 |          |
| 21 | BTB-00804375                     | 0 | 15833866 |          |
| 21 | ARS-BFGL-NGS-25378               | 0 | 15888254 |          |
| 21 | Hapmap32600-BTA-149891           | 0 | 15920240 |          |
| 21 | Hapmap40073-BTA-53493            | 0 | 15974418 |          |
| 21 | ARS-BFGL-NGS-42615               | 0 | 16018560 |          |
| 21 | BTA-53495-no-rs                  | 0 | 16038671 |          |
| 21 | BTB-00804666                     | 0 | 16082632 |          |
| 21 | ARS-BFGL-NGS-54451               | 0 | 16123475 |          |
| 21 | Hapmap31201-BTA-162197           | 0 | 16172731 |          |
| 21 | BTB-01869567                     | 0 | 16211861 |          |
| 21 | Hapmap30598-BTA-161495           | 0 | 16230075 |          |
| 21 | Hapmap43878-BTA-53506            | 0 | 16272399 |          |
| 21 | ARS-BFGL-NGS-112137              | 0 | 16341393 |          |
| 21 | BTA-53509-no-rs                  | 0 | 16504551 |          |
| 21 | BTA-53514-no-rs                  | 0 | 16539956 |          |
| 21 | Hapmap29103-BTA-135687           | 0 | 16577265 |          |
| 21 | Hapmap54222-rs29017183           | 0 | 16612599 |          |
| 21 | Hapmap36030-SCAFFOLD230125_16583 | 0 |          | 16639742 |
| 21 | ARS-BFGL-NGS-57683               | 0 | 16676281 |          |
| 21 | BTB-00804927                     | 0 | 16706433 |          |
| 21 | ARS-BFGL-NGS-116894              | 0 | 16734384 |          |
| 21 | ARS-BFGL-NGS-29380               | 0 | 16758470 |          |
| 21 | Hapmap40495-BTA-121307           | 0 | 16803930 |          |
| 21 | ARS-BFGL-NGS-50790               |   | 16864906 |          |
| 21 | Hapmap46952-BTA-121310           | 0 | 16889161 |          |
| 21 | Hapmap50023-BTA-53528            | 0 | 16941444 |          |
| 21 | ARS-BFGL-NGS-67978               | 0 | 16976633 |          |
| 21 | BTB-00805391                     | 0 | 17028796 |          |
| 21 | ARS-BFGL-NGS-30546               | 0 | 17141361 |          |

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| 21 | Hapmap47472-BTA-101981 | 0 | 17163437 |
| 21 | ARS-BFGL-NGS-43622     | 0 | 17207452 |
| 21 | Hapmap26997-BTA-152849 | 0 | 17242509 |
| 21 | ARS-BFGL-NGS-66848     | 0 | 17287016 |
| 21 | ARS-BFGL-NGS-18787     | 0 | 17309173 |
| 21 | ARS-BFGL-NGS-28017     | 0 | 17353227 |
| 21 | ARS-BFGL-NGS-94521     | 0 | 17373428 |
| 21 | BTA-51656-no-rs        | 0 | 17423153 |
| 21 | Hapmap49643-BTA-51662  | 0 | 17447471 |
| 21 | Hapmap26740-BTA-155993 | 0 | 17531298 |
| 21 | ARS-BFGL-NGS-21819     | 0 | 17568377 |
| 21 | BTA-117498-no-rs       | 0 | 17655807 |
| 21 | BTB-01769597           | 0 | 17712351 |
| 21 | ARS-BFGL-BAC-34984     | 0 | 17740672 |
| 21 | ARS-BFGL-NGS-33483     | 0 | 17792993 |
| 21 | Hapmap48372-BTA-51581  | 0 | 17826296 |
| 21 | ARS-BFGL-NGS-88739     | 0 | 17880194 |
| 21 | ARS-BFGL-NGS-22171     | 0 | 17927006 |
| 21 | Hapmap40071-BTA-51569  | 0 | 18012172 |
| 21 | ARS-BFGL-NGS-40066     | 0 | 18077750 |
| 21 | BTA-90547-no-rs        | 0 | 18100136 |
| 21 | ARS-BFGL-NGS-79733     | 0 | 18140689 |
| 21 | BTA-106754-no-rs       | 0 | 18167162 |
| 21 | Hapmap55387-rs29016047 | 0 | 18191354 |
| 21 | ARS-BFGL-NGS-87200     | 0 | 18243285 |
| 21 | BTB-00806183           | 0 | 18338067 |
| 21 | Hapmap38840-BTA-51603  | 0 | 18372495 |
| 21 | BTB-00806412           | 0 | 18410412 |
| 21 | Hapmap57137-rs29011525 | 0 | 18454966 |
| 21 | Hapmap40756-BTA-51617  | 0 | 18564065 |
| 21 | Hapmap29024-BTA-135712 | 0 | 18852380 |
| 21 | ARS-BFGL-NGS-66604     | 0 | 18878793 |
| 21 | BTB-00806621           | 0 | 18912588 |
| 21 | ARS-BFGL-NGS-42380     | 0 | 18947157 |
| 21 | ARS-BFGL-NGS-115145    | 0 | 18975984 |
| 21 | BTB-00806795           | 0 | 19002483 |
| 21 | ARS-BFGL-NGS-33883     | 0 | 19051950 |
| 21 | BTB-00808681           | 0 | 19094205 |
| 21 | ARS-BFGL-NGS-100035    | 0 | 19130853 |
| 21 | Hapmap33092-BTA-51753  | 0 | 19160289 |
| 21 | Hapmap38505-BTA-51760  | 0 | 19193100 |
| 21 | ARS-BFGL-NGS-60170     | 0 | 19235295 |
| 21 | Hapmap47979-BTA-51767  | 0 | 19267278 |
| 21 | ARS-BFGL-NGS-44071     | 0 | 19291709 |
| 21 | ARS-BFGL-NGS-103603    | 0 | 19312826 |
| 21 | ARS-BFGL-NGS-48670     | 0 | 19347140 |
| 21 | ARS-BFGL-NGS-113201    | 0 | 19379299 |
| 21 | Hapmap38414-BTA-51785  | 0 | 19421165 |
| 21 | Hapmap39714-BTA-111678 | 0 | 19507919 |
| 21 | ARS-BFGL-NGS-101940    | 0 | 19571888 |
| 21 | ARS-BFGL-NGS-41922     | 0 | 19601568 |
| 21 | ARS-BFGL-NGS-80801     | 0 | 19623728 |
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| 21 | ARS-BFGL-NGS-22129     | 0 | 19682458 |

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| 21 | ARS-BFGL-NGS-91468     | 0        | 19767713 |
| 21 | ARS-BFGL-NGS-40408     | 0        | 19792546 |
| 21 | ARS-BFGL-BAC-33343     | 0        | 19832171 |
| 21 | ARS-BFGL-NGS-54127     | 0        | 19897848 |
| 21 | ARS-BFGL-NGS-63590     | 0        | 19953173 |
| 21 | Hapmap47651-BTA-51810  | 0        | 19983053 |
| 21 | ARS-BFGL-NGS-77590     | 20003050 |          |
| 21 | ARS-BFGL-NGS-12580     | 20028323 |          |
| 21 | ARS-BFGL-NGS-96981     | 0        | 20078296 |
| 21 | ARS-BFGL-NGS-92246     | 0        | 20194633 |
| 21 | ARS-BFGL-NGS-16989     | 0        | 20216308 |
| 21 | BTB-01712106           | 0        | 20232444 |
| 21 | BTA-115463-no-rs       | 0        | 20248628 |
| 21 | ARS-BFGL-NGS-106149    | 0        | 20300789 |
| 21 | ARS-BFGL-NGS-13218     | 0        | 20356312 |
| 21 | ARS-BFGL-NGS-24595     | 0        | 20477690 |
| 21 | ARS-BFGL-NGS-94937     | 0        | 20728681 |
| 21 | Hapmap43604-BTA-51816  | 0        | 20750026 |
| 21 | Hapmap53721-rs29024386 | 0        | 20770629 |
| 21 | ARS-BFGL-NGS-51150     | 20809523 |          |
| 21 | ARS-BFGL-NGS-73374     | 0        | 20890704 |
| 21 | BTA-51814-no-rs        | 0        | 20916004 |
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| 21 | ARS-BFGL-NGS-109350    | 0        | 21117869 |
| 21 | ARS-BFGL-NGS-40159     | 0        | 21142616 |
| 21 | Hapmap41563-BTA-51853  | 0        | 21192182 |
| 21 | ARS-BFGL-NGS-111076    | 0        | 21220448 |
| 21 | ARS-BFGL-NGS-41852     | 0        | 21242156 |
| 21 | ARS-BFGL-NGS-20711     | 0        | 21306639 |
| 21 | ARS-BFGL-NGS-103695    | 0        | 21333104 |
| 21 | ARS-BFGL-NGS-28897     | 0        | 21362621 |
| 21 | ARS-BFGL-NGS-93010     | 21411959 |          |
| 21 | ARS-BFGL-NGS-55347     | 0        | 21442215 |
| 21 | ARS-BFGL-NGS-116820    | 0        | 21485801 |
| 21 | ARS-BFGL-NGS-68815     | 0        | 21532974 |
| 21 | ARS-BFGL-NGS-15180     | 21643142 |          |
| 21 | BTB-00810142           | 0        | 21671581 |
| 21 | ARS-BFGL-NGS-43000     | 21703503 |          |
| 21 | ARS-BFGL-NGS-21850     | 21730828 |          |
| 21 | ARS-BFGL-NGS-73451     | 0        | 21796083 |
| 21 | ARS-BFGL-NGS-84831     | 0        | 21831416 |
| 21 | ARS-BFGL-NGS-107467    | 0        | 21859000 |
| 21 | ARS-BFGL-NGS-41566     | 0        | 21893359 |
| 21 | ARS-BFGL-BAC-29118     | 0        | 21947594 |
| 21 | ARS-BFGL-NGS-29930     | 21983474 |          |
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| 21 | ARS-BFGL-NGS-98331     | 0        | 22057989 |
| 21 | Hapmap46829-BTA-51680  | 0        | 22087411 |
| 21 | Hapmap60509-ss46526473 | 0        | 22123704 |

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| 21 | ARS-BFGL-NGS-82290               | 22156279 |          |
| 21 | ARS-BFGL-NGS-114140              | 0        | 22215439 |
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| 21 | BTA-51687-no-rs                  | 0        | 22315417 |
| 21 | Hapmap50717-BTA-51691            | 0        | 22358430 |
| 21 | ARS-BFGL-NGS-117140              | 0        | 22397530 |
| 21 | Hapmap43603-BTA-51704            | 0        | 22435618 |
| 21 | ARS-BFGL-NGS-75707               | 0        | 22481793 |
| 21 | Hapmap48373-BTA-51706            | 0        | 22520337 |
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| 21 | ARS-BFGL-NGS-30365               | 0        | 22668633 |
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| 21 | ARS-BFGL-NGS-114226              | 0        | 22729968 |
| 21 | ARS-BFGL-NGS-104725              | 0        | 22748437 |
| 21 | Hapmap39842-BTA-51720            | 0        | 22774118 |
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| 21 | ARS-BFGL-NGS-112524              | 0        | 22858538 |
| 21 | ARS-BFGL-NGS-69616               | 0        | 22933799 |
| 21 | ARS-BFGL-NGS-21312               | 0        | 22961561 |
| 21 | ARS-BFGL-NGS-61826               | 0        | 22991710 |
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| 21 | ARS-BFGL-NGS-69585               | 0        | 23118390 |
| 21 | ARS-BFGL-NGS-80218               | 0        | 23145690 |
| 21 | ARS-BFGL-NGS-110151              | 0        | 23220048 |
| 21 | ARS-BFGL-NGS-18916               | 0        | 23255385 |
| 21 | ARS-BFGL-NGS-14046               | 0        | 23314869 |
| 21 | ARS-BFGL-NGS-108758              | 0        | 23361236 |
| 21 | ARS-BFGL-NGS-15924               | 0        | 23443660 |
| 21 | ARS-BFGL-NGS-56762               | 0        | 23486322 |
| 21 | ARS-BFGL-NGS-112162              | 0        | 23530389 |
| 21 | ARS-BFGL-NGS-71975               | 0        | 23612341 |
| 21 | Hapmap50381-BTA-51741            | 0        | 23675656 |
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| 21 | ARS-BFGL-NGS-28785               | 0        | 23755490 |
| 21 | ARS-BFGL-NGS-36030               | 23853465 |          |
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| 21 | BTB-01916852                     | 0        | 23976265 |
| 21 | Hapmap23770-BTA-158471           | 0        | 24082700 |
| 21 | Hapmap27015-BTA-158721           | 0        | 24136096 |
| 21 | Hapmap44044-BTA-24268            | 0        | 24278877 |
| 21 | ARS-BFGL-NGS-66427               | 0        | 24332945 |
| 21 | ARS-BFGL-NGS-71778               | 0        | 24467622 |
| 21 | ARS-BFGL-NGS-115608              | 0        | 24630238 |
| 21 | ARS-BFGL-NGS-30218               | 0        | 24659132 |
| 21 | BTB-00810692                     | 0        | 24763790 |
| 21 | Hapmap40438-BTA-51877            | 0        | 24805298 |
| 21 | Hapmap51463-BTA-51879            | 0        | 24844501 |
| 21 | ARS-BFGL-NGS-99587               | 0        | 24894169 |
| 21 | ARS-BFGL-NGS-78148               | 0        | 24978101 |
| 21 | BTB-00810924                     | 0        | 25007400 |
| 21 | BTA-51880-no-rs                  | 0        | 25036501 |
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| 21 | BTB-00811103                     | 0        | 25099276 |
| 21 | Hapmap35708-SCAFFOLD316799_27843 | 0        | 25136856 |

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| 21 | Hapmap44252-BTA-51889                 | 0        | 25274580 |  |  |
| 21 | BTA-51916-no-rs                       | 0        | 25345559 |  |  |
| 21 | BTA-51917-no-rs                       | 0        | 25367361 |  |  |
| 21 | ARS-BFGL-NGS-95359                    | 0        | 25404906 |  |  |
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| 21 | BTB-00811274                          | 0        | 25522208 |  |  |
| 21 | Hapmap54561-rs29009825                | 0        | 25556577 |  |  |
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| 21 | BTB-00811369                          | 0        | 25619489 |  |  |
| 21 | INRA-47                               | 0        | 25670128 |  |  |
| 21 | Hapmap53212-rs29015272                | 0        | 25704052 |  |  |
| 21 | BTB-00811523                          | 0        | 25792494 |  |  |
| 21 | BTA-51906-no-rs                       | 0        | 25850647 |  |  |
| 21 | Hapmap53588-rs29009835                | 0        | 25876602 |  |  |
| 21 | BTA-51937-no-rs                       | 0        | 26026944 |  |  |
| 21 | BTB-01168615                          | 0        | 26116828 |  |  |
| 21 | BTA-102927-no-rs                      | 0        | 26146591 |  |  |
| 21 | Hapmap42769-BTA-102926                | 0        | 26181772 |  |  |
| 21 | Hapmap40869-BTA-102923                | 0        | 26230141 |  |  |
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| 21 | BTB-00812393                          | 0        | 26412160 |  |  |
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| 21 | Hapmap59615-ss46526895                | 0        | 26597194 |  |  |
| 21 | ARS-USMARC-Parent-EF093511-rs29012316 | 0        | 26620013 |  |  |
| 21 | ARS-BFGL-NGS-34437                    | 0        | 26628267 |  |  |
| 21 | ARS-BFGL-NGS-60010                    | 26662447 |          |  |  |
| 21 | ARS-BFGL-NGS-24741                    | 0        | 26688952 |  |  |
| 21 | BTA-51971-no-rs                       | 0        | 26715346 |  |  |
| 21 | ARS-BFGL-BAC-33968                    | 0        | 26736588 |  |  |
| 21 | BTA-51988-no-rs                       | 0        | 26797690 |  |  |
| 21 | BTB-00813107                          | 0        | 26855569 |  |  |
| 21 | ARS-BFGL-NGS-71636                    | 0        | 26936862 |  |  |
| 21 | ARS-BFGL-NGS-36903                    | 0        | 26965607 |  |  |
| 21 | ARS-BFGL-NGS-14410                    | 0        | 27017806 |  |  |
| 21 | Hapmap52867-rs29023496                | 0        | 27087855 |  |  |
| 21 | ARS-BFGL-NGS-57997                    | 0        | 27141548 |  |  |
| 21 | ARS-BFGL-NGS-103205                   | 0        | 27166480 |  |  |
| 21 | ARS-BFGL-NGS-108253                   | 0        | 27193233 |  |  |
| 21 | ARS-BFGL-NGS-106708                   | 0        | 27216929 |  |  |
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| 21 | Hapmap50865-BTA-110502                | 0        | 27773578 |  |  |
| 21 | Hapmap49382-BTA-93782                 | 0        | 27887072 |  |  |
| 21 | Hapmap39461-BTA-109898                | 0        | 27927781 |  |  |

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| 21 | Hapmap52079-rs29012330 | 0 | 27956825 |
| 21 | BTB-01496593           | 0 | 27983449 |
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| 21 | Hapmap24683-BTA-151573 | 0 | 28129905 |
| 21 | ARS-BFGL-NGS-31601     | 0 | 28165756 |
| 21 | ARS-BFGL-NGS-35230     | 0 | 28199518 |
| 21 | ARS-BFGL-NGS-118593    | 0 | 28228285 |
| 21 | ARS-BFGL-NGS-103873    | 0 | 28283039 |
| 21 | Hapmap27197-BTA-153894 | 0 | 28453650 |
| 21 | BTA-104996-no-rs       | 0 | 28474431 |
| 21 | ARS-BFGL-NGS-64419     | 0 | 28525114 |
| 21 | Hapmap51464-BTA-51997  | 0 | 28553892 |
| 21 | ARS-BFGL-NGS-53412     | 0 | 28612871 |
| 21 | BTB-00800444           | 0 | 28675178 |
| 21 | ARS-BFGL-NGS-53850     | 0 | 28750888 |
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| 21 | ARS-BFGL-NGS-101655    | 0 | 28816012 |
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| 21 | BTB-00800263           | 0 | 28906490 |
| 21 | ARS-BFGL-NGS-103282    | 0 | 28935137 |
| 21 | BTB-01241039           | 0 | 28966946 |
| 21 | Hapmap39719-BTA-116371 | 0 | 29066613 |
| 21 | ARS-BFGL-NGS-29794     | 0 | 29251234 |
| 21 | BTA-116375-no-rs       | 0 | 29281192 |
| 21 | ARS-BFGL-NGS-234       | 0 | 29304230 |
| 21 | BTA-116377-no-rs       | 0 | 29326891 |
| 21 | ARS-BFGL-NGS-17780     | 0 | 29448617 |
| 21 | ARS-BFGL-NGS-13930     | 0 | 29492511 |
| 21 | ARS-BFGL-NGS-54970     | 0 | 29530056 |
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| 21 | ARS-BFGL-NGS-102090    | 0 | 29624611 |
| 21 | ARS-BFGL-NGS-55520     | 0 | 29675953 |
| 21 | ARS-BFGL-NGS-101070    | 0 | 29704865 |
| 21 | ARS-BFGL-NGS-35131     | 0 | 29737484 |
| 21 | ARS-BFGL-NGS-11820     | 0 | 29808549 |
| 21 | BTB-01107683           | 0 | 29893539 |
| 21 | Hapmap49946-BTA-29235  | 0 | 29966098 |
| 21 | BTB-01200389           | 0 | 30007996 |
| 21 | BTA-29249-no-rs        | 0 | 30058397 |
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| 21 | ARS-BFGL-NGS-13360     | 0 | 30118274 |
| 21 | ARS-BFGL-NGS-77354     | 0 | 30175405 |
| 21 | BTB-01108077           | 0 | 30224238 |
| 21 | ARS-BFGL-NGS-108440    | 0 | 30255230 |
| 21 | ARS-BFGL-NGS-42873     | 0 | 30316554 |
| 21 | ARS-BFGL-NGS-113562    | 0 | 30385129 |
| 21 | Hapmap26972-BTA-147195 | 0 | 30412653 |
| 21 | ARS-BFGL-NGS-31899     | 0 | 30451722 |
| 21 | Hapmap38535-BTA-85920  | 0 | 30485584 |
| 21 | ARS-BFGL-NGS-61211     | 0 | 30507065 |
| 21 | ARS-BFGL-NGS-39921     | 0 | 30527505 |



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| 21 | BTB-00800628                     | 0 | 30706521 |          |
| 21 | ARS-BFGL-NGS-85189               | 0 | 30730970 |          |
| 21 | ARS-BFGL-NGS-37012               | 0 | 30752108 |          |
| 21 | ARS-BFGL-NGS-101900              | 0 | 30781415 |          |
| 21 | BTB-01777254                     | 0 | 30845579 |          |
| 21 | ARS-BFGL-NGS-50330               |   | 30887167 |          |
| 21 | ARS-BFGL-NGS-59140               |   | 30908358 |          |
| 21 | ARS-BFGL-NGS-60995               | 0 | 30942765 |          |
| 21 | ARS-BFGL-NGS-59490               |   | 31003599 |          |
| 21 | ARS-BFGL-NGS-117619              | 0 | 31035761 |          |
| 21 | Hapmap46427-BTA-51697            | 0 | 31096895 |          |
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| 21 | Hapmap36718-SCAFFOLD317015_11758 | 0 |          | 31161136 |
| 21 | Hapmap59410-ss46526044           | 0 | 31194044 |          |
| 21 | ARS-BFGL-NGS-19953               | 0 | 31251702 |          |
| 21 | ARS-BFGL-NGS-20345               | 0 | 31278884 |          |
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| 21 | ARS-BFGL-NGS-20554               | 0 | 31405956 |          |
| 21 | ARS-BFGL-NGS-24797               | 0 | 31443165 |          |
| 21 | BTB-01727935                     | 0 | 31492233 |          |
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| 21 | ARS-BFGL-NGS-101477              | 0 | 31910399 |          |
| 21 | ARS-BFGL-NGS-25400               |   | 31938171 |          |
| 21 | ARS-BFGL-NGS-119025              | 0 | 31960636 |          |
| 21 | ARS-BFGL-NGS-34121               | 0 | 32113699 |          |
| 21 | ARS-BFGL-NGS-54770               |   | 32188880 |          |
| 21 | ARS-BFGL-NGS-102705              | 0 | 32544201 |          |
| 21 | BTB-00814147                     | 0 | 32598936 |          |
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| 21 | ARS-BFGL-NGS-57621               | 0 | 32669870 |          |
| 21 | Hapmap25541-BTA-135872           | 0 | 32728281 |          |
| 21 | ARS-BFGL-NGS-93930               | 0 | 32758644 |          |
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| 21 | BTA-05995-rs29020142             | 0 | 32811807 |          |
| 21 | BTB-00814378                     | 0 | 32849712 |          |
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| 21 | BTB-01610014                     | 0 | 33089280 |          |
| 21 | Hapmap26098-BTA-122988           | 0 | 33159372 |          |
| 21 | ARS-BFGL-NGS-104404              | 0 | 33401904 |          |
| 21 | ARS-BFGL-NGS-12317               | 0 | 33439863 |          |
| 21 | ARS-BFGL-NGS-35280               | 0 | 33475697 |          |
| 21 | Hapmap40367-BTA-73682            | 0 | 33515083 |          |
| 21 | ARS-BFGL-NGS-57816               | 0 | 33570843 |          |
| 21 | ARS-BFGL-NGS-12511               | 0 | 33601152 |          |
| 21 | Hapmap36405-SCAFFOLD205022_32716 | 0 |          | 33623307 |
| 21 | ARS-BFGL-NGS-27323               | 0 | 33667183 |          |
| 21 | ARS-BFGL-NGS-89251               | 0 | 33764430 |          |
| 21 | ARS-BFGL-NGS-112667              | 0 | 33860797 |          |
| 21 | Hapmap32329-BTA-147054           | 0 | 33893499 |          |
| 21 | ARS-BFGL-NGS-107844              | 0 | 33922134 |          |

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| 21 | ARS-BFGL-BAC-34557              | 0 | 33948119 |          |
| 21 | BTB-01376888                    | 0 | 33986466 |          |
| 21 | ARS-BFGL-NGS-24846              | 0 | 34037563 |          |
| 21 | ARS-BFGL-NGS-35082              | 0 | 34062578 |          |
| 21 | Hapmap41010-BTA-52085           | 0 | 34121218 |          |
| 21 | Hapmap53631-rs29015146          | 0 | 34165847 |          |
| 21 | BTB-00815656                    | 0 | 34189548 |          |
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| 21 | ARS-BFGL-NGS-27646              | 0 | 34243875 |          |
| 21 | ARS-BFGL-NGS-41574              | 0 | 34303720 |          |
| 21 | BTB-00815539                    | 0 | 34339514 |          |
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| 21 | ARS-BFGL-NGS-25171              | 0 | 34486610 |          |
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| 21 | ARS-BFGL-NGS-58606              | 0 | 34730593 |          |
| 21 | ARS-BFGL-NGS-70769              | 0 | 34766249 |          |
| 21 | ARS-BFGL-NGS-18642              | 0 | 34810865 |          |
| 21 | ARS-BFGL-NGS-19706              | 0 | 34898843 |          |
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| 21 | ARS-BFGL-NGS-58262              | 0 | 35071096 |          |
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| 21 | ARS-BFGL-NGS-81131              | 0 | 35184852 |          |
| 21 | ARS-BFGL-NGS-63656              | 0 | 35326818 |          |
| 21 | ARS-BFGL-NGS-96633              | 0 | 35371521 |          |
| 21 | Hapmap52964-rs29016827          | 0 | 35415545 |          |
| 21 | ARS-BFGL-BAC-29149              | 0 | 35448143 |          |
| 21 | Hapmap45432-BTA-52127           | 0 | 35468995 |          |
| 21 | ARS-BFGL-NGS-72462              | 0 | 35494765 |          |
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| 21 | Hapmap50721-BTA-52111           | 0 | 35564875 |          |
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| 21 | ARS-BFGL-NGS-46324              | 0 | 35664712 |          |
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| 21 | Hapmap41286-BTA-52147           | 0 | 36341943 |          |
| 21 | ARS-BFGL-NGS-69232              | 0 | 36379982 |          |

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| 21 | Hapmap39377-BTA-113470 | 0 | 36623599 |
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| 21 | Hapmap31219-BTA-52206  | 0 | 37828747 |
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| 21 | BTB-00818059           | 0 | 38718696 |
| 21 | Hapmap61076-rs29023524 | 0 | 38757269 |
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| 21 | BTB-00818220           | 0 | 38876245 |
| 21 | BTB-00818234           | 0 | 38919896 |
| 21 | BTB-00818375           | 0 | 38974965 |
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| 21 | Hapmap33736-BTA-163613         | 0 | 39184077 |          |
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| 21 | ARS-BFGL-NGS-65709             | 0 | 39496121 |          |
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| 21 | ARS-BFGL-NGS-42955             | 0 | 39597049 |          |
| 21 | BTB-01894337                   | 0 | 39659374 |          |
| 21 | BTB-01533089                   | 0 | 39716280 |          |
| 21 | Hapmap43436-BTA-101435         | 0 | 39758522 |          |
| 21 | Hapmap48988-BTA-101434         | 0 | 39822586 |          |
| 21 | Hapmap35241-BES8_Contig395_800 | 0 |          | 39911981 |
| 21 | BTB-00819205                   | 0 | 39956130 |          |
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| 21 | BTB-00819187                   | 0 | 40072235 |          |
| 21 | BTB-00819102                   | 0 | 40143093 |          |
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| 21 | BTB-00819017                   | 0 | 40237404 |          |
| 21 | BTB-00818977                   | 0 | 40285358 |          |
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| 21 | BTA-52232-no-rs                | 0 | 40554899 |          |
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| 21 | Hapmap27030-BTA-161084         | 0 | 41244373 |          |
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| 21 | BTA-01762-rs29012716           | 0 | 41383298 |          |
| 21 | BTB-01240966                   | 0 | 41451547 |          |
| 21 | BTB-01240884                   | 0 | 41484660 |          |
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| 21 | ARS-BFGL-NGS-117336            | 0 | 41947454 |          |
| 21 | Hapmap44447-BTA-121316         | 0 | 41995360 |          |

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| 21 | ARS-BFGL-NGS-43635     | 0        | 42051380 |
| 21 | Hapmap60703-rs29010376 | 0        | 42089249 |
| 21 | ARS-BFGL-NGS-73440     | 42210356 |          |
| 21 | Hapmap39342-BTA-52219  | 0        | 42244509 |
| 21 | BTA-96707-no-rs        | 0        | 42275591 |
| 21 | ARS-BFGL-NGS-10594     | 0        | 42389217 |
| 21 | Hapmap59970-rs29026939 | 0        | 42413671 |
| 21 | ARS-BFGL-BAC-29183     | 0        | 42440611 |
| 21 | Hapmap42487-BTA-26592  | 0        | 42462426 |
| 21 | ARS-BFGL-NGS-23813     | 0        | 42540260 |
| 21 | BTA-26609-no-rs        | 0        | 42613342 |
| 21 | BTB-01102651           | 0        | 42640851 |
| 21 | Hapmap49357-BTA-87614  | 0        | 42668952 |
| 21 | Hapmap32563-BTA-135955 | 0        | 42703086 |
| 21 | BTA-86128-no-rs        | 0        | 42752759 |
| 21 | ARS-BFGL-NGS-70743     | 0        | 42795641 |
| 21 | Hapmap41565-BTA-52250  | 0        | 42835553 |
| 21 | BTB-00819243           | 0        | 42912983 |
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| 21 | BTA-52343-no-rs        | 0        | 43147563 |
| 21 | ARS-BFGL-NGS-21789     | 0        | 43208119 |
| 21 | ARS-BFGL-NGS-66560     | 43246618 |          |
| 21 | Hapmap44324-BTA-97029  | 0        | 43304015 |
| 21 | ARS-BFGL-NGS-116131    | 0        | 43326877 |
| 21 | BTB-01483706           | 0        | 43364207 |
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| 21 | ARS-BFGL-BAC-58770     | 43428936 |          |
| 21 | Hapmap40917-BTA-16338  | 0        | 43468307 |
| 21 | BTB-01275062           | 0        | 43495358 |
| 21 | Hapmap50902-BTA-16342  | 0        | 43524083 |
| 21 | BTB-01275085           | 0        | 43551754 |
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| 21 | Hapmap49066-BTA-16330  | 0        | 43613357 |
| 21 | Hapmap43190-BTA-16332  | 0        | 43649910 |
| 21 | BTB-01635373           | 0        | 43689960 |
| 21 | BTB-01635323           | 0        | 43718434 |
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| 21 | BTA-93497-no-rs        | 0        | 43823284 |
| 21 | BTA-93503-no-rs        | 0        | 43912762 |
| 21 | BTB-01924219           | 0        | 43938393 |
| 21 | BTA-94452-no-rs        | 0        | 44042762 |
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| 21 | BTB-00207396           | 0        | 44155321 |
| 21 | ARS-BFGL-BAC-29205     | 0        | 44229968 |
| 21 | Hapmap51104-BTA-98686  | 0        | 44254467 |
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| 21 | Hapmap55117-rs29020058 | 0        | 44315783 |
| 21 | ARS-BFGL-BAC-25530     | 44477844 |          |
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| 21 | BTA-72258-no-rs        | 0        | 44543676 |
| 21 | BTB-00207198           | 0        | 44574752 |

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| 21 | BTB-00820947           | 0        | 44634072 |
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| 21 | BTB-00820789           | 0        | 44715724 |
| 21 | ARS-BFGL-NGS-41594     | 0        | 44765704 |
| 21 | BTA-72257-no-rs        | 0        | 44792706 |
| 21 | ARS-BFGL-NGS-38887     | 0        | 44836875 |
| 21 | ARS-BFGL-BAC-29207     | 0        | 44862140 |
| 21 | ARS-BFGL-NGS-118121    | 0        | 44907303 |
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| 21 | ARS-BFGL-NGS-110329    | 0        | 45065907 |
| 21 | BTB-00736348           | 0        | 45096714 |
| 21 | ARS-BFGL-NGS-103682    | 0        | 45151868 |
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| 21 | ARS-BFGL-NGS-86276     | 0        | 45333059 |
| 21 | BTB-00821280           | 0        | 45417602 |
| 21 | ARS-BFGL-NGS-56625     | 0        | 45475858 |
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| 21 | BTB-00821375           | 0        | 45804647 |
| 21 | Hapmap32804-BTA-135970 | 0        | 45910348 |
| 21 | Hapmap41892-BTA-52386  | 0        | 45982185 |
| 21 | ARS-BFGL-NGS-107391    | 0        | 46018333 |
| 21 | ARS-BFGL-NGS-17640     | 46040262 |          |
| 21 | BTB-00821496           | 0        | 46145471 |
| 21 | Hapmap41893-BTA-52395  | 0        | 46190788 |
| 21 | Hapmap31415-BTA-135986 | 0        | 46217299 |
| 21 | BTB-00821571           | 0        | 46251243 |
| 21 | ARS-BFGL-NGS-81614     | 0        | 46428406 |
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| 21 | BTB-00821654           | 0        | 46636496 |
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| 21 | Hapmap49646-BTA-52405  | 0        | 46731447 |
| 21 | ARS-BFGL-NGS-37402     | 0        | 46793691 |
| 21 | ARS-BFGL-NGS-22685     | 0        | 46877052 |
| 21 | ARS-BFGL-NGS-68622     | 0        | 46925376 |
| 21 | BTA-52458-no-rs        | 0        | 46984914 |
| 21 | ARS-BFGL-NGS-39835     | 0        | 47046755 |
| 21 | Hapmap47652-BTA-52437  | 0        | 47208703 |
| 21 | ARS-BFGL-NGS-29730     | 0        | 47273394 |
| 21 | ARS-BFGL-NGS-19437     | 0        | 47400719 |
| 21 | Hapmap33361-BTA-136015 | 0        | 47429665 |
| 21 | Hapmap50017-BTA-52441  | 0        | 47484905 |
| 21 | ARS-BFGL-NGS-47160     | 47567948 |          |
| 21 | BTB-00822176           | 0        | 47654659 |
| 21 | BTB-01805581           | 0        | 47676165 |
| 21 | Hapmap49824-BTA-09376  | 0        | 47746735 |
| 21 | Hapmap47034-BTA-52445  | 0        | 47778730 |
| 21 | ARS-BFGL-NGS-37945     | 0        | 47865334 |
| 21 | BTB-01480455           | 0        | 47902442 |
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| 21 | BTA-93299-no-rs        | 0 | 48062756 |
| 21 | BTB-01479918           | 0 | 48099076 |
| 21 | ARS-BFGL-NGS-119896    | 0 | 48137074 |
| 21 | Hapmap27764-BTA-152263 | 0 | 48244741 |
| 21 | BTA-96922-no-rs        | 0 | 48425129 |
| 21 | BTB-01481870           | 0 | 48457964 |
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| 21 | BTA-96927-no-rs        | 0 | 48509940 |
| 21 | ARS-BFGL-NGS-73381     | 0 | 48545958 |
| 21 | Hapmap45823-BTA-19038  | 0 | 48615135 |
| 21 | BTA-87826-no-rs        | 0 | 48657222 |
| 21 | BTB-01686668           | 0 | 48686907 |
| 21 | BTA-113430-no-rs       | 0 | 48728554 |
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| 21 | BTB-01605223           | 0 | 48778636 |
| 21 | Hapmap42788-BTA-107220 | 0 | 48808007 |
| 21 | Hapmap29405-BTA-159679 | 0 | 48878349 |
| 21 | BTB-00823211           | 0 | 48911422 |
| 21 | BTA-52470-no-rs        | 0 | 48939326 |
| 21 | ARS-BFGL-BAC-29227     | 0 | 48979048 |
| 21 | BTB-02030040           | 0 | 49004375 |
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| 21 | ARS-BFGL-NGS-117837    | 0 | 49143093 |
| 21 | BTB-00822762           | 0 | 49165337 |
| 21 | BTA-52462-no-rs        | 0 | 49229075 |
| 21 | Hapmap49209-BTA-52459  | 0 | 49242650 |
| 21 | Hapmap48703-BTA-27318  | 0 | 49290972 |
| 21 | BTB-00822497           | 0 | 49316928 |
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| 21 | Hapmap50165-BTA-94963  | 0 | 49362705 |
| 21 | BTB-01639450           | 0 | 49439452 |
| 21 | Hapmap49647-BTA-52454  | 0 | 49485249 |
| 21 | BTA-52446-no-rs        | 0 | 49533074 |
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| 21 | Hapmap32051-BTA-136019 | 0 | 49623230 |
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| 21 | ARS-BFGL-NGS-93196     | 0 | 49665319 |
| 21 | BTB-00823669           | 0 | 49706980 |
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| 21 | ARS-BFGL-BAC-34612     | 0 | 49849644 |
| 21 | BTB-00823583           | 0 | 49889250 |
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| 21 | ARS-BFGL-BAC-34613     | 0 | 49949243 |
| 21 | Hapmap52435-rs29012295 | 0 | 49977747 |
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| 21 | BTA-00309-rs29027880   | 0 | 50063362 |
| 21 | BTB-01664247           | 0 | 50110530 |
| 21 | BTB-00823887           | 0 | 50136106 |
| 21 | Hapmap53857-rs29019381 | 0 | 50205999 |
| 21 | ARS-BFGL-NGS-26840     | 0 | 50244378 |
| 21 | BTB-00482098           | 0 | 50284474 |
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| 21 | Hapmap23389-BTA-116094 | 0 | 50697604 |
| 21 | BTB-01720309           | 0 | 50741916 |
| 21 | Hapmap25099-BTA-161217 | 0 | 50827531 |
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| 21 | ARS-BFGL-NGS-110784    | 0 | 51031411 |
| 21 | BTB-01684577           | 0 | 51058902 |
| 21 | Hapmap32984-BTA-113902 | 0 | 51138460 |
| 21 | BTB-01690594           | 0 | 51176485 |
| 21 | BTB-01375511           | 0 | 51357564 |
| 21 | BTB-01375524           | 0 | 51461130 |
| 21 | BTB-01172090           | 0 | 51495235 |
| 21 | ARS-BFGL-NGS-62269     | 0 | 51528760 |
| 21 | BTB-01172066           | 0 | 51556381 |
| 21 | Hapmap40156-BTA-103844 | 0 | 51733686 |
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| 21 | BTB-01749774           | 0 | 51857151 |
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| 21 | Hapmap50580-BTA-116485 | 0 | 52476997 |
| 21 | BTB-01242144           | 0 | 52507636 |
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| 21 | Hapmap38656-BTA-117256 | 0 | 52608666 |
| 21 | BTB-01736640           | 0 | 52653695 |
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| 21 | BTA-28244-no-rs        | 0 | 52734525 |
| 21 | ARS-BFGL-NGS-83971     | 0 | 52771584 |
| 21 | BTA-116497-no-rs       | 0 | 52816464 |
| 21 | BTA-116495-no-rs       | 0 | 52842528 |
| 21 | BTA-116483-no-rs       | 0 | 52872801 |
| 21 | ARS-BFGL-NGS-90862     | 0 | 52915581 |
| 21 | ARS-BFGL-NGS-44156     | 0 | 52962847 |
| 21 | BTB-02006806           | 0 | 52997950 |
| 21 | BTA-98559-no-rs        | 0 | 53056400 |
| 21 | ARS-BFGL-BAC-35190     | 0 | 53091967 |
| 21 | BTA-98555-no-rs        | 0 | 53144321 |
| 21 | BTB-00648868           | 0 | 53248982 |
| 21 | Hapmap24402-BTA-131035 | 0 | 53268658 |
| 21 | BTB-02025540           | 0 | 53369113 |
| 21 | BTB-00649119           | 0 | 53433865 |
| 21 | BTB-00649131           | 0 | 53457352 |



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| 21 | BTB-00649148                    | 0        | 53500339 |  |
| 21 | BTB-00649157                    | 0        | 53525183 |  |
| 21 | ARS-BFGL-NGS-33035              | 0        | 53552467 |  |
| 21 | BTB-01497825                    | 0        | 53603868 |  |
| 21 | BTB-01814935                    | 0        | 53630520 |  |
| 21 | ARS-BFGL-NGS-65313              | 0        | 53658686 |  |
| 21 | BTB-00824019                    | 0        | 53756629 |  |
| 21 | ARS-BFGL-NGS-19027              | 0        | 53779256 |  |
| 21 | BTB-00824063                    | 0        | 53855758 |  |
| 21 | Hapmap28352-BTA-136027          | 0        | 53945721 |  |
| 21 | ARS-BFGL-NGS-110093             | 0        | 53975772 |  |
| 21 | ARS-BFGL-NGS-111163             | 0        | 54056137 |  |
| 21 | BTB-01046586                    | 0        | 54186710 |  |
| 21 | ARS-BFGL-NGS-46793              | 0        | 54208626 |  |
| 21 | ARS-BFGL-NGS-107562             | 0        | 54247557 |  |
| 21 | BTB-01392919                    | 0        | 54276389 |  |
| 21 | BTB-01392802                    | 0        | 54324980 |  |
| 21 | ARS-BFGL-NGS-104054             | 0        | 54553298 |  |
| 21 | ARS-BFGL-NGS-32443              | 0        | 54673135 |  |
| 21 | BTA-91173-no-rs                 | 0        | 54745471 |  |
| 21 | Hapmap50255-BTA-119714          | 0        | 54783091 |  |
| 21 | Hapmap42437-BTA-115005          | 0        | 54841136 |  |
| 21 | Hapmap51688-BTA-115008          | 0        | 54879224 |  |
| 21 | BTA-106060-no-rs                | 0        | 54923774 |  |
| 21 | Hapmap51131-BTA-106058          | 0        | 54964720 |  |
| 21 | ARS-BFGL-NGS-22156              | 0        | 55059767 |  |
| 21 | ARS-BFGL-NGS-43284              | 0        | 55096333 |  |
| 21 | BTB-00824825                    | 0        | 55243199 |  |
| 21 | BTA-52628-no-rs                 | 0        | 55275824 |  |
| 21 | ARS-BFGL-NGS-105670             | 0        | 55348624 |  |
| 21 | ARS-BFGL-NGS-25138              | 0        | 55375347 |  |
| 21 | Hapmap26512-BTA-52638           | 0        | 55483469 |  |
| 21 | BTA-98184-no-rs                 | 0        | 55532125 |  |
| 21 | Hapmap39755-BTA-52639           | 0        | 55574197 |  |
| 21 | ARS-BFGL-NGS-82324              | 0        | 55617452 |  |
| 21 | ARS-BFGL-NGS-60795              | 0        | 55712777 |  |
| 21 | Hapmap36523-SCAFFOLD141316_865  | 0        | 55755010 |  |
| 21 | Hapmap34575-BES5_Contig592_1191 | 0        | 55834366 |  |
| 21 | ARS-BFGL-NGS-113671             | 0        | 55876970 |  |
| 21 | ARS-BFGL-NGS-116152             | 0        | 55976405 |  |
| 21 | BTA-52544-no-rs                 | 0        | 56037002 |  |
| 21 | ARS-BFGL-NGS-54500              | 56060866 |          |  |
| 21 | ARS-BFGL-NGS-13189              | 0        | 56088858 |  |
| 21 | ARS-BFGL-NGS-13660              | 56118709 |          |  |
| 21 | BTA-52559-no-rs                 | 0        | 56159925 |  |
| 21 | ARS-BFGL-NGS-36353              | 0        | 56272444 |  |
| 21 | Hapmap42333-BTA-81770           | 0        | 56348332 |  |
| 21 | ARS-BFGL-NGS-106159             | 0        | 56511299 |  |
| 21 | ARS-BFGL-NGS-115253             | 0        | 56555790 |  |
| 21 | ARS-BFGL-NGS-95533              | 0        | 56601433 |  |
| 21 | ARS-BFGL-NGS-92303              | 0        | 56634361 |  |
| 21 | ARS-BFGL-NGS-17037              | 0        | 56702180 |  |
| 21 | ARS-BFGL-NGS-39454              | 0        | 56722594 |  |
| 21 | ARS-BFGL-NGS-101431             | 0        | 56758194 |  |

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| 21 | ARS-BFGL-NGS-113699            | 0 | 56879174 |  |
| 21 | Hapmap30532-BTA-136054         | 0 | 56984645 |  |
| 21 | Hapmap43466-BTA-112022         | 0 | 57058513 |  |
| 21 | ARS-BFGL-NGS-61113             | 0 | 57156944 |  |
| 21 | ARS-BFGL-NGS-29588             | 0 | 57186819 |  |
| 21 | ARS-BFGL-NGS-23777             | 0 | 57230746 |  |
| 21 | BTA-52610-no-rs                | 0 | 57303130 |  |
| 21 | BTA-52615-no-rs                | 0 | 57479244 |  |
| 21 | ARS-BFGL-NGS-39863             | 0 | 57523947 |  |
| 21 | ARS-BFGL-NGS-68709             | 0 | 57603552 |  |
| 21 | BTA-52592-no-rs                | 0 | 57658018 |  |
| 21 | Hapmap45290-BTA-52591          | 0 | 57709863 |  |
| 21 | ARS-BFGL-NGS-104549            | 0 | 57731221 |  |
| 21 | ARS-BFGL-NGS-119716            | 0 | 57765296 |  |
| 21 | ARS-BFGL-BAC-35204             | 0 | 57796630 |  |
| 21 | ARS-BFGL-NGS-17085             | 0 | 57819236 |  |
| 21 | ARS-BFGL-NGS-106084            | 0 | 57848290 |  |
| 21 | ARS-BFGL-NGS-108622            | 0 | 57870643 |  |
| 21 | ARS-BFGL-NGS-91137             | 0 | 57897391 |  |
| 21 | Hapmap36811-SCAFFOLD240339_791 | 0 | 57920570 |  |
| 21 | ARS-BFGL-NGS-27232             | 0 | 57948571 |  |
| 21 | ARS-BFGL-NGS-24785             | 0 | 58060052 |  |
| 21 | ARS-BFGL-NGS-12043             | 0 | 58106100 |  |
| 21 | ARS-BFGL-NGS-23598             | 0 | 58137970 |  |
| 21 | ARS-BFGL-NGS-260               | 0 | 58150735 |  |
| 21 | ARS-BFGL-NGS-41245             | 0 | 58188882 |  |
| 21 | ARS-BFGL-NGS-27139             | 0 | 58222356 |  |
| 21 | ARS-BFGL-NGS-111589            | 0 | 58246444 |  |
| 21 | ARS-BFGL-NGS-37875             | 0 | 58272258 |  |
| 21 | ARS-BFGL-NGS-114036            | 0 | 58323035 |  |
| 21 | ARS-BFGL-NGS-99274             | 0 | 58409066 |  |
| 21 | ARS-BFGL-NGS-13205             | 0 | 58442333 |  |
| 21 | ARS-BFGL-NGS-99229             | 0 | 58944572 |  |
| 21 | ARS-BFGL-NGS-115017            | 0 | 58966585 |  |
| 21 | ARS-BFGL-NGS-89732             | 0 | 58988890 |  |
| 21 | ARS-BFGL-NGS-20420             | 0 | 59026976 |  |
| 21 | ARS-BFGL-NGS-34766             | 0 | 59081896 |  |
| 21 | ARS-BFGL-NGS-40056             | 0 | 59151975 |  |
| 21 | ARS-BFGL-NGS-25153             | 0 | 59173696 |  |
| 21 | ARS-BFGL-NGS-14810             | 0 | 59199306 |  |
| 21 | ARS-BFGL-NGS-101173            | 0 | 59219376 |  |
| 21 | ARS-BFGL-NGS-20315             | 0 | 59248804 |  |
| 21 | ARS-BFGL-NGS-24589             | 0 | 59280578 |  |
| 21 | ARS-BFGL-NGS-22488             | 0 | 59325954 |  |
| 21 | ARS-BFGL-NGS-35461             | 0 | 59345138 |  |
| 21 | ARS-BFGL-NGS-119187            | 0 | 59368115 |  |
| 21 | ARS-BFGL-NGS-16940             | 0 | 59508785 |  |
| 21 | ARS-BFGL-NGS-109895            | 0 | 59601763 |  |
| 21 | ARS-BFGL-NGS-53844             | 0 | 59640020 |  |
| 21 | ARS-BFGL-NGS-16275             | 0 | 59665710 |  |
| 21 | BTA-52712-no-rs                | 0 | 59728340 |  |
| 21 | BTA-52707-no-rs                | 0 | 59759420 |  |
| 21 | Hapmap41894-BTA-52700          | 0 | 59819908 |  |
| 21 | ARS-BFGL-NGS-14422             | 0 | 59853238 |  |

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| 21 | ARS-BFGL-NGS-108484    | 0 | 59875525 |
| 21 | ARS-BFGL-NGS-15505     | 0 | 59908965 |
| 21 | ARS-BFGL-NGS-79673     | 0 | 59952026 |
| 21 | ARS-BFGL-NGS-23752     | 0 | 60065494 |
| 21 | BTB-01082247           | 0 | 60146851 |
| 21 | ARS-BFGL-NGS-42178     | 0 | 60175026 |
| 21 | ARS-BFGL-NGS-60758     | 0 | 60195812 |
| 21 | ARS-BFGL-NGS-38324     | 0 | 60220817 |
| 21 | ARS-BFGL-NGS-71306     | 0 | 60252111 |
| 21 | ARS-BFGL-NGS-104524    | 0 | 60277815 |
| 21 | ARS-BFGL-NGS-47559     | 0 | 60364864 |
| 21 | ARS-BFGL-NGS-13221     | 0 | 60445084 |
| 21 | ARS-BFGL-NGS-95953     | 0 | 60475531 |
| 21 | ARS-BFGL-NGS-103468    | 0 | 60553762 |
| 21 | ARS-BFGL-NGS-57970     | 0 | 60689040 |
| 21 | BTB-01994546           | 0 | 60851191 |
| 21 | ARS-BFGL-NGS-118600    | 0 | 61035644 |
| 21 | ARS-BFGL-NGS-69497     | 0 | 61094140 |
| 21 | Hapmap48802-BTA-52802  | 0 | 61121046 |
| 21 | ARS-BFGL-NGS-101750    | 0 | 61180711 |
| 21 | ARS-BFGL-NGS-98794     | 0 | 61233617 |
| 21 | ARS-BFGL-NGS-76886     | 0 | 61261222 |
| 21 | ARS-BFGL-NGS-80743     | 0 | 61310103 |
| 21 | ARS-BFGL-NGS-70042     | 0 | 61333785 |
| 21 | ARS-BFGL-NGS-71046     | 0 | 61412716 |
| 21 | Hapmap38841-BTA-52789  | 0 | 61450735 |
| 21 | UA-IFASA-5666          | 0 | 61538452 |
| 21 | ARS-BFGL-NGS-34930     | 0 | 61619393 |
| 21 | BTA-52774-no-rs        | 0 | 61649083 |
| 21 | Hapmap44958-BTA-52773  | 0 | 61674924 |
| 21 | ARS-BFGL-NGS-66510     | 0 | 61751656 |
| 21 | ARS-BFGL-NGS-13898     | 0 | 61847284 |
| 21 | ARS-BFGL-NGS-119282    | 0 | 61885578 |
| 21 | ARS-BFGL-NGS-69222     | 0 | 61919398 |
| 21 | ARS-BFGL-NGS-95111     | 0 | 61963124 |
| 21 | ARS-BFGL-NGS-104428    | 0 | 61994597 |
| 21 | Hapmap31098-BTA-136127 | 0 | 62028408 |
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| 21 | ARS-BFGL-NGS-118961    | 0 | 62089501 |
| 21 | ARS-BFGL-NGS-39180     | 0 | 62115138 |
| 21 | ARS-BFGL-NGS-71988     | 0 | 62169682 |
| 21 | ARS-BFGL-NGS-40713     | 0 | 62223140 |
| 21 | ARS-BFGL-BAC-34585     | 0 | 62245543 |
| 21 | ARS-BFGL-NGS-28332     | 0 | 62356345 |
| 21 | ARS-BFGL-NGS-98134     | 0 | 62377154 |
| 21 | ARS-BFGL-NGS-102816    | 0 | 62402185 |
| 21 | ARS-BFGL-NGS-18270     | 0 | 62445122 |
| 21 | ARS-BFGL-NGS-33885     | 0 | 62502588 |
| 21 | ARS-BFGL-NGS-18002     | 0 | 62530384 |
| 21 | ARS-BFGL-NGS-55430     | 0 | 62560705 |
| 21 | ARS-BFGL-NGS-15298     | 0 | 62588326 |
| 21 | Hapmap38470-BTA-121318 | 0 | 62615027 |
| 21 | ARS-BFGL-NGS-33365     | 0 | 62648435 |
| 21 | ARS-BFGL-NGS-109809    | 0 | 62679019 |

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| 21 | ARS-BFGL-NGS-115598                   | 0 | 62709685 |          |  |
| 21 | ARS-BFGL-NGS-110401                   | 0 | 62769411 |          |  |
| 21 | BTA-119918-no-rs                      | 0 | 62831408 |          |  |
| 21 | BTA-119914-no-rs                      | 0 | 62891038 |          |  |
| 21 | Hapmap23158-BTA-158869                | 0 | 62927337 |          |  |
| 21 | ARS-BFGL-BAC-63680                    |   | 62954780 |          |  |
| 21 | Hapmap40048-BTA-119906                | 0 | 63014645 |          |  |
| 21 | ARS-BFGL-NGS-102438                   | 0 | 63058261 |          |  |
| 21 | Hapmap24330-BTA-119896                | 0 | 63125212 |          |  |
| 21 | Hapmap49481-BTA-119893                | 0 | 63152155 |          |  |
| 21 | ARS-BFGL-NGS-44115                    | 0 | 63178211 |          |  |
| 21 | Hapmap46949-BTA-119904                | 0 | 63236456 |          |  |
| 21 | Hapmap47724-BTA-75446                 | 0 | 63413503 |          |  |
| 21 | ARS-BFGL-NGS-12794                    | 0 | 63447746 |          |  |
| 21 | ARS-BFGL-NGS-98174                    | 0 | 63495187 |          |  |
| 21 | ARS-BFGL-NGS-55752                    | 0 | 63515334 |          |  |
| 21 | ARS-BFGL-NGS-99716                    | 0 | 63560239 |          |  |
| 21 | Hapmap41011-BTA-52897                 | 0 | 63583791 |          |  |
| 21 | ARS-BFGL-NGS-23697                    | 0 | 63626176 |          |  |
| 21 | ARS-BFGL-NGS-110315                   | 0 | 63659620 |          |  |
| 21 | ARS-BFGL-NGS-107424                   | 0 | 63708710 |          |  |
| 21 | ARS-BFGL-NGS-63007                    | 0 | 63735024 |          |  |
| 21 | Hapmap24823-BTA-136149                | 0 | 63775748 |          |  |
| 21 | ARS-BFGL-NGS-21241                    | 0 | 63796668 |          |  |
| 21 | ARS-BFGL-NGS-53487                    | 0 | 63848940 |          |  |
| 21 | Hapmap58477-rs29015713                | 0 | 63880634 |          |  |
| 21 | ARS-BFGL-NGS-30590                    | 0 | 63930679 |          |  |
| 21 | BTA-24891-no-rs                       | 0 | 63955841 |          |  |
| 21 | ARS-BFGL-NGS-37805                    | 0 | 63985298 |          |  |
| 21 | BTA-52914-no-rs                       | 0 | 64051567 |          |  |
| 21 | ARS-BFGL-NGS-43652                    | 0 | 64085350 |          |  |
| 21 | Hapmap39756-BTA-52915                 | 0 | 64107848 |          |  |
| 21 | ARS-BFGL-NGS-118390                   | 0 | 64129449 |          |  |
| 21 | BTA-52916-no-rs                       | 0 | 64154468 |          |  |
| 21 | ARS-BFGL-BAC-35149                    | 0 | 64261331 |          |  |
| 21 | ARS-BFGL-NGS-39420                    |   | 64292330 |          |  |
| 21 | ARS-BFGL-NGS-25959                    | 0 | 64354251 |          |  |
| 21 | BTA-95369-no-rs                       | 0 | 64367413 |          |  |
| 21 | Hapmap39792-BTA-95367                 | 0 | 64415056 |          |  |
| 21 | Hapmap41783-BTA-16670                 | 0 | 64497084 |          |  |
| 21 | ARS-BFGL-NGS-75316                    | 0 | 64529310 |          |  |
| 21 | ARS-BFGL-NGS-44117                    | 0 | 64705185 |          |  |
| 21 | ARS-BFGL-NGS-75411                    | 0 | 64727056 |          |  |
| 21 | ARS-BFGL-NGS-63564                    | 0 | 64782256 |          |  |
| 21 | Hapmap33762-BTA-20842                 | 0 | 65040975 |          |  |
| 21 | ARS-BFGL-NGS-109009                   | 0 | 65063551 |          |  |
| 21 | ARS-BFGL-NGS-110569                   | 0 | 65102247 |          |  |
| 21 | BTA-20844-no-rs                       | 0 | 65128161 |          |  |
| 21 | ARS-BFGL-NGS-10110                    |   | 65177834 |          |  |
| 21 | ARS-USMARC-Parent-EF026085-rs29021607 | 0 |          | 65198296 |  |
| 21 | ARS-BFGL-NGS-37996                    | 0 | 65233513 |          |  |
| 21 | Hapmap32052-BTA-136158                | 0 | 65272069 |          |  |
| 21 | Hapmap41014-BTA-52933                 | 0 | 65316438 |          |  |
| 21 | Hapmap41013-BTA-52932                 | 0 | 65365440 |          |  |

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| 21 | ARS-BFGL-NGS-116458             | 0        | 65396288 |          |
| 21 | ARS-BFGL-NGS-43191              | 0        | 65428138 |          |
| 21 | BTA-52935-no-rs                 | 0        | 65450996 |          |
| 21 | Hapmap54413-rs29026873          | 0        | 65478998 |          |
| 21 | ARS-BFGL-NGS-15163              | 0        | 65512647 |          |
| 21 | BTA-52926-no-rs                 | 0        | 65586228 |          |
| 21 | Hapmap24484-BTA-136154          | 0        | 65619983 |          |
| 21 | ARS-BFGL-NGS-35553              | 0        | 65667782 |          |
| 21 | ARS-BFGL-NGS-68301              | 0        | 65690099 |          |
| 21 | Hapmap50502-BTA-92554           | 0        | 65776237 |          |
| 21 | Hapmap53110-rs29024180          | 0        | 65860395 |          |
| 21 | ARS-BFGL-NGS-89260              | 65934740 |          |          |
| 21 | BTA-52957-no-rs                 | 0        | 65970967 |          |
| 21 | Hapmap52873-ss46526026          | 0        | 66064177 |          |
| 21 | Hapmap35472-SCAFFOLD35342_21388 | 0        |          | 66107076 |
| 21 | ARS-BFGL-NGS-17977              | 0        | 66148635 |          |
| 21 | ARS-BFGL-NGS-44155              | 0        | 66177498 |          |
| 21 | ARS-BFGL-NGS-13743              | 0        | 66258467 |          |
| 21 | ARS-BFGL-NGS-24407              | 0        | 66287283 |          |
| 21 | ARS-BFGL-NGS-90719              | 0        | 66344554 |          |
| 21 | ARS-BFGL-NGS-94839              | 0        | 66380363 |          |
| 21 | ARS-BFGL-NGS-114799             | 0        | 66492068 |          |
| 21 | UA-IFASA-8627                   | 0        | 66514846 |          |
| 21 | UA-IFASA-5796                   | 0        | 66538486 |          |
| 21 | ARS-BFGL-NGS-19338              | 0        | 66679072 |          |
| 21 | ARS-BFGL-NGS-35910              | 0        | 66742133 |          |
| 21 | ARS-BFGL-NGS-100337             | 0        | 66782808 |          |
| 21 | ARS-BFGL-NGS-57400              | 0        | 66814735 |          |
| 21 | ARS-BFGL-NGS-87371              | 0        | 66870052 |          |
| 21 | ARS-BFGL-NGS-95580              | 0        | 66951310 |          |
| 21 | ARS-BFGL-NGS-37313              | 0        | 66988787 |          |
| 21 | ARS-BFGL-NGS-107488             | 0        | 67030857 |          |
| 21 | Hapmap35139-BES10_Contig553_546 | 0        |          | 67059264 |
| 21 | ARS-BFGL-NGS-20339              | 0        | 67088847 |          |
| 21 | ARS-BFGL-NGS-88482              | 0        | 67113129 |          |
| 21 | ARS-BFGL-NGS-113795             | 0        | 67159217 |          |
| 21 | ARS-BFGL-NGS-105314             | 0        | 67195140 |          |
| 21 | ARS-BFGL-NGS-116517             | 0        | 67220188 |          |
| 21 | Hapmap38679-BTA-53056           | 0        | 67302510 |          |
| 21 | ARS-BFGL-BAC-25240              | 67366627 |          |          |
| 21 | ARS-BFGL-NGS-56427              | 0        | 67403252 |          |
| 21 | ARS-BFGL-NGS-25820              | 67430616 |          |          |
| 21 | ARS-BFGL-BAC-32514              | 0        | 67457663 |          |
| 21 | UA-IFASA-6311                   | 0        | 67484045 |          |
| 21 | ARS-BFGL-NGS-115346             | 0        | 67515244 |          |
| 21 | Hapmap50726-BTA-53062           | 0        | 67551834 |          |
| 21 | ARS-BFGL-NGS-98182              | 0        | 67593887 |          |
| 21 | ARS-BFGL-NGS-118403             | 0        | 67645520 |          |
| 21 | ARS-BFGL-BAC-30311              | 0        | 67675273 |          |
| 21 | ARS-BFGL-NGS-58807              | 0        | 67717363 |          |
| 21 | ARS-BFGL-NGS-54071              | 0        | 67777704 |          |
| 21 | ARS-BFGL-NGS-112426             | 0        | 67801201 |          |
| 21 | ARS-BFGL-NGS-63238              | 0        | 67845758 |          |
| 21 | Hapmap59281-rs29027629          | 0        | 67904403 |          |

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| 21 | ARS-BFGL-NGS-119656             | 0        | 67963614 |          |
| 21 | Hapmap26747-BTA-157648          | 0        | 68011648 |          |
| 21 | ARS-BFGL-NGS-21626              | 0        | 68105539 |          |
| 21 | ARS-BFGL-NGS-29558              | 0        | 68128825 |          |
| 21 | ARS-BFGL-NGS-38270              | 0        | 68152356 |          |
| 21 | BTA-53082-no-rs                 | 0        | 68194734 |          |
| 21 | ARS-BFGL-NGS-54822              | 0        | 68216653 |          |
| 21 | ARS-BFGL-NGS-103918             | 0        | 68236325 |          |
| 21 | ARS-BFGL-NGS-105412             | 0        | 68285400 |          |
| 21 | BTA-03263-rs29011028            | 0        | 68356479 |          |
| 21 | ARS-BFGL-NGS-86477              | 0        | 68399787 |          |
| 21 | ARS-BFGL-NGS-40480              | 68436849 |          |          |
| 21 | ARS-BFGL-NGS-21983              | 0        | 68461213 |          |
| 21 | ARS-BFGL-NGS-18310              | 68496541 |          |          |
| 21 | ARS-BFGL-NGS-37484              | 0        | 68683196 |          |
| 21 | ARS-BFGL-NGS-68397              | 0        | 68724487 |          |
| 21 | Hapmap41289-BTA-53093           | 0        | 68751694 |          |
| 21 | ARS-BFGL-NGS-30120              | 68779125 |          |          |
| 21 | Hapmap30839-BTA-147642          | 0        | 68824210 |          |
| 21 | ARS-BFGL-NGS-21245              | 0        | 68846429 |          |
| 21 | ARS-BFGL-NGS-34517              | 0        | 68868534 |          |
| 21 | ARS-BFGL-NGS-10808              | 0        | 68894872 |          |
| 21 | ARS-BFGL-NGS-35742              | 0        | 68916556 |          |
| 21 | ARS-BFGL-NGS-117917             | 0        | 68965986 |          |
| 21 | Hapmap34162-BES8_Contig487_1402 | 0        |          | 69094176 |
| 21 | ARS-BFGL-NGS-82314              | 0        | 69126047 |          |
| 21 | Hapmap35820-SCAFFOLD55013_40998 | 0        |          | 69222948 |
| 21 | ARS-BFGL-NGS-39941              | 0        | 69279283 |          |
| 21 | ARS-BFGL-NGS-84302              | 0        | 69308530 |          |
| 21 | Hapmap49212-BTA-53105           | 0        | 69340662 |          |
| 21 | ARS-BFGL-NGS-115062             | 0        | 69395154 |          |
| 21 | ARS-BFGL-NGS-111074             | 0        | 69490730 |          |
| 21 | ARS-BFGL-NGS-52633              | 0        | 69516661 |          |
| 21 | ARS-BFGL-NGS-22162              | 0        | 69554017 |          |
| 21 | ARS-BFGL-NGS-69059              | 0        | 69650321 |          |
| 21 | ARS-BFGL-NGS-91002              | 0        | 69853542 |          |
| 21 | ARS-BFGL-NGS-13450              | 69939350 |          |          |
| 21 | ARS-BFGL-NGS-33371              | 0        | 69972343 |          |
| 21 | ARS-BFGL-NGS-63968              | 0        | 70012413 |          |
| 21 | ARS-BFGL-NGS-10484              | 0        | 70050042 |          |
| 21 | ARS-BFGL-NGS-35582              | 0        | 70089833 |          |
| 21 | ARS-BFGL-NGS-40895              | 0        | 70116946 |          |
| 21 | ARS-BFGL-NGS-74200              | 70155265 |          |          |
| 21 | Hapmap42243-BTA-53152           | 0        | 70182980 |          |
| 21 | ARS-BFGL-NGS-67767              | 0        | 70272221 |          |
| 21 | ARS-BFGL-NGS-16898              | 0        | 70294301 |          |
| 21 | ARS-BFGL-NGS-119475             | 0        | 70373409 |          |
| 21 | ARS-BFGL-NGS-71316              | 0        | 70393623 |          |
| 21 | ARS-BFGL-NGS-104354             | 0        | 70429196 |          |
| 21 | ARS-BFGL-NGS-32701              | 0        | 70466564 |          |
| 21 | ARS-BFGL-NGS-114538             | 0        | 70521657 |          |
| 21 | ARS-BFGL-NGS-26440              | 70608408 |          |          |
| 21 | ARS-BFGL-NGS-73522              | 0        | 70702245 |          |
| 21 | BTA-100472-no-rs                | 0        | 70759096 |          |

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| 21 | ARS-BFGL-NGS-19528     | 0        | 70783456 |
| 21 | ARS-BFGL-NGS-117259    | 0        | 70814197 |
| 21 | ARS-BFGL-NGS-80970     | 70858428 |          |
| 21 | ARS-BFGL-NGS-111489    | 0        | 70901743 |
| 21 | ARS-BFGL-NGS-27992     | 0        | 70931906 |
| 21 | ARS-BFGL-NGS-15199     | 0        | 71025601 |
| 21 | ARS-BFGL-NGS-26823     | 0        | 71047034 |
| 21 | BTA-53169-no-rs        | 0        | 71080360 |
| 21 | Hapmap54369-rs29015082 | 0        | 71109676 |
| 21 | ARS-BFGL-NGS-50214     | 0        | 71136925 |
| 22 | ARS-BFGL-NGS-17360     | 0        | 162018   |
| 22 | BTB-01707875           | 0        | 182947   |
| 22 | BTB-00829140           | 0        | 388140   |
| 22 | BTB-00829151           | 0        | 422262   |
| 22 | ARS-BFGL-NGS-38925     | 0        | 499356   |
| 22 | ARS-BFGL-NGS-84222     | 0        | 531301   |
| 22 | BTB-01872781           | 0        | 574301   |
| 22 | ARS-BFGL-NGS-17666     | 0        | 632381   |
| 22 | ARS-BFGL-NGS-63555     | 0        | 698228   |
| 22 | ARS-BFGL-NGS-16830     | 0        | 731015   |
| 22 | BTB-01191597           | 0        | 793826   |
| 22 | ARS-BFGL-NGS-45331     | 0        | 921678   |
| 22 | BTB-01191963           | 0        | 972161   |
| 22 | BTB-01191987           | 0        | 998048   |
| 22 | ARS-BFGL-NGS-36565     | 0        | 1035792  |
| 22 | BTB-01192051           | 0        | 1079118  |
| 22 | BTB-01192060           | 0        | 1115210  |
| 22 | BTB-01192087           | 0        | 1151510  |
| 22 | ARS-BFGL-NGS-103852    | 0        | 1232199  |
| 22 | Hapmap28061-BTA-163408 | 0        | 1280171  |
| 22 | ARS-BFGL-NGS-39898     | 0        | 1319636  |
| 22 | BTB-01933812           | 0        | 1386362  |
| 22 | BTB-01355483           | 0        | 1404150  |
| 22 | ARS-BFGL-NGS-114580    | 0        | 1428683  |
| 22 | BTB-01355272           | 0        | 1534772  |
| 22 | ARS-BFGL-NGS-118681    | 0        | 1549739  |
| 22 | ARS-BFGL-NGS-14557     | 0        | 1644612  |
| 22 | ARS-BFGL-NGS-94902     | 0        | 1694331  |
| 22 | BTB-00833550           | 0        | 1732412  |
| 22 | ARS-BFGL-NGS-100992    | 0        | 1770694  |
| 22 | ARS-BFGL-NGS-12981     | 0        | 1901120  |
| 22 | ARS-BFGL-NGS-27290     | 1960759  |          |
| 22 | BTB-00833376           | 0        | 2010561  |
| 22 | Hapmap32015-BTA-110997 | 0        | 2069272  |
| 22 | Hapmap42972-BTA-55129  | 0        | 2170376  |
| 22 | ARS-BFGL-NGS-102689    | 0        | 2214007  |
| 22 | ARS-BFGL-NGS-42806     | 0        | 2281908  |
| 22 | ARS-BFGL-NGS-41850     | 0        | 2314019  |
| 22 | Hapmap27963-BTA-147241 | 0        | 2332558  |
| 22 | ARS-BFGL-BAC-28083     | 0        | 2469444  |
| 22 | ARS-BFGL-NGS-39270     | 2518338  |          |
| 22 | Hapmap41765-BTA-119173 | 0        | 2585743  |
| 22 | ARS-BFGL-NGS-113718    | 0        | 2655659  |
| 22 | BTA-54025-no-rs        | 0        | 2687429  |

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| 22 | ARS-BFGL-NGS-31517              | 0 | 2719085 |         |
| 22 | ARS-BFGL-NGS-100238             | 0 | 2763023 |         |
| 22 | BTA-119176-no-rs                | 0 | 2788566 |         |
| 22 | Hapmap49213-BTA-53730           | 0 | 2808095 |         |
| 22 | ARS-BFGL-NGS-112796             | 0 | 2857608 |         |
| 22 | Hapmap47324-BTA-55159           | 0 | 2922700 |         |
| 22 | BTA-54736-no-rs                 | 0 | 2947011 |         |
| 22 | ARS-BFGL-NGS-86048              | 0 | 2984302 |         |
| 22 | ARS-BFGL-NGS-30499              | 0 | 3046992 |         |
| 22 | Hapmap39760-BTA-55284           | 0 | 3073232 |         |
| 22 | BTA-55263-no-rs                 | 0 | 3126680 |         |
| 22 | BTA-114881-no-rs                | 0 | 3141689 |         |
| 22 | Hapmap36468-SCAFFOLD225014_6126 | 0 |         | 3200170 |
| 22 | Hapmap33004-BTA-136233          | 0 | 3228262 |         |
| 22 | BTA-53568-no-rs                 | 0 | 3249038 |         |
| 22 | BTB-01185292                    | 0 | 3308603 |         |
| 22 | Hapmap46922-BTA-106688          | 0 | 3346191 |         |
| 22 | ARS-BFGL-NGS-21494              | 0 | 3394637 |         |
| 22 | ARS-BFGL-NGS-21505              | 0 | 3416439 |         |
| 22 | Hapmap26393-BTA-136223          | 0 | 3550589 |         |
| 22 | ARS-BFGL-NGS-116397             | 0 | 3593166 |         |
| 22 | Hapmap50391-BTA-55184           | 0 | 3653150 |         |
| 22 | ARS-BFGL-NGS-112864             | 0 | 3723071 |         |
| 22 | ARS-BFGL-NGS-108953             | 0 | 3747335 |         |
| 22 | Hapmap50729-BTA-54089           | 0 | 3805494 |         |
| 22 | Hapmap43380-BTA-86280           | 0 | 3840934 |         |
| 22 | ARS-BFGL-NGS-17851              | 0 | 3877151 |         |
| 22 | ARS-BFGL-NGS-66359              | 0 | 3912205 |         |
| 22 | Hapmap60505-rs29023254          | 0 | 4006911 |         |
| 22 | Hapmap60454-rs29020896          | 0 | 4046850 |         |
| 22 | ARS-BFGL-NGS-34196              | 0 | 4113432 |         |
| 22 | ARS-BFGL-BAC-35180              | 0 | 4187696 |         |
| 22 | BTB-00830411                    | 0 | 4226071 |         |
| 22 | BTA-53843-no-rs                 | 0 | 4255848 |         |
| 22 | BTA-53814-no-rs                 | 0 | 4277555 |         |
| 22 | ARS-BFGL-NGS-27926              | 0 | 4326026 |         |
| 22 | Hapmap51605-BTA-53768           | 0 | 4376421 |         |
| 22 | ARS-BFGL-NGS-101561             | 0 | 4423514 |         |
| 22 | Hapmap51741-BTA-53756           | 0 | 4443783 |         |
| 22 | BTB-00830153                    | 0 | 4534118 |         |
| 22 | Hapmap52306-rs29012938          | 0 | 4576518 |         |
| 22 | ARS-BFGL-NGS-117121             | 0 | 4622997 |         |
| 22 | ARS-BFGL-NGS-58313              | 0 | 4649751 |         |
| 22 | BTA-53679-no-rs                 | 0 | 4702265 |         |
| 22 | Hapmap59806-rs29011514          | 0 | 4735174 |         |
| 22 | ARS-BFGL-NGS-89834              | 0 | 4790023 |         |
| 22 | ARS-BFGL-NGS-53193              | 0 | 4848038 |         |
| 22 | Hapmap46936-BTA-113993          | 0 | 4973727 |         |
| 22 | ARS-BFGL-NGS-117751             | 0 | 4994019 |         |
| 22 | Hapmap47040-BTA-54661           | 0 | 5022403 |         |
| 22 | ARS-BFGL-NGS-62095              | 0 | 5051642 |         |
| 22 | BTB-00832114                    | 0 | 5080479 |         |
| 22 | ARS-BFGL-NGS-100995             | 0 | 5111080 |         |
| 22 | ARS-BFGL-NGS-63977              | 0 | 5158829 |         |



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| 22 | ARS-BFGL-NGS-23411     | 0 | 5183409 |
| 22 | ARS-BFGL-NGS-111384    | 0 | 5222528 |
| 22 | BTB-00831723           | 0 | 5253524 |
| 22 | ARS-BFGL-NGS-100520    | 0 | 5287823 |
| 22 | ARS-BFGL-NGS-27027     | 0 | 5310074 |
| 22 | ARS-BFGL-NGS-58967     | 0 | 5353497 |
| 22 | ARS-BFGL-NGS-37182     | 0 | 5408000 |
| 22 | BTA-54457-no-rs        | 0 | 5431430 |
| 22 | ARS-BFGL-NGS-105607    | 0 | 5524106 |
| 22 | ARS-BFGL-NGS-114057    | 0 | 5546862 |
| 22 | ARS-BFGL-NGS-29194     | 0 | 5579646 |
| 22 | BTA-54264-no-rs        | 0 | 5600976 |
| 22 | ARS-BFGL-NGS-43040     | 0 | 5629829 |
| 22 | ARS-BFGL-NGS-88200     | 0 | 5651405 |
| 22 | BTA-114639-no-rs       | 0 | 5671480 |
| 22 | ARS-BFGL-NGS-48234     | 0 | 5694881 |
| 22 | Hapmap49653-BTA-54778  | 0 | 5741589 |
| 22 | ARS-BFGL-NGS-349       | 0 | 5780532 |
| 22 | ARS-BFGL-NGS-99906     | 0 | 5833750 |
| 22 | BTA-54801-no-rs        | 0 | 5858933 |
| 22 | Hapmap60747-rs29010034 | 0 | 5884558 |
| 22 | ARS-BFGL-NGS-94808     | 0 | 5926189 |
| 22 | Hapmap43291-BTA-54818  | 0 | 5963144 |
| 22 | ARS-BFGL-NGS-33467     | 0 | 5989796 |
| 22 | ARS-BFGL-NGS-34986     | 0 | 6021745 |
| 22 | BTB-00832694           | 0 | 6034078 |
| 22 | Hapmap58102-rs29011445 | 0 | 6064248 |
| 22 | BTB-00832763           | 0 | 6101824 |
| 22 | Hapmap61006-rs29024592 | 0 | 6140185 |
| 22 | BTA-08756-no-rs        | 0 | 6190859 |
| 22 | ARS-BFGL-NGS-29620     | 0 | 6294082 |
| 22 | ARS-BFGL-NGS-100258    | 0 | 6351718 |
| 22 | ARS-BFGL-NGS-98305     | 0 | 6426099 |
| 22 | ARS-BFGL-NGS-119413    | 0 | 6450949 |
| 22 | ARS-BFGL-NGS-66910     | 0 | 6485383 |
| 22 | ARS-BFGL-NGS-61218     | 0 | 6539120 |
| 22 | ARS-BFGL-NGS-28382     | 0 | 6617917 |
| 22 | BTB-01641930           | 0 | 6678167 |
| 22 | BTA-53593-no-rs        | 0 | 6712302 |
| 22 | ARS-BFGL-NGS-101918    | 0 | 6755891 |
| 22 | ARS-BFGL-BAC-28593     | 0 | 6814022 |
| 22 | ARS-BFGL-NGS-76327     | 0 | 6839739 |
| 22 | ARS-BFGL-NGS-12710     | 0 | 6876710 |
| 22 | ARS-BFGL-NGS-118232    | 0 | 6916862 |
| 22 | ARS-BFGL-NGS-12650     | 0 | 6946664 |
| 22 | ARS-BFGL-NGS-66274     | 0 | 6992794 |
| 22 | ARS-BFGL-NGS-14343     | 0 | 7022169 |
| 22 | ARS-BFGL-NGS-113645    | 0 | 7042758 |
| 22 | Hapmap57734-rs29023397 | 0 | 7077833 |
| 22 | ARS-BFGL-NGS-112253    | 0 | 7152566 |
| 22 | ARS-BFGL-BAC-26000     | 0 | 7174350 |
| 22 | ARS-BFGL-NGS-92040     | 0 | 7236560 |
| 22 | Hapmap49656-BTA-55096  | 0 | 7313043 |
| 22 | ARS-BFGL-NGS-104562    | 0 | 7385040 |

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| 22 | ARS-BFGL-NGS-18950             | 7420716  |          |
| 22 | ARS-BFGL-NGS-13436             | 0        | 7529422  |
| 22 | ARS-BFGL-NGS-16037             | 0        | 7623264  |
| 22 | Hapmap42000-BTA-89464          | 0        | 7647712  |
| 22 | ARS-BFGL-NGS-94105             | 0        | 7691228  |
| 22 | ARS-BFGL-NGS-118520            | 0        | 7728567  |
| 22 | ARS-BFGL-NGS-114164            | 0        | 7760690  |
| 22 | Hapmap23270-BTA-148536         | 0        | 7798009  |
| 22 | BTA-107544-no-rs               | 0        | 7916763  |
| 22 | BTA-107545-no-rs               | 0        | 7958285  |
| 22 | Hapmap42824-BTA-116676         | 0        | 8062535  |
| 22 | ARS-BFGL-NGS-109974            | 0        | 8207459  |
| 22 | ARS-BFGL-NGS-77874             | 0        | 8223349  |
| 22 | ARS-BFGL-NGS-100385            | 0        | 8253547  |
| 22 | ARS-BFGL-NGS-74728             | 0        | 8308367  |
| 22 | BTA-55154-no-rs                | 0        | 8355726  |
| 22 | ARS-BFGL-NGS-119142            | 0        | 8389075  |
| 22 | ARS-BFGL-NGS-54208             | 0        | 8434315  |
| 22 | ARS-BFGL-NGS-11959             | 0        | 8475203  |
| 22 | BTA-117772-no-rs               | 0        | 8549826  |
| 22 | BTB-01743103                   | 0        | 8590896  |
| 22 | Hapmap44095-BTA-55125          | 0        | 8626195  |
| 22 | ARS-BFGL-NGS-91725             | 0        | 8666109  |
| 22 | ARS-BFGL-NGS-57003             | 0        | 8696863  |
| 22 | BTA-99960-no-rs                | 0        | 8765709  |
| 22 | BTA-99962-no-rs                | 0        | 8806285  |
| 22 | BTB-01911100                   | 0        | 8838211  |
| 22 | BTA-09886-rs29026042           | 0        | 8962725  |
| 22 | Hapmap51745-BTA-55160          | 0        | 9026539  |
| 22 | ARS-BFGL-NGS-114896            | 0        | 9093915  |
| 22 | ARS-BFGL-NGS-119364            | 0        | 9145631  |
| 22 | Hapmap53283-rs29015746         | 0        | 9165638  |
| 22 | BTB-01887959                   | 0        | 9222993  |
| 22 | BTB-00834421                   | 0        | 9323835  |
| 22 | Hapmap25321-BTA-156840         | 0        | 9362027  |
| 22 | BTA-29226-no-rs                | 0        | 9404197  |
| 22 | Hapmap58148-rs29020564         | 0        | 9482434  |
| 22 | ARS-BFGL-BAC-33244             | 0        | 9550422  |
| 22 | ARS-BFGL-NGS-62002             | 0        | 9589736  |
| 22 | Hapmap27049-BTA-55187          | 0        | 9620607  |
| 22 | Hapmap40075-BTA-55191          | 0        | 9681116  |
| 22 | Hapmap42370-BTA-95032          | 0        | 9781519  |
| 22 | Hapmap36333-SCAFFOLD20754_2588 | 0        | 9815001  |
| 22 | Hapmap24381-BTA-150366         | 0        | 9869416  |
| 22 | ARS-BFGL-NGS-10926             | 0        | 9918880  |
| 22 | Hapmap51665-BTA-95020          | 0        | 9980613  |
| 22 | ARS-BFGL-NGS-71148             | 0        | 10039544 |
| 22 | BTB-01545928                   | 0        | 10085056 |
| 22 | ARS-BFGL-NGS-73453             | 0        | 10114380 |
| 22 | ARS-BFGL-NGS-41970             | 10167041 |          |
| 22 | ARS-BFGL-NGS-48952             | 0        | 10193026 |
| 22 | Hapmap54461-rs29016490         | 0        | 10228378 |
| 22 | ARS-BFGL-NGS-107798            | 0        | 10269204 |
| 22 | BTA-55233-no-rs                | 0        | 10378466 |

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| 22 | Hapmap44257-BTA-55232                 | 0 | 10412181 |   |          |
| 22 | BTA-55229-no-rs                       | 0 | 10476965 |   |          |
| 22 | Hapmap38236-BTA-55228                 | 0 | 10502283 |   |          |
| 22 | Hapmap47325-BTA-55227                 | 0 | 10563792 |   |          |
| 22 | Hapmap49219-BTA-55225                 | 0 | 10593931 |   |          |
| 22 | ARS-BFGL-NGS-34178                    | 0 | 10633248 |   |          |
| 22 | ARS-BFGL-NGS-115144                   | 0 | 10657184 |   |          |
| 22 | ARS-BFGL-NGS-11037                    | 0 | 10684294 |   |          |
| 22 | BTB-01184624                          | 0 | 10811371 |   |          |
| 22 | ARS-BFGL-NGS-99053                    | 0 | 10855513 |   |          |
| 22 | ARS-BFGL-NGS-85728                    | 0 | 10876925 |   |          |
| 22 | BTB-01184669                          | 0 | 10998835 |   |          |
| 22 | ARS-USMARC-Parent-DQ990832-rs29015065 | 0 |          | 0 | 11038205 |
| 22 | Hapmap50552-BTA-106670                | 0 | 11063911 |   |          |
| 22 | ARS-BFGL-NGS-40402                    | 0 | 11094412 |   |          |
| 22 | BTA-55272-no-rs                       | 0 | 11159199 |   |          |
| 22 | Hapmap47989-BTA-55279                 | 0 | 11200185 |   |          |
| 22 | BTA-106671-no-rs                      | 0 | 11224025 |   |          |
| 22 | ARS-BFGL-NGS-66628                    | 0 | 11246732 |   |          |
| 22 | ARS-BFGL-NGS-64438                    | 0 | 11344539 |   |          |
| 22 | Hapmap60104-rs29016060                | 0 | 11402326 |   |          |
| 22 | ARS-BFGL-NGS-119931                   | 0 | 11432737 |   |          |
| 22 | ARS-BFGL-NGS-21216                    | 0 | 11634045 |   |          |
| 22 | Hapmap44096-BTA-55271                 | 0 | 11668590 |   |          |
| 22 | BTB-00836196                          | 0 | 11719009 |   |          |
| 22 | ARS-BFGL-NGS-24419                    | 0 | 11756783 |   |          |
| 22 | ARS-BFGL-NGS-71723                    | 0 | 11790491 |   |          |
| 22 | ARS-BFGL-NGS-24627                    | 0 | 11818533 |   |          |
| 22 | ARS-BFGL-NGS-65384                    | 0 | 11901294 |   |          |
| 22 | ARS-BFGL-NGS-33348                    | 0 | 11935606 |   |          |
| 22 | ARS-BFGL-NGS-35291                    | 0 | 12081026 |   |          |
| 22 | ARS-BFGL-NGS-43002                    | 0 | 12112404 |   |          |
| 22 | ARS-BFGL-NGS-80071                    | 0 | 12188353 |   |          |
| 22 | ARS-BFGL-NGS-86532                    | 0 | 12258334 |   |          |
| 22 | ARS-BFGL-NGS-111514                   | 0 | 12290203 |   |          |
| 22 | ARS-BFGL-NGS-104806                   | 0 | 12330219 |   |          |
| 22 | Hapmap54042-ss46526396                | 0 | 12470007 |   |          |
| 22 | ARS-BFGL-NGS-114520                   | 0 | 12484410 |   |          |
| 22 | ARS-BFGL-NGS-18067                    | 0 | 12508651 |   |          |
| 22 | ARS-BFGL-NGS-10360                    |   | 12558543 |   |          |
| 22 | BTA-53629-no-rs                       | 0 | 12581491 |   |          |
| 22 | Hapmap7772-BTA-53630                  | 0 | 12601957 |   |          |
| 22 | ARS-BFGL-NGS-67545                    | 0 | 12672556 |   |          |
| 22 | ARS-BFGL-NGS-18001                    | 0 | 12699738 |   |          |
| 22 | UA-IFASA-8224                         | 0 | 12725452 |   |          |
| 22 | Hapmap50728-BTA-53564                 | 0 | 12777094 |   |          |
| 22 | ARS-BFGL-NGS-60902                    | 0 | 12806792 |   |          |
| 22 | ARS-BFGL-NGS-76420                    |   | 12828815 |   |          |
| 22 | Hapmap55190-rs29018766                | 0 | 12869969 |   |          |
| 22 | ARS-BFGL-NGS-44609                    | 0 | 12948282 |   |          |
| 22 | Hapmap41016-BTA-53575                 | 0 | 12971019 |   |          |
| 22 | ARS-BFGL-NGS-88519                    | 0 | 13012930 |   |          |
| 22 | ARS-BFGL-BAC-35128                    | 0 | 13108382 |   |          |
| 22 | Hapmap59940-rs29011730                | 0 | 13172658 |   |          |

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| 22 | Hapmap58214-rs29015775 | 0        | 13203551 |
| 22 | ARS-BFGL-NGS-102131    | 0        | 13223791 |
| 22 | BTB-00837505           | 0        | 13370087 |
| 22 | BTB-01573636           | 0        | 13432836 |
| 22 | Hapmap44181-BTA-104938 | 0        | 13516956 |
| 22 | ARS-BFGL-NGS-32750     | 0        | 13581891 |
| 22 | ARS-BFGL-NGS-79374     | 0        | 13650687 |
| 22 | ARS-BFGL-NGS-63502     | 0        | 13726095 |
| 22 | ARS-BFGL-NGS-21706     | 0        | 13798228 |
| 22 | ARS-BFGL-NGS-42352     | 0        | 13922735 |
| 22 | ARS-BFGL-BAC-30368     | 0        | 13951231 |
| 22 | ARS-BFGL-NGS-65247     | 0        | 13992221 |
| 22 | UA-IFASA-6992          | 0        | 14022499 |
| 22 | ARS-BFGL-NGS-24816     | 0        | 14056517 |
| 22 | BTB-00834905           | 0        | 14086186 |
| 22 | Hapmap42249-BTA-55197  | 0        | 14133039 |
| 22 | Hapmap40925-BTA-22921  | 0        | 14179514 |
| 22 | ARS-BFGL-NGS-74971     | 0        | 14218256 |
| 22 | BTA-53697-no-rs        | 0        | 14225720 |
| 22 | ARS-BFGL-NGS-43254     | 0        | 14251082 |
| 22 | BTB-00834995           | 0        | 14300175 |
| 22 | Hapmap25851-BTA-148529 | 0        | 14380979 |
| 22 | BTB-01536368           | 0        | 14390250 |
| 22 | BTB-01536365           | 0        | 14437598 |
| 22 | Hapmap38047-BTA-101643 | 0        | 14472226 |
| 22 | ARS-BFGL-NGS-41778     | 0        | 14514444 |
| 22 | ARS-BFGL-NGS-102663    | 0        | 14535643 |
| 22 | ARS-BFGL-NGS-87388     | 0        | 14611272 |
| 22 | ARS-BFGL-NGS-11112     | 0        | 14654094 |
| 22 | ARS-BFGL-NGS-17964     | 0        | 14688385 |
| 22 | ARS-BFGL-NGS-16135     | 0        | 14737606 |
| 22 | ARS-BFGL-NGS-89613     | 0        | 14782972 |
| 22 | BTA-53716-no-rs        | 0        | 14804081 |
| 22 | ARS-BFGL-NGS-40091     | 0        | 14834123 |
| 22 | ARS-BFGL-NGS-102061    | 0        | 14884534 |
| 22 | ARS-BFGL-NGS-56148     | 0        | 14914252 |
| 22 | ARS-BFGL-NGS-48781     | 0        | 14951169 |
| 22 | ARS-BFGL-BAC-30373     | 0        | 15037352 |
| 22 | Hapmap47771-BTA-89634  | 0        | 15062848 |
| 22 | Hapmap51083-BTA-89628  | 0        | 15136147 |
| 22 | ARS-BFGL-NGS-78511     | 0        | 15177059 |
| 22 | ARS-BFGL-NGS-32980     | 15276355 |          |
| 22 | BTB-00835129           | 0        | 15312341 |
| 22 | ARS-BFGL-NGS-30940     | 0        | 15424279 |
| 22 | BTB-01778445           | 0        | 15534060 |
| 22 | ARS-BFGL-NGS-15552     | 0        | 15589177 |
| 22 | ARS-BFGL-NGS-77884     | 0        | 15658179 |
| 22 | ARS-BFGL-NGS-111950    | 0        | 15700731 |
| 22 | ARS-BFGL-NGS-37550     | 0        | 15751257 |
| 22 | ARS-BFGL-NGS-111093    | 0        | 15806114 |
| 22 | ARS-BFGL-NGS-14119     | 0        | 15889570 |
| 22 | ARS-BFGL-NGS-73531     | 0        | 15920835 |
| 22 | ARS-BFGL-NGS-82304     | 0        | 15974506 |
| 22 | ARS-BFGL-NGS-49100     | 16169625 |          |

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| 22 | ARS-BFGL-NGS-33853     | 0 | 16219978 |
| 22 | ARS-BFGL-NGS-108127    | 0 | 16301901 |
| 22 | Hapmap39758-BTA-53663  | 0 | 16407075 |
| 22 | ARS-BFGL-NGS-15569     | 0 | 16437316 |
| 22 | BTA-53660-no-rs        | 0 | 16470040 |
| 22 | BTB-00837920           | 0 | 16531187 |
| 22 | ARS-BFGL-BAC-30364     | 0 | 16588477 |
| 22 | ARS-BFGL-NGS-42158     | 0 | 16614706 |
| 22 | ARS-BFGL-NGS-91250     | 0 | 16661066 |
| 22 | ARS-BFGL-BAC-30365     | 0 | 16696579 |
| 22 | ARS-BFGL-NGS-110176    | 0 | 16727330 |
| 22 | Hapmap41571-BTA-53654  | 0 | 16773170 |
| 22 | Hapmap59560-rs29017213 | 0 | 16794296 |
| 22 | ARS-BFGL-NGS-110354    | 0 | 16914504 |
| 22 | ARS-BFGL-NGS-18277     | 0 | 16961290 |
| 22 | Hapmap40130-BTA-53653  | 0 | 16989798 |
| 22 | Hapmap43611-BTA-53650  | 0 | 17044215 |
| 22 | ARS-BFGL-NGS-19765     | 0 | 17072951 |
| 22 | Hapmap41572-BTA-53725  | 0 | 17173373 |
| 22 | Hapmap29346-BTA-136378 | 0 | 17210607 |
| 22 | BTB-01672122           | 0 | 17303141 |
| 22 | Hapmap26750-BTA-157857 | 0 | 17368119 |
| 22 | Hapmap57361-rs29014847 | 0 | 17440447 |
| 22 | Hapmap40045-BTA-116935 | 0 | 17476978 |
| 22 | ARS-BFGL-NGS-100997    | 0 | 17528971 |
| 22 | ARS-BFGL-NGS-21410     | 0 | 17556764 |
| 22 | ARS-BFGL-NGS-97597     | 0 | 17578228 |
| 22 | Hapmap49470-BTA-116950 | 0 | 17629960 |
| 22 | Hapmap47847-BTA-116952 | 0 | 17668911 |
| 22 | Hapmap26190-BTA-157864 | 0 | 17736238 |
| 22 | ARS-BFGL-NGS-40199     | 0 | 17793439 |
| 22 | ARS-BFGL-NGS-26943     | 0 | 17831641 |
| 22 | ARS-BFGL-NGS-24126     | 0 | 17857858 |
| 22 | BTA-55223-no-rs        | 0 | 17882779 |
| 22 | ARS-BFGL-NGS-105070    | 0 | 17911023 |
| 22 | ARS-BFGL-NGS-92664     | 0 | 17947543 |
| 22 | ARS-BFGL-NGS-119355    | 0 | 17979751 |
| 22 | BTA-55216-no-rs        | 0 | 18008945 |
| 22 | ARS-BFGL-NGS-52880     | 0 | 18039089 |
| 22 | BTA-53738-no-rs        | 0 | 18186376 |
| 22 | ARS-BFGL-NGS-30495     | 0 | 18247196 |
| 22 | ARS-BFGL-NGS-34917     | 0 | 18298289 |
| 22 | ARS-BFGL-NGS-80740     | 0 | 18320948 |
| 22 | BTB-00840176           | 0 | 18358528 |
| 22 | ARS-BFGL-NGS-36137     | 0 | 18391209 |
| 22 | ARS-BFGL-NGS-24810     | 0 | 18457027 |
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| 22 | ARS-BFGL-NGS-33584     | 0 | 18628331 |
| 22 | ARS-BFGL-NGS-35507     | 0 | 18655823 |
| 22 | BTA-53732-no-rs        | 0 | 18677760 |
| 22 | BTA-53731-no-rs        | 0 | 18730860 |
| 22 | ARS-BFGL-NGS-35294     | 0 | 18774368 |
| 22 | ARS-BFGL-NGS-61811     | 0 | 18813188 |
| 22 | ARS-BFGL-NGS-24520     | 0 | 18839403 |

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| 22 | BTB-00839606           | 0 | 18884775 |
| 22 | ARS-BFGL-NGS-63033     | 0 | 18921591 |
| 22 | BTB-00839408           | 0 | 18978658 |
| 22 | ARS-BFGL-NGS-97664     | 0 | 19009765 |
| 22 | BTB-00839354           | 0 | 19129988 |
| 22 | BTB-00839323           | 0 | 19168846 |
| 22 | Hapmap26726-BTA-153204 | 0 | 19214010 |
| 22 | Hapmap22807-BTA-153197 | 0 | 19286702 |
| 22 | BTB-01560413           | 0 | 19348878 |
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| 22 | ARS-BFGL-NGS-114883    | 0 | 19481233 |
| 22 | Hapmap46118-BTA-108252 | 0 | 19532910 |
| 22 | ARS-BFGL-NGS-116099    | 0 | 19624572 |
| 22 | BTB-01245390           | 0 | 19668749 |
| 22 | Hapmap58806-rs29017282 | 0 | 19715510 |
| 22 | Hapmap60727-rs29025595 | 0 | 19749589 |
| 22 | Hapmap40022-BTA-70534  | 0 | 19807636 |
| 22 | Hapmap39236-BTA-70532  | 0 | 19842704 |
| 22 | BTB-00184322           | 0 | 19887271 |
| 22 | ARS-BFGL-NGS-31373     | 0 | 19952965 |
| 22 | ARS-BFGL-NGS-118881    | 0 | 20016115 |
| 22 | Hapmap50449-BTA-70525  | 0 | 20074083 |
| 22 | BTB-00184159           | 0 | 20130648 |
| 22 | Hapmap38565-BTA-109448 | 0 | 20179074 |
| 22 | ARS-BFGL-BAC-60300     |   | 20257375 |
| 22 | BTB-01291903           | 0 | 20294936 |
| 22 | Hapmap44504-BTA-03111  | 0 | 20329458 |
| 22 | ARS-BFGL-NGS-32700     | 0 | 20397580 |
| 22 | Hapmap54956-rs29010379 | 0 | 20434643 |
| 22 | ARS-BFGL-NGS-85778     | 0 | 20451252 |
| 22 | BTA-18671-no-rs        | 0 | 20491299 |
| 22 | ARS-BFGL-NGS-98117     | 0 | 20553635 |
| 22 | ARS-BFGL-NGS-93529     | 0 | 20591179 |
| 22 | Hapmap42966-BTA-53761  | 0 | 20661636 |
| 22 | Hapmap42967-BTA-53762  | 0 | 20715825 |
| 22 | Hapmap32056-BTA-136395 | 0 | 20748752 |
| 22 | ARS-BFGL-NGS-95371     | 0 | 20786020 |
| 22 | Hapmap54944-rs29012357 | 0 | 20826586 |
| 22 | BTB-00841056           | 0 | 20906455 |
| 22 | ARS-BFGL-NGS-14178     | 0 | 20920119 |
| 22 | ARS-BFGL-NGS-16473     | 0 | 20974146 |
| 22 | Hapmap24079-BTA-136416 | 0 | 21000933 |
| 22 | BTB-00841311           | 0 | 21085263 |
| 22 | BTB-00841422           | 0 | 21119081 |
| 22 | BTA-24112-no-rs        | 0 | 21134847 |
| 22 | BTA-91554-no-rs        | 0 | 21164077 |
| 22 | BTB-00841577           | 0 | 21203326 |
| 22 | BTA-53769-no-rs        | 0 | 21250557 |
| 22 | Hapmap47657-BTA-53851  | 0 | 21266612 |
| 22 | BTB-00842968           | 0 | 21361239 |
| 22 | ARS-BFGL-NGS-100124    | 0 | 21431682 |
| 22 | ARS-BFGL-NGS-65462     | 0 | 21455286 |
| 22 | ARS-BFGL-BAC-30382     | 0 | 21495296 |
| 22 | ARS-BFGL-NGS-19546     | 0 | 21547900 |

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| 22 | Hapmap38965-BTA-53804                 | 0        | 21614894 |          |          |
| 22 | ARS-BFGL-NGS-88777                    | 0        | 21647999 |          |          |
| 22 | ARS-BFGL-NGS-119348                   | 0        | 21686600 |          |          |
| 22 | UA-IFASA-6291                         | 0        | 21736880 |          |          |
| 22 | UA-IFASA-6532                         | 0        | 21770149 |          |          |
| 22 | BTB-00841829                          | 0        | 21809951 |          |          |
| 22 | UA-IFASA-6407                         | 0        | 21853102 |          |          |
| 22 | ARS-BFGL-NGS-60695                    | 0        | 21888915 |          |          |
| 22 | ARS-BFGL-NGS-22498                    | 0        | 21943722 |          |          |
| 22 | Hapmap50386-BTA-53775                 | 0        | 22004775 |          |          |
| 22 | ARS-BFGL-NGS-112847                   | 0        | 22047960 |          |          |
| 22 | Hapmap52611-rs29018692                | 0        | 22075972 |          |          |
| 22 | ARS-BFGL-NGS-107827                   | 0        | 22114742 |          |          |
| 22 | ARS-BFGL-NGS-57234                    | 0        | 22160219 |          |          |
| 22 | ARS-BFGL-NGS-13194                    | 0        | 22382709 |          |          |
| 22 | BTB-01234067                          | 0        | 22468608 |          |          |
| 22 | ARS-BFGL-NGS-113544                   | 0        | 22558590 |          |          |
| 22 | ARS-USMARC-Parent-EF093509-rs29015170 | 0        | 22573121 | 0        | 22573121 |
| 22 | ARS-BFGL-NGS-102988                   | 0        | 22682370 |          |          |
| 22 | BTB-01233929                          | 0        | 22811054 |          |          |
| 22 | ARS-BFGL-NGS-48182                    | 0        | 22869809 |          |          |
| 22 | BTA-53817-no-rs                       | 0        | 22961332 |          |          |
| 22 | Hapmap51254-BTA-53826                 | 0        | 22997440 |          |          |
| 22 | ARS-BFGL-NGS-27533                    | 0        | 23065451 |          |          |
| 22 | ARS-BFGL-NGS-13590                    | 23186972 |          |          |          |
| 22 | ARS-BFGL-NGS-52594                    | 0        | 23214897 |          |          |
| 22 | ARS-BFGL-NGS-33615                    | 0        | 23245545 |          |          |
| 22 | ARS-BFGL-NGS-92324                    | 0        | 23268971 |          |          |
| 22 | BTA-14388-rs29023151                  | 0        | 23303686 |          |          |
| 22 | ARS-BFGL-NGS-37492                    | 0        | 23329129 |          |          |
| 22 | ARS-BFGL-NGS-111517                   | 0        | 23365188 |          |          |
| 22 | ARS-BFGL-NGS-111308                   | 0        | 23390508 |          |          |
| 22 | ARS-BFGL-NGS-57585                    | 0        | 23458863 |          |          |
| 22 | BTA-16900-no-rs                       | 0        | 23502867 |          |          |
| 22 | ARS-BFGL-NGS-41434                    | 0        | 23554117 |          |          |
| 22 | Hapmap55470-rs29017069                | 0        | 23575419 |          |          |
| 22 | BTB-00842597                          | 0        | 23626348 |          |          |
| 22 | ARS-BFGL-NGS-36467                    | 0        | 23682224 |          |          |
| 22 | Hapmap24296-BTA-136423                | 0        | 23729069 |          |          |
| 22 | Hapmap35135-BES10_Contig779_1471      | 0        | 23765329 | 23765329 |          |
| 22 | BTA-108140-no-rs                      | 0        | 23834157 |          |          |
| 22 | Hapmap31051-BTA-108138                | 0        | 23879479 |          |          |
| 22 | Hapmap49433-BTA-108141                | 0        | 23914818 |          |          |
| 22 | Hapmap58155-rs29020843                | 0        | 23984012 |          |          |
| 22 | BTA-53805-no-rs                       | 0        | 24007619 |          |          |
| 22 | ARS-BFGL-NGS-21799                    | 0        | 24032586 |          |          |
| 22 | BTB-00842370                          | 0        | 24078956 |          |          |
| 22 | BTA-04040-rs29014407                  | 0        | 24112377 |          |          |
| 22 | ARS-BFGL-BAC-45020                    | 24181857 |          |          |          |
| 22 | BTA-92840-no-rs                       | 0        | 24219999 |          |          |
| 22 | BTA-53875-no-rs                       | 0        | 24293970 |          |          |
| 22 | ARS-BFGL-NGS-24541                    | 0        | 24347814 |          |          |
| 22 | ARS-BFGL-NGS-38142                    | 0        | 24377214 |          |          |
| 22 | Hapmap42578-BTA-53881                 | 0        | 24428789 |          |          |

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| 22 | BTA-53883-no-rs                 | 0 | 24462555 |  |
| 22 | Hapmap27747-BTA-136437          | 0 | 24494154 |  |
| 22 | ARS-BFGL-NGS-44075              | 0 | 24538255 |  |
| 22 | BTA-53892-no-rs                 | 0 | 24576730 |  |
| 22 | Hapmap47321-BTA-53898           | 0 | 24668744 |  |
| 22 | BTA-53899-no-rs                 | 0 | 24689372 |  |
| 22 | Hapmap22928-BTA-136455          | 0 | 24842302 |  |
| 22 | BTB-00844564                    | 0 | 24892680 |  |
| 22 | BTB-00844720                    | 0 | 24993912 |  |
| 22 | Hapmap50387-BTA-53912           | 0 | 25030110 |  |
| 22 | BTA-53914-no-rs                 | 0 | 25056533 |  |
| 22 | ARS-BFGL-NGS-109363             | 0 | 25076967 |  |
| 22 | Hapmap38325-BTA-53915           | 0 | 25113789 |  |
| 22 | BTA-53922-no-rs                 | 0 | 25141851 |  |
| 22 | BTA-53925-no-rs                 | 0 | 25267209 |  |
| 22 | Hapmap61078-rs29026400          | 0 | 25321072 |  |
| 22 | Hapmap48807-BTA-53967           | 0 | 25374624 |  |
| 22 | BTA-53968-no-rs                 | 0 | 25437215 |  |
| 22 | BTB-01853208                    | 0 | 25551900 |  |
| 22 | BTA-100621-no-rs                | 0 | 25598780 |  |
| 22 | BTA-100624-no-rs                | 0 | 25617237 |  |
| 22 | Hapmap34595-BES7_Contig485_1361 | 0 | 25808620 |  |
| 22 | Hapmap32083-BTA-147240          | 0 | 25978117 |  |
| 22 | Hapmap31553-BTA-86073           | 0 | 26002227 |  |
| 22 | BTB-01379989                    | 0 | 26121870 |  |
| 22 | BTA-86068-no-rs                 | 0 | 26163729 |  |
| 22 | BTB-01464126                    | 0 | 26206868 |  |
| 22 | ARS-BFGL-NGS-103142             | 0 | 26256400 |  |
| 22 | Hapmap25302-BTA-150556          | 0 | 26294371 |  |
| 22 | ARS-BFGL-NGS-54727              | 0 | 26315000 |  |
| 22 | ARS-BFGL-NGS-103264             | 0 | 26355258 |  |
| 22 | ARS-BFGL-NGS-67328              | 0 | 26504086 |  |
| 22 | BTA-77184-no-rs                 | 0 | 26604789 |  |
| 22 | Hapmap51493-BTA-77185           | 0 | 26657157 |  |
| 22 | Hapmap45714-BTA-77191           | 0 | 26719493 |  |
| 22 | BTA-74869-no-rs                 | 0 | 26865100 |  |
| 22 | BTB-00220229                    | 0 | 26924506 |  |
| 22 | BTB-00220180                    | 0 | 26983681 |  |
| 22 | BTA-74763-no-rs                 | 0 | 27033445 |  |
| 22 | BTB-00220167                    | 0 | 27044601 |  |
| 22 | BTA-74745-no-rs                 | 0 | 27079444 |  |
| 22 | BTA-74734-no-rs                 | 0 | 27114305 |  |
| 22 | BTA-74727-no-rs                 | 0 | 27116737 |  |
| 22 | Hapmap33580-BTA-136506          | 0 | 27280154 |  |
| 22 | Hapmap26394-BTA-136497          | 0 | 27309084 |  |
| 22 | ARS-BFGL-NGS-29950              | 0 | 27362842 |  |
| 22 | ARS-BFGL-NGS-105900             | 0 | 27397550 |  |
| 22 | BTA-54060-no-rs                 | 0 | 27427804 |  |
| 22 | ARS-BFGL-NGS-42576              | 0 | 27556050 |  |
| 22 | BTA-54042-no-rs                 | 0 | 27591140 |  |
| 22 | Hapmap42968-BTA-54040           | 0 | 27647893 |  |
| 22 | Hapmap38901-BTA-54038           | 0 | 27674939 |  |
| 22 | ARS-BFGL-NGS-15682              | 0 | 27769749 |  |
| 22 | ARS-BFGL-BAC-35754              | 0 | 27794006 |  |



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| 22 | ARS-BFGL-NGS-81301              | 0        | 27856677 |          |
| 22 | ARS-BFGL-NGS-10107              | 0        | 27925585 |          |
| 22 | Hapmap51255-BTA-54024           | 0        | 28037314 |          |
| 22 | BTA-91650-no-rs                 | 0        | 28111843 |          |
| 22 | ARS-BFGL-NGS-35996              | 0        | 28161068 |          |
| 22 | Hapmap53654-rs29027191          | 0        | 28208926 |          |
| 22 | ARS-BFGL-NGS-107702             | 0        | 28292573 |          |
| 22 | ARS-BFGL-NGS-91452              | 0        | 28318270 |          |
| 22 | ARS-BFGL-BAC-35748              | 0        | 28374530 |          |
| 22 | ARS-BFGL-NGS-68106              | 0        | 28396385 |          |
| 22 | ARS-BFGL-NGS-117825             | 0        | 28433171 |          |
| 22 | ARS-BFGL-NGS-109224             | 0        | 28524038 |          |
| 22 | Hapmap58858-rs29023597          | 0        | 28569757 |          |
| 22 | ARS-BFGL-NGS-35360              | 0        | 28594240 |          |
| 22 | ARS-BFGL-NGS-23735              | 0        | 28635957 |          |
| 22 | Hapmap40360-BTA-53989           | 0        | 28673485 |          |
| 22 | ARS-BFGL-NGS-92124              | 0        | 28714406 |          |
| 22 | BTA-53982-no-rs                 | 0        | 28737766 |          |
| 22 | Hapmap27395-BTA-136468          | 0        | 28788894 |          |
| 22 | ARS-BFGL-NGS-42270              | 29101885 |          |          |
| 22 | Hapmap53119-rs29018454          | 0        | 29237947 |          |
| 22 | Hapmap33847-BES9_Contig373_1108 | 0        |          | 29300905 |
| 22 | ARS-BFGL-NGS-35481              | 0        | 29403983 |          |
| 22 | ARS-BFGL-NGS-117851             | 0        | 29476244 |          |
| 22 | Hapmap29107-BTA-149070          | 0        | 29520183 |          |
| 22 | ARS-BFGL-NGS-112715             | 0        | 29546235 |          |
| 22 | ARS-BFGL-NGS-64616              | 0        | 29604876 |          |
| 22 | ARS-BFGL-NGS-59260              | 0        | 29635362 |          |
| 22 | ARS-BFGL-BAC-35770              | 0        | 29655985 |          |
| 22 | ARS-BFGL-NGS-10971              | 0        | 29705155 |          |
| 22 | ARS-BFGL-NGS-113670             | 0        | 29803741 |          |
| 22 | ARS-BFGL-NGS-20317              | 0        | 29854903 |          |
| 22 | Hapmap39759-BTA-54112           | 0        | 30010174 |          |
| 22 | Hapmap46359-BTA-26846           | 0        | 30044319 |          |
| 22 | ARS-BFGL-NGS-76231              | 0        | 30187053 |          |
| 22 | Hapmap24485-BTA-136527          | 0        | 30245042 |          |
| 22 | Hapmap31416-BTA-136529          | 0        | 30398665 |          |
| 22 | BTA-54115-no-rs                 | 0        | 30488276 |          |
| 22 | Hapmap30347-BTA-54117           | 0        | 30518549 |          |
| 22 | ARS-BFGL-NGS-21173              | 0        | 30598794 |          |
| 22 | Hapmap46953-BTA-121345          | 0        | 30769143 |          |
| 22 | Hapmap50289-BTA-24348           | 0        | 30863595 |          |
| 22 | ARS-BFGL-NGS-108422             | 0        | 30894155 |          |
| 22 | Hapmap30334-BTA-24354           | 0        | 30952379 |          |
| 22 | ARS-BFGL-NGS-86309              | 0        | 30988035 |          |
| 22 | ARS-BFGL-NGS-103188             | 0        | 31020826 |          |
| 22 | ARS-BFGL-NGS-10105              | 0        | 31052013 |          |
| 22 | ARS-BFGL-NGS-115242             | 0        | 31087678 |          |
| 22 | Hapmap45590-BTA-97750           | 0        | 31131541 |          |
| 22 | ARS-BFGL-NGS-39255              | 0        | 31188606 |          |
| 22 | Hapmap35325-BES7_Contig247_1147 | 0        |          | 31259303 |
| 22 | ARS-BFGL-NGS-77117              | 0        | 31309419 |          |
| 22 | ARS-BFGL-BAC-35760              | 0        | 31409974 |          |
| 22 | ARS-BFGL-NGS-80175              | 0        | 31446714 |          |

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| 22 | Hapmap54964-rs29011593 | 0        | 31481925 |
| 22 | BTA-114529-no-rs       | 0        | 31527795 |
| 22 | Hapmap7840-BTA-54134   | 0        | 31649896 |
| 22 | Hapmap60793-rs29018735 | 0        | 31702243 |
| 22 | ARS-BFGL-BAC-33156     | 0        | 31759270 |
| 22 | ARS-BFGL-NGS-44682     | 0        | 31782668 |
| 22 | Hapmap40441-BTA-54131  | 0        | 31841994 |
| 22 | Hapmap32057-BTA-136551 | 0        | 31938780 |
| 22 | Hapmap26395-BTA-136544 | 0        | 31960252 |
| 22 | Hapmap59952-rs29019970 | 0        | 32041036 |
| 22 | Hapmap30066-BTA-54068  | 0        | 32131933 |
| 22 | ARS-BFGL-NGS-99895     | 0        | 32175665 |
| 22 | ARS-BFGL-NGS-68862     | 0        | 32208759 |
| 22 | ARS-BFGL-NGS-60299     | 0        | 32234944 |
| 22 | BTA-54082-no-rs        | 0        | 32257185 |
| 22 | ARS-BFGL-NGS-19809     | 0        | 32298375 |
| 22 | Hapmap44467-BTA-54083  | 0        | 32324849 |
| 22 | ARS-BFGL-NGS-102789    | 0        | 32369396 |
| 22 | Hapmap25256-BTA-136520 | 0        | 32390645 |
| 22 | Hapmap45771-BTA-54088  | 0        | 32538832 |
| 22 | ARS-BFGL-NGS-21229     | 0        | 32573751 |
| 22 | Hapmap52235-ss46526582 | 0        | 32599934 |
| 22 | ARS-BFGL-NGS-19629     | 0        | 32651309 |
| 22 | ARS-BFGL-NGS-116119    | 0        | 32693879 |
| 22 | ARS-BFGL-NGS-32482     | 0        | 32794982 |
| 22 | Hapmap51256-BTA-54100  | 0        | 32827786 |
| 22 | BTA-54110-no-rs        | 0        | 32930704 |
| 22 | ARS-BFGL-NGS-31607     | 0        | 32990568 |
| 22 | BTA-79149-no-rs        | 0        | 33076318 |
| 22 | Hapmap43051-BTA-79151  | 0        | 33098772 |
| 22 | ARS-BFGL-NGS-29523     | 0        | 33193736 |
| 22 | Hapmap46875-BTA-79157  | 0        | 33245588 |
| 22 | ARS-BFGL-BAC-33160     | 0        | 33290034 |
| 22 | BTA-79164-no-rs        | 0        | 33310297 |
| 22 | Hapmap52084-rs29011014 | 0        | 33350429 |
| 22 | ARS-BFGL-NGS-110665    | 0        | 33423142 |
| 22 | ARS-BFGL-BAC-48450     | 33446270 |          |
| 22 | ARS-BFGL-BAC-35103     | 0        | 33469183 |
| 22 | ARS-BFGL-NGS-79484     | 0        | 33511119 |
| 22 | Hapmap49344-BTA-85023  | 0        | 33583017 |
| 22 | Hapmap32064-BTA-138840 | 0        | 33665698 |
| 22 | Hapmap42996-BTA-60916  | 0        | 33690494 |
| 22 | Hapmap47345-BTA-60915  | 0        | 33766195 |
| 22 | Hapmap29351-BTA-138815 | 0        | 33935727 |
| 22 | Hapmap38474-BTA-122598 | 0        | 33983201 |
| 22 | Hapmap52799-ss46526060 | 0        | 34046326 |
| 22 | Hapmap53460-rs29027620 | 0        | 34127590 |
| 22 | ARS-BFGL-NGS-91144     | 0        | 34181203 |
| 22 | Hapmap43895-BTA-60905  | 0        | 34216267 |
| 22 | ARS-BFGL-NGS-55340     | 34244868 |          |
| 22 | BTA-60902-no-rs        | 0        | 34265726 |
| 22 | Hapmap49788-BTA-88951  | 0        | 34311771 |
| 22 | ARS-BFGL-NGS-109445    | 0        | 34339125 |
| 22 | ARS-BFGL-BAC-25910     | 34385123 |          |

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| 22 | ARS-BFGL-NGS-40184             | 0 | 34416644 |  |
| 22 | ARS-BFGL-NGS-33625             | 0 | 34882212 |  |
| 22 | Hapmap24903-BTA-54156          | 0 | 34939274 |  |
| 22 | ARS-BFGL-BAC-35711             | 0 | 35115756 |  |
| 22 | ARS-BFGL-NGS-26784             | 0 | 35137655 |  |
| 22 | BTA-54170-no-rs                | 0 | 35250658 |  |
| 22 | BTA-54174-no-rs                | 0 | 35287744 |  |
| 22 | Hapmap51905-BTA-54176          | 0 | 35328236 |  |
| 22 | Hapmap48384-BTA-54234          | 0 | 35354500 |  |
| 22 | ARS-BFGL-NGS-110326            | 0 | 35385782 |  |
| 22 | ARS-BFGL-NGS-105963            | 0 | 35413050 |  |
| 22 | ARS-BFGL-NGS-103404            | 0 | 35442308 |  |
| 22 | Hapmap31418-BTA-136570         | 0 | 35465698 |  |
| 22 | ARS-BFGL-NGS-11671             | 0 | 35497292 |  |
| 22 | ARS-BFGL-NGS-67926             | 0 | 35527229 |  |
| 22 | BTA-54218-no-rs                | 0 | 35596534 |  |
| 22 | ARS-BFGL-NGS-18217             | 0 | 35629110 |  |
| 22 | Hapmap52539-rs29014630         | 0 | 35662420 |  |
| 22 | BTA-54217-no-rs                | 0 | 35707395 |  |
| 22 | ARS-BFGL-NGS-21808             | 0 | 35771697 |  |
| 22 | BTA-54207-no-rs                | 0 | 35807763 |  |
| 22 | Hapmap41295-BTA-54203          | 0 | 35844274 |  |
| 22 | BTA-54189-no-rs                | 0 | 35889976 |  |
| 22 | ARS-BFGL-NGS-40999             | 0 | 35972319 |  |
| 22 | Hapmap50888-BTA-121350         | 0 | 36047120 |  |
| 22 | BTA-22352-no-rs                | 0 | 36338436 |  |
| 22 | BTA-27368-no-rs                | 0 | 36452151 |  |
| 22 | Hapmap30035-BTA-155747         | 0 | 36499828 |  |
| 22 | Hapmap35530-SCAFFOLD65737_1657 | 0 | 36527685 |  |
| 22 | ARS-BFGL-BAC-35732             | 0 | 36548339 |  |
| 22 | Hapmap44094-BTA-54250          | 0 | 36560138 |  |
| 22 | ARS-BFGL-NGS-105840            | 0 | 36722990 |  |
| 22 | ARS-BFGL-NGS-44213             | 0 | 36754236 |  |
| 22 | ARS-BFGL-NGS-101780            | 0 | 36784006 |  |
| 22 | ARS-BFGL-NGS-101826            | 0 | 36866292 |  |
| 22 | Hapmap46086-BTA-54248          | 0 | 36927992 |  |
| 22 | Hapmap22708-BTA-136589         | 0 | 36949382 |  |
| 22 | ARS-BFGL-NGS-101737            | 0 | 37013886 |  |
| 22 | ARS-BFGL-NGS-119530            | 0 | 37083195 |  |
| 22 | ARS-BFGL-NGS-77115             | 0 | 37203531 |  |
| 22 | BTA-54244-no-rs                | 0 | 37265470 |  |
| 22 | Hapmap38038-BTA-54243          | 0 | 37337158 |  |
| 22 | ARS-BFGL-NGS-43302             | 0 | 37402411 |  |
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| 22 | ARS-BFGL-NGS-116802            | 0 | 37519085 |  |
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| 22 | UA-IFASA-4249                  | 0 | 37652444 |  |
| 22 | ARS-BFGL-NGS-117020            | 0 | 37709024 |  |
| 22 | BTA-109833-no-rs               | 0 | 37730087 |  |
| 22 | ARS-BFGL-NGS-48310             | 0 | 37760061 |  |
| 22 | BTA-13501-rs29018460           | 0 | 37785136 |  |
| 22 | Hapmap42580-BTA-54259          | 0 | 37813307 |  |
| 22 | ARS-BFGL-NGS-45829             | 0 | 37845837 |  |

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| 22 | Hapmap38729-BTA-121351         | 0 | 37968823 |          |
| 22 | Hapmap44388-BTA-54275          | 0 | 38047255 |          |
| 22 | ARS-BFGL-NGS-21848             | 0 | 38080562 |          |
| 22 | ARS-BFGL-NGS-75652             | 0 | 38110241 |          |
| 22 | ARS-BFGL-BAC-35737             | 0 | 38144146 |          |
| 22 | BTA-54293-no-rs                | 0 | 38169842 |          |
| 22 | ARS-BFGL-BAC-35740             | 0 | 38199861 |          |
| 22 | ARS-BFGL-NGS-100139            | 0 | 38243250 |          |
| 22 | Hapmap23398-BTA-136605         | 0 | 38303302 |          |
| 22 | BTA-54278-no-rs                | 0 | 38341013 |          |
| 22 | ARS-BFGL-NGS-12696             | 0 | 38461582 |          |
| 22 | ARS-BFGL-BAC-25990             |   | 38553083 |          |
| 22 | ARS-BFGL-NGS-37623             | 0 | 38648446 |          |
| 22 | ARS-BFGL-NGS-84349             | 0 | 38693078 |          |
| 22 | ARS-BFGL-NGS-98103             | 0 | 38727002 |          |
| 22 | Hapmap50026-BTA-54447          | 0 | 38759273 |          |
| 22 | ARS-BFGL-NGS-44810             |   | 38782041 |          |
| 22 | ARS-BFGL-NGS-82909             | 0 | 38815613 |          |
| 22 | Hapmap47039-BTA-54432          | 0 | 38877794 |          |
| 22 | BTA-54431-no-rs                | 0 | 38902715 |          |
| 22 | BTB-00846328                   | 0 | 38974248 |          |
| 22 | ARS-BFGL-NGS-58425             | 0 | 39026908 |          |
| 22 | BTB-00846254                   | 0 | 39074789 |          |
| 22 | BTB-00846141                   | 0 | 39188946 |          |
| 22 | ARS-BFGL-NGS-55340             | 0 | 39226376 |          |
| 22 | ARS-BFGL-NGS-71810             | 0 | 39276433 |          |
| 22 | ARS-BFGL-NGS-10930             |   | 39301446 |          |
| 22 | BTA-54404-no-rs                | 0 | 39330233 |          |
| 22 | Hapmap35958-SCAFFOLD36354_2181 | 0 |          | 39365900 |
| 22 | ARS-BFGL-NGS-119221            | 0 | 39389061 |          |
| 22 | ARS-BFGL-NGS-93535             | 0 | 39414833 |          |
| 22 | Hapmap41413-BTA-106121         | 0 | 39461150 |          |
| 22 | Hapmap60772-rs29020976         | 0 | 39491373 |          |
| 22 | BTB-01311348                   | 0 | 39545402 |          |
| 22 | ARS-BFGL-NGS-111295            | 0 | 39601681 |          |
| 22 | ARS-BFGL-BAC-25950             |   | 39657636 |          |
| 22 | ARS-BFGL-NGS-17550             | 0 | 39702951 |          |
| 22 | ARS-BFGL-NGS-10155             | 0 | 40079119 |          |
| 22 | Hapmap26421-BTA-148672         | 0 | 40113694 |          |
| 22 | ARS-BFGL-NGS-14090             |   | 40167931 |          |
| 22 | ARS-BFGL-NGS-109967            | 0 | 40195640 |          |
| 22 | ARS-BFGL-NGS-116598            | 0 | 40232132 |          |
| 22 | ARS-BFGL-NGS-15809             | 0 | 40382875 |          |
| 22 | Hapmap39642-BTA-28263          | 0 | 40389345 |          |
| 22 | Hapmap32338-BTA-149015         | 0 | 40456324 |          |
| 22 | Hapmap38398-BTA-28256          | 0 | 40495544 |          |
| 22 | Hapmap35514-SCAFFOLD96282_2582 | 0 |          | 40519013 |
| 22 | BTA-122849-no-rs               | 0 | 40557691 |          |
| 22 | ARS-BFGL-NGS-59684             | 0 | 40604309 |          |
| 22 | UA-IFASA-4856                  | 0 | 40633105 |          |
| 22 | Hapmap55168-rs29017467         | 0 | 40660672 |          |
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| 22 | ARS-BFGL-NGS-95575             | 0 | 40726456 |          |
| 22 | BTB-01447224                   | 0 | 40833049 |          |

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| 22 | ARS-BFGL-NGS-41940              | 40997991 |          |
| 22 | BTB-00847100                    | 0        | 41032001 |
| 22 | BTB-00847079                    | 0        | 41109447 |
| 22 | Hapmap46428-BTA-54503           | 0        | 41141995 |
| 22 | Hapmap33894-BES9_Contig418_574  | 0        | 41194111 |
| 22 | ARS-BFGL-NGS-18917              | 0        | 41224019 |
| 22 | BTA-54499-no-rs                 | 0        | 41256253 |
| 22 | Hapmap42582-BTA-54484           | 0        | 41285179 |
| 22 | BTA-54480-no-rs                 | 0        | 41314139 |
| 22 | Hapmap42581-BTA-54463           | 0        | 41393601 |
| 22 | ARS-BFGL-NGS-39645              | 0        | 41417926 |
| 22 | ARS-BFGL-NGS-12851              | 0        | 41437950 |
| 22 | ARS-BFGL-BAC-35143              | 0        | 41480732 |
| 22 | ARS-BFGL-NGS-60129              | 0        | 41516332 |
| 22 | ARS-BFGL-BAC-33314              | 0        | 41537351 |
| 22 | Hapmap48704-BTA-27679           | 0        | 41573980 |
| 22 | Hapmap27229-BTA-162186          | 0        | 41693079 |
| 22 | ARS-BFGL-NGS-23637              | 0        | 41786532 |
| 22 | Hapmap31366-BTA-106474          | 0        | 41825294 |
| 22 | Hapmap38998-BTA-106501          | 0        | 41883131 |
| 22 | ARS-BFGL-NGS-65865              | 0        | 41903693 |
| 22 | ARS-BFGL-NGS-75444              | 0        | 41934247 |
| 22 | Hapmap43133-BTA-106470          | 0        | 41974372 |
| 22 | ARS-BFGL-NGS-21200              | 0        | 42031023 |
| 22 | Hapmap57565-rs29010880          | 0        | 42057997 |
| 22 | ARS-BFGL-NGS-33411              | 0        | 42084440 |
| 22 | BTA-106477-no-rs                | 0        | 42111462 |
| 22 | Hapmap48168-BTA-106480          | 0        | 42137230 |
| 22 | Hapmap49425-BTA-106482          | 0        | 42177755 |
| 22 | ARS-BFGL-NGS-20777              | 0        | 42202220 |
| 22 | ARS-BFGL-NGS-34862              | 0        | 42226149 |
| 22 | ARS-BFGL-NGS-110255             | 0        | 42284451 |
| 22 | ARS-BFGL-NGS-61201              | 0        | 42338567 |
| 22 | BTA-122342-no-rs                | 0        | 42360284 |
| 22 | ARS-BFGL-NGS-119426             | 0        | 42472743 |
| 22 | ARS-BFGL-BAC-28538              | 0        | 42492853 |
| 22 | Hapmap28371-BTA-154324          | 0        | 42542095 |
| 22 | ARS-BFGL-NGS-37580              | 42616545 |          |
| 22 | BTB-01944780                    | 0        | 42791065 |
| 22 | Hapmap44390-BTA-54545           | 0        | 42965301 |
| 22 | Hapmap33956-BES4_Contig493_3026 | 0        | 42994215 |
| 22 | BTA-54537-no-rs                 | 0        | 43045044 |
| 22 | ARS-BFGL-NGS-113756             | 0        | 43094806 |
| 22 | Hapmap53021-rs29009645          | 0        | 43127183 |
| 22 | ARS-BFGL-NGS-61008              | 0        | 43175304 |
| 22 | ARS-BFGL-NGS-100568             | 0        | 43218799 |
| 22 | ARS-BFGL-NGS-23279              | 0        | 43252018 |
| 22 | ARS-BFGL-NGS-22211              | 0        | 43274058 |
| 22 | ARS-BFGL-NGS-29294              | 0        | 43296761 |
| 22 | ARS-BFGL-NGS-111100             | 0        | 43336207 |
| 22 | ARS-BFGL-NGS-107129             | 0        | 43478537 |
| 22 | ARS-BFGL-NGS-43839              | 0        | 43518191 |
| 22 | Hapmap33950-BES3_Contig483_1359 | 0        | 43569849 |
| 22 | UA-IFASA-6042                   | 0        | 43595820 |

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| 22 | ARS-BFGL-NGS-39442     | 0        | 43620882 |
| 22 | ARS-BFGL-NGS-107592    | 0        | 43664444 |
| 22 | ARS-BFGL-BAC-28524     | 0        | 43691131 |
| 22 | ARS-BFGL-NGS-109885    | 0        | 43723207 |
| 22 | ARS-BFGL-NGS-103551    | 0        | 43773414 |
| 22 | BTB-00847362           | 0        | 43801163 |
| 22 | ARS-BFGL-NGS-102869    | 0        | 43834473 |
| 22 | Hapmap30494-BTA-122955 | 0        | 43862404 |
| 22 | Hapmap51144-BTA-11140  | 0        | 43894412 |
| 22 | Hapmap29492-BTA-54505  | 0        | 43914790 |
| 22 | Hapmap54532-rs29013429 | 0        | 43949380 |
| 22 | BTB-00847220           | 0        | 44030499 |
| 22 | BTA-54597-no-rs        | 0        | 44177312 |
| 22 | ARS-BFGL-NGS-75375     | 0        | 44266173 |
| 22 | Hapmap31160-BTA-153965 | 0        | 44296938 |
| 22 | Hapmap49214-BTA-54587  | 0        | 44339542 |
| 22 | BTB-00848517           | 0        | 44430993 |
| 22 | BTA-54585-no-rs        | 0        | 44480638 |
| 22 | ARS-BFGL-NGS-32388     | 0        | 44533699 |
| 22 | BTB-00848473           | 0        | 44565593 |
| 22 | ARS-BFGL-NGS-18749     | 0        | 44595995 |
| 22 | ARS-BFGL-NGS-112869    | 0        | 44619321 |
| 22 | ARS-BFGL-NGS-112409    | 0        | 44646095 |
| 22 | Hapmap26396-BTA-136640 | 0        | 44742047 |
| 22 | ARS-BFGL-NGS-82140     | 0        | 44765577 |
| 22 | Hapmap61036-rs29016268 | 0        | 44795825 |
| 22 | Hapmap42971-BTA-54556  | 0        | 44845224 |
| 22 | Hapmap39574-BTA-54554  | 0        | 44891648 |
| 22 | BTA-54550-no-rs        | 0        | 44948905 |
| 22 | ARS-BFGL-NGS-118471    | 0        | 45047902 |
| 22 | ARS-BFGL-NGS-81286     | 0        | 45118438 |
| 22 | BTA-54599-no-rs        | 0        | 45128545 |
| 22 | ARS-BFGL-NGS-115378    | 0        | 45148700 |
| 22 | Hapmap30805-BTA-136662 | 0        | 45178889 |
| 22 | Hapmap59588-rs29018461 | 0        | 45224109 |
| 22 | Hapmap42246-BTA-54605  | 0        | 45259497 |
| 22 | Hapmap41019-BTA-54608  | 0        | 45286800 |
| 22 | Hapmap47984-BTA-54611  | 0        | 45316746 |
| 22 | Hapmap42844-BTA-121357 | 0        | 45355303 |
| 22 | BTB-00848949           | 0        | 45403139 |
| 22 | ARS-BFGL-NGS-26800     | 0        | 45448000 |
| 22 | Hapmap53981-rs29024347 | 0        | 45470576 |
| 22 | Hapmap49215-BTA-54614  | 0        | 45512122 |
| 22 | BTB-00849108           | 0        | 45556690 |
| 22 | BTA-54617-no-rs        | 0        | 45698497 |
| 22 | ARS-BFGL-NGS-19389     | 0        | 45723095 |
| 22 | BTA-54618-no-rs        | 0        | 45750581 |
| 22 | Hapmap27903-BTA-54620  | 0        | 45821043 |
| 22 | BTB-00849206           | 0        | 45866182 |
| 22 | ARS-BFGL-NGS-116947    | 0        | 45896379 |
| 22 | Hapmap38075-BTA-54630  | 0        | 45975343 |
| 22 | ARS-BFGL-NGS-16790     | 46024016 |          |
| 22 | BTA-19298-no-rs        | 0        | 46098277 |
| 22 | BTB-01833705           | 0        | 46131029 |

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| 22 | UA-IFASA-2605                         | 0 | 46211779 |
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| 22 | ARS-BFGL-NGS-40436                    | 0 | 46273481 |
| 22 | Hapmap41900-BTA-54636                 | 0 | 46309192 |
| 22 | Hapmap50027-BTA-54637                 | 0 | 46352132 |
| 22 | ARS-BFGL-NGS-110651                   | 0 | 46384288 |
| 22 | BTB-00849628                          | 0 | 46450719 |
| 22 | ARS-BFGL-NGS-817                      | 0 | 46533857 |
| 22 | ARS-BFGL-NGS-26419                    | 0 | 46607237 |
| 22 | ARS-BFGL-NGS-34067                    | 0 | 46663211 |
| 22 | ARS-BFGL-NGS-81589                    | 0 | 46691404 |
| 22 | BTB-00849757                          | 0 | 46751219 |
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| 22 | ARS-BFGL-NGS-63880                    | 0 | 46850967 |
| 22 | ARS-BFGL-NGS-111049                   | 0 | 46902036 |
| 22 | BTB-01913549                          | 0 | 46969215 |
| 22 | ARS-BFGL-NGS-59768                    | 0 | 47044737 |
| 22 | Hapmap32362-BTA-155537                | 0 | 47103229 |
| 22 | BTA-54671-no-rs                       | 0 | 47163956 |
| 22 | BTA-07404-no-rs                       | 0 | 47219601 |
| 22 | ARS-BFGL-NGS-73007                    | 0 | 47244749 |
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| 22 | ARS-BFGL-NGS-47500                    | 0 | 47317128 |
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| 22 | ARS-BFGL-NGS-58114                    | 0 | 47510478 |
| 22 | ARS-BFGL-NGS-108083                   | 0 | 47537080 |
| 22 | ARS-BFGL-NGS-36970                    | 0 | 47619247 |
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| 22 | ARS-BFGL-BAC-30967                    | 0 | 47856067 |
| 22 | ARS-BFGL-NGS-30091                    | 0 | 47943947 |
| 22 | Hapmap41575-BTA-54694                 | 0 | 47983179 |
| 22 | ARS-BFGL-NGS-114025                   | 0 | 48014982 |
| 22 | BTB-00850807                          | 0 | 48063014 |
| 22 | ARS-BFGL-NGS-19917                    | 0 | 48109722 |
| 22 | ARS-BFGL-NGS-34582                    | 0 | 48136758 |
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| 22 | Hapmap33683-BTA-26389                 | 0 | 48210434 |
| 22 | ARS-BFGL-NGS-22249                    | 0 | 48283392 |
| 22 | ARS-BFGL-NGS-106065                   | 0 | 48315348 |
| 22 | ARS-BFGL-NGS-75959                    | 0 | 48349750 |
| 22 | ARS-BFGL-NGS-79759                    | 0 | 48374877 |
| 22 | ARS-BFGL-NGS-21218                    | 0 | 48406016 |
| 22 | ARS-BFGL-NGS-71818                    | 0 | 48464301 |
| 22 | Hapmap24297-BTA-136715                | 0 | 48493438 |
| 22 | Hapmap49652-BTA-54737                 | 0 | 48537375 |

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| 22 | ARS-BFGL-NGS-104605    | 0        | 48575040 |
| 22 | Hapmap26665-BTA-136771 | 0        | 48628872 |
| 22 | ARS-BFGL-NGS-36474     | 0        | 48663639 |
| 22 | BTB-00854474           | 0        | 48727610 |
| 22 | Hapmap39844-BTA-54797  | 0        | 48764434 |
| 22 | Hapmap25085-BTA-156050 | 0        | 48810254 |
| 22 | ARS-BFGL-NGS-102498    | 0        | 48830838 |
| 22 | ARS-BFGL-NGS-29744     | 0        | 48880998 |
| 22 | ARS-BFGL-NGS-76123     | 0        | 48904665 |
| 22 | ARS-BFGL-NGS-31208     | 0        | 49131324 |
| 22 | ARS-BFGL-NGS-115576    | 0        | 49206422 |
| 22 | ARS-BFGL-NGS-44610     | 0        | 49226530 |
| 22 | ARS-BFGL-NGS-85808     | 0        | 49251271 |
| 22 | ARS-BFGL-NGS-43780     | 49273889 |          |
| 22 | ARS-BFGL-NGS-42670     | 49356765 |          |
| 22 | ARS-BFGL-NGS-26408     | 0        | 49402072 |
| 22 | Hapmap47041-BTA-54700  | 0        | 49479051 |
| 22 | ARS-BFGL-NGS-107417    | 0        | 49515665 |
| 22 | ARS-BFGL-NGS-72105     | 0        | 49541424 |
| 22 | Hapmap46833-BTA-54748  | 0        | 49695503 |
| 22 | BTB-01344939           | 0        | 49804304 |
| 22 | ARS-BFGL-NGS-19029     | 0        | 49987199 |
| 22 | ARS-BFGL-NGS-31703     | 0        | 50009060 |
| 22 | ARS-BFGL-NGS-88154     | 0        | 50047287 |
| 22 | ARS-BFGL-NGS-117178    | 0        | 50296961 |
| 22 | ARS-BFGL-NGS-16330     | 0        | 50338409 |
| 22 | ARS-BFGL-NGS-15965     | 0        | 50407021 |
| 22 | ARS-BFGL-NGS-39459     | 0        | 50474049 |
| 22 | ARS-BFGL-NGS-43179     | 0        | 50533222 |
| 22 | ARS-BFGL-NGS-28703     | 0        | 50562087 |
| 22 | Hapmap60583-rs29027190 | 0        | 50652412 |
| 22 | Hapmap57252-rs29018823 | 0        | 50705290 |
| 22 | ARS-BFGL-NGS-19090     | 50786697 |          |
| 22 | BTA-54761-no-rs        | 0        | 50926015 |
| 22 | BTB-00851968           | 0        | 50993959 |
| 22 | ARS-BFGL-NGS-40920     | 0        | 51087450 |
| 22 | ARS-BFGL-NGS-17638     | 0        | 51112744 |
| 22 | ARS-BFGL-NGS-104258    | 0        | 51180659 |
| 22 | ARS-BFGL-NGS-119268    | 0        | 51214861 |
| 22 | ARS-BFGL-NGS-119923    | 0        | 51222664 |
| 22 | ARS-BFGL-NGS-58654     | 0        | 51245935 |
| 22 | ARS-BFGL-NGS-28042     | 0        | 51283351 |
| 22 | ARS-BFGL-NGS-116277    | 0        | 51321838 |
| 22 | ARS-BFGL-NGS-30489     | 0        | 51356807 |
| 22 | Hapmap58292-rs29023404 | 0        | 51398402 |
| 22 | ARS-BFGL-NGS-55098     | 0        | 51419074 |
| 22 | ARS-BFGL-NGS-111216    | 0        | 51452218 |
| 22 | ARS-BFGL-NGS-52080     | 51484825 |          |
| 22 | ARS-BFGL-NGS-102411    | 0        | 51550935 |
| 22 | Hapmap47322-BTA-54813  | 0        | 51607887 |
| 22 | ARS-BFGL-NGS-66300     | 0        | 51804078 |
| 22 | Hapmap47987-BTA-54785  | 0        | 51865370 |
| 22 | ARS-BFGL-NGS-97562     | 0        | 51900773 |
| 22 | ARS-BFGL-NGS-103597    | 0        | 51967543 |



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| 22 | ARS-BFGL-NGS-94797     | 0        | 52008267 |
| 22 | ARS-BFGL-NGS-39199     | 0        | 52032223 |
| 22 | ARS-BFGL-NGS-24963     | 0        | 52056494 |
| 22 | ARS-BFGL-NGS-98658     | 0        | 52113096 |
| 22 | ARS-BFGL-NGS-17340     | 52232004 |          |
| 22 | ARS-BFGL-NGS-41013     | 0        | 52294063 |
| 22 | Hapmap43880-BTA-54826  | 0        | 52355321 |
| 22 | ARS-BFGL-NGS-42382     | 0        | 52390214 |
| 22 | Hapmap50389-BTA-54820  | 0        | 52427382 |
| 22 | ARS-BFGL-NGS-31663     | 0        | 52455431 |
| 22 | ARS-BFGL-NGS-28973     | 0        | 52481411 |
| 22 | Hapmap54847-rs29022340 | 0        | 52504436 |
| 22 | ARS-BFGL-BAC-28607     | 0        | 52557258 |
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| 22 | ARS-BFGL-NGS-119381    | 0        | 52627676 |
| 22 | BTA-12965-rs29024909   | 0        | 52740764 |
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| 22 | ARS-BFGL-NGS-29420     | 52827405 |          |
| 22 | ARS-BFGL-NGS-113174    | 0        | 52899262 |
| 22 | ARS-BFGL-NGS-32152     | 0        | 52955533 |
| 22 | BTB-01841536           | 0        | 53014964 |
| 22 | ARS-BFGL-NGS-95842     | 0        | 53125546 |
| 22 | BTB-00853109           | 0        | 53158683 |
| 22 | ARS-BFGL-NGS-100741    | 0        | 53203469 |
| 22 | ARS-BFGL-NGS-114071    | 0        | 53232159 |
| 22 | ARS-BFGL-NGS-107585    | 0        | 53254546 |
| 22 | ARS-BFGL-NGS-301       | 0        | 53283054 |
| 22 | Hapmap43881-BTA-54837  | 0        | 53309647 |
| 22 | ARS-BFGL-NGS-117960    | 0        | 53348693 |
| 22 | ARS-BFGL-NGS-110743    | 0        | 53377535 |
| 22 | ARS-BFGL-NGS-113290    | 0        | 53457282 |
| 22 | ARS-BFGL-NGS-103928    | 0        | 53470362 |
| 22 | ARS-BFGL-NGS-19990     | 53520681 |          |
| 22 | Hapmap49032-BTA-115439 | 0        | 53695239 |
| 22 | BTA-54892-no-rs        | 0        | 53724697 |
| 22 | ARS-BFGL-NGS-39385     | 0        | 53858197 |
| 22 | BTB-00854039           | 0        | 53904704 |
| 22 | UA-IFASA-5612          | 0        | 53944830 |
| 22 | ARS-BFGL-NGS-119471    | 0        | 53981070 |
| 22 | ARS-BFGL-NGS-51980     | 0        | 54028803 |
| 22 | BTB-00388772           | 0        | 54065331 |
| 22 | Hapmap43953-BTA-83292  | 0        | 54103673 |
| 22 | ARS-BFGL-NGS-85399     | 0        | 54132903 |
| 22 | Hapmap2744-BTA-121362  | 0        | 54183730 |
| 22 | BTA-54896-no-rs        | 0        | 54212982 |
| 22 | Hapmap60563-ss46526220 | 0        | 54256311 |
| 22 | ARS-BFGL-NGS-82997     | 0        | 54293260 |
| 22 | ARS-BFGL-NGS-41939     | 0        | 54324678 |
| 22 | ARS-BFGL-NGS-115367    | 0        | 54375172 |
| 22 | ARS-BFGL-NGS-113691    | 0        | 54440045 |
| 22 | ARS-BFGL-NGS-10497     | 0        | 54484718 |
| 22 | BTB-00855230           | 0        | 54548964 |
| 22 | ARS-BFGL-NGS-55311     | 0        | 54583973 |
| 22 | ARS-BFGL-BAC-31006     | 0        | 54607385 |

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| 22 | ARS-BFGL-NGS-106287                   | 0 | 54645178 |          |  |
| 22 | Hapmap47043-BTA-54956                 | 0 | 54665331 |          |  |
| 22 | ARS-BFGL-NGS-68                       | 0 | 54733971 |          |  |
| 22 | Hapmap36428-SCAFFOLD91128_4487        | 0 |          | 54776528 |  |
| 22 | ARS-BFGL-NGS-26676                    | 0 | 54861700 |          |  |
| 22 | Hapmap41094-BTA-83358                 | 0 | 54881794 |          |  |
| 22 | ARS-BFGL-NGS-104424                   | 0 | 54903638 |          |  |
| 22 | ARS-BFGL-NGS-114255                   | 0 | 54927816 |          |  |
| 22 | ARS-BFGL-NGS-76826                    | 0 | 55004676 |          |  |
| 22 | ARS-BFGL-NGS-116073                   | 0 | 55063369 |          |  |
| 22 | ARS-BFGL-NGS-25024                    | 0 | 55108887 |          |  |
| 22 | ARS-BFGL-NGS-118899                   | 0 | 55133947 |          |  |
| 22 | ARS-BFGL-NGS-14331                    | 0 | 55156974 |          |  |
| 22 | ARS-BFGL-NGS-64680                    | 0 | 55177966 |          |  |
| 22 | ARS-BFGL-NGS-104069                   | 0 | 55200500 |          |  |
| 22 | ARS-BFGL-NGS-25043                    | 0 | 55257755 |          |  |
| 22 | ARS-BFGL-NGS-53832                    | 0 | 55296176 |          |  |
| 22 | ARS-BFGL-NGS-22605                    | 0 | 55340623 |          |  |
| 22 | ARS-BFGL-NGS-115487                   | 0 | 55365371 |          |  |
| 22 | ARS-BFGL-NGS-69445                    | 0 | 55393821 |          |  |
| 22 | ARS-BFGL-NGS-52950                    | 0 | 55448106 |          |  |
| 22 | ARS-BFGL-NGS-99335                    | 0 | 55511639 |          |  |
| 22 | ARS-BFGL-NGS-111253                   | 0 | 55535817 |          |  |
| 22 | ARS-BFGL-NGS-101766                   | 0 | 55556217 |          |  |
| 22 | BTA-106005-no-rs                      | 0 | 55586234 |          |  |
| 22 | ARS-BFGL-NGS-107625                   | 0 | 55639415 |          |  |
| 22 | ARS-BFGL-NGS-116399                   | 0 | 55700320 |          |  |
| 22 | ARS-BFGL-NGS-111450                   | 0 | 55739882 |          |  |
| 22 | ARS-BFGL-NGS-62254                    | 0 | 55770123 |          |  |
| 22 | ARS-BFGL-NGS-23553                    | 0 | 55803801 |          |  |
| 22 | ARS-BFGL-NGS-27360                    | 0 | 55889024 |          |  |
| 22 | Hapmap58218-rs29015891                | 0 | 55913908 |          |  |
| 22 | ARS-BFGL-BAC-31025                    | 0 | 55988937 |          |  |
| 22 | Hapmap23073-BTA-136759                | 0 | 56049440 |          |  |
| 22 | BTA-54868-no-rs                       | 0 | 56085534 |          |  |
| 22 | Hapmap49654-BTA-54875                 | 0 | 56108702 |          |  |
| 22 | BTA-54880-no-rs                       | 0 | 56153353 |          |  |
| 22 | ARS-BFGL-NGS-110768                   | 0 | 56189372 |          |  |
| 22 | ARS-BFGL-NGS-39475                    | 0 | 56235584 |          |  |
| 22 | ARS-BFGL-NGS-113431                   | 0 | 56264962 |          |  |
| 22 | ARS-BFGL-BAC-31020                    | 0 | 56285538 |          |  |
| 22 | Hapmap33781-BTA-149618                | 0 | 56316474 |          |  |
| 22 | BTA-121366-no-rs                      | 0 | 56345412 |          |  |
| 22 | Hapmap43616-BTA-55004                 | 0 | 56377497 |          |  |
| 22 | ARS-BFGL-NGS-16048                    | 0 | 56448122 |          |  |
| 22 | ARS-BFGL-NGS-81834                    | 0 | 56507175 |          |  |
| 22 | ARS-USMARC-Parent-EF034082-rs29013532 | 0 |          | 56526462 |  |
| 22 | Hapmap47045-BTA-55007                 | 0 | 56563647 |          |  |
| 22 | BTB-00855998                          | 0 | 56603472 |          |  |
| 22 | ARS-BFGL-NGS-108006                   | 0 | 56675252 |          |  |
| 22 | Hapmap60954-rs29021814                | 0 | 56711180 |          |  |
| 22 | ARS-BFGL-NGS-111845                   | 0 | 56765689 |          |  |
| 22 | ARS-BFGL-NGS-39901                    | 0 | 56790940 |          |  |
| 22 | ARS-BFGL-NGS-111217                   | 0 | 56853848 |          |  |

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| 22 | ARS-BFGL-NGS-20709             | 0 | 56877831 |          |
| 22 | ARS-BFGL-NGS-109532            | 0 | 56916823 |          |
| 22 | ARS-BFGL-NGS-70725             | 0 | 56943056 |          |
| 22 | Hapmap26413-BTA-146026         | 0 | 56966256 |          |
| 22 | ARS-BFGL-NGS-117587            | 0 | 56990001 |          |
| 22 | ARS-BFGL-NGS-103472            | 0 | 56997366 |          |
| 22 | ARS-BFGL-NGS-112879            | 0 | 57035240 |          |
| 22 | ARS-BFGL-NGS-58746             | 0 | 57059887 |          |
| 22 | ARS-BFGL-NGS-104212            | 0 | 57098389 |          |
| 22 | ARS-BFGL-NGS-55064             | 0 | 57139923 |          |
| 22 | ARS-BFGL-NGS-71610             |   | 57144652 |          |
| 22 | BTA-109257-no-rs               | 0 | 57205387 |          |
| 22 | ARS-BFGL-NGS-20180             | 0 | 57253436 |          |
| 22 | BTA-86052-no-rs                | 0 | 57292276 |          |
| 22 | ARS-BFGL-NGS-96007             | 0 | 57350433 |          |
| 22 | BTA-102240-no-rs               | 0 | 57383765 |          |
| 22 | BTA-102233-no-rs               | 0 | 57410486 |          |
| 22 | ARS-BFGL-BAC-31015             | 0 | 57430055 |          |
| 22 | BTB-00856713                   | 0 | 57486105 |          |
| 22 | ARS-BFGL-NGS-111847            | 0 | 57579173 |          |
| 22 | ARS-BFGL-NGS-102750            | 0 | 57619786 |          |
| 22 | ARS-BFGL-NGS-35067             | 0 | 57642429 |          |
| 22 | Hapmap44225-BTA-28287          | 0 | 57674021 |          |
| 22 | ARS-BFGL-NGS-99658             | 0 | 57696620 |          |
| 22 | ARS-BFGL-NGS-106885            | 0 | 57730808 |          |
| 22 | ARS-BFGL-NGS-76146             | 0 | 57770461 |          |
| 22 | ARS-BFGL-NGS-30741             | 0 | 57800571 |          |
| 22 | ARS-BFGL-NGS-31024             | 0 | 57868636 |          |
| 22 | ARS-BFGL-NGS-43481             | 0 | 57930390 |          |
| 22 | ARS-BFGL-NGS-68645             | 0 | 58010164 |          |
| 22 | ARS-BFGL-NGS-100405            | 0 | 58075276 |          |
| 22 | ARS-BFGL-NGS-21670             |   | 58099542 |          |
| 22 | UA-IFASA-8581                  | 0 | 58144602 |          |
| 22 | ARS-BFGL-NGS-26653             | 0 | 58166945 |          |
| 22 | ARS-BFGL-NGS-10654             | 0 | 58201716 |          |
| 22 | ARS-BFGL-NGS-27551             | 0 | 58235303 |          |
| 22 | ARS-BFGL-NGS-111637            | 0 | 58262760 |          |
| 22 | BTA-91717-no-rs                | 0 | 58333623 |          |
| 22 | ARS-BFGL-NGS-92484             | 0 | 58347597 |          |
| 22 | ARS-BFGL-NGS-74619             | 0 | 58397411 |          |
| 22 | ARS-BFGL-NGS-119094            | 0 | 58429229 |          |
| 22 | ARS-BFGL-NGS-82789             | 0 | 58458470 |          |
| 22 | ARS-BFGL-NGS-32222             | 0 | 58489232 |          |
| 22 | ARS-BFGL-NGS-21481             | 0 | 58530759 |          |
| 22 | ARS-BFGL-NGS-60576             | 0 | 58557374 |          |
| 22 | ARS-BFGL-NGS-102776            | 0 | 58597169 |          |
| 22 | ARS-BFGL-NGS-14035             | 0 | 58649692 |          |
| 22 | ARS-BFGL-NGS-40445             | 0 | 58675187 |          |
| 22 | ARS-BFGL-NGS-110459            | 0 | 58717546 |          |
| 22 | ARS-BFGL-NGS-119059            | 0 | 58748602 |          |
| 22 | ARS-BFGL-NGS-68194             | 0 | 58790629 |          |
| 22 | Hapmap52953-rs29025745         | 0 | 58816379 |          |
| 22 | Hapmap35936-SCAFFOLD65654_2749 | 0 |          | 58846586 |
| 22 | ARS-BFGL-NGS-44530             | 0 | 58873440 |          |

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| 22 | ARS-BFGL-NGS-102794    | 0        | 58888976 |
| 22 | ARS-BFGL-NGS-117615    | 0        | 58924998 |
| 22 | ARS-BFGL-NGS-56813     | 0        | 58998502 |
| 22 | ARS-BFGL-NGS-41278     | 0        | 59066764 |
| 22 | ARS-BFGL-NGS-69008     | 0        | 59113086 |
| 22 | ARS-BFGL-NGS-79740     | 0        | 59167318 |
| 22 | ARS-BFGL-NGS-113315    | 0        | 59204394 |
| 22 | ARS-BFGL-NGS-77507     | 0        | 59237587 |
| 22 | ARS-BFGL-NGS-84561     | 0        | 59277831 |
| 22 | ARS-BFGL-NGS-86983     | 0        | 59325992 |
| 22 | ARS-BFGL-NGS-30728     | 0        | 59387581 |
| 22 | BTA-121377-no-rs       | 0        | 59438364 |
| 22 | ARS-BFGL-NGS-40161     | 0        | 59458932 |
| 22 | ARS-BFGL-NGS-32970     | 0        | 59487979 |
| 22 | ARS-BFGL-NGS-24884     | 0        | 59612919 |
| 22 | ARS-BFGL-NGS-54563     | 0        | 59712580 |
| 22 | ARS-BFGL-NGS-90643     | 0        | 59802619 |
| 22 | ARS-BFGL-NGS-59239     | 0        | 59836668 |
| 22 | ARS-BFGL-NGS-64046     | 0        | 59859344 |
| 22 | ARS-BFGL-NGS-83675     | 0        | 59928392 |
| 22 | ARS-BFGL-NGS-30239     | 0        | 59951940 |
| 22 | ARS-BFGL-NGS-16841     | 0        | 59984067 |
| 22 | ARS-BFGL-NGS-119430    | 0        | 60029005 |
| 22 | ARS-BFGL-NGS-12899     | 0        | 60056909 |
| 22 | UA-IFASA-4798          | 0        | 60084013 |
| 22 | ARS-BFGL-NGS-101683    | 0        | 60105535 |
| 22 | ARS-BFGL-NGS-116144    | 0        | 60130492 |
| 22 | Hapmap39470-BTA-121373 | 0        | 60243916 |
| 22 | BTA-55081-no-rs        | 0        | 60265622 |
| 22 | ARS-BFGL-NGS-23420     | 0        | 60338692 |
| 22 | Hapmap30583-BTA-157589 | 0        | 60376752 |
| 22 | ARS-BFGL-NGS-56282     | 0        | 60396967 |
| 22 | ARS-BFGL-NGS-41609     | 0        | 60435042 |
| 22 | ARS-BFGL-NGS-41433     | 0        | 60459451 |
| 22 | ARS-BFGL-NGS-75440     | 60475320 |          |
| 22 | ARS-BFGL-NGS-65477     | 0        | 60508872 |
| 22 | ARS-BFGL-NGS-119941    | 0        | 60543119 |
| 22 | ARS-BFGL-NGS-71010     | 60565514 |          |
| 22 | ARS-BFGL-NGS-19124     | 0        | 60600490 |
| 22 | ARS-BFGL-NGS-28070     | 60634400 |          |
| 22 | ARS-BFGL-NGS-42322     | 0        | 60659773 |
| 22 | ARS-BFGL-NGS-114675    | 0        | 60691260 |
| 22 | ARS-BFGL-NGS-58676     | 0        | 60736089 |
| 22 | ARS-BFGL-NGS-70541     | 0        | 60785491 |
| 22 | BTA-03895-no-rs        | 0        | 60877108 |
| 22 | ARS-BFGL-NGS-30266     | 0        | 60930725 |
| 22 | ARS-BFGL-NGS-85420     | 0        | 60960603 |
| 22 | BTA-55057-no-rs        | 0        | 60985682 |
| 22 | ARS-BFGL-NGS-25064     | 0        | 61015806 |
| 22 | ARS-BFGL-NGS-49050     | 61040701 |          |
| 22 | Hapmap52284-rs29018845 | 0        | 61099118 |
| 22 | ARS-BFGL-NGS-67185     | 0        | 61149265 |
| 22 | ARS-BFGL-NGS-92218     | 0        | 61172869 |
| 22 | ARS-BFGL-NGS-105794    | 0        | 61199665 |

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| 22 | ARS-BFGL-NGS-16314     | 0 | 61258859 |
| 22 | ARS-BFGL-NGS-113935    | 0 | 61283415 |
| 22 | BTB-00297406           | 0 | 61378199 |
| 23 | ARS-BFGL-NGS-38316     | 0 | 60163    |
| 23 | BTA-55427-no-rs        | 0 | 402797   |
| 23 | ARS-BFGL-NGS-16498     | 0 | 423898   |
| 23 | ARS-BFGL-BAC-29485     | 0 | 582242   |
| 23 | ARS-BFGL-NGS-110066    | 0 | 961672   |
| 23 | ARS-BFGL-NGS-42852     | 0 | 1105025  |
| 23 | ARS-BFGL-NGS-11268     | 0 | 1233395  |
| 23 | ARS-BFGL-NGS-27064     | 0 | 1775946  |
| 23 | ARS-BFGL-NGS-26836     | 0 | 1912637  |
| 23 | ARS-BFGL-NGS-110371    | 0 | 1938970  |
| 23 | ARS-BFGL-NGS-102567    | 0 | 2019985  |
| 23 | Hapmap49436-BTA-108964 | 0 | 2115089  |
| 23 | ARS-BFGL-NGS-31256     | 0 | 2178685  |
| 23 | ARS-BFGL-NGS-59918     | 0 | 2209312  |
| 23 | ARS-BFGL-NGS-103160    | 0 | 2247046  |
| 23 | ARS-BFGL-NGS-59707     | 0 | 2570211  |
| 23 | ARS-BFGL-NGS-102306    | 0 | 2612973  |
| 23 | ARS-BFGL-NGS-27835     | 0 | 2650825  |
| 23 | ARS-BFGL-BAC-30737     | 0 | 2702505  |
| 23 | Hapmap26228-BTA-56589  | 0 | 2727234  |
| 23 | Hapmap51261-BTA-56108  | 0 | 2755704  |
| 23 | ARS-BFGL-NGS-110902    | 0 | 2849432  |
| 23 | ARS-BFGL-NGS-93210     | 0 | 2893723  |
| 23 | Hapmap44605-BTA-55952  | 0 | 2965430  |
| 23 | ARS-BFGL-NGS-89490     | 0 | 3035534  |
| 23 | BTA-55869-no-rs        | 0 | 3061955  |
| 23 | Hapmap51466-BTA-55807  | 0 | 3098756  |
| 23 | UA-IFASA-4895          | 0 | 3167662  |
| 23 | ARS-BFGL-NGS-69231     | 0 | 3239987  |
| 23 | Hapmap58371-rs29014419 | 0 | 3320932  |
| 23 | ARS-BFGL-NGS-38075     | 0 | 3360714  |
| 23 | Hapmap43883-BTA-55663  | 0 | 3387731  |
| 23 | ARS-BFGL-NGS-15303     | 0 | 3468292  |
| 23 | ARS-BFGL-NGS-110926    | 0 | 3488971  |
| 23 | ARS-BFGL-NGS-85750     | 0 | 3544538  |
| 23 | UA-IFASA-8061          | 0 | 3581582  |
| 23 | ARS-BFGL-NGS-67812     | 0 | 3626219  |
| 23 | BTA-55567-no-rs        | 0 | 3664434  |
| 23 | ARS-BFGL-NGS-43411     | 0 | 3885583  |
| 23 | ARS-BFGL-NGS-89394     | 0 | 3972340  |
| 23 | ARS-BFGL-NGS-118446    | 0 | 4083573  |
| 23 | ARS-BFGL-NGS-119695    | 0 | 4170083  |
| 23 | ARS-BFGL-NGS-44366     | 0 | 4197354  |
| 23 | BTA-56775-no-rs        | 0 | 4238180  |
| 23 | BTA-27838-no-rs        | 0 | 4261877  |
| 23 | ARS-BFGL-NGS-16625     | 0 | 4284878  |
| 23 | ARS-BFGL-BAC-28344     | 0 | 4359518  |
| 23 | ARS-BFGL-BAC-42861     | 0 | 4399105  |
| 23 | Hapmap50737-BTA-56873  | 0 | 4435399  |
| 23 | ARS-BFGL-BAC-46051     | 0 | 4455923  |
| 23 | ARS-BFGL-BAC-29860     | 0 | 4499584  |

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| 23 | ARS-BFGL-BAC-30440               | 0       | 4524082 |         |
| 23 | ARS-BFGL-BAC-35859               | 0       | 4590972 |         |
| 23 | ARS-BFGL-NGS-27582               | 0       | 4622146 |         |
| 23 | ARS-BFGL-BAC-31235               | 0       | 4647111 |         |
| 23 | Hapmap38509-BTA-55454            | 0       | 4674703 |         |
| 23 | ARS-BFGL-NGS-111297              | 0       | 4715107 |         |
| 23 | ARS-BFGL-NGS-103242              | 0       | 4737838 |         |
| 23 | ARS-BFGL-BAC-30072               | 0       | 4781751 |         |
| 23 | ARS-BFGL-BAC-28936               | 0       | 4811920 |         |
| 23 | ARS-BFGL-BAC-31319               | 0       | 4847028 |         |
| 23 | Hapmap44259-BTA-56979            | 0       | 4948668 |         |
| 23 | ARS-BFGL-NGS-84270               | 4970070 |         |         |
| 23 | ARS-BFGL-BAC-43516               | 0       | 4996089 |         |
| 23 | ARS-BFGL-NGS-106470              | 0       | 5047747 |         |
| 23 | Hapmap42809-BTA-111151           | 0       | 5166565 |         |
| 23 | ARS-BFGL-BAC-44120               | 0       | 5212261 |         |
| 23 | BTA-97574-no-rs                  | 0       | 5328505 |         |
| 23 | Hapmap51784-BTA-97575            | 0       | 5455304 |         |
| 23 | ARS-BFGL-NGS-84509               | 0       | 5484630 |         |
| 23 | ARS-BFGL-NGS-13215               | 0       | 5524345 |         |
| 23 | ARS-BFGL-NGS-114210              | 0       | 5547603 |         |
| 23 | Hapmap41168-BTA-117434           | 0       | 5598043 |         |
| 23 | ARS-BFGL-NGS-90410               | 0       | 5618724 |         |
| 23 | ARS-BFGL-BAC-46707               | 0       | 5756655 |         |
| 23 | ARS-BFGL-NGS-21242               | 0       | 5896623 |         |
| 23 | BTA-57038-no-rs                  | 0       | 5931664 |         |
| 23 | BTA-57034-no-rs                  | 0       | 6089999 |         |
| 23 | ARS-BFGL-NGS-68679               | 0       | 6124341 |         |
| 23 | Hapmap39868-BTA-78275            | 0       | 6301283 |         |
| 23 | BTA-13303-rs29018265             | 0       | 6370419 |         |
| 23 | Hapmap27734-BTA-123546           | 0       | 6488117 |         |
| 23 | ARS-BFGL-NGS-48933               | 0       | 6517437 |         |
| 23 | ARS-BFGL-NGS-101416              | 0       | 6592643 |         |
| 23 | Hapmap36138-SCAFFOLD96069_11607  | 0       |         | 6616920 |
| 23 | ARS-BFGL-NGS-92713               | 0       | 6652921 |         |
| 23 | ARS-BFGL-NGS-118915              | 0       | 6695925 |         |
| 23 | ARS-BFGL-NGS-81933               | 0       | 6727000 |         |
| 23 | Hapmap51467-BTA-57073            | 0       | 6760915 |         |
| 23 | Hapmap27397-BTA-136953           | 0       | 6849805 |         |
| 23 | Hapmap40908-BTA-121388           | 0       | 6999212 |         |
| 23 | Hapmap58593-rs29013434           | 0       | 7073340 |         |
| 23 | Hapmap58570-ss46526027           | 0       | 7132129 |         |
| 23 | Hapmap60475-rs29022896           | 0       | 7191371 |         |
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| 23 | BTA-57090-no-rs                  | 0       | 7227396 |         |
| 23 | ARS-BFGL-NGS-84256               | 0       | 7240128 |         |
| 23 | Hapmap50393-BTA-57089            | 0       | 7276902 |         |
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| 23 | ARS-BFGL-NGS-37375               | 0       | 7332041 |         |
| 23 | ARS-BFGL-NGS-48510               | 7351531 |         |         |
| 23 | ARS-BFGL-NGS-112194              | 0       | 7457298 |         |
| 23 | ARS-BFGL-BAC-29517               | 0       | 7490054 |         |
| 23 | ARS-BFGL-NGS-72163               | 0       | 7547153 |         |
| 23 | ARS-BFGL-NGS-55476               | 0       | 7627089 |         |

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| 23 | ARS-BFGL-NGS-23687     | 0 | 7722626  |
| 23 | ARS-BFGL-NGS-109956    | 0 | 7841643  |
| 23 | ARS-BFGL-NGS-115177    | 0 | 7874236  |
| 23 | ARS-BFGL-NGS-44219     | 0 | 7942859  |
| 23 | Hapmap47330-BTA-57177  | 0 | 7970738  |
| 23 | BTA-57182-no-rs        | 0 | 8063504  |
| 23 | ARS-BFGL-NGS-114160    | 0 | 8124702  |
| 23 | UA-IFASA-4515          | 0 | 8289524  |
| 23 | ARS-BFGL-NGS-20276     | 0 | 8347642  |
| 23 | BTA-57141-no-rs        | 0 | 8513266  |
| 23 | Hapmap24244-BTA-114119 | 0 | 8627994  |
| 23 | BTA-114118-no-rs       | 0 | 8688910  |
| 23 | ARS-BFGL-NGS-24772     | 0 | 8733592  |
| 23 | Hapmap38418-BTA-57213  | 0 | 8819178  |
| 23 | Hapmap24080-BTA-136999 | 0 | 8847082  |
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| 23 | ARS-BFGL-NGS-14059     | 0 | 8965776  |
| 23 | ARS-BFGL-NGS-40685     | 0 | 8998867  |
| 23 | ARS-BFGL-NGS-55885     | 0 | 9020371  |
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| 23 | ARS-BFGL-NGS-28548     | 0 | 9104671  |
| 23 | BTA-57236-no-rs        | 0 | 9146495  |
| 23 | ARS-BFGL-NGS-42704     | 0 | 9244678  |
| 23 | ARS-BFGL-NGS-40073     | 0 | 9318256  |
| 23 | ARS-BFGL-NGS-61728     | 0 | 9346877  |
| 23 | BTA-98024-no-rs        | 0 | 9368834  |
| 23 | ARS-BFGL-NGS-18381     | 0 | 9453816  |
| 23 | ARS-BFGL-NGS-35410     | 0 | 9479267  |
| 23 | ARS-BFGL-NGS-115852    | 0 | 9524150  |
| 23 | ARS-BFGL-BAC-31346     | 0 | 9570626  |
| 23 | Hapmap50596-BTA-121389 | 0 | 9591806  |
| 23 | BTA-57168-no-rs        | 0 | 9617524  |
| 23 | ARS-BFGL-NGS-16679     | 0 | 9673954  |
| 23 | BTA-57167-no-rs        | 0 | 9712645  |
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| 23 | ARS-BFGL-NGS-19914     | 0 | 9790753  |
| 23 | ARS-BFGL-BAC-29509     | 0 | 9829493  |
| 23 | Hapmap29349-BTA-136997 | 0 | 9861848  |
| 23 | ARS-BFGL-NGS-118658    | 0 | 9951185  |
| 23 | ARS-BFGL-NGS-44232     | 0 | 10026534 |
| 23 | ARS-BFGL-BAC-28160     | 0 | 10115560 |
| 23 | ARS-BFGL-NGS-106115    | 0 | 10146619 |
| 23 | BTA-57201-no-rs        | 0 | 10167082 |
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| 23 | ARS-BFGL-NGS-113855    | 0 | 10274733 |
| 23 | ARS-BFGL-NGS-117853    | 0 | 10306869 |
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| 23 | Hapmap54795-rs29014478 | 0 | 10451041 |
| 23 | ARS-BFGL-NGS-106811    | 0 | 10526857 |
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| 23 | Hapmap53500-rs29016513 | 0 | 10665897 |
| 23 | ARS-BFGL-NGS-94682     | 0 | 10688252 |

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| 23 | BTA-91289-no-rs        | 0 | 10870036 |
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| 23 | Hapmap58169-rs29027007 | 0 | 11067172 |
| 23 | ARS-BFGL-NGS-23361     | 0 | 11171182 |
| 23 | ARS-BFGL-NGS-118921    | 0 | 11251946 |
| 23 | Hapmap32161-BTA-55429  | 0 | 11311478 |
| 23 | ARS-BFGL-NGS-35220     | 0 | 11438802 |
| 23 | ARS-BFGL-BAC-30052     | 0 | 11477969 |
| 23 | ARS-BFGL-NGS-45123     | 0 | 11505285 |
| 23 | ARS-BFGL-NGS-116395    | 0 | 11543048 |
| 23 | Hapmap48388-BTA-55514  | 0 | 11563415 |
| 23 | ARS-BFGL-NGS-36754     | 0 | 11589692 |
| 23 | Hapmap39546-BTA-121390 | 0 | 11599932 |
| 23 | ARS-BFGL-NGS-18676     | 0 | 11631005 |
| 23 | ARS-BFGL-NGS-68466     | 0 | 11692615 |
| 23 | ARS-BFGL-NGS-107882    | 0 | 11769430 |
| 23 | Hapmap26666-BTA-137044 | 0 | 11818761 |
| 23 | ARS-BFGL-NGS-86659     | 0 | 11882710 |
| 23 | Hapmap61132-rs29019650 | 0 | 11907305 |
| 23 | Hapmap41021-BTA-55488  | 0 | 11929169 |
| 23 | BTA-55470-no-rs        | 0 | 11975930 |
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| 23 | ARS-BFGL-NGS-14545     | 0 | 12197733 |
| 23 | ARS-BFGL-NGS-28356     | 0 | 12255806 |
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| 23 | Hapmap39973-BTA-119855 | 0 | 12384489 |
| 23 | Hapmap44604-BTA-55457  | 0 | 12447484 |
| 23 | Hapmap49110-BTA-29232  | 0 | 12519690 |
| 23 | ARS-BFGL-BAC-30064     | 0 | 12548841 |
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| 23 | Hapmap30236-BTA-137040 | 0 | 12663012 |
| 23 | Hapmap43618-BTA-55447  | 0 | 12732961 |
| 23 | Hapmap49220-BTA-55442  | 0 | 12838486 |
| 23 | ARS-BFGL-NGS-55930     | 0 | 12910040 |
| 23 | ARS-BFGL-NGS-111735    | 0 | 12997137 |
| 23 | ARS-BFGL-NGS-24521     | 0 | 13025914 |
| 23 | ARS-BFGL-NGS-47430     |   | 13060214 |
| 23 | ARS-BFGL-NGS-42525     | 0 | 13081503 |
| 23 | ARS-BFGL-NGS-91598     | 0 | 13122318 |
| 23 | Hapmap23651-BTA-161953 | 0 | 13155828 |
| 23 | ARS-BFGL-NGS-104970    | 0 | 13185570 |
| 23 | ARS-BFGL-NGS-46495     | 0 | 13240935 |
| 23 | ARS-BFGL-NGS-20503     | 0 | 13267795 |
| 23 | ARS-BFGL-NGS-32774     | 0 | 13371915 |
| 23 | BTA-87444-no-rs        | 0 | 13423541 |
| 23 | Hapmap55007-rs29021986 | 0 | 13484531 |
| 23 | ARS-BFGL-NGS-109291    | 0 | 13517193 |
| 23 | ARS-BFGL-NGS-37901     | 0 | 13668169 |
| 23 | ARS-BFGL-BAC-30068     | 0 | 13691444 |
| 23 | Hapmap44343-BTA-113612 | 0 | 13714810 |



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| 23 | ARS-BFGL-NGS-103020    | 0        | 13770707 |
| 23 | BTA-86649-no-rs        | 0        | 13793884 |
| 23 | ARS-BFGL-NGS-78960     | 0        | 13820849 |
| 23 | ARS-BFGL-NGS-41214     | 0        | 13846320 |
| 23 | ARS-BFGL-NGS-13554     | 0        | 13866915 |
| 23 | ARS-BFGL-NGS-101393    | 0        | 14063300 |
| 23 | ARS-BFGL-NGS-61941     | 0        | 14101481 |
| 23 | ARS-BFGL-NGS-105087    | 0        | 14123921 |
| 23 | ARS-BFGL-NGS-118763    | 0        | 14170863 |
| 23 | ARS-BFGL-NGS-34854     | 0        | 14192055 |
| 23 | ARS-BFGL-NGS-100006    | 0        | 14215024 |
| 23 | ARS-BFGL-NGS-29516     | 0        | 14246801 |
| 23 | ARS-BFGL-NGS-78514     | 0        | 14313819 |
| 23 | ARS-BFGL-NGS-113147    | 0        | 14336244 |
| 23 | ARS-BFGL-NGS-105392    | 0        | 14372603 |
| 23 | ARS-BFGL-NGS-59308     | 0        | 14394214 |
| 23 | ARS-BFGL-NGS-89600     | 14424516 |          |
| 23 | ARS-BFGL-NGS-115470    | 0        | 14495329 |
| 23 | ARS-BFGL-NGS-22482     | 0        | 14540324 |
| 23 | Hapmap30534-BTA-137081 | 0        | 14580054 |
| 23 | ARS-BFGL-NGS-74688     | 0        | 14623137 |
| 23 | ARS-BFGL-NGS-42298     | 0        | 14658449 |
| 23 | ARS-BFGL-NGS-53586     | 0        | 14696996 |
| 23 | ARS-BFGL-NGS-15657     | 0        | 14756959 |
| 23 | ARS-BFGL-NGS-17887     | 0        | 14769068 |
| 23 | ARS-BFGL-NGS-34065     | 0        | 14842862 |
| 23 | ARS-BFGL-NGS-111485    | 0        | 14862935 |
| 23 | Hapmap30806-BTA-137079 | 0        | 14889869 |
| 23 | Hapmap52126-rs29027530 | 0        | 14926099 |
| 23 | ARS-BFGL-NGS-25325     | 0        | 14981935 |
| 23 | ARS-BFGL-NGS-15765     | 0        | 15005574 |
| 23 | ARS-BFGL-NGS-14688     | 0        | 15035028 |
| 23 | BTA-55566-no-rs        | 0        | 15062555 |
| 23 | ARS-BFGL-NGS-100628    | 0        | 15123634 |
| 23 | Hapmap41022-BTA-55560  | 0        | 15147471 |
| 23 | BTA-13690-rs29018648   | 0        | 15202043 |
| 23 | ARS-BFGL-NGS-114864    | 0        | 15255522 |
| 23 | ARS-BFGL-NGS-19650     | 0        | 15313928 |
| 23 | ARS-BFGL-NGS-50420     | 15345878 |          |
| 23 | ARS-BFGL-NGS-111195    | 0        | 15375447 |
| 23 | ARS-BFGL-NGS-94543     | 0        | 15406638 |
| 23 | ARS-BFGL-NGS-33616     | 0        | 15465413 |
| 23 | ARS-BFGL-NGS-98078     | 0        | 15561765 |
| 23 | ARS-BFGL-NGS-28111     | 0        | 15585076 |
| 23 | Hapmap43293-BTA-55610  | 0        | 15610355 |
| 23 | BTA-55613-no-rs        | 0        | 15656140 |
| 23 | ARS-BFGL-NGS-23572     | 0        | 15725194 |
| 23 | BTA-55534-no-rs        | 0        | 15768513 |
| 23 | ARS-BFGL-NGS-23145     | 0        | 15863223 |
| 23 | ARS-BFGL-NGS-34057     | 0        | 15907479 |
| 23 | ARS-BFGL-NGS-83440     | 0        | 15985508 |
| 23 | ARS-BFGL-NGS-76846     | 0        | 16021555 |
| 23 | ARS-BFGL-NGS-34042     | 0        | 16052126 |

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| 23 | ARS-BFGL-NGS-86109     | 0        | 16086032 |
| 23 | Hapmap8049-BTA-55656   | 0        | 16171880 |
| 23 | Hapmap46306-BTA-55660  | 0        | 16280653 |
| 23 | Hapmap38510-BTA-55662  | 0        | 16353481 |
| 23 | Hapmap54285-ss46526570 | 0        | 16406167 |
| 23 | ARS-BFGL-BAC-28908     | 0        | 16536674 |
| 23 | Hapmap57208-rs29025986 | 0        | 16601543 |
| 23 | ARS-BFGL-NGS-38730     | 0        | 16672574 |
| 23 | ARS-BFGL-NGS-42480     | 16697867 |          |
| 23 | ARS-BFGL-NGS-69568     | 0        | 16751688 |
| 23 | UA-IFASA-9530          | 0        | 16777244 |
| 23 | ARS-BFGL-NGS-36746     | 0        | 16828734 |
| 23 | ARS-BFGL-NGS-30931     | 0        | 16851207 |
| 23 | ARS-BFGL-NGS-105824    | 0        | 16872390 |
| 23 | ARS-BFGL-NGS-86252     | 0        | 16951579 |
| 23 | ARS-BFGL-NGS-114979    | 0        | 16991375 |
| 23 | ARS-BFGL-NGS-30004     | 0        | 17013312 |
| 23 | ARS-BFGL-NGS-21261     | 0        | 17045647 |
| 23 | ARS-BFGL-NGS-84692     | 0        | 17115236 |
| 23 | ARS-BFGL-NGS-29360     | 17136094 |          |
| 23 | ARS-BFGL-NGS-40876     | 0        | 17162519 |
| 23 | ARS-BFGL-NGS-50110     | 17200996 |          |
| 23 | ARS-BFGL-NGS-29807     | 0        | 17224191 |
| 23 | Hapmap48809-BTA-55698  | 0        | 17275448 |
| 23 | ARS-BFGL-NGS-77327     | 0        | 17298755 |
| 23 | ARS-BFGL-NGS-25182     | 0        | 17400539 |
| 23 | ARS-BFGL-NGS-105313    | 0        | 17421461 |
| 23 | ARS-BFGL-NGS-119944    | 0        | 17453019 |
| 23 | Hapmap46835-BTA-55650  | 0        | 17516357 |
| 23 | ARS-BFGL-NGS-18971     | 0        | 17572459 |
| 23 | BTA-55695-no-rs        | 0        | 17632524 |
| 23 | ARS-BFGL-NGS-75371     | 0        | 17671642 |
| 23 | Hapmap57090-ss46526861 | 0        | 17735099 |
| 23 | BTA-55671-no-rs        | 0        | 17778401 |
| 23 | Hapmap47799-BTA-07017  | 0        | 17811197 |
| 23 | BTA-55689-no-rs        | 0        | 17833720 |
| 23 | Hapmap31419-BTA-137113 | 0        | 17869914 |
| 23 | ARS-BFGL-NGS-10525     | 0        | 17927593 |
| 23 | ARS-BFGL-NGS-115472    | 0        | 17963149 |
| 23 | ARS-BFGL-NGS-111070    | 0        | 18000445 |
| 23 | ARS-BFGL-NGS-39395     | 0        | 18043560 |
| 23 | ARS-BFGL-NGS-33691     | 0        | 18081990 |
| 23 | BTA-65971-no-rs        | 0        | 18113264 |
| 23 | Hapmap40783-BTA-65969  | 0        | 18144874 |
| 23 | BTA-65964-no-rs        | 0        | 18197600 |
| 23 | Hapmap58661-rs29014446 | 0        | 18264611 |
| 23 | ARS-BFGL-NGS-92438     | 0        | 18461918 |
| 23 | ARS-BFGL-NGS-94995     | 0        | 18695002 |
| 23 | BTA-118008-no-rs       | 0        | 18715079 |
| 23 | ARS-BFGL-NGS-30039     | 0        | 18764200 |
| 23 | ARS-BFGL-NGS-23577     | 0        | 18930756 |
| 23 | BTA-107577-no-rs       | 0        | 18984834 |
| 23 | Hapmap38275-BTA-101455 | 0        | 19068670 |
| 23 | ARS-BFGL-NGS-104206    | 0        | 19089496 |

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| 23 | ARS-BFGL-NGS-112173             | 0 | 19138429 |          |
| 23 | Hapmap55067-ss46526268          | 0 | 19163000 |          |
| 23 | ARS-BFGL-NGS-111284             | 0 | 19187106 |          |
| 23 | ARS-BFGL-NGS-18329              | 0 | 19210594 |          |
| 23 | UA-IFASA-1570                   | 0 | 19233007 |          |
| 23 | UA-IFASA-1564                   | 0 | 19256555 |          |
| 23 | BTA-55705-no-rs                 | 0 | 19308267 |          |
| 23 | ARS-BFGL-NGS-101468             | 0 | 19349032 |          |
| 23 | ARS-BFGL-NGS-68050              |   | 19374941 |          |
| 23 | ARS-BFGL-NGS-92339              | 0 | 19397902 |          |
| 23 | ARS-BFGL-NGS-99429              | 0 | 19478135 |          |
| 23 | Hapmap57016-rs29019757          | 0 | 19526598 |          |
| 23 | ARS-BFGL-NGS-33456              | 0 | 19667110 |          |
| 23 | ARS-BFGL-NGS-101622             | 0 | 19693791 |          |
| 23 | Hapmap49081-BTA-20993           | 0 | 19749211 |          |
| 23 | BTA-55757-no-rs                 | 0 | 19767455 |          |
| 23 | ARS-BFGL-NGS-25180              |   | 19808257 |          |
| 23 | ARS-BFGL-NGS-80066              | 0 | 19834215 |          |
| 23 | Hapmap42251-BTA-55740           | 0 | 19876145 |          |
| 23 | ARS-BFGL-NGS-111955             | 0 | 19915536 |          |
| 23 | BTA-55724-no-rs                 | 0 | 19984055 |          |
| 23 | ARS-BFGL-NGS-103121             | 0 | 20024769 |          |
| 23 | ARS-BFGL-NGS-28734              | 0 | 20058993 |          |
| 23 | ARS-BFGL-NGS-25324              | 0 | 20098931 |          |
| 23 | ARS-BFGL-BAC-29489              | 0 | 20144062 |          |
| 23 | ARS-BFGL-BAC-29490              | 0 | 20166517 |          |
| 23 | ARS-BFGL-NGS-31808              | 0 | 20193086 |          |
| 23 | ARS-BFGL-NGS-113880             | 0 | 20215611 |          |
| 23 | ARS-BFGL-NGS-117343             | 0 | 20267168 |          |
| 23 | ARS-BFGL-NGS-32373              | 0 | 20320655 |          |
| 23 | Hapmap50155-BTA-91877           | 0 | 20348228 |          |
| 23 | ARS-BFGL-BAC-29493              | 0 | 20374550 |          |
| 23 | ARS-BFGL-NGS-39389              | 0 | 20402236 |          |
| 23 | ARS-BFGL-NGS-89815              | 0 | 20692320 |          |
| 23 | ARS-BFGL-NGS-18880              |   | 20839913 |          |
| 23 | ARS-BFGL-NGS-76293              | 0 | 20947487 |          |
| 23 | ARS-BFGL-NGS-95360              | 0 | 21044566 |          |
| 23 | ARS-BFGL-NGS-61400              | 0 | 21142452 |          |
| 23 | ARS-BFGL-NGS-53331              | 0 | 21224427 |          |
| 23 | ARS-BFGL-NGS-81560              |   | 21246824 |          |
| 23 | Hapmap60955-rs29022431          | 0 | 21292766 |          |
| 23 | ARS-BFGL-NGS-25108              | 0 | 21315975 |          |
| 23 | ARS-BFGL-NGS-116595             | 0 | 21331843 |          |
| 23 | ARS-BFGL-NGS-27887              | 0 | 21365104 |          |
| 23 | UA-IFASA-4807                   | 0 | 21451980 |          |
| 23 | BTA-107634-no-rs                | 0 | 21584168 |          |
| 23 | ARS-BFGL-NGS-40248              | 0 | 21615472 |          |
| 23 | ARS-BFGL-NGS-20819              | 0 | 21638593 |          |
| 23 | BTA-16460-no-rs                 | 0 | 21675696 |          |
| 23 | Hapmap40178-BTA-55802           | 0 | 21748514 |          |
| 23 | BTA-55800-no-rs                 | 0 | 21776780 |          |
| 23 | ARS-BFGL-NGS-112183             | 0 | 21802968 |          |
| 23 | Hapmap35058-BES7_Contig424_1473 | 0 |          | 21839805 |
| 23 | UA-IFASA-5859                   | 0 | 21945453 |          |

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| 23 | Hapmap44684-BTA-55791  | 0 | 21992298 |
| 23 | ARS-BFGL-BAC-30735     | 0 | 22032509 |
| 23 | Hapmap39064-BTA-55787  | 0 | 22080127 |
| 23 | ARS-BFGL-NGS-34780     | 0 | 22240511 |
| 23 | Hapmap50028-BTA-55772  | 0 | 22300959 |
| 23 | UA-IFASA-1885          | 0 | 22402514 |
| 23 | ARS-BFGL-NGS-82606     | 0 | 22477558 |
| 23 | Hapmap47049-BTA-55771  | 0 | 22510920 |
| 23 | ARS-BFGL-NGS-14302     | 0 | 22567976 |
| 23 | Hapmap23007-BTA-137198 | 0 | 22683246 |
| 23 | BTA-55949-no-rs        | 0 | 22716563 |
| 23 | ARS-BFGL-NGS-25070     |   | 22760398 |
| 23 | ARS-BFGL-BAC-30741     | 0 | 22848975 |
| 23 | Hapmap45569-BTA-55944  | 0 | 22916565 |
| 23 | Hapmap40557-BTA-55940  | 0 | 22976019 |
| 23 | BTA-55939-no-rs        | 0 | 22997898 |
| 23 | ARS-BFGL-NGS-39188     | 0 | 23098548 |
| 23 | Hapmap40027-BTA-81692  | 0 | 23207289 |
| 23 | ARS-BFGL-NGS-27191     | 0 | 23283512 |
| 23 | ARS-BFGL-NGS-36171     | 0 | 23325266 |
| 23 | BTB-00354638           | 0 | 23349487 |
| 23 | ARS-BFGL-NGS-106176    | 0 | 23411261 |
| 23 | ARS-BFGL-NGS-89187     | 0 | 23445180 |
| 23 | ARS-BFGL-NGS-114061    | 0 | 23507190 |
| 23 | ARS-BFGL-NGS-109965    | 0 | 23557329 |
| 23 | ARS-BFGL-NGS-40050     |   | 23587742 |
| 23 | BTA-81662-no-rs        | 0 | 23610824 |
| 23 | BTA-81684-no-rs        | 0 | 23675301 |
| 23 | ARS-BFGL-NGS-37547     | 0 | 23692539 |
| 23 | ARS-BFGL-NGS-69490     | 0 | 23746294 |
| 23 | BTA-81631-no-rs        | 0 | 23780769 |
| 23 | Hapmap44065-BTA-37528  | 0 | 23814378 |
| 23 | UA-IFASA-8890          | 0 | 23909884 |
| 23 | ARS-BFGL-BAC-28328     | 0 | 23934499 |
| 23 | BTA-37548-no-rs        | 0 | 23965902 |
| 23 | ARS-BFGL-NGS-45050     |   | 23998263 |
| 23 | BTA-55907-no-rs        | 0 | 24042335 |
| 23 | Hapmap30807-BTA-137195 | 0 | 24053849 |
| 23 | Hapmap59650-rs29009818 | 0 | 24087811 |
| 23 | ARS-BFGL-BAC-58650     |   | 24117682 |
| 23 | ARS-BFGL-NGS-31416     | 0 | 24157504 |
| 23 | Hapmap50029-BTA-55899  | 0 | 24181053 |
| 23 | ARS-BFGL-NGS-101144    | 0 | 24209774 |
| 23 | ARS-BFGL-NGS-36755     | 0 | 24252110 |
| 23 | ARS-BFGL-NGS-64712     | 0 | 24278582 |
| 23 | ARS-BFGL-NGS-40502     | 0 | 24441569 |
| 23 | ARS-BFGL-NGS-83189     | 0 | 24500082 |
| 23 | Hapmap47327-BTA-55967  | 0 | 24538245 |
| 23 | BTA-55972-no-rs        | 0 | 24568625 |
| 23 | ARS-BFGL-NGS-63551     | 0 | 24607919 |
| 23 | ARS-BFGL-NGS-70327     | 0 | 24640422 |
| 23 | ARS-BFGL-NGS-16284     | 0 | 24667121 |
| 23 | ARS-BFGL-NGS-16080     | 0 | 24699202 |
| 23 | ARS-BFGL-NGS-118217    | 0 | 24727613 |

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| 23 | ARS-BFGL-NGS-31623                    | 0        | 24803563 |  |  |
| 23 | ARS-BFGL-NGS-17549                    | 0        | 24873758 |  |  |
| 23 | ARS-BFGL-NGS-27250                    | 24904300 |          |  |  |
| 23 | Hapmap41584-BTA-56031                 | 0        | 24939249 |  |  |
| 23 | ARS-BFGL-NGS-96246                    | 0        | 24961006 |  |  |
| 23 | ARS-BFGL-NGS-44911                    | 0        | 24989231 |  |  |
| 23 | Hapmap28130-BTA-137222                | 0        | 25038202 |  |  |
| 23 | ARS-BFGL-NGS-14941                    | 0        | 25062520 |  |  |
| 23 | ARS-BFGL-NGS-103407                   | 0        | 25083314 |  |  |
| 23 | ARS-BFGL-NGS-111879                   | 0        | 25109188 |  |  |
| 23 | Hapmap44002-BTA-110636                | 0        | 25178791 |  |  |
| 23 | Hapmap32120-BTA-155825                | 0        | 25194666 |  |  |
| 23 | ARS-BFGL-NGS-117031                   | 0        | 25222914 |  |  |
| 23 | ARS-BFGL-NGS-12818                    | 0        | 25472436 |  |  |
| 23 | Hapmap49222-BTA-55895                 | 0        | 25486358 |  |  |
| 23 | ARS-BFGL-NGS-42030                    | 25507676 |          |  |  |
| 23 | ARS-BFGL-NGS-109142                   | 0        | 25552635 |  |  |
| 23 | BTA-56042-no-rs                       | 0        | 25590646 |  |  |
| 23 | BTA-118887-no-rs                      | 0        | 25642674 |  |  |
| 23 | ARS-BFGL-NGS-102734                   | 0        | 25899622 |  |  |
| 23 | BTA-27247-no-rs                       | 0        | 26736263 |  |  |
| 23 | ARS-BFGL-NGS-85480                    | 0        | 26812296 |  |  |
| 23 | ARS-BFGL-NGS-96349                    | 0        | 26995067 |  |  |
| 23 | ARS-BFGL-NGS-24349                    | 0        | 27018207 |  |  |
| 23 | ARS-BFGL-BAC-28338                    | 0        | 27058749 |  |  |
| 23 | ARS-BFGL-NGS-38776                    | 0        | 27088825 |  |  |
| 23 | ARS-BFGL-NGS-79310                    | 0        | 27174246 |  |  |
| 23 | Hapmap47328-BTA-56087                 | 0        | 27215001 |  |  |
| 23 | Hapmap53349-ss46526376                | 0        | 27305227 |  |  |
| 23 | ARS-USMARC-Parent-AY937242-rs17872223 | 0        | 27306795 |  |  |
| 23 | ARS-BFGL-NGS-82024                    | 0        | 27337800 |  |  |
| 23 | ARS-BFGL-NGS-72442                    | 0        | 27383176 |  |  |
| 23 | Hapmap57616-rs29026690                | 0        | 27421348 |  |  |
| 23 | ARS-BFGL-NGS-104658                   | 0        | 27444064 |  |  |
| 23 | ARS-BFGL-NGS-21160                    | 27485467 |          |  |  |
| 23 | ARS-BFGL-NGS-105633                   | 0        | 27545231 |  |  |
| 23 | ARS-BFGL-NGS-43021                    | 0        | 27583474 |  |  |
| 23 | ARS-BFGL-NGS-99242                    | 0        | 27644218 |  |  |
| 23 | ARS-BFGL-NGS-11887                    | 0        | 27776075 |  |  |
| 23 | ARS-BFGL-NGS-97747                    | 0        | 27804037 |  |  |
| 23 | ARS-BFGL-NGS-12220                    | 27865384 |          |  |  |
| 23 | ARS-BFGL-NGS-16619                    | 0        | 27887914 |  |  |
| 23 | Hapmap46836-BTA-55820                 | 0        | 27923154 |  |  |
| 23 | BTA-55821-no-rs                       | 0        | 27944066 |  |  |
| 23 | ARS-BFGL-NGS-67719                    | 0        | 27965340 |  |  |
| 23 | BTA-55853-no-rs                       | 0        | 27992880 |  |  |
| 23 | ARS-BFGL-NGS-90570                    | 0        | 28021047 |  |  |
| 23 | ARS-BFGL-NGS-42400                    | 28087630 |          |  |  |
| 23 | ARS-BFGL-NGS-100422                   | 0        | 28149594 |  |  |
| 23 | UA-IFASA-5823                         | 0        | 28193501 |  |  |
| 23 | ARS-BFGL-NGS-113235                   | 0        | 28223274 |  |  |
| 23 | ARS-BFGL-NGS-115943                   | 0        | 28234435 |  |  |
| 23 | BTA-55886-no-rs                       | 0        | 28281915 |  |  |
| 23 | Hapmap44774-BTA-55887                 | 0        | 28307706 |  |  |

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| 23 | UA-IFASA-7712                    | 0 | 28311070 |          |
| 23 | BTA-111017-no-rs                 | 0 | 28444435 |          |
| 23 | ARS-BFGL-NGS-39                  | 0 | 28563533 |          |
| 23 | ARS-BFGL-NGS-60100               | 0 | 28598059 |          |
| 23 | ARS-BFGL-NGS-43333               | 0 | 28627993 |          |
| 23 | ARS-BFGL-NGS-83284               | 0 | 28649349 |          |
| 23 | UA-IFASA-9236                    | 0 | 28674580 |          |
| 23 | ARS-BFGL-NGS-31638               | 0 | 28736266 |          |
| 23 | ARS-BFGL-NGS-105966              | 0 | 28902561 |          |
| 23 | Hapmap40502-BTA-17475            | 0 | 28938184 |          |
| 23 | ARS-BFGL-NGS-110774              | 0 | 29150525 |          |
| 23 | ARS-BFGL-NGS-96241               | 0 | 29192020 |          |
| 23 | ARS-BFGL-NGS-95687               | 0 | 29213375 |          |
| 23 | ARS-BFGL-NGS-59981               | 0 | 29240771 |          |
| 23 | ARS-BFGL-BAC-35219               | 0 | 29316835 |          |
| 23 | Hapmap22709-BTA-137286           | 0 | 29358848 |          |
| 23 | BTA-94041-no-rs                  | 0 | 29464782 |          |
| 23 | BTA-93496-no-rs                  | 0 | 29498529 |          |
| 23 | ARS-BFGL-NGS-109612              | 0 | 29535762 |          |
| 23 | ARS-BFGL-NGS-104394              | 0 | 29872481 |          |
| 23 | INRA-655                         | 0 | 29897088 |          |
| 23 | ARS-BFGL-NGS-117913              | 0 | 29922215 |          |
| 23 | ARS-BFGL-NGS-26195               | 0 | 30014736 |          |
| 23 | Hapmap36280-SCAFFOLD155216_10397 | 0 |          | 30039692 |
| 23 | ARS-BFGL-NGS-31283               | 0 | 30091153 |          |
| 23 | BTA-06687-no-rs                  | 0 | 30163726 |          |
| 23 | ARS-BFGL-NGS-78313               | 0 | 30222836 |          |
| 23 | BTA-56180-no-rs                  | 0 | 30244691 |          |
| 23 | ARS-BFGL-NGS-72191               | 0 | 30279220 |          |
| 23 | BTA-56199-no-rs                  | 0 | 30322316 |          |
| 23 | Hapmap39414-BTA-56194            | 0 | 30343750 |          |
| 23 | ARS-BFGL-NGS-24000               |   | 30369967 |          |
| 23 | BTA-28538-no-rs                  | 0 | 30595850 |          |
| 23 | ARS-BFGL-NGS-79240               | 0 | 30684605 |          |
| 23 | BTA-68781-no-rs                  | 0 | 30711619 |          |
| 23 | ARS-BFGL-NGS-31519               | 0 | 30735804 |          |
| 23 | BTA-68789-no-rs                  | 0 | 30773701 |          |
| 23 | ARS-BFGL-NGS-42983               | 0 | 30806829 |          |
| 23 | ARS-BFGL-NGS-111855              | 0 | 30849340 |          |
| 23 | Hapmap31226-BTA-68802            | 0 | 30930877 |          |
| 23 | ARS-BFGL-NGS-14014               | 0 | 30953561 |          |
| 23 | Hapmap40375-BTA-91069            | 0 | 31011387 |          |
| 23 | ARS-BFGL-NGS-100585              | 0 | 31040935 |          |
| 23 | Hapmap38435-BTA-76819            | 0 | 31085246 |          |
| 23 | ARS-BFGL-NGS-77399               | 0 | 31107936 |          |
| 23 | ARS-BFGL-NGS-23660               | 0 | 31142042 |          |
| 23 | Hapmap49751-BTA-76811            | 0 | 31222894 |          |
| 23 | ARS-BFGL-NGS-112824              | 0 | 31286064 |          |
| 23 | ARS-BFGL-NGS-15262               | 0 | 31312887 |          |
| 23 | ARS-BFGL-NGS-14858               | 0 | 31354655 |          |
| 23 | Hapmap53842-rs29014609           | 0 | 31407257 |          |
| 23 | ARS-BFGL-NGS-103331              | 0 | 31456978 |          |
| 23 | ARS-BFGL-NGS-31811               | 0 | 31559440 |          |
| 23 | ARS-BFGL-BAC-58850               |   | 31675506 |          |

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| 23 | ARS-BFGL-NGS-78594             | 0 | 31759589 |          |
| 23 | BTA-89233-no-rs                | 0 | 31819343 |          |
| 23 | Hapmap58717-rs29026673         | 0 | 31864904 |          |
| 23 | BTA-56300-no-rs                | 0 | 31918004 |          |
| 23 | ARS-BFGL-NGS-101938            | 0 | 31946349 |          |
| 23 | ARS-BFGL-NGS-37272             | 0 | 32025158 |          |
| 23 | Hapmap29824-BTA-137304         | 0 | 32110882 |          |
| 23 | BTA-56261-no-rs                | 0 | 32155432 |          |
| 23 | ARS-BFGL-NGS-71037             | 0 | 32287468 |          |
| 23 | ARS-BFGL-NGS-108740            | 0 | 32331699 |          |
| 23 | Hapmap50733-BTA-56252          | 0 | 32375661 |          |
| 23 | Hapmap43294-BTA-56514          | 0 | 32414135 |          |
| 23 | ARS-BFGL-NGS-12422             | 0 | 32539425 |          |
| 23 | BTA-56520-no-rs                | 0 | 32581285 |          |
| 23 | ARS-BFGL-NGS-19381             | 0 | 32621505 |          |
| 23 | Hapmap35589-SCAFFOLD96303_4158 | 0 |          | 32682177 |
| 23 | UA-IFASA-4233                  | 0 | 32736387 |          |
| 23 | Hapmap57587-rs29015298         | 0 | 32757561 |          |
| 23 | ARS-BFGL-BAC-28947             | 0 | 32811208 |          |
| 23 | Hapmap51130-BTA-105627         | 0 | 32876929 |          |
| 23 | ARS-BFGL-NGS-39980             | 0 | 32898092 |          |
| 23 | Hapmap59614-ss46526680         | 0 | 32948876 |          |
| 23 | Hapmap53617-rs29011699         | 0 | 32975635 |          |
| 23 | Hapmap57845-rs29014813         | 0 | 32998188 |          |
| 23 | UA-IFASA-8452                  | 0 | 33019085 |          |
| 23 | ARS-BFGL-NGS-92818             | 0 | 33085360 |          |
| 23 | BTA-56325-no-rs                | 0 | 33122738 |          |
| 23 | BTA-56332-no-rs                | 0 | 33151313 |          |
| 23 | ARS-BFGL-NGS-15794             | 0 | 33269631 |          |
| 23 | ARS-BFGL-NGS-85703             | 0 | 33296630 |          |
| 23 | BTA-56341-no-rs                | 0 | 33322550 |          |
| 23 | BTA-56342-no-rs                | 0 | 33349411 |          |
| 23 | Hapmap54016-rs29022819         | 0 | 33376943 |          |
| 23 | ARS-BFGL-NGS-105236            | 0 | 33444954 |          |
| 23 | BTA-33046-no-rs                | 0 | 33529406 |          |
| 23 | ARS-BFGL-BAC-36110             |   | 33645739 |          |
| 23 | ARS-BFGL-NGS-68510             |   | 33671301 |          |
| 23 | Hapmap40166-BTA-121405         | 0 | 33759092 |          |
| 23 | ARS-BFGL-BAC-36050             |   | 33781781 |          |
| 23 | ARS-BFGL-BAC-36030             |   | 33804325 |          |
| 23 | BTA-56432-no-rs                | 0 | 33874418 |          |
| 23 | ARS-BFGL-NGS-107881            | 0 | 33961556 |          |
| 23 | ARS-BFGL-NGS-82538             | 0 | 34020355 |          |
| 23 | BTA-28042-no-rs                | 0 | 34107623 |          |
| 23 | ARS-BFGL-NGS-112063            | 0 | 34231434 |          |
| 23 | ARS-BFGL-NGS-61632             | 0 | 34284231 |          |
| 23 | ARS-BFGL-NGS-110889            | 0 | 34339845 |          |
| 23 | Hapmap38741-BTA-28049          | 0 | 34379695 |          |
| 23 | ARS-BFGL-NGS-113689            | 0 | 34516184 |          |
| 23 | Hapmap30604-BTA-163136         | 0 | 34575024 |          |
| 23 | ARS-BFGL-NGS-37691             | 0 | 34854207 |          |
| 23 | Hapmap41775-BTA-121406         | 0 | 35007295 |          |
| 23 | UA-IFASA-6653                  | 0 | 35069770 |          |
| 23 | ARS-BFGL-NGS-103705            | 0 | 35156681 |          |

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| 23 | ARS-BFGL-NGS-104089            | 0 | 35182683 |  |
| 23 | ARS-BFGL-NGS-118652            | 0 | 35249334 |  |
| 23 | Hapmap25546-BTA-137359         | 0 | 35309434 |  |
| 23 | Hapmap23206-BTA-137360         | 0 | 35354310 |  |
| 23 | BTA-56465-no-rs                | 0 | 35361186 |  |
| 23 | Hapmap53970-rs29017628         | 0 | 35406968 |  |
| 23 | BTA-56474-no-rs                | 0 | 35452881 |  |
| 23 | Hapmap43137-BTA-106951         | 0 | 35537952 |  |
| 23 | Hapmap48171-BTA-106952         | 0 | 35568450 |  |
| 23 | BTA-106954-no-rs               | 0 | 35606289 |  |
| 23 | ARS-BFGL-NGS-83192             | 0 | 35642738 |  |
| 23 | BTA-56450-no-rs                | 0 | 35706450 |  |
| 23 | ARS-BFGL-NGS-59653             | 0 | 35744707 |  |
| 23 | Hapmap50031-BTA-56452          | 0 | 35816005 |  |
| 23 | Hapmap55061-rs29022874         | 0 | 35848905 |  |
| 23 | Hapmap58547-rs29023020         | 0 | 35911017 |  |
| 23 | Hapmap52976-rs29018100         | 0 | 35970763 |  |
| 23 | ARS-BFGL-NGS-16621             | 0 | 36011849 |  |
| 23 | ARS-BFGL-BAC-44117             | 0 | 36070248 |  |
| 23 | ARS-BFGL-NGS-31956             | 0 | 36112949 |  |
| 23 | ARS-BFGL-NGS-109297            | 0 | 36139914 |  |
| 23 | ARS-BFGL-NGS-107030            | 0 | 36233897 |  |
| 23 | Hapmap22629-BTA-137362         | 0 | 36319959 |  |
| 23 | ARS-BFGL-NGS-104988            | 0 | 36342869 |  |
| 23 | ARS-BFGL-NGS-62832             | 0 | 36509046 |  |
| 23 | ARS-BFGL-NGS-110420            | 0 | 36558895 |  |
| 23 | ARS-BFGL-NGS-100134            | 0 | 36594609 |  |
| 23 | Hapmap32621-BTA-154402         | 0 | 36638469 |  |
| 23 | BTA-106641-no-rs               | 0 | 36668732 |  |
| 23 | ARS-BFGL-NGS-64320             | 0 | 36759291 |  |
| 23 | Hapmap53253-rs29027305         | 0 | 36926025 |  |
| 23 | UA-IFASA-8351                  | 0 | 37004511 |  |
| 23 | ARS-BFGL-NGS-93014             | 0 | 37029269 |  |
| 23 | Hapmap59653-rs29010378         | 0 | 37063747 |  |
| 23 | Hapmap43765-BTA-112029         | 0 | 37168379 |  |
| 23 | ARS-BFGL-NGS-62081             | 0 | 37292633 |  |
| 23 | ARS-BFGL-NGS-105768            | 0 | 37321457 |  |
| 23 | ARS-BFGL-NGS-89720             | 0 | 37418384 |  |
| 23 | ARS-BFGL-NGS-114467            | 0 | 37473341 |  |
| 23 | ARS-BFGL-NGS-59084             | 0 | 37504267 |  |
| 23 | Hapmap47835-BTA-112028         | 0 | 37534897 |  |
| 23 | Hapmap49449-BTA-112027         | 0 | 37559983 |  |
| 23 | BTA-112061-no-rs               | 0 | 37621058 |  |
| 23 | ARS-BFGL-NGS-59516             | 0 | 37654124 |  |
| 23 | ARS-BFGL-NGS-108416            | 0 | 37692330 |  |
| 23 | ARS-BFGL-NGS-118012            | 0 | 37877795 |  |
| 23 | Hapmap35138-BES7_Contig441_813 | 0 | 37917746 |  |
| 23 | BTA-56539-no-rs                | 0 | 37966422 |  |
| 23 | ARS-BFGL-BAC-44125             | 0 | 38105202 |  |
| 23 | ARS-BFGL-NGS-62148             | 0 | 38151328 |  |
| 23 | Hapmap50033-BTA-56544          | 0 | 38177588 |  |
| 23 | ARS-BFGL-NGS-88425             | 0 | 38206814 |  |
| 23 | ARS-BFGL-NGS-115866            | 0 | 38224271 |  |
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| 23 | BTA-56563-no-rs                 | 0 | 38412668 |          |
| 23 | Hapmap33612-BTA-56564           | 0 | 38469772 |          |
| 23 | Hapmap31420-BTA-137383          | 0 | 38521106 |          |
| 23 | Hapmap50736-BTA-56581           | 0 | 38541164 |          |
| 23 | ARS-BFGL-NGS-103150             | 0 | 38609338 |          |
| 23 | Hapmap31500-BTA-157735          | 0 | 38670855 |          |
| 23 | UA-IFASA-4463                   | 0 | 38810995 |          |
| 23 | Hapmap26934-BTA-124853          | 0 | 38921550 |          |
| 23 | Hapmap44473-BTA-63059           | 0 | 39077806 |          |
| 23 | Hapmap50423-BTA-63074           | 0 | 39123379 |          |
| 23 | ARS-BFGL-NGS-117167             | 0 | 39157565 |          |
| 23 | BTA-121410-no-rs                | 0 | 39203502 |          |
| 23 | ARS-BFGL-NGS-114432             | 0 | 39254055 |          |
| 23 | ARS-BFGL-NGS-64276              | 0 | 39282627 |          |
| 23 | ARS-BFGL-NGS-65768              | 0 | 39303680 |          |
| 23 | ARS-BFGL-NGS-87354              | 0 | 39383906 |          |
| 23 | BTA-01409-rs29012374            | 0 | 39411428 |          |
| 23 | ARS-BFGL-NGS-41640              |   | 39442376 |          |
| 23 | ARS-BFGL-NGS-97986              | 0 | 39484629 |          |
| 23 | Hapmap57401-rs29021597          | 0 | 39649309 |          |
| 23 | ARS-BFGL-NGS-34021              | 0 | 39763063 |          |
| 23 | ARS-BFGL-NGS-62302              | 0 | 39896138 |          |
| 23 | ARS-BFGL-NGS-38537              | 0 | 39980694 |          |
| 23 | BTA-56768-no-rs                 | 0 | 40074451 |          |
| 23 | ARS-BFGL-NGS-115157             | 0 | 40154308 |          |
| 23 | ARS-BFGL-NGS-15957              | 0 | 40182681 |          |
| 23 | BTA-56771-no-rs                 | 0 | 40203865 |          |
| 23 | Hapmap33890-BES3_Contig418_1154 | 0 |          | 40236175 |
| 23 | Hapmap35156-BES9_Contig360_881  | 0 |          | 40258674 |
| 23 | ARS-BFGL-NGS-97912              | 0 | 40321929 |          |
| 23 | ARS-BFGL-BAC-46684              | 0 | 40366428 |          |
| 23 | Hapmap31542-BTA-56774           | 0 | 40416708 |          |
| 23 | ARS-BFGL-NGS-63422              | 0 | 40440746 |          |
| 23 | ARS-BFGL-NGS-11208              | 0 | 40525915 |          |
| 23 | ARS-BFGL-NGS-22016              | 0 | 40606753 |          |
| 23 | ARS-BFGL-NGS-77100              |   | 40631438 |          |
| 23 | ARS-BFGL-NGS-38498              | 0 | 40672572 |          |
| 23 | Hapmap44098-BTA-56779           | 0 | 40703070 |          |
| 23 | Hapmap58574-ss46526262          | 0 | 40770599 |          |
| 23 | ARS-BFGL-NGS-23120              |   | 40812221 |          |
| 23 | Hapmap41299-BTA-56786           | 0 | 40847341 |          |
| 23 | ARS-BFGL-NGS-75314              | 0 | 40870270 |          |
| 23 | ARS-BFGL-NGS-31694              | 0 | 40901750 |          |
| 23 | ARS-BFGL-NGS-12710              | 0 | 40925829 |          |
| 23 | UA-IFASA-8930                   | 0 | 40951388 |          |
| 23 | ARS-BFGL-NGS-69151              | 0 | 40993370 |          |
| 23 | ARS-BFGL-NGS-67641              | 0 | 41064620 |          |
| 23 | Hapmap60333-rs29018032          | 0 | 41103432 |          |
| 23 | BTA-56822-no-rs                 | 0 | 41141204 |          |
| 23 | UA-IFASA-4678                   | 0 | 41173273 |          |
| 23 | ARS-BFGL-NGS-62604              | 0 | 41241900 |          |
| 23 | Hapmap42255-BTA-56826           | 0 | 41313003 |          |
| 23 | ARS-BFGL-NGS-85507              | 0 | 41349455 |          |
| 23 | ARS-BFGL-NGS-39539              | 0 | 41457147 |          |

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| 23 | ARS-BFGL-NGS-77290             | 0 | 41496176 |          |
| 23 | ARS-BFGL-NGS-12457             | 0 | 41519486 |          |
| 23 | ARS-BFGL-NGS-30723             | 0 | 41557555 |          |
| 23 | Hapmap59016-rs29021748         | 0 | 41633864 |          |
| 23 | BTB-00870908                   | 0 | 41672507 |          |
| 23 | Hapmap35535-SCAFFOLD86180_8791 | 0 |          | 41700829 |
| 23 | ARS-BFGL-NGS-110714            | 0 | 41725497 |          |
| 23 | BTA-56833-no-rs                | 0 | 41750522 |          |
| 23 | BTB-00870927                   | 0 | 41788859 |          |
| 23 | ARS-BFGL-NGS-82440             |   | 41816233 |          |
| 23 | Hapmap49663-BTA-56835          | 0 | 41842601 |          |
| 23 | BTA-56844-no-rs                | 0 | 41878488 |          |
| 23 | ARS-BFGL-NGS-48370             |   | 41901234 |          |
| 23 | ARS-BFGL-NGS-19612             | 0 | 41928622 |          |
| 23 | Hapmap38291-BTA-121416         | 0 | 41965164 |          |
| 23 | ARS-BFGL-NGS-19401             | 0 | 41992435 |          |
| 23 | ARS-BFGL-NGS-44766             | 0 | 42028599 |          |
| 23 | ARS-BFGL-NGS-18124             | 0 | 42076544 |          |
| 23 | BTA-56863-no-rs                | 0 | 42121189 |          |
| 23 | ARS-BFGL-NGS-95117             | 0 | 42143018 |          |
| 23 | ARS-BFGL-NGS-23397             | 0 | 42171885 |          |
| 23 | ARS-BFGL-NGS-97867             | 0 | 42206374 |          |
| 23 | BTB-00871509                   | 0 | 42255282 |          |
| 23 | UA-IFASA-4209                  | 0 | 42303362 |          |
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| 23 | BTB-00577027                   | 0 | 42384884 |          |
| 23 | Hapmap23000-BTA-129488         | 0 | 42410514 |          |
| 23 | Hapmap47196-BTA-120999         | 0 | 42442804 |          |
| 23 | UA-IFASA-5674                  | 0 | 42463613 |          |
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| 23 | ARS-BFGL-NGS-43531             | 0 | 42550545 |          |
| 23 | UA-IFASA-8264                  | 0 | 42581988 |          |
| 23 | ARS-BFGL-NGS-102268            | 0 | 42621004 |          |
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| 23 | ARS-BFGL-NGS-108505            | 0 | 42813241 |          |
| 23 | ARS-BFGL-NGS-104813            | 0 | 42931372 |          |
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| 23 | ARS-BFGL-NGS-102939            | 0 | 43125196 |          |
| 23 | BTA-56899-no-rs                | 0 | 43151282 |          |
| 23 | BTA-56897-no-rs                | 0 | 43183778 |          |
| 23 | BTA-56888-no-rs                | 0 | 43208891 |          |
| 23 | ARS-BFGL-NGS-42675             | 0 | 43257970 |          |
| 23 | ARS-BFGL-NGS-40875             | 0 | 43298591 |          |
| 23 | Hapmap26397-BTA-137444         | 0 | 43393005 |          |
| 23 | ARS-BFGL-NGS-255               | 0 | 43497286 |          |
| 23 | BTB-00871695                   | 0 | 43535918 |          |
| 23 | Hapmap38327-BTA-56872          | 0 | 43572857 |          |
| 23 | ARS-BFGL-NGS-29832             | 0 | 43613690 |          |
| 23 | ARS-BFGL-NGS-17605             | 0 | 43743986 |          |
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| 23 | BTB-00259200                   | 0 | 43813857 |          |

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| 23 | ARS-BFGL-NGS-12068     | 0        | 43887472 |
| 23 | Hapmap24271-BTA-56933  | 0        | 43925150 |
| 23 | ARS-BFGL-NGS-16830     | 43950048 |          |
| 23 | BTB-00872950           | 0        | 43984482 |
| 23 | BTB-00872988           | 0        | 44074073 |
| 23 | ARS-BFGL-NGS-110047    | 0        | 44121535 |
| 23 | ARS-BFGL-NGS-56707     | 0        | 44153826 |
| 23 | ARS-BFGL-NGS-17829     | 0        | 44175062 |
| 23 | ARS-BFGL-NGS-42817     | 0        | 44212558 |
| 23 | Hapmap42254-BTA-56665  | 0        | 44246320 |
| 23 | BTB-00869387           | 0        | 44332733 |
| 23 | Hapmap47993-BTA-56668  | 0        | 44376639 |
| 23 | ARS-BFGL-NGS-114619    | 0        | 44403751 |
| 23 | ARS-BFGL-NGS-104370    | 0        | 44428685 |
| 23 | BTA-56690-no-rs        | 0        | 44458259 |
| 23 | ARS-BFGL-NGS-110589    | 0        | 44577240 |
| 23 | ARS-BFGL-NGS-109849    | 0        | 44613518 |
| 23 | ARS-BFGL-NGS-115605    | 0        | 44680105 |
| 23 | Hapmap58399-rs29020123 | 0        | 44716169 |
| 23 | BTB-00869928           | 0        | 44754145 |
| 23 | Hapmap42588-BTA-56723  | 0        | 44811372 |
| 23 | ARS-BFGL-NGS-115203    | 0        | 44876806 |
| 23 | ARS-BFGL-NGS-41732     | 0        | 44897933 |
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| 23 | Hapmap46088-BTA-56733  | 0        | 44945634 |
| 23 | ARS-BFGL-NGS-104864    | 0        | 44971873 |
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| 23 | BTB-01877881           | 0        | 45048666 |
| 23 | BTA-56731-no-rs        | 0        | 45106522 |
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| 23 | Hapmap28631-BTA-154760 | 0        | 45212829 |
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| 23 | BTB-01188712           | 0        | 45277736 |
| 23 | ARS-BFGL-NGS-104353    | 0        | 45312549 |
| 23 | ARS-BFGL-NGS-22254     | 0        | 45347763 |
| 23 | BTA-107490-no-rs       | 0        | 45368338 |
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| 23 | UA-IFASA-8948          | 0        | 45420761 |
| 23 | BTB-01188972           | 0        | 45455716 |
| 23 | Hapmap38722-BTA-107506 | 0        | 45507722 |
| 23 | BTA-107511-no-rs       | 0        | 45530763 |
| 23 | BTA-107518-no-rs       | 0        | 45586528 |
| 23 | ARS-BFGL-NGS-13217     | 0        | 45610982 |
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| 23 | Hapmap52125-rs29026859 | 0        | 45723946 |
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| 23 | ARS-BFGL-BAC-36398     | 0        | 45902421 |
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| 23 | BTB-00867539           | 0        | 45971361 |
| 23 | BTB-00867599           | 0        | 46010729 |
| 23 | Hapmap40179-BTA-56624  | 0        | 46063916 |

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| 23 | Hapmap23689-BTA-137393          | 0 | 46156810 |  |
| 23 | BTB-00867820                    | 0 | 46210682 |  |
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| 23 | BTB-01751684                    | 0 | 46295105 |  |
| 23 | Hapmap30585-BTA-158361          | 0 | 46334617 |  |
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| 23 | ARS-BFGL-NGS-64815              | 0 | 46401353 |  |
| 23 | ARS-BFGL-NGS-17355              | 0 | 46418534 |  |
| 23 | ARS-BFGL-BAC-36399              | 0 | 46442661 |  |
| 23 | BTB-02046287                    | 0 | 46472149 |  |
| 23 | INRA-529                        | 0 | 46489756 |  |
| 23 | BTB-00868129                    | 0 | 46538985 |  |
| 23 | Hapmap27475-BTA-56640           | 0 | 46578332 |  |
| 23 | BTA-86477-no-rs                 | 0 | 46611153 |  |
| 23 | Hapmap43295-BTA-56643           | 0 | 46641218 |  |
| 23 | BTB-00868343                    | 0 | 46672013 |  |
| 23 | BTA-121413-no-rs                | 0 | 46772002 |  |
| 23 | BTA-15087-rs29026452            | 0 | 46803092 |  |
| 23 | BTB-00868478                    | 0 | 46833240 |  |
| 23 | ARS-BFGL-NGS-39402              | 0 | 46886049 |  |
| 23 | BTB-00868513                    | 0 | 46909323 |  |
| 23 | ARS-BFGL-NGS-84065              | 0 | 46963476 |  |
| 23 | BTB-00868877                    | 0 | 47005648 |  |
| 23 | ARS-BFGL-BAC-36400              | 0 | 47040907 |  |
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| 23 | BTA-56647-no-rs                 | 0 | 47097194 |  |
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| 23 | Hapmap36809-SCAFFOLD140402_6904 | 0 | 47175087 |  |
| 23 | BTB-00868972                    | 0 | 47198837 |  |
| 23 | Hapmap23842-BTA-56935           | 0 | 47219946 |  |
| 23 | Hapmap49861-BTA-110754          | 0 | 47312700 |  |
| 23 | Hapmap53770-ss46526325          | 0 | 47353027 |  |
| 23 | ARS-BFGL-NGS-17756              | 0 | 47395208 |  |
| 23 | ARS-BFGL-NGS-11784              | 0 | 47430304 |  |
| 23 | ARS-BFGL-NGS-118828             | 0 | 47464804 |  |
| 23 | BTB-00873571                    | 0 | 47511124 |  |
| 23 | ARS-BFGL-NGS-64270              |   | 47627822 |  |
| 23 | ARS-BFGL-NGS-116599             | 0 | 47677534 |  |
| 23 | ARS-BFGL-NGS-53420              | 0 | 47704495 |  |
| 23 | ARS-BFGL-NGS-38613              | 0 | 47734120 |  |
| 23 | Hapmap53926-rs29025235          | 0 | 47786010 |  |
| 23 | ARS-BFGL-NGS-14848              | 0 | 47885720 |  |
| 23 | ARS-BFGL-NGS-83700              | 0 | 47916657 |  |
| 23 | ARS-BFGL-NGS-89415              | 0 | 47953939 |  |
| 23 | ARS-BFGL-NGS-21427              | 0 | 48022071 |  |
| 23 | ARS-BFGL-NGS-113537             | 0 | 48059745 |  |
| 23 | BTA-101164-no-rs                | 0 | 48094367 |  |
| 23 | ARS-BFGL-NGS-89190              | 0 | 48125881 |  |
| 23 | ARS-BFGL-NGS-91148              | 0 | 48165597 |  |
| 23 | ARS-BFGL-NGS-57983              | 0 | 48197978 |  |
| 23 | ARS-BFGL-NGS-21130              |   | 48253839 |  |
| 23 | BTB-01175105                    | 0 | 48280977 |  |

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| 23 | Hapmap30295-BTA-153703 | 0 | 48376059 |
| 23 | Hapmap49834-BTA-104472 | 0 | 48397375 |
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| 23 | BTB-01174768           | 0 | 48442259 |
| 23 | BTA-122302-no-rs       | 0 | 48444673 |
| 23 | ARS-BFGL-NGS-39327     | 0 | 48496658 |
| 23 | ARS-BFGL-NGS-115599    | 0 | 48537019 |
| 23 | ARS-BFGL-NGS-35107     | 0 | 48563085 |
| 23 | ARS-BFGL-NGS-118579    | 0 | 48597495 |
| 23 | ARS-BFGL-NGS-108142    | 0 | 48623792 |
| 23 | ARS-BFGL-NGS-32006     | 0 | 48659317 |
| 23 | BTA-103323-no-rs       | 0 | 48701393 |
| 23 | ARS-BFGL-NGS-17217     | 0 | 48763952 |
| 23 | BTB-01783889           | 0 | 48791036 |
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| 23 | ARS-BFGL-NGS-20081     | 0 | 48910189 |
| 23 | ARS-BFGL-NGS-36409     | 0 | 48959735 |
| 23 | UA-IFASA-2485          | 0 | 48994682 |
| 23 | ARS-BFGL-NGS-61352     | 0 | 49030120 |
| 23 | ARS-BFGL-NGS-721       | 0 | 49061686 |
| 23 | Hapmap41132-BTA-103312 | 0 | 49094579 |
| 23 | ARS-BFGL-NGS-103489    | 0 | 49135538 |
| 23 | ARS-BFGL-NGS-113487    | 0 | 49155568 |
| 23 | ARS-BFGL-NGS-28289     | 0 | 49177883 |
| 23 | ARS-BFGL-NGS-104755    | 0 | 49200814 |
| 23 | Hapmap49546-BTA-25249  | 0 | 49260004 |
| 23 | Hapmap48695-BTA-25246  | 0 | 49283896 |
| 23 | ARS-BFGL-NGS-82347     | 0 | 49307866 |
| 23 | BTB-01336729           | 0 | 49332018 |
| 23 | ARS-BFGL-NGS-34417     | 0 | 49437644 |
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| 23 | Hapmap24587-BTA-25254  | 0 | 49496642 |
| 23 | ARS-BFGL-NGS-102286    | 0 | 49521206 |
| 23 | ARS-BFGL-NGS-60350     | 0 | 49546828 |
| 23 | Hapmap25626-BTA-163164 | 0 | 49626490 |
| 23 | ARS-BFGL-NGS-119306    | 0 | 49651909 |
| 23 | ARS-BFGL-NGS-73903     | 0 | 49725139 |
| 23 | BTA-122365-no-rs       | 0 | 49762070 |
| 23 | ARS-BFGL-NGS-14200     | 0 | 49809003 |
| 23 | ARS-BFGL-NGS-24200     | 0 | 49838717 |
| 23 | ARS-BFGL-NGS-53510     | 0 | 49866658 |
| 23 | Hapmap39230-BTA-56961  | 0 | 49900420 |
| 23 | ARS-BFGL-NGS-137       | 0 | 49945187 |
| 23 | BTB-00874009           | 0 | 49979807 |
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| 23 | ARS-BFGL-NGS-111311    | 0 | 50206439 |
| 23 | ARS-BFGL-NGS-84504     | 0 | 50265078 |
| 23 | ARS-BFGL-NGS-24799     | 0 | 50328541 |

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| 23 | ARS-BFGL-NGS-99591                    | 0        | 50388461 |   |          |
| 23 | Hapmap52999-ss46526205                | 0        | 50421129 |   |          |
| 23 | ARS-BFGL-NGS-11502                    | 0        | 50443262 |   |          |
| 23 | ARS-BFGL-NGS-118139                   | 0        | 50490654 |   |          |
| 23 | ARS-BFGL-NGS-63004                    | 0        | 50599646 |   |          |
| 23 | ARS-BFGL-NGS-105334                   | 0        | 50688170 |   |          |
| 23 | ARS-BFGL-NGS-38093                    | 0        | 50710691 |   |          |
| 23 | ARS-BFGL-NGS-31524                    | 0        | 50747363 |   |          |
| 23 | ARS-BFGL-NGS-42315                    | 0        | 50782334 |   |          |
| 23 | BTB-00874227                          | 0        | 50811981 |   |          |
| 23 | ARS-BFGL-NGS-114043                   | 0        | 50858645 |   |          |
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| 23 | ARS-BFGL-NGS-27800                    | 0        | 50897089 |   |          |
| 23 | ARS-BFGL-BAC-36416                    | 0        | 50923511 |   |          |
| 23 | ARS-BFGL-NGS-29892                    | 0        | 50948353 |   |          |
| 23 | ARS-BFGL-NGS-114243                   | 0        | 50971212 |   |          |
| 23 | ARS-BFGL-NGS-78019                    | 0        | 51008151 |   |          |
| 23 | ARS-BFGL-NGS-80000                    | 51030385 |          |   |          |
| 23 | ARS-BFGL-NGS-22726                    | 0        | 51058024 |   |          |
| 23 | ARS-BFGL-NGS-29752                    | 0        | 51072920 |   |          |
| 23 | Hapmap38466-BTA-118912                | 0        | 51097849 |   |          |
| 23 | BTB-01381318                          | 0        | 51118713 |   |          |
| 23 | BTB-01381388                          | 0        | 51187803 |   |          |
| 23 | ARS-BFGL-NGS-73959                    | 0        | 51216744 |   |          |
| 23 | ARS-BFGL-NGS-108494                   | 0        | 51241585 |   |          |
| 23 | Hapmap25065-BTA-147272                | 0        | 51280200 |   |          |
| 23 | BTB-01381436                          | 0        | 51323380 |   |          |
| 23 | BTB-01381524                          | 0        | 51353236 |   |          |
| 23 | ARS-BFGL-NGS-28739                    | 0        | 51386626 |   |          |
| 23 | ARS-BFGL-NGS-17155                    | 0        | 51456430 |   |          |
| 23 | ARS-BFGL-NGS-13891                    | 0        | 51487543 |   |          |
| 23 | ARS-BFGL-NGS-104949                   | 0        | 51546522 |   |          |
| 23 | ARS-BFGL-NGS-35019                    | 0        | 51577711 |   |          |
| 23 | ARS-BFGL-NGS-92459                    | 0        | 51598235 |   |          |
| 23 | BTA-113665-no-rs                      | 0        | 51621297 |   |          |
| 23 | BTA-99678-no-rs                       | 0        | 51665660 |   |          |
| 23 | ARS-BFGL-NGS-117465                   | 0        | 51719827 |   |          |
| 23 | ARS-BFGL-NGS-118311                   | 0        | 51746394 |   |          |
| 23 | ARS-BFGL-NGS-31568                    | 0        | 51795496 |   |          |
| 23 | ARS-BFGL-NGS-34136                    | 0        | 51821779 |   |          |
| 23 | ARS-BFGL-NGS-39116                    | 0        | 51859644 |   |          |
| 23 | Hapmap54265-rs29022783                | 0        | 51884358 |   |          |
| 23 | BTA-100229-no-rs                      | 0        | 51917675 |   |          |
| 23 | Hapmap57192-rs29027634                | 0        | 51938161 |   |          |
| 23 | ARS-BFGL-NGS-76787                    | 0        | 51991897 |   |          |
| 23 | ARS-BFGL-NGS-30251                    | 0        | 52038120 |   |          |
| 23 | ARS-BFGL-NGS-100967                   | 0        | 52068611 |   |          |
| 23 | ARS-BFGL-NGS-44550                    | 52091670 |          |   |          |
| 23 | Hapmap47467-BTA-100234                | 0        | 52128894 |   |          |
| 23 | BTB-01156395                          | 0        | 52156348 |   |          |
| 23 | BTB-02081535                          | 0        | 52285248 |   |          |
| 24 | BTB-00875757                          | 0        | 580805   |   |          |
| 24 | ARS-BFGL-NGS-103469                   | 0        | 632760   |   |          |

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| 24 | BTA-57495-no-rs                       | 0 | 653401  |         |
| 24 | UA-IFASA-7925                         | 0 | 679380  |         |
| 24 | ARS-BFGL-NGS-66596                    | 0 | 706868  |         |
| 24 | BTB-00879309                          | 0 | 757597  |         |
| 24 | BTB-00875707                          | 0 | 785766  |         |
| 24 | ARS-BFGL-NGS-111867                   | 0 | 858718  |         |
| 24 | ARS-BFGL-NGS-10928                    | 0 | 966055  |         |
| 24 | Hapmap47669-BTA-59022                 | 0 | 1094942 |         |
| 24 | ARS-BFGL-NGS-39061                    | 0 | 1137518 |         |
| 24 | ARS-BFGL-NGS-107477                   | 0 | 1180217 |         |
| 24 | BTB-00875512                          | 0 | 1215950 |         |
| 24 | ARS-BFGL-NGS-87352                    | 0 | 1261041 |         |
| 24 | ARS-BFGL-NGS-95640                    | 0 | 1282069 |         |
| 24 | ARS-BFGL-NGS-29217                    | 0 | 1310330 |         |
| 24 | ARS-BFGL-NGS-77985                    | 0 | 1336600 |         |
| 24 | ARS-BFGL-NGS-114710                   | 0 | 1401886 |         |
| 24 | BTB-00875313                          | 0 | 1426384 |         |
| 24 | ARS-BFGL-NGS-37419                    | 0 | 1507094 |         |
| 24 | BTB-00875197                          | 0 | 1529327 |         |
| 24 | Hapmap33874-BES10_Contig434_1045      | 0 |         | 1549465 |
| 24 | BTB-00875143                          | 0 | 1582182 |         |
| 24 | ARS-BFGL-NGS-23140                    | 0 | 1604247 |         |
| 24 | ARS-BFGL-NGS-31912                    | 0 | 1634512 |         |
| 24 | ARS-BFGL-NGS-19332                    | 0 | 1673550 |         |
| 24 | ARS-BFGL-NGS-114261                   | 0 | 1705974 |         |
| 24 | BTA-121879-no-rs                      | 0 | 1764055 |         |
| 24 | BTA-82879-no-rs                       | 0 | 1797807 |         |
| 24 | BTB-00377031                          | 0 | 1807628 |         |
| 24 | Hapmap35633-SCAFFOLD222971_1761       | 0 |         | 1854858 |
| 24 | ARS-USMARC-Parent-DQ995977-rs29020834 | 0 |         | 1854953 |
| 24 | ARS-BFGL-NGS-11247                    | 0 | 1895647 |         |
| 24 | ARS-BFGL-NGS-63597                    | 0 | 1931077 |         |
| 24 | ARS-BFGL-NGS-110908                   | 0 | 2010941 |         |
| 24 | BTB-01604338                          | 0 | 2032594 |         |
| 24 | UA-IFASA-3097                         | 0 | 2072866 |         |
| 24 | BTB-01955346                          | 0 | 2094260 |         |
| 24 | ARS-BFGL-NGS-111602                   | 0 | 2114444 |         |
| 24 | BTB-02061552                          | 0 | 2127788 |         |
| 24 | Hapmap50827-BTA-94026                 | 0 | 2166631 |         |
| 24 | BTB-01448403                          | 0 | 2186221 |         |
| 24 | ARS-BFGL-NGS-29324                    | 0 | 2254157 |         |
| 24 | ARS-BFGL-NGS-111907                   | 0 | 2325200 |         |
| 24 | ARS-BFGL-NGS-112610                   | 0 | 2347580 |         |
| 24 | ARS-BFGL-NGS-85094                    | 0 | 2393800 |         |
| 24 | ARS-BFGL-NGS-39521                    | 0 | 2435027 |         |
| 24 | ARS-BFGL-NGS-59487                    | 0 | 2466721 |         |
| 24 | ARS-BFGL-NGS-114852                   | 0 | 2498535 |         |
| 24 | ARS-BFGL-NGS-82717                    | 0 | 2536985 |         |
| 24 | BTB-00875765                          | 0 | 2557807 |         |
| 24 | ARS-BFGL-NGS-30248                    | 0 | 2579535 |         |
| 24 | Hapmap38612-BTA-58070                 | 0 | 2658119 |         |
| 24 | ARS-BFGL-NGS-37064                    | 0 | 2702058 |         |
| 24 | ARS-BFGL-NGS-14917                    | 0 | 2752863 |         |
| 24 | ARS-BFGL-NGS-22551                    | 0 | 2795809 |         |

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| 24 | Hapmap48003-BTA-57985           | 0 | 2824375 |         |
| 24 | ARS-BFGL-NGS-115779             | 0 | 2859956 |         |
| 24 | Hapmap36258-SCAFFOLD60223_13396 | 0 |         | 2971794 |
| 24 | BTB-00876230                    | 0 | 3004567 |         |
| 24 | BTA-57884-no-rs                 | 0 | 3029468 |         |
| 24 | ARS-BFGL-NGS-108020             | 0 | 3052873 |         |
| 24 | ARS-BFGL-NGS-73174              | 0 | 3079651 |         |
| 24 | BTB-00876061                    | 0 | 3110607 |         |
| 24 | ARS-BFGL-NGS-14440              |   | 3143836 |         |
| 24 | ARS-BFGL-NGS-116328             | 0 | 3165105 |         |
| 24 | Hapmap28803-BTA-137548          | 0 | 3193273 |         |
| 24 | BTB-00876819                    | 0 | 3216217 |         |
| 24 | BTB-00876647                    | 0 | 3260790 |         |
| 24 | Hapmap50041-BTA-58215           | 0 | 3283496 |         |
| 24 | BTB-00876889                    | 0 | 3342966 |         |
| 24 | ARS-BFGL-NGS-116072             | 0 | 3384628 |         |
| 24 | ARS-BFGL-BAC-28667              | 0 | 3417911 |         |
| 24 | ARS-BFGL-NGS-47260              | 0 | 3448057 |         |
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| 24 | Hapmap42985-BTA-58359           | 0 | 3494782 |         |
| 24 | BTB-00877170                    | 0 | 3501561 |         |
| 24 | ARS-BFGL-NGS-117654             | 0 | 3524909 |         |
| 24 | ARS-BFGL-NGS-111462             | 0 | 3601352 |         |
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| 24 | ARS-BFGL-NGS-63149              | 0 | 3721378 |         |
| 24 | Hapmap41303-BTA-58461           | 0 | 3749382 |         |
| 24 | ARS-BFGL-NGS-63596              | 0 | 3779702 |         |
| 24 | ARS-BFGL-NGS-107177             | 0 | 3835011 |         |
| 24 | BTB-00877492                    | 0 | 3860135 |         |
| 24 | ARS-BFGL-NGS-110553             | 0 | 3923592 |         |
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| 24 | BTB-00877912                    | 0 | 3991319 |         |
| 24 | ARS-BFGL-NGS-12290              | 0 | 4014793 |         |
| 24 | Hapmap33715-BTA-137579          | 0 | 4046179 |         |
| 24 | BTB-00877876                    | 0 | 4085278 |         |
| 24 | ARS-BFGL-BAC-42839              | 0 | 4118163 |         |
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| 24 | ARS-BFGL-NGS-85981              | 0 | 4335837 |         |
| 24 | ARS-BFGL-NGS-58364              | 0 | 4375311 |         |
| 24 | BTB-00877619                    | 0 | 4436484 |         |
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| 24 | ARS-BFGL-NGS-44005              | 0 | 4526781 |         |
| 24 | ARS-BFGL-NGS-58952              | 0 | 4608171 |         |
| 24 | ARS-BFGL-NGS-31749              | 0 | 4669101 |         |
| 24 | BTB-00878429                    | 0 | 4718729 |         |
| 24 | ARS-BFGL-NGS-103969             | 0 | 4741755 |         |
| 24 | Hapmap57060-rs29023510          | 0 | 4805759 |         |
| 24 | ARS-BFGL-NGS-109462             | 0 | 4855238 |         |
| 24 | ARS-BFGL-NGS-30774              | 0 | 4888852 |         |
| 24 | Hapmap43889-BTA-58801           | 0 | 4922801 |         |



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| 24 | BTB-01921336                    | 0 | 4970639 |         |
| 24 | Hapmap43625-BTA-58790           | 0 | 5002135 |         |
| 24 | BTB-00878073                    | 0 | 5024793 |         |
| 24 | BTA-21517-no-rs                 | 0 | 5054955 |         |
| 24 | BTA-111495-no-rs                | 0 | 5118635 |         |
| 24 | ARS-BFGL-NGS-15816              | 0 | 5218028 |         |
| 24 | BTB-01192196                    | 0 | 5239672 |         |
| 24 | Hapmap44000-BTA-108084          | 0 | 5269940 |         |
| 24 | Hapmap36637-SCAFFOLD318693_6319 | 0 |         | 5304270 |
| 24 | Hapmap51383-BTA-108086          | 0 | 5329775 |         |
| 24 | ARS-BFGL-NGS-35747              | 0 | 5355518 |         |
| 24 | Hapmap50858-BTA-108088          | 0 | 5389986 |         |
| 24 | Hapmap57049-rs29024425          | 0 | 5426458 |         |
| 24 | ARS-BFGL-NGS-32109              | 0 | 5446935 |         |
| 24 | Hapmap49854-BTA-108097          | 0 | 5486959 |         |
| 24 | Hapmap41146-BTA-108100          | 0 | 5504370 |         |
| 24 | ARS-BFGL-NGS-52316              | 0 | 5615210 |         |
| 24 | Hapmap60094-rs29025212          | 0 | 5696089 |         |
| 24 | Hapmap39494-BTA-58829           | 0 | 5734740 |         |
| 24 | ARS-BFGL-NGS-60965              | 0 | 5778968 |         |
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| 24 | BTB-00878928                    | 0 | 5883369 |         |
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| 24 | BTA-115570-no-rs                | 0 | 5974844 |         |
| 24 | ARS-BFGL-BAC-29834              | 0 | 6047561 |         |
| 24 | BTB-00878703                    | 0 | 6098249 |         |
| 24 | Hapmap38271-BTA-100414          | 0 | 6122933 |         |
| 24 | ARS-BFGL-BAC-29830              | 0 | 6162760 |         |
| 24 | BTA-100407-no-rs                | 0 | 6235814 |         |
| 24 | Hapmap54424-rs29021957          | 0 | 6276349 |         |
| 24 | ARS-BFGL-NGS-619                | 0 | 6309265 |         |
| 24 | ARS-BFGL-NGS-37757              | 0 | 6346211 |         |
| 24 | Hapmap27989-BTA-58845           | 0 | 6371849 |         |
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| 24 | BTA-109895-no-rs                | 0 | 6479864 |         |
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| 24 | ARS-BFGL-BAC-29234              | 0 | 6547659 |         |
| 24 | Hapmap42361-BTA-91303           | 0 | 6580849 |         |
| 24 | BTA-91299-no-rs                 | 0 | 6659975 |         |
| 24 | Hapmap53890-rs29021221          | 0 | 6711598 |         |
| 24 | Hapmap49670-BTA-58890           | 0 | 6860164 |         |
| 24 | ARS-BFGL-NGS-76816              | 0 | 6914110 |         |
| 24 | ARS-BFGL-NGS-19670              | 0 | 7017169 |         |
| 24 | ARS-BFGL-NGS-12601              | 0 | 7192353 |         |
| 24 | BTA-112619-no-rs                | 0 | 7220993 |         |
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| 24 | ARS-BFGL-NGS-114702             | 0 | 7286128 |         |
| 24 | ARS-BFGL-NGS-25585              | 0 | 7322657 |         |
| 24 | ARS-BFGL-NGS-60078              | 0 | 7344690 |         |
| 24 | ARS-BFGL-NGS-94157              | 0 | 7380047 |         |
| 24 | ARS-BFGL-NGS-41622              | 0 | 7411826 |         |
| 24 | BTA-12361-rs29024314            | 0 | 7482109 |         |

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| 24 | ARS-BFGL-NGS-113248    | 0       | 7596334  |
| 24 | ARS-BFGL-NGS-37092     | 0       | 7634934  |
| 24 | ARS-BFGL-NGS-62549     | 0       | 7678534  |
| 24 | ARS-BFGL-NGS-71263     | 0       | 7712547  |
| 24 | ARS-BFGL-NGS-112539    | 0       | 7753085  |
| 24 | ARS-BFGL-NGS-31554     | 0       | 7785743  |
| 24 | ARS-BFGL-NGS-38218     | 0       | 7812996  |
| 24 | BTB-01414130           | 0       | 7838578  |
| 24 | BTB-00880593           | 0       | 7899310  |
| 24 | BTB-00880612           | 0       | 7926959  |
| 24 | UA-IFASA-7984          | 0       | 7943787  |
| 24 | Hapmap50408-BTA-58987  | 0       | 7946406  |
| 24 | BTB-00880811           | 0       | 7968526  |
| 24 | BTB-01414148           | 0       | 8007163  |
| 24 | BTA-58996-no-rs        | 0       | 8071750  |
| 24 | BTA-58997-no-rs        | 0       | 8177030  |
| 24 | BTB-01910403           | 0       | 8203368  |
| 24 | Hapmap59034-rs29025484 | 0       | 8265175  |
| 24 | BTB-02092251           | 0       | 8293809  |
| 24 | BTA-58999-no-rs        | 0       | 8312970  |
| 24 | ARS-BFGL-BAC-37052     | 0       | 8353424  |
| 24 | BTB-01989758           | 0       | 8393286  |
| 24 | ARS-BFGL-NGS-107083    | 0       | 8435459  |
| 24 | Hapmap55368-rs29027132 | 0       | 8476559  |
| 24 | BTA-115451-no-rs       | 0       | 8540940  |
| 24 | ARS-BFGL-NGS-22285     | 0       | 8605493  |
| 24 | ARS-BFGL-NGS-33646     | 0       | 8717068  |
| 24 | ARS-BFGL-NGS-32590     | 0       | 8740300  |
| 24 | Hapmap58311-ss46526412 | 0       | 8786037  |
| 24 | ARS-BFGL-NGS-100431    | 0       | 8973783  |
| 24 | Hapmap49224-BTA-57251  | 0       | 9058158  |
| 24 | Hapmap38789-BTA-86678  | 0       | 9138102  |
| 24 | ARS-BFGL-NGS-28990     | 0       | 9162928  |
| 24 | Hapmap54266-rs29023063 | 0       | 9216482  |
| 24 | ARS-BFGL-BAC-44134     | 0       | 9251349  |
| 24 | BTA-59035-no-rs        | 0       | 9334620  |
| 24 | UA-IFASA-4296          | 0       | 9355676  |
| 24 | Hapmap41590-BTA-59025  | 0       | 9476410  |
| 24 | Hapmap41029-BTA-59023  | 0       | 9566167  |
| 24 | Hapmap52500-rs29021742 | 0       | 9609146  |
| 24 | ARS-BFGL-NGS-111903    | 0       | 9710904  |
| 24 | ARS-BFGL-NGS-13880     | 9732103 |          |
| 24 | ARS-BFGL-NGS-26183     | 0       | 9760206  |
| 24 | Hapmap57786-rs29014137 | 0       | 9772293  |
| 24 | ARS-BFGL-NGS-116113    | 0       | 9826542  |
| 24 | ARS-BFGL-BAC-41574     | 0       | 9864505  |
| 24 | ARS-BFGL-NGS-102124    | 0       | 9883335  |
| 24 | Hapmap42988-BTA-59007  | 0       | 9922357  |
| 24 | BTB-00881260           | 0       | 9942161  |
| 24 | ARS-BFGL-BAC-27990     | 9984096 |          |
| 24 | BTA-59006-no-rs        | 0       | 10008816 |
| 24 | ARS-BFGL-NGS-38347     | 0       | 10210368 |
| 24 | ARS-BFGL-NGS-31300     | 0       | 10343062 |
| 24 | Hapmap49552-BTA-28187  | 0       | 10528315 |

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| 24 | UA-IFASA-2078          | 0 | 10568706 |
| 24 | BTA-18966-no-rs        | 0 | 10631945 |
| 24 | BTA-18952-no-rs        | 0 | 10705866 |
| 24 | ARS-BFGL-NGS-32862     | 0 | 10752899 |
| 24 | Hapmap59628-rs29013651 | 0 | 10812124 |
| 24 | ARS-BFGL-BAC-41582     | 0 | 10888286 |
| 24 | BTB-01140405           | 0 | 10890316 |
| 24 | BTB-01998747           | 0 | 10945641 |
| 24 | ARS-BFGL-NGS-79951     | 0 | 10966864 |
| 24 | UA-IFASA-7878          | 0 | 11016646 |
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| 24 | ARS-BFGL-NGS-55786     | 0 | 11204777 |
| 24 | BTB-00881459           | 0 | 11259399 |
| 24 | BTB-00881687           | 0 | 11287974 |
| 24 | ARS-BFGL-BAC-41588     | 0 | 11311755 |
| 24 | Hapmap48813-BTA-57373  | 0 | 11365275 |
| 24 | ARS-BFGL-NGS-17745     | 0 | 11405540 |
| 24 | BTB-00881995           | 0 | 11465791 |
| 24 | ARS-BFGL-NGS-13081     | 0 | 11501937 |
| 24 | BTB-00882078           | 0 | 11544426 |
| 24 | ARS-BFGL-BAC-37058     | 0 | 11587257 |
| 24 | ARS-BFGL-NGS-109955    | 0 | 11625175 |
| 24 | BTB-01970944           | 0 | 11645293 |
| 24 | BTB-00882314           | 0 | 11693173 |
| 24 | BTB-00882425           | 0 | 11726699 |
| 24 | ARS-BFGL-NGS-33249     | 0 | 11753230 |
| 24 | ARS-BFGL-NGS-103225    | 0 | 11772225 |
| 24 | ARS-BFGL-NGS-54408     | 0 | 11807167 |
| 24 | Hapmap46842-BTA-57397  | 0 | 11851627 |
| 24 | Hapmap41025-BTA-57399  | 0 | 11916234 |
| 24 | ARS-BFGL-BAC-37060     | 0 | 11969012 |
| 24 | ARS-BFGL-NGS-14770     | 0 | 12034037 |
| 24 | ARS-BFGL-BAC-37064     | 0 | 12099822 |
| 24 | ARS-BFGL-NGS-25093     | 0 | 12143105 |
| 24 | ARS-BFGL-NGS-42755     | 0 | 12193460 |
| 24 | ARS-BFGL-NGS-111583    | 0 | 12225403 |
| 24 | ARS-BFGL-NGS-90674     | 0 | 12318913 |
| 24 | BTA-57412-no-rs        | 0 | 12351291 |
| 24 | BTA-57410-no-rs        | 0 | 12372814 |
| 24 | Hapmap48000-BTA-57409  | 0 | 12415668 |
| 24 | ARS-BFGL-NGS-27610     | 0 | 12496648 |
| 24 | Hapmap49665-BTA-57403  | 0 | 12522470 |
| 24 | ARS-BFGL-NGS-16875     | 0 | 12544066 |
| 24 | BTA-71136-no-rs        | 0 | 12682668 |
| 24 | ARS-BFGL-NGS-25920     | 0 | 12775555 |
| 24 | ARS-BFGL-NGS-110598    | 0 | 12874615 |
| 24 | ARS-BFGL-NGS-14250     | 0 | 12916861 |
| 24 | ARS-BFGL-NGS-80841     | 0 | 13010579 |
| 24 | ARS-BFGL-NGS-35298     | 0 | 13073556 |
| 24 | BTA-105709-no-rs       | 0 | 13158889 |
| 24 | BTA-91085-no-rs        | 0 | 13250354 |
| 24 | ARS-BFGL-NGS-61286     | 0 | 13281977 |

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| 24 | Hapmap23166-BTA-57415                 | 0 | 13331435 |  |  |
| 24 | ARS-BFGL-NGS-86120                    | 0 | 13366494 |  |  |
| 24 | ARS-BFGL-NGS-32805                    | 0 | 13461216 |  |  |
| 24 | ARS-BFGL-NGS-23196                    | 0 | 13531667 |  |  |
| 24 | Hapmap50627-BTA-23969                 | 0 | 13582752 |  |  |
| 24 | ARS-BFGL-NGS-13089                    | 0 | 13722994 |  |  |
| 24 | Hapmap44635-BTA-119424                | 0 | 13763894 |  |  |
| 24 | Hapmap48946-BTA-92562                 | 0 | 13810452 |  |  |
| 24 | Hapmap57973-rs29024513                | 0 | 13837820 |  |  |
| 24 | BTA-34314-no-rs                       | 0 | 13980307 |  |  |
| 24 | BTA-34317-no-rs                       | 0 | 14081938 |  |  |
| 24 | ARS-BFGL-NGS-70108                    | 0 | 14194168 |  |  |
| 24 | ARS-BFGL-NGS-20854                    | 0 | 14355120 |  |  |
| 24 | ARS-BFGL-NGS-59950                    | 0 | 14441733 |  |  |
| 24 | Hapmap23163-BTA-34330                 | 0 | 14481810 |  |  |
| 24 | Hapmap23227-BTA-161734                | 0 | 14612809 |  |  |
| 24 | ARS-BFGL-NGS-31453                    | 0 | 14704121 |  |  |
| 24 | Hapmap28640-BTA-28603                 | 0 | 14771980 |  |  |
| 24 | ARS-BFGL-NGS-19695                    | 0 | 14841074 |  |  |
| 24 | Hapmap51974-BTA-22883                 | 0 | 14863810 |  |  |
| 24 | ARS-BFGL-NGS-110858                   | 0 | 14905706 |  |  |
| 24 | Hapmap41026-BTA-57431                 | 0 | 14933405 |  |  |
| 24 | ARS-BFGL-NGS-35812                    | 0 | 14956552 |  |  |
| 24 | ARS-BFGL-NGS-59956                    | 0 | 15030753 |  |  |
| 24 | ARS-BFGL-NGS-20239                    | 0 | 15077549 |  |  |
| 24 | Hapmap60297-rs29016248                | 0 | 15103392 |  |  |
| 24 | ARS-BFGL-NGS-57434                    | 0 | 15180279 |  |  |
| 24 | Hapmap56671-rs29014562                | 0 | 15228124 |  |  |
| 24 | ARS-BFGL-NGS-101091                   | 0 | 15259118 |  |  |
| 24 | BTA-24492-no-rs                       | 0 | 15293390 |  |  |
| 24 | ARS-BFGL-NGS-14385                    | 0 | 15390609 |  |  |
| 24 | ARS-USMARC-Parent-DQ990833-rs29010147 | 0 | 15447771 |  |  |
| 24 | ARS-BFGL-NGS-85237                    | 0 | 15489455 |  |  |
| 24 | BTA-24495-no-rs                       | 0 | 15527942 |  |  |
| 24 | Hapmap38663-BTA-24501                 | 0 | 15692639 |  |  |
| 24 | BTA-24502-no-rs                       | 0 | 15729672 |  |  |
| 24 | BTA-105168-no-rs                      | 0 | 16012254 |  |  |
| 24 | Hapmap31483-BTA-154276                | 0 | 16037884 |  |  |
| 24 | BTA-106283-no-rs                      | 0 | 16062787 |  |  |
| 24 | ARS-BFGL-NGS-85970                    | 0 | 16118203 |  |  |
| 24 | Hapmap51611-BTA-57449                 | 0 | 16157557 |  |  |
| 24 | Hapmap59068-rs29016865                | 0 | 16182756 |  |  |
| 24 | Hapmap55035-rs29016863                | 0 | 16189524 |  |  |
| 24 | Hapmap44685-BTA-57443                 | 0 | 16274083 |  |  |
| 24 | Hapmap49666-BTA-57439                 | 0 | 16306830 |  |  |
| 24 | Hapmap42979-BTA-57434                 | 0 | 16366222 |  |  |
| 24 | ARS-BFGL-BAC-44770                    | 0 | 16660415 |  |  |
| 24 | ARS-BFGL-NGS-14815                    | 0 | 16768234 |  |  |
| 24 | Hapmap41907-BTA-57459                 | 0 | 16803112 |  |  |
| 24 | ARS-BFGL-NGS-28763                    | 0 | 16851070 |  |  |
| 24 | Hapmap50398-BTA-57456                 | 0 | 16882668 |  |  |
| 24 | Hapmap50397-BTA-57452                 | 0 | 16971171 |  |  |
| 24 | ARS-BFGL-NGS-73346                    | 0 | 17022179 |  |  |
| 24 | ARS-BFGL-BAC-44145                    | 0 | 17094736 |  |  |

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| 24 | BTB-00882676                   | 0 | 17144207 |          |
| 24 | Hapmap42592-BTA-57478          | 0 | 17179801 |          |
| 24 | ARS-BFGL-BAC-28140             |   | 17252574 |          |
| 24 | ARS-BFGL-BAC-44155             | 0 | 17295136 |          |
| 24 | BTB-00882667                   | 0 | 17317994 |          |
| 24 | ARS-BFGL-BAC-44758             | 0 | 17374214 |          |
| 24 | Hapmap54864-rs29015687         | 0 | 17473817 |          |
| 24 | ARS-BFGL-NGS-44468             | 0 | 17890979 |          |
| 24 | Hapmap55009-rs29022074         | 0 | 17928618 |          |
| 24 | Hapmap55239-rs29011203         | 0 | 17985623 |          |
| 24 | ARS-BFGL-NGS-103776            | 0 | 18036453 |          |
| 24 | ARS-BFGL-NGS-67690             |   | 18123556 |          |
| 24 | Hapmap36074-SCAFFOLD137719_496 | 0 |          | 18248989 |
| 24 | BTA-57494-no-rs                | 0 | 18313760 |          |
| 24 | Hapmap48814-BTA-57491          | 0 | 18336401 |          |
| 24 | Hapmap44101-BTA-57488          | 0 | 18369994 |          |
| 24 | Hapmap50588-BTA-118970         | 0 | 18599946 |          |
| 24 | BTA-118993-no-rs               | 0 | 18639645 |          |
| 24 | Hapmap42090-BTA-118962         | 0 | 18713603 |          |
| 24 | BTA-57542-no-rs                | 0 | 18784177 |          |
| 24 | ARS-BFGL-NGS-28993             | 0 | 18809656 |          |
| 24 | ARS-BFGL-NGS-23856             | 0 | 18893792 |          |
| 24 | Hapmap50889-BTA-121427         | 0 | 18941276 |          |
| 24 | BTA-57537-no-rs                | 0 | 18990335 |          |
| 24 | Hapmap42481-BTA-23463          | 0 | 19118430 |          |
| 24 | Hapmap39065-BTA-57536          | 0 | 19185484 |          |
| 24 | Hapmap48815-BTA-57530          | 0 | 19237134 |          |
| 24 | Hapmap42980-BTA-57528          | 0 | 19267711 |          |
| 24 | ARS-BFGL-NGS-54190             |   | 19306436 |          |
| 24 | ARS-BFGL-NGS-114703            | 0 | 19337148 |          |
| 24 | ARS-BFGL-NGS-113716            | 0 | 19370939 |          |
| 24 | ARS-BFGL-NGS-19788             | 0 | 19393447 |          |
| 24 | ARS-BFGL-NGS-38991             | 0 | 19498323 |          |
| 24 | ARS-BFGL-NGS-79350             |   | 19537537 |          |
| 24 | Hapmap58461-rs29025371         | 0 | 19574532 |          |
| 24 | ARS-BFGL-BAC-44769             | 0 | 19599117 |          |
| 24 | ARS-BFGL-NGS-23425             | 0 | 19624509 |          |
| 24 | ARS-BFGL-NGS-108816            | 0 | 19656113 |          |
| 24 | Hapmap46805-BTA-38898          | 0 | 19698377 |          |
| 24 | ARS-BFGL-NGS-26000             |   | 19750432 |          |
| 24 | ARS-BFGL-NGS-43035             | 0 | 19805259 |          |
| 24 | ARS-BFGL-NGS-112929            | 0 | 19878541 |          |
| 24 | Hapmap23653-BTA-33247          | 0 | 19916295 |          |
| 24 | ARS-BFGL-NGS-90343             | 0 | 19984827 |          |
| 24 | ARS-BFGL-NGS-24496             | 0 | 20025676 |          |
| 24 | ARS-BFGL-NGS-117961            | 0 | 20037136 |          |
| 24 | ARS-BFGL-NGS-74801             | 0 | 20058337 |          |
| 24 | Hapmap40398-BTA-116840         | 0 | 20123342 |          |
| 24 | ARS-BFGL-NGS-73114             | 0 | 20163874 |          |
| 24 | ARS-BFGL-NGS-81590             | 0 | 20202976 |          |
| 24 | BTA-116847-no-rs               | 0 | 20310997 |          |
| 24 | ARS-BFGL-BAC-47323             | 0 | 20359135 |          |
| 24 | Hapmap41159-BTA-113937         | 0 | 20398546 |          |
| 24 | ARS-BFGL-NGS-96812             | 0 | 20446002 |          |

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| 24 | BTA-57507-no-rs        | 0        | 20513331 |
| 24 | ARS-BFGL-NGS-115196    | 0        | 20662650 |
| 24 | ARS-BFGL-NGS-40566     | 0        | 20684377 |
| 24 | BTA-57510-no-rs        | 0        | 20740027 |
| 24 | ARS-BFGL-NGS-22845     | 0        | 20765626 |
| 24 | ARS-BFGL-NGS-46034     | 0        | 20787578 |
| 24 | ARS-BFGL-NGS-81820     | 0        | 20823403 |
| 24 | Hapmap59517-rs29027550 | 0        | 20886644 |
| 24 | ARS-BFGL-NGS-56400     | 0        | 20973161 |
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| 24 | ARS-BFGL-NGS-39445     | 0        | 21071943 |
| 24 | ARS-BFGL-NGS-14384     | 0        | 21153197 |
| 24 | Hapmap27267-BTA-88436  | 0        | 21176958 |
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| 24 | ARS-BFGL-NGS-30844     | 0        | 21283553 |
| 24 | ARS-BFGL-NGS-78497     | 0        | 21330516 |
| 24 | ARS-BFGL-BAC-47338     | 0        | 21384458 |
| 24 | ARS-BFGL-NGS-81321     | 0        | 21415080 |
| 24 | ARS-BFGL-NGS-11810     | 21487419 |          |
| 24 | ARS-BFGL-NGS-105149    | 0        | 21526318 |
| 24 | ARS-BFGL-NGS-17010     | 21571435 |          |
| 24 | ARS-BFGL-NGS-61055     | 0        | 21618018 |
| 24 | ARS-BFGL-NGS-64563     | 0        | 21649461 |
| 24 | ARS-BFGL-NGS-26860     | 21690766 |          |
| 24 | Hapmap38797-BTA-99366  | 0        | 21743914 |
| 24 | Hapmap31756-BTA-137674 | 0        | 21769395 |
| 24 | ARS-BFGL-NGS-96939     | 0        | 21800794 |
| 24 | ARS-BFGL-NGS-23962     | 0        | 21823464 |
| 24 | ARS-BFGL-NGS-115340    | 0        | 21873361 |
| 24 | ARS-BFGL-NGS-102332    | 0        | 21918990 |
| 24 | ARS-BFGL-NGS-10227     | 0        | 21980450 |
| 24 | Hapmap38610-BTA-57584  | 0        | 22099387 |
| 24 | ARS-BFGL-BAC-47350     | 0        | 22146057 |
| 24 | ARS-BFGL-NGS-109395    | 0        | 22194158 |
| 24 | ARS-BFGL-NGS-110165    | 0        | 22218997 |
| 24 | ARS-BFGL-NGS-26399     | 0        | 22255176 |
| 24 | Hapmap42981-BTA-57599  | 0        | 22300490 |
| 24 | BTA-57636-no-rs        | 0        | 22403126 |
| 24 | Hapmap38329-BTA-57629  | 0        | 22454666 |
| 24 | Hapmap51000-BTA-57638  | 0        | 22519060 |
| 24 | Hapmap25823-BTA-137703 | 0        | 22568449 |
| 24 | ARS-BFGL-NGS-77029     | 0        | 22615490 |
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| 24 | ARS-BFGL-NGS-117013    | 0        | 22782022 |
| 24 | Hapmap59298-rs29022301 | 0        | 22837383 |
| 24 | BTA-57610-no-rs        | 0        | 22862463 |
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| 24 | ARS-BFGL-NGS-114549    | 0        | 22922425 |
| 24 | ARS-BFGL-NGS-91126     | 0        | 23027518 |
| 24 | BTA-119584-no-rs       | 0        | 23065592 |

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| 24 | ARS-BFGL-NGS-10126              | 0 | 23088258 |          |
| 24 | ARS-BFGL-NGS-101939             | 0 | 23192294 |          |
| 24 | Hapmap36329-SCAFFOLD35926_1498  | 0 |          | 23305591 |
| 24 | BTA-119589-no-rs                | 0 | 23338720 |          |
| 24 | BTA-10234-no-rs                 | 0 | 23462498 |          |
| 24 | ARS-BFGL-BAC-28633              | 0 | 23520106 |          |
| 24 | Hapmap40135-BTA-57587           | 0 | 23562954 |          |
| 24 | BTA-57589-no-rs                 | 0 | 23692398 |          |
| 24 | ARS-BFGL-NGS-94607              | 0 | 23729953 |          |
| 24 | ARS-BFGL-BAC-28639              | 0 | 23774345 |          |
| 24 | BTA-57591-no-rs                 | 0 | 23806551 |          |
| 24 | BTA-57595-no-rs                 | 0 | 23827359 |          |
| 24 | Hapmap31100-BTA-137689          | 0 | 23947370 |          |
| 24 | ARS-BFGL-NGS-31994              | 0 | 24055479 |          |
| 24 | Hapmap38835-BTA-41276           | 0 | 24127904 |          |
| 24 | Hapmap38596-BTA-41284           | 0 | 24220391 |          |
| 24 | ARS-BFGL-NGS-84426              | 0 | 24302542 |          |
| 24 | BTA-70057-no-rs                 | 0 | 24327708 |          |
| 24 | Hapmap60054-rs29011300          | 0 | 24432820 |          |
| 24 | BTA-41322-no-rs                 | 0 | 24465047 |          |
| 24 | ARS-BFGL-NGS-62250              | 0 | 24499452 |          |
| 24 | BTA-57640-no-rs                 | 0 | 24582206 |          |
| 24 | Hapmap40731-BTA-41334           | 0 | 24685039 |          |
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| 24 | Hapmap49668-BTA-57642           | 0 | 24791721 |          |
| 24 | ARS-BFGL-NGS-101670             | 0 | 24873093 |          |
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| 24 | ARS-BFGL-NGS-85255              | 0 | 25025130 |          |
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| 24 | ARS-BFGL-NGS-112570             | 0 | 25130392 |          |
| 24 | Hapmap48172-BTA-107824          | 0 | 25225422 |          |
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| 24 | ARS-BFGL-NGS-24392              | 0 | 25332919 |          |
| 24 | ARS-BFGL-NGS-117435             | 0 | 25493389 |          |
| 24 | ARS-BFGL-NGS-31130              | 0 | 25568343 |          |
| 24 | ARS-BFGL-BAC-28647              | 0 | 25731567 |          |
| 24 | BTA-57690-no-rs                 | 0 | 25793673 |          |
| 24 | ARS-BFGL-NGS-99694              | 0 | 25861246 |          |
| 24 | Hapmap42436-BTA-114985          | 0 | 25895037 |          |
| 24 | ARS-BFGL-NGS-15850              |   | 25921286 |          |
| 24 | Hapmap22754-BTA-157164          | 0 | 25943831 |          |
| 24 | ARS-BFGL-NGS-63047              | 0 | 25977554 |          |
| 24 | UA-IFASA-5735                   | 0 | 26080792 |          |
| 24 | ARS-BFGL-NGS-111470             | 0 | 26152512 |          |
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| 24 | ARS-BFGL-NGS-52760              | 0 | 26312936 |          |
| 24 | ARS-BFGL-NGS-56305              | 0 | 26333813 |          |
| 24 | Hapmap52659-ss46526625          | 0 | 26377377 |          |
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| 24 | ARS-BFGL-NGS-27451              | 0 | 26435436 |          |
| 24 | BTA-111854-no-rs                | 0 | 26634972 |          |
| 24 | ARS-BFGL-NGS-85622              | 0 | 26698515 |          |

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| 24 | ARS-BFGL-NGS-114078              | 0 | 26731148 |          |
| 24 | Hapmap39983-BTA-20390            | 0 | 26760851 |          |
| 24 | Hapmap25335-BTA-160783           | 0 | 26811479 |          |
| 24 | ARS-BFGL-BAC-28656               | 0 | 26852308 |          |
| 24 | Hapmap42129-BTA-20041            | 0 | 26892315 |          |
| 24 | ARS-BFGL-NGS-18000               | 0 | 26933166 |          |
| 24 | Hapmap34487-BES10_Contig784_2526 | 0 |          | 26996704 |
| 24 | ARS-BFGL-NGS-57713               | 0 | 27207444 |          |
| 24 | ARS-BFGL-NGS-53418               | 0 | 27253171 |          |
| 24 | BTB-01217053                     | 0 | 27284870 |          |
| 24 | BTA-112401-no-rs                 | 0 | 27337609 |          |
| 24 | Hapmap60145-rs29013637           | 0 | 27381101 |          |
| 24 | Hapmap52579-rs29012793           | 0 | 27410837 |          |
| 24 | Hapmap48185-BTA-112403           | 0 | 27444828 |          |
| 24 | BTA-112410-no-rs                 | 0 | 27475390 |          |
| 24 | ARS-BFGL-NGS-113760              | 0 | 27506980 |          |
| 24 | Hapmap29300-BTA-112502           | 0 | 27535609 |          |
| 24 | BTA-29378-no-rs                  | 0 | 27631285 |          |
| 24 | BTB-01923665                     | 0 | 27670226 |          |
| 24 | ARS-BFGL-BAC-28660               | 0 | 27729208 |          |
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| 24 | ARS-BFGL-NGS-103621              | 0 | 27808368 |          |
| 24 | ARS-BFGL-NGS-96359               | 0 | 27850482 |          |
| 24 | Hapmap52350-rs29018025           | 0 | 27903679 |          |
| 24 | BTB-00866491                     | 0 | 27951089 |          |
| 24 | ARS-BFGL-NGS-75337               | 0 | 28007169 |          |
| 24 | BTB-01200767                     | 0 | 28028939 |          |
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| 24 | BTA-109230-no-rs                 | 0 | 28083770 |          |
| 24 | BTA-109231-no-rs                 | 0 | 28107759 |          |
| 24 | BTA-22620-no-rs                  | 0 | 28154039 |          |
| 24 | BTB-01878016                     | 0 | 28175885 |          |
| 24 | BTB-02012738                     | 0 | 28196203 |          |
| 24 | Hapmap53299-rs29024075           | 0 | 28244323 |          |
| 24 | Hapmap50890-BTA-121436           | 0 | 28267327 |          |
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| 24 | Hapmap47665-BTA-57738            | 0 | 28336343 |          |
| 24 | BTA-57743-no-rs                  | 0 | 28400451 |          |
| 24 | BTB-00884385                     | 0 | 28425789 |          |
| 24 | ARS-BFGL-NGS-12461               | 0 | 28457132 |          |
| 24 | BTA-57745-no-rs                  | 0 | 28497174 |          |
| 24 | Hapmap42982-BTA-57758            | 0 | 28546447 |          |
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| 24 | BTB-01485885                     | 0 | 28691752 |          |
| 24 | ARS-BFGL-NGS-51410               | 0 | 28772509 |          |
| 24 | BTA-97262-no-rs                  | 0 | 28789611 |          |
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| 24 | Hapmap54981-rs29019846           | 0 | 28853585 |          |
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| 24 | Hapmap58887-rs29013502           | 0 | 28907154 |          |
| 24 | BTB-01646599                     | 0 | 28941584 |          |
| 24 | ARS-BFGL-NGS-41140               | 0 | 28975828 |          |
| 24 | ARS-BFGL-NGS-35716               | 0 | 29013292 |          |



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| 24 | ARS-BFGL-NGS-118806    | 0 | 29068445 |
| 24 | BTB-00884727           | 0 | 29090409 |
| 24 | BTB-00883964           | 0 | 29132144 |
| 24 | Hapmap54558-rs29009598 | 0 | 29187804 |
| 24 | BTA-57730-no-rs        | 0 | 29231157 |
| 24 | BTA-93775-no-rs        | 0 | 29301773 |
| 24 | BTB-00883644           | 0 | 29328512 |
| 24 | BTB-00883599           | 0 | 29349786 |
| 24 | Hapmap32162-BTA-57721  | 0 | 29405619 |
| 24 | BTA-110818-no-rs       | 0 | 29450475 |
| 24 | BTB-01651286           | 0 | 29483955 |
| 24 | BTB-01651307           | 0 | 29504429 |
| 24 | Hapmap46788-BTA-25059  | 0 | 29553275 |
| 24 | Hapmap27658-BTA-25051  | 0 | 29585161 |
| 24 | ARS-BFGL-NGS-81983     | 0 | 29658517 |
| 24 | BTB-01335596           | 0 | 29687635 |
| 24 | BTA-25048-no-rs        | 0 | 29712858 |
| 24 | ARS-BFGL-NGS-17310     | 0 | 29762125 |
| 24 | BTB-01683041           | 0 | 29893427 |
| 24 | BTB-01721436           | 0 | 29942533 |
| 24 | BTB-00885512           | 0 | 30028775 |
| 24 | UA-IFASA-1888          | 0 | 30114997 |
| 24 | BTB-00885423           | 0 | 30137891 |
| 24 | BTB-00885224           | 0 | 30174487 |
| 24 | BTB-00885200           | 0 | 30206723 |
| 24 | ARS-BFGL-NGS-53865     | 0 | 30237817 |
| 24 | BTB-00885058           | 0 | 30265281 |
| 24 | Hapmap25046-BTA-137706 | 0 | 30348706 |
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| 24 | BTA-57766-no-rs        | 0 | 30423964 |
| 24 | ARS-BFGL-NGS-14982     | 0 | 30468614 |
| 24 | ARS-BFGL-NGS-115494    | 0 | 30503642 |
| 24 | ARS-BFGL-NGS-38531     | 0 | 30513490 |
| 24 | BTB-01319301           | 0 | 30538520 |
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| 24 | BTB-01319345           | 0 | 30623638 |
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| 24 | ARS-BFGL-NGS-91541     | 0 | 30760990 |
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| 24 | ARS-BFGL-NGS-115509    | 0 | 30835359 |
| 24 | BTA-111753-no-rs       | 0 | 30861528 |
| 24 | ARS-BFGL-NGS-96695     | 0 | 30881740 |
| 24 | BTB-01258354           | 0 | 31029119 |
| 24 | BTB-01258307           | 0 | 31086312 |
| 24 | BTA-119562-no-rs       | 0 | 31105952 |
| 24 | BTB-01258194           | 0 | 31133584 |
| 24 | BTA-119549-no-rs       | 0 | 31238523 |
| 24 | ARS-BFGL-NGS-10163     | 0 | 31325789 |
| 24 | BTA-26069-no-rs        | 0 | 31348603 |
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| 24 | BTB-00885930           | 0 | 31478502 |
| 24 | UA-IFASA-4800          | 0 | 31524371 |
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| 24 | BTA-57821-no-rs        | 0 | 31577052 |
| 24 | ARS-BFGL-NGS-15267     | 0 | 31609408 |
| 24 | BTB-00885755           | 0 | 31681255 |
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| 24 | ARS-BFGL-NGS-13006     | 0 | 31765644 |
| 24 | ARS-BFGL-NGS-107185    | 0 | 31798310 |
| 24 | Hapmap50038-BTA-57803  | 0 | 31859177 |
| 24 | Hapmap42983-BTA-57801  | 0 | 31886347 |
| 24 | ARS-BFGL-NGS-36648     | 0 | 31908970 |
| 24 | BTA-57789-no-rs        | 0 | 31971610 |
| 24 | ARS-BFGL-NGS-117679    | 0 | 31982958 |
| 24 | ARS-BFGL-NGS-14224     | 0 | 32032423 |
| 24 | Hapmap52324-rs29020396 | 0 | 32057788 |
| 24 | BTB-01313766           | 0 | 32144737 |
| 24 | Hapmap49083-BTA-21452  | 0 | 32171355 |
| 24 | ARS-BFGL-NGS-112175    | 0 | 32222225 |
| 24 | ARS-BFGL-NGS-114452    | 0 | 32292578 |
| 24 | Hapmap50400-BTA-57851  | 0 | 32318375 |
| 24 | UA-IFASA-4570          | 0 | 32346216 |
| 24 | BTA-20514-no-rs        | 0 | 32405659 |
| 24 | ARS-BFGL-NGS-96111     | 0 | 32428439 |
| 24 | ARS-BFGL-NGS-103366    | 0 | 32494334 |
| 24 | ARS-BFGL-NGS-117906    | 0 | 32517935 |
| 24 | BTA-57840-no-rs        | 0 | 32541375 |
| 24 | Hapmap44027-BTA-17389  | 0 | 32567718 |
| 24 | BTA-17380-no-rs        | 0 | 32593321 |
| 24 | Hapmap47331-BTA-57855  | 0 | 32621855 |
| 24 | Hapmap41219-BTA-29565  | 0 | 32677985 |
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| 24 | BTB-01635208           | 0 | 32778094 |
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| 24 | BTB-01623856           | 0 | 32938309 |
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| 24 | Hapmap59495-rs29020511 | 0 | 33038121 |
| 24 | ARS-BFGL-NGS-100144    | 0 | 33076123 |
| 24 | BTB-01820961           | 0 | 33094977 |
| 24 | BTB-01853924           | 0 | 33137570 |
| 24 | ARS-BFGL-NGS-102290    | 0 | 33205943 |
| 24 | ARS-BFGL-NGS-10333     | 0 | 33246227 |
| 24 | ARS-BFGL-NGS-114808    | 0 | 33272897 |
| 24 | ARS-BFGL-NGS-28791     | 0 | 33309954 |
| 24 | ARS-BFGL-NGS-40349     | 0 | 33367651 |
| 24 | ARS-BFGL-NGS-24749     | 0 | 33445718 |
| 24 | BTA-57925-no-rs        | 0 | 33501960 |
| 24 | ARS-BFGL-NGS-72010     | 0 | 33581573 |
| 24 | ARS-BFGL-NGS-111103    | 0 | 33624891 |
| 24 | Hapmap31101-BTA-137721 | 0 | 33641999 |
| 24 | ARS-BFGL-NGS-42867     | 0 | 33690164 |
| 24 | BTB-00886339           | 0 | 33714063 |

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| 24 | BTB-00886525           | 0 | 33761360 |
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| 24 | BTA-106035-no-rs       | 0 | 33863680 |
| 24 | BTB-01588458           | 0 | 33904918 |
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| 24 | ARS-BFGL-NGS-54587     | 0 | 33989659 |
| 24 | Hapmap49850-BTA-107112 | 0 | 34013385 |
| 24 | BTB-02000349           | 0 | 34034406 |
| 24 | Hapmap33571-BTA-115560 | 0 | 34054931 |
| 24 | BTB-00886546           | 0 | 34093337 |
| 24 | Hapmap59581-rs29024854 | 0 | 34130436 |
| 24 | BTB-00886641           | 0 | 34167121 |
| 24 | ARS-BFGL-NGS-116211    | 0 | 34201179 |
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| 24 | BTB-00158812           | 0 | 34304399 |
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| 24 | ARS-BFGL-NGS-41583     | 0 | 34485175 |
| 24 | BTA-69595-no-rs        | 0 | 34508910 |
| 24 | ARS-BFGL-NGS-93960     | 0 | 34581691 |
| 24 | BTB-00158530           | 0 | 34621317 |
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| 24 | Hapmap23588-BTA-137760 | 0 | 35056278 |
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| 24 | ARS-BFGL-NGS-28437     | 0 | 35221266 |
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| 24 | BTB-00887221           | 0 | 35374555 |
| 24 | Hapmap38114-BTA-57971  | 0 | 35403612 |
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| 24 | ARS-BFGL-NGS-30020     | 0 | 35692688 |
| 24 | BTB-00887528           | 0 | 35866834 |
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| 24 | Hapmap57741-rs29026418          | 0 | 35982394 |          |
| 24 | BTA-57995-no-rs                 | 0 | 36003718 |          |
| 24 | BTA-57998-no-rs                 | 0 | 36024062 |          |
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| 24 | BTB-01834216                    | 0 | 36274529 |          |
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| 24 | Hapmap22828-BTA-90188           | 0 | 36808804 |          |
| 24 | BTB-02035904                    | 0 | 36902073 |          |
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| 24 | BTB-00888771                    | 0 | 37252526 |          |
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| 24 | Hapmap32115-BTA-154778          | 0 | 37377303 |          |
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| 24 | ARS-BFGL-NGS-68538              | 0 | 37547021 |          |
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| 24 | UA-IFASA-8558                   | 0 | 37587124 |          |
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| 24 | ARS-BFGL-NGS-96321              | 0 | 37709361 |          |
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| 24 | BTB-00888233                    | 0 | 37763861 |          |
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| 24 | ARS-BFGL-NGS-49210              | 0 | 37819368 |          |
| 24 | Hapmap59568-rs29024289          | 0 | 37844515 |          |
| 24 | Hapmap38040-BTA-58035           | 0 | 37879633 |          |
| 24 | BTB-00887818                    | 0 | 37938500 |          |
| 24 | BTB-00887858                    | 0 | 37958693 |          |
| 24 | ARS-BFGL-NGS-112380             | 0 | 38007758 |          |
| 24 | Hapmap27476-BTA-58137           | 0 | 38039321 |          |

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| 24 | Hapmap51155-BTA-11643  | 0        | 38086180 |
| 24 | BTA-58128-no-rs        | 0        | 38158543 |
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| 24 | Hapmap57572-rs29011245 | 0        | 38227107 |
| 24 | BTA-58112-no-rs        | 0        | 38262053 |
| 24 | Hapmap31875-BTA-58099  | 0        | 38307677 |
| 24 | BTB-00889194           | 0        | 38347278 |
| 24 | BTB-00889144           | 0        | 38383252 |
| 24 | BTA-58095-no-rs        | 0        | 38449638 |
| 24 | ARS-BFGL-NGS-59909     | 0        | 38473316 |
| 24 | BTB-00888968           | 0        | 38518899 |
| 24 | ARS-BFGL-NGS-102838    | 0        | 38581398 |
| 24 | Hapmap44607-BTA-58080  | 0        | 38640377 |
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| 24 | BTB-01548760           | 0        | 38871331 |
| 24 | Hapmap48158-BTA-102889 | 0        | 38899975 |
| 24 | BTA-102886-no-rs       | 0        | 38962480 |
| 24 | BTB-01621818           | 0        | 38983896 |
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| 24 | ARS-BFGL-NGS-32593     | 0        | 39153166 |
| 24 | ARS-BFGL-NGS-23375     | 0        | 39181120 |
| 24 | Hapmap53477-rs29022536 | 0        | 39208572 |
| 24 | ARS-BFGL-NGS-45810     | 39320770 |          |
| 24 | ARS-BFGL-NGS-90060     | 0        | 39345129 |
| 24 | Hapmap57118-rs29009938 | 0        | 39365195 |
| 24 | BTA-100770-no-rs       | 0        | 39389519 |
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| 24 | ARS-BFGL-NGS-109295    | 0        | 39557140 |
| 24 | ARS-BFGL-BAC-30716     | 0        | 39629608 |
| 24 | ARS-BFGL-NGS-61876     | 0        | 39650461 |
| 24 | Hapmap43742-BTA-100784 | 0        | 39694262 |
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| 24 | Hapmap23155-BTA-152408 | 0        | 39834310 |
| 24 | ARS-BFGL-NGS-46290     | 39876972 |          |
| 24 | ARS-BFGL-NGS-111285    | 0        | 39923238 |
| 24 | Hapmap30511-BTA-129561 | 0        | 39964041 |
| 24 | ARS-BFGL-NGS-48560     | 0        | 39998484 |
| 24 | Hapmap22923-BTA-129564 | 0        | 40020911 |
| 24 | ARS-BFGL-NGS-104327    | 0        | 40056388 |
| 24 | ARS-BFGL-NGS-16550     | 40114436 |          |
| 24 | Hapmap47135-BTA-94127  | 0        | 40260020 |
| 24 | Hapmap57222-rs29016359 | 0        | 40286590 |
| 24 | Hapmap50828-BTA-94125  | 0        | 40342820 |
| 24 | Hapmap44318-BTA-94123  | 0        | 40370501 |
| 24 | Hapmap45250-BTA-120849 | 0        | 40490628 |
| 24 | BTA-94120-no-rs        | 0        | 40524759 |
| 24 | ARS-BFGL-NGS-14194     | 0        | 40684364 |

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| 24 | ARS-BFGL-NGS-92921     | 0        | 40731136 |
| 24 | ARS-BFGL-NGS-12400     | 40761481 |          |
| 24 | ARS-BFGL-BAC-44781     | 0        | 40790931 |
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| 24 | Hapmap57059-rs29023291 | 0        | 40927460 |
| 24 | ARS-BFGL-BAC-44783     | 0        | 40983360 |
| 24 | ARS-BFGL-NGS-109766    | 0        | 41023649 |
| 24 | ARS-BFGL-NGS-98552     | 0        | 41068212 |
| 24 | Hapmap38237-BTA-58152  | 0        | 41097326 |
| 24 | Hapmap29528-BTA-137809 | 0        | 41133688 |
| 24 | UA-IFASA-5838          | 0        | 41187936 |
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| 24 | ARS-BFGL-NGS-70555     | 0        | 41289711 |
| 24 | ARS-BFGL-NGS-101197    | 0        | 41358011 |
| 24 | ARS-BFGL-NGS-42149     | 0        | 41411399 |
| 24 | ARS-BFGL-NGS-73693     | 0        | 41433477 |
| 24 | Hapmap50402-BTA-58146  | 0        | 41474124 |
| 24 | Hapmap58305-ss46526972 | 0        | 41540027 |
| 24 | ARS-BFGL-NGS-15210     | 41579956 |          |
| 24 | ARS-BFGL-NGS-117929    | 0        | 41603109 |
| 24 | ARS-BFGL-NGS-35552     | 0        | 41644404 |
| 24 | ARS-BFGL-NGS-114672    | 0        | 41694223 |
| 24 | ARS-BFGL-NGS-102130    | 0        | 41829351 |
| 24 | ARS-BFGL-NGS-70210     | 41981394 |          |
| 24 | Hapmap25943-BTA-58225  | 0        | 42048793 |
| 24 | Hapmap58100-rs29011403 | 0        | 42116328 |
| 24 | Hapmap52180-rs29018448 | 0        | 42184674 |
| 24 | ARS-BFGL-NGS-29353     | 0        | 42236118 |
| 24 | ARS-BFGL-NGS-74054     | 0        | 42296195 |
| 24 | BTA-58184-no-rs        | 0        | 42325205 |
| 24 | Hapmap40275-BTA-58181  | 0        | 42384422 |
| 24 | ARS-BFGL-NGS-79945     | 0        | 42467023 |
| 24 | ARS-BFGL-NGS-41313     | 0        | 42506011 |
| 24 | Hapmap30536-BTA-137818 | 0        | 42530296 |
| 24 | ARS-BFGL-NGS-45679     | 0        | 42582505 |
| 24 | ARS-BFGL-NGS-95379     | 0        | 42665926 |
| 24 | Hapmap38613-BTA-58167  | 0        | 42698685 |
| 24 | Hapmap50567-BTA-111916 | 0        | 42737372 |
| 24 | ARS-BFGL-NGS-43520     | 0        | 42762598 |
| 24 | ARS-BFGL-NGS-110400    | 0        | 42817466 |
| 24 | ARS-BFGL-NGS-76750     | 42864843 |          |
| 24 | ARS-BFGL-NGS-112388    | 0        | 42938823 |
| 24 | ARS-BFGL-NGS-29508     | 0        | 42967505 |
| 24 | ARS-BFGL-NGS-40737     | 0        | 43011857 |
| 24 | ARS-BFGL-NGS-92290     | 0        | 43099447 |
| 24 | Hapmap53147-ss46526107 | 0        | 43149962 |
| 24 | ARS-BFGL-NGS-56044     | 0        | 43170091 |
| 24 | ARS-BFGL-BAC-45401     | 0        | 43266910 |
| 24 | ARS-BFGL-NGS-119287    | 0        | 43352545 |
| 24 | BTA-58154-no-rs        | 0        | 43402173 |
| 24 | Hapmap60176-rs29027126 | 0        | 43500292 |
| 24 | ARS-BFGL-NGS-102190    | 0        | 43638478 |
| 24 | ARS-BFGL-NGS-83316     | 0        | 43763122 |

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| 24 | Hapmap50040-BTA-58202           | 0        | 43919738 |          |
| 24 | Hapmap33007-BTA-137838          | 0        | 43952239 |          |
| 24 | ARS-BFGL-NGS-53460              | 44083312 |          |          |
| 24 | Hapmap51792-BTA-103575          | 0        | 44514696 |          |
| 24 | Hapmap23404-BTA-163828          | 0        | 44578089 |          |
| 24 | ARS-BFGL-NGS-67897              | 0        | 44626279 |          |
| 24 | ARS-BFGL-NGS-117885             | 0        | 44728240 |          |
| 24 | ARS-BFGL-NGS-37025              | 0        | 44810378 |          |
| 24 | ARS-BFGL-NGS-32328              | 0        | 44834601 |          |
| 24 | ARS-BFGL-NGS-12757              | 0        | 44943818 |          |
| 24 | Hapmap47332-BTA-58247           | 0        | 45052793 |          |
| 24 | Hapmap57978-rs29024944          | 0        | 45239241 |          |
| 24 | ARS-BFGL-NGS-87679              | 0        | 45300946 |          |
| 24 | Hapmap33939-BES5_Contig460_1314 | 0        |          | 45347514 |
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| 24 | ARS-BFGL-NGS-100056             | 0        | 45471120 |          |
| 24 | ARS-BFGL-NGS-67339              | 0        | 45497032 |          |
| 24 | ARS-BFGL-NGS-111021             | 0        | 45517924 |          |
| 24 | ARS-BFGL-BAC-45404              | 0        | 45539162 |          |
| 24 | ARS-BFGL-NGS-11833              | 0        | 45590846 |          |
| 24 | ARS-BFGL-NGS-117346             | 0        | 45611032 |          |
| 24 | Hapmap30808-BTA-137930          | 0        | 45638818 |          |
| 24 | ARS-BFGL-NGS-60830              | 45665283 |          |          |
| 24 | ARS-BFGL-NGS-89370              | 0        | 45699025 |          |
| 24 | ARS-BFGL-NGS-17752              | 0        | 45735897 |          |
| 24 | ARS-BFGL-NGS-13314              | 0        | 45775076 |          |
| 24 | Hapmap34929-VSWAP1E30590A_scf02 | 0        |          | 45819892 |
| 24 | ARS-BFGL-NGS-38332              | 0        | 45871107 |          |
| 24 | Hapmap25548-BTA-137934          | 0        | 45895819 |          |
| 24 | ARS-BFGL-NGS-18561              | 0        | 45933554 |          |
| 24 | ARS-BFGL-NGS-20011              | 0        | 45973112 |          |
| 24 | ARS-BFGL-NGS-106793             | 0        | 45998467 |          |
| 24 | ARS-BFGL-NGS-44158              | 0        | 46027109 |          |
| 24 | ARS-BFGL-NGS-81207              | 0        | 46066924 |          |
| 24 | Hapmap48008-BTA-58482           | 0        | 46095575 |          |
| 24 | Hapmap58192-rs29025238          | 0        | 46134325 |          |
| 24 | Hapmap56316-rs29025240          | 0        | 46174116 |          |
| 24 | Hapmap44102-BTA-58355           | 0        | 46202647 |          |
| 24 | BTA-15007-no-rs                 | 0        | 46381175 |          |
| 24 | Hapmap38711-BTA-90355           | 0        | 46406960 |          |
| 24 | ARS-BFGL-NGS-15920              | 46496461 |          |          |
| 24 | ARS-BFGL-NGS-62539              | 0        | 46537819 |          |
| 24 | ARS-BFGL-NGS-13322              | 0        | 46586673 |          |
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| 24 | ARS-BFGL-NGS-36959              | 0        | 46648689 |          |
| 24 | ARS-BFGL-BAC-45415              | 0        | 46667213 |          |
| 24 | ARS-BFGL-NGS-39140              | 46688139 |          |          |
| 24 | ARS-BFGL-NGS-112910             | 0        | 46710573 |          |
| 24 | ARS-BFGL-NGS-106603             | 0        | 46736606 |          |
| 24 | ARS-BFGL-NGS-118237             | 0        | 46763152 |          |
| 24 | ARS-BFGL-NGS-101036             | 0        | 46875033 |          |
| 24 | ARS-BFGL-NGS-91062              | 0        | 46930659 |          |
| 24 | ARS-BFGL-NGS-110128             | 0        | 46964705 |          |
| 24 | Hapmap22675-BTA-137880          | 0        | 46994661 |          |

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| 24 | ARS-BFGL-NGS-100990              | 0        | 47116153 |          |
| 24 | Hapmap48397-BTA-58570            | 0        | 47181172 |          |
| 24 | BTA-02218-rs29009775             | 0        | 47258091 |          |
| 24 | ARS-BFGL-NGS-53860               | 47323079 |          |          |
| 24 | ARS-BFGL-NGS-33840               | 0        | 47343727 |          |
| 24 | ARS-BFGL-NGS-42400               | 0        | 47413118 |          |
| 24 | ARS-BFGL-NGS-21471               | 0        | 47483468 |          |
| 24 | ARS-BFGL-NGS-39670               | 0        | 47529189 |          |
| 24 | Hapmap52259-rs29019756           | 0        | 47603966 |          |
| 24 | ARS-BFGL-NGS-14677               | 0        | 47635860 |          |
| 24 | ARS-BFGL-NGS-105364              | 0        | 47684822 |          |
| 24 | Hapmap44018-BTA-121449           | 0        | 47722933 |          |
| 24 | Hapmap32674-BTA-58547            | 0        | 47762063 |          |
| 24 | Hapmap57112-rs29012760           | 0        | 47797164 |          |
| 24 | ARS-BFGL-NGS-21552               | 0        | 47880145 |          |
| 24 | ARS-BFGL-NGS-22112               | 0        | 47936702 |          |
| 24 | ARS-BFGL-NGS-37597               | 0        | 48140670 |          |
| 24 | ARS-BFGL-NGS-13788               | 0        | 48164849 |          |
| 24 | ARS-BFGL-NGS-94490               | 48201319 |          |          |
| 24 | ARS-BFGL-NGS-89733               | 0        | 48226481 |          |
| 24 | ARS-BFGL-NGS-35960               | 48284745 |          |          |
| 24 | ARS-BFGL-NGS-104621              | 0        | 48334377 |          |
| 24 | ARS-BFGL-NGS-81276               | 0        | 48380393 |          |
| 24 | ARS-BFGL-NGS-58788               | 0        | 48420323 |          |
| 24 | ARS-BFGL-NGS-92647               | 0        | 48462831 |          |
| 24 | ARS-BFGL-BAC-29235               | 0        | 48506213 |          |
| 24 | ARS-BFGL-NGS-78700               | 48528178 |          |          |
| 24 | ARS-BFGL-NGS-113538              | 0        | 48566369 |          |
| 24 | ARS-BFGL-NGS-32658               | 0        | 48593796 |          |
| 24 | ARS-BFGL-NGS-112695              | 0        | 48618537 |          |
| 24 | ARS-BFGL-NGS-119704              | 0        | 48649157 |          |
| 24 | ARS-BFGL-NGS-110003              | 0        | 48713379 |          |
| 24 | ARS-BFGL-NGS-71312               | 0        | 48750658 |          |
| 24 | ARS-BFGL-NGS-24167               | 0        | 48784991 |          |
| 24 | ARS-BFGL-NGS-111017              | 0        | 48872488 |          |
| 24 | ARS-BFGL-NGS-78606               | 0        | 48899795 |          |
| 24 | Hapmap40844-BTA-97019            | 0        | 48928498 |          |
| 24 | ARS-BFGL-NGS-118412              | 0        | 48999628 |          |
| 24 | Hapmap36476-SCAFFOLD205003_54121 | 0        |          | 49190314 |
| 24 | ARS-BFGL-NGS-67422               | 0        | 49231606 |          |
| 24 | BTA-42867-no-rs                  | 0        | 49418132 |          |
| 24 | BTA-101200-no-rs                 | 0        | 49527486 |          |
| 24 | Hapmap51532-BTA-101206           | 0        | 49547605 |          |
| 24 | Hapmap33061-BTA-158942           | 0        | 49652173 |          |
| 24 | ARS-BFGL-NGS-100044              | 0        | 49755342 |          |
| 24 | ARS-BFGL-NGS-45289               | 0        | 49813314 |          |
| 24 | ARS-BFGL-NGS-64682               | 0        | 49849382 |          |
| 24 | ARS-BFGL-NGS-65809               | 0        | 49885214 |          |
| 24 | Hapmap38513-BTA-58574            | 0        | 49914644 |          |
| 24 | Hapmap39664-BTA-58571            | 0        | 49961663 |          |
| 24 | ARS-BFGL-NGS-13986               | 0        | 50027354 |          |
| 24 | ARS-BFGL-NGS-808                 | 0        | 50071713 |          |
| 24 | ARS-BFGL-NGS-116190              | 0        | 50170319 |          |
| 24 | ARS-BFGL-NGS-31631               | 0        | 50205055 |          |



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| 24 | ARS-BFGL-NGS-13255             | 0        | 50266999 |          |
| 24 | ARS-BFGL-NGS-111274            | 0        | 50306117 |          |
| 24 | ARS-BFGL-NGS-59700             | 0        | 50413079 |          |
| 24 | ARS-BFGL-NGS-17892             | 0        | 50568228 |          |
| 24 | ARS-BFGL-NGS-36484             | 0        | 50640590 |          |
| 24 | ARS-BFGL-NGS-26178             | 0        | 50692389 |          |
| 24 | ARS-BFGL-NGS-26157             | 0        | 50725426 |          |
| 24 | Hapmap50405-BTA-58347          | 0        | 50931360 |          |
| 24 | ARS-BFGL-NGS-31604             | 0        | 50952847 |          |
| 24 | ARS-BFGL-NGS-21021             | 0        | 51027430 |          |
| 24 | ARS-BFGL-NGS-114240            | 0        | 51049585 |          |
| 24 | ARS-BFGL-NGS-53288             | 0        | 51080132 |          |
| 24 | ARS-BFGL-NGS-24146             | 0        | 51227109 |          |
| 24 | ARS-BFGL-NGS-96714             | 0        | 51254221 |          |
| 24 | BTA-21614-no-rs                | 0        | 51304389 |          |
| 24 | ARS-BFGL-NGS-85186             | 0        | 51371971 |          |
| 24 | Hapmap43888-BTA-58597          | 0        | 51454276 |          |
| 24 | ARS-BFGL-NGS-93376             | 0        | 51508537 |          |
| 24 | ARS-BFGL-NGS-118573            | 0        | 51600665 |          |
| 24 | ARS-BFGL-NGS-98596             | 0        | 51731744 |          |
| 24 | Hapmap41910-BTA-58608          | 0        | 51764946 |          |
| 24 | ARS-BFGL-NGS-62630             | 0        | 51808350 |          |
| 24 | ARS-BFGL-BAC-29263             | 0        | 51840480 |          |
| 24 | Hapmap41819-BTA-29479          | 0        | 51863747 |          |
| 24 | Hapmap34420-BES1_Contig612_959 | 0        |          | 51891534 |
| 24 | BTA-29467-no-rs                | 0        | 51959189 |          |
| 24 | ARS-BFGL-NGS-102626            | 0        | 52047342 |          |
| 24 | Hapmap31480-BTA-153688         | 0        | 52086080 |          |
| 24 | ARS-BFGL-BAC-29264             | 0        | 52137319 |          |
| 24 | Hapmap50849-BTA-104451         | 0        | 52165674 |          |
| 24 | ARS-BFGL-NGS-72650             | 52240779 |          |          |
| 24 | ARS-BFGL-NGS-17832             | 0        | 52292037 |          |
| 24 | ARS-BFGL-BAC-58790             | 52328963 |          |          |
| 24 | ARS-BFGL-NGS-102880            | 0        | 52349934 |          |
| 24 | Hapmap31154-BTA-153012         | 0        | 52402983 |          |
| 24 | ARS-BFGL-NGS-105368            | 0        | 52426314 |          |
| 24 | ARS-BFGL-NGS-93055             | 0        | 52484363 |          |
| 24 | Hapmap43124-BTA-102567         | 0        | 52507276 |          |
| 24 | ARS-BFGL-BAC-29266             | 0        | 52545933 |          |
| 24 | Hapmap22797-BTA-138024         | 0        | 52578970 |          |
| 24 | ARS-BFGL-NGS-19883             | 0        | 52606336 |          |
| 24 | ARS-BFGL-NGS-108432            | 0        | 52626424 |          |
| 24 | ARS-BFGL-NGS-116083            | 0        | 52728523 |          |
| 24 | ARS-BFGL-BAC-29268             | 0        | 52777140 |          |
| 24 | Hapmap55314-rs29026474         | 0        | 52825393 |          |
| 24 | Hapmap41704-BTA-98451          | 0        | 53038351 |          |
| 24 | ARS-BFGL-NGS-115311            | 0        | 53075632 |          |
| 24 | Hapmap33043-BTA-151607         | 0        | 53139028 |          |
| 24 | ARS-BFGL-NGS-45249             | 0        | 53171585 |          |
| 24 | Hapmap53690-rs29026074         | 0        | 53195202 |          |
| 24 | ARS-BFGL-NGS-45576             | 0        | 53228187 |          |
| 24 | Hapmap51379-BTA-106446         | 0        | 53351891 |          |
| 24 | ARS-BFGL-NGS-93595             | 0        | 53434181 |          |
| 24 | Hapmap34957-BES2_Contig394_660 | 0        |          | 53506417 |

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| 24 | ARS-BFGL-NGS-13165                    | 0 | 53531725 |          |  |
| 24 | ARS-BFGL-NGS-55685                    | 0 | 53576672 |          |  |
| 24 | BTA-58638-no-rs                       | 0 | 53790841 |          |  |
| 24 | ARS-BFGL-NGS-38279                    | 0 | 53820816 |          |  |
| 24 | ARS-BFGL-BAC-29833                    | 0 | 53850563 |          |  |
| 24 | ARS-BFGL-NGS-42637                    | 0 | 53929088 |          |  |
| 24 | Hapmap55299-rs29024580                | 0 | 53964359 |          |  |
| 24 | Hapmap32643-BTA-160255                | 0 | 54072517 |          |  |
| 24 | Hapmap35829-SCAFFOLD148737_3600       | 0 |          | 54252151 |  |
| 24 | BTA-117811-no-rs                      | 0 | 54299083 |          |  |
| 24 | Hapmap52438-rs29009828                | 0 | 54476739 |          |  |
| 24 | ARS-BFGL-NGS-40476                    | 0 | 54507621 |          |  |
| 24 | ARS-BFGL-NGS-116424                   | 0 | 54542635 |          |  |
| 24 | ARS-BFGL-BAC-29836                    | 0 | 54571696 |          |  |
| 24 | Hapmap48817-BTA-58442                 | 0 | 54598265 |          |  |
| 24 | Hapmap50507-BTA-94221                 | 0 | 54648112 |          |  |
| 24 | ARS-BFGL-NGS-113579                   | 0 | 54688033 |          |  |
| 24 | Hapmap40764-BTA-58434                 | 0 | 54736873 |          |  |
| 24 | ARS-BFGL-NGS-111655                   | 0 | 54816759 |          |  |
| 24 | ARS-BFGL-NGS-63960                    |   | 54893494 |          |  |
| 24 | ARS-BFGL-NGS-85334                    | 0 | 54964769 |          |  |
| 24 | Hapmap23755-BTA-137917                | 0 | 55100581 |          |  |
| 24 | ARS-BFGL-BAC-35256                    | 0 | 55136356 |          |  |
| 24 | ARS-BFGL-NGS-117151                   | 0 | 55220853 |          |  |
| 24 | ARS-BFGL-BAC-35257                    | 0 | 55262870 |          |  |
| 24 | BTA-58423-no-rs                       | 0 | 55284787 |          |  |
| 24 | BTA-58422-no-rs                       | 0 | 55310132 |          |  |
| 24 | Hapmap51263-BTA-58411                 | 0 | 55360030 |          |  |
| 24 | ARS-BFGL-BAC-35260                    | 0 | 55380898 |          |  |
| 24 | ARS-BFGL-NGS-65432                    | 0 | 55511322 |          |  |
| 24 | Hapmap26953-BTA-137904                | 0 | 55550378 |          |  |
| 24 | ARS-BFGL-NGS-26447                    | 0 | 55570429 |          |  |
| 24 | BTB-00890331                          | 0 | 55592754 |          |  |
| 24 | Hapmap39415-BTA-58406                 | 0 | 55619094 |          |  |
| 24 | ARS-BFGL-NGS-16935                    | 0 | 55662810 |          |  |
| 24 | ARS-BFGL-NGS-81093                    | 0 | 55694540 |          |  |
| 24 | Hapmap33481-BTA-137902                | 0 | 55716093 |          |  |
| 24 | ARS-BFGL-NGS-24809                    | 0 | 55761630 |          |  |
| 24 | Hapmap30908-BTA-58401                 | 0 | 55846432 |          |  |
| 24 | Hapmap51262-BTA-58394                 | 0 | 55945408 |          |  |
| 24 | ARS-BFGL-NGS-35634                    | 0 | 55980406 |          |  |
| 24 | Hapmap50042-BTA-58392                 | 0 | 56037219 |          |  |
| 24 | ARS-BFGL-NGS-118960                   | 0 | 56059860 |          |  |
| 24 | Hapmap53430-rs29019929                | 0 | 56148861 |          |  |
| 24 | Hapmap44522-BTA-119331                | 0 | 56197050 |          |  |
| 24 | BTB-01257745                          | 0 | 56234552 |          |  |
| 24 | ARS-BFGL-NGS-58620                    | 0 | 56255881 |          |  |
| 24 | BTB-00891555                          | 0 | 56280771 |          |  |
| 24 | Hapmap41187-BTA-122573                | 0 | 56352717 |          |  |
| 24 | ARS-BFGL-NGS-106353                   | 0 | 56379984 |          |  |
| 24 | ARS-USMARC-Parent-AY939849-rs17870274 | 0 |          | 56415794 |  |
| 24 | ARS-BFGL-NGS-26740                    |   | 56418548 |          |  |
| 24 | ARS-BFGL-NGS-31800                    | 0 | 56442291 |          |  |
| 24 | BTB-00891813                          | 0 | 56487933 |          |  |

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| 24 | BTA-58647-no-rs                 | 0        | 56512716 |  |
| 24 | BTB-00891865                    | 0        | 56535985 |  |
| 24 | ARS-BFGL-BAC-35262              | 0        | 56564480 |  |
| 24 | Hapmap38685-BTA-58652           | 0        | 56627241 |  |
| 24 | Hapmap43046-BTA-77404           | 0        | 56772444 |  |
| 24 | Hapmap52025-rs29015105          | 0        | 56808617 |  |
| 24 | BTA-58706-no-rs                 | 0        | 56834044 |  |
| 24 | Hapmap59021-rs29022078          | 0        | 56855901 |  |
| 24 | BTA-58685-no-rs                 | 0        | 56889750 |  |
| 24 | ARS-BFGL-NGS-15345              | 0        | 56967385 |  |
| 24 | ARS-BFGL-NGS-112182             | 0        | 57068593 |  |
| 24 | ARS-BFGL-NGS-97093              | 0        | 57098899 |  |
| 24 | ARS-BFGL-NGS-26723              | 0        | 57200185 |  |
| 24 | ARS-BFGL-NGS-72290              | 0        | 57257505 |  |
| 24 | ARS-BFGL-NGS-37969              | 0        | 57316936 |  |
| 24 | ARS-BFGL-NGS-27131              | 0        | 57395079 |  |
| 24 | Hapmap51003-BTA-58716           | 0        | 57482936 |  |
| 24 | ARS-BFGL-NGS-38111              | 0        | 57563581 |  |
| 24 | ARS-BFGL-NGS-114450             | 0        | 57619335 |  |
| 24 | Hapmap48398-BTA-58707           | 0        | 57654717 |  |
| 24 | ARS-BFGL-BAC-35845              | 0        | 57679389 |  |
| 24 | ARS-BFGL-NGS-117413             | 0        | 57725812 |  |
| 24 | Hapmap36537-SCAFFOLD195793_4445 | 0        | 57741957 |  |
| 24 | ARS-BFGL-NGS-26059              | 0        | 57764032 |  |
| 24 | ARS-BFGL-NGS-10304              | 0        | 57862706 |  |
| 24 | ARS-BFGL-NGS-40852              | 0        | 57909464 |  |
| 24 | ARS-BFGL-NGS-79591              | 0        | 57950814 |  |
| 24 | ARS-BFGL-NGS-42080              | 0        | 58060227 |  |
| 24 | ARS-BFGL-NGS-88199              | 0        | 58072832 |  |
| 24 | ARS-BFGL-NGS-117573             | 0        | 58081600 |  |
| 24 | ARS-BFGL-NGS-119760             | 0        | 58104341 |  |
| 24 | ARS-BFGL-NGS-104375             | 0        | 58145322 |  |
| 24 | BTA-10939-no-rs                 | 0        | 58274429 |  |
| 24 | Hapmap55400-rs29024439          | 0        | 58327400 |  |
| 24 | ARS-BFGL-NGS-65909              | 0        | 58404849 |  |
| 24 | Hapmap24560-BTA-147782          | 0        | 58464704 |  |
| 24 | ARS-BFGL-NGS-35770              | 58524434 |          |  |
| 24 | BTA-58671-no-rs                 | 0        | 58635630 |  |
| 24 | ARS-BFGL-NGS-39650              | 58778920 |          |  |
| 24 | ARS-BFGL-NGS-25800              | 0        | 58809468 |  |
| 24 | ARS-BFGL-NGS-93013              | 0        | 58895885 |  |
| 24 | ARS-BFGL-NGS-109598             | 0        | 58956063 |  |
| 24 | ARS-BFGL-NGS-87044              | 0        | 58983505 |  |
| 24 | BTA-58731-no-rs                 | 0        | 59003754 |  |
| 24 | ARS-BFGL-NGS-40129              | 0        | 59035357 |  |
| 24 | ARS-BFGL-NGS-72174              | 0        | 59074415 |  |
| 24 | ARS-BFGL-NGS-107077             | 0        | 59101739 |  |
| 24 | ARS-BFGL-NGS-73260              | 0        | 59177468 |  |
| 24 | BTA-58720-no-rs                 | 0        | 59242301 |  |
| 24 | Hapmap49230-BTA-58719           | 0        | 59307071 |  |
| 24 | ARS-BFGL-NGS-98539              | 0        | 59339017 |  |
| 24 | ARS-BFGL-NGS-40380              | 0        | 59383880 |  |
| 24 | ARS-BFGL-NGS-84525              | 0        | 59409204 |  |
| 24 | ARS-BFGL-NGS-93817              | 0        | 59564307 |  |

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| 24 | BTA-65595-no-rs                  | 0 | 59616242 |  |
| 24 | UA-IFASA-1397                    | 0 | 59670860 |  |
| 24 | ARS-BFGL-NGS-94293               | 0 | 59703255 |  |
| 24 | Hapmap53567-rs29013381           | 0 | 59848455 |  |
| 24 | ARS-BFGL-NGS-10638               | 0 | 59890947 |  |
| 24 | Hapmap49535-BTA-22286            | 0 | 59939788 |  |
| 24 | ARS-BFGL-NGS-116616              | 0 | 60058862 |  |
| 24 | Hapmap49390-BTA-96326            | 0 | 60108474 |  |
| 24 | Hapmap28681-BTA-150829           | 0 | 60148925 |  |
| 24 | Hapmap44011-BTA-115851           | 0 | 60208205 |  |
| 24 | ARS-BFGL-NGS-104400              | 0 | 60394194 |  |
| 24 | ARS-BFGL-NGS-83715               | 0 | 60432726 |  |
| 24 | Hapmap40262-BTA-114755           | 0 | 60457625 |  |
| 24 | Hapmap42819-BTA-114761           | 0 | 60522857 |  |
| 24 | ARS-BFGL-NGS-116548              | 0 | 60543436 |  |
| 24 | ARS-BFGL-NGS-112116              | 0 | 60580758 |  |
| 24 | ARS-BFGL-NGS-103861              | 0 | 60613517 |  |
| 24 | ARS-BFGL-NGS-23259               | 0 | 60642880 |  |
| 24 | ARS-BFGL-NGS-16849               | 0 | 60663761 |  |
| 24 | Hapmap53049-rs29019360           | 0 | 60717688 |  |
| 24 | ARS-BFGL-NGS-112584              | 0 | 60745394 |  |
| 24 | ARS-BFGL-NGS-18151               | 0 | 60778879 |  |
| 24 | Hapmap49232-BTA-58778            | 0 | 60842899 |  |
| 24 | ARS-BFGL-NGS-100716              | 0 | 60905721 |  |
| 24 | ARS-BFGL-NGS-108294              | 0 | 60946043 |  |
| 24 | Hapmap40009-BTA-58757            | 0 | 61001528 |  |
| 24 | BTA-58755-no-rs                  | 0 | 61086641 |  |
| 24 | Hapmap23074-BTA-138067           | 0 | 61109709 |  |
| 24 | Hapmap30844-BTA-148492           | 0 | 61140716 |  |
| 24 | Hapmap25069-BTA-148491           | 0 | 61205500 |  |
| 24 | ARS-BFGL-NGS-14127               | 0 | 61235733 |  |
| 24 | ARS-BFGL-NGS-102053              | 0 | 61262694 |  |
| 24 | ARS-BFGL-NGS-36906               | 0 | 61284899 |  |
| 24 | ARS-BFGL-NGS-117690              | 0 | 61331590 |  |
| 24 | ARS-BFGL-NGS-41126               | 0 | 61361164 |  |
| 24 | ARS-BFGL-NGS-25933               | 0 | 61404105 |  |
| 24 | ARS-BFGL-BAC-36465               | 0 | 61427213 |  |
| 24 | ARS-BFGL-NGS-103202              | 0 | 61455723 |  |
| 24 | ARS-BFGL-NGS-118678              | 0 | 61500404 |  |
| 24 | ARS-BFGL-NGS-12385               | 0 | 61571026 |  |
| 24 | BTA-103834-no-rs                 | 0 | 61591682 |  |
| 24 | ARS-BFGL-BAC-36464               | 0 | 61631363 |  |
| 24 | Hapmap51746-BTA-58798            | 0 | 61676001 |  |
| 24 | UA-IFASA-4165                    | 0 | 61831791 |  |
| 24 | ARS-BFGL-NGS-17212               | 0 | 61863528 |  |
| 24 | ARS-BFGL-NGS-73573               | 0 | 61885106 |  |
| 24 | ARS-BFGL-NGS-10696               | 0 | 61918390 |  |
| 24 | BTB-00893217                     | 0 | 61931908 |  |
| 24 | ARS-BFGL-NGS-70670               | 0 | 61958252 |  |
| 24 | Hapmap35425-SCAFFOLD305155_18811 | 0 | 61981024 |  |
| 24 | BTB-00893323                     | 0 | 62052361 |  |
| 24 | ARS-BFGL-NGS-81145               | 0 | 62079669 |  |
| 24 | BTB-00893347                     | 0 | 62104076 |  |
| 24 | ARS-BFGL-NGS-33785               | 0 | 62130639 |  |

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| 24 | Hapmap42596-BTA-58793  | 0       | 62169295 |
| 24 | BTB-00893432           | 0       | 62191687 |
| 24 | Hapmap24097-BTA-155074 | 0       | 62320145 |
| 24 | BTB-01890193           | 0       | 62507214 |
| 24 | BTA-23594-no-rs        | 0       | 62530799 |
| 24 | BTA-105360-no-rs       | 0       | 62569209 |
| 24 | BTA-105351-no-rs       | 0       | 62593028 |
| 24 | ARS-BFGL-NGS-29191     | 0       | 62643699 |
| 24 | ARS-BFGL-NGS-83184     | 0       | 62685898 |
| 25 | ARS-BFGL-NGS-28648     | 0       | 104438   |
| 25 | ARS-BFGL-NGS-67788     | 0       | 138382   |
| 25 | ARS-BFGL-BAC-37937     | 0       | 173462   |
| 25 | Hapmap40362-BTA-59892  | 0       | 202554   |
| 25 | ARS-BFGL-NGS-90695     | 0       | 237319   |
| 25 | ARS-BFGL-NGS-109911    | 0       | 279528   |
| 25 | ARS-BFGL-NGS-119643    | 0       | 324116   |
| 25 | ARS-BFGL-NGS-43098     | 0       | 373060   |
| 25 | ARS-BFGL-BAC-46926     | 0       | 406196   |
| 25 | ARS-BFGL-NGS-19158     | 0       | 428390   |
| 25 | ARS-BFGL-NGS-12001     | 0       | 472458   |
| 25 | ARS-BFGL-NGS-20408     | 0       | 520071   |
| 25 | ARS-BFGL-NGS-74270     | 609241  |          |
| 25 | ARS-BFGL-NGS-14220     | 0       | 636274   |
| 25 | ARS-BFGL-NGS-40627     | 0       | 664032   |
| 25 | ARS-BFGL-NGS-108460    | 0       | 687508   |
| 25 | ARS-BFGL-NGS-117233    | 0       | 757572   |
| 25 | ARS-BFGL-NGS-62237     | 0       | 813455   |
| 25 | ARS-BFGL-NGS-116934    | 0       | 840143   |
| 25 | ARS-BFGL-NGS-115164    | 0       | 930509   |
| 25 | ARS-BFGL-NGS-117981    | 0       | 947823   |
| 25 | ARS-BFGL-NGS-40090     | 983759  |          |
| 25 | ARS-BFGL-NGS-110520    | 0       | 1045725  |
| 25 | ARS-BFGL-NGS-61709     | 0       | 1086505  |
| 25 | ARS-BFGL-NGS-103099    | 0       | 1127441  |
| 25 | ARS-BFGL-NGS-111712    | 0       | 1160378  |
| 25 | Hapmap29768-BTC-016149 | 0       | 1205232  |
| 25 | ARS-BFGL-NGS-38417     | 0       | 1272855  |
| 25 | Hapmap52944-rs29021704 | 0       | 1303460  |
| 25 | Hapmap27497-BTC-016272 | 0       | 1333214  |
| 25 | ARS-BFGL-BAC-43557     | 0       | 1365841  |
| 25 | ARS-BFGL-BAC-44214     | 0       | 1404930  |
| 25 | Hapmap33541-BTC-016426 | 0       | 1431881  |
| 25 | Hapmap31901-BTC-016378 | 0       | 1456346  |
| 25 | ARS-BFGL-NGS-35620     | 1489008 |          |
| 25 | ARS-BFGL-NGS-15055     | 0       | 1665327  |
| 25 | ARS-BFGL-NGS-15062     | 0       | 1712523  |
| 25 | ARS-BFGL-NGS-89820     | 1737669 |          |
| 25 | ARS-BFGL-NGS-79851     | 0       | 1771425  |
| 25 | ARS-BFGL-NGS-93418     | 0       | 1808056  |
| 25 | ARS-BFGL-NGS-16453     | 0       | 1837213  |
| 25 | ARS-BFGL-BAC-43578     | 0       | 1864761  |
| 25 | Hapmap25726-BTC-051370 | 0       | 1890992  |
| 25 | Hapmap22786-BTC-071372 | 0       | 1919606  |
| 25 | Hapmap30746-BTC-070031 | 0       | 1955733  |

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| 25 | Hapmap23849-BTC-016077                | 0       | 1990059 |         |  |
| 25 | Hapmap24734-BTC-016033                | 0       | 2027230 |         |  |
| 25 | ARS-BFGL-NGS-23131                    | 0       | 2060211 |         |  |
| 25 | Hapmap29767-BTC-015734                | 0       | 2084697 |         |  |
| 25 | ARS-BFGL-NGS-25277                    | 0       | 2105645 |         |  |
| 25 | Hapmap24932-BTC-015659                | 0       | 2152451 |         |  |
| 25 | ARS-BFGL-NGS-116067                   | 0       | 2180562 |         |  |
| 25 | Hapmap24609-BTC-015462                | 0       | 2201381 |         |  |
| 25 | Hapmap31260-BTC-015327                | 0       | 2224930 |         |  |
| 25 | ARS-BFGL-NGS-91926                    | 0       | 2248143 |         |  |
| 25 | ARS-BFGL-NGS-13853                    | 0       | 2270513 |         |  |
| 25 | Hapmap23294-BTC-017011                | 0       | 2299373 |         |  |
| 25 | Hapmap30108-BTC-016596                | 0       | 2410925 |         |  |
| 25 | ARS-BFGL-NGS-68140                    | 2481478 |         |         |  |
| 25 | ARS-BFGL-NGS-82337                    | 0       | 2551246 |         |  |
| 25 | ARS-BFGL-BAC-28144                    | 0       | 2606575 |         |  |
| 25 | ARS-BFGL-NGS-12473                    | 0       | 2691937 |         |  |
| 25 | Hapmap25672-BTC-015794                | 0       | 2749266 |         |  |
| 25 | Hapmap26816-BTC-015808                | 0       | 2773521 |         |  |
| 25 | ARS-BFGL-NGS-84200                    | 2823458 |         |         |  |
| 25 | ARS-BFGL-NGS-10250                    | 0       | 2880252 |         |  |
| 25 | ARS-BFGL-NGS-69062                    | 0       | 2989172 |         |  |
| 25 | Hapmap36042-SCAFFOLD31537_3371        | 0       |         | 3055650 |  |
| 25 | Hapmap27498-BTC-017275                | 0       | 3125095 |         |  |
| 25 | ARS-USMARC-Parent-EF034083-rs29018286 | 0       |         | 3126438 |  |
| 25 | Hapmap24934-BTC-017367                | 0       | 3148958 |         |  |
| 25 | Hapmap49674-BTA-60512                 | 0       | 3261769 |         |  |
| 25 | Hapmap25825-BTA-138140                | 0       | 3322776 |         |  |
| 25 | ARS-BFGL-BAC-40665                    | 0       | 3345449 |         |  |
| 25 | Hapmap30112-BTC-017460                | 0       | 3421493 |         |  |
| 25 | ARS-BFGL-NGS-16936                    | 0       | 3460805 |         |  |
| 25 | Hapmap25158-BTC-017507                | 0       | 3481970 |         |  |
| 25 | Hapmap31902-BTC-017618                | 0       | 3591167 |         |  |
| 25 | Hapmap27815-BTC-017722                | 0       | 3624364 |         |  |
| 25 | Hapmap26819-BTC-017803                | 0       | 3649920 |         |  |
| 25 | Hapmap22899-BTC-018001                | 0       | 3676450 |         |  |
| 25 | ARS-BFGL-NGS-29624                    | 0       | 3696387 |         |  |
| 25 | ARS-BFGL-NGS-16204                    | 0       | 3735874 |         |  |
| 25 | Hapmap30941-BTC-018717                | 0       | 3768108 |         |  |
| 25 | Hapmap23660-BTC-018762                | 0       | 3801478 |         |  |
| 25 | ARS-BFGL-NGS-107989                   | 0       | 3857054 |         |  |
| 25 | ARS-BFGL-NGS-67505                    | 0       | 4015514 |         |  |
| 25 | Hapmap25398-BTC-019181                | 0       | 4110250 |         |  |
| 25 | ARS-BFGL-NGS-92926                    | 0       | 4131112 |         |  |
| 25 | ARS-BFGL-NGS-65447                    | 0       | 4157331 |         |  |
| 25 | ARS-BFGL-NGS-31020                    | 0       | 4229011 |         |  |
| 25 | ARS-BFGL-NGS-91974                    | 0       | 4249133 |         |  |
| 25 | ARS-BFGL-NGS-62236                    | 0       | 4354023 |         |  |
| 25 | Hapmap38080-BTA-71296                 | 0       | 4407311 |         |  |
| 25 | ARS-BFGL-NGS-39925                    | 0       | 4485089 |         |  |
| 25 | Hapmap25383-BTC-001479                | 0       | 4514909 |         |  |
| 25 | Hapmap31636-BTC-053953                | 0       | 4544289 |         |  |
| 25 | ARS-BFGL-NGS-108964                   | 0       | 4566007 |         |  |
| 25 | Hapmap32480-BTC-053994                | 0       | 4589105 |         |  |

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| 25 | Hapmap32744-BTC-054063 | 0 | 4647188 |
| 25 | Hapmap30713-BTC-054092 | 0 | 4667894 |
| 25 | Hapmap31306-BTC-054203 | 0 | 4689960 |
| 25 | Hapmap25777-BTC-071814 | 0 | 4779974 |
| 25 | Hapmap26585-BTC-053658 | 0 | 4823274 |
| 25 | Hapmap32730-BTC-047457 | 0 | 4847733 |
| 25 | Hapmap23552-BTC-054518 | 0 | 4869724 |
| 25 | ARS-BFGL-NGS-114392    | 0 | 4892529 |
| 25 | Hapmap26300-BTC-054549 | 0 | 4931889 |
| 25 | Hapmap32481-BTC-054553 | 0 | 4952802 |
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| 25 | Hapmap26526-BTC-001269 | 0 | 5104091 |
| 25 | ARS-BFGL-NGS-66673     | 0 | 5134416 |
| 25 | Hapmap26242-BTC-001240 | 0 | 5156189 |
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| 25 | Hapmap32174-BTC-000539 | 0 | 5356622 |
| 25 | Hapmap31994-BTC-065943 | 0 | 5385729 |
| 25 | Hapmap32974-BTC-065967 | 0 | 5408004 |
| 25 | ARS-BFGL-NGS-11200     | 0 | 5435104 |
| 25 | Hapmap32173-BTC-000382 | 0 | 5495966 |
| 25 | ARS-BFGL-NGS-116421    | 0 | 5548577 |
| 25 | ARS-BFGL-NGS-41022     | 0 | 5662943 |
| 25 | Hapmap49602-BTA-41546  | 0 | 5683681 |
| 25 | Hapmap26025-BTC-050671 | 0 | 5728001 |
| 25 | Hapmap32426-BTC-000132 | 0 | 5759625 |
| 25 | Hapmap25460-BTC-059537 | 0 | 5805641 |
| 25 | Hapmap30462-BTC-059597 | 0 | 5836611 |
| 25 | ARS-BFGL-NGS-115043    | 0 | 5860370 |
| 25 | ARS-BFGL-NGS-113208    | 0 | 5907022 |
| 25 | Hapmap30152-BTC-053926 | 0 | 5948405 |
| 25 | ARS-BFGL-NGS-26868     | 0 | 5971288 |
| 25 | ARS-BFGL-NGS-82300     | 0 | 6012749 |
| 25 | Hapmap51962-BTA-96856  | 0 | 6050787 |
| 25 | Hapmap32191-BTC-019394 | 0 | 6103549 |
| 25 | Hapmap31265-BTC-019439 | 0 | 6126326 |
| 25 | Hapmap32438-BTC-019523 | 0 | 6155473 |
| 25 | Hapmap24512-BTC-019555 | 0 | 6175956 |
| 25 | Hapmap31908-BTC-019642 | 0 | 6207435 |
| 25 | Hapmap30117-BTC-019731 | 0 | 6239475 |
| 25 | ARS-BFGL-NGS-114607    | 0 | 6271900 |
| 25 | Hapmap29912-BTC-019837 | 0 | 6292680 |
| 25 | Hapmap49236-BTA-60577  | 0 | 6333623 |
| 25 | ARS-BFGL-NGS-112362    | 0 | 6367564 |
| 25 | Hapmap31267-BTC-020423 | 0 | 6395301 |
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| 25 | Hapmap25985-BTC-020890 | 0 | 6444456 |
| 25 | Hapmap30673-BTC-021236 | 0 | 6474172 |
| 25 | Hapmap33111-BTC-021675 | 0 | 6496284 |
| 25 | ARS-BFGL-NGS-21791     | 0 | 6524292 |
| 25 | Hapmap31912-BTC-021752 | 0 | 6579959 |
| 25 | Hapmap52616-rs29014010 | 0 | 6608460 |
| 25 | Hapmap26823-BTC-021812 | 0 | 6639565 |
| 25 | BTA-60607-no-rs        | 0 | 6742260 |

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| 25 | Hapmap32193-BTC-021933           | 0        | 6766419  |         |
| 25 | Hapmap30456-BTC-058518           | 0        | 6862372  |         |
| 25 | ARS-BFGL-NGS-64876               | 0        | 6910261  |         |
| 25 | Hapmap27288-BTC-022084           | 0        | 6968865  |         |
| 25 | Hapmap46847-BTA-60630            | 0        | 7104014  |         |
| 25 | ARS-BFGL-NGS-21190               | 7148338  |          |         |
| 25 | ARS-BFGL-NGS-45290               | 0        | 7192237  |         |
| 25 | Hapmap35909-SCAFFOLD210508_16484 | 0        |          | 7322244 |
| 25 | Hapmap52283-rs29018832           | 0        | 7361738  |         |
| 25 | ARS-BFGL-NGS-35470               | 7381787  |          |         |
| 25 | Hapmap42268-BTA-60619            | 0        | 7393865  |         |
| 25 | ARS-BFGL-NGS-12961               | 0        | 7415256  |         |
| 25 | ARS-BFGL-NGS-115179              | 0        | 7463590  |         |
| 25 | ARS-BFGL-NGS-34026               | 0        | 7515881  |         |
| 25 | ARS-BFGL-NGS-90194               | 0        | 7644483  |         |
| 25 | ARS-BFGL-NGS-112588              | 0        | 7782264  |         |
| 25 | ARS-BFGL-NGS-114786              | 0        | 7952738  |         |
| 25 | ARS-BFGL-NGS-16187               | 0        | 7992272  |         |
| 25 | ARS-BFGL-NGS-68584               | 0        | 8051126  |         |
| 25 | Hapmap47137-BTA-95505            | 0        | 8060061  |         |
| 25 | ARS-BFGL-NGS-57462               | 0        | 8086468  |         |
| 25 | ARS-BFGL-NGS-60044               | 0        | 8114873  |         |
| 25 | ARS-BFGL-NGS-113918              | 0        | 8165854  |         |
| 25 | ARS-BFGL-NGS-18827               | 0        | 8209518  |         |
| 25 | BTA-60652-no-rs                  | 0        | 8272291  |         |
| 25 | Hapmap35396-SCAFFOLD245063_17530 | 0        |          | 8293697 |
| 25 | BTA-60642-no-rs                  | 0        | 8317735  |         |
| 25 | ARS-BFGL-NGS-23477               | 0        | 8383027  |         |
| 25 | BTA-60656-no-rs                  | 0        | 8430452  |         |
| 25 | ARS-BFGL-NGS-39207               | 0        | 8473881  |         |
| 25 | Hapmap49237-BTA-60646            | 0        | 8517544  |         |
| 25 | Hapmap48965-BTA-97600            | 0        | 8647971  |         |
| 25 | ARS-BFGL-NGS-95388               | 0        | 8747202  |         |
| 25 | ARS-BFGL-NGS-101381              | 0        | 8789153  |         |
| 25 | ARS-BFGL-NGS-24871               | 0        | 8904610  |         |
| 25 | ARS-BFGL-NGS-42964               | 0        | 8969569  |         |
| 25 | BTA-60694-no-rs                  | 0        | 9012448  |         |
| 25 | Hapmap39667-BTA-60698            | 0        | 9059141  |         |
| 25 | Hapmap27973-BTA-156112           | 0        | 9252279  |         |
| 25 | BTA-111433-no-rs                 | 0        | 9258986  |         |
| 25 | ARS-BFGL-NGS-17864               | 0        | 9361223  |         |
| 25 | ARS-BFGL-NGS-114468              | 0        | 9451711  |         |
| 25 | ARS-BFGL-NGS-43303               | 0        | 9621091  |         |
| 25 | BTA-60749-no-rs                  | 0        | 9664651  |         |
| 25 | ARS-BFGL-NGS-118929              | 0        | 9695346  |         |
| 25 | ARS-BFGL-NGS-82110               | 9746859  |          |         |
| 25 | ARS-BFGL-NGS-49840               | 9774118  |          |         |
| 25 | ARS-BFGL-NGS-116319              | 0        | 9798722  |         |
| 25 | Hapmap43893-BTA-60736            | 0        | 9862811  |         |
| 25 | ARS-BFGL-NGS-110809              | 0        | 9906629  |         |
| 25 | ARS-BFGL-NGS-32794               | 0        | 9965984  |         |
| 25 | ARS-BFGL-NGS-30473               | 0        | 10033932 |         |
| 25 | ARS-BFGL-NGS-115172              | 0        | 10073572 |         |
| 25 | ARS-BFGL-NGS-59600               | 10109903 |          |         |



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| 25 | ARS-BFGL-NGS-119848              | 0 | 10131703 |          |
| 25 | ARS-BFGL-NGS-35930               | 0 | 10167532 |          |
| 25 | Hapmap48642-BTA-119781           | 0 | 10254815 |          |
| 25 | ARS-BFGL-NGS-42699               | 0 | 10305794 |          |
| 25 | ARS-BFGL-NGS-67020               | 0 | 10426830 |          |
| 25 | BTA-60770-no-rs                  | 0 | 10448562 |          |
| 25 | ARS-BFGL-NGS-16206               | 0 | 10526660 |          |
| 25 | ARS-BFGL-NGS-24519               | 0 | 10653023 |          |
| 25 | Hapmap36124-SCAFFOLD100400_31720 | 0 |          | 10686085 |
| 25 | BTA-59053-no-rs                  | 0 | 10725405 |          |
| 25 | ARS-BFGL-NGS-111398              | 0 | 10792412 |          |
| 25 | Hapmap25048-BTA-138242           | 0 | 10818342 |          |
| 25 | ARS-BFGL-NGS-20752               | 0 | 10857068 |          |
| 25 | ARS-BFGL-NGS-20024               | 0 | 10896067 |          |
| 25 | ARS-BFGL-NGS-101712              | 0 | 10922009 |          |
| 25 | ARS-BFGL-NGS-67390               |   | 10946226 |          |
| 25 | ARS-BFGL-NGS-30690               |   | 10968180 |          |
| 25 | ARS-BFGL-BAC-29878               | 0 | 10992142 |          |
| 25 | ARS-BFGL-NGS-110934              | 0 | 11015593 |          |
| 25 | ARS-BFGL-NGS-108775              | 0 | 11042076 |          |
| 25 | ARS-BFGL-BAC-27530               | 0 | 11062974 |          |
| 25 | ARS-BFGL-NGS-40123               | 0 | 11083088 |          |
| 25 | ARS-BFGL-BAC-36545               | 0 | 11103902 |          |
| 25 | ARS-BFGL-NGS-102275              | 0 | 11125978 |          |
| 25 | Hapmap24618-BTC-022651           | 0 | 11151580 |          |
| 25 | ARS-BFGL-NGS-35331               | 0 | 11177426 |          |
| 25 | ARS-BFGL-NGS-72054               | 0 | 11203241 |          |
| 25 | Hapmap30951-BTC-023201           | 0 | 11228655 |          |
| 25 | Hapmap32921-BTC-023401           | 0 | 11248699 |          |
| 25 | Hapmap30410-BTC-023620           | 0 | 11276656 |          |
| 25 | Hapmap26254-BTC-024038           | 0 | 11320423 |          |
| 25 | Hapmap26623-BTC-073724           | 0 | 11357566 |          |
| 25 | Hapmap31589-BTC-024512           | 0 | 11419998 |          |
| 25 | ARS-BFGL-NGS-77259               | 0 | 11492138 |          |
| 25 | Hapmap24742-BTC-025430           | 0 | 11527536 |          |
| 25 | UA-IFASA-3143                    | 0 | 11564340 |          |
| 25 | ARS-BFGL-NGS-99670               |   | 11595587 |          |
| 25 | Hapmap41304-BTA-59122            | 0 | 11620439 |          |
| 25 | Hapmap29919-BTC-026030           | 0 | 11702431 |          |
| 25 | ARS-BFGL-NGS-101344              | 0 | 11738728 |          |
| 25 | ARS-BFGL-BAC-29240               |   | 11760835 |          |
| 25 | Hapmap25406-BTC-027475           | 0 | 11804934 |          |
| 25 | Hapmap57304-rs29013565           | 0 | 11826909 |          |
| 25 | Hapmap23969-BTC-026782           | 0 | 11863750 |          |
| 25 | Hapmap25405-BTC-026733           | 0 | 11885927 |          |
| 25 | Hapmap58226-rs29016369           | 0 | 11937399 |          |
| 25 | ARS-BFGL-BAC-46087               | 0 | 12044822 |          |
| 25 | Hapmap24109-BTC-001826           | 0 | 12073485 |          |
| 25 | ARS-BFGL-NGS-100355              | 0 | 12094931 |          |
| 25 | ARS-BFGL-NGS-11513               | 0 | 12129796 |          |
| 25 | ARS-BFGL-NGS-22367               | 0 | 12161098 |          |
| 25 | Hapmap32703-BTC-026516           | 0 | 12190414 |          |
| 25 | Hapmap25682-BTC-026219           | 0 | 12217941 |          |
| 25 | Hapmap32196-BTC-026150           | 0 | 12252170 |          |

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| 25 | ARS-BFGL-NGS-38719                    | 0        | 12296561 |  |  |
| 25 | Hapmap31272-BTC-026061                | 0        | 12334098 |  |  |
| 25 | ARS-BFGL-NGS-30407                    | 0        | 12359174 |  |  |
| 25 | ARS-BFGL-NGS-118965                   | 0        | 12494196 |  |  |
| 25 | ARS-BFGL-NGS-82152                    | 0        | 12569917 |  |  |
| 25 | ARS-BFGL-NGS-38363                    | 0        | 12604751 |  |  |
| 25 | Hapmap22798-BTA-138328                | 0        | 12660246 |  |  |
| 25 | BTB-00898931                          | 0        | 12684337 |  |  |
| 25 | Hapmap23896-BTA-59579                 | 0        | 12733757 |  |  |
| 25 | ARS-BFGL-NGS-53189                    | 0        | 12778079 |  |  |
| 25 | Hapmap52158-rs29019621                | 0        | 12965823 |  |  |
| 25 | ARS-BFGL-BAC-29890                    | 13003931 |          |  |  |
| 25 | ARS-BFGL-NGS-16781                    | 0        | 13040126 |  |  |
| 25 | ARS-BFGL-NGS-71336                    | 0        | 13113762 |  |  |
| 25 | BTB-01803323                          | 0        | 13156946 |  |  |
| 25 | ARS-BFGL-NGS-108579                   | 0        | 13320944 |  |  |
| 25 | Hapmap42990-BTA-59554                 | 0        | 13368475 |  |  |
| 25 | ARS-BFGL-NGS-54462                    | 0        | 13405791 |  |  |
| 25 | ARS-BFGL-NGS-100416                   | 0        | 13469186 |  |  |
| 25 | ARS-BFGL-NGS-109001                   | 0        | 13510306 |  |  |
| 25 | BTA-59544-no-rs                       | 0        | 13567579 |  |  |
| 25 | ARS-BFGL-NGS-47310                    | 13593048 |          |  |  |
| 25 | Hapmap32061-BTA-138316                | 0        | 13647777 |  |  |
| 25 | ARS-BFGL-NGS-100702                   | 0        | 13749103 |  |  |
| 25 | Hapmap60472-rs29024916                | 0        | 13785575 |  |  |
| 25 | ARS-BFGL-NGS-20346                    | 0        | 13824693 |  |  |
| 25 | Hapmap40768-BTA-59535                 | 0        | 13854332 |  |  |
| 25 | Hapmap29990-BTA-138311                | 0        | 13899236 |  |  |
| 25 | ARS-BFGL-NGS-41100                    | 0        | 14026584 |  |  |
| 25 | ARS-BFGL-BAC-44189                    | 0        | 14087070 |  |  |
| 25 | ARS-BFGL-NGS-60130                    | 14110867 |          |  |  |
| 25 | ARS-BFGL-NGS-102074                   | 0        | 14140304 |  |  |
| 25 | ARS-BFGL-NGS-99149                    | 0        | 14216892 |  |  |
| 25 | ARS-BFGL-NGS-31906                    | 0        | 14257075 |  |  |
| 25 | ARS-BFGL-NGS-35155                    | 0        | 14261980 |  |  |
| 25 | ARS-BFGL-NGS-53551                    | 0        | 14293043 |  |  |
| 25 | BTA-15683-no-rs                       | 0        | 14316609 |  |  |
| 25 | ARS-BFGL-NGS-60910                    | 14337306 |          |  |  |
| 25 | ARS-BFGL-NGS-32203                    | 0        | 14382813 |  |  |
| 25 | ARS-BFGL-NGS-68002                    | 0        | 14439385 |  |  |
| 25 | Hapmap25008-BTA-109486                | 0        | 14464084 |  |  |
| 25 | ARS-BFGL-NGS-13481                    | 0        | 14541927 |  |  |
| 25 | ARS-BFGL-NGS-26930                    | 14676885 |          |  |  |
| 25 | ARS-USMARC-Parent-AY941204-rs17872131 | 0        | 14683151 |  |  |
| 25 | ARS-BFGL-NGS-78790                    | 14686647 |          |  |  |
| 25 | ARS-BFGL-NGS-40452                    | 0        | 14707476 |  |  |
| 25 | Hapmap44186-BTA-106650                | 0        | 14838782 |  |  |
| 25 | BTA-106654-no-rs                      | 0        | 14860864 |  |  |
| 25 | ARS-BFGL-NGS-101882                   | 0        | 14893789 |  |  |
| 25 | ARS-BFGL-NGS-26313                    | 0        | 15006757 |  |  |
| 25 | ARS-BFGL-NGS-41995                    | 0        | 15035075 |  |  |
| 25 | ARS-BFGL-NGS-89168                    | 0        | 15098389 |  |  |
| 25 | ARS-BFGL-NGS-38864                    | 0        | 15120011 |  |  |
| 25 | Hapmap39682-BTA-74189                 | 0        | 15151658 |  |  |

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| 25 | ARS-BFGL-NGS-29535     | 0        | 15243009 |
| 25 | Hapmap43301-BTA-59470  | 0        | 15302388 |
| 25 | ARS-BFGL-NGS-84660     | 0        | 15365566 |
| 25 | BTA-59468-no-rs        | 0        | 15398821 |
| 25 | ARS-BFGL-NGS-42918     | 0        | 15423763 |
| 25 | ARS-BFGL-NGS-67659     | 0        | 15459513 |
| 25 | Hapmap41911-BTA-59461  | 0        | 15510660 |
| 25 | ARS-BFGL-NGS-14996     | 0        | 15539265 |
| 25 | ARS-BFGL-NGS-18399     | 0        | 15594301 |
| 25 | ARS-BFGL-NGS-111872    | 0        | 15627982 |
| 25 | ARS-BFGL-NGS-107797    | 0        | 15653583 |
| 25 | ARS-BFGL-NGS-70550     | 15693647 |          |
| 25 | ARS-BFGL-NGS-115688    | 0        | 15722466 |
| 25 | ARS-BFGL-NGS-113916    | 0        | 15752362 |
| 25 | ARS-BFGL-NGS-37247     | 0        | 15780158 |
| 25 | ARS-BFGL-NGS-20957     | 0        | 15817521 |
| 25 | ARS-BFGL-NGS-34801     | 0        | 15963644 |
| 25 | Hapmap42597-BTA-59441  | 0        | 16017661 |
| 25 | ARS-BFGL-NGS-115086    | 0        | 16048464 |
| 25 | BTA-59423-no-rs        | 0        | 16113126 |
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| 25 | Hapmap26128-BTA-138283 | 0        | 16169590 |
| 25 | ARS-BFGL-BAC-42417     | 0        | 16215240 |
| 25 | Hapmap50047-BTA-59192  | 0        | 16256587 |
| 25 | ARS-BFGL-NGS-16007     | 0        | 16279900 |
| 25 | ARS-BFGL-NGS-105575    | 0        | 16335767 |
| 25 | ARS-BFGL-NGS-104357    | 0        | 16362034 |
| 25 | ARS-BFGL-NGS-74312     | 0        | 16396397 |
| 25 | Hapmap48012-BTA-59182  | 0        | 16419309 |
| 25 | Hapmap54366-rs29015052 | 0        | 16564593 |
| 25 | BTA-59165-no-rs        | 0        | 16595844 |
| 25 | UA-IFASA-7169          | 0        | 16647252 |
| 25 | ARS-BFGL-NGS-113306    | 0        | 16704949 |
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| 25 | ARS-BFGL-NGS-90323     | 0        | 16951033 |
| 25 | ARS-BFGL-NGS-34811     | 0        | 17015670 |
| 25 | ARS-BFGL-NGS-36610     | 0        | 17063933 |
| 25 | ARS-BFGL-NGS-115486    | 0        | 17166118 |
| 25 | ARS-BFGL-NGS-86758     | 0        | 17197385 |
| 25 | ARS-BFGL-NGS-102269    | 0        | 17222665 |
| 25 | Hapmap38970-BTA-59641  | 0        | 17245976 |
| 25 | ARS-BFGL-NGS-63981     | 0        | 17307818 |
| 25 | ARS-BFGL-NGS-56754     | 0        | 17363060 |
| 25 | ARS-BFGL-NGS-39369     | 0        | 17386719 |
| 25 | ARS-BFGL-NGS-119384    | 0        | 17439343 |
| 25 | ARS-BFGL-NGS-40107     | 0        | 17483780 |
| 25 | ARS-BFGL-NGS-16806     | 0        | 17581256 |
| 25 | ARS-BFGL-NGS-19355     | 0        | 17601353 |
| 25 | Hapmap39387-BTA-17700  | 0        | 17636792 |
| 25 | Hapmap26452-BTA-156280 | 0        | 17742193 |
| 25 | ARS-BFGL-NGS-117274    | 0        | 17860710 |

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| 25 | ARS-BFGL-NGS-113268             | 0        | 17891876 |  |
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| 25 | ARS-BFGL-NGS-102032             | 0        | 17974481 |  |
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| 25 | Hapmap42261-BTA-59580           | 0        | 18029588 |  |
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| 25 | ARS-BFGL-NGS-38340              | 18206998 |          |  |
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| 25 | ARS-BFGL-NGS-44798              | 0        | 18995111 |  |
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| 25 | Hapmap43799-BTA-17809           | 0        | 19123438 |  |
| 25 | ARS-BFGL-NGS-68658              | 0        | 19145490 |  |
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| 25 | ARS-BFGL-NGS-109168             | 0        | 19237205 |  |
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| 25 | ARS-BFGL-NGS-20938              | 0        | 19479101 |  |
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| 25 | ARS-BFGL-NGS-114006             | 0        | 20114319 |  |
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| 25 | BTA-59682-no-rs                 | 0        | 20233535 |  |
| 25 | ARS-BFGL-NGS-103867             | 0        | 20398199 |  |
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| 25 | BTA-26029-no-rs                 | 0        | 20490804 |  |
| 25 | ARS-BFGL-NGS-10641              | 0        | 20545057 |  |
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| 25 | ARS-BFGL-NGS-72150              | 20619710 |          |  |
| 25 | BTA-26025-no-rs                 | 0        | 20647454 |  |
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| 25 | ARS-BFGL-NGS-16739              | 0        | 20723432 |  |
| 25 | Hapmap35639-SCAFFOLD215107_4516 | 0        | 20773510 |  |
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| 25 | ARS-BFGL-NGS-42285              | 0        | 20893257 |  |
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| 25 | Hapmap47058-BTA-59697           | 0        | 21043603 |  |
| 25 | ARS-BFGL-NGS-107922             | 0        | 21102365 |  |
| 25 | ARS-BFGL-NGS-70300              | 21166451 |          |  |
| 25 | ARS-BFGL-NGS-103288             | 0        | 21225000 |  |
| 25 | ARS-BFGL-BAC-46941              | 0        | 21290132 |  |

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| 25 | BTB-00900391                    | 0 | 21366590 |  |
| 25 | ARS-BFGL-NGS-73380              | 0 | 21389096 |  |
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| 25 | BTB-01768733                    | 0 | 21495479 |  |
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| 25 | Hapmap42765-BTA-102002          | 0 | 21684491 |  |
| 25 | ARS-BFGL-NGS-74729              | 0 | 21711208 |  |
| 25 | ARS-BFGL-NGS-94143              | 0 | 21779048 |  |
| 25 | BTA-23303-no-rs                 | 0 | 21808238 |  |
| 25 | ARS-BFGL-NGS-101143             | 0 | 21910752 |  |
| 25 | ARS-BFGL-NGS-103926             | 0 | 21983909 |  |
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| 25 | ARS-BFGL-NGS-24214              | 0 | 22045818 |  |
| 25 | ARS-BFGL-NGS-33773              | 0 | 22081367 |  |
| 25 | Hapmap46913-BTA-104578          | 0 | 22142933 |  |
| 25 | ARS-BFGL-NGS-60954              | 0 | 22166475 |  |
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| 25 | Hapmap50414-BTA-59706           | 0 | 22238007 |  |
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| 25 | ARS-BFGL-NGS-104547             | 0 | 22437996 |  |
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| 25 | Hapmap55142-rs29022150          | 0 | 22494422 |  |
| 25 | Hapmap55456-rs29021604          | 0 | 22566179 |  |
| 25 | Hapmap35988-SCAFFOLD166019_6545 | 0 | 22591574 |  |
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| 25 | BTA-59764-no-rs                 | 0 | 22797558 |  |
| 25 | ARS-BFGL-NGS-107917             | 0 | 22837178 |  |
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| 25 | ARS-BFGL-NGS-77143              | 0 | 22964883 |  |
| 25 | ARS-BFGL-NGS-81742              | 0 | 23009707 |  |
| 25 | ARS-BFGL-NGS-118651             | 0 | 23040867 |  |
| 25 | ARS-BFGL-NGS-28728              | 0 | 23104348 |  |
| 25 | ARS-BFGL-NGS-95960              | 0 | 23171070 |  |
| 25 | ARS-BFGL-NGS-107536             | 0 | 23231135 |  |
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| 25 | BTB-00903936                    | 0 | 23610546 |  |
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| 25 | Hapmap27053-BTA-98894           | 0 | 23730847 |  |
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| 25 | Hapmap29724-BTA-138409          | 0 | 23884287 |  |
| 25 | ARS-BFGL-NGS-53687              | 0 | 24006008 |  |

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| 25 | ARS-BFGL-NGS-44107     | 0        | 24061101 |
| 25 | ARS-BFGL-NGS-17307     | 0        | 24092836 |
| 25 | ARS-BFGL-NGS-113653    | 0        | 24125205 |
| 25 | BTA-18198-no-rs        | 0        | 24225515 |
| 25 | Hapmap43502-BTA-18199  | 0        | 24228117 |
| 25 | Hapmap40889-BTA-114361 | 0        | 24306105 |
| 25 | BTA-18207-no-rs        | 0        | 24383713 |
| 25 | Hapmap48238-BTA-18211  | 0        | 24431072 |
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| 25 | ARS-BFGL-NGS-12932     | 0        | 24541231 |
| 25 | Hapmap41787-BTA-18214  | 0        | 24565008 |
| 25 | ARS-BFGL-NGS-104425    | 0        | 24592273 |
| 25 | ARS-BFGL-NGS-31959     | 0        | 24625971 |
| 25 | ARS-BFGL-NGS-42319     | 0        | 24661275 |
| 25 | ARS-BFGL-NGS-20140     | 0        | 24710966 |
| 25 | ARS-BFGL-NGS-11480     | 24760605 |          |
| 25 | ARS-BFGL-NGS-10731     | 0        | 24785051 |
| 25 | ARS-BFGL-NGS-108693    | 0        | 24810204 |
| 25 | ARS-BFGL-NGS-97895     | 0        | 24877266 |
| 25 | ARS-BFGL-NGS-73558     | 0        | 24917193 |
| 25 | UA-IFASA-2352          | 0        | 25035637 |
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| 25 | ARS-BFGL-NGS-19616     | 0        | 25166451 |
| 25 | ARS-BFGL-NGS-15620     | 0        | 25192584 |
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| 25 | ARS-BFGL-NGS-39381     | 0        | 25296418 |
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| 25 | ARS-BFGL-NGS-21527     | 0        | 25547267 |
| 25 | Hapmap41912-BTA-59851  | 0        | 25631487 |
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| 25 | ARS-BFGL-NGS-118621    | 0        | 25707002 |
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| 25 | ARS-BFGL-NGS-24420     | 0        | 25876171 |
| 25 | ARS-BFGL-NGS-26109     | 0        | 26000030 |
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| 25 | Hapmap39665-BTA-59836  | 0        | 26103020 |
| 25 | ARS-BFGL-NGS-113232    | 0        | 26147665 |
| 25 | ARS-BFGL-NGS-74847     | 0        | 26175012 |
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| 25 | BTA-59843-no-rs        | 0        | 26260257 |
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| 25 | ARS-BFGL-NGS-105526    | 0        | 26337016 |
| 25 | ARS-BFGL-BAC-42500     | 0        | 26468456 |
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| 25 | ARS-BFGL-NGS-14945     | 0        | 26669633 |
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| 25 | ARS-BFGL-NGS-110948    | 0        | 26747553 |
| 25 | ARS-BFGL-NGS-40782     | 0        | 26807071 |
| 25 | ARS-BFGL-NGS-70490     | 26830749 |          |
| 25 | ARS-BFGL-BAC-42506     | 0        | 26899864 |

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| 25 | ARS-BFGL-NGS-37360     | 0 | 27501732 |
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| 25 | ARS-BFGL-NGS-70606     | 0 | 27787134 |
| 25 | Hapmap39031-BTA-59776  | 0 | 27847889 |
| 25 | Hapmap44260-BTA-59780  | 0 | 27872006 |
| 25 | Hapmap41591-BTA-59790  | 0 | 27912102 |
| 25 | ARS-BFGL-NGS-20397     | 0 | 27947783 |
| 25 | ARS-BFGL-BAC-42272     | 0 | 27970816 |
| 25 | ARS-BFGL-NGS-112805    | 0 | 28003780 |
| 25 | ARS-BFGL-NGS-28385     | 0 | 28049888 |
| 25 | ARS-BFGL-NGS-32714     | 0 | 28227061 |
| 25 | ARS-BFGL-NGS-75298     | 0 | 28272468 |
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| 25 | BTB-02081953           | 0 | 28380368 |
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| 25 | ARS-BFGL-NGS-78220     | 0 | 28644814 |
| 25 | Hapmap8541-BTA-59825   | 0 | 28711626 |
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| 25 | ARS-BFGL-NGS-113771    | 0 | 28867085 |
| 25 | ARS-BFGL-NGS-101637    | 0 | 28906785 |
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| 25 | ARS-BFGL-NGS-65052     | 0 | 29044566 |
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| 25 | Hapmap48824-BTA-59885  | 0 | 29532547 |
| 25 | BTB-01710538           | 0 | 29635262 |
| 25 | ARS-BFGL-BAC-43579     | 0 | 29665645 |
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| 25 | ARS-BFGL-BAC-37178     | 0 | 30062438 |

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| 25 | Hapmap22767-BTC-029613 | 0        | 30116355 |
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| 25 | ARS-BFGL-NGS-119914    | 0        | 30269233 |
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| 25 | Hapmap22765-BTC-027973 | 0        | 30451724 |
| 25 | Hapmap31274-BTC-028005 | 0        | 30485498 |
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| 25 | Hapmap27064-BTC-028223 | 0        | 30716026 |
| 25 | Hapmap27292-BTC-028249 | 0        | 30736444 |
| 25 | ARS-BFGL-BAC-45231     | 0        | 30824927 |
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| 25 | ARS-BFGL-BAC-37538     | 0        | 30883697 |
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| 25 | Hapmap33175-BTC-074012 | 0        | 31015524 |
| 25 | Hapmap30681-BTC-028325 | 0        | 31056724 |
| 25 | Hapmap25408-BTC-028364 | 0        | 31086333 |
| 25 | Hapmap23115-BTC-028391 | 0        | 31107742 |
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| 25 | Hapmap24118-BTC-028475 | 0        | 31203231 |
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| 25 | Hapmap22972-BTC-029023 | 0        | 31366235 |
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| 25 | Hapmap31974-BTC-057825 | 0        | 31549173 |
| 25 | Hapmap23619-BTC-057878 | 0        | 31587644 |
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| 25 | Hapmap27352-BTC-065752 | 0        | 31766400 |
| 25 | Hapmap31342-BTC-065723 | 0        | 31789354 |
| 25 | Hapmap27118-BTC-065696 | 0        | 31803766 |
| 25 | Hapmap24944-BTC-030146 | 0        | 31834691 |
| 25 | Hapmap40501-BTA-17376  | 0        | 31915518 |
| 25 | ARS-BFGL-NGS-110334    | 0        | 31941596 |
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| 25 | ARS-BFGL-NGS-80240     | 31984312 |          |
| 25 | Hapmap48242-BTA-19454  | 0        | 32003625 |



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| 25 | BTA-101631-no-rs       | 0        | 32089261 |
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| 25 | ARS-BFGL-NGS-109952    | 0        | 32215208 |
| 25 | ARS-BFGL-NGS-73491     | 0        | 32335015 |
| 25 | ARS-BFGL-NGS-119445    | 0        | 32359922 |
| 25 | Hapmap54723-rs29023089 | 0        | 32496396 |
| 25 | BTB-01254352           | 0        | 32541835 |
| 25 | ARS-BFGL-NGS-38449     | 0        | 32575148 |
| 25 | ARS-BFGL-NGS-73511     | 0        | 32608745 |
| 25 | BTA-118965-no-rs       | 0        | 32648759 |
| 25 | BTB-01798822           | 0        | 32672085 |
| 25 | ARS-BFGL-NGS-106069    | 0        | 32672869 |
| 25 | BTA-91052-no-rs        | 0        | 32725579 |
| 25 | Hapmap48942-BTA-91048  | 0        | 32755073 |
| 25 | ARS-BFGL-NGS-64032     | 0        | 32778661 |
| 25 | ARS-BFGL-NGS-57317     | 0        | 32823036 |
| 25 | ARS-BFGL-NGS-115426    | 0        | 32854821 |
| 25 | Hapmap23035-BTA-91056  | 0        | 32887168 |
| 25 | ARS-BFGL-NGS-37189     | 0        | 32912638 |
| 25 | ARS-BFGL-NGS-98489     | 0        | 33066496 |
| 25 | ARS-BFGL-NGS-114938    | 0        | 33108530 |
| 25 | ARS-BFGL-BAC-43199     | 0        | 33172002 |
| 25 | Hapmap52950-rs29022515 | 0        | 33242844 |
| 25 | ARS-BFGL-NGS-59828     | 0        | 33273586 |
| 25 | ARS-BFGL-BAC-41932     | 0        | 33293815 |
| 25 | ARS-BFGL-BAC-38065     | 0        | 33314090 |
| 25 | ARS-BFGL-BAC-43866     | 0        | 33352790 |
| 25 | ARS-BFGL-BAC-33650     | 33391370 |          |
| 25 | ARS-BFGL-NGS-38306     | 0        | 33412423 |
| 25 | ARS-BFGL-NGS-70438     | 0        | 33438819 |
| 25 | ARS-BFGL-BAC-45112     | 0        | 33463169 |
| 25 | ARS-BFGL-NGS-39528     | 0        | 33486631 |
| 25 | ARS-BFGL-NGS-58465     | 0        | 33575261 |
| 25 | ARS-BFGL-BAC-46980     | 0        | 33603349 |
| 25 | ARS-BFGL-BAC-46971     | 0        | 33626520 |
| 25 | ARS-BFGL-BAC-45301     | 0        | 33653400 |
| 25 | ARS-BFGL-NGS-25946     | 0        | 33676156 |
| 25 | ARS-BFGL-NGS-32883     | 0        | 33773540 |
| 25 | ARS-BFGL-NGS-104568    | 0        | 33803849 |
| 25 | ARS-BFGL-NGS-111214    | 0        | 33831631 |
| 25 | ARS-BFGL-NGS-44485     | 0        | 33852697 |
| 25 | ARS-BFGL-NGS-106263    | 0        | 33876914 |
| 25 | Hapmap48825-BTA-60019  | 0        | 33920843 |
| 25 | ARS-BFGL-BAC-41359     | 0        | 33958794 |
| 25 | ARS-BFGL-NGS-37872     | 0        | 33988481 |
| 25 | ARS-BFGL-NGS-66429     | 0        | 34025400 |
| 25 | ARS-BFGL-BAC-37410     | 34055277 |          |
| 25 | ARS-BFGL-NGS-13230     | 34072990 |          |
| 25 | ARS-BFGL-BAC-44697     | 0        | 34112565 |
| 25 | ARS-BFGL-NGS-28695     | 0        | 34144055 |
| 25 | ARS-BFGL-BAC-42130     | 0        | 34166184 |
| 25 | ARS-BFGL-BAC-42122     | 0        | 34193877 |

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| 25 | ARS-BFGL-NGS-98487    | 0        | 34233226 |
| 25 | ARS-BFGL-BAC-38364    | 0        | 34256781 |
| 25 | ARS-BFGL-NGS-85281    | 0        | 34280737 |
| 25 | ARS-BFGL-NGS-42647    | 0        | 34324170 |
| 25 | ARS-BFGL-BAC-38947    | 0        | 34351018 |
| 25 | ARS-BFGL-BAC-38942    | 0        | 34374432 |
| 25 | ARS-BFGL-NGS-38489    | 0        | 34413958 |
| 25 | ARS-BFGL-BAC-39503    | 0        | 34445886 |
| 25 | ARS-BFGL-NGS-10144    | 0        | 34481593 |
| 25 | ARS-BFGL-NGS-79609    | 0        | 34512995 |
| 25 | ARS-BFGL-NGS-96615    | 0        | 34535480 |
| 25 | ARS-BFGL-NGS-106428   | 0        | 34565592 |
| 25 | ARS-BFGL-NGS-88403    | 0        | 34596606 |
| 25 | ARS-BFGL-BAC-38871    | 0        | 34622211 |
| 25 | ARS-BFGL-NGS-104141   | 0        | 34643812 |
| 25 | ARS-BFGL-BAC-43226    | 0        | 34663848 |
| 25 | ARS-BFGL-NGS-75075    | 0        | 34684826 |
| 25 | ARS-BFGL-NGS-73240    | 0        | 34722408 |
| 25 | ARS-BFGL-NGS-115222   | 0        | 34770404 |
| 25 | ARS-BFGL-NGS-71416    | 0        | 34800159 |
| 25 | ARS-BFGL-NGS-25988    | 0        | 34827377 |
| 25 | ARS-BFGL-NGS-79064    | 0        | 34851458 |
| 25 | ARS-BFGL-NGS-57960    | 0        | 34887253 |
| 25 | ARS-BFGL-NGS-63889    | 0        | 34945286 |
| 25 | ARS-BFGL-NGS-118309   | 0        | 34984182 |
| 25 | ARS-BFGL-NGS-54279    | 0        | 35051317 |
| 25 | ARS-BFGL-NGS-13985    | 0        | 35071379 |
| 25 | ARS-BFGL-BAC-34490    | 35105351 |          |
| 25 | ARS-BFGL-NGS-119668   | 0        | 35140504 |
| 25 | ARS-BFGL-BAC-47077    | 0        | 35164634 |
| 25 | ARS-BFGL-NGS-18088    | 0        | 35187979 |
| 25 | ARS-BFGL-NGS-75154    | 0        | 35212826 |
| 25 | ARS-BFGL-BAC-43936    | 0        | 35246368 |
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| 25 | ARS-BFGL-NGS-11116    | 0        | 35315115 |
| 25 | Hapmap42263-BTA-60093 | 0        | 35342491 |
| 25 | ARS-BFGL-BAC-43250    | 0        | 35368558 |
| 25 | ARS-BFGL-NGS-111585   | 0        | 35429971 |
| 25 | ARS-BFGL-NGS-25882    | 0        | 35483804 |
| 25 | ARS-BFGL-BAC-42642    | 0        | 35532374 |
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| 25 | ARS-BFGL-NGS-28167    | 0        | 35623801 |
| 25 | ARS-BFGL-NGS-107782   | 0        | 35657709 |
| 25 | BTA-121467-no-rs      | 0        | 35713510 |
| 25 | ARS-BFGL-NGS-41383    | 0        | 35741717 |
| 25 | ARS-BFGL-NGS-74596    | 0        | 35776622 |
| 25 | ARS-BFGL-NGS-52638    | 0        | 35801651 |
| 25 | ARS-BFGL-NGS-24832    | 0        | 35853810 |
| 25 | ARS-BFGL-NGS-30323    | 0        | 35909653 |
| 25 | ARS-BFGL-NGS-38544    | 0        | 35928367 |
| 25 | ARS-BFGL-NGS-79606    | 0        | 35994174 |
| 25 | ARS-BFGL-NGS-10694    | 0        | 36067715 |
| 25 | ARS-BFGL-NGS-113474   | 0        | 36201470 |
| 25 | ARS-BFGL-NGS-59259    | 0        | 36234087 |

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| 25 | ARS-BFGL-NGS-94708             | 0        | 36265032 |  |
| 25 | ARS-BFGL-NGS-29143             | 0        | 36285839 |  |
| 25 | ARS-BFGL-NGS-20432             | 0        | 36309252 |  |
| 25 | ARS-BFGL-NGS-21215             | 0        | 36339896 |  |
| 25 | ARS-BFGL-NGS-111042            | 0        | 36361835 |  |
| 25 | Hapmap52775-rs29010405         | 0        | 36383338 |  |
| 25 | ARS-BFGL-NGS-101212            | 0        | 36413374 |  |
| 25 | ARS-BFGL-NGS-13197             | 0        | 36448529 |  |
| 25 | ARS-BFGL-NGS-70320             | 36472030 |          |  |
| 25 | ARS-BFGL-NGS-21280             | 36493458 |          |  |
| 25 | ARS-BFGL-NGS-57630             | 36514994 |          |  |
| 25 | BTA-60112-no-rs                | 0        | 36604505 |  |
| 25 | ARS-BFGL-NGS-84704             | 0        | 36625127 |  |
| 25 | BTA-60114-no-rs                | 0        | 36679317 |  |
| 25 | BTA-72591-no-rs                | 0        | 36682561 |  |
| 25 | ARS-BFGL-NGS-49790             | 36709894 |          |  |
| 25 | Hapmap39496-BTA-60118          | 0        | 36786067 |  |
| 25 | ARS-BFGL-NGS-31028             | 0        | 36818334 |  |
| 25 | ARS-BFGL-NGS-16480             | 36873499 |          |  |
| 25 | Hapmap39666-BTA-60132          | 0        | 36903786 |  |
| 25 | ARS-BFGL-BAC-40054             | 0        | 37006628 |  |
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| 25 | ARS-BFGL-NGS-86512             | 0        | 37240065 |  |
| 25 | ARS-BFGL-NGS-109920            | 0        | 37358616 |  |
| 25 | Hapmap40770-BTA-60247          | 0        | 37526830 |  |
| 25 | ARS-BFGL-NGS-43837             | 0        | 37598922 |  |
| 25 | ARS-BFGL-NGS-76406             | 0        | 37634505 |  |
| 25 | ARS-BFGL-NGS-116342            | 0        | 37656205 |  |
| 25 | Hapmap31758-BTA-138589         | 0        | 37670373 |  |
| 25 | ARS-BFGL-NGS-45488             | 0        | 37693781 |  |
| 25 | ARS-BFGL-NGS-16430             | 37783875 |          |  |
| 25 | ARS-BFGL-NGS-23455             | 0        | 37814617 |  |
| 25 | ARS-BFGL-NGS-94757             | 0        | 37870957 |  |
| 25 | ARS-BFGL-NGS-34168             | 0        | 37899945 |  |
| 25 | ARS-BFGL-NGS-115067            | 0        | 37927752 |  |
| 25 | Hapmap53354-rs29013464         | 0        | 37958335 |  |
| 25 | ARS-BFGL-NGS-26452             | 0        | 37988321 |  |
| 25 | ARS-BFGL-NGS-90680             | 38122122 |          |  |
| 25 | ARS-BFGL-NGS-32440             | 0        | 38142895 |  |
| 25 | Hapmap36343-SCAFFOLD206036_438 | 0        | 38171850 |  |
| 25 | ARS-BFGL-NGS-73909             | 0        | 38232904 |  |
| 25 | BTA-58674-no-rs                | 0        | 38260897 |  |
| 25 | ARS-BFGL-NGS-83242             | 0        | 38283088 |  |
| 25 | ARS-BFGL-NGS-36333             | 0        | 38330924 |  |
| 25 | ARS-BFGL-NGS-28673             | 0        | 38357005 |  |
| 25 | ARS-BFGL-NGS-95918             | 0        | 38377594 |  |
| 25 | UA-IFASA-6752                  | 0        | 38560656 |  |
| 25 | ARS-BFGL-NGS-37948             | 0        | 38660560 |  |
| 25 | Hapmap41913-BTA-60271          | 0        | 38698430 |  |
| 25 | ARS-BFGL-BAC-40138             | 0        | 38736596 |  |
| 25 | ARS-BFGL-NGS-22963             | 0        | 38856905 |  |
| 25 | ARS-BFGL-NGS-82339             | 0        | 38898601 |  |
| 25 | Hapmap57520-rs29013228         | 0        | 38938896 |  |
| 25 | Hapmap52144-ss46526472         | 0        | 38961935 |  |

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| 25 | ARS-BFGL-NGS-37744                    | 0 | 38994661 |  |  |
| 25 | ARS-BFGL-NGS-43833                    | 0 | 39066743 |  |  |
| 25 | ARS-BFGL-NGS-29419                    | 0 | 39112932 |  |  |
| 25 | BTA-60358-no-rs                       | 0 | 39197736 |  |  |
| 25 | ARS-BFGL-NGS-99980                    |   | 39261659 |  |  |
| 25 | ARS-BFGL-NGS-105741                   | 0 | 39286957 |  |  |
| 25 | Hapmap58114-rs29014516                | 0 | 39312988 |  |  |
| 25 | ARS-BFGL-NGS-30410                    |   | 39341426 |  |  |
| 25 | ARS-BFGL-NGS-11871                    | 0 | 39404142 |  |  |
| 25 | ARS-BFGL-NGS-66266                    | 0 | 39424763 |  |  |
| 25 | ARS-BFGL-NGS-43247                    | 0 | 39468067 |  |  |
| 25 | ARS-BFGL-NGS-60739                    | 0 | 39495358 |  |  |
| 25 | ARS-BFGL-NGS-103770                   | 0 | 39518953 |  |  |
| 25 | ARS-BFGL-NGS-19270                    | 0 | 39544407 |  |  |
| 25 | ARS-BFGL-NGS-54056                    | 0 | 39709880 |  |  |
| 25 | ARS-BFGL-NGS-57087                    | 0 | 39756424 |  |  |
| 25 | ARS-BFGL-NGS-43022                    | 0 | 39785037 |  |  |
| 25 | ARS-BFGL-NGS-80667                    | 0 | 39819492 |  |  |
| 25 | ARS-BFGL-NGS-42041                    | 0 | 39844749 |  |  |
| 25 | ARS-BFGL-NGS-22271                    | 0 | 39874146 |  |  |
| 25 | ARS-BFGL-NGS-20585                    | 0 | 39921068 |  |  |
| 25 | ARS-BFGL-NGS-116112                   | 0 | 39992746 |  |  |
| 25 | BTA-60412-no-rs                       | 0 | 40022986 |  |  |
| 25 | ARS-BFGL-NGS-104036                   | 0 | 40060928 |  |  |
| 25 | ARS-BFGL-NGS-81763                    | 0 | 40113297 |  |  |
| 25 | ARS-BFGL-NGS-720                      | 0 | 40157894 |  |  |
| 25 | ARS-BFGL-NGS-92401                    | 0 | 40202030 |  |  |
| 25 | ARS-BFGL-NGS-101093                   | 0 | 40230382 |  |  |
| 25 | ARS-BFGL-NGS-89703                    | 0 | 40282215 |  |  |
| 25 | ARS-BFGL-NGS-115197                   | 0 | 40308955 |  |  |
| 25 | BTA-60438-no-rs                       | 0 | 40341603 |  |  |
| 25 | ARS-BFGL-NGS-99646                    | 0 | 40376753 |  |  |
| 25 | ARS-BFGL-NGS-119457                   | 0 | 40406561 |  |  |
| 25 | ARS-BFGL-NGS-102877                   | 0 | 40436393 |  |  |
| 25 | ARS-BFGL-NGS-23407                    | 0 | 40480346 |  |  |
| 25 | Hapmap51005-BTA-60474                 | 0 | 40655616 |  |  |
| 25 | Hapmap47132-BTA-91548                 | 0 | 40730047 |  |  |
| 25 | ARS-BFGL-NGS-13398                    | 0 | 40785528 |  |  |
| 25 | ARS-BFGL-NGS-114447                   | 0 | 40827689 |  |  |
| 25 | ARS-USMARC-Parent-AY942198-rs29003010 | 0 | 40851475 |  |  |
| 25 | ARS-BFGL-NGS-112894                   | 0 | 40862647 |  |  |
| 25 | ARS-BFGL-NGS-74733                    | 0 | 40907003 |  |  |
| 25 | ARS-BFGL-NGS-16579                    | 0 | 40940951 |  |  |
| 25 | ARS-BFGL-NGS-108347                   | 0 | 40963341 |  |  |
| 25 | Hapmap30960-BTC-030209                | 0 | 41018073 |  |  |
| 25 | ARS-BFGL-NGS-55884                    | 0 | 41065193 |  |  |
| 25 | Hapmap31341-BTC-065490                | 0 | 41100355 |  |  |
| 25 | ARS-BFGL-NGS-42902                    | 0 | 41191025 |  |  |
| 25 | ARS-BFGL-BAC-47313                    | 0 | 41213862 |  |  |
| 25 | ARS-BFGL-NGS-22044                    | 0 | 41274779 |  |  |
| 25 | ARS-BFGL-NGS-65615                    | 0 | 41309842 |  |  |
| 25 | Hapmap30413-BTC-031509                | 0 | 41321020 |  |  |
| 25 | Hapmap27068-BTC-031603                | 0 | 41370241 |  |  |
| 25 | ARS-BFGL-NGS-38880                    |   | 41398074 |  |  |

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| 25 | ARS-BFGL-NGS-36624               | 0        | 41497446 |        |
| 25 | ARS-BFGL-NGS-18654               | 0        | 41569490 |        |
| 25 | ARS-BFGL-NGS-30598               | 0        | 41596286 |        |
| 25 | ARS-BFGL-NGS-89877               | 0        | 41624510 |        |
| 25 | ARS-BFGL-NGS-32207               | 0        | 41646364 |        |
| 25 | ARS-BFGL-NGS-33887               | 0        | 41703966 |        |
| 25 | ARS-BFGL-NGS-85430               | 41766398 |          |        |
| 25 | ARS-BFGL-NGS-39241               | 0        | 41813524 |        |
| 25 | ARS-BFGL-NGS-100661              | 0        | 41841016 |        |
| 25 | Hapmap31693-BTC-072709           | 0        | 41849369 |        |
| 25 | ARS-BFGL-BAC-48130               | 0        | 41871343 |        |
| 25 | ARS-BFGL-NGS-55048               | 0        | 41908941 |        |
| 25 | ARS-BFGL-NGS-43689               | 0        | 41935313 |        |
| 25 | ARS-BFGL-NGS-43920               | 0        | 41970282 |        |
| 25 | Hapmap24768-BTC-058762           | 0        | 42006514 |        |
| 25 | BTA-03469-no-rs                  | 0        | 42069207 |        |
| 25 | ARS-BFGL-NGS-33630               | 42119129 |          |        |
| 25 | ARS-BFGL-NGS-30199               | 0        | 42150487 |        |
| 25 | BTA-60516-no-rs                  | 0        | 42189451 |        |
| 25 | ARS-BFGL-NGS-22468               | 0        | 42231003 |        |
| 25 | ARS-BFGL-NGS-21354               | 0        | 42269092 |        |
| 25 | ARS-BFGL-NGS-36391               | 0        | 42296069 |        |
| 25 | ARS-BFGL-NGS-26308               | 0        | 42343345 |        |
| 25 | ARS-BFGL-NGS-101981              | 0        | 42364359 |        |
| 25 | ARS-BFGL-NGS-12443               | 0        | 42609054 |        |
| 25 | ARS-BFGL-NGS-116071              | 0        | 42631146 |        |
| 25 | ARS-BFGL-NGS-34717               | 0        | 42640462 |        |
| 25 | ARS-BFGL-NGS-30953               | 0        | 42687812 |        |
| 25 | ARS-BFGL-NGS-27183               | 0        | 42726313 |        |
| 25 | ARS-BFGL-NGS-35357               | 0        | 42768470 |        |
| 25 | ARS-BFGL-NGS-103039              | 0        | 42799212 |        |
| 25 | ARS-BFGL-NGS-115796              | 0        | 42851121 |        |
| 26 | Hapmap32062-BTA-138668           | 0        | 634169   |        |
| 26 | Hapmap48407-BTA-60956            | 0        | 726780   |        |
| 26 | Hapmap39418-BTA-61060            | 0        | 756489   |        |
| 26 | Hapmap36306-SCAFFOLD246909_16859 | 0        |          | 837967 |
| 26 | BTB-02048878                     | 0        | 874754   |        |
| 26 | BTA-61940-no-rs                  | 0        | 918433   |        |
| 26 | BTB-00918897                     | 0        | 968330   |        |
| 26 | BTB-01783951                     | 0        | 1012643  |        |
| 26 | Hapmap45824-BTA-21209            | 0        | 1065894  |        |
| 26 | BTB-00918966                     | 0        | 1168365  |        |
| 26 | BTB-01735218                     | 0        | 1200750  |        |
| 26 | ARS-BFGL-NGS-36475               | 0        | 1272307  |        |
| 26 | ARS-BFGL-NGS-29458               | 0        | 1292508  |        |
| 26 | BTB-01518195                     | 0        | 1344063  |        |
| 26 | BTB-01518178                     | 0        | 1390273  |        |
| 26 | ARS-BFGL-NGS-116942              | 0        | 1419676  |        |
| 26 | BTB-01518122                     | 0        | 1460436  |        |
| 26 | BTB-01347410                     | 0        | 1577113  |        |
| 26 | BTB-01347429                     | 0        | 1617952  |        |
| 26 | ARS-BFGL-NGS-110789              | 0        | 1637300  |        |
| 26 | BTB-01753170                     | 0        | 1710621  |        |
| 26 | BTB-01347735                     | 0        | 1819162  |        |

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| 26 | ARS-BFGL-NGS-101098    | 0 | 1847895 |
| 26 | BTB-01734684           | 0 | 2001199 |
| 26 | BTB-00014012           | 0 | 2253944 |
| 26 | BTA-60878-no-rs        | 0 | 2343667 |
| 26 | Hapmap55647-rs29012488 | 0 | 2405336 |
| 26 | Hapmap44106-BTA-60914  | 0 | 2452597 |
| 26 | BTB-01886966           | 0 | 2519854 |
| 26 | BTB-01767954           | 0 | 2579823 |
| 26 | ARS-BFGL-NGS-73431     | 0 | 2648036 |
| 26 | BTB-02042071           | 0 | 2687667 |
| 26 | BTB-01962597           | 0 | 2752175 |
| 26 | ARS-BFGL-NGS-100500    | 0 | 2806734 |
| 26 | ARS-BFGL-NGS-41355     | 0 | 2849216 |
| 26 | Hapmap51817-BTA-22015  | 0 | 2915575 |
| 26 | Hapmap60383-rs29019554 | 0 | 3010798 |
| 26 | Hapmap41490-BTA-24504  | 0 | 3046047 |
| 26 | Hapmap55512-rs29011234 | 0 | 3087092 |
| 26 | Hapmap44471-BTA-61074  | 0 | 3139603 |
| 26 | BTA-119187-no-rs       | 0 | 3226995 |
| 26 | Hapmap25344-BTA-163589 | 0 | 3262473 |
| 26 | BTB-01967262           | 0 | 3308703 |
| 26 | Hapmap60803-rs29013514 | 0 | 3358903 |
| 26 | BTB-00919987           | 0 | 3399538 |
| 26 | BTB-01703941           | 0 | 3475031 |
| 26 | BTA-61213-no-rs        | 0 | 3524161 |
| 26 | ARS-BFGL-NGS-46925     | 0 | 3548056 |
| 26 | BTA-61389-no-rs        | 0 | 3618349 |
| 26 | BTB-00920094           | 0 | 3689522 |
| 26 | BTB-00920216           | 0 | 3772596 |
| 26 | ARS-BFGL-NGS-102718    | 0 | 3835287 |
| 26 | BTB-00920286           | 0 | 3884506 |
| 26 | BTB-00920322           | 0 | 3930593 |
| 26 | BTA-61571-no-rs        | 0 | 3955269 |
| 26 | BTA-61580-no-rs        | 0 | 3984807 |
| 26 | BTB-00920624           | 0 | 4100470 |
| 26 | BTB-00920641           | 0 | 4129816 |
| 26 | BTB-00920733           | 0 | 4160853 |
| 26 | Hapmap48830-BTA-61718  | 0 | 4204767 |
| 26 | ARS-BFGL-NGS-96550     | 0 | 4248936 |
| 26 | Hapmap55042-rs29017686 | 0 | 4304365 |
| 26 | BTB-00921053           | 0 | 4350094 |
| 26 | BTB-00921095           | 0 | 4397384 |
| 26 | ARS-BFGL-NGS-106298    | 0 | 4511531 |
| 26 | BTB-00921166           | 0 | 4558899 |
| 26 | BTB-01771371           | 0 | 4600968 |
| 26 | BTB-01806388           | 0 | 4731392 |
| 26 | BTB-01806486           | 0 | 4754531 |
| 26 | ARS-BFGL-NGS-76430     | 0 | 4781510 |
| 26 | ARS-BFGL-NGS-26848     | 0 | 4840609 |
| 26 | BTB-01413749           | 0 | 4972470 |
| 26 | ARS-BFGL-NGS-116057    | 0 | 5006481 |
| 26 | ARS-BFGL-NGS-66659     | 0 | 5050225 |
| 26 | BTB-01413341           | 0 | 5094776 |
| 26 | Hapmap60861-rs29018356 | 0 | 5258082 |

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| 26 | ARS-BFGL-NGS-92269             | 0       | 5288263 |         |
| 26 | ARS-BFGL-NGS-10056             | 0       | 5315170 |         |
| 26 | ARS-BFGL-NGS-80925             | 0       | 5364728 |         |
| 26 | Hapmap27890-BTA-157655         | 0       | 5387056 |         |
| 26 | BTB-01725142                   | 0       | 5424156 |         |
| 26 | BTA-20375-no-rs                | 0       | 5472360 |         |
| 26 | ARS-BFGL-NGS-13248             | 0       | 5504271 |         |
| 26 | Hapmap54064-rs29011996         | 0       | 5526925 |         |
| 26 | ARS-BFGL-NGS-112525            | 0       | 5610648 |         |
| 26 | BTB-00919035                   | 0       | 5673970 |         |
| 26 | BTB-00919313                   | 0       | 5929244 |         |
| 26 | ARS-BFGL-NGS-110961            | 0       | 5990573 |         |
| 26 | ARS-BFGL-NGS-70970             | 0       | 6051502 |         |
| 26 | ARS-BFGL-NGS-111804            | 0       | 6092833 |         |
| 26 | Hapmap42273-BTA-61984          | 0       | 6288576 |         |
| 26 | ARS-BFGL-NGS-66554             | 0       | 6375086 |         |
| 26 | Hapmap49077-BTA-19819          | 0       | 6437290 |         |
| 26 | BTB-00484645                   | 0       | 6487986 |         |
| 26 | BTB-00484715                   | 0       | 6548506 |         |
| 26 | Hapmap26496-BTA-27708          | 0       | 6594101 |         |
| 26 | BTA-61982-no-rs                | 0       | 6620890 |         |
| 26 | BTB-00923166                   | 0       | 6653695 |         |
| 26 | ARS-BFGL-NGS-98526             | 0       | 6692455 |         |
| 26 | BTB-02057686                   | 0       | 6741237 |         |
| 26 | ARS-BFGL-NGS-42532             | 0       | 6777353 |         |
| 26 | Hapmap60922-rs29024937         | 0       | 6860529 |         |
| 26 | ARS-BFGL-NGS-46690             | 6907224 |         |         |
| 26 | ARS-BFGL-NGS-73895             | 0       | 6948695 |         |
| 26 | ARS-BFGL-NGS-86536             | 0       | 6987898 |         |
| 26 | Hapmap41711-BTA-99983          | 0       | 7015179 |         |
| 26 | ARS-BFGL-NGS-106308            | 0       | 7062184 |         |
| 26 | ARS-BFGL-NGS-10114             | 0       | 7171642 |         |
| 26 | ARS-BFGL-NGS-47701             | 0       | 7251671 |         |
| 26 | Hapmap33924-BES8_Contig245_678 | 0       |         | 7302860 |
| 26 | Hapmap38617-BTA-61974          | 0       | 7335203 |         |
| 26 | BTB-00922910                   | 0       | 7375138 |         |
| 26 | BTA-61968-no-rs                | 0       | 7457878 |         |
| 26 | ARS-BFGL-NGS-58471             | 0       | 7528354 |         |
| 26 | BTA-61958-no-rs                | 0       | 7568757 |         |
| 26 | Hapmap48832-BTA-61957          | 0       | 7589436 |         |
| 26 | ARS-BFGL-NGS-82901             | 0       | 7627567 |         |
| 26 | Hapmap47505-BTA-111929         | 0       | 7653183 |         |
| 26 | BTB-01077939                   | 0       | 7685110 |         |
| 26 | ARS-BFGL-NGS-110280            | 0       | 7720139 |         |
| 26 | ARS-BFGL-NGS-43507             | 0       | 7761759 |         |
| 26 | BTA-113587-no-rs               | 0       | 7799706 |         |
| 26 | BTB-01078268                   | 0       | 7846224 |         |
| 26 | BTB-01078331                   | 0       | 7900988 |         |
| 26 | BTA-113588-no-rs               | 0       | 7932648 |         |
| 26 | BTB-01957902                   | 0       | 7984752 |         |
| 26 | BTA-113590-no-rs               | 0       | 8035401 |         |
| 26 | Hapmap40338-BTA-113591         | 0       | 8093918 |         |
| 26 | ARS-BFGL-NGS-109705            | 0       | 8129819 |         |
| 26 | ARS-BFGL-NGS-57757             | 0       | 8195509 |         |

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| 26 | ARS-USMARC-Parent-DQ990834-rs29013727 | 0 | 8221270  |
| 26 | BTB-01078829                          | 0 | 8278702  |
| 26 | BTB-01078857                          | 0 | 8327230  |
| 26 | BTA-113604-no-rs                      | 0 | 8356096  |
| 26 | ARS-BFGL-NGS-37164                    | 0 | 8392511  |
| 26 | ARS-BFGL-NGS-40201                    | 0 | 8434620  |
| 26 | BTB-01882638                          | 0 | 8501096  |
| 26 | Hapmap48207-BTA-119935                | 0 | 8539808  |
| 26 | BTA-119936-no-rs                      | 0 | 8564813  |
| 26 | ARS-BFGL-NGS-40660                    | 0 | 8695518  |
| 26 | BTB-01442451                          | 0 | 8719722  |
| 26 | Hapmap59051-rs29015731                | 0 | 8769852  |
| 26 | BTA-93559-no-rs                       | 0 | 8791126  |
| 26 | BTB-01442797                          | 0 | 8842020  |
| 26 | Hapmap35846-SCAFFOLD75504_4732        | 0 | 8887209  |
| 26 | Hapmap51682-BTA-111279                | 0 | 8916487  |
| 26 | ARS-BFGL-NGS-26337                    | 0 | 8961240  |
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| 26 | BTB-01211987                          | 0 | 9078964  |
| 26 | BTB-01212072                          | 0 | 9113734  |
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| 26 | BTA-111275-no-rs                      | 0 | 9195089  |
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| 26 | ARS-BFGL-NGS-60176                    | 0 | 9305328  |
| 26 | ARS-BFGL-NGS-19911                    | 0 | 9339995  |
| 26 | BTA-96427-no-rs                       | 0 | 9415082  |
| 26 | ARS-BFGL-NGS-46700                    | 0 | 9550462  |
| 26 | BTB-01457415                          | 0 | 9669992  |
| 26 | BTB-01457399                          | 0 | 9698553  |
| 26 | Hapmap41599-BTA-62001                 | 0 | 9725747  |
| 26 | BTB-00923512                          | 0 | 9753195  |
| 26 | BTA-62009-no-rs                       | 0 | 9794465  |
| 26 | BTA-19152-no-rs                       | 0 | 9832963  |
| 26 | ARS-BFGL-NGS-13746                    | 0 | 9866940  |
| 26 | ARS-BFGL-NGS-21987                    | 0 | 9898255  |
| 26 | ARS-BFGL-NGS-24552                    | 0 | 9947363  |
| 26 | Hapmap58185-rs29022254                | 0 | 10002077 |
| 26 | BTA-61910-no-rs                       | 0 | 10020259 |
| 26 | BTB-00949198                          | 0 | 10127164 |
| 26 | Hapmap60238-rs29019572                | 0 | 10176380 |
| 26 | BTA-61920-no-rs                       | 0 | 10214117 |
| 26 | BTA-61921-no-rs                       | 0 | 10255258 |
| 26 | BTA-18060-no-rs                       | 0 | 10310793 |
| 26 | Hapmap48831-BTA-61922                 | 0 | 10339734 |
| 26 | BTB-00949724                          | 0 | 10375915 |
| 26 | ARS-BFGL-NGS-21794                    | 0 | 10397362 |
| 26 | BTA-111681-no-rs                      | 0 | 10441474 |
| 26 | Hapmap39280-BTA-61928                 | 0 | 10504061 |
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| 26 | BTB-00923704                          | 0 | 10607350 |
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| 26 | BTB-00923786                          | 0 | 10717382 |
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| 26 | Hapmap44107-BTA-62034                 | 0 | 10768072 |  |
| 26 | BTA-111857-no-rs                      | 0 | 10815586 |  |
| 26 | BTB-01667023                          | 0 | 10854941 |  |
| 26 | BTB-00924013                          | 0 | 10922061 |  |
| 26 | BTA-62062-no-rs                       | 0 | 10941151 |  |
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| 26 | BTA-62081-no-rs                       | 0 | 11017588 |  |
| 26 | ARS-BFGL-NGS-118836                   | 0 | 11054561 |  |
| 26 | BTB-00925415                          | 0 | 11102722 |  |
| 26 | Hapmap54245-rs29024825                | 0 | 11135194 |  |
| 26 | BTA-08775-rs29022332                  | 0 | 11201198 |  |
| 26 | BTB-00925273                          | 0 | 11325724 |  |
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| 26 | BTB-01491485                          | 0 | 11478058 |  |
| 26 | ARS-BFGL-NGS-53115                    | 0 | 11528933 |  |
| 26 | ARS-BFGL-NGS-33881                    | 0 | 11736520 |  |
| 26 | Hapmap25649-BTA-62051                 | 0 | 11802443 |  |
| 26 | Hapmap38238-BTA-62050                 | 0 | 11822578 |  |
| 26 | BTA-62049-no-rs                       | 0 | 11840342 |  |
| 26 | ARS-BFGL-NGS-63853                    | 0 | 11942868 |  |
| 26 | BTB-01219956                          | 0 | 12064775 |  |
| 26 | Hapmap46894-BTA-89312                 | 0 | 12102814 |  |
| 26 | Hapmap60087-rs29027586                | 0 | 12136498 |  |
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| 26 | BTB-01908417                          | 0 | 12268427 |  |
| 26 | BTB-01841682                          | 0 | 12295284 |  |
| 26 | ARS-BFGL-NGS-41148                    | 0 | 12364119 |  |
| 26 | BTA-27150-no-rs                       | 0 | 12404200 |  |
| 26 | BTA-90299-no-rs                       | 0 | 12463857 |  |
| 26 | BTA-27162-no-rs                       | 0 | 12620533 |  |
| 26 | ARS-BFGL-NGS-73202                    | 0 | 12659840 |  |
| 26 | ARS-BFGL-NGS-109100                   | 0 | 12756039 |  |
| 26 | ARS-BFGL-NGS-85813                    | 0 | 12972133 |  |
| 26 | Hapmap48022-BTA-62041                 | 0 | 13078410 |  |
| 26 | ARS-USMARC-Parent-EF150946-rs29023666 | 0 | 13229219 |  |
| 26 | Hapmap35423-SCAFFOLD90532_1165        | 0 | 13229500 |  |
| 26 | ARS-BFGL-NGS-18                       | 0 | 13293856 |  |
| 26 | BTA-120467-no-rs                      | 0 | 13300472 |  |
| 26 | Hapmap26714-BTA-150277                | 0 | 13363059 |  |
| 26 | BTB-01134797                          | 0 | 13418877 |  |
| 26 | ARS-BFGL-NGS-16008                    | 0 | 13455013 |  |
| 26 | BTA-122125-no-rs                      | 0 | 13478928 |  |
| 26 | BTB-01134234                          | 0 | 13523116 |  |
| 26 | Hapmap34490-BES11_Contig376_1462      | 0 | 13552023 |  |
| 26 | Hapmap50513-BTA-94779                 | 0 | 13573878 |  |
| 26 | ARS-BFGL-NGS-16205                    | 0 | 13601655 |  |
| 26 | BTB-01134344                          | 0 | 13630418 |  |
| 26 | Hapmap38926-BTA-94783                 | 0 | 13697600 |  |
| 26 | Hapmap58550-rs29023071                | 0 | 13738456 |  |
| 26 | BTB-01134449                          | 0 | 13781200 |  |
| 26 | BTB-01134531                          | 0 | 13831127 |  |

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| 26 | BTA-94795-no-rs                  | 0 | 13848857 |          |
| 26 | ARS-BFGL-NGS-95979               | 0 | 13910096 |          |
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| 26 | BTA-94786-no-rs                  | 0 | 13969960 |          |
| 26 | Hapmap32599-BTA-149858           | 0 | 14025318 |          |
| 26 | BTA-12383-rs29024336             | 0 | 14072277 |          |
| 26 | ARS-BFGL-NGS-112275              | 0 | 14127433 |          |
| 26 | Hapmap52817-rs29011969           | 0 | 14155229 |          |
| 26 | Hapmap31461-BTA-150123           | 0 | 14248473 |          |
| 26 | ARS-BFGL-NGS-30940               |   | 14285303 |          |
| 26 | BTB-01131901                     | 0 | 14335765 |          |
| 26 | Hapmap48951-BTA-94291            | 0 | 14388255 |          |
| 26 | Hapmap49385-BTA-94287            | 0 | 14457492 |          |
| 26 | ARS-BFGL-NGS-104867              | 0 | 14512486 |          |
| 26 | ARS-BFGL-NGS-85864               | 0 | 14532797 |          |
| 26 | ARS-BFGL-NGS-106228              | 0 | 14586545 |          |
| 26 | ARS-BFGL-NGS-43498               | 0 | 14615635 |          |
| 26 | Hapmap26713-BTA-150121           | 0 | 14654938 |          |
| 26 | ARS-BFGL-NGS-31744               | 0 | 14694412 |          |
| 26 | ARS-BFGL-NGS-104216              | 0 | 14729936 |          |
| 26 | ARS-BFGL-NGS-36382               | 0 | 14755039 |          |
| 26 | Hapmap43106-BTA-94298            | 0 | 14814944 |          |
| 26 | ARS-BFGL-NGS-25406               | 0 | 14869035 |          |
| 26 | ARS-BFGL-NGS-84575               | 0 | 14912765 |          |
| 26 | ARS-BFGL-NGS-21545               | 0 | 14975265 |          |
| 26 | BTA-103707-no-rs                 | 0 | 15004908 |          |
| 26 | ARS-BFGL-NGS-14093               | 0 | 15080711 |          |
| 26 | ARS-BFGL-NGS-79514               | 0 | 15145083 |          |
| 26 | BTB-01290845                     | 0 | 15190314 |          |
| 26 | ARS-BFGL-NGS-98681               | 0 | 15231279 |          |
| 26 | ARS-BFGL-NGS-116151              | 0 | 15271746 |          |
| 26 | ARS-BFGL-NGS-43432               | 0 | 15336560 |          |
| 26 | BTA-18314-no-rs                  | 0 | 15383866 |          |
| 26 | BTB-01290713                     | 0 | 15415542 |          |
| 26 | Hapmap34283-BES10_Contig580_1086 | 0 |          | 15462849 |
| 26 | BTB-00861766                     | 0 | 15510890 |          |
| 26 | Hapmap35475-SCAFFOLD373916_456   | 0 |          | 15566243 |
| 26 | ARS-BFGL-NGS-99784               | 0 | 15752942 |          |
| 26 | BTB-00706838                     | 0 | 15824141 |          |
| 26 | BTB-00706857                     | 0 | 15861364 |          |
| 26 | ARS-BFGL-NGS-27313               | 0 | 15972936 |          |
| 26 | ARS-BFGL-NGS-44420               |   | 15995326 |          |
| 26 | BTB-01619101                     | 0 | 16035322 |          |
| 26 | Hapmap41670-BTA-87679            | 0 | 16091850 |          |
| 26 | ARS-BFGL-NGS-11389               | 0 | 16393292 |          |
| 26 | BTB-00929887                     | 0 | 16536774 |          |
| 26 | ARS-BFGL-NGS-12887               | 0 | 16570559 |          |
| 26 | ARS-BFGL-NGS-29299               | 0 | 16614068 |          |
| 26 | ARS-BFGL-NGS-17995               | 0 | 16662006 |          |
| 26 | ARS-BFGL-NGS-104463              | 0 | 16708402 |          |
| 26 | Hapmap54846-rs29022328           | 0 | 16753151 |          |
| 26 | Hapmap41595-BTA-60800            | 0 | 16791783 |          |
| 26 | Hapmap58930-rs29010490           | 0 | 16822073 |          |
| 26 | ARS-BFGL-NGS-118205              | 0 | 16862899 |          |

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| 26 | BTA-121474-no-rs                 | 0 | 16888208 |          |
| 26 | BTB-00924931                     | 0 | 16916860 |          |
| 26 | ARS-BFGL-NGS-33564               | 0 | 16945938 |          |
| 26 | ARS-BFGL-NGS-107286              | 0 | 16973274 |          |
| 26 | ARS-BFGL-NGS-48955               | 0 | 16999066 |          |
| 26 | ARS-BFGL-NGS-117172              | 0 | 17058843 |          |
| 26 | Hapmap34543-BES8_Contig453_955   | 0 |          | 17086237 |
| 26 | BTB-00926954                     | 0 | 17163979 |          |
| 26 | BTB-00926944                     | 0 | 17191819 |          |
| 26 | ARS-BFGL-NGS-106959              | 0 | 17225652 |          |
| 26 | ARS-BFGL-NGS-113660              | 0 | 17246984 |          |
| 26 | ARS-BFGL-NGS-17408               | 0 | 17279165 |          |
| 26 | ARS-BFGL-NGS-25217               | 0 | 17307507 |          |
| 26 | Hapmap51474-BTA-62082            | 0 | 17360205 |          |
| 26 | UA-IFASA-9551                    | 0 | 17389674 |          |
| 26 | BTA-62092-no-rs                  | 0 | 17437785 |          |
| 26 | ARS-BFGL-NGS-25903               | 0 | 17465791 |          |
| 26 | Hapmap42274-BTA-62094            | 0 | 17488500 |          |
| 26 | ARS-BFGL-NGS-32221               | 0 | 17554626 |          |
| 26 | ARS-BFGL-NGS-111577              | 0 | 17577730 |          |
| 26 | ARS-BFGL-NGS-21408               | 0 | 17609285 |          |
| 26 | ARS-BFGL-NGS-117063              | 0 | 17678631 |          |
| 26 | BTB-00926636                     | 0 | 17718880 |          |
| 26 | BTA-62125-no-rs                  | 0 | 17761012 |          |
| 26 | ARS-BFGL-NGS-110679              | 0 | 17815724 |          |
| 26 | ARS-BFGL-NGS-72889               | 0 | 17851349 |          |
| 26 | BTB-00926868                     | 0 | 17902587 |          |
| 26 | ARS-BFGL-NGS-104399              | 0 | 17958125 |          |
| 26 | BTB-00927181                     | 0 | 18067588 |          |
| 26 | Hapmap44394-BTA-62134            | 0 | 18169859 |          |
| 26 | ARS-BFGL-NGS-102625              | 0 | 18193246 |          |
| 26 | Hapmap57941-rs29016512           | 0 | 18219181 |          |
| 26 | ARS-BFGL-NGS-56898               | 0 | 18288540 |          |
| 26 | Hapmap26230-BTA-62144            | 0 | 18314646 |          |
| 26 | Hapmap48023-BTA-62139            | 0 | 18335079 |          |
| 26 | ARS-BFGL-NGS-41198               | 0 | 18377516 |          |
| 26 | ARS-BFGL-NGS-43938               | 0 | 18477722 |          |
| 26 | ARS-BFGL-NGS-40914               | 0 | 18612734 |          |
| 26 | ARS-BFGL-NGS-111739              | 0 | 18684200 |          |
| 26 | ARS-BFGL-NGS-110130              | 0 | 18734589 |          |
| 26 | ARS-BFGL-NGS-90129               | 0 | 18776144 |          |
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| 26 | ARS-BFGL-NGS-41056               | 0 | 18906121 |          |
| 26 | ARS-BFGL-NGS-107130              | 0 | 18931939 |          |
| 26 | ARS-BFGL-NGS-116902              | 0 | 18967997 |          |
| 26 | ARS-BFGL-NGS-25126               | 0 | 18994785 |          |
| 26 | Hapmap33971-BES11_Contig361_1110 | 0 |          | 19037832 |
| 26 | ARS-BFGL-NGS-67380               |   | 19097135 |          |
| 26 | ARS-BFGL-NGS-115120              | 0 | 19125108 |          |
| 26 | BTA-62184-no-rs                  | 0 | 19146857 |          |
| 26 | BTB-00928670                     | 0 | 19189998 |          |
| 26 | ARS-BFGL-NGS-113339              | 0 | 19237604 |          |
| 26 | Hapmap40565-BTA-62157            | 0 | 19263805 |          |

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| 26 | Hapmap36584-SCAFFOLD295127_4272 | 0        | 19297164 |
| 26 | Hapmap30237-BTA-138776          | 0        | 19323674 |
| 26 | ARS-BFGL-NGS-101911             | 0        | 19344348 |
| 26 | Hapmap51844-BTA-62166           | 0        | 19396842 |
| 26 | BTA-62167-no-rs                 | 0        | 19460476 |
| 26 | BTA-62171-no-rs                 | 0        | 19507012 |
| 26 | BTB-00928144                    | 0        | 19554675 |
| 26 | Hapmap51475-BTA-62174           | 0        | 19605912 |
| 26 | ARS-BFGL-NGS-107546             | 0        | 19657939 |
| 26 | BTB-01389311                    | 0        | 19686897 |
| 26 | ARS-BFGL-NGS-60526              | 0        | 19727292 |
| 26 | BTB-01389478                    | 0        | 19880677 |
| 26 | Hapmap38540-BTA-87288           | 0        | 19909212 |
| 26 | BTB-01389594                    | 0        | 19942669 |
| 26 | BTB-01985838                    | 0        | 19973761 |
| 26 | ARS-BFGL-NGS-10103              | 0        | 20012464 |
| 26 | ARS-BFGL-NGS-115980             | 0        | 20065602 |
| 26 | Hapmap41914-BTA-60848           | 0        | 20100276 |
| 26 | Hapmap54104-rs29010930          | 0        | 20203731 |
| 26 | ARS-BFGL-NGS-71584              | 0        | 20290497 |
| 26 | Hapmap49400-BTA-04628           | 0        | 20332013 |
| 26 | ARS-BFGL-NGS-23064              | 0        | 20365711 |
| 26 | ARS-BFGL-NGS-77668              | 0        | 20393457 |
| 26 | ARS-BFGL-NGS-33933              | 0        | 20423093 |
| 26 | ARS-BFGL-NGS-24640              | 20444634 |          |
| 26 | BTB-00930925                    | 0        | 20474308 |
| 26 | Hapmap50891-BTA-121476          | 0        | 20560149 |
| 26 | ARS-BFGL-NGS-17476              | 0        | 20597976 |
| 26 | BTA-60847-no-rs                 | 0        | 20618884 |
| 26 | Hapmap35702-SCAFFOLD240765_1255 | 0        | 20668949 |
| 26 | ARS-BFGL-NGS-39397              | 0        | 20716721 |
| 26 | ARS-BFGL-NGS-105540             | 0        | 20738708 |
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| 26 | Hapmap43894-BTA-60813           | 0        | 20813204 |
| 26 | BTB-00930720                    | 0        | 20903573 |
| 26 | Hapmap46411-BTA-15820           | 0        | 20984335 |
| 26 | Hapmap31825-BTA-158647          | 0        | 21056547 |
| 26 | Hapmap33073-BTA-162864          | 0        | 21180893 |
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| 26 | Hapmap47344-BTA-60858           | 0        | 21258113 |
| 26 | ARS-BFGL-NGS-110077             | 0        | 21322557 |
| 26 | ARS-BFGL-NGS-108305             | 0        | 21363670 |
| 26 | BTB-00931586                    | 0        | 21409429 |
| 26 | Hapmap32646-BTA-161322          | 0        | 21491243 |
| 26 | ARS-BFGL-NGS-115545             | 0        | 21537143 |
| 26 | ARS-BFGL-NGS-38040              | 21606683 |          |
| 26 | BTB-00931809                    | 0        | 21636291 |
| 26 | ARS-BFGL-NGS-114149             | 0        | 21702714 |
| 26 | ARS-BFGL-NGS-115299             | 0        | 21734523 |
| 26 | ARS-BFGL-NGS-72030              | 21800887 |          |
| 26 | ARS-BFGL-NGS-101374             | 0        | 21832456 |
| 26 | BTB-00932019                    | 0        | 21870752 |
| 26 | ARS-BFGL-NGS-116481             | 0        | 21977581 |
| 26 | Hapmap24832-BTA-138805          | 0        | 22016380 |

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| 26 | ARS-BFGL-NGS-64768     | 0 22083565 |
| 26 | BTB-00932332           | 0 22118554 |
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| 26 | BTB-00933843           | 0 22301642 |
| 26 | Hapmap53405-rs29014382 | 0 22339074 |
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| 26 | BTB-00933928           | 0 22446047 |
| 26 | Hapmap51875-BTA-110142 | 0 22526369 |
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| 26 | BTA-60900-no-rs        | 0 22557427 |
| 26 | Hapmap24165-BTA-60897  | 0 22587068 |
| 26 | ARS-BFGL-NGS-43159     | 0 22628269 |
| 26 | ARS-BFGL-NGS-110383    | 0 22648404 |
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| 26 | BTB-00932483           | 0 22826271 |
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| 26 | ARS-BFGL-NGS-39823     | 0 22951431 |
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| 26 | Hapmap38196-BTA-114696 | 0 23461479 |
| 26 | ARS-BFGL-NGS-19440     | 0 23549756 |
| 26 | Hapmap48222-BTA-122240 | 0 23641881 |
| 26 | Hapmap49372-BTA-91009  | 0 23689229 |
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| 26 | BTA-60935-no-rs        | 0 23876476 |
| 26 | ARS-BFGL-NGS-111090    | 0 23920913 |
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| 26 | BTB-00933365           | 0 24337880 |
| 26 | ARS-BFGL-NGS-102845    | 0 24401843 |
| 26 | ARS-BFGL-NGS-33708     | 0 24446490 |
| 26 | ARS-BFGL-NGS-21800     | 24477962   |
| 26 | ARS-BFGL-NGS-31501     | 0 24507253 |
| 26 | ARS-BFGL-NGS-10920     | 24531763   |

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| 26 | ARS-BFGL-NGS-18194              | 0        | 24575207 |          |
| 26 | BTA-60940-no-rs                 | 0        | 24604029 |          |
| 26 | ARS-BFGL-NGS-61995              | 0        | 24731198 |          |
| 26 | ARS-BFGL-NGS-118189             | 0        | 24786731 |          |
| 26 | BTB-00935528                    | 0        | 24835410 |          |
| 26 | Hapmap26669-BTA-138851          | 0        | 24916618 |          |
| 26 | ARS-BFGL-NGS-119249             | 0        | 24945559 |          |
| 26 | BTB-00933445                    | 0        | 24993254 |          |
| 26 | Hapmap53060-rs29020888          | 0        | 25032529 |          |
| 26 | BTB-00934644                    | 0        | 25117278 |          |
| 26 | ARS-BFGL-NGS-58864              | 0        | 25144793 |          |
| 26 | ARS-BFGL-NGS-21130              | 0        | 25170222 |          |
| 26 | ARS-BFGL-NGS-25894              | 0        | 25217555 |          |
| 26 | UA-IFASA-4715                   | 0        | 25314352 |          |
| 26 | BTB-00934189                    | 0        | 25355925 |          |
| 26 | ARS-BFGL-NGS-113644             | 0        | 25449591 |          |
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| 26 | BTA-02609-no-rs                 | 0        | 25501890 |          |
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| 26 | ARS-BFGL-NGS-17816              | 0        | 25880226 |          |
| 26 | ARS-BFGL-NGS-23822              | 0        | 25906309 |          |
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| 26 | ARS-BFGL-NGS-114371             | 0        | 25982293 |          |
| 26 | ARS-BFGL-NGS-35579              | 0        | 26058953 |          |
| 26 | Hapmap25945-BTA-61048           | 0        | 26084414 |          |
| 26 | ARS-BFGL-NGS-19700              | 26124236 |          |          |
| 26 | Hapmap61119-rs29026516          | 0        | 26171235 |          |
| 26 | Hapmap56205-rs29011326          | 0        | 26234033 |          |
| 26 | BTA-61038-no-rs                 | 0        | 26267018 |          |
| 26 | ARS-BFGL-NGS-65546              | 0        | 26296160 |          |
| 26 | Hapmap60409-rs29025943          | 0        | 26340616 |          |
| 26 | BTB-01124891                    | 0        | 26369697 |          |
| 26 | Hapmap41107-BTA-91216           | 0        | 26402625 |          |
| 26 | BTA-91223-no-rs                 | 0        | 26433407 |          |
| 26 | Hapmap36115-SCAFFOLD295529_6923 | 0        |          | 26462249 |
| 26 | ARS-BFGL-NGS-81009              | 0        | 26491674 |          |
| 26 | BTB-00935571                    | 0        | 26547375 |          |
| 26 | BTB-00935537                    | 0        | 26585557 |          |
| 26 | ARS-BFGL-NGS-20281              | 0        | 26598730 |          |
| 26 | BTB-01414534                    | 0        | 26696586 |          |
| 26 | Hapmap44533-BTA-23200           | 0        | 26733221 |          |
| 26 | Hapmap28763-BTA-162328          | 0        | 26757136 |          |
| 26 | BTB-01414504                    | 0        | 26797758 |          |
| 26 | Hapmap57957-rs29017349          | 0        | 26841116 |          |
| 26 | BTB-01856345                    | 0        | 26911622 |          |
| 26 | BTA-86449-no-rs                 | 0        | 26994093 |          |
| 26 | ARS-BFGL-NGS-10463              | 0        | 27042598 |          |
| 26 | BTA-86472-no-rs                 | 0        | 27074092 |          |
| 26 | BTB-02014990                    | 0        | 27173269 |          |
| 26 | ARS-BFGL-NGS-71848              | 0        | 27213271 |          |

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| 26 | BTA-87355-no-rs        | 0 | 27251857 |
| 26 | Hapmap55465-rs29015883 | 0 | 27282866 |
| 26 | BTA-122405-no-rs       | 0 | 27317513 |
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| 26 | BTA-96253-no-rs        | 0 | 27419209 |
| 26 | Hapmap49810-BTA-96248  | 0 | 27497280 |
| 26 | Hapmap27884-BTA-154626 | 0 | 27597261 |
| 26 | BTB-01880011           | 0 | 27638508 |
| 26 | Hapmap49155-BTA-40748  | 0 | 27783665 |
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| 26 | ARS-BFGL-NGS-30817     | 0 | 27873468 |
| 26 | Hapmap29376-BTA-72268  | 0 | 27894025 |
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| 26 | BTA-40753-no-rs        | 0 | 27972961 |
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| 26 | Hapmap46811-BTA-40771  | 0 | 28155692 |
| 26 | Hapmap42542-BTA-40776  | 0 | 28185697 |
| 26 | BTB-00675918           | 0 | 28214078 |
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| 26 | Hapmap60921-rs29024733 | 0 | 28368749 |
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| 26 | Hapmap53502-rs29017020 | 0 | 28544401 |
| 26 | ARS-BFGL-NGS-113744    | 0 | 28609937 |
| 26 | Hapmap50498-BTA-89147  | 0 | 28665513 |
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| 26 | Hapmap38478-BTA-20824  | 0 | 28723721 |
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| 26 | BTA-20833-no-rs        | 0 | 28932407 |
| 26 | ARS-BFGL-NGS-60856     | 0 | 29027326 |
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| 26 | BTA-61132-no-rs        | 0 | 29128988 |
| 26 | BTB-01929001           | 0 | 29170744 |
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| 26 | ARS-BFGL-NGS-16829     | 0 | 29698221 |
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| 26 | Hapmap44427-BTA-92700           | 0 | 29775954 |  |
| 26 | ARS-BFGL-NGS-109588             | 0 | 29803693 |  |
| 26 | Hapmap23820-BTA-149582          | 0 | 29838712 |  |
| 26 | Hapmap27608-BTA-149578          | 0 | 29863445 |  |
| 26 | BTB-01430967                    | 0 | 29896827 |  |
| 26 | ARS-BFGL-NGS-119488             | 0 | 29929536 |  |
| 26 | Hapmap59240-rs29019735          | 0 | 29951748 |  |
| 26 | ARS-BFGL-NGS-116214             | 0 | 29972396 |  |
| 26 | Hapmap38583-BTA-16451           | 0 | 30006329 |  |
| 26 | ARS-BFGL-NGS-509                | 0 | 30063699 |  |
| 26 | ARS-BFGL-NGS-11216              | 0 | 30115057 |  |
| 26 | BTB-01955763                    | 0 | 30146092 |  |
| 26 | Hapmap44206-BTA-119750          | 0 | 30168678 |  |
| 26 | Hapmap59603-rs29023552          | 0 | 30209142 |  |
| 26 | ARS-BFGL-NGS-32374              | 0 | 30249622 |  |
| 26 | BTA-105468-no-rs                | 0 | 30284187 |  |
| 26 | Hapmap24787-BTA-105457          | 0 | 30320284 |  |
| 26 | Hapmap45240-BTA-105455          | 0 | 30360218 |  |
| 26 | Hapmap25071-BTA-149164          | 0 | 30421065 |  |
| 26 | Hapmap23372-BTA-91325           | 0 | 30452407 |  |
| 26 | Hapmap43992-BTA-103071          | 0 | 30508089 |  |
| 26 | BTA-103072-no-rs                | 0 | 30544077 |  |
| 26 | BTB-01551119                    | 0 | 30573598 |  |
| 26 | ARS-BFGL-NGS-92020              | 0 | 30607485 |  |
| 26 | ARS-BFGL-NGS-21775              | 0 | 30657502 |  |
| 26 | Hapmap39763-BTA-61122           | 0 | 30678267 |  |
| 26 | ARS-BFGL-NGS-115277             | 0 | 30717345 |  |
| 26 | BTB-00937875                    | 0 | 30815555 |  |
| 26 | BTB-00937840                    | 0 | 30858995 |  |
| 26 | Hapmap38330-BTA-61119           | 0 | 30903998 |  |
| 26 | Hapmap60201-rs29018734          | 0 | 30940158 |  |
| 26 | BTA-61117-no-rs                 | 0 | 30963937 |  |
| 26 | Hapmap29749-BTA-61115           | 0 | 31006924 |  |
| 26 | ARS-BFGL-NGS-38183              | 0 | 31049759 |  |
| 26 | Hapmap49241-BTA-61105           | 0 | 31154453 |  |
| 26 | Hapmap26130-BTA-138908          | 0 | 31181513 |  |
| 26 | Hapmap40449-BTA-61103           | 0 | 31213256 |  |
| 26 | Hapmap47348-BTA-61100           | 0 | 31238221 |  |
| 26 | BTA-61099-no-rs                 | 0 | 31267471 |  |
| 26 | ARS-BFGL-NGS-63695              | 0 | 31287870 |  |
| 26 | Hapmap35185-BES3_Contig288_1358 | 0 | 31348288 |  |
| 26 | ARS-BFGL-NGS-23945              | 0 | 31439013 |  |
| 26 | ARS-BFGL-NGS-91860              | 0 | 31520567 |  |
| 26 | ARS-BFGL-NGS-62295              | 0 | 31555351 |  |
| 26 | ARS-BFGL-NGS-114723             | 0 | 31577458 |  |
| 26 | ARS-BFGL-NGS-38359              | 0 | 31617334 |  |
| 26 | BTB-00938365                    | 0 | 31650452 |  |
| 26 | ARS-BFGL-NGS-19538              | 0 | 31718007 |  |
| 26 | Hapmap57949-rs29017014          | 0 | 31764609 |  |
| 26 | BTA-61136-no-rs                 | 0 | 31791751 |  |
| 26 | Hapmap43896-BTA-61135           | 0 | 31843643 |  |
| 26 | ARS-BFGL-NGS-96746              | 0 | 31892540 |  |
| 26 | Hapmap48021-BTA-61134           | 0 | 31930415 |  |
| 26 | Hapmap32398-BTA-24913           | 0 | 31980622 |  |



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| 26 | ARS-BFGL-NGS-22838               | 0 | 32030774 |          |
| 26 | BTA-116271-no-rs                 | 0 | 32060721 |          |
| 26 | BTB-01334793                     | 0 | 32094947 |          |
| 26 | ARS-BFGL-NGS-103727              | 0 | 32129884 |          |
| 26 | ARS-BFGL-NGS-73350               | 0 | 32154699 |          |
| 26 | ARS-BFGL-NGS-14446               | 0 | 32213121 |          |
| 26 | Hapmap58837-rs29018727           | 0 | 32256878 |          |
| 26 | Hapmap24019-BTA-26327            | 0 | 32292212 |          |
| 26 | BTB-00755024                     | 0 | 32328191 |          |
| 26 | BTB-01631465                     | 0 | 32336734 |          |
| 26 | Hapmap30866-BTA-157287           | 0 | 32417235 |          |
| 26 | ARS-BFGL-NGS-89840               | 0 | 32442734 |          |
| 26 | ARS-BFGL-NGS-10818               | 0 | 32497450 |          |
| 26 | BTB-00938457                     | 0 | 32545785 |          |
| 26 | ARS-BFGL-NGS-92813               | 0 | 32601265 |          |
| 26 | ARS-BFGL-NGS-31090               |   | 32644710 |          |
| 26 | BTA-61163-no-rs                  | 0 | 32670961 |          |
| 26 | BTB-02036417                     | 0 | 32716808 |          |
| 26 | ARS-BFGL-NGS-38386               | 0 | 32736700 |          |
| 26 | ARS-BFGL-NGS-100042              | 0 | 32766500 |          |
| 26 | BTA-91041-no-rs                  | 0 | 32792279 |          |
| 26 | BTB-00938770                     | 0 | 32821171 |          |
| 26 | ARS-BFGL-NGS-119563              | 0 | 32851706 |          |
| 26 | ARS-BFGL-NGS-100251              | 0 | 32892811 |          |
| 26 | ARS-BFGL-NGS-118191              | 0 | 32915658 |          |
| 26 | BTA-61176-no-rs                  | 0 | 33003665 |          |
| 26 | ARS-BFGL-NGS-16835               | 0 | 33059584 |          |
| 26 | Hapmap32535-BTA-123313           | 0 | 33103128 |          |
| 26 | ARS-BFGL-NGS-80584               | 0 | 33153900 |          |
| 26 | ARS-BFGL-NGS-48262               | 0 | 33191302 |          |
| 26 | Hapmap56942-ss46526051           | 0 | 33234819 |          |
| 26 | BTB-00939142                     | 0 | 33276196 |          |
| 26 | BTA-61189-no-rs                  | 0 | 33306959 |          |
| 26 | BTB-00939179                     | 0 | 33337772 |          |
| 26 | BTB-00939286                     | 0 | 33399883 |          |
| 26 | BTB-00939306                     | 0 | 33443386 |          |
| 26 | ARS-BFGL-NGS-30327               | 0 | 33495295 |          |
| 26 | Hapmap28356-BTA-138950           | 0 | 33518628 |          |
| 26 | BTB-00939466                     | 0 | 33556275 |          |
| 26 | ARS-BFGL-NGS-42871               | 0 | 33583861 |          |
| 26 | Hapmap35278-BES11_Contig288_1189 | 0 |          | 33605534 |
| 26 | Hapmap48409-BTA-61200            | 0 | 33637025 |          |
| 26 | ARS-BFGL-NGS-110554              | 0 | 33658696 |          |
| 26 | ARS-BFGL-NGS-13609               | 0 | 33691408 |          |
| 26 | ARS-BFGL-NGS-105353              | 0 | 33716256 |          |
| 26 | ARS-BFGL-NGS-14                  | 0 | 33778915 |          |
| 26 | Hapmap30353-BTA-61336            | 0 | 33805612 |          |
| 26 | BTA-61348-no-rs                  | 0 | 33836268 |          |
| 26 | Hapmap48410-BTA-61358            | 0 | 33885893 |          |
| 26 | BTB-00939873                     | 0 | 33918405 |          |
| 26 | ARS-BFGL-NGS-58925               | 0 | 33962496 |          |
| 26 | ARS-BFGL-NGS-111714              | 0 | 34074630 |          |
| 26 | Hapmap24712-BTA-61417            | 0 | 34170639 |          |
| 26 | ARS-BFGL-NGS-61048               | 0 | 34218142 |          |

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| 26 | ARS-BFGL-NGS-12014     | 0        | 34270114 |
| 26 | ARS-BFGL-NGS-32090     | 34311810 |          |
| 26 | ARS-BFGL-NGS-111617    | 0        | 34358100 |
| 26 | ARS-BFGL-NGS-16336     | 0        | 34398368 |
| 26 | ARS-BFGL-NGS-63916     | 0        | 34436316 |
| 26 | ARS-BFGL-NGS-25187     | 0        | 34460340 |
| 26 | BTA-61386-no-rs        | 0        | 34537950 |
| 26 | ARS-BFGL-NGS-41415     | 0        | 34605253 |
| 26 | ARS-BFGL-NGS-93001     | 0        | 34695001 |
| 26 | ARS-BFGL-NGS-461       | 0        | 34736908 |
| 26 | BTA-100347-no-rs       | 0        | 34800551 |
| 26 | BTA-100341-no-rs       | 0        | 34821636 |
| 26 | Hapmap45330-BTA-100346 | 0        | 34841453 |
| 26 | ARS-BFGL-NGS-23255     | 0        | 34873014 |
| 26 | ARS-BFGL-NGS-94552     | 0        | 34955110 |
| 26 | ARS-BFGL-NGS-27911     | 0        | 35048102 |
| 26 | ARS-BFGL-NGS-45930     | 35123876 |          |
| 26 | ARS-BFGL-NGS-83234     | 0        | 35187167 |
| 26 | BTA-61224-no-rs        | 0        | 35327341 |
| 26 | Hapmap42605-BTA-61330  | 0        | 35360458 |
| 26 | Hapmap50419-BTA-61332  | 0        | 35434598 |
| 26 | BTB-01669542           | 0        | 35591865 |
| 26 | ARS-BFGL-NGS-111633    | 0        | 35619632 |
| 26 | Hapmap32845-BTA-152047 | 0        | 35662269 |
| 26 | BTB-01154857           | 0        | 35728924 |
| 26 | BTB-01154553           | 0        | 36056808 |
| 26 | Hapmap31234-BTA-99590  | 0        | 36103668 |
| 26 | Hapmap51107-BTA-99604  | 0        | 36158390 |
| 26 | BTA-11000-no-rs        | 0        | 36236584 |
| 26 | ARS-BFGL-NGS-100092    | 0        | 36287552 |
| 26 | ARS-BFGL-NGS-112819    | 0        | 36330565 |
| 26 | BTB-00283181           | 0        | 36378789 |
| 26 | Hapmap60760-rs29011138 | 0        | 36428581 |
| 26 | ARS-BFGL-NGS-40939     | 0        | 36478953 |
| 26 | BTB-00283237           | 0        | 36508584 |
| 26 | BTA-77888-no-rs        | 0        | 36542213 |
| 26 | BTB-01510894           | 0        | 36592364 |
| 26 | BTA-99472-no-rs        | 0        | 36631883 |
| 26 | ARS-BFGL-NGS-116502    | 0        | 36663874 |
| 26 | Hapmap58322-rs29013674 | 0        | 36734119 |
| 26 | ARS-BFGL-NGS-33634     | 0        | 36808909 |
| 26 | BTA-61435-no-rs        | 0        | 36844969 |
| 26 | BTA-61436-no-rs        | 0        | 36874611 |
| 26 | ARS-BFGL-NGS-104620    | 0        | 36905943 |
| 26 | BTA-21547-no-rs        | 0        | 36938045 |
| 26 | ARS-BFGL-NGS-81623     | 0        | 36959324 |
| 26 | BTB-01314304           | 0        | 36988650 |
| 26 | ARS-BFGL-NGS-12828     | 0        | 37018466 |
| 26 | ARS-BFGL-NGS-40727     | 0        | 37048074 |
| 26 | ARS-BFGL-NGS-82750     | 37203584 |          |
| 26 | BTA-93417-no-rs        | 0        | 37241021 |
| 26 | UA-IFASA-9391          | 0        | 37301677 |
| 26 | ARS-BFGL-NGS-115227    | 0        | 37336603 |
| 26 | ARS-BFGL-NGS-33292     | 0        | 37368988 |

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| 26 | BTA-61460-no-rs                  | 0 | 37389662 |          |
| 26 | ARS-BFGL-NGS-11526               | 0 | 37415036 |          |
| 26 | ARS-BFGL-NGS-75740               |   | 37441511 |          |
| 26 | ARS-BFGL-NGS-43058               | 0 | 37466186 |          |
| 26 | Hapmap41034-BTA-61477            | 0 | 37527870 |          |
| 26 | BTB-00941222                     | 0 | 37579568 |          |
| 26 | BTA-61482-no-rs                  | 0 | 37621755 |          |
| 26 | Hapmap41035-BTA-61488            | 0 | 37668932 |          |
| 26 | ARS-BFGL-NGS-24786               | 0 | 37708139 |          |
| 26 | ARS-BFGL-NGS-53731               | 0 | 37733926 |          |
| 26 | ARS-BFGL-NGS-95833               | 0 | 37797893 |          |
| 26 | ARS-BFGL-NGS-107207              | 0 | 37871121 |          |
| 26 | ARS-BFGL-NGS-105524              | 0 | 37898614 |          |
| 26 | UA-IFASA-9376                    | 0 | 37919585 |          |
| 26 | BTB-00942520                     | 0 | 37956801 |          |
| 26 | Hapmap38332-BTA-61490            | 0 | 37987418 |          |
| 26 | BTA-05179-no-rs                  | 0 | 38008649 |          |
| 26 | ARS-BFGL-NGS-100468              | 0 | 38060272 |          |
| 26 | Hapmap57696-rs29024036           | 0 | 38108260 |          |
| 26 | Hapmap58513-rs29024371           | 0 | 38147375 |          |
| 26 | ARS-BFGL-NGS-117047              | 0 | 38169833 |          |
| 26 | ARS-BFGL-NGS-114316              | 0 | 38204002 |          |
| 26 | ARS-USMARC-Parent-EF034086-no-rs | 0 |          | 38233337 |
| 26 | BTA-10577-no-rs                  | 0 | 38277491 |          |
| 26 | ARS-BFGL-NGS-114564              | 0 | 38404424 |          |
| 26 | ARS-BFGL-NGS-12990               | 0 | 38443689 |          |
| 26 | Hapmap58341-rs29009898           | 0 | 38469800 |          |
| 26 | BTA-61502-no-rs                  | 0 | 38585670 |          |
| 26 | Hapmap31761-BTA-138979           | 0 | 38726082 |          |
| 26 | ARS-BFGL-NGS-96701               | 0 | 38817824 |          |
| 26 | ARS-BFGL-NGS-39928               | 0 | 38846841 |          |
| 26 | ARS-BFGL-NGS-114768              | 0 | 38924276 |          |
| 26 | Hapmap50053-BTA-61516            | 0 | 38980475 |          |
| 26 | ARS-BFGL-NGS-95682               | 0 | 39033157 |          |
| 26 | ARS-BFGL-NGS-10510               |   | 39068477 |          |
| 26 | ARS-BFGL-NGS-111911              | 0 | 39121205 |          |
| 26 | ARS-BFGL-NGS-113216              | 0 | 39220494 |          |
| 26 | ARS-BFGL-NGS-61317               | 0 | 39288059 |          |
| 26 | ARS-BFGL-NGS-100107              | 0 | 39319670 |          |
| 26 | ARS-BFGL-NGS-115002              | 0 | 39343374 |          |
| 26 | Hapmap42736-BTA-93531            | 0 | 39370429 |          |
| 26 | BTA-93527-no-rs                  | 0 | 39390959 |          |
| 26 | ARS-BFGL-NGS-84251               | 0 | 39452485 |          |
| 26 | ARS-BFGL-NGS-66701               | 0 | 39485249 |          |
| 26 | ARS-BFGL-NGS-51210               |   | 39519293 |          |
| 26 | Hapmap30883-BTA-159927           | 0 | 39556637 |          |
| 26 | DPI-21                           | 0 | 39601498 |          |
| 26 | ARS-BFGL-NGS-46579               | 0 | 39655739 |          |
| 26 | Hapmap48829-BTA-61554            | 0 | 39681664 |          |
| 26 | ARS-BFGL-NGS-21474               | 0 | 39728315 |          |
| 26 | Hapmap8756-BTA-61552             | 0 | 39769366 |          |
| 26 | ARS-BFGL-NGS-39572               | 0 | 39880033 |          |
| 26 | ARS-BFGL-NGS-31426               | 0 | 39902180 |          |
| 26 | ARS-BFGL-NGS-17213               | 0 | 39931707 |          |

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| 26 | ARS-BFGL-NGS-10035              | 0 | 39952154 |          |
| 26 | ARS-BFGL-NGS-103038             | 0 | 39986299 |          |
| 26 | Hapmap24081-BTA-139000          | 0 | 40056717 |          |
| 26 | ARS-BFGL-NGS-116960             | 0 | 40104722 |          |
| 26 | ARS-BFGL-NGS-35758              | 0 | 40148550 |          |
| 26 | DPI-59                          | 0 | 40352074 |          |
| 26 | ARS-BFGL-NGS-115729             | 0 | 40388206 |          |
| 26 | ARS-BFGL-NGS-64085              | 0 | 40432824 |          |
| 26 | ARS-BFGL-NGS-42889              | 0 | 40519284 |          |
| 26 | Hapmap25594-BTA-152426          | 0 | 40592930 |          |
| 26 | BTA-100861-no-rs                | 0 | 40648090 |          |
| 26 | Hapmap30238-BTA-139005          | 0 | 40773670 |          |
| 26 | Hapmap33859-BES4_Contig360_1110 | 0 |          | 40814686 |
| 26 | ARS-BFGL-NGS-118736             | 0 | 40959791 |          |
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| 26 | Hapmap42269-BTA-61597           | 0 | 41041883 |          |
| 26 | ARS-BFGL-NGS-23638              | 0 | 41118722 |          |
| 26 | Hapmap36060-SCAFFOLD71490_809   | 0 |          | 41154335 |
| 26 | ARS-BFGL-NGS-111901             | 0 | 41183634 |          |
| 26 | BTB-00942916                    | 0 | 41230320 |          |
| 26 | ARS-BFGL-NGS-110207             | 0 | 41318595 |          |
| 26 | ARS-BFGL-NGS-10498              | 0 | 41341146 |          |
| 26 | Hapmap46715-BTA-61583           | 0 | 41383749 |          |
| 26 | ARS-BFGL-NGS-39607              | 0 | 41414375 |          |
| 26 | ARS-BFGL-NGS-119107             | 0 | 41441550 |          |
| 26 | ARS-BFGL-NGS-118654             | 0 | 41466267 |          |
| 26 | Hapmap52045-rs29025349          | 0 | 41544425 |          |
| 26 | Hapmap24499-BTA-61679           | 0 | 41595937 |          |
| 26 | BTA-61672-no-rs                 | 0 | 41635762 |          |
| 26 | BTB-00943770                    | 0 | 41679943 |          |
| 26 | ARS-BFGL-NGS-33804              | 0 | 41709612 |          |
| 26 | ARS-BFGL-NGS-27004              | 0 | 41762178 |          |
| 26 | DPI-31                          | 0 | 41824235 |          |
| 26 | BTA-61650-no-rs                 | 0 | 41850719 |          |
| 26 | BTA-61647-no-rs                 | 0 | 41887511 |          |
| 26 | ARS-BFGL-NGS-106897             | 0 | 41956121 |          |
| 26 | Hapmap24713-BTA-61641           | 0 | 42033314 |          |
| 26 | ARS-BFGL-NGS-111767             | 0 | 42070684 |          |
| 26 | Hapmap32066-BTA-139040          | 0 | 42147711 |          |
| 26 | ARS-BFGL-NGS-51570              |   | 42178883 |          |
| 26 | Hapmap43307-BTA-61631           | 0 | 42311312 |          |
| 26 | BTA-61698-no-rs                 | 0 | 42337633 |          |
| 26 | ARS-BFGL-NGS-104104             | 0 | 42371025 |          |
| 26 | ARS-BFGL-NGS-101156             | 0 | 42403875 |          |
| 26 | ARS-BFGL-NGS-35662              | 0 | 42425741 |          |
| 26 | ARS-BFGL-NGS-24375              | 0 | 42448432 |          |
| 26 | ARS-BFGL-NGS-28346              | 0 | 42471130 |          |
| 26 | ARS-BFGL-NGS-109765             | 0 | 42524744 |          |
| 26 | Hapmap49679-BTA-61690           | 0 | 42561633 |          |
| 26 | BTA-61688-no-rs                 | 0 | 42605901 |          |
| 26 | UA-IFASA-5698                   | 0 | 42673967 |          |
| 26 | ARS-BFGL-NGS-107539             | 0 | 42703980 |          |
| 26 | INRA-573                        | 0 | 42778213 |          |
| 26 | ARS-BFGL-NGS-62648              | 0 | 42807171 |          |

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| 26 | BTA-121499-no-rs       | 0 | 42831090 |
| 26 | ARS-BFGL-NGS-108850    | 0 | 42896381 |
| 26 | ARS-BFGL-NGS-15144     | 0 | 42933219 |
| 26 | ARS-BFGL-NGS-86712     | 0 | 42959100 |
| 26 | ARS-BFGL-NGS-61840     | 0 | 42986707 |
| 26 | ARS-BFGL-NGS-82697     | 0 | 43010301 |
| 26 | ARS-BFGL-NGS-30945     | 0 | 43087057 |
| 26 | Hapmap39279-BTA-61630  | 0 | 43129105 |
| 26 | Hapmap25049-BTA-139020 | 0 | 43150604 |
| 26 | ARS-BFGL-NGS-117950    | 0 | 43211435 |
| 26 | BTA-61626-no-rs        | 0 | 43251025 |
| 26 | ARS-BFGL-NGS-78988     | 0 | 43312255 |
| 26 | ARS-BFGL-NGS-42155     | 0 | 43350725 |
| 26 | BTA-61616-no-rs        | 0 | 43364283 |
| 26 | Hapmap38686-BTA-61607  | 0 | 43392412 |
| 26 | Hapmap52062-rs29027270 | 0 | 43479080 |
| 26 | ARS-BFGL-NGS-33236     | 0 | 43506424 |
| 26 | BTA-52296-no-rs        | 0 | 43528093 |
| 26 | ARS-BFGL-NGS-26482     | 0 | 43590763 |
| 26 | ARS-BFGL-NGS-79710     |   | 43652722 |
| 26 | ARS-BFGL-NGS-20623     | 0 | 43687318 |
| 26 | ARS-BFGL-NGS-115563    | 0 | 43709706 |
| 26 | ARS-BFGL-NGS-13960     | 0 | 43757284 |
| 26 | ARS-BFGL-NGS-15401     | 0 | 43801835 |
| 26 | ARS-BFGL-NGS-36907     | 0 | 43839970 |
| 26 | ARS-BFGL-NGS-81799     | 0 | 43902769 |
| 26 | ARS-BFGL-NGS-19663     | 0 | 43933332 |
| 26 | ARS-BFGL-NGS-32861     | 0 | 43957191 |
| 26 | ARS-BFGL-NGS-117809    | 0 | 43981400 |
| 26 | ARS-BFGL-NGS-846       | 0 | 44042554 |
| 26 | ARS-BFGL-NGS-16380     |   | 44075416 |
| 26 | ARS-BFGL-NGS-30855     | 0 | 44120284 |
| 26 | Hapmap58261-rs29024872 | 0 | 44141331 |
| 26 | Hapmap41566-BTA-52258  | 0 | 44181047 |
| 26 | ARS-BFGL-NGS-14909     | 0 | 44238995 |
| 26 | ARS-BFGL-NGS-36401     | 0 | 44344370 |
| 26 | Hapmap23008-BTA-139065 | 0 | 44378759 |
| 26 | BTA-61707-no-rs        | 0 | 44436400 |
| 26 | ARS-BFGL-NGS-110216    | 0 | 44458925 |
| 26 | ARS-BFGL-NGS-30392     | 0 | 44539739 |
| 26 | ARS-BFGL-NGS-114114    | 0 | 44573103 |
| 26 | ARS-BFGL-NGS-109850    | 0 | 44603054 |
| 26 | ARS-BFGL-NGS-92931     | 0 | 44626729 |
| 26 | ARS-BFGL-NGS-81720     |   | 44651639 |
| 26 | ARS-BFGL-NGS-73559     | 0 | 44728135 |
| 26 | ARS-BFGL-NGS-21323     | 0 | 44775265 |
| 26 | Hapmap39232-BTA-61724  | 0 | 44810685 |
| 26 | BTA-61761-no-rs        | 0 | 44835808 |
| 26 | Hapmap43308-BTA-61764  | 0 | 44892777 |
| 26 | UA-IFASA-7436          | 0 | 44915718 |
| 26 | UA-IFASA-1706          | 0 | 44982860 |
| 26 | ARS-BFGL-NGS-59060     |   | 45010453 |
| 26 | BTA-103482-no-rs       | 0 | 45033015 |
| 26 | ARS-BFGL-NGS-23845     | 0 | 45109876 |

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| 26 | ARS-BFGL-NGS-42220              | 0        | 45149850 |          |
| 26 | ARS-BFGL-NGS-39674              | 0        | 45205153 |          |
| 26 | ARS-BFGL-NGS-110733             | 0        | 45237753 |          |
| 26 | BTB-01175272                    | 0        | 45268357 |          |
| 26 | BTA-61751-no-rs                 | 0        | 45302252 |          |
| 26 | BTA-61758-no-rs                 | 0        | 45343379 |          |
| 26 | ARS-BFGL-NGS-86952              | 0        | 45409333 |          |
| 26 | BTA-61759-no-rs                 | 0        | 45430774 |          |
| 26 | Hapmap41037-BTA-61760           | 0        | 45524494 |          |
| 26 | ARS-BFGL-NGS-12324              | 0        | 45566286 |          |
| 26 | Hapmap26229-BTA-61839           | 0        | 45591669 |          |
| 26 | ARS-BFGL-NGS-35886              | 0        | 45642121 |          |
| 26 | ARS-BFGL-NGS-114320             | 0        | 45669303 |          |
| 26 | ARS-BFGL-NGS-15453              | 0        | 45698552 |          |
| 26 | BTA-88023-no-rs                 | 0        | 45734303 |          |
| 26 | Hapmap57526-rs29013535          | 0        | 45764849 |          |
| 26 | ARS-BFGL-NGS-53327              | 0        | 45825261 |          |
| 26 | ARS-BFGL-NGS-73670              | 45845280 |          |          |
| 26 | ARS-BFGL-NGS-110497             | 0        | 45870133 |          |
| 26 | Hapmap35265-BES1_Contig647_1466 | 0        |          | 45909407 |
| 26 | ARS-BFGL-NGS-101415             | 0        | 45954628 |          |
| 26 | ARS-BFGL-NGS-30060              | 0        | 45983109 |          |
| 26 | Hapmap40690-BTA-22265           | 0        | 46028299 |          |
| 26 | ARS-BFGL-NGS-53740              | 0        | 46052762 |          |
| 26 | Hapmap39576-BTA-61829           | 0        | 46065693 |          |
| 26 | ARS-BFGL-NGS-117785             | 0        | 46101773 |          |
| 26 | ARS-BFGL-NGS-115281             | 0        | 46135252 |          |
| 26 | ARS-BFGL-NGS-119524             | 0        | 46187669 |          |
| 26 | ARS-BFGL-NGS-98941              | 0        | 46251043 |          |
| 26 | Hapmap57117-rs29009912          | 0        | 46283709 |          |
| 26 | ARS-BFGL-NGS-27081              | 0        | 46362711 |          |
| 26 | ARS-BFGL-NGS-44396              | 0        | 46366100 |          |
| 26 | ARS-BFGL-NGS-30814              | 0        | 46398279 |          |
| 26 | ARS-BFGL-NGS-110538             | 0        | 46477435 |          |
| 26 | ARS-BFGL-NGS-77278              | 0        | 46541332 |          |
| 26 | ARS-BFGL-NGS-16405              | 0        | 46673561 |          |
| 26 | ARS-BFGL-NGS-114453             | 0        | 46701291 |          |
| 26 | ARS-BFGL-NGS-28021              | 0        | 46764379 |          |
| 26 | ARS-BFGL-NGS-112732             | 0        | 46796135 |          |
| 26 | ARS-BFGL-NGS-115945             | 0        | 46844504 |          |
| 26 | ARS-BFGL-NGS-113666             | 0        | 46901914 |          |
| 26 | ARS-BFGL-NGS-74523              | 0        | 46949271 |          |
| 26 | ARS-BFGL-NGS-12376              | 0        | 46986687 |          |
| 26 | BTB-00945417                    | 0        | 47017213 |          |
| 26 | BTA-121503-no-rs                | 0        | 47029338 |          |
| 26 | ARS-BFGL-NGS-67259              | 0        | 47075097 |          |
| 26 | ARS-BFGL-NGS-42563              | 0        | 47113178 |          |
| 26 | ARS-BFGL-NGS-13959              | 0        | 47135234 |          |
| 26 | ARS-BFGL-NGS-116503             | 0        | 47230247 |          |
| 26 | ARS-BFGL-NGS-32465              | 0        | 47288628 |          |
| 26 | ARS-BFGL-NGS-34171              | 0        | 47335257 |          |
| 26 | ARS-BFGL-NGS-119213             | 0        | 47375257 |          |
| 26 | ARS-BFGL-NGS-83265              | 0        | 47430089 |          |
| 26 | ARS-BFGL-NGS-74397              | 0        | 47528072 |          |

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| 26 | Hapmap24403-BTA-139120           | 0        | 47568107 |          |
| 26 | ARS-BFGL-NGS-60982               | 0        | 47591251 |          |
| 26 | ARS-BFGL-NGS-63430               | 47837750 |          |          |
| 26 | ARS-BFGL-NGS-32517               | 0        | 47907512 |          |
| 26 | ARS-BFGL-NGS-100351              | 0        | 47932408 |          |
| 26 | ARS-BFGL-NGS-30950               | 47957153 |          |          |
| 26 | ARS-BFGL-NGS-79720               | 0        | 48007359 |          |
| 26 | ARS-BFGL-NGS-34118               | 0        | 48042552 |          |
| 26 | BTB-00947578                     | 0        | 48079829 |          |
| 26 | ARS-BFGL-NGS-111445              | 0        | 48120342 |          |
| 26 | ARS-BFGL-NGS-107171              | 0        | 48146677 |          |
| 26 | ARS-BFGL-NGS-117443              | 0        | 48187132 |          |
| 26 | ARS-BFGL-NGS-118475              | 0        | 48223351 |          |
| 26 | BTA-61880-no-rs                  | 0        | 48300208 |          |
| 26 | ARS-BFGL-NGS-20369               | 0        | 48329243 |          |
| 26 | ARS-BFGL-NGS-19519               | 0        | 48407133 |          |
| 26 | ARS-BFGL-NGS-75399               | 0        | 48447574 |          |
| 26 | BTA-61888-no-rs                  | 0        | 48469059 |          |
| 26 | BTB-00948422                     | 0        | 48543291 |          |
| 26 | ARS-BFGL-NGS-13120               | 48583446 |          |          |
| 26 | BTA-61889-no-rs                  | 0        | 48606000 |          |
| 26 | ARS-BFGL-NGS-43690               | 48634991 |          |          |
| 26 | ARS-BFGL-NGS-118574              | 0        | 48672512 |          |
| 26 | ARS-BFGL-NGS-88751               | 0        | 48713332 |          |
| 26 | ARS-BFGL-NGS-76550               | 0        | 48751188 |          |
| 26 | ARS-BFGL-NGS-42638               | 0        | 48778819 |          |
| 26 | ARS-BFGL-NGS-114684              | 0        | 48810060 |          |
| 26 | ARS-BFGL-NGS-10314               | 0        | 48838979 |          |
| 26 | ARS-BFGL-NGS-115548              | 0        | 48944472 |          |
| 26 | Hapmap24386-BTA-163519           | 0        | 48971298 |          |
| 26 | Hapmap27655-BTA-163523           | 0        | 49027625 |          |
| 26 | ARS-BFGL-NGS-70602               | 0        | 49115192 |          |
| 26 | Hapmap50642-BTA-28388            | 0        | 49137602 |          |
| 26 | Hapmap36057-SCAFFOLD190733_8751  | 0        |          | 49160578 |
| 26 | Hapmap28514-BTA-163525           | 0        | 49185154 |          |
| 26 | ARS-BFGL-NGS-107088              | 0        | 49206999 |          |
| 26 | ARS-BFGL-NGS-12000               | 49228876 |          |          |
| 26 | ARS-BFGL-NGS-100404              | 0        | 49253877 |          |
| 26 | Hapmap49945-BTA-28394            | 0        | 49366950 |          |
| 26 | ARS-BFGL-NGS-94742               | 0        | 49394472 |          |
| 26 | ARS-BFGL-NGS-116447              | 0        | 49532894 |          |
| 26 | ARS-BFGL-NGS-35712               | 0        | 49562974 |          |
| 26 | Hapmap35521-SCAFFOLD105036_27060 | 0        |          | 49585700 |
| 26 | Hapmap34836-BES2_Contig346_959   | 0        |          | 49620433 |
| 26 | ARS-BFGL-NGS-266                 | 0        | 49655897 |          |
| 26 | ARS-BFGL-NGS-37947               | 0        | 49688041 |          |
| 26 | ARS-BFGL-NGS-32899               | 0        | 49736388 |          |
| 26 | Hapmap58569-ss46526690           | 0        | 49762633 |          |
| 26 | ARS-BFGL-NGS-85624               | 0        | 49803472 |          |
| 26 | ARS-BFGL-NGS-109807              | 0        | 49918587 |          |
| 26 | ARS-BFGL-NGS-117222              | 0        | 49954228 |          |
| 26 | ARS-BFGL-NGS-24474               | 0        | 49992792 |          |
| 26 | ARS-BFGL-NGS-85772               | 0        | 50028630 |          |
| 26 | ARS-BFGL-NGS-10954               | 0        | 50082843 |          |

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| 26 | BTB-01490570           | 0 | 50211553 |
| 26 | ARS-BFGL-NGS-77836     | 0 | 50273965 |
| 26 | ARS-BFGL-NGS-13320     |   | 50329144 |
| 26 | BTB-01799855           | 0 | 50353192 |
| 26 | Hapmap46476-BTA-25480  | 0 | 50517416 |
| 26 | Hapmap31153-BTA-152874 | 0 | 50545507 |
| 26 | BTA-122273-no-rs       | 0 | 50586179 |
| 26 | Hapmap41729-BTA-102219 | 0 | 50680745 |
| 26 | ARS-BFGL-NGS-86889     | 0 | 50817833 |
| 26 | ARS-BFGL-NGS-948       | 0 | 50842832 |
| 26 | ARS-BFGL-NGS-76621     | 0 | 50877495 |
| 26 | ARS-BFGL-NGS-41511     | 0 | 50933887 |
| 26 | ARS-BFGL-NGS-76872     | 0 | 50957350 |
| 26 | ARS-BFGL-NGS-28608     | 0 | 51032219 |
| 26 | ARS-BFGL-NGS-83586     | 0 | 51107888 |
| 26 | ARS-BFGL-NGS-33557     | 0 | 51154962 |
| 26 | ARS-BFGL-NGS-106724    | 0 | 51181758 |
| 26 | ARS-BFGL-NGS-37066     | 0 | 51222340 |
| 26 | ARS-BFGL-NGS-104073    | 0 | 51245504 |
| 26 | ARS-BFGL-NGS-117200    | 0 | 51267717 |
| 26 | ARS-BFGL-NGS-11059     | 0 | 51337749 |
| 26 | ARS-BFGL-NGS-85679     | 0 | 51358645 |
| 26 | ARS-BFGL-NGS-107801    | 0 | 51376213 |
| 26 | ARS-BFGL-NGS-31656     | 0 | 51426365 |
| 26 | ARS-BFGL-NGS-101725    | 0 | 51460945 |
| 26 | ARS-BFGL-NGS-117590    | 0 | 51506691 |
| 26 | ARS-BFGL-NGS-19463     | 0 | 51528962 |
| 26 | ARS-BFGL-NGS-26253     | 0 | 51539404 |
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| 27 | ARS-BFGL-NGS-91530     | 0 | 36664    |
| 27 | ARS-BFGL-NGS-113226    | 0 | 97306    |
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| 27 | Hapmap53608-rs29011235 | 0 | 169363   |
| 27 | ARS-BFGL-NGS-68177     | 0 | 189179   |
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| 27 | ARS-BFGL-NGS-13916     | 0 | 323730   |
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| 27 | ARS-BFGL-NGS-110084    | 0 | 367537   |
| 27 | ARS-BFGL-NGS-102879    | 0 | 405328   |
| 27 | ARS-BFGL-NGS-40271     | 0 | 480387   |
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| 27 | Hapmap47781-BTA-94014  | 0 | 703314   |
| 27 | Hapmap48565-BTA-103629 | 0 | 767042   |
| 27 | ARS-BFGL-NGS-31866     | 0 | 837411   |
| 27 | Hapmap57646-rs29022182 | 0 | 864922   |
| 27 | ARS-BFGL-NGS-39713     | 0 | 900013   |
| 27 | ARS-BFGL-NGS-92492     | 0 | 939276   |
| 27 | ARS-BFGL-NGS-41182     | 0 | 967098   |
| 27 | ARS-BFGL-NGS-112590    | 0 | 1099585  |
| 27 | BTA-103612-no-rs       | 0 | 1121464  |



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| 27 | ARS-BFGL-NGS-68707     | 0       | 1173546 |
| 27 | BTA-103632-no-rs       | 0       | 1250585 |
| 27 | Hapmap47161-BTA-103631 | 0       | 1271954 |
| 27 | Hapmap25490-BTA-103605 | 0       | 1312576 |
| 27 | Hapmap59341-rs29017265 | 0       | 1343227 |
| 27 | Hapmap48557-BTA-100941 | 0       | 1413956 |
| 27 | ARS-BFGL-NGS-25841     | 0       | 1440241 |
| 27 | ARS-BFGL-NGS-14300     | 1467500 |         |
| 27 | ARS-BFGL-NGS-18120     | 0       | 1525307 |
| 27 | ARS-BFGL-NGS-13351     | 0       | 1560174 |
| 27 | BTA-118459-no-rs       | 0       | 1580498 |
| 27 | ARS-BFGL-NGS-41238     | 0       | 1660030 |
| 27 | BTA-91171-no-rs        | 0       | 1685161 |
| 27 | ARS-BFGL-NGS-44492     | 0       | 1712239 |
| 27 | Hapmap31456-BTA-149089 | 0       | 1738959 |
| 27 | ARS-BFGL-NGS-111591    | 0       | 1886128 |
| 27 | Hapmap29879-BTA-92303  | 0       | 1970333 |
| 27 | BTA-92291-no-rs        | 0       | 2021945 |
| 27 | BTA-92280-no-rs        | 0       | 2079249 |
| 27 | ARS-BFGL-NGS-68964     | 0       | 2158165 |
| 27 | ARS-BFGL-NGS-107525    | 0       | 2225280 |
| 27 | Hapmap42364-BTA-92264  | 0       | 2298767 |
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| 27 | BTA-08152-no-rs        | 0       | 2378910 |
| 27 | ARS-BFGL-NGS-35388     | 0       | 2472812 |
| 27 | Hapmap47444-BTA-92271  | 0       | 2591036 |
| 27 | Hapmap38724-BTA-110699 | 0       | 2642613 |
| 27 | ARS-BFGL-NGS-35140     | 0       | 2748297 |
| 27 | BTA-05488-no-rs        | 0       | 2783365 |
| 27 | ARS-BFGL-NGS-45124     | 0       | 2830061 |
| 27 | ARS-BFGL-NGS-101503    | 0       | 2879244 |
| 27 | ARS-BFGL-NGS-113495    | 0       | 2995076 |
| 27 | ARS-BFGL-NGS-100576    | 0       | 3076246 |
| 27 | ARS-BFGL-NGS-66230     | 3100090 |         |
| 27 | Hapmap56478-rs29016788 | 0       | 3169481 |
| 27 | ARS-BFGL-NGS-74822     | 0       | 3243779 |
| 27 | Hapmap26131-BTA-139186 | 0       | 3323199 |
| 27 | ARS-BFGL-NGS-86242     | 0       | 3343936 |
| 27 | BTA-63385-no-rs        | 0       | 3400875 |
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| 27 | ARS-BFGL-NGS-115442    | 0       | 3477315 |
| 27 | Hapmap49899-BTA-18490  | 0       | 3495048 |
| 27 | ARS-BFGL-NGS-51330     | 3553169 |         |
| 27 | ARS-BFGL-NGS-25436     | 0       | 3679178 |
| 27 | Hapmap40251-BTA-62548  | 0       | 3721279 |
| 27 | ARS-BFGL-NGS-115240    | 0       | 3852629 |
| 27 | Hapmap57458-rs29024621 | 0       | 3909806 |
| 27 | BTA-62216-no-rs        | 0       | 3938392 |
| 27 | ARS-BFGL-NGS-20740     | 0       | 4003506 |
| 27 | BTA-62387-no-rs        | 0       | 4093465 |
| 27 | ARS-BFGL-NGS-119178    | 0       | 4175605 |
| 27 | Hapmap48414-BTA-62657  | 0       | 4332273 |
| 27 | ARS-BFGL-NGS-119160    | 0       | 4357162 |
| 27 | BTA-115188-no-rs       | 0       | 4433466 |

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| 27 | ARS-BFGL-NGS-94470       | 4456590   |
| 27 | BTA-115187-no-rs 0       | 4476626   |
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| 27 | ARS-BFGL-NGS-24136       | 0 4544917 |
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| 27 | ARS-BFGL-NGS-102900      | 0 4720968 |
| 27 | ARS-BFGL-NGS-56644       | 0 4743690 |
| 27 | ARS-BFGL-NGS-14024       | 0 4773381 |
| 27 | Hapmap58719-rs29026681 0 | 4818598   |
| 27 | ARS-BFGL-NGS-38750       | 0 4845275 |
| 27 | ARS-BFGL-NGS-86611       | 0 4921772 |
| 27 | ARS-BFGL-NGS-116642      | 0 4947815 |
| 27 | ARS-BFGL-NGS-55443       | 0 5000552 |
| 27 | Hapmap32354-BTA-154097 0 | 6289689   |
| 27 | BTA-105784-no-rs 0       | 6343786   |
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| 27 | ARS-BFGL-NGS-45187       | 0 6591965 |
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| 27 | ARS-BFGL-NGS-102321      | 0 7593356 |
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| 27 | ARS-BFGL-NGS-103904      | 0 8056516 |
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| 27 | Hapmap23708-BTA-162739 0 | 8479832   |
| 27 | Hapmap44168-BTA-95812 0  | 8503527   |

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| 27 | BTA-88213-no-rs        | 0        | 8541405  |
| 27 | BTA-88209-no-rs        | 0        | 8589473  |
| 27 | BTB-01397172           | 0        | 8649727  |
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| 27 | Hapmap24342-BTA-147970 | 0        | 8730441  |
| 27 | UA-IFASA-9335          | 0        | 8781446  |
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| 27 | Hapmap32660-BTA-28361  | 0        | 8827679  |
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| 27 | Hapmap58782-rs29016179 | 0        | 10565495 |
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| 27 | Hapmap24215-BTA-163266 | 0        | 10764825 |
| 27 | BTA-11431-rs29017191   | 0        | 10864279 |
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| 27 | ARS-BFGL-NGS-24531     | 0        | 11073757 |
| 27 | Hapmap47357-BTA-63177  | 0        | 11110068 |
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| 27 | ARS-BFGL-NGS-66811     | 0        | 11447194 |
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| 27 | BTB-00952137           | 0        | 11538259 |

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| 27 | BTA-51961-no-rs                 | 0 | 11575848 |          |  |
| 27 | Hapmap60236-rs29015203          | 0 | 11630902 |          |  |
| 27 | BTA-51951-no-rs                 | 0 | 11641296 |          |  |
| 27 | Hapmap60026-rs29013398          | 0 | 11657439 |          |  |
| 27 | ARS-BFGL-NGS-117055             | 0 | 11690504 |          |  |
| 27 | Hapmap39419-BTA-63237           | 0 | 11715052 |          |  |
| 27 | BTB-00953536                    | 0 | 11741829 |          |  |
| 27 | BTB-00953522                    | 0 | 11766922 |          |  |
| 27 | ARS-BFGL-NGS-52560              |   | 11822624 |          |  |
| 27 | BTB-00953618                    | 0 | 11862558 |          |  |
| 27 | Hapmap48031-BTA-63248           | 0 | 11928787 |          |  |
| 27 | ARS-BFGL-NGS-45997              | 0 | 11950907 |          |  |
| 27 | BTB-00953692                    | 0 | 11996409 |          |  |
| 27 | BTA-63250-no-rs                 | 0 | 12011926 |          |  |
| 27 | Hapmap41042-BTA-63252           | 0 | 12035173 |          |  |
| 27 | BTB-00953811                    | 0 | 12072378 |          |  |
| 27 | Hapmap58554-rs29023204          | 0 | 12151538 |          |  |
| 27 | Hapmap51010-BTA-63256           | 0 | 12199787 |          |  |
| 27 | ARS-BFGL-NGS-522                | 0 | 12244806 |          |  |
| 27 | BTA-123063-no-rs                | 0 | 12282518 |          |  |
| 27 | ARS-BFGL-NGS-52875              | 0 | 12330184 |          |  |
| 27 | Hapmap60634-rs29019583          | 0 | 12354872 |          |  |
| 27 | BTA-03086-rs29010853            | 0 | 12400152 |          |  |
| 27 | BTA-63267-no-rs                 | 0 | 12457385 |          |  |
| 27 | BTB-00954129                    | 0 | 12523146 |          |  |
| 27 | Hapmap55258-rs29019421          | 0 | 12583844 |          |  |
| 27 | BTA-63268-no-rs                 | 0 | 12625430 |          |  |
| 27 | ARS-BFGL-NGS-114008             | 0 | 12688549 |          |  |
| 27 | Hapmap38845-BTA-63388           | 0 | 12739324 |          |  |
| 27 | Hapmap51011-BTA-63392           | 0 | 12794064 |          |  |
| 27 | BTA-63401-no-rs                 | 0 | 12818675 |          |  |
| 27 | ARS-BFGL-NGS-63536              | 0 | 12873213 |          |  |
| 27 | ARS-BFGL-NGS-102169             | 0 | 12930436 |          |  |
| 27 | BTA-63422-no-rs                 | 0 | 12982268 |          |  |
| 27 | UA-IFASA-5987                   | 0 | 13065744 |          |  |
| 27 | BTA-117112-no-rs                | 0 | 13093846 |          |  |
| 27 | BTB-01244450                    | 0 | 13124258 |          |  |
| 27 | ARS-BFGL-NGS-105197             | 0 | 13156667 |          |  |
| 27 | BTB-01244380                    | 0 | 13226283 |          |  |
| 27 | BTA-117108-no-rs                | 0 | 13262885 |          |  |
| 27 | ARS-BFGL-NGS-34490              | 0 | 13290951 |          |  |
| 27 | Hapmap54779-rs29010442          | 0 | 13341571 |          |  |
| 27 | Hapmap30867-BTA-157933          | 0 | 13408992 |          |  |
| 27 | ARS-BFGL-NGS-110157             | 0 | 13453316 |          |  |
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| 27 | BTB-00954894                    | 0 | 13631137 |          |  |
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| 27 | ARS-BFGL-NGS-74518              | 0 | 13684170 |          |  |
| 27 | ARS-BFGL-NGS-39294              | 0 | 13713277 |          |  |
| 27 | Hapmap39281-BTA-63449           | 0 | 13767421 |          |  |
| 27 | ARS-BFGL-NGS-27678              | 0 | 13789330 |          |  |

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| 27 | Hapmap48834-BTA-63451                 | 0 | 13810075 |   |          |
| 27 | Hapmap52065-rs29025876                | 0 | 13886781 |   |          |
| 27 | UA-IFASA-6384                         | 0 | 13949422 |   |          |
| 27 | ARS-BFGL-NGS-13588                    | 0 | 14028863 |   |          |
| 27 | ARS-BFGL-NGS-33254                    | 0 | 14053471 |   |          |
| 27 | ARS-BFGL-NGS-113646                   | 0 | 14100430 |   |          |
| 27 | ARS-BFGL-NGS-117515                   | 0 | 14147458 |   |          |
| 27 | ARS-BFGL-NGS-38921                    | 0 | 14173400 |   |          |
| 27 | BTB-00957495                          | 0 | 14250534 |   |          |
| 27 | ARS-BFGL-NGS-36940                    |   | 14292852 |   |          |
| 27 | BTB-00957311                          | 0 | 14326129 |   |          |
| 27 | Hapmap30595-BTA-160795                | 0 | 14399090 |   |          |
| 27 | ARS-BFGL-NGS-115788                   | 0 | 14428400 |   |          |
| 27 | Hapmap51274-BTA-63517                 | 0 | 14500349 |   |          |
| 27 | ARS-BFGL-NGS-23308                    | 0 | 14526116 |   |          |
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| 27 | ARS-BFGL-NGS-108986                   | 0 | 14591550 |   |          |
| 27 | ARS-BFGL-NGS-72832                    | 0 | 14615571 |   |          |
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| 27 | BTB-00957058                          | 0 | 14671414 |   |          |
| 27 | ARS-BFGL-NGS-109905                   | 0 | 14736506 |   |          |
| 27 | ARS-BFGL-NGS-75783                    | 0 | 14768736 |   |          |
| 27 | BTA-63513-no-rs                       | 0 | 14815149 |   |          |
| 27 | BTB-00956915                          | 0 | 14840414 |   |          |
| 27 | ARS-BFGL-NGS-19734                    | 0 | 14876795 |   |          |
| 27 | Hapmap57076-ss46526296                | 0 | 14901236 |   |          |
| 27 | ARS-BFGL-NGS-102850                   | 0 | 14931898 |   |          |
| 27 | ARS-BFGL-NGS-48879                    | 0 | 14959042 |   |          |
| 27 | Hapmap28258-BTA-139286                | 0 | 14985595 |   |          |
| 27 | ARS-BFGL-NGS-87857                    | 0 | 15044426 |   |          |
| 27 | ARS-BFGL-NGS-103368                   | 0 | 15101058 |   |          |
| 27 | Hapmap61080-rs29013547                | 0 | 15141168 |   |          |
| 27 | ARS-USMARC-Parent-EF093512-rs29013546 | 0 |          | 0 | 15141319 |
| 27 | Hapmap24350-BTA-163569                | 0 | 15175109 |   |          |
| 27 | BTB-01738922                          | 0 | 15202709 |   |          |
| 27 | BTB-01738839                          | 0 | 15229451 |   |          |
| 27 | Hapmap50892-BTA-121510                | 0 | 15266193 |   |          |
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| 27 | ARS-BFGL-NGS-75787                    | 0 | 15480885 |   |          |
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| 27 | Hapmap49246-BTA-63213                 | 0 | 15545018 |   |          |
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| 27 | ARS-BFGL-NGS-97489                    | 0 | 15603940 |   |          |
| 27 | Hapmap40452-BTA-63211                 | 0 | 15637738 |   |          |
| 27 | BTA-63210-no-rs                       | 0 | 15699193 |   |          |
| 27 | ARS-BFGL-NGS-58358                    | 0 | 15755401 |   |          |
| 27 | Hapmap48030-BTA-63208                 | 0 | 15794249 |   |          |
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| 27 | ARS-BFGL-NGS-38547                    | 0 | 15884697 |   |          |

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| 27 | Hapmap25499-BTA-123322 | 0 | 16176342 |
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| 27 | Hapmap43632-BTA-62330  | 0 | 16351777 |
| 27 | BTB-01926888           | 0 | 16398882 |
| 27 | BTB-01603522           | 0 | 16421445 |
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| 27 | BTA-62230-no-rs        | 0 | 16488368 |
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| 27 | BTA-62222-no-rs        | 0 | 16571478 |
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| 27 | Hapmap38945-BTA-21179  | 0 | 16666124 |
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| 27 | ARS-BFGL-NGS-113025    | 0 | 16926528 |
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| 27 | ARS-BFGL-NGS-80643     | 0 | 17007677 |
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| 27 | BTB-00000964           | 0 | 17455716 |
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| 27 | ARS-BFGL-NGS-16120     | 0 | 17593646 |
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| 27 | BTB-01731688           | 0 | 17722584 |
| 27 | Hapmap50057-BTA-62385  | 0 | 17759823 |
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| 27 | ARS-BFGL-NGS-109626    | 0 | 17846556 |
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| 27 | BTA-62386-no-rs        | 0 | 17894486 |
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| 27 | ARS-BFGL-NGS-111454    | 0 | 18226356 |
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| 27 | BTB-00958396                          | 0 | 18560951 |          |  |
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| 27 | ARS-BFGL-NGS-72901                    | 0 | 18740236 |          |  |
| 27 | ARS-BFGL-NGS-11300                    |   | 18781024 |          |  |
| 27 | ARS-BFGL-NGS-44288                    | 0 | 18810353 |          |  |
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| 27 | Hapmap59411-ss46526171                | 0 | 19067353 |          |  |
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| 27 | ARS-BFGL-NGS-24322                    | 0 | 19137853 |          |  |
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| 27 | Hapmap43897-BTA-62417                 | 0 | 19464406 |          |  |
| 27 | Hapmap45084-BTA-113746                | 0 | 19594127 |          |  |
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| 27 | Hapmap27219-BTA-160871                | 0 | 19766888 |          |  |
| 27 | Hapmap51418-BTA-20281                 | 0 | 19793968 |          |  |
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| 27 | ARS-BFGL-NGS-113043                   | 0 | 20067064 |          |  |
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| 27 | ARS-BFGL-NGS-23467                    | 0 | 20369666 |          |  |
| 27 | ARS-BFGL-NGS-115848                   | 0 | 20559148 |          |  |
| 27 | ARS-BFGL-NGS-116275                   | 0 | 20592947 |          |  |
| 27 | ARS-BFGL-NGS-39770                    |   | 20636525 |          |  |
| 27 | Hapmap45417-BTA-23529                 | 0 | 20717328 |          |  |
| 27 | ARS-BFGL-NGS-105992                   | 0 | 20757482 |          |  |
| 27 | ARS-BFGL-NGS-115538                   | 0 | 20791916 |          |  |
| 27 | ARS-BFGL-NGS-100615                   | 0 | 20863121 |          |  |
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| 27 | ARS-BFGL-NGS-17125                    | 0 | 20962310 |          |  |
| 27 | Hapmap59859-rs29017054                | 0 | 21054150 |          |  |
| 27 | ARS-BFGL-NGS-103430                   | 0 | 21137214 |          |  |
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| 27 | BTB-00959959                          | 0 | 21363744 |          |  |
| 27 | BTB-00959916                          | 0 | 21386737 |          |  |
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| 27 | ARS-BFGL-NGS-20982     | 0 | 22100455 |
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| 27 | BTA-66900-no-rs        | 0 | 22382464 |
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| 27 | ARS-BFGL-NGS-116604    | 0 | 22811813 |
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| 27 | Hapmap54743-rs29013433          | 0 | 23928751 |          |
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| 27 | ARS-BFGL-NGS-101179             | 0 | 24273840 |          |
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| 27 | ARS-BFGL-NGS-15225              | 0 | 24516466 |          |
| 27 | ARS-BFGL-NGS-43957              | 0 | 24539434 |          |
| 27 | ARS-BFGL-NGS-43776              | 0 | 24576801 |          |
| 27 | BTA-62621-no-rs                 | 0 | 24658347 |          |
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| 27 | BTA-11629-rs29017388            | 0 | 24768316 |          |
| 27 | Hapmap51273-BTA-62638           | 0 | 24832786 |          |
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| 27 | BTB-00964138                    | 0 | 24913023 |          |
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| 27 | Hapmap25551-BTA-139364          | 0 | 25295935 |          |
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| 27 | ARS-BFGL-NGS-11582              | 0 | 25501920 |          |
| 27 | BTB-00964618                    | 0 | 25529207 |          |
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| 27 | ARS-BFGL-NGS-74803              | 0 | 26096787 |          |
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| 27 | ARS-BFGL-NGS-110867             | 0 | 26142340 |          |
| 27 | BTA-62484-no-rs                 | 0 | 26212976 |          |

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| 27 | Hapmap55616-rs29022013 | 0 | 26270873 |
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| 27 | Hapmap39067-BTA-62463  | 0 | 26444012 |
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| 27 | Hapmap43264-BTA-41979  | 0 | 26552613 |
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| 27 | ARS-BFGL-NGS-27731     | 0 | 26838250 |
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| 27 | BTB-00964856           | 0 | 26903098 |
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| 27 | Hapmap29352-BTA-139387 | 0 | 26966060 |
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| 27 | BTA-62667-no-rs        | 0 | 27046682 |
| 27 | BTB-00964657           | 0 | 27089350 |
| 27 | Hapmap25552-BTA-139394 | 0 | 27131535 |
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| 27 | ARS-BFGL-NGS-60151     | 0 | 27446887 |
| 27 | Hapmap30813-BTA-139409 | 0 | 27512843 |
| 27 | BTA-62728-no-rs        | 0 | 27544904 |
| 27 | ARS-BFGL-NGS-21110     | 0 | 27644292 |
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| 27 | Hapmap24349-BTA-163475 | 0 | 27755194 |
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| 27 | ARS-BFGL-NGS-28325     | 0 | 27838625 |
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| 27 | Hapmap47463-BTA-02786  | 0 | 27940956 |
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| 27 | Hapmap31143-BTA-151369 | 0 | 28099356 |
| 27 | Hapmap43421-BTA-97718  | 0 | 28148660 |
| 27 | Hapmap39794-BTA-97726  | 0 | 28194481 |
| 27 | ARS-BFGL-NGS-85809     | 0 | 28235299 |
| 27 | BTB-01064004           | 0 | 28268363 |
| 27 | Hapmap44432-BTA-97711  | 0 | 28298862 |
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| 27 | ARS-BFGL-NGS-58109     | 0 | 29009479 |
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| 27 | BTB-01063562           | 0 | 29070529 |
| 27 | BTA-97696-no-rs        | 0 | 29110029 |
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| 27 | BTB-01063458           | 0 | 29161814 |
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| 27 | Hapmap27965-BTA-148364 | 0 | 29300595 |
| 27 | BTA-97723-no-rs        | 0 | 29334605 |
| 27 | BTB-01795638           | 0 | 29419113 |
| 27 | Hapmap41690-BTA-94627  | 0 | 29486131 |
| 27 | BTA-110943-no-rs       | 0 | 29524324 |
| 27 | BTA-110944-no-rs       | 0 | 29550454 |
| 27 | ARS-BFGL-NGS-116607    | 0 | 29586067 |
| 27 | BTA-94629-no-rs        | 0 | 29650426 |
| 27 | ARS-BFGL-NGS-40430     | 0 | 29934809 |
| 27 | Hapmap53111-rs29024461 | 0 | 30025162 |
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| 27 | Hapmap26942-BTA-130469 | 0 | 30089811 |
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| 27 | BTA-98192-no-rs        | 0 | 30325584 |
| 27 | ARS-BFGL-NGS-34924     | 0 | 30383099 |
| 27 | Hapmap24339-BTA-139441 | 0 | 30407960 |
| 27 | ARS-BFGL-NGS-102454    | 0 | 30445552 |
| 27 | ARS-BFGL-NGS-115938    | 0 | 30479059 |
| 27 | Hapmap49244-BTA-62731  | 0 | 30510177 |
| 27 | BTB-01920407           | 0 | 30593718 |
| 27 | BTB-00966237           | 0 | 30642183 |
| 27 | UA-IFASA-2151          | 0 | 30670832 |
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| 27 | Hapmap51137-BTA-107964 | 0 | 30797409 |
| 27 | ARS-BFGL-NGS-30427     | 0 | 30846202 |
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| 27 | ARS-BFGL-NGS-29469     | 0 | 31080330 |
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| 27 | ARS-BFGL-NGS-37749     | 0 | 31216225 |
| 27 | Hapmap26091-BTA-109412 | 0 | 31261689 |
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| 27 | BTB-01796032           | 0 | 31337533 |
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| 27 | Hapmap40631-BTA-103396 | 0 | 31461111 |
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| 27 | Hapmap48161-BTA-103404 | 0 | 31600184 |
| 27 | Hapmap43747-BTA-103405 | 0 | 31625207 |
| 27 | ARS-BFGL-NGS-84161     | 0 | 31647685 |
| 27 | Hapmap33591-BTA-153271 | 0 | 31695928 |
| 27 | BTA-23660-no-rs        | 0 | 31721442 |
| 27 | BTA-25146-no-rs        | 0 | 31757690 |
| 27 | ARS-BFGL-NGS-76263     | 0 | 31794586 |
| 27 | Hapmap44631-BTA-103409 | 0 | 31817489 |
| 27 | ARS-BFGL-NGS-33505     | 0 | 31857755 |

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| 27 | BTB-01067854                    | 0 | 31893602 |          |
| 27 | ARS-BFGL-NGS-81420              |   | 31928025 |          |
| 27 | Hapmap42770-BTA-103418          | 0 | 31972077 |          |
| 27 | ARS-BFGL-NGS-72140              | 0 | 32008090 |          |
| 27 | BTA-103426-no-rs                | 0 | 32034924 |          |
| 27 | ARS-BFGL-NGS-16551              | 0 | 32073018 |          |
| 27 | ARS-BFGL-NGS-109326             | 0 | 32101941 |          |
| 27 | BTB-01068433                    | 0 | 32129484 |          |
| 27 | ARS-BFGL-NGS-71338              | 0 | 32157142 |          |
| 27 | Hapmap22787-BTA-103450          | 0 | 32184354 |          |
| 27 | ARS-BFGL-NGS-39651              | 0 | 32230922 |          |
| 27 | ARS-BFGL-NGS-14674              | 0 | 32254213 |          |
| 27 | ARS-BFGL-NGS-17420              | 0 | 32281266 |          |
| 27 | Hapmap40574-BTA-68418           | 0 | 32303544 |          |
| 27 | ARS-BFGL-NGS-23068              | 0 | 32328719 |          |
| 27 | ARS-BFGL-NGS-119875             | 0 | 32405436 |          |
| 27 | BTA-119240-no-rs                | 0 | 32488843 |          |
| 27 | BTB-01759195                    | 0 | 32513708 |          |
| 27 | ARS-BFGL-NGS-112547             | 0 | 32541258 |          |
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| 27 | ARS-BFGL-NGS-73189              | 0 | 32811897 |          |
| 27 | ARS-BFGL-NGS-32098              | 0 | 32855429 |          |
| 27 | ARS-BFGL-NGS-106207             | 0 | 32889433 |          |
| 27 | BTB-00967319                    | 0 | 32960445 |          |
| 27 | ARS-BFGL-NGS-38143              | 0 | 32989721 |          |
| 27 | ARS-BFGL-NGS-31659              | 0 | 33035739 |          |
| 27 | Hapmap8922-BTA-62770            | 0 | 33149699 |          |
| 27 | Hapmap26399-BTA-139459          | 0 | 33170008 |          |
| 27 | ARS-BFGL-NGS-22280              | 0 | 33273490 |          |
| 27 | ARS-BFGL-NGS-36044              | 0 | 33303529 |          |
| 27 | BTB-00967762                    | 0 | 33335144 |          |
| 27 | ARS-BFGL-NGS-14420              |   | 33341855 |          |
| 27 | ARS-BFGL-NGS-13890              |   | 33400664 |          |
| 27 | ARS-BFGL-NGS-35260              | 0 | 33435883 |          |
| 27 | BTA-62777-no-rs                 | 0 | 33501205 |          |
| 27 | ARS-BFGL-NGS-59327              | 0 | 33527863 |          |
| 27 | BTA-62762-no-rs                 | 0 | 33652270 |          |
| 27 | ARS-BFGL-NGS-109019             | 0 | 33684165 |          |
| 27 | ARS-BFGL-NGS-105349             | 0 | 33715201 |          |
| 27 | ARS-BFGL-NGS-19534              | 0 | 33749694 |          |
| 27 | ARS-BFGL-NGS-39846              | 0 | 33788321 |          |
| 27 | Hapmap24151-BTA-147212          | 0 | 33845584 |          |
| 27 | Hapmap55145-rs29022532          | 0 | 33872604 |          |
| 27 | Hapmap35718-SCAFFOLD271203_2920 | 0 |          | 33894649 |
| 27 | Hapmap41097-BTA-85971           | 0 | 33947904 |          |
| 27 | Hapmap39622-BTA-116224          | 0 | 34036869 |          |
| 27 | BTA-116225-no-rs                | 0 | 34077950 |          |
| 27 | Hapmap56548-rs29026610          | 0 | 34138225 |          |
| 27 | Hapmap49245-BTA-62816           | 0 | 34166163 |          |

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| 27 | BTB-00967894           | 0        | 34194524 |
| 27 | BTB-01511007           | 0        | 34295252 |
| 27 | ARS-BFGL-NGS-29650     | 0        | 34326743 |
| 27 | Hapmap26179-BTA-155675 | 0        | 34417344 |
| 27 | ARS-BFGL-NGS-69182     | 0        | 34522912 |
| 27 | ARS-BFGL-NGS-107573    | 0        | 34568979 |
| 27 | Hapmap40205-BTA-118023 | 0        | 34679115 |
| 27 | BTB-01746933           | 0        | 34704855 |
| 27 | ARS-BFGL-NGS-35329     | 0        | 34731324 |
| 27 | ARS-BFGL-NGS-108861    | 0        | 34758932 |
| 27 | BTA-62837-no-rs        | 0        | 34804110 |
| 27 | BTB-00968246           | 0        | 34836847 |
| 27 | ARS-BFGL-NGS-71055     | 0        | 34904207 |
| 27 | ARS-BFGL-NGS-15147     | 0        | 34943234 |
| 27 | Hapmap42423-BTA-109756 | 0        | 34978041 |
| 27 | Hapmap42802-BTA-109751 | 0        | 35024154 |
| 27 | ARS-BFGL-NGS-70784     | 0        | 35057301 |
| 27 | ARS-BFGL-NGS-105300    | 0        | 35084149 |
| 27 | ARS-BFGL-NGS-25689     | 0        | 35110230 |
| 27 | ARS-BFGL-NGS-11696     | 0        | 35144687 |
| 27 | ARS-BFGL-NGS-106559    | 0        | 35174391 |
| 27 | ARS-BFGL-NGS-30207     | 0        | 35230645 |
| 27 | BTA-16776-no-rs        | 0        | 35305074 |
| 27 | ARS-BFGL-NGS-110790    | 0        | 35339647 |
| 27 | ARS-BFGL-NGS-39006     | 0        | 35372600 |
| 27 | Hapmap46767-BTA-117224 | 0        | 35486995 |
| 27 | ARS-BFGL-NGS-12204     | 0        | 35513325 |
| 27 | ARS-BFGL-NGS-33070     | 35543951 |          |
| 27 | ARS-BFGL-NGS-108281    | 0        | 35592055 |
| 27 | ARS-BFGL-NGS-34373     | 0        | 35641437 |
| 27 | ARS-BFGL-NGS-20223     | 0        | 35734689 |
| 27 | Hapmap52361-ss46526521 | 0        | 35900786 |
| 27 | ARS-BFGL-NGS-34077     | 0        | 35951981 |
| 27 | ARS-BFGL-NGS-93780     | 35985713 |          |
| 27 | ARS-BFGL-NGS-12610     | 36054950 |          |
| 27 | ARS-BFGL-NGS-102956    | 0        | 36076628 |
| 27 | ARS-BFGL-NGS-20225     | 0        | 36117365 |
| 27 | ARS-BFGL-NGS-57448     | 0        | 36155097 |
| 27 | BTA-62789-no-rs        | 0        | 36179183 |
| 27 | ARS-BFGL-NGS-24288     | 0        | 36207108 |
| 27 | ARS-BFGL-NGS-11080     | 36264950 |          |
| 27 | ARS-BFGL-NGS-35188     | 0        | 36285734 |
| 27 | ARS-BFGL-NGS-88722     | 0        | 36342691 |
| 27 | ARS-BFGL-NGS-100828    | 0        | 36370570 |
| 27 | ARS-BFGL-NGS-111354    | 0        | 36392756 |
| 27 | ARS-BFGL-NGS-31584     | 0        | 36433735 |
| 27 | ARS-BFGL-NGS-119756    | 0        | 36463726 |
| 27 | ARS-BFGL-NGS-30651     | 0        | 36485949 |
| 27 | Hapmap25553-BTA-139470 | 0        | 36528856 |
| 27 | BTA-62850-no-rs        | 0        | 36557344 |
| 27 | ARS-BFGL-NGS-24942     | 0        | 36592652 |
| 27 | Hapmap43312-BTA-62851  | 0        | 36673512 |
| 27 | Hapmap47065-BTA-62853  | 0        | 36709501 |
| 27 | ARS-BFGL-NGS-108131    | 0        | 36764232 |

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| 27 | ARS-BFGL-NGS-99660                    | 0        | 36853597 |          |  |
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| 27 | ARS-BFGL-NGS-83296                    | 0        | 36935085 |          |  |
| 27 | ARS-BFGL-NGS-111806                   | 0        | 36959262 |          |  |
| 27 | Hapmap58881-rs29013339                | 0        | 37004165 |          |  |
| 27 | ARS-BFGL-NGS-24680                    | 0        | 37052324 |          |  |
| 27 | ARS-BFGL-NGS-92338                    | 0        | 37120275 |          |  |
| 27 | ARS-BFGL-NGS-94026                    | 0        | 37145353 |          |  |
| 27 | ARS-BFGL-NGS-67948                    | 0        | 37217916 |          |  |
| 27 | ARS-BFGL-NGS-37799                    | 0        | 37315792 |          |  |
| 27 | ARS-BFGL-NGS-14480                    | 37357125 |          |          |  |
| 27 | ARS-BFGL-NGS-37470                    | 37389551 |          |          |  |
| 27 | ARS-BFGL-NGS-116574                   | 0        | 37430965 |          |  |
| 27 | ARS-BFGL-NGS-87779                    | 0        | 37456627 |          |  |
| 27 | ARS-BFGL-NGS-46870                    | 37479272 |          |          |  |
| 27 | ARS-USMARC-Parent-EF141102-rs29015783 | 0        |          | 37513923 |  |
| 27 | BTA-121522-no-rs                      | 0        | 37661635 |          |  |
| 27 | ARS-BFGL-NGS-112434                   | 0        | 37767563 |          |  |
| 27 | ARS-BFGL-NGS-106816                   | 0        | 37859509 |          |  |
| 27 | ARS-BFGL-NGS-89050                    | 37897281 |          |          |  |
| 27 | ARS-BFGL-NGS-11756                    | 0        | 37923186 |          |  |
| 27 | ARS-BFGL-NGS-73826                    | 0        | 38053835 |          |  |
| 27 | ARS-BFGL-NGS-93827                    | 0        | 38085937 |          |  |
| 27 | ARS-BFGL-NGS-18614                    | 0        | 38109791 |          |  |
| 27 | ARS-BFGL-NGS-45270                    | 0        | 38233675 |          |  |
| 27 | ARS-BFGL-NGS-90403                    | 0        | 38254703 |          |  |
| 27 | ARS-BFGL-NGS-28636                    | 0        | 38299935 |          |  |
| 27 | ARS-BFGL-NGS-77035                    | 0        | 38436906 |          |  |
| 27 | ARS-BFGL-NGS-23323                    | 0        | 38457181 |          |  |
| 27 | ARS-BFGL-NGS-27817                    | 0        | 38492126 |          |  |
| 27 | Hapmap49686-BTA-62976                 | 0        | 38522773 |          |  |
| 27 | ARS-BFGL-NGS-82401                    | 0        | 38568007 |          |  |
| 27 | BTA-62979-no-rs                       | 0        | 38601989 |          |  |
| 27 | ARS-BFGL-NGS-63803                    | 0        | 38631236 |          |  |
| 27 | Hapmap24404-BTA-139489                | 0        | 38672897 |          |  |
| 27 | ARS-BFGL-NGS-58720                    | 0        | 38699737 |          |  |
| 27 | Hapmap58237-rs29017248                | 0        | 38747766 |          |  |
| 27 | ARS-BFGL-NGS-10940                    | 0        | 38832893 |          |  |
| 27 | Hapmap59417-ss46526965                | 0        | 38863807 |          |  |
| 27 | Hapmap55066-rs29026559                | 0        | 38925271 |          |  |
| 27 | Hapmap59286-rs29021722                | 0        | 38964379 |          |  |
| 27 | Hapmap48690-BTA-23375                 | 0        | 38985629 |          |  |
| 27 | ARS-BFGL-NGS-66380                    | 0        | 39027034 |          |  |
| 27 | ARS-BFGL-NGS-34701                    | 0        | 39227390 |          |  |
| 27 | ARS-BFGL-NGS-115656                   | 0        | 39259827 |          |  |
| 27 | Hapmap38550-BTA-98603                 | 0        | 39335460 |          |  |
| 27 | ARS-BFGL-NGS-32410                    | 39393065 |          |          |  |
| 27 | ARS-BFGL-NGS-116861                   | 0        | 39440886 |          |  |
| 27 | Hapmap50176-BTA-98600                 | 0        | 39457953 |          |  |
| 27 | ARS-BFGL-NGS-40891                    | 0        | 39518936 |          |  |
| 27 | Hapmap58959-rs29015098                | 0        | 39544673 |          |  |
| 27 | ARS-BFGL-NGS-26971                    | 0        | 39612032 |          |  |
| 27 | Hapmap47356-BTA-63000                 | 0        | 39688231 |          |  |
| 27 | ARS-BFGL-NGS-10166                    | 0        | 39750933 |          |  |

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| 27 | ARS-BFGL-NGS-76581     | 0 | 39783292 |
| 27 | ARS-BFGL-NGS-30711     | 0 | 39916848 |
| 27 | ARS-BFGL-NGS-43116     | 0 | 39958869 |
| 27 | Hapmap39937-BTA-63006  | 0 | 39994067 |
| 27 | ARS-BFGL-NGS-76178     | 0 | 40015948 |
| 27 | ARS-BFGL-NGS-34386     | 0 | 40048472 |
| 27 | ARS-BFGL-NGS-108859    | 0 | 40083461 |
| 27 | ARS-BFGL-NGS-39526     | 0 | 40102881 |
| 27 | ARS-BFGL-NGS-84326     | 0 | 40210986 |
| 27 | ARS-BFGL-NGS-12726     | 0 | 40345497 |
| 27 | ARS-BFGL-NGS-112312    | 0 | 40612818 |
| 27 | ARS-BFGL-NGS-110316    | 0 | 40677733 |
| 27 | BTB-00968596           | 0 | 40721679 |
| 27 | BTB-00968652           | 0 | 40807552 |
| 27 | ARS-BFGL-NGS-97124     | 0 | 40846421 |
| 27 | Hapmap23992-BTA-139506 | 0 | 40870573 |
| 27 | Hapmap57132-rs29011225 | 0 | 40916876 |
| 27 | ARS-BFGL-NGS-116686    | 0 | 40951386 |
| 27 | ARS-BFGL-NGS-81530     | 0 | 40973802 |
| 27 | Hapmap50422-BTA-63028  | 0 | 40999202 |
| 27 | Hapmap51908-BTA-63031  | 0 | 41049981 |
| 27 | BTA-63038-no-rs        | 0 | 41126365 |
| 27 | ARS-BFGL-NGS-34656     | 0 | 41191284 |
| 27 | BTB-00969023           | 0 | 41226347 |
| 27 | BTB-00969048           | 0 | 41254671 |
| 27 | ARS-BFGL-NGS-118334    | 0 | 41297038 |
| 27 | BTB-00969310           | 0 | 41341380 |
| 27 | Hapmap42612-BTA-63039  | 0 | 41383711 |
| 27 | ARS-BFGL-NGS-117840    | 0 | 41418572 |
| 27 | BTB-01795364           | 0 | 41465055 |
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| 27 | ARS-BFGL-NGS-112603    | 0 | 41552379 |
| 27 | ARS-BFGL-NGS-26400     | 0 | 41582349 |
| 27 | Hapmap48029-BTA-63045  | 0 | 41613442 |
| 27 | ARS-BFGL-NGS-25886     | 0 | 41649895 |
| 27 | BTA-63137-no-rs        | 0 | 41687452 |
| 27 | Hapmap50424-BTA-63130  | 0 | 41726707 |
| 27 | ARS-BFGL-NGS-82610     | 0 | 41760090 |
| 27 | ARS-BFGL-NGS-10170     | 0 | 41805300 |
| 27 | Hapmap42105-BTA-121526 | 0 | 41830247 |
| 27 | ARS-BFGL-NGS-109460    | 0 | 41866129 |
| 27 | ARS-BFGL-NGS-109774    | 0 | 41915821 |
| 27 | Hapmap27161-BTA-134658 | 0 | 41959867 |
| 27 | ARS-BFGL-NGS-53149     | 0 | 41981338 |
| 27 | BTB-00972234           | 0 | 42021387 |
| 27 | ARS-BFGL-NGS-103033    | 0 | 42055498 |
| 27 | ARS-BFGL-NGS-19163     | 0 | 42080730 |
| 27 | ARS-BFGL-NGS-87845     | 0 | 42118037 |
| 27 | ARS-BFGL-NGS-118029    | 0 | 42142351 |
| 27 | BTB-00972053           | 0 | 42183549 |
| 27 | ARS-BFGL-NGS-74889     | 0 | 42216810 |
| 27 | Hapmap60853-rs29024039 | 0 | 42243435 |
| 27 | Hapmap53657-rs29027439 | 0 | 42292467 |
| 27 | ARS-BFGL-NGS-102740    | 0 | 42344117 |

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| 27 | BTB-00971672                     | 0 | 42390677 |  |
| 27 | Hapmap40451-BTA-63097            | 0 | 42442485 |  |
| 27 | ARS-BFGL-NGS-42206               | 0 | 42466128 |  |
| 27 | ARS-BFGL-NGS-94946               | 0 | 42489109 |  |
| 27 | BTB-00969778                     | 0 | 42518482 |  |
| 27 | ARS-BFGL-NGS-118987              | 0 | 42544869 |  |
| 27 | Hapmap26774-BTA-163037           | 0 | 42578430 |  |
| 27 | ARS-BFGL-NGS-91580               | 0 | 42617614 |  |
| 27 | Hapmap42114-BTA-122792           | 0 | 42673983 |  |
| 27 | BTA-04843-no-rs                  | 0 | 42713838 |  |
| 27 | Hapmap48141-BTA-98457            | 0 | 42751177 |  |
| 27 | ARS-BFGL-NGS-37647               | 0 | 42776720 |  |
| 27 | ARS-BFGL-NGS-35632               | 0 | 42875339 |  |
| 27 | ARS-BFGL-NGS-26925               | 0 | 42927083 |  |
| 27 | BTB-01460945                     | 0 | 43011011 |  |
| 27 | BTB-01460972                     | 0 | 43038925 |  |
| 27 | ARS-BFGL-NGS-23029               | 0 | 43066841 |  |
| 27 | ARS-BFGL-NGS-79964               | 0 | 43104231 |  |
| 27 | ARS-BFGL-NGS-76106               | 0 | 43142784 |  |
| 27 | BTB-01975527                     | 0 | 43173186 |  |
| 27 | ARS-BFGL-NGS-56063               | 0 | 43237090 |  |
| 27 | BTB-01598698                     | 0 | 43260976 |  |
| 27 | BTB-01598720                     | 0 | 43292942 |  |
| 27 | BTB-00969891                     | 0 | 43390959 |  |
| 27 | Hapmap41400-BTA-101218           | 0 | 43435991 |  |
| 27 | ARS-BFGL-NGS-24170               | 0 | 43459156 |  |
| 27 | Hapmap47470-BTA-101224           | 0 | 43485837 |  |
| 27 | ARS-BFGL-NGS-231                 | 0 | 43525777 |  |
| 27 | BTA-28716-no-rs                  | 0 | 43585306 |  |
| 27 | ARS-BFGL-NGS-64852               | 0 | 43629777 |  |
| 27 | BTB-01956180                     | 0 | 43656445 |  |
| 27 | Hapmap41099-BTA-86696            | 0 | 43672233 |  |
| 27 | Hapmap59081-rs29017657           | 0 | 43730070 |  |
| 27 | ARS-BFGL-NGS-78918               | 0 | 43766200 |  |
| 27 | Hapmap44636-BTA-120097           | 0 | 43789958 |  |
| 27 | ARS-BFGL-NGS-87775               | 0 | 43816848 |  |
| 27 | ARS-BFGL-NGS-108022              | 0 | 43851804 |  |
| 27 | BTB-01261619                     | 0 | 43901931 |  |
| 27 | BTB-01261578                     | 0 | 43921267 |  |
| 27 | ARS-BFGL-NGS-62589               | 0 | 43981265 |  |
| 27 | Hapmap35611-SCAFFOLD120249_17244 | 0 | 44005137 |  |
| 27 | ARS-BFGL-NGS-108599              | 0 | 44026383 |  |
| 27 | BTB-01261492                     | 0 | 44062692 |  |
| 27 | BTA-120087-no-rs                 | 0 | 44109080 |  |
| 27 | BTA-63053-no-rs                  | 0 | 44148168 |  |
| 27 | BTA-63058-no-rs                  | 0 | 44178500 |  |
| 27 | ARS-BFGL-NGS-18675               | 0 | 44201880 |  |
| 27 | BTB-00970170                     | 0 | 44230216 |  |
| 27 | ARS-BFGL-NGS-79347               | 0 | 44256068 |  |
| 27 | ARS-BFGL-NGS-98605               | 0 | 44339249 |  |
| 27 | ARS-BFGL-NGS-587                 | 0 | 44363069 |  |
| 27 | Hapmap49688-BTA-63066            | 0 | 44425701 |  |
| 27 | BTA-63068-no-rs                  | 0 | 44450009 |  |
| 27 | BTB-00970626                     | 0 | 44492309 |  |



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| 27 | ARS-BFGL-NGS-117116    | 0        | 44529353 |
| 27 | BTB-00970690           | 0        | 44563698 |
| 27 | ARS-BFGL-NGS-72026     | 0        | 44588453 |
| 27 | Hapmap42117-BTA-15977  | 0        | 44629833 |
| 27 | ARS-BFGL-NGS-28209     | 0        | 44726012 |
| 27 | ARS-BFGL-NGS-49500     | 44782494 |          |
| 27 | Hapmap38844-BTA-63080  | 0        | 44851308 |
| 27 | ARS-BFGL-NGS-28410     | 44952306 |          |
| 27 | ARS-BFGL-NGS-239       | 0        | 45003136 |
| 27 | ARS-BFGL-NGS-72819     | 0        | 45217020 |
| 27 | BTB-00971533           | 0        | 45288161 |
| 27 | BTB-01682077           | 0        | 45347958 |
| 27 | BTB-01682090           | 0        | 45368987 |
| 28 | ARS-BFGL-NGS-114898    | 0        | 41088    |
| 28 | ARS-BFGL-NGS-31092     | 0        | 77680    |
| 28 | Hapmap40395-BTA-113989 | 0        | 98444    |
| 28 | Hapmap38423-BTA-64741  | 0        | 154179   |
| 28 | ARS-BFGL-NGS-88829     | 0        | 177494   |
| 28 | ARS-BFGL-NGS-118234    | 0        | 247173   |
| 28 | ARS-BFGL-NGS-118787    | 0        | 308805   |
| 28 | BTA-64665-no-rs        | 0        | 337857   |
| 28 | ARS-BFGL-NGS-11990     | 365467   |          |
| 28 | ARS-BFGL-NGS-112483    | 0        | 407166   |
| 28 | BTB-00972943           | 0        | 456341   |
| 28 | Hapmap47687-BTA-64620  | 0        | 492808   |
| 28 | ARS-BFGL-NGS-113621    | 0        | 560975   |
| 28 | ARS-BFGL-NGS-108130    | 0        | 606890   |
| 28 | ARS-BFGL-NGS-118966    | 0        | 664070   |
| 28 | BTB-01811139           | 0        | 717380   |
| 28 | ARS-BFGL-NGS-103085    | 0        | 811398   |
| 28 | ARS-BFGL-NGS-72206     | 0        | 846112   |
| 28 | ARS-BFGL-NGS-36477     | 0        | 952364   |
| 28 | BTB-01729976           | 0        | 984322   |
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| 28 | BTB-00973399           | 0        | 1093973  |
| 28 | ARS-BFGL-NGS-55000     | 0        | 1135437  |
| 28 | ARS-BFGL-NGS-14350     | 1184009  |          |
| 28 | ARS-BFGL-NGS-14076     | 0        | 1220957  |
| 28 | ARS-BFGL-NGS-70320     | 0        | 1260704  |
| 28 | ARS-BFGL-NGS-28849     | 0        | 1283286  |
| 28 | ARS-BFGL-NGS-63285     | 0        | 1307837  |
| 28 | ARS-BFGL-NGS-21957     | 0        | 1331799  |
| 28 | ARS-BFGL-NGS-35024     | 0        | 1358731  |
| 28 | BTB-01988431           | 0        | 1517277  |
| 28 | BTB-01465541           | 0        | 1630958  |
| 28 | BTB-01741857           | 0        | 1740737  |
| 28 | ARS-BFGL-NGS-23879     | 0        | 1751899  |
| 28 | BTB-01827114           | 0        | 1826892  |
| 28 | ARS-BFGL-NGS-42695     | 0        | 2026966  |
| 28 | ARS-BFGL-NGS-60834     | 0        | 2047488  |
| 28 | ARS-BFGL-NGS-57890     | 0        | 2092581  |
| 28 | BTA-98454-no-rs        | 0        | 2181928  |
| 28 | BTB-01498660           | 0        | 2233574  |
| 28 | ARS-BFGL-NGS-42947     | 0        | 2313753  |

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| 28 | BTB-01768350                     | 0       | 2469724 |  |
| 28 | BTA-116005-no-rs                 | 0       | 2869287 |  |
| 28 | Hapmap47516-BTA-116004           | 0       | 2902778 |  |
| 28 | ARS-BFGL-NGS-16848               | 0       | 2924302 |  |
| 28 | ARS-BFGL-NGS-118662              | 0       | 2947166 |  |
| 28 | Hapmap53582-rs29012732           | 0       | 2968856 |  |
| 28 | BTB-00974528                     | 0       | 2999426 |  |
| 28 | ARS-BFGL-NGS-93286               | 0       | 3105798 |  |
| 28 | BTB-00974613                     | 0       | 3289667 |  |
| 28 | ARS-BFGL-NGS-30719               | 0       | 3338516 |  |
| 28 | BTB-00974697                     | 0       | 3378937 |  |
| 28 | ARS-BFGL-NGS-75049               | 0       | 3504349 |  |
| 28 | BTB-00974835                     | 0       | 3532094 |  |
| 28 | ARS-BFGL-NGS-101894              | 0       | 3560627 |  |
| 28 | Hapmap54513-rs29023738           | 0       | 3592677 |  |
| 28 | Hapmap49247-BTA-63647            | 0       | 3637555 |  |
| 28 | ARS-BFGL-NGS-22980               | 3710024 |         |  |
| 28 | ARS-BFGL-NGS-112716              | 0       | 3785867 |  |
| 28 | ARS-BFGL-NGS-90271               | 0       | 3844829 |  |
| 28 | BTA-63610-no-rs                  | 0       | 3872413 |  |
| 28 | Hapmap55407-rs29018562           | 0       | 3938623 |  |
| 28 | ARS-BFGL-NGS-21540               | 3976460 |         |  |
| 28 | Hapmap49856-BTA-108815           | 0       | 3998395 |  |
| 28 | ARS-BFGL-NGS-64758               | 0       | 4041876 |  |
| 28 | Hapmap47780-BTA-93610            | 0       | 4108478 |  |
| 28 | ARS-BFGL-NGS-107787              | 0       | 4235517 |  |
| 28 | BTB-01622498                     | 0       | 4270798 |  |
| 28 | Hapmap47519-BTA-117732           | 0       | 4374848 |  |
| 28 | ARS-BFGL-NGS-87317               | 0       | 4408535 |  |
| 28 | Hapmap36092-SCAFFOLD270101_29656 | 0       | 4493022 |  |
| 28 | BTB-01158205                     | 0       | 4608578 |  |
| 28 | Hapmap25782-BTA-100901           | 0       | 4722726 |  |
| 28 | BTB-01158508                     | 0       | 4760286 |  |
| 28 | Hapmap36406-SCAFFOLD20062_414    | 0       | 4797154 |  |
| 28 | ARS-BFGL-NGS-110722              | 0       | 4837387 |  |
| 28 | BTA-100905-no-rs                 | 0       | 4866330 |  |
| 28 | ARS-BFGL-NGS-84268               | 0       | 4904075 |  |
| 28 | BTB-01158818                     | 0       | 4938675 |  |
| 28 | Hapmap27617-BTA-152468           | 0       | 4973279 |  |
| 28 | BTA-88838-no-rs                  | 0       | 5006278 |  |
| 28 | Hapmap40383-BTA-100914           | 0       | 5052476 |  |
| 28 | BTA-11034-no-rs                  | 0       | 5123022 |  |
| 28 | ARS-BFGL-NGS-101604              | 0       | 5174726 |  |
| 28 | BTB-01158925                     | 0       | 5207275 |  |
| 28 | Hapmap57145-rs29014913           | 0       | 5236364 |  |
| 28 | ARS-BFGL-NGS-118647              | 0       | 5267865 |  |
| 28 | ARS-BFGL-NGS-18597               | 0       | 5290625 |  |
| 28 | ARS-BFGL-NGS-282                 | 0       | 5343495 |  |
| 28 | ARS-BFGL-NGS-35393               | 0       | 5395223 |  |
| 28 | ARS-BFGL-NGS-39810               | 5435846 |         |  |
| 28 | ARS-BFGL-NGS-96482               | 0       | 5462329 |  |
| 28 | ARS-BFGL-NGS-114198              | 0       | 5506637 |  |
| 28 | ARS-BFGL-NGS-440                 | 0       | 5563242 |  |
| 28 | ARS-BFGL-NGS-37886               | 0       | 5593682 |  |

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| 28 | UA-IFASA-3099                         | 0 | 5634824 |   |         |
| 28 | Hapmap44306-BTA-88506                 | 0 | 5666293 |   |         |
| 28 | ARS-BFGL-NGS-64621                    | 0 | 5755467 |   |         |
| 28 | BTA-91361-no-rs                       | 0 | 5785672 |   |         |
| 28 | ARS-BFGL-NGS-65545                    | 0 | 5818384 |   |         |
| 28 | ARS-BFGL-NGS-33721                    | 0 | 5876902 |   |         |
| 28 | Hapmap57035-rs29025683                | 0 | 5912551 |   |         |
| 28 | ARS-USMARC-Parent-EF034085-rs29025677 | 0 | 5913226 | 0 | 5913226 |
| 28 | ARS-BFGL-NGS-110981                   | 0 | 5940366 |   |         |
| 28 | ARS-BFGL-NGS-111192                   | 0 | 5965031 |   |         |
| 28 | ARS-BFGL-NGS-103093                   | 0 | 6024330 |   |         |
| 28 | BTA-108414-no-rs                      | 0 | 6133705 |   |         |
| 28 | ARS-BFGL-NGS-65250                    | 0 | 6202234 |   |         |
| 28 | Hapmap58640-rs29010066                | 0 | 6241120 |   |         |
| 28 | ARS-BFGL-NGS-39630                    | 0 | 6274705 |   |         |
| 28 | ARS-BFGL-NGS-36950                    | 0 | 6499231 |   |         |
| 28 | BTA-57559-no-rs                       | 0 | 6520121 |   |         |
| 28 | BTB-00874839                          | 0 | 6547497 |   |         |
| 28 | BTB-00874898                          | 0 | 6575192 |   |         |
| 28 | ARS-BFGL-NGS-64575                    | 0 | 6626319 |   |         |
| 28 | Hapmap43150-BTA-110538                | 0 | 6732947 |   |         |
| 28 | Hapmap41740-BTA-106658                | 0 | 6821915 |   |         |
| 28 | ARS-BFGL-NGS-40170                    | 0 | 6888276 |   |         |
| 28 | ARS-BFGL-NGS-13717                    | 0 | 6908507 |   |         |
| 28 | ARS-BFGL-NGS-113785                   | 0 | 6935604 |   |         |
| 28 | Hapmap47440-BTA-90993                 | 0 | 6958438 |   |         |
| 28 | ARS-BFGL-NGS-26240                    | 0 | 7001292 |   |         |
| 28 | Hapmap43101-BTA-92663                 | 0 | 7013666 |   |         |
| 28 | ARS-BFGL-NGS-81939                    | 0 | 7048297 |   |         |
| 28 | BTA-90996-no-rs                       | 0 | 7068698 |   |         |
| 28 | ARS-BFGL-NGS-38478                    | 0 | 7097227 |   |         |
| 28 | ARS-BFGL-NGS-28818                    | 0 | 7138132 |   |         |
| 28 | BTA-92661-no-rs                       | 0 | 7188752 |   |         |
| 28 | ARS-BFGL-NGS-33530                    | 0 | 7210641 |   |         |
| 28 | BTB-00976175                          | 0 | 7248001 |   |         |
| 28 | ARS-BFGL-NGS-101271                   | 0 | 7289071 |   |         |
| 28 | Hapmap49696-BTA-64604                 | 0 | 7333002 |   |         |
| 28 | ARS-BFGL-NGS-10882                    | 0 | 7375756 |   |         |
| 28 | BTB-02041711                          | 0 | 7422506 |   |         |
| 28 | ARS-BFGL-NGS-100331                   | 0 | 7464549 |   |         |
| 28 | ARS-BFGL-NGS-19227                    | 0 | 7495691 |   |         |
| 28 | ARS-BFGL-NGS-101248                   | 0 | 7534483 |   |         |
| 28 | Hapmap59655-rs29010842                | 0 | 7557315 |   |         |
| 28 | ARS-BFGL-NGS-27677                    | 0 | 7594862 |   |         |
| 28 | ARS-BFGL-NGS-53448                    | 0 | 7655984 |   |         |
| 28 | ARS-BFGL-NGS-75160                    | 0 | 7694748 |   |         |
| 28 | ARS-BFGL-NGS-81213                    | 0 | 7715648 |   |         |
| 28 | ARS-BFGL-NGS-43798                    | 0 | 7748299 |   |         |
| 28 | BTB-00975169                          | 0 | 7823597 |   |         |
| 28 | ARS-BFGL-NGS-25300                    | 0 | 7852154 |   |         |
| 28 | ARS-BFGL-NGS-20529                    | 0 | 7878725 |   |         |
| 28 | ARS-BFGL-NGS-27233                    | 0 | 7899978 |   |         |
| 28 | BTB-00975363                          | 0 | 7940185 |   |         |
| 28 | Hapmap47360-BTA-63966                 | 0 | 8002146 |   |         |

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| 28 | BTB-00974967                   | 0 | 8033988  |         |  |
| 28 | Hapmap36799-SCAFFOLD82626_1783 | 0 |          | 8080087 |  |
| 28 | BTA-63935-no-rs                | 0 | 8105051  |         |  |
| 28 | BTA-63914-no-rs                | 0 | 8149787  |         |  |
| 28 | BTA-64283-no-rs                | 0 | 8192374  |         |  |
| 28 | ARS-BFGL-NGS-18023             | 0 | 8219490  |         |  |
| 28 | ARS-BFGL-NGS-36770             | 0 | 8263362  |         |  |
| 28 | ARS-BFGL-NGS-16913             | 0 | 8346709  |         |  |
| 28 | ARS-BFGL-NGS-11490             | 0 | 8380329  |         |  |
| 28 | ARS-BFGL-NGS-105477            | 0 | 8405753  |         |  |
| 28 | ARS-BFGL-NGS-103007            | 0 | 8426911  |         |  |
| 28 | Hapmap49252-BTA-64616          | 0 | 8477956  |         |  |
| 28 | ARS-BFGL-NGS-79829             | 0 | 8501840  |         |  |
| 28 | Hapmap38171-BTA-64624          | 0 | 8576539  |         |  |
| 28 | ARS-BFGL-NGS-106080            | 0 | 8598618  |         |  |
| 28 | Hapmap49253-BTA-64631          | 0 | 8632342  |         |  |
| 28 | ARS-BFGL-NGS-36712             | 0 | 8669272  |         |  |
| 28 | ARS-BFGL-NGS-34904             | 0 | 8693574  |         |  |
| 28 | ARS-BFGL-NGS-22537             | 0 | 8719697  |         |  |
| 28 | ARS-BFGL-NGS-36783             | 0 | 8758466  |         |  |
| 28 | ARS-BFGL-NGS-64272             | 0 | 8837691  |         |  |
| 28 | ARS-BFGL-NGS-117366            | 0 | 8889991  |         |  |
| 28 | ARS-BFGL-NGS-114215            | 0 | 9100851  |         |  |
| 28 | ARS-BFGL-NGS-75540             | 0 | 9131855  |         |  |
| 28 | ARS-BFGL-NGS-42296             | 0 | 9175452  |         |  |
| 28 | Hapmap29954-BTA-108390         | 0 | 9225917  |         |  |
| 28 | Hapmap41322-BTA-64648          | 0 | 9263455  |         |  |
| 28 | Hapmap57617-rs29026743         | 0 | 9367295  |         |  |
| 28 | ARS-BFGL-NGS-81877             | 0 | 9431460  |         |  |
| 28 | ARS-BFGL-NGS-83908             | 0 | 9487766  |         |  |
| 28 | BTA-90140-no-rs                | 0 | 9520934  |         |  |
| 28 | ARS-BFGL-NGS-115876            | 0 | 9579553  |         |  |
| 28 | ARS-BFGL-NGS-120               | 0 | 9634810  |         |  |
| 28 | Hapmap50430-BTA-64686          | 0 | 9665369  |         |  |
| 28 | ARS-BFGL-NGS-88529             | 0 | 9697693  |         |  |
| 28 | ARS-BFGL-NGS-28137             | 0 | 9724264  |         |  |
| 28 | BTA-64685-no-rs                | 0 | 9763835  |         |  |
| 28 | Hapmap33203-BTA-139731         | 0 | 9794656  |         |  |
| 28 | Hapmap38337-BTA-64678          | 0 | 9827919  |         |  |
| 28 | BTA-64672-no-rs                | 0 | 9858113  |         |  |
| 28 | BTA-92199-no-rs                | 0 | 9932041  |         |  |
| 28 | ARS-BFGL-NGS-61189             | 0 | 9964623  |         |  |
| 28 | ARS-BFGL-NGS-25890             | 0 | 10044965 |         |  |
| 28 | BTA-92207-no-rs                | 0 | 10108072 |         |  |
| 28 | Hapmap38792-BTA-92186          | 0 | 10127554 |         |  |
| 28 | Hapmap60761-rs29011573         | 0 | 10227920 |         |  |
| 28 | Hapmap42617-BTA-64691          | 0 | 10261561 |         |  |
| 28 | UA-IFASA-6749                  | 0 | 10307792 |         |  |
| 28 | Hapmap41046-BTA-64696          | 0 | 10333239 |         |  |
| 28 | ARS-BFGL-NGS-36805             | 0 | 10389351 |         |  |
| 28 | BTA-64697-no-rs                | 0 | 10471125 |         |  |
| 28 | ARS-BFGL-NGS-36160             | 0 | 10511817 |         |  |
| 28 | ARS-BFGL-NGS-12126             | 0 | 10588137 |         |  |
| 28 | Hapmap42447-BTA-118468         | 0 | 10668085 |         |  |

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| 28 | BTA-64781-no-rs                | 0 | 10766592 |          |
| 28 | ARS-BFGL-NGS-112517            | 0 | 10791824 |          |
| 28 | Hapmap48421-BTA-64784          | 0 | 10880155 |          |
| 28 | ARS-BFGL-NGS-118045            | 0 | 10919448 |          |
| 28 | BTA-64710-no-rs                | 0 | 10958226 |          |
| 28 | Hapmap39009-BTA-121529         | 0 | 11082523 |          |
| 28 | BTA-26836-no-rs                | 0 | 11152945 |          |
| 28 | ARS-BFGL-NGS-46260             |   | 11196379 |          |
| 28 | Hapmap60194-rs29018070         | 0 | 11303951 |          |
| 28 | BTA-64714-no-rs                | 0 | 11446289 |          |
| 28 | Hapmap48838-BTA-64718          | 0 | 11496309 |          |
| 28 | BTA-64720-no-rs                | 0 | 11601334 |          |
| 28 | ARS-BFGL-NGS-17443             | 0 | 11661167 |          |
| 28 | Hapmap55592-rs29012361         | 0 | 11719408 |          |
| 28 | ARS-BFGL-NGS-40856             | 0 | 11743764 |          |
| 28 | Hapmap55640-rs29014036         | 0 | 11897521 |          |
| 28 | Hapmap34350-BES8_Contig562_678 | 0 |          | 11932557 |
| 28 | Hapmap54617-rs29021286         | 0 | 11960495 |          |
| 28 | Hapmap50192-BTA-104693         | 0 | 12030121 |          |
| 28 | Hapmap39350-BTA-64742          | 0 | 12102175 |          |
| 28 | ARS-BFGL-NGS-114347            | 0 | 12126849 |          |
| 28 | ARS-BFGL-NGS-37663             | 0 | 12247994 |          |
| 28 | Hapmap53063-rs29021085         | 0 | 12268860 |          |
| 28 | ARS-BFGL-NGS-22855             | 0 | 12361124 |          |
| 28 | Hapmap55826-rs29023262         | 0 | 12593367 |          |
| 28 | Hapmap31107-BTA-139755         | 0 | 12652506 |          |
| 28 | Hapmap41607-BTA-64762          | 0 | 12683164 |          |
| 28 | Hapmap55972-rs29011387         | 0 | 12885550 |          |
| 28 | Hapmap45049-BTA-64763          | 0 | 12928459 |          |
| 28 | ARS-BFGL-NGS-63581             | 0 | 13017638 |          |
| 28 | Hapmap43757-BTA-107542         | 0 | 13159624 |          |
| 28 | Hapmap50751-BTA-64830          | 0 | 13270960 |          |
| 28 | Hapmap26400-BTA-139796         | 0 | 13291848 |          |
| 28 | ARS-BFGL-NGS-61773             | 0 | 13353747 |          |
| 28 | ARS-BFGL-NGS-112827            | 0 | 13424880 |          |
| 28 | ARS-BFGL-NGS-103144            | 0 | 13450152 |          |
| 28 | ARS-BFGL-NGS-16598             | 0 | 13495024 |          |
| 28 | Hapmap38041-BTA-64824          | 0 | 13522294 |          |
| 28 | ARS-BFGL-NGS-32797             | 0 | 13589307 |          |
| 28 | BTA-64815-no-rs                | 0 | 13659540 |          |
| 28 | ARS-BFGL-NGS-14590             |   | 13691955 |          |
| 28 | ARS-BFGL-NGS-100421            | 0 | 13713042 |          |
| 28 | ARS-BFGL-NGS-112924            | 0 | 13773877 |          |
| 28 | ARS-BFGL-NGS-38030             |   | 13802852 |          |
| 28 | Hapmap43006-BTA-64814          | 0 | 13954510 |          |
| 28 | BTB-00976841                   | 0 | 13995887 |          |
| 28 | BTB-00976799                   | 0 | 14031534 |          |
| 28 | BTA-64811-no-rs                | 0 | 14058525 |          |
| 28 | BTA-63552-no-rs                | 0 | 14091432 |          |
| 28 | Hapmap41043-BTA-63549          | 0 | 14129075 |          |
| 28 | BTA-63546-no-rs                | 0 | 14205772 |          |
| 28 | ARS-BFGL-NGS-42033             | 0 | 14243381 |          |
| 28 | ARS-BFGL-NGS-105922            | 0 | 14306505 |          |
| 28 | BTB-00978135                   | 0 | 14338094 |          |

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| 28 | BTB-00978046                     | 0 | 14373984 |          |
| 28 | BTB-00978025                     | 0 | 14412155 |          |
| 28 | Hapmap43634-BTA-63545            | 0 | 14442380 |          |
| 28 | Hapmap43002-BTA-63541            | 0 | 14482088 |          |
| 28 | UA-IFASA-4897                    | 0 | 14515456 |          |
| 28 | BTB-00052914                     | 0 | 14571127 |          |
| 28 | ARS-BFGL-NGS-59130               |   | 14601834 |          |
| 28 | BTB-00053028                     | 0 | 14626377 |          |
| 28 | ARS-BFGL-NGS-62593               | 0 | 14651368 |          |
| 28 | ARS-BFGL-NGS-113790              | 0 | 14996556 |          |
| 28 | Hapmap57731-rs29023197           | 0 | 15031048 |          |
| 28 | ARS-BFGL-NGS-112617              | 0 | 15100045 |          |
| 28 | ARS-BFGL-NGS-41903               | 0 | 15123970 |          |
| 28 | BTB-01905965                     | 0 | 15167861 |          |
| 28 | Hapmap50269-BTA-16971            | 0 | 15224521 |          |
| 28 | ARS-BFGL-NGS-108752              | 0 | 15273955 |          |
| 28 | BTB-00978892                     | 0 | 15300456 |          |
| 28 | Hapmap38168-BTA-63574            | 0 | 15390176 |          |
| 28 | ARS-BFGL-NGS-62227               | 0 | 15411008 |          |
| 28 | BTB-00978826                     | 0 | 15436077 |          |
| 28 | UA-IFASA-8424                    | 0 | 15465954 |          |
| 28 | Hapmap43635-BTA-63570            | 0 | 15502546 |          |
| 28 | BTA-63569-no-rs                  | 0 | 15530655 |          |
| 28 | BTA-63563-no-rs                  | 0 | 15554884 |          |
| 28 | ARS-BFGL-NGS-75885               | 0 | 15591853 |          |
| 28 | ARS-BFGL-NGS-34800               | 0 | 15638383 |          |
| 28 | ARS-BFGL-NGS-760                 | 0 | 15671729 |          |
| 28 | ARS-BFGL-NGS-41944               | 0 | 15721558 |          |
| 28 | ARS-BFGL-NGS-12759               | 0 | 15739975 |          |
| 28 | Hapmap50823-BTA-92119            | 0 | 15780687 |          |
| 28 | ARS-BFGL-NGS-17092               | 0 | 15812621 |          |
| 28 | BTB-00979245                     | 0 | 15853834 |          |
| 28 | BTB-00979271                     | 0 | 15890631 |          |
| 28 | ARS-BFGL-NGS-51030               |   | 15916594 |          |
| 28 | BTA-92128-no-rs                  | 0 | 15950444 |          |
| 28 | BTB-01878683                     | 0 | 15961662 |          |
| 28 | Hapmap51476-BTA-63589            | 0 | 16002510 |          |
| 28 | Hapmap32897-BTA-63586            | 0 | 16039235 |          |
| 28 | BTB-00979082                     | 0 | 16067789 |          |
| 28 | ARS-USMARC-Parent-EF034087-no-rs | 0 |          | 16097749 |
| 28 | Hapmap53701-rs29017064           | 0 | 16097772 |          |
| 28 | ARS-BFGL-NGS-71158               | 0 | 16124333 |          |
| 28 | Hapmap41920-BTA-63578            | 0 | 16171405 |          |
| 28 | Hapmap44111-BTA-63577            | 0 | 16199391 |          |
| 28 | ARS-BFGL-NGS-10534               | 0 | 16250507 |          |
| 28 | ARS-BFGL-NGS-34792               | 0 | 16291445 |          |
| 28 | Hapmap28053-BTA-156781           | 0 | 16330947 |          |
| 28 | BTB-00080204                     | 0 | 16412210 |          |
| 28 | Hapmap48649-BTA-121210           | 0 | 16467810 |          |
| 28 | ARS-BFGL-NGS-110719              | 0 | 16519850 |          |
| 28 | Hapmap59726-rs29025962           | 0 | 16540309 |          |
| 28 | Hapmap26411-BTA-143246           | 0 | 16583296 |          |
| 28 | ARS-BFGL-NGS-119076              | 0 | 16617505 |          |
| 28 | BTA-11097-rs29016861             | 0 | 16641022 |          |

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| 28 | BTB-00229863                     | 0 | 16699539 |          |
| 28 | Hapmap53634-rs29015230           | 0 | 16727989 |          |
| 28 | Hapmap42306-BTA-73982            | 0 | 16753454 |          |
| 28 | ARS-BFGL-NGS-115739              | 0 | 16783056 |          |
| 28 | ARS-BFGL-NGS-81391               | 0 | 16808237 |          |
| 28 | BTA-63648-no-rs                  | 0 | 16855018 |          |
| 28 | ARS-BFGL-NGS-18615               | 0 | 16897942 |          |
| 28 | BTA-20879-no-rs                  | 0 | 16975360 |          |
| 28 | ARS-BFGL-NGS-36989               | 0 | 17031531 |          |
| 28 | ARS-BFGL-NGS-106508              | 0 | 17072008 |          |
| 28 | BTB-01307156                     | 0 | 17115751 |          |
| 28 | ARS-BFGL-NGS-111209              | 0 | 17171751 |          |
| 28 | BTB-00979763                     | 0 | 17196687 |          |
| 28 | ARS-BFGL-NGS-105316              | 0 | 17229601 |          |
| 28 | Hapmap40078-BTA-63620            | 0 | 17304235 |          |
| 28 | ARS-BFGL-NGS-13630               |   | 17331595 |          |
| 28 | ARS-BFGL-NGS-29431               | 0 | 17374797 |          |
| 28 | BTB-00979307                     | 0 | 17440715 |          |
| 28 | BTB-00979302                     | 0 | 17485412 |          |
| 28 | BTA-63612-no-rs                  | 0 | 17562580 |          |
| 28 | ARS-BFGL-NGS-17699               | 0 | 17600137 |          |
| 28 | ARS-BFGL-NGS-18928               | 0 | 17863891 |          |
| 28 | BTA-106423-no-rs                 | 0 | 17896938 |          |
| 28 | ARS-BFGL-NGS-14113               | 0 | 17924436 |          |
| 28 | Hapmap35176-BES10_Contig435_1219 | 0 |          | 17967255 |
| 28 | Hapmap25314-BTA-154302           | 0 | 18012682 |          |
| 28 | Hapmap49844-BTA-106417           | 0 | 18048845 |          |
| 28 | BTB-01183623                     | 0 | 18107065 |          |
| 28 | ARS-BFGL-NGS-13573               | 0 | 18148402 |          |
| 28 | BTA-106425-no-rs                 | 0 | 18173916 |          |
| 28 | Hapmap54791-rs29011605           | 0 | 18194435 |          |
| 28 | Hapmap56567-rs29019836           | 0 | 18263301 |          |
| 28 | ARS-BFGL-NGS-113019              | 0 | 18294817 |          |
| 28 | BTA-10873-rs29016424             | 0 | 18317414 |          |
| 28 | BTB-00980334                     | 0 | 18375373 |          |
| 28 | ARS-BFGL-NGS-60822               | 0 | 18447627 |          |
| 28 | ARS-BFGL-NGS-102609              | 0 | 18472885 |          |
| 28 | ARS-BFGL-NGS-43501               | 0 | 18536733 |          |
| 28 | Hapmap48979-BTA-06121            | 0 | 18563984 |          |
| 28 | ARS-BFGL-NGS-102320              | 0 | 18593051 |          |
| 28 | BTB-00980562                     | 0 | 18625628 |          |
| 28 | BTA-63683-no-rs                  | 0 | 18663296 |          |
| 28 | ARS-BFGL-NGS-118693              | 0 | 18684204 |          |
| 28 | Hapmap38335-BTA-63684            | 0 | 18732955 |          |
| 28 | ARS-BFGL-NGS-64340               |   | 18758510 |          |
| 28 | Hapmap43636-BTA-63692            | 0 | 18780603 |          |
| 28 | ARS-BFGL-NGS-69496               | 0 | 18967449 |          |
| 28 | BTB-00980225                     | 0 | 19126695 |          |
| 28 | Hapmap34837-BES2_Contig400_1246  | 0 |          | 19203345 |
| 28 | Hapmap55560-rs29010051           | 0 | 19236396 |          |
| 28 | Hapmap27402-BTA-139880           | 0 | 19382206 |          |
| 28 | BTA-09012-no-rs                  | 0 | 19436357 |          |
| 28 | BTA-63702-no-rs                  | 0 | 19613942 |          |
| 28 | ARS-BFGL-NGS-109442              | 0 | 19699898 |          |

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| 28 | BTA-65177-no-rs                 | 0 | 19734852 |  |
| 28 | ARS-BFGL-NGS-30090              |   | 19766274 |  |
| 28 | BTB-01016364                    | 0 | 19836248 |  |
| 28 | ARS-BFGL-NGS-45799              | 0 | 19890598 |  |
| 28 | BTB-01681889                    | 0 | 19969386 |  |
| 28 | BTB-00980670                    | 0 | 20014813 |  |
| 28 | ARS-BFGL-NGS-95596              | 0 | 20047805 |  |
| 28 | ARS-BFGL-NGS-116552             | 0 | 20096355 |  |
| 28 | ARS-BFGL-NGS-116386             | 0 | 20158883 |  |
| 28 | BTA-63707-no-rs                 | 0 | 20197058 |  |
| 28 | BTA-63705-no-rs                 | 0 | 20295356 |  |
| 28 | ARS-BFGL-NGS-79803              | 0 | 20339439 |  |
| 28 | ARS-BFGL-NGS-109835             | 0 | 20401964 |  |
| 28 | ARS-BFGL-NGS-110992             | 0 | 20421361 |  |
| 28 | Hapmap52240-rs29013844          | 0 | 20453054 |  |
| 28 | Hapmap48932-BTA-88109           | 0 | 20480901 |  |
| 28 | Hapmap54293-rs29013288          | 0 | 20553876 |  |
| 28 | BTB-01128535                    | 0 | 20680034 |  |
| 28 | Hapmap27893-BTA-163162          | 0 | 20729253 |  |
| 28 | Hapmap24563-BTA-149598          | 0 | 20759391 |  |
| 28 | BTB-01128833                    | 0 | 20792415 |  |
| 28 | Hapmap38713-BTA-92763           | 0 | 20821114 |  |
| 28 | Hapmap48125-BTA-92753           | 0 | 20855508 |  |
| 28 | BTB-01129012                    | 0 | 20886524 |  |
| 28 | BTB-01129090                    | 0 | 20915841 |  |
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| 28 | Hapmap39169-BTA-92769           | 0 | 21014194 |  |
| 28 | BTB-01129293                    | 0 | 21066992 |  |
| 28 | BTB-02080610                    | 0 | 21101833 |  |
| 28 | Hapmap56126-rs29022885          | 0 | 21137220 |  |
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| 28 | BTB-01171634                    | 0 | 21516493 |  |
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| 28 | ARS-BFGL-NGS-49095              | 0 | 22323454 |  |
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| 28 | Hapmap32810-BTA-139892          | 0 | 22427057 |  |
| 28 | Hapmap40453-BTA-63723           | 0 | 22451431 |  |
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| 28 | ARS-BFGL-NGS-118454             | 0 | 22535246 |  |
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| 28 | BTB-00980887                    | 0 | 22633575 |  |



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| 28 | ARS-BFGL-NGS-14253     | 0 | 22760601 |
| 28 | ARS-BFGL-NGS-77933     | 0 | 22792613 |
| 28 | UA-IFASA-4794          | 0 | 22820825 |
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| 28 | BTA-61748-no-rs        | 0 | 22911596 |
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| 28 | BTB-00944183           | 0 | 23046825 |
| 28 | BTB-00944100           | 0 | 23075883 |
| 28 | BTB-00944057           | 0 | 23112056 |
| 28 | ARS-BFGL-NGS-91878     | 0 | 23149412 |
| 28 | Hapmap39768-BTA-63742  | 0 | 23200800 |
| 28 | ARS-BFGL-NGS-82350     | 0 | 23278035 |
| 28 | BTB-01561529           | 0 | 23349468 |
| 28 | BTA-104046-no-rs       | 0 | 23385803 |
| 28 | ARS-BFGL-NGS-18633     | 0 | 23422364 |
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| 28 | Hapmap51751-BTA-63790  | 0 | 23500352 |
| 28 | Hapmap54658-rs29015655 | 0 | 23530483 |
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| 28 | Hapmap52367-rs29014044 | 0 | 23742925 |
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| 28 | BTB-01754281           | 0 | 23944281 |
| 28 | Hapmap33588-BTA-150259 | 0 | 23969284 |
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| 28 | BTB-00982339           | 0 | 24065549 |
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| 28 | ARS-BFGL-NGS-46964     | 0 | 24266422 |
| 28 | ARS-BFGL-NGS-87034     | 0 | 24292229 |
| 28 | ARS-BFGL-NGS-25207     | 0 | 24365059 |
| 28 | ARS-BFGL-NGS-15201     | 0 | 24386413 |
| 28 | UA-IFASA-8003          | 0 | 24423785 |
| 28 | BTB-00982085           | 0 | 24459918 |
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| 28 | ARS-BFGL-NGS-107273    | 0 | 24719677 |
| 28 | BTB-00981789           | 0 | 24751304 |
| 28 | BTB-00981721           | 0 | 24845323 |
| 28 | ARS-BFGL-NGS-42058     | 0 | 24873261 |
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| 28 | Hapmap51909-BTA-63755  | 0 | 25175373 |
| 28 | Hapmap44654-BTA-63754  | 0 | 25244340 |
| 28 | BTB-00981547           | 0 | 25296185 |
| 28 | Hapmap44554-BTA-63753  | 0 | 25352987 |

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| 28 | ARS-BFGL-NGS-114812    | 0        | 25565993 |
| 28 | ARS-BFGL-NGS-60192     | 0        | 25609489 |
| 28 | Hapmap56853-rs29009882 | 0        | 25726782 |
| 28 | ARS-BFGL-NGS-37190     | 0        | 25771595 |
| 28 | ARS-BFGL-NGS-21876     | 0        | 25871892 |
| 28 | ARS-BFGL-NGS-116565    | 0        | 25938159 |
| 28 | ARS-BFGL-NGS-13390     | 0        | 25986353 |
| 28 | ARS-BFGL-NGS-75391     | 0        | 26035238 |
| 28 | BTB-00984682           | 0        | 26084739 |
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| 28 | ARS-BFGL-NGS-17426     | 0        | 26211511 |
| 28 | ARS-BFGL-NGS-112712    | 0        | 26277189 |
| 28 | ARS-BFGL-NGS-42580     | 26302597 |          |
| 28 | ARS-BFGL-NGS-14416     | 0        | 26336704 |
| 28 | ARS-BFGL-NGS-109305    | 0        | 26362076 |
| 28 | ARS-BFGL-NGS-113256    | 0        | 26404210 |
| 28 | BTA-63833-no-rs        | 0        | 26470072 |
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| 28 | ARS-BFGL-NGS-36357     | 0        | 26530892 |
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| 28 | ARS-BFGL-NGS-116627    | 0        | 26630070 |
| 28 | ARS-BFGL-NGS-20357     | 0        | 26667266 |
| 28 | ARS-BFGL-NGS-77028     | 0        | 26689199 |
| 28 | ARS-BFGL-NGS-105227    | 0        | 26710422 |
| 28 | ARS-BFGL-NGS-87804     | 0        | 26735196 |
| 28 | ARS-BFGL-NGS-40700     | 26756338 |          |
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| 28 | ARS-BFGL-NGS-15940     | 26818009 |          |
| 28 | ARS-BFGL-NGS-80910     | 0        | 26839732 |
| 28 | ARS-BFGL-NGS-30338     | 0        | 26861615 |
| 28 | ARS-BFGL-NGS-116374    | 0        | 26885074 |
| 28 | ARS-BFGL-NGS-44160     | 0        | 26909230 |
| 28 | Hapmap47897-BTA-25453  | 0        | 26925887 |
| 28 | ARS-BFGL-NGS-118538    | 0        | 26972581 |
| 28 | ARS-BFGL-NGS-18908     | 0        | 26994978 |
| 28 | ARS-BFGL-NGS-102370    | 0        | 27023327 |
| 28 | ARS-BFGL-NGS-118737    | 0        | 27051506 |
| 28 | ARS-BFGL-NGS-76173     | 0        | 27072121 |
| 28 | ARS-BFGL-NGS-102613    | 0        | 27102620 |
| 28 | Hapmap43495-BTA-122771 | 0        | 27135744 |
| 28 | Hapmap40927-BTA-25456  | 0        | 27168516 |
| 28 | ARS-BFGL-NGS-56673     | 0        | 27229817 |
| 28 | ARS-BFGL-NGS-103901    | 0        | 27251639 |
| 28 | ARS-BFGL-NGS-88826     | 0        | 27292148 |
| 28 | ARS-BFGL-NGS-83800     | 27313680 |          |
| 28 | BTB-00985112           | 0        | 27334957 |
| 28 | Hapmap43638-BTA-63877  | 0        | 27357965 |
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| 28 | ARS-BFGL-NGS-95048     | 0        | 27477255 |
| 28 | ARS-BFGL-NGS-111868    | 0        | 27515747 |
| 28 | ARS-BFGL-NGS-113326    | 0        | 27536248 |
| 28 | ARS-BFGL-NGS-29771     | 0        | 27564486 |

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| 28 | ARS-BFGL-NGS-56311     | 0        | 27588345 |
| 28 | ARS-BFGL-NGS-54228     | 0        | 27618750 |
| 28 | ARS-BFGL-NGS-19082     | 0        | 27655543 |
| 28 | ARS-BFGL-NGS-115022    | 0        | 27762101 |
| 28 | ARS-BFGL-NGS-18505     | 0        | 27785430 |
| 28 | ARS-BFGL-NGS-29335     | 0        | 27824064 |
| 28 | ARS-BFGL-NGS-54254     | 0        | 27863025 |
| 28 | ARS-BFGL-NGS-111371    | 0        | 27902139 |
| 28 | ARS-BFGL-NGS-30132     | 0        | 27942519 |
| 28 | ARS-BFGL-NGS-48650     | 28011033 |          |
| 28 | ARS-BFGL-NGS-35458     | 0        | 28063983 |
| 28 | ARS-BFGL-NGS-95272     | 0        | 28099050 |
| 28 | UA-IFASA-6208          | 0        | 28149081 |
| 28 | ARS-BFGL-NGS-23089     | 0        | 28185694 |
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| 28 | ARS-BFGL-NGS-19725     | 0        | 28239419 |
| 28 | ARS-BFGL-NGS-43400     | 28272199 |          |
| 28 | ARS-BFGL-NGS-64041     | 0        | 28297122 |
| 28 | Hapmap56893-rs29013584 | 0        | 28317627 |
| 28 | ARS-BFGL-NGS-111019    | 0        | 28342445 |
| 28 | ARS-BFGL-NGS-67480     | 28385256 |          |
| 28 | ARS-BFGL-NGS-50615     | 0        | 28407057 |
| 28 | ARS-BFGL-NGS-30453     | 0        | 28450452 |
| 28 | ARS-BFGL-NGS-72980     | 28491461 |          |
| 28 | ARS-BFGL-NGS-35186     | 0        | 28549725 |
| 28 | BTB-00986484           | 0        | 28580661 |
| 28 | Hapmap48644-BTA-119939 | 0        | 28606746 |
| 28 | Hapmap48033-BTA-63946  | 0        | 28660577 |
| 28 | Hapmap55318-rs29013309 | 0        | 28743056 |
| 28 | ARS-BFGL-NGS-43160     | 28859419 |          |
| 28 | Hapmap27748-BTA-140063 | 0        | 28884068 |
| 28 | Hapmap58649-rs29011010 | 0        | 28953159 |
| 28 | Hapmap41044-BTA-63992  | 0        | 28998751 |
| 28 | ARS-BFGL-NGS-107358    | 0        | 29084057 |
| 28 | Hapmap60533-rs29020432 | 0        | 29117568 |
| 28 | BTA-111483-no-rs       | 0        | 29142304 |
| 28 | ARS-BFGL-NGS-106531    | 0        | 29232773 |
| 28 | ARS-BFGL-NGS-103806    | 0        | 29367316 |
| 28 | ARS-BFGL-NGS-84710     | 29547026 |          |
| 28 | BTA-63967-no-rs        | 0        | 29727352 |
| 28 | ARS-BFGL-NGS-81249     | 0        | 29826005 |
| 28 | ARS-BFGL-NGS-36859     | 0        | 29854462 |
| 28 | ARS-BFGL-NGS-75505     | 0        | 29878267 |
| 28 | UA-IFASA-6955          | 0        | 29913288 |
| 28 | ARS-BFGL-NGS-77400     | 0        | 29939938 |
| 28 | Hapmap42281-BTA-63982  | 0        | 29981371 |
| 28 | BTA-63984-no-rs        | 0        | 30070377 |
| 28 | Hapmap26958-BTA-140048 | 0        | 30158724 |
| 28 | ARS-BFGL-NGS-118275    | 0        | 30201072 |
| 28 | Hapmap48728-BTA-36414  | 0        | 30486580 |
| 28 | ARS-BFGL-NGS-96858     | 0        | 30760470 |
| 28 | BTA-64009-no-rs        | 0        | 30809642 |
| 28 | Hapmap44610-BTA-64006  | 0        | 30838950 |
| 28 | ARS-BFGL-NGS-116958    | 0        | 30867732 |

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| 28 | Hapmap32311-BTA-140064           | 0        | 30987389 |          |
| 28 | ARS-BFGL-NGS-24300               | 0        | 31053570 |          |
| 28 | ARS-BFGL-NGS-37538               | 0        | 31130099 |          |
| 28 | ARS-BFGL-NGS-111327              | 0        | 31169188 |          |
| 28 | ARS-BFGL-NGS-59644               | 0        | 31197813 |          |
| 28 | ARS-BFGL-NGS-73307               | 0        | 31371629 |          |
| 28 | ARS-BFGL-NGS-113210              | 0        | 31431555 |          |
| 28 | ARS-BFGL-NGS-16103               | 0        | 31636252 |          |
| 28 | ARS-BFGL-NGS-113089              | 0        | 31700004 |          |
| 28 | ARS-BFGL-NGS-15532               | 0        | 31764960 |          |
| 28 | ARS-BFGL-NGS-116715              | 0        | 31919826 |          |
| 28 | ARS-BFGL-NGS-55934               | 0        | 31960726 |          |
| 28 | ARS-BFGL-NGS-32511               | 0        | 32020943 |          |
| 28 | ARS-BFGL-NGS-46400               | 32075192 |          |          |
| 28 | ARS-BFGL-NGS-110336              | 0        | 32162001 |          |
| 28 | ARS-BFGL-NGS-41049               | 0        | 32216055 |          |
| 28 | ARS-BFGL-NGS-27431               | 0        | 32303190 |          |
| 28 | ARS-BFGL-NGS-22289               | 0        | 32398753 |          |
| 28 | ARS-BFGL-NGS-67675               | 0        | 32440653 |          |
| 28 | ARS-BFGL-NGS-41683               | 0        | 32465519 |          |
| 28 | Hapmap35179-BES10_Contig554_1262 | 0        |          | 32605039 |
| 28 | ARS-BFGL-NGS-12212               | 0        | 32629221 |          |
| 28 | ARS-BFGL-NGS-33575               | 0        | 32718347 |          |
| 28 | ARS-BFGL-NGS-86233               | 0        | 32939809 |          |
| 28 | ARS-BFGL-NGS-59247               | 0        | 32996400 |          |
| 28 | ARS-BFGL-NGS-91056               | 0        | 33096711 |          |
| 28 | Hapmap34673-BES10_Contig743_1320 | 0        |          | 33123471 |
| 28 | ARS-BFGL-NGS-19967               | 0        | 33240420 |          |
| 28 | ARS-BFGL-NGS-99585               | 0        | 33262793 |          |
| 28 | ARS-BFGL-NGS-899                 | 0        | 33328952 |          |
| 28 | ARS-BFGL-NGS-88771               | 0        | 33359220 |          |
| 28 | ARS-BFGL-NGS-106765              | 0        | 33405497 |          |
| 28 | ARS-BFGL-NGS-76330               | 0        | 33449126 |          |
| 28 | ARS-BFGL-NGS-17087               | 0        | 33570352 |          |
| 28 | ARS-BFGL-NGS-27870               | 0        | 33632545 |          |
| 28 | ARS-BFGL-NGS-33770               | 33706052 |          |          |
| 28 | ARS-BFGL-NGS-115508              | 0        | 33729338 |          |
| 28 | ARS-BFGL-NGS-101592              | 0        | 33767206 |          |
| 28 | BTA-64054-no-rs                  | 0        | 33847185 |          |
| 28 | ARS-BFGL-NGS-113747              | 0        | 33897208 |          |
| 28 | ARS-BFGL-NGS-31039               | 0        | 33943992 |          |
| 28 | ARS-BFGL-NGS-56159               | 0        | 33969626 |          |
| 28 | ARS-BFGL-NGS-111706              | 0        | 34021273 |          |
| 28 | Hapmap46854-BTA-64068            | 0        | 34066383 |          |
| 28 | ARS-BFGL-NGS-105786              | 0        | 34095147 |          |
| 28 | ARS-BFGL-NGS-110727              | 0        | 34142490 |          |
| 28 | ARS-BFGL-NGS-11877               | 0        | 34157181 |          |
| 28 | ARS-BFGL-NGS-63621               | 0        | 34178363 |          |
| 28 | ARS-BFGL-NGS-101363              | 0        | 34240971 |          |
| 28 | ARS-BFGL-NGS-41821               | 0        | 34261057 |          |
| 28 | ARS-BFGL-NGS-117805              | 0        | 34281050 |          |
| 28 | Hapmap36413-SCAFFOLD205131_13346 | 0        |          | 34309492 |
| 28 | Hapmap53159-rs29013603           | 0        | 34373181 |          |
| 28 | ARS-BFGL-NGS-42738               | 0        | 34429786 |          |

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| 28 | ARS-BFGL-NGS-15634                    | 0 | 34461844 |   |          |
| 28 | ARS-BFGL-NGS-62314                    | 0 | 34503334 |   |          |
| 28 | ARS-BFGL-NGS-10481                    | 0 | 34530363 |   |          |
| 28 | ARS-BFGL-NGS-99440                    | 0 | 34596949 |   |          |
| 28 | ARS-BFGL-NGS-29453                    | 0 | 34617002 |   |          |
| 28 | ARS-BFGL-NGS-104102                   | 0 | 34700947 |   |          |
| 28 | UA-IFASA-7767                         | 0 | 34722075 |   |          |
| 28 | ARS-BFGL-NGS-25269                    | 0 | 34748548 |   |          |
| 28 | ARS-BFGL-NGS-86329                    | 0 | 34832161 |   |          |
| 28 | ARS-BFGL-NGS-29739                    | 0 | 34855538 |   |          |
| 28 | ARS-BFGL-NGS-77785                    | 0 | 34887911 |   |          |
| 28 | ARS-BFGL-NGS-69020                    |   | 34929321 |   |          |
| 28 | ARS-BFGL-NGS-101535                   | 0 | 34987717 |   |          |
| 28 | ARS-BFGL-NGS-103387                   | 0 | 35036603 |   |          |
| 28 | ARS-BFGL-NGS-65547                    | 0 | 35051834 |   |          |
| 28 | ARS-BFGL-NGS-15751                    | 0 | 35076001 |   |          |
| 28 | Hapmap47068-BTA-64117                 | 0 | 35113955 |   |          |
| 28 | ARS-BFGL-NGS-108719                   | 0 | 35152519 |   |          |
| 28 | ARS-BFGL-NGS-57340                    | 0 | 35183341 |   |          |
| 28 | ARS-BFGL-NGS-34053                    | 0 | 35247970 |   |          |
| 28 | BTB-00987935                          | 0 | 35294673 |   |          |
| 28 | ARS-USMARC-Parent-EF026086-rs29013660 | 0 |          | 0 | 35331560 |
| 28 | UA-IFASA-5633                         | 0 | 35354394 |   |          |
| 28 | BTA-26221-no-rs                       | 0 | 35387553 |   |          |
| 28 | ARS-BFGL-NGS-36659                    | 0 | 35412301 |   |          |
| 28 | BTB-01693480                          | 0 | 35504637 |   |          |
| 28 | BTB-02015177                          | 0 | 35668756 |   |          |
| 28 | BTB-01851415                          | 0 | 35714622 |   |          |
| 28 | ARS-BFGL-NGS-94161                    | 0 | 35810609 |   |          |
| 28 | Hapmap46855-BTA-64134                 | 0 | 35845887 |   |          |
| 28 | BTB-00988209                          | 0 | 35898904 |   |          |
| 28 | ARS-BFGL-NGS-85125                    | 0 | 35989628 |   |          |
| 28 | ARS-BFGL-NGS-71077                    | 0 | 36010482 |   |          |
| 28 | Hapmap47595-BTA-37811                 | 0 | 36058242 |   |          |
| 28 | ARS-BFGL-NGS-11070                    |   | 36085117 |   |          |
| 28 | Hapmap55704-ss46526884                | 0 | 36108733 |   |          |
| 28 | BTA-101196-no-rs                      | 0 | 36159296 |   |          |
| 28 | ARS-BFGL-NGS-46431                    | 0 | 36183465 |   |          |
| 28 | ARS-BFGL-NGS-109112                   | 0 | 36219505 |   |          |
| 28 | ARS-BFGL-NGS-102019                   | 0 | 36243828 |   |          |
| 28 | ARS-BFGL-NGS-36553                    | 0 | 36285860 |   |          |
| 28 | ARS-BFGL-NGS-33494                    | 0 | 36300699 |   |          |
| 28 | Hapmap51965-BTA-101198                | 0 | 36314835 |   |          |
| 28 | Hapmap52711-rs29025273                | 0 | 36359123 |   |          |
| 28 | ARS-BFGL-NGS-83238                    | 0 | 36410577 |   |          |
| 28 | BTB-02078366                          | 0 | 36504079 |   |          |
| 28 | BTB-02006659                          | 0 | 36526154 |   |          |
| 28 | BTA-95963-no-rs                       | 0 | 36630826 |   |          |
| 28 | BTB-01469727                          | 0 | 36776061 |   |          |
| 28 | ARS-BFGL-NGS-28764                    | 0 | 36832452 |   |          |
| 28 | BTA-64181-no-rs                       | 0 | 36898094 |   |          |
| 28 | Hapmap49694-BTA-64179                 | 0 | 36943445 |   |          |
| 28 | ARS-BFGL-NGS-74541                    | 0 | 37052366 |   |          |
| 28 | ARS-BFGL-NGS-68555                    | 0 | 37202750 |   |          |

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| 28 | Hapmap49693-BTA-64161  | 0 | 37272033 |
| 28 | BTA-11232-no-rs        | 0 | 37296816 |
| 28 | BTB-00989225           | 0 | 37331358 |
| 28 | Hapmap43004-BTA-64153  | 0 | 37359315 |
| 28 | BTA-64158-no-rs        | 0 | 37398488 |
| 28 | ARS-BFGL-NGS-21924     | 0 | 37433520 |
| 28 | BTB-00989046           | 0 | 37480599 |
| 28 | Hapmap54940-rs29013966 | 0 | 37514643 |
| 28 | BTB-00988758           | 0 | 37591354 |
| 28 | ARS-BFGL-NGS-43187     | 0 | 37624697 |
| 28 | Hapmap38515-BTA-64145  | 0 | 37650672 |
| 28 | BTB-00988573           | 0 | 37682570 |
| 28 | Hapmap49249-BTA-64138  | 0 | 37716831 |
| 28 | ARS-BFGL-NGS-107712    | 0 | 37740394 |
| 28 | Hapmap54360-rs29014681 | 0 | 37770465 |
| 28 | ARS-BFGL-NGS-110226    | 0 | 37799844 |
| 28 | ARS-BFGL-NGS-107805    | 0 | 37846339 |
| 28 | BTB-01137045           | 0 | 37873240 |
| 28 | ARS-BFGL-NGS-58598     | 0 | 37925442 |
| 28 | Hapmap44431-BTA-95784  | 0 | 37962946 |
| 28 | ARS-BFGL-NGS-23193     | 0 | 38004515 |
| 28 | ARS-BFGL-NGS-115768    | 0 | 38026506 |
| 28 | BTB-01640011           | 0 | 38074472 |
| 28 | BTB-01640085           | 0 | 38104962 |
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| 28 | ARS-BFGL-NGS-119089    | 0 | 38314983 |
| 28 | ARS-BFGL-NGS-28921     | 0 | 38339404 |
| 28 | ARS-BFGL-NGS-36993     | 0 | 38376643 |
| 28 | Hapmap48306-BTA-36540  | 0 | 38449335 |
| 28 | Hapmap54789-rs29011450 | 0 | 38503969 |
| 28 | ARS-BFGL-NGS-110340    | 0 | 38843869 |
| 28 | Hapmap56980-rs29013197 | 0 | 38961890 |
| 28 | ARS-BFGL-NGS-32087     | 0 | 39061596 |
| 28 | Hapmap32414-BTA-65998  | 0 | 39087744 |
| 28 | BTA-64281-no-rs        | 0 | 39134584 |
| 28 | ARS-BFGL-NGS-119915    | 0 | 39165936 |
| 28 | BTA-64273-no-rs        | 0 | 39189766 |
| 28 | ARS-BFGL-NGS-108324    | 0 | 39225422 |
| 28 | Hapmap42625-BTA-65988  | 0 | 39271695 |
| 28 | ARS-BFGL-NGS-97350     | 0 | 39400356 |
| 28 | ARS-BFGL-NGS-118113    | 0 | 39482527 |
| 28 | ARS-BFGL-NGS-101950    | 0 | 39528421 |
| 28 | Hapmap41923-BTA-64252  | 0 | 39637143 |
| 28 | BTA-64258-no-rs        | 0 | 39657519 |
| 28 | Hapmap41045-BTA-64263  | 0 | 39700262 |
| 28 | ARS-BFGL-NGS-16426     | 0 | 39750540 |
| 28 | BTA-64266-no-rs        | 0 | 39772736 |
| 28 | ARS-BFGL-NGS-60152     | 0 | 39872208 |
| 28 | BTB-00990573           | 0 | 39950373 |
| 28 | BTB-01978062           | 0 | 39971968 |
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| 28 | ARS-BFGL-NGS-55590     | 0 | 40113903 |
| 28 | ARS-BFGL-NGS-85316     | 0 | 40158569 |
| 28 | Hapmap30566-BTA-151869 | 0 | 40191764 |

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| 28 | ARS-BFGL-NGS-27514             | 0 | 40343865 |          |
| 28 | BTB-00990667                   | 0 | 40395543 |          |
| 28 | UA-IFASA-3114                  | 0 | 40571835 |          |
| 28 | Hapmap29876-BTA-64410          | 0 | 40642749 |          |
| 28 | ARS-BFGL-NGS-33459             | 0 | 40749312 |          |
| 28 | Hapmap35495-SCAFFOLD265551_632 | 0 |          | 40782405 |
| 28 | BTA-23497-no-rs                | 0 | 40817081 |          |
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| 28 | ARS-BFGL-NGS-74050             | 0 | 40891657 |          |
| 28 | ARS-BFGL-NGS-114518            | 0 | 40918760 |          |
| 28 | Hapmap27609-BTA-149856         | 0 | 40931834 |          |
| 28 | ARS-BFGL-NGS-33900             | 0 | 40957698 |          |
| 28 | ARS-BFGL-NGS-103673            | 0 | 40993536 |          |
| 28 | ARS-BFGL-NGS-86927             | 0 | 41060041 |          |
| 28 | ARS-BFGL-NGS-27287             | 0 | 41088934 |          |
| 28 | ARS-BFGL-NGS-113064            | 0 | 41120024 |          |
| 28 | ARS-BFGL-NGS-116431            | 0 | 41154672 |          |
| 28 | ARS-BFGL-NGS-11341             | 0 | 41210483 |          |
| 28 | ARS-BFGL-NGS-53880             |   | 41268878 |          |
| 28 | ARS-BFGL-NGS-55070             |   | 41306221 |          |
| 28 | ARS-BFGL-NGS-27365             | 0 | 41339679 |          |
| 28 | ARS-BFGL-NGS-108993            | 0 | 41382669 |          |
| 28 | ARS-BFGL-NGS-58930             | 0 | 41403376 |          |
| 28 | ARS-BFGL-NGS-15178             | 0 | 41426446 |          |
| 28 | Hapmap52247-rs29010830         | 0 | 41471492 |          |
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| 28 | BTB-00991273                   | 0 | 41525772 |          |
| 28 | ARS-BFGL-NGS-37010             |   | 41574265 |          |
| 28 | BTA-101426-no-rs               | 0 | 41612341 |          |
| 28 | ARS-BFGL-NGS-23112             | 0 | 41649579 |          |
| 28 | ARS-BFGL-NGS-104256            | 0 | 41674187 |          |
| 28 | ARS-BFGL-NGS-15103             | 0 | 41694429 |          |
| 28 | BTB-01532674                   | 0 | 41737604 |          |
| 28 | BTB-00992330                   | 0 | 41781082 |          |
| 28 | BTB-00992306                   | 0 | 41807079 |          |
| 28 | BTB-00992363                   | 0 | 41836576 |          |
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| 28 | ARS-BFGL-NGS-71100             |   | 41898328 |          |
| 28 | ARS-BFGL-NGS-58728             | 0 | 41921923 |          |
| 28 | BTA-99382-no-rs                | 0 | 41967637 |          |
| 28 | BTA-99379-no-rs                | 0 | 41996812 |          |
| 28 | BTB-00992438                   | 0 | 42049080 |          |
| 28 | Hapmap54895-rs29024828         | 0 | 42085407 |          |
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| 28 | ARS-BFGL-NGS-40955             | 0 | 42180848 |          |
| 28 | BTB-00992523                   | 0 | 42219956 |          |
| 28 | ARS-BFGL-NGS-100444            | 0 | 42255760 |          |
| 28 | ARS-BFGL-NGS-119555            | 0 | 42322533 |          |
| 28 | ARS-BFGL-NGS-37392             | 0 | 42376459 |          |
| 28 | ARS-BFGL-NGS-105735            | 0 | 42413870 |          |
| 28 | BTA-64470-no-rs                | 0 | 42436188 |          |
| 28 | BTB-00993046                   | 0 | 42471028 |          |
| 28 | ARS-BFGL-NGS-62624             | 0 | 42520920 |          |
| 28 | BTB-00993221                   | 0 | 42551127 |          |

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| 28 | ARS-BFGL-NGS-30380                    | 42582828 |          |  |
| 28 | ARS-BFGL-NGS-17470                    | 0        | 42617112 |  |
| 28 | ARS-BFGL-NGS-34198                    | 0        | 42651360 |  |
| 28 | Hapmap48038-BTA-64479                 | 0        | 42675311 |  |
| 28 | ARS-BFGL-NGS-17601                    | 0        | 42695490 |  |
| 28 | ARS-BFGL-NGS-18896                    | 0        | 42720661 |  |
| 28 | ARS-BFGL-NGS-79313                    | 0        | 42749034 |  |
| 28 | ARS-BFGL-NGS-30705                    | 0        | 42774413 |  |
| 28 | BTA-64424-no-rs                       | 0        | 42803944 |  |
| 28 | ARS-BFGL-NGS-81842                    | 0        | 42831281 |  |
| 28 | ARS-BFGL-NGS-113814                   | 0        | 42881677 |  |
| 28 | ARS-BFGL-NGS-28913                    | 0        | 42957868 |  |
| 28 | BTB-00993480                          | 0        | 43013191 |  |
| 28 | BTA-02499-no-rs                       | 0        | 43088798 |  |
| 28 | BTA-64483-no-rs                       | 0        | 43135873 |  |
| 28 | BTB-00993386                          | 0        | 43179395 |  |
| 28 | BTA-64609-no-rs                       | 0        | 43217773 |  |
| 28 | Hapmap43641-BTA-64241                 | 0        | 43242413 |  |
| 28 | Hapmap38118-BTA-64240                 | 0        | 43266533 |  |
| 28 | ARS-BFGL-NGS-112985                   | 0        | 43287244 |  |
| 28 | BTB-00990065                          | 0        | 43319688 |  |
| 28 | ARS-BFGL-NGS-110697                   | 0        | 43350234 |  |
| 28 | Hapmap29728-BTA-140144                | 0        | 43374550 |  |
| 28 | ARS-BFGL-NGS-104768                   | 0        | 43459357 |  |
| 28 | ARS-BFGL-NGS-110675                   | 0        | 43486801 |  |
| 28 | ARS-BFGL-NGS-60450                    | 0        | 43544497 |  |
| 28 | ARS-BFGL-NGS-116671                   | 0        | 43576806 |  |
| 28 | ARS-BFGL-NGS-102618                   | 0        | 43609377 |  |
| 28 | ARS-BFGL-NGS-77814                    | 0        | 43642378 |  |
| 28 | Hapmap36705-SCAFFOLD40294_36721       | 0        | 43667216 |  |
| 28 | ARS-BFGL-NGS-88389                    | 0        | 43697575 |  |
| 28 | BTB-00994028                          | 0        | 43720031 |  |
| 28 | ARS-BFGL-NGS-119323                   | 0        | 43740822 |  |
| 28 | ARS-BFGL-NGS-41460                    | 0        | 43783655 |  |
| 28 | ARS-BFGL-NGS-78642                    | 0        | 43815607 |  |
| 28 | ARS-BFGL-NGS-22779                    | 0        | 43848284 |  |
| 28 | ARS-BFGL-NGS-105545                   | 0        | 43877796 |  |
| 28 | ARS-BFGL-NGS-106657                   | 0        | 43965824 |  |
| 28 | ARS-BFGL-NGS-74562                    | 0        | 44022923 |  |
| 28 | Hapmap38119-BTA-64560                 | 0        | 44030986 |  |
| 28 | BTA-64562-no-rs                       | 0        | 44056044 |  |
| 28 | Hapmap41321-BTA-64563                 | 0        | 44085986 |  |
| 28 | ARS-BFGL-NGS-111648                   | 0        | 44118793 |  |
| 28 | ARS-BFGL-NGS-36868                    | 0        | 44153620 |  |
| 28 | ARS-BFGL-NGS-19085                    | 0        | 44194654 |  |
| 28 | BTB-00994774                          | 0        | 44224501 |  |
| 28 | ARS-USMARC-Parent-EF042091-rs29014974 | 0        | 44261945 |  |
| 28 | ARS-BFGL-NGS-113188                   | 0        | 44332828 |  |
| 28 | BTB-00994382                          | 0        | 44364238 |  |
| 28 | BTB-00994340                          | 0        | 44391777 |  |
| 28 | ARS-BFGL-NGS-98430                    | 0        | 44421318 |  |
| 28 | ARS-BFGL-NGS-20933                    | 0        | 44453761 |  |
| 28 | BTA-21197-no-rs                       | 0        | 44496184 |  |
| 28 | ARS-BFGL-NGS-61191                    | 0        | 44544107 |  |



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| 28 | BTB-00995112           | 0 | 44649351 |
| 28 | ARS-BFGL-NGS-108464    | 0 | 44694578 |
| 28 | ARS-BFGL-NGS-119568    | 0 | 44720555 |
| 28 | ARS-BFGL-NGS-56552     | 0 | 44752862 |
| 28 | Hapmap46056-BTA-21265  | 0 | 44780753 |
| 28 | UA-IFASA-7637          | 0 | 44838730 |
| 28 | BTB-00993850           | 0 | 44891698 |
| 28 | ARS-BFGL-NGS-50180     |   | 44939077 |
| 28 | ARS-BFGL-NGS-91390     | 0 | 44961253 |
| 28 | ARS-BFGL-NGS-17610     |   | 45039064 |
| 28 | ARS-BFGL-NGS-55750     | 0 | 45053272 |
| 28 | ARS-BFGL-NGS-52786     | 0 | 45075270 |
| 28 | BTA-122394-no-rs       | 0 | 45109689 |
| 28 | Hapmap57867-rs29020442 | 0 | 45144385 |
| 28 | ARS-BFGL-NGS-76133     | 0 | 45177305 |
| 28 | Hapmap53226-rs29020573 | 0 | 45216206 |
| 28 | BTA-115921-no-rs       | 0 | 45240243 |
| 28 | Hapmap24695-BTA-157524 | 0 | 45262079 |
| 28 | ARS-BFGL-NGS-110190    | 0 | 45290843 |
| 28 | ARS-BFGL-NGS-11935     | 0 | 45331148 |
| 28 | Hapmap47686-BTA-64538  | 0 | 45369901 |
| 28 | ARS-BFGL-NGS-118293    | 0 | 45409471 |
| 28 | BTA-64548-no-rs        | 0 | 45442995 |
| 28 | ARS-BFGL-NGS-20013     | 0 | 45477737 |
| 28 | ARS-BFGL-NGS-103888    | 0 | 45516017 |
| 28 | BTB-01443963           | 0 | 45560971 |
| 28 | ARS-BFGL-NGS-109638    | 0 | 45614272 |
| 28 | ARS-BFGL-NGS-77820     |   | 45650589 |
| 28 | ARS-BFGL-NGS-42019     | 0 | 45700407 |
| 28 | ARS-BFGL-NGS-116063    | 0 | 45805830 |
| 28 | ARS-BFGL-NGS-28348     | 0 | 45870946 |
| 28 | ARS-BFGL-NGS-119491    | 0 | 45916628 |
| 28 | BTB-00995363           | 0 | 45969025 |
| 28 | ARS-BFGL-NGS-74123     | 0 | 45997628 |
| 28 | ARS-BFGL-NGS-24880     | 0 | 46039560 |
| 28 | BTB-00995659           | 0 | 46072629 |
| 28 | ARS-BFGL-NGS-17624     | 0 | 46102047 |
| 28 | ARS-BFGL-NGS-16233     | 0 | 46146720 |
| 28 | Hapmap43005-BTA-64606  | 0 | 46194755 |
| 28 | ARS-BFGL-NGS-19605     | 0 | 46224056 |
| 29 | BTB-02087390           | 0 | 16860    |
| 29 | Hapmap53898-rs29026969 | 0 | 630087   |
| 29 | ARS-BFGL-NGS-69761     | 0 | 673312   |
| 29 | Hapmap58534-rs29018685 | 0 | 724198   |
| 29 | ARS-BFGL-NGS-76669     | 0 | 812039   |
| 29 | BTB-01743168           | 0 | 836019   |
| 29 | Hapmap32312-BTA-140265 | 0 | 924383   |
| 29 | Hapmap40571-BTA-66487  | 0 | 975414   |
| 29 | Hapmap39498-BTA-66465  | 0 | 1021183  |
| 29 | Hapmap27591-BTA-140252 | 0 | 1104258  |
| 29 | UA-IFASA-3274          | 0 | 1175476  |
| 29 | ARS-BFGL-NGS-21321     | 0 | 1198364  |
| 29 | ARS-BFGL-NGS-105673    | 0 | 1249518  |
| 29 | Hapmap43008-BTA-65226  | 0 | 1300987  |

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| 29 | ARS-BFGL-NGS-17668              | 0       | 1348472 |  |
| 29 | Hapmap46856-BTA-64855           | 0       | 1380589 |  |
| 29 | ARS-BFGL-NGS-43123              | 0       | 1437429 |  |
| 29 | Hapmap27168-BTA-140237          | 0       | 1531232 |  |
| 29 | UA-IFASA-8427                   | 0       | 1573172 |  |
| 29 | BTA-94010-no-rs                 | 0       | 1638645 |  |
| 29 | BTB-02030831                    | 0       | 1688078 |  |
| 29 | BTB-01373902                    | 0       | 1753384 |  |
| 29 | ARS-BFGL-NGS-80627              | 0       | 1787268 |  |
| 29 | ARS-BFGL-NGS-96357              | 0       | 1832257 |  |
| 29 | ARS-BFGL-NGS-21254              | 0       | 1898171 |  |
| 29 | BTB-01373594                    | 0       | 1951595 |  |
| 29 | ARS-BFGL-NGS-39483              | 0       | 2002713 |  |
| 29 | ARS-BFGL-NGS-111831             | 0       | 2039203 |  |
| 29 | Hapmap35197-BES11_Contig441_882 | 0       | 2067440 |  |
| 29 | ARS-BFGL-NGS-86310              | 2091741 |         |  |
| 29 | ARS-BFGL-NGS-106118             | 0       | 2139421 |  |
| 29 | ARS-BFGL-NGS-119674             | 0       | 2191530 |  |
| 29 | Hapmap44268-BTA-66621           | 0       | 2227690 |  |
| 29 | BTB-00997705                    | 0       | 2262975 |  |
| 29 | ARS-BFGL-NGS-13527              | 0       | 2294521 |  |
| 29 | ARS-BFGL-NGS-118188             | 0       | 2324336 |  |
| 29 | ARS-BFGL-NGS-15910              | 2369574 |         |  |
| 29 | UA-IFASA-7388                   | 0       | 2396643 |  |
| 29 | Hapmap38424-BTA-64887           | 0       | 2427716 |  |
| 29 | ARS-BFGL-NGS-19509              | 0       | 2491812 |  |
| 29 | ARS-BFGL-NGS-34508              | 0       | 2522803 |  |
| 29 | ARS-BFGL-NGS-35061              | 0       | 2547207 |  |
| 29 | Hapmap42618-BTA-64955           | 0       | 2630326 |  |
| 29 | UA-IFASA-7109                   | 0       | 2680682 |  |
| 29 | BTB-00998232                    | 0       | 2714357 |  |
| 29 | Hapmap48839-BTA-65003           | 0       | 2745018 |  |
| 29 | Hapmap41324-BTA-65017           | 0       | 2803170 |  |
| 29 | Hapmap33716-BTA-140311          | 0       | 2858775 |  |
| 29 | Hapmap30243-BTA-140315          | 0       | 2899371 |  |
| 29 | BTB-00998633                    | 0       | 2933158 |  |
| 29 | ARS-BFGL-NGS-46634              | 0       | 2963181 |  |
| 29 | BTB-01648891                    | 0       | 3074352 |  |
| 29 | UA-IFASA-9501                   | 0       | 3128299 |  |
| 29 | BTA-119212-no-rs                | 0       | 3219084 |  |
| 29 | ARS-BFGL-NGS-90518              | 0       | 3245223 |  |
| 29 | UA-IFASA-9495                   | 0       | 3348193 |  |
| 29 | ARS-BFGL-NGS-52742              | 0       | 3378324 |  |
| 29 | BTA-119227-no-rs                | 0       | 3461095 |  |
| 29 | ARS-BFGL-NGS-21204              | 0       | 3487134 |  |
| 29 | ARS-BFGL-NGS-54696              | 0       | 3518753 |  |
| 29 | ARS-BFGL-NGS-15560              | 3563907 |         |  |
| 29 | UA-IFASA-8487                   | 0       | 3605478 |  |
| 29 | BTB-01500830                    | 0       | 3643872 |  |
| 29 | Hapmap43969-BTA-90971           | 0       | 3680914 |  |
| 29 | Hapmap24091-BTA-149028          | 0       | 3708497 |  |
| 29 | ARS-BFGL-NGS-113039             | 0       | 3759231 |  |
| 29 | UA-IFASA-9243                   | 0       | 3870348 |  |
| 29 | BTA-105386-no-rs                | 0       | 3890407 |  |

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| 29 | BTB-01385818           | 0 | 4005434 |
| 29 | Hapmap55467-rs29016399 | 0 | 4065379 |
| 29 | BTB-01360311           | 0 | 4112520 |
| 29 | BTB-01385740           | 0 | 4166955 |
| 29 | UA-IFASA-8294          | 0 | 4223844 |
| 29 | UA-IFASA-7975          | 0 | 4264009 |
| 29 | BTA-106112-no-rs       | 0 | 4331410 |
| 29 | ARS-BFGL-NGS-43278     | 0 | 4377323 |
| 29 | Hapmap43752-BTA-106111 | 0 | 4417047 |
| 29 | BTA-92233-no-rs        | 0 | 4471301 |
| 29 | ARS-BFGL-NGS-32916     | 0 | 4533981 |
| 29 | BTB-00999506           | 0 | 4593932 |
| 29 | Hapmap42620-BTA-65399  | 0 | 4635145 |
| 29 | UA-IFASA-7302          | 0 | 4687135 |
| 29 | ARS-BFGL-NGS-76514     | 0 | 4719212 |
| 29 | ARS-BFGL-NGS-55607     | 0 | 4829608 |
| 29 | BTB-02008242           | 0 | 4878998 |
| 29 | ARS-BFGL-NGS-56314     | 0 | 4944723 |
| 29 | Hapmap38878-BTA-112098 | 0 | 4991434 |
| 29 | ARS-BFGL-NGS-80026     | 0 | 5062872 |
| 29 | ARS-BFGL-NGS-20615     | 0 | 5085168 |
| 29 | BTB-00999163           | 0 | 5195373 |
| 29 | Hapmap55216-rs29014075 | 0 | 5224367 |
| 29 | UA-IFASA-7440          | 0 | 5265850 |
| 29 | ARS-BFGL-NGS-92221     | 0 | 5348843 |
| 29 | BTB-01872572           | 0 | 5386153 |
| 29 | ARS-BFGL-NGS-32198     | 0 | 5801594 |
| 29 | BTB-01687196           | 0 | 5843134 |
| 29 | BTB-02059862           | 0 | 5882258 |
| 29 | Hapmap39939-BTA-65474  | 0 | 5998839 |
| 29 | ARS-BFGL-NGS-43446     | 0 | 6042243 |
| 29 | Hapmap30880-BTA-159457 | 0 | 6145335 |
| 29 | Hapmap27639-BTA-159458 | 0 | 6216396 |
| 29 | ARS-BFGL-NGS-86658     | 0 | 6285416 |
| 29 | Hapmap23225-BTA-159474 | 0 | 6325387 |
| 29 | ARS-BFGL-NGS-112954    | 0 | 6340807 |
| 29 | BTB-01276394           | 0 | 6400168 |
| 29 | ARS-BFGL-NGS-45763     | 0 | 6433814 |
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| 29 | ARS-BFGL-NGS-44090     | 0 | 6599274 |
| 29 | BTA-109865-no-rs       | 0 | 6643250 |
| 29 | Hapmap23827-BTA-155640 | 0 | 6667848 |
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| 29 | ARS-BFGL-NGS-62876     | 0 | 6716350 |
| 29 | BTA-119131-no-rs       | 0 | 6751779 |
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| 29 | ARS-BFGL-NGS-55373     | 0 | 6893054 |
| 29 | Hapmap50432-BTA-65585  | 0 | 6929030 |
| 29 | Hapmap31430-BTA-140339 | 0 | 6950974 |
| 29 | ARS-BFGL-NGS-15066     | 0 | 6976219 |
| 29 | UA-IFASA-7566          | 0 | 7017457 |
| 29 | BTB-01892890           | 0 | 7025142 |

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| 29 | ARS-BFGL-NGS-109800                   | 0       | 7091551 |   |         |
| 29 | Hapmap42622-BTA-65690                 | 0       | 7179453 |   |         |
| 29 | ARS-BFGL-NGS-106058                   | 0       | 7220670 |   |         |
| 29 | ARS-BFGL-NGS-15851                    | 0       | 7251574 |   |         |
| 29 | Hapmap43901-BTA-65743                 | 0       | 7276898 |   |         |
| 29 | Hapmap27666-BTA-65107                 | 0       | 7326425 |   |         |
| 29 | ARS-BFGL-NGS-112317                   | 0       | 7355188 |   |         |
| 29 | ARS-BFGL-NGS-13953                    | 0       | 7401774 |   |         |
| 29 | ARS-BFGL-NGS-78474                    | 0       | 7480356 |   |         |
| 29 | ARS-BFGL-NGS-28344                    | 0       | 7510119 |   |         |
| 29 | ARS-BFGL-NGS-87662                    | 0       | 7557982 |   |         |
| 29 | ARS-BFGL-NGS-35993                    | 0       | 7589996 |   |         |
| 29 | ARS-BFGL-NGS-79231                    | 0       | 7614504 |   |         |
| 29 | ARS-BFGL-NGS-28810                    | 0       | 7677198 |   |         |
| 29 | ARS-BFGL-NGS-29090                    | 0       | 7749930 |   |         |
| 29 | ARS-BFGL-NGS-82054                    | 0       | 7868143 |   |         |
| 29 | ARS-BFGL-NGS-61824                    | 0       | 7954438 |   |         |
| 29 | ARS-BFGL-NGS-39276                    | 0       | 8040122 |   |         |
| 29 | ARS-BFGL-NGS-113763                   | 0       | 8089812 |   |         |
| 29 | ARS-BFGL-NGS-113337                   | 0       | 8111631 |   |         |
| 29 | ARS-BFGL-NGS-25133                    | 0       | 8136855 |   |         |
| 29 | ARS-BFGL-NGS-25418                    | 0       | 8205599 |   |         |
| 29 | ARS-BFGL-NGS-88036                    | 0       | 8295671 |   |         |
| 29 | Hapmap33268-BTA-65892                 | 0       | 8413548 |   |         |
| 29 | Hapmap27050-BTA-66471                 | 0       | 8583586 |   |         |
| 29 | ARS-BFGL-NGS-110662                   | 0       | 8652221 |   |         |
| 29 | BTA-66124-no-rs                       | 0       | 8678652 |   |         |
| 29 | ARS-BFGL-NGS-31793                    | 0       | 8712068 |   |         |
| 29 | ARS-BFGL-NGS-60840                    | 8814793 |         |   |         |
| 29 | UA-IFASA-8138                         | 0       | 8865683 |   |         |
| 29 | UA-IFASA-8749                         | 0       | 8898117 |   |         |
| 29 | UA-IFASA-8514                         | 0       | 8936383 |   |         |
| 29 | ARS-BFGL-NGS-36978                    | 0       | 8983004 |   |         |
| 29 | ARS-BFGL-NGS-117865                   | 0       | 9020167 |   |         |
| 29 | ARS-BFGL-NGS-87906                    | 0       | 9064567 |   |         |
| 29 | ARS-BFGL-NGS-96822                    | 0       | 9157256 |   |         |
| 29 | ARS-USMARC-Parent-AY856094-rs17871190 | 0       |         | 0 | 9160939 |
| 29 | ARS-BFGL-NGS-111039                   | 0       | 9200396 |   |         |
| 29 | ARS-BFGL-NGS-115602                   | 0       | 9233307 |   |         |
| 29 | Hapmap39855-BTA-66440                 | 0       | 9258332 |   |         |
| 29 | Hapmap32898-BTA-66437                 | 0       | 9319793 |   |         |
| 29 | UA-IFASA-8765                         | 0       | 9340747 |   |         |
| 29 | BTA-66429-no-rs                       | 0       | 9402394 |   |         |
| 29 | ARS-BFGL-NGS-34370                    | 9454029 |         |   |         |
| 29 | ARS-BFGL-NGS-40156                    | 0       | 9478408 |   |         |
| 29 | Hapmap40457-BTA-66422                 | 0       | 9519865 |   |         |
| 29 | BTA-66416-no-rs                       | 0       | 9542296 |   |         |
| 29 | BTA-03099-rs29010866                  | 0       | 9595450 |   |         |
| 29 | Hapmap23757-BTA-140373                | 0       | 9642995 |   |         |
| 29 | ARS-BFGL-NGS-76396                    | 0       | 9733633 |   |         |
| 29 | ARS-BFGL-NGS-103971                   | 0       | 9758457 |   |         |
| 29 | Hapmap43905-BTA-66358                 | 0       | 9795645 |   |         |
| 29 | ARS-BFGL-NGS-102434                   | 0       | 9821985 |   |         |
| 29 | ARS-BFGL-NGS-67211                    | 0       | 9881743 |   |         |

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| 29 | Hapmap49260-BTA-66294  | 0 | 9963108  |
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| 29 | Hapmap38517-BTA-66158  | 0 | 10065477 |
| 29 | Hapmap40784-BTA-66134  | 0 | 10125707 |
| 29 | UA-IFASA-7512          | 0 | 10172197 |
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| 29 | Hapmap41051-BTA-66390  | 0 | 10279337 |
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| 29 | UA-IFASA-6374          | 0 | 10346832 |
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| 29 | UA-IFASA-7147          | 0 | 10807034 |
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| 29 | ARS-BFGL-NGS-18625     | 0 | 11155886 |
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| 29 | ARS-BFGL-NGS-58568     | 0 | 11649185 |
| 29 | Hapmap58963-rs29015214 | 0 | 11686385 |
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| 29 | ARS-BFGL-NGS-33829     | 0 | 11940671 |
| 29 | UA-IFASA-5875          | 0 | 12029130 |
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| 29 | ARS-BFGL-NGS-25459              | 0 | 12581946 |          |
| 29 | Hapmap49544-BTA-24971           | 0 | 12726618 |          |
| 29 | ARS-BFGL-NGS-94537              | 0 | 12781858 |          |
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| 29 | BTB-01551048                    | 0 | 12868932 |          |
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| 29 | Hapmap25332-BTA-160177          | 0 | 13087607 |          |
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| 29 | Hapmap31511-BTA-160176          | 0 | 13194072 |          |
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| 29 | ARS-BFGL-NGS-86694              | 0 | 13282822 |          |
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| 29 | BTB-01008169                    | 0 | 13695183 |          |
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| 29 | BTB-01802047                    | 0 | 13886918 |          |
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| 29 | BTA-70166-no-rs                 | 0 | 14578092 |          |
| 29 | ARS-BFGL-NGS-10234              | 0 | 14618963 |          |
| 29 | BTB-00426200                    | 0 | 14664124 |          |
| 29 | ARS-BFGL-NGS-112278             | 0 | 14708733 |          |
| 29 | UA-IFASA-6266                   | 0 | 14751300 |          |
| 29 | Hapmap54951-rs29010185          | 0 | 14788465 |          |
| 29 | ARS-BFGL-NGS-73946              | 0 | 14828179 |          |
| 29 | BTA-105944-no-rs                | 0 | 14871102 |          |
| 29 | UA-IFASA-8569                   | 0 | 14909515 |          |
| 29 | Hapmap27620-BTA-154130          | 0 | 14953359 |          |
| 29 | Hapmap35496-SCAFFOLD155290_7520 | 0 |          | 14983423 |
| 29 | BTA-105966-no-rs                | 0 | 15020736 |          |
| 29 | ARS-BFGL-NGS-15912              | 0 | 15464156 |          |
| 29 | Hapmap48614-BTA-112193          | 0 | 15487637 |          |
| 29 | Hapmap42430-BTA-112191          | 0 | 15520726 |          |
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| 29 | ARS-BFGL-NGS-21020              | 0 | 15671305 |          |
| 29 | ARS-BFGL-NGS-20179              | 0 | 15774315 |          |
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| 29 | Hapmap28046-BTA-140463          | 0 | 15849387 |          |
| 29 | Hapmap23993-BTA-140467          | 0 | 15902913 |          |
| 29 | ARS-BFGL-NGS-115782             | 0 | 15955906 |          |

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| 29 | UA-IFASA-5406                    | 0        | 16071248 |  |
| 29 | BTA-64901-no-rs                  | 0        | 16131653 |  |
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| 29 | ARS-BFGL-NGS-79435               | 0        | 16216928 |  |
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| 29 | ARS-BFGL-NGS-97397               | 0        | 16353986 |  |
| 29 | ARS-BFGL-NGS-16382               | 0        | 16414885 |  |
| 29 | Hapmap25828-BTA-140477           | 0        | 16457263 |  |
| 29 | Hapmap53990-rs29024700           | 0        | 16487387 |  |
| 29 | ARS-BFGL-NGS-42829               | 0        | 16531851 |  |
| 29 | ARS-BFGL-NGS-118291              | 0        | 16618927 |  |
| 29 | ARS-BFGL-NGS-25290               | 16659474 |          |  |
| 29 | ARS-BFGL-NGS-22610               | 0        | 16709243 |  |
| 29 | ARS-BFGL-NGS-59353               | 0        | 16760748 |  |
| 29 | ARS-BFGL-NGS-95113               | 0        | 16794628 |  |
| 29 | ARS-BFGL-NGS-112818              | 0        | 16834971 |  |
| 29 | ARS-BFGL-NGS-110769              | 0        | 16887247 |  |
| 29 | ARS-BFGL-NGS-11065               | 0        | 16907482 |  |
| 29 | ARS-BFGL-NGS-119199              | 0        | 16928540 |  |
| 29 | Hapmap43318-BTA-64930            | 0        | 16982264 |  |
| 29 | ARS-BFGL-NGS-46278               | 0        | 17004428 |  |
| 29 | ARS-BFGL-NGS-109996              | 0        | 17029209 |  |
| 29 | ARS-BFGL-NGS-34316               | 0        | 17051937 |  |
| 29 | ARS-BFGL-NGS-39422               | 0        | 17087250 |  |
| 29 | ARS-BFGL-NGS-109946              | 0        | 17128763 |  |
| 29 | ARS-BFGL-NGS-72467               | 0        | 17186221 |  |
| 29 | ARS-BFGL-NGS-109631              | 0        | 17226225 |  |
| 29 | ARS-BFGL-NGS-67209               | 0        | 17259716 |  |
| 29 | ARS-BFGL-NGS-24259               | 0        | 17286165 |  |
| 29 | BTB-01009850                     | 0        | 17346563 |  |
| 29 | ARS-BFGL-NGS-15080               | 17381655 |          |  |
| 29 | BTA-64972-no-rs                  | 0        | 17402388 |  |
| 29 | ARS-BFGL-NGS-89188               | 0        | 17433726 |  |
| 29 | ARS-BFGL-NGS-100425              | 0        | 17460679 |  |
| 29 | ARS-BFGL-NGS-107278              | 0        | 17491630 |  |
| 29 | BTB-01009457                     | 0        | 17532391 |  |
| 29 | BTA-64956-no-rs                  | 0        | 17597424 |  |
| 29 | Hapmap36716-SCAFFOLD295038_28592 | 0        | 17676805 |  |
| 29 | ARS-BFGL-NGS-44264               | 0        | 17705763 |  |
| 29 | UA-IFASA-4358                    | 0        | 17796803 |  |
| 29 | ARS-BFGL-NGS-67720               | 0        | 17876279 |  |
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| 29 | Hapmap27205-BTA-156398           | 0        | 18203037 |  |
| 29 | ARS-BFGL-NGS-22503               | 0        | 18244524 |  |
| 29 | Hapmap32983-BTA-112295           | 0        | 18419356 |  |
| 29 | BTB-01442293                     | 0        | 18560032 |  |
| 29 | BTB-02050030                     | 0        | 18592194 |  |
| 29 | BTA-16480-no-rs                  | 0        | 18617183 |  |
| 29 | ARS-BFGL-NGS-20458               | 0        | 18647026 |  |
| 29 | BTA-64987-no-rs                  | 0        | 18798320 |  |
| 29 | BTB-01809217                     | 0        | 19003267 |  |

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| 29 | Hapmap25650-BTA-64990           | 0 | 19066779 |          |
| 29 | BTB-01010321                    | 0 | 19099383 |          |
| 29 | BTB-02045029                    | 0 | 19200818 |          |
| 29 | ARS-BFGL-NGS-34410              |   | 19234709 |          |
| 29 | ARS-BFGL-NGS-47918              | 0 | 19332326 |          |
| 29 | ARS-BFGL-NGS-100550             | 0 | 19350889 |          |
| 29 | ARS-BFGL-NGS-78952              | 0 | 19376416 |          |
| 29 | Hapmap22933-BTA-140507          | 0 | 19618823 |          |
| 29 | ARS-BFGL-NGS-102135             | 0 | 19740081 |          |
| 29 | ARS-BFGL-NGS-79745              | 0 | 19837339 |          |
| 29 | ARS-BFGL-NGS-107288             | 0 | 19865090 |          |
| 29 | ARS-BFGL-NGS-16780              |   | 19928179 |          |
| 29 | BTA-65012-no-rs                 | 0 | 19966479 |          |
| 29 | BTB-01653937                    | 0 | 20020494 |          |
| 29 | BTB-01654014                    | 0 | 20077616 |          |
| 29 | Hapmap54563-rs29009937          | 0 | 20115988 |          |
| 29 | ARS-BFGL-NGS-89491              | 0 | 20146131 |          |
| 29 | BTB-01381791                    | 0 | 20199725 |          |
| 29 | Hapmap27460-BTA-161100          | 0 | 20254234 |          |
| 29 | BTB-01381621                    | 0 | 20312863 |          |
| 29 | Hapmap51771-BTA-86230           | 0 | 20368742 |          |
| 29 | Hapmap36828-SCAFFOLD260989_933  | 0 |          | 20421129 |
| 29 | BTB-01011420                    | 0 | 20496998 |          |
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| 29 | ARS-BFGL-NGS-109118             | 0 | 20601858 |          |
| 29 | BTB-01011245                    | 0 | 20658120 |          |
| 29 | ARS-BFGL-NGS-104458             | 0 | 20706709 |          |
| 29 | Hapmap32343-BTA-150265          | 0 | 20825782 |          |
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| 29 | BTB-01454830                    | 0 | 20882357 |          |
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| 29 | Hapmap52761-rs29016832          | 0 | 21329340 |          |
| 29 | BTA-16208-no-rs                 | 0 | 21359146 |          |
| 29 | BTB-01070974                    | 0 | 21399349 |          |
| 29 | ARS-BFGL-NGS-64791              | 0 | 21432596 |          |
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| 29 | BTB-01646216                    | 0 | 21534086 |          |
| 29 | BTB-01646287                    | 0 | 21576992 |          |
| 29 | BTB-01646336                    | 0 | 21611292 |          |
| 29 | Hapmap39008-BTA-120199          | 0 | 21643797 |          |
| 29 | BTA-120198-no-rs                | 0 | 21693781 |          |
| 29 | ARS-BFGL-NGS-111050             | 0 | 21718056 |          |
| 29 | BTA-65044-no-rs                 | 0 | 21762858 |          |
| 29 | ARS-BFGL-NGS-115158             | 0 | 21828399 |          |
| 29 | ARS-BFGL-NGS-18922              | 0 | 21930571 |          |
| 29 | Hapmap36817-SCAFFOLD245829_8774 | 0 |          | 21987120 |
| 29 | ARS-BFGL-NGS-111521             | 0 | 22019432 |          |
| 29 | BTB-01088519                    | 0 | 22161137 |          |
| 29 | ARS-BFGL-NGS-37183              | 0 | 22203096 |          |
| 29 | ARS-BFGL-NGS-70494              | 0 | 22344648 |          |



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| 29 | Hapmap39673-BTA-65056           | 0 | 22380350 |  |
| 29 | BTB-01012731                    | 0 | 22429522 |  |
| 29 | BTB-01088337                    | 0 | 22531990 |  |
| 29 | Hapmap50604-BTA-16404           | 0 | 22566055 |  |
| 29 | Hapmap50603-BTA-16403           | 0 | 22605691 |  |
| 29 | UA-IFASA-9601                   | 0 | 22660543 |  |
| 29 | UA-IFASA-7930                   | 0 | 22713977 |  |
| 29 | Hapmap50903-BTA-16406           | 0 | 22754275 |  |
| 29 | ARS-BFGL-NGS-114141             | 0 | 22803867 |  |
| 29 | Hapmap51541-BTA-106562          | 0 | 22853469 |  |
| 29 | BTA-106551-no-rs                | 0 | 22876174 |  |
| 29 | ARS-BFGL-NGS-34173              | 0 | 22898633 |  |
| 29 | BTB-00511910                    | 0 | 22930524 |  |
| 29 | Hapmap44368-BTA-32048           | 0 | 22964186 |  |
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| 29 | BTB-00512181                    | 0 | 23103285 |  |
| 29 | Hapmap42193-BTA-38148           | 0 | 23142122 |  |
| 29 | UA-IFASA-8631                   | 0 | 23162838 |  |
| 29 | Hapmap48311-BTA-38136           | 0 | 23262727 |  |
| 29 | Hapmap41760-BTA-116569          | 0 | 23411243 |  |
| 29 | ARS-BFGL-NGS-57426              | 0 | 23509444 |  |
| 29 | ARS-BFGL-NGS-105389             | 0 | 23558604 |  |
| 29 | Hapmap27179-BTA-148480          | 0 | 23600321 |  |
| 29 | UA-IFASA-5417                   | 0 | 23630602 |  |
| 29 | UA-IFASA-9595                   | 0 | 23651812 |  |
| 29 | Hapmap23283-BTA-161784          | 0 | 23709655 |  |
| 29 | ARS-BFGL-NGS-85157              | 0 | 23762023 |  |
| 29 | ARS-BFGL-NGS-79053              | 0 | 23801596 |  |
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| 29 | BTB-00934783                    | 0 | 23903248 |  |
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| 29 | BTB-00935033                    | 0 | 23975214 |  |
| 29 | BTB-02076946                    | 0 | 24014819 |  |
| 29 | BTB-02096877                    | 0 | 24046829 |  |
| 29 | ARS-BFGL-NGS-115030             | 0 | 24109998 |  |
| 29 | ARS-BFGL-NGS-104681             | 0 | 24162211 |  |
| 29 | BTB-01343372                    | 0 | 24199232 |  |
| 29 | ARS-BFGL-NGS-19254              | 0 | 24228574 |  |
| 29 | ARS-BFGL-NGS-44350              | 0 | 24259532 |  |
| 29 | ARS-BFGL-NGS-104856             | 0 | 24295201 |  |
| 29 | Hapmap39737-BTA-26203           | 0 | 24343619 |  |
| 29 | Hapmap54633-rs29021971          | 0 | 24362649 |  |
| 29 | BTB-01933670                    | 0 | 24398875 |  |
| 29 | ARS-BFGL-NGS-109817             | 0 | 24441159 |  |
| 29 | ARS-BFGL-NGS-47177              | 0 | 24462745 |  |
| 29 | BTA-26202-no-rs                 | 0 | 24488581 |  |
| 29 | ARS-BFGL-NGS-17629              | 0 | 24553029 |  |
| 29 | ARS-BFGL-NGS-112145             | 0 | 24598168 |  |
| 29 | ARS-BFGL-NGS-44904              | 0 | 24631139 |  |
| 29 | BTB-01013350                    | 0 | 24726149 |  |
| 29 | Hapmap43319-BTA-65094           | 0 | 24774389 |  |
| 29 | ARS-BFGL-NGS-108100             | 0 | 24832068 |  |
| 29 | BTB-01013468                    | 0 | 24965664 |  |
| 29 | Hapmap36784-SCAFFOLD25027_24456 | 0 | 24997599 |  |

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| 29 | ARS-BFGL-NGS-32389     | 0        | 25036795 |
| 29 | BTB-01013642           | 0        | 25073156 |
| 29 | ARS-BFGL-NGS-56020     | 0        | 25110723 |
| 29 | Hapmap41325-BTA-65112  | 0        | 25143584 |
| 29 | ARS-BFGL-NGS-91850     | 25185862 |          |
| 29 | BTB-01014103           | 0        | 25219612 |
| 29 | ARS-BFGL-NGS-34288     | 0        | 25286242 |
| 29 | ARS-BFGL-NGS-24205     | 0        | 25325889 |
| 29 | ARS-BFGL-NGS-64656     | 0        | 25358736 |
| 29 | BTA-65125-no-rs        | 0        | 25377883 |
| 29 | ARS-BFGL-NGS-39535     | 0        | 25419745 |
| 29 | ARS-BFGL-NGS-24750     | 25444245 |          |
| 29 | ARS-BFGL-NGS-116911    | 0        | 25487607 |
| 29 | UA-IFASA-6023          | 0        | 25523713 |
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| 29 | ARS-BFGL-NGS-91937     | 0        | 25587657 |
| 29 | ARS-BFGL-NGS-100219    | 0        | 25654866 |
| 29 | Hapmap46858-BTA-65152  | 0        | 25692810 |
| 29 | ARS-BFGL-NGS-56290     | 0        | 25716188 |
| 29 | ARS-BFGL-NGS-114570    | 0        | 25759091 |
| 29 | ARS-BFGL-NGS-29332     | 0        | 25780595 |
| 29 | ARS-BFGL-NGS-26875     | 0        | 25819074 |
| 29 | BTB-01015843           | 0        | 25850203 |
| 29 | ARS-BFGL-NGS-12494     | 0        | 25881358 |
| 29 | ARS-BFGL-NGS-25788     | 0        | 25917670 |
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| 29 | ARS-BFGL-NGS-36962     | 0        | 26116729 |
| 29 | ARS-BFGL-NGS-112101    | 0        | 26153037 |
| 29 | ARS-BFGL-NGS-107328    | 0        | 26158894 |
| 29 | Hapmap49698-BTA-65127  | 0        | 26220457 |
| 29 | ARS-BFGL-NGS-41814     | 0        | 26243702 |
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| 29 | BTB-01014755           | 0        | 26591038 |
| 29 | Hapmap51016-BTA-65142  | 0        | 26638151 |
| 29 | ARS-BFGL-NGS-94949     | 0        | 26697399 |
| 29 | ARS-BFGL-NGS-24998     | 0        | 26721324 |
| 29 | ARS-BFGL-NGS-98902     | 0        | 26751704 |
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| 29 | BTB-01016631           | 0        | 27184360 |
| 29 | BTB-01016570           | 0        | 27218550 |
| 29 | ARS-BFGL-NGS-29652     | 0        | 27265368 |
| 29 | BTA-65196-no-rs        | 0        | 27285803 |
| 29 | Hapmap42284-BTA-65181  | 0        | 27465875 |
| 29 | BTA-65179-no-rs        | 0        | 27529419 |
| 29 | BTA-15875-no-rs        | 0        | 27572834 |
| 29 | ARS-BFGL-NGS-118282    | 0        | 27592955 |

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| 29 | BTA-111991-no-rs                      | 0 | 27614094 |   |          |
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| 29 | BTB-01337579                          | 0 | 27880841 |   |          |
| 29 | BTB-01337498                          | 0 | 27906483 |   |          |
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| 29 | ARS-BFGL-NGS-17874                    | 0 | 28170104 |   |          |
| 29 | ARS-BFGL-NGS-14500                    | 0 | 28192104 |   |          |
| 29 | Hapmap42619-BTA-65257                 | 0 | 28224030 |   |          |
| 29 | Hapmap45305-BTA-65247                 | 0 | 28248785 |   |          |
| 29 | BTA-65245-no-rs                       | 0 | 28325008 |   |          |
| 29 | ARS-BFGL-NGS-117926                   | 0 | 28483133 |   |          |
| 29 | ARS-BFGL-NGS-94355                    | 0 | 28523337 |   |          |
| 29 | Hapmap54158-rs29026721                | 0 | 28559588 |   |          |
| 29 | ARS-BFGL-NGS-43380                    | 0 | 28600601 |   |          |
| 29 | ARS-BFGL-NGS-110327                   | 0 | 28621321 |   |          |
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| 29 | Hapmap40781-BTA-65234                 | 0 | 28702318 |   |          |
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| 29 | BTB-01017247                          | 0 | 28809817 |   |          |
| 29 | BTB-01017180                          | 0 | 28849610 |   |          |
| 29 | ARS-BFGL-NGS-37244                    | 0 | 28887293 |   |          |
| 29 | ARS-BFGL-NGS-102700                   | 0 | 28908928 |   |          |
| 29 | ARS-BFGL-NGS-18412                    | 0 | 28930002 |   |          |
| 29 | ARS-BFGL-NGS-79220                    | 0 | 28967249 |   |          |
| 29 | ARS-BFGL-NGS-26242                    | 0 | 28997196 |   |          |
| 29 | ARS-BFGL-NGS-118467                   | 0 | 29030950 |   |          |
| 29 | UA-IFASA-5034                         | 0 | 29052623 |   |          |
| 29 | ARS-BFGL-NGS-23652                    | 0 | 29099593 |   |          |
| 29 | ARS-BFGL-NGS-100024                   | 0 | 29128377 |   |          |
| 29 | ARS-BFGL-NGS-62480                    |   | 29194986 |   |          |
| 29 | ARS-BFGL-NGS-112981                   | 0 | 29234193 |   |          |
| 29 | ARS-BFGL-NGS-107767                   | 0 | 29284458 |   |          |
| 29 | ARS-BFGL-NGS-39174                    | 0 | 29317864 |   |          |
| 29 | BTB-01019303                          | 0 | 29376146 |   |          |
| 29 | Hapmap42285-BTA-65386                 | 0 | 29433038 |   |          |
| 29 | ARS-BFGL-NGS-25532                    | 0 | 29484704 |   |          |
| 29 | UA-IFASA-6059                         | 0 | 29538314 |   |          |
| 29 | UA-IFASA-8302                         | 0 | 29570986 |   |          |
| 29 | BTA-65384-no-rs                       | 0 | 29595613 |   |          |
| 29 | ARS-BFGL-NGS-24873                    | 0 | 29615691 |   |          |
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| 29 | ARS-BFGL-NGS-119428                   | 0 | 29768788 |   |          |
| 29 | ARS-BFGL-NGS-39490                    |   | 29795486 |   |          |
| 29 | ARS-BFGL-NGS-109960                   | 0 | 29877105 |   |          |
| 29 | ARS-BFGL-NGS-105093                   | 0 | 29907525 |   |          |
| 29 | ARS-BFGL-NGS-106691                   | 0 | 29952558 |   |          |
| 29 | ARS-BFGL-NGS-118114                   | 0 | 30003729 |   |          |
| 29 | ARS-BFGL-NGS-21087                    | 0 | 30064779 |   |          |
| 29 | ARS-BFGL-NGS-25740                    |   | 30094160 |   |          |

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| 29 | ARS-BFGL-NGS-118400            | 0 | 30201805 |          |
| 29 | BTB-01021889                   | 0 | 30397108 |          |
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| 29 | ARS-BFGL-NGS-17769             | 0 | 30463107 |          |
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| 29 | ARS-BFGL-NGS-101314            | 0 | 30510306 |          |
| 29 | ARS-BFGL-NGS-92120             |   | 30539225 |          |
| 29 | ARS-BFGL-NGS-12073             | 0 | 30572612 |          |
| 29 | UA-IFASA-7213                  | 0 | 30614026 |          |
| 29 | ARS-BFGL-NGS-52511             | 0 | 30638566 |          |
| 29 | UA-IFASA-8888                  | 0 | 30670615 |          |
| 29 | Hapmap40782-BTA-65467          | 0 | 30691750 |          |
| 29 | BTA-65463-no-rs                | 0 | 30722836 |          |
| 29 | ARS-BFGL-NGS-68193             | 0 | 30743862 |          |
| 29 | UA-IFASA-7516                  | 0 | 30827166 |          |
| 29 | ARS-BFGL-NGS-71223             | 0 | 30866924 |          |
| 29 | UA-IFASA-8605                  | 0 | 30901735 |          |
| 29 | Hapmap38638-BTA-90748          | 0 | 30939309 |          |
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| 29 | ARS-BFGL-NGS-106865            | 0 | 31026439 |          |
| 29 | ARS-BFGL-NGS-98534             | 0 | 31061295 |          |
| 29 | BTB-01520084                   | 0 | 31133190 |          |
| 29 | Hapmap50431-BTA-65530          | 0 | 31271841 |          |
| 29 | BTB-01022586                   | 0 | 31359399 |          |
| 29 | UA-IFASA-7587                  | 0 | 31413726 |          |
| 29 | BTB-01022473                   | 0 | 31453117 |          |
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| 29 | Hapmap51676-BTA-10760          | 0 | 31647640 |          |
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| 29 | UA-IFASA-5646                  | 0 | 31846063 |          |
| 29 | BTB-01020342                   | 0 | 31899837 |          |
| 29 | ARS-BFGL-NGS-11967             | 0 | 31958996 |          |
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| 29 | Hapmap51018-BTA-65434          | 0 | 32113882 |          |
| 29 | Hapmap34976-BES2_Contig422_801 | 0 |          | 32169891 |
| 29 | ARS-BFGL-NGS-112928            | 0 | 32218592 |          |
| 29 | BTA-65424-no-rs                | 0 | 32286495 |          |
| 29 | ARS-BFGL-NGS-109714            | 0 | 32308718 |          |
| 29 | ARS-BFGL-NGS-62183             | 0 | 32381830 |          |
| 29 | BTB-01020010                   | 0 | 32420629 |          |
| 29 | ARS-BFGL-NGS-110219            | 0 | 32472924 |          |
| 29 | Hapmap40017-BTA-65421          | 0 | 32516455 |          |
| 29 | ARS-BFGL-NGS-36127             | 0 | 32544765 |          |
| 29 | UA-IFASA-7281                  | 0 | 32594274 |          |
| 29 | ARS-BFGL-NGS-12309             | 0 | 32671085 |          |
| 29 | BTA-65417-no-rs                | 0 | 32767633 |          |
| 29 | UA-IFASA-7219                  | 0 | 32796589 |          |
| 29 | ARS-BFGL-NGS-13330             |   | 32833123 |          |

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| 29 | BTA-65410-no-rs                 | 0 | 32890074 |          |
| 29 | UA-IFASA-8767                   | 0 | 32916926 |          |
| 29 | UA-IFASA-9430                   | 0 | 32944239 |          |
| 29 | Hapmap48423-BTA-65404           | 0 | 32977943 |          |
| 29 | ARS-BFGL-NGS-119359             | 0 | 33033594 |          |
| 29 | Hapmap24248-BTA-140569          | 0 | 33104818 |          |
| 29 | BTB-01019775                    | 0 | 33157623 |          |
| 29 | ARS-BFGL-NGS-112734             | 0 | 33174196 |          |
| 29 | ARS-BFGL-NGS-112518             | 0 | 33249348 |          |
| 29 | ARS-BFGL-NGS-16031              | 0 | 33329702 |          |
| 29 | Hapmap58618-rs29012371          | 0 | 33353664 |          |
| 29 | BTB-01023253                    | 0 | 33492481 |          |
| 29 | ARS-BFGL-NGS-102550             | 0 | 33536814 |          |
| 29 | ARS-BFGL-NGS-24769              | 0 | 33568217 |          |
| 29 | ARS-BFGL-NGS-41631              | 0 | 33593218 |          |
| 29 | ARS-BFGL-NGS-115193             | 0 | 33632626 |          |
| 29 | Hapmap52938-rs29027128          | 0 | 33658982 |          |
| 29 | ARS-BFGL-NGS-40178              | 0 | 33770541 |          |
| 29 | BTA-65587-no-rs                 | 0 | 33781565 |          |
| 29 | UA-IFASA-8226                   | 0 | 33858119 |          |
| 29 | Hapmap49699-BTA-65589           | 0 | 33962200 |          |
| 29 | Hapmap60712-rs29014894          | 0 | 33992669 |          |
| 29 | BTA-66497-no-rs                 | 0 | 34027829 |          |
| 29 | ARS-BFGL-NGS-24911              | 0 | 34044509 |          |
| 29 | Hapmap36081-SCAFFOLD265215_4647 | 0 | 34066650 | 34066650 |
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| 29 | ARS-BFGL-NGS-22900              | 0 | 34118132 |          |
| 29 | ARS-BFGL-NGS-114404             | 0 | 34161198 |          |
| 29 | ARS-BFGL-NGS-84289              | 0 | 34196127 |          |
| 29 | ARS-BFGL-NGS-34282              | 0 | 34263203 |          |
| 29 | ARS-BFGL-NGS-31714              | 0 | 34298099 |          |
| 29 | ARS-BFGL-NGS-508                | 0 | 34331219 |          |
| 29 | ARS-BFGL-NGS-15981              | 0 | 34359490 |          |
| 29 | ARS-BFGL-NGS-26170              | 0 | 34487700 |          |
| 29 | ARS-BFGL-NGS-16773              | 0 | 34531698 |          |
| 29 | ARS-BFGL-NGS-32670              | 0 | 34560563 |          |
| 29 | ARS-BFGL-NGS-50392              | 0 | 34591197 |          |
| 29 | BTA-66489-no-rs                 | 0 | 34618653 |          |
| 29 | ARS-BFGL-NGS-18933              | 0 | 34650967 |          |
| 29 | ARS-BFGL-NGS-102334             | 0 | 34676788 |          |
| 29 | BTA-66486-no-rs                 | 0 | 34697118 |          |
| 29 | ARS-BFGL-NGS-93880              | 0 | 34746857 |          |
| 29 | Hapmap38768-BTA-66476           | 0 | 34779973 |          |
| 29 | ARS-BFGL-NGS-111197             | 0 | 34813744 |          |
| 29 | ARS-BFGL-NGS-101217             | 0 | 35014999 |          |
| 29 | ARS-BFGL-NGS-38339              | 0 | 35074343 |          |
| 29 | BTB-01023946                    | 0 | 35136093 |          |
| 29 | ARS-BFGL-NGS-36490              | 0 | 35169599 |          |
| 29 | UA-IFASA-5609                   | 0 | 35202899 |          |
| 29 | ARS-BFGL-NGS-85977              | 0 | 35232674 |          |
| 29 | UA-IFASA-9704                   | 0 | 35264875 |          |
| 29 | ARS-BFGL-NGS-99951              | 0 | 35284979 |          |
| 29 | ARS-BFGL-NGS-12285              | 0 | 35329572 |          |
| 29 | Hapmap53268-rs29022154          | 0 | 35387115 |          |

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| 29 | UA-IFASA-6129          | 0 | 35414857 |
| 29 | ARS-BFGL-NGS-23717     | 0 | 35459916 |
| 29 | Hapmap42621-BTA-65545  | 0 | 35481937 |
| 29 | BTA-118938-no-rs       | 0 | 35532843 |
| 29 | Hapmap30586-BTA-158491 | 0 | 35567566 |
| 29 | BTB-02057682           | 0 | 35638517 |
| 29 | ARS-BFGL-NGS-65200     | 0 | 35669290 |
| 29 | ARS-BFGL-NGS-402       | 0 | 35698376 |
| 29 | Hapmap51478-BTA-65660  | 0 | 35721168 |
| 29 | UA-IFASA-5436          | 0 | 35779281 |
| 29 | ARS-BFGL-NGS-28392     | 0 | 35812578 |
| 29 | ARS-BFGL-NGS-101068    | 0 | 35837362 |
| 29 | ARS-BFGL-NGS-101872    | 0 | 35924543 |
| 29 | ARS-BFGL-NGS-115969    | 0 | 35964691 |
| 29 | ARS-BFGL-NGS-89027     | 0 | 35984996 |
| 29 | ARS-BFGL-NGS-114960    | 0 | 36024434 |
| 29 | ARS-BFGL-NGS-16036     | 0 | 36090391 |
| 29 | BTB-01027202           | 0 | 36141887 |
| 29 | ARS-BFGL-NGS-110853    | 0 | 36188416 |
| 29 | ARS-BFGL-NGS-112823    | 0 | 36240881 |
| 29 | UA-IFASA-2489          | 0 | 36274932 |
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| 29 | ARS-BFGL-NGS-39172     | 0 | 36628237 |
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| 29 | Hapmap45306-BTA-65657  | 0 | 36994618 |
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| 29 | ARS-BFGL-NGS-18010     | 0 | 37101861 |
| 29 | ARS-BFGL-NGS-104213    | 0 | 37152168 |
| 29 | ARS-BFGL-NGS-44310     | 0 | 37202583 |
| 29 | BTA-65647-no-rs        | 0 | 37237891 |
| 29 | ARS-BFGL-NGS-51488     | 0 | 37440150 |
| 29 | UA-IFASA-3263          | 0 | 37472079 |
| 29 | ARS-BFGL-NGS-17583     | 0 | 37515087 |
| 29 | ARS-BFGL-NGS-111280    | 0 | 37567873 |
| 29 | BTA-65725-no-rs        | 0 | 37621771 |
| 29 | ARS-BFGL-NGS-116042    | 0 | 37696303 |
| 29 | Hapmap58266-rs29018037 | 0 | 37721984 |
| 29 | ARS-BFGL-NGS-56408     | 0 | 37749427 |
| 29 | BTA-65626-no-rs        | 0 | 37782301 |
| 29 | ARS-BFGL-NGS-42672     | 0 | 37811748 |
| 29 | ARS-BFGL-NGS-15883     | 0 | 37864665 |
| 29 | ARS-BFGL-NGS-22879     | 0 | 37885806 |
| 29 | ARS-BFGL-NGS-43147     | 0 | 37913830 |

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| 29 | ARS-BFGL-NGS-33015              | 0 | 37949466 |          |
| 29 | ARS-BFGL-NGS-104120             | 0 | 37991973 |          |
| 29 | UA-IFASA-7742                   | 0 | 38015000 |          |
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| 29 | ARS-BFGL-NGS-70792              | 0 | 38102852 |          |
| 29 | Hapmap35913-SCAFFOLD230709_3621 | 0 |          | 38154672 |
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| 29 | ARS-BFGL-NGS-97760              | 0 | 38845455 |          |
| 29 | ARS-BFGL-NGS-28857              | 0 | 39905644 |          |
| 29 | ARS-BFGL-NGS-37165              | 0 | 39930095 |          |
| 29 | BTB-01554924                    | 0 | 39951629 |          |
| 29 | ARS-BFGL-NGS-115406             | 0 | 40025469 |          |
| 29 | ARS-BFGL-NGS-90760              | 0 | 40153672 |          |
| 29 | ARS-BFGL-NGS-59096              | 0 | 40188702 |          |
| 29 | UA-IFASA-7997                   | 0 | 40227347 |          |
| 29 | ARS-BFGL-NGS-73148              | 0 | 40281016 |          |
| 29 | ARS-BFGL-NGS-40810              | 0 | 40321510 |          |
| 29 | Hapmap40918-BTA-17349           | 0 | 40344120 |          |
| 29 | UA-IFASA-9622                   | 0 | 40369589 |          |
| 29 | ARS-BFGL-NGS-33272              | 0 | 40402948 |          |
| 29 | Hapmap58798-rs29016922          | 0 | 40430062 |          |
| 29 | Hapmap29828-BTA-140682          | 0 | 40466840 |          |
| 29 | ARS-BFGL-NGS-29788              | 0 | 40507958 |          |
| 29 | Hapmap40569-BTA-65742           | 0 | 40574224 |          |
| 29 | ARS-BFGL-NGS-58039              | 0 | 40623384 |          |
| 29 | ARS-BFGL-NGS-12970              | 0 | 40646639 |          |
| 29 | ARS-BFGL-NGS-86495              | 0 | 40695267 |          |
| 29 | ARS-BFGL-NGS-104926             | 0 | 40726799 |          |
| 29 | ARS-BFGL-NGS-65155              | 0 | 40758893 |          |
| 29 | ARS-BFGL-NGS-25549              | 0 | 40782098 |          |
| 29 | ARS-BFGL-NGS-40812              | 0 | 40829193 |          |
| 29 | ARS-BFGL-NGS-118284             | 0 | 40858913 |          |
| 29 | Hapmap30540-BTA-140691          | 0 | 40974549 |          |
| 29 | UA-IFASA-7534                   | 0 | 41108931 |          |
| 29 | ARS-BFGL-NGS-104963             | 0 | 41133252 |          |
| 29 | ARS-BFGL-NGS-54361              | 0 | 41166786 |          |
| 29 | ARS-BFGL-NGS-110249             | 0 | 41264801 |          |
| 29 | Hapmap38185-BTA-102307          | 0 | 41358437 |          |
| 29 | BTB-01541976                    | 0 | 41407366 |          |
| 29 | UA-IFASA-6857                   | 0 | 41470852 |          |
| 29 | BTB-01029026                    | 0 | 41512425 |          |
| 29 | ARS-BFGL-NGS-114339             | 0 | 41592079 |          |
| 29 | ARS-BFGL-NGS-11952              | 0 | 41615761 |          |
| 29 | ARS-BFGL-NGS-112942             | 0 | 41639786 |          |
| 29 | ARS-BFGL-NGS-38732              | 0 | 41664361 |          |
| 29 | Hapmap45307-BTA-65775           | 0 | 41686158 |          |
| 29 | ARS-BFGL-NGS-106578             | 0 | 41714403 |          |
| 29 | ARS-BFGL-NGS-76941              | 0 | 41755825 |          |
| 29 | ARS-BFGL-NGS-15313              | 0 | 41778946 |          |
| 29 | ARS-BFGL-NGS-76336              | 0 | 41828108 |          |
| 29 | ARS-BFGL-NGS-114737             | 0 | 41854768 |          |
| 29 | ARS-BFGL-NGS-103324             | 0 | 41891179 |          |

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| 29 | ARS-BFGL-NGS-27093              | 0 | 41939696 |          |
| 29 | ARS-BFGL-NGS-85356              | 0 | 41989397 |          |
| 29 | ARS-BFGL-NGS-52294              | 0 | 42035516 |          |
| 29 | ARS-BFGL-NGS-72328              | 0 | 42085807 |          |
| 29 | BTB-01708179                    | 0 | 42190604 |          |
| 29 | ARS-BFGL-NGS-36939              | 0 | 42287950 |          |
| 29 | Hapmap49490-BTA-121555          | 0 | 42342570 |          |
| 29 | ARS-BFGL-NGS-36875              | 0 | 42406544 |          |
| 29 | Hapmap30761-BTA-123384          | 0 | 42455680 |          |
| 29 | BTB-01031508                    | 0 | 42620218 |          |
| 29 | Hapmap49700-BTA-65879           | 0 | 42651294 |          |
| 29 | Hapmap57378-rs29020063          | 0 | 42749808 |          |
| 29 | Hapmap34333-BES2_Contig145_646  | 0 |          | 42842353 |
| 29 | ARS-BFGL-NGS-35587              | 0 | 42897144 |          |
| 29 | ARS-BFGL-NGS-29002              | 0 | 42921883 |          |
| 29 | ARS-BFGL-NGS-101195             | 0 | 42985739 |          |
| 29 | ARS-BFGL-NGS-118477             | 0 | 43006000 |          |
| 29 | ARS-BFGL-NGS-113356             | 0 | 43043207 |          |
| 29 | ARS-BFGL-NGS-70540              |   | 43108445 |          |
| 29 | ARS-BFGL-NGS-30371              | 0 | 43129250 |          |
| 29 | ARS-BFGL-NGS-19964              | 0 | 43189370 |          |
| 29 | ARS-BFGL-NGS-50270              |   | 43269744 |          |
| 29 | Hapmap53306-rs29024708          | 0 | 43304256 |          |
| 29 | ARS-BFGL-NGS-12384              | 0 | 43328607 |          |
| 29 | BTB-01030439                    | 0 | 43377920 |          |
| 29 | ARS-BFGL-NGS-87587              | 0 | 43429511 |          |
| 29 | ARS-BFGL-NGS-80659              | 0 | 43466342 |          |
| 29 | ARS-BFGL-NGS-25130              | 0 | 43498073 |          |
| 29 | ARS-BFGL-NGS-110358             | 0 | 43525624 |          |
| 29 | ARS-BFGL-NGS-104470             | 0 | 43563745 |          |
| 29 | ARS-BFGL-NGS-37863              | 0 | 43611640 |          |
| 29 | ARS-BFGL-NGS-38896              | 0 | 43652252 |          |
| 29 | ARS-BFGL-NGS-94493              | 0 | 43686401 |          |
| 29 | ARS-BFGL-NGS-59421              | 0 | 43709769 |          |
| 29 | BTB-01030615                    | 0 | 43747765 |          |
| 29 | ARS-BFGL-NGS-37441              | 0 | 43777249 |          |
| 29 | BTB-01030719                    | 0 | 43826144 |          |
| 29 | ARS-BFGL-NGS-38552              | 0 | 43839783 |          |
| 29 | ARS-BFGL-NGS-110940             | 0 | 43914923 |          |
| 29 | ARS-BFGL-NGS-16241              | 0 | 43948092 |          |
| 29 | ARS-BFGL-NGS-21416              | 0 | 44050471 |          |
| 29 | CAPN1_1                         | 0 | 44069063 |          |
| 29 | UA-IFASA-1370                   | 0 | 44085769 |          |
| 29 | CAPN1_2                         | 0 | 44087629 |          |
| 29 | Hapmap24488-BTA-140710          | 0 | 44141358 |          |
| 29 | UA-IFASA-9734                   | 0 | 44172614 |          |
| 29 | ARS-BFGL-NGS-19057              | 0 | 44196154 |          |
| 29 | ARS-BFGL-NGS-59580              |   | 44223148 |          |
| 29 | ARS-BFGL-NGS-82048              | 0 | 44243444 |          |
| 29 | Hapmap36151-SCAFFOLD96691_12353 | 0 |          | 44292035 |
| 29 | ARS-BFGL-NGS-24243              | 0 | 44325408 |          |
| 29 | ARS-BFGL-NGS-106901             | 0 | 44372611 |          |
| 29 | ARS-BFGL-NGS-102787             | 0 | 44395075 |          |
| 29 | ARS-BFGL-NGS-57882              | 0 | 44546564 |          |



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| 29 | ARS-BFGL-NGS-110936              | 0        | 44585782 |          |
| 29 | ARS-BFGL-NGS-118251              | 0        | 44612074 |          |
| 29 | Hapmap38621-BTA-65727            | 0        | 44628137 |          |
| 29 | ARS-BFGL-NGS-113797              | 0        | 44649908 |          |
| 29 | ARS-BFGL-NGS-101448              | 0        | 44740917 |          |
| 29 | ARS-USMARC-Parent-DQ404153-no-rs | 0        |          | 44756502 |
| 29 | UA-IFASA-5680                    | 0        | 44807928 |          |
| 29 | BTB-01033776                     | 0        | 44853970 |          |
| 29 | BTA-66033-no-rs                  | 0        | 44900940 |          |
| 29 | ARS-BFGL-NGS-119847              | 0        | 44969518 |          |
| 29 | ARS-BFGL-NGS-20927               | 0        | 44979377 |          |
| 29 | ARS-BFGL-NGS-34609               | 0        | 44999264 |          |
| 29 | ARS-BFGL-NGS-109360              | 0        | 45023665 |          |
| 29 | ARS-BFGL-NGS-103780              | 0        | 45102557 |          |
| 29 | ARS-BFGL-NGS-104441              | 0        | 45129099 |          |
| 29 | Hapmap30072-BTA-65952            | 0        | 45166442 |          |
| 29 | ARS-BFGL-NGS-41686               | 0        | 45187114 |          |
| 29 | ARS-BFGL-NGS-29040               | 0        | 45287502 |          |
| 29 | BTB-01033227                     | 0        | 45326585 |          |
| 29 | ARS-BFGL-NGS-14337               | 0        | 45367095 |          |
| 29 | Hapmap41926-BTA-65940            | 0        | 45458280 |          |
| 29 | Hapmap53679-rs29025626           | 0        | 45482143 |          |
| 29 | ARS-BFGL-NGS-35555               | 0        | 45575574 |          |
| 29 | ARS-BFGL-NGS-56568               | 0        | 45660037 |          |
| 29 | ARS-BFGL-NGS-23884               | 0        | 45686541 |          |
| 29 | BTB-01032695                     | 0        | 45763264 |          |
| 29 | BTB-01032680                     | 0        | 45817015 |          |
| 29 | ARS-BFGL-NGS-40798               | 0        | 45875893 |          |
| 29 | ARS-BFGL-NGS-118751              | 0        | 45974645 |          |
| 29 | ARS-BFGL-NGS-24800               | 0        | 46014507 |          |
| 29 | ARS-BFGL-NGS-119531              | 0        | 46062895 |          |
| 29 | ARS-BFGL-NGS-100295              | 0        | 46099425 |          |
| 29 | ARS-BFGL-NGS-40342               | 0        | 46143465 |          |
| 29 | ARS-BFGL-NGS-19582               | 0        | 46212320 |          |
| 29 | Hapmap47366-BTA-66045            | 0        | 46274749 |          |
| 29 | ARS-BFGL-NGS-102580              | 0        | 46326971 |          |
| 29 | ARS-BFGL-NGS-38476               | 0        | 46358011 |          |
| 29 | ARS-BFGL-NGS-86476               | 0        | 46396836 |          |
| 29 | ARS-BFGL-NGS-36040               | 0        | 46465076 |          |
| 29 | ARS-BFGL-NGS-42803               | 0        | 46527676 |          |
| 29 | ARS-BFGL-NGS-39430               | 46568652 |          |          |
| 29 | ARS-BFGL-NGS-17707               | 0        | 46619278 |          |
| 29 | ARS-BFGL-NGS-99155               | 0        | 46646575 |          |
| 29 | ARS-BFGL-NGS-91570               | 0        | 46676339 |          |
| 29 | BTB-01036181                     | 0        | 46703510 |          |
| 29 | ARS-BFGL-NGS-18122               | 0        | 46732932 |          |
| 29 | Hapmap47369-BTA-66337            | 0        | 46796930 |          |
| 29 | ARS-BFGL-NGS-26547               | 0        | 46839077 |          |
| 29 | ARS-BFGL-NGS-22056               | 0        | 46858633 |          |
| 29 | ARS-BFGL-NGS-65789               | 0        | 46883278 |          |
| 29 | Hapmap41050-BTA-66135            | 0        | 46905855 |          |
| 29 | ARS-BFGL-NGS-79012               | 0        | 46969623 |          |
| 29 | ARS-BFGL-NGS-29253               | 0        | 46999731 |          |
| 29 | ARS-BFGL-NGS-108161              | 0        | 47054342 |          |

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| 29 | Hapmap35817-SCAFFOLD296812_510  | 0        | 47113040 |
| 29 | ARS-BFGL-NGS-17328              | 0        | 47143497 |
| 29 | ARS-BFGL-NGS-30169              | 0        | 47171224 |
| 29 | ARS-BFGL-NGS-70165              | 0        | 47194388 |
| 29 | ARS-BFGL-NGS-28384              | 0        | 47269419 |
| 29 | ARS-BFGL-NGS-100175             | 0        | 47318036 |
| 29 | ARS-BFGL-NGS-18176              | 0        | 47356724 |
| 29 | ARS-BFGL-NGS-76567              | 0        | 47377238 |
| 29 | Hapmap41327-BTA-66071           | 0        | 47422720 |
| 29 | ARS-BFGL-NGS-61484              | 0        | 47455052 |
| 29 | ARS-BFGL-NGS-101626             | 0        | 47478209 |
| 29 | ARS-BFGL-NGS-14050              | 0        | 47499900 |
| 29 | ARS-BFGL-NGS-107395             | 0        | 47527067 |
| 29 | ARS-BFGL-NGS-30751              | 0        | 47572920 |
| 29 | ARS-BFGL-NGS-99096              | 0        | 47595658 |
| 29 | ARS-BFGL-NGS-116372             | 0        | 47623380 |
| 29 | ARS-BFGL-NGS-65571              | 0        | 47662588 |
| 29 | BTA-66080-no-rs                 | 0        | 47690650 |
| 29 | ARS-BFGL-NGS-78864              | 0        | 47713433 |
| 29 | ARS-BFGL-NGS-111472             | 0        | 47744819 |
| 29 | Hapmap41328-BTA-66089           | 0        | 47780900 |
| 29 | ARS-BFGL-NGS-17027              | 0        | 47805682 |
| 29 | ARS-BFGL-NGS-116154             | 0        | 47826672 |
| 29 | ARS-BFGL-NGS-44217              | 0        | 47852399 |
| 29 | ARS-BFGL-NGS-23368              | 0        | 47874605 |
| 29 | ARS-BFGL-NGS-30480              | 47944961 |          |
| 29 | UA-IFASA-9812                   | 0        | 48012818 |
| 29 | Hapmap24672-BTA-140771          | 0        | 48033872 |
| 29 | ARS-BFGL-NGS-42102              | 0        | 48054630 |
| 29 | ARS-BFGL-NGS-118777             | 0        | 48089966 |
| 29 | Hapmap24835-BTA-140780          | 0        | 48123622 |
| 29 | ARS-BFGL-NGS-110729             | 0        | 48178151 |
| 29 | Hapmap47072-BTA-66156           | 0        | 48224534 |
| 29 | ARS-BFGL-NGS-105026             | 0        | 48252404 |
| 29 | ARS-BFGL-NGS-111347             | 0        | 48285322 |
| 29 | ARS-BFGL-NGS-105564             | 0        | 48335639 |
| 29 | ARS-BFGL-NGS-10432              | 0        | 48355723 |
| 29 | ARS-BFGL-NGS-101178             | 0        | 48411645 |
| 29 | ARS-BFGL-NGS-24257              | 0        | 48453418 |
| 29 | ARS-BFGL-NGS-42391              | 0        | 48475112 |
| 29 | ARS-BFGL-NGS-28930              | 48501273 |          |
| 29 | ARS-BFGL-NGS-102087             | 0        | 48545094 |
| 29 | Hapmap35487-SCAFFOLD246380_8866 | 0        | 48580965 |
| 29 | ARS-BFGL-NGS-17275              | 0        | 48602453 |
| 29 | ARS-BFGL-NGS-11139              | 0        | 48672163 |
| 29 | ARS-BFGL-NGS-110393             | 0        | 48704825 |
| 29 | BTA-66199-no-rs                 | 0        | 48735363 |
| 29 | Hapmap48841-BTA-66201           | 0        | 48762574 |
| 29 | ARS-BFGL-NGS-29979              | 0        | 48809184 |
| 29 | ARS-BFGL-NGS-56596              | 0        | 48843374 |
| 29 | Hapmap40456-BTA-66218           | 0        | 48895237 |
| 29 | ARS-BFGL-NGS-10561              | 0        | 48915813 |
| 29 | ARS-BFGL-NGS-118384             | 0        | 48948337 |
| 29 | ARS-BFGL-NGS-29493              | 0        | 48978997 |

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| 29 | ARS-BFGL-NGS-61470     | 0        | 49009465 |
| 29 | ARS-BFGL-NGS-81862     | 0        | 49036580 |
| 29 | ARS-BFGL-NGS-91588     | 0        | 49079040 |
| 29 | ARS-BFGL-NGS-16904     | 0        | 49170534 |
| 29 | ARS-BFGL-NGS-40673     | 0        | 49216792 |
| 29 | ARS-BFGL-NGS-31081     | 0        | 49242653 |
| 29 | BTB-01037943           | 0        | 49286682 |
| 29 | ARS-BFGL-NGS-117323    | 0        | 49357135 |
| 29 | ARS-BFGL-NGS-18653     | 0        | 49412703 |
| 29 | ARS-BFGL-NGS-23659     | 0        | 49440762 |
| 29 | ARS-BFGL-NGS-89746     | 0        | 49478288 |
| 29 | ARS-BFGL-NGS-10454     | 0        | 49561700 |
| 29 | ARS-BFGL-NGS-111079    | 0        | 49596034 |
| 29 | ARS-BFGL-NGS-102385    | 0        | 49779067 |
| 29 | Hapmap57188-rs29027555 | 0        | 49867074 |
| 29 | ARS-BFGL-NGS-109317    | 0        | 49906123 |
| 29 | ARS-BFGL-NGS-92419     | 0        | 49922377 |
| 29 | Hapmap24687-BTA-152298 | 0        | 49949493 |
| 29 | ARS-BFGL-NGS-25479     | 0        | 49979913 |
| 29 | ARS-BFGL-NGS-106809    | 0        | 50020743 |
| 29 | UA-IFASA-1391          | 0        | 50046572 |
| 29 | ARS-BFGL-NGS-29984     | 0        | 50091170 |
| 29 | ARS-BFGL-NGS-63184     | 0        | 50126810 |
| 29 | ARS-BFGL-NGS-53937     | 0        | 50202589 |
| 29 | ARS-BFGL-NGS-37430     | 0        | 50240781 |
| 29 | ARS-BFGL-NGS-97292     | 0        | 50274795 |
| 29 | ARS-BFGL-NGS-40378     | 0        | 50296573 |
| 29 | ARS-BFGL-NGS-118015    | 0        | 50336324 |
| 29 | ARS-BFGL-NGS-28431     | 0        | 50361506 |
| 29 | BTB-01051265           | 0        | 50386436 |
| 29 | ARS-BFGL-NGS-16401     | 0        | 50406176 |
| 29 | ARS-BFGL-NGS-31629     | 0        | 50466342 |
| 29 | ARS-BFGL-NGS-78501     | 0        | 50533499 |
| 29 | ARS-BFGL-NGS-32840     | 50569383 |          |
| 29 | ARS-BFGL-NGS-110460    | 0        | 50586068 |
| 29 | ARS-BFGL-NGS-116005    | 0        | 50716478 |
| 29 | UA-IFASA-6592          | 0        | 50742374 |
| 29 | ARS-BFGL-NGS-14481     | 0        | 50797148 |
| 29 | ARS-BFGL-NGS-119031    | 0        | 50820993 |
| 29 | ARS-BFGL-NGS-91027     | 0        | 50860475 |
| 29 | ARS-BFGL-NGS-75820     | 0        | 50941547 |
| 29 | ARS-BFGL-NGS-119817    | 0        | 50971886 |
| 29 | ARS-BFGL-NGS-41478     | 0        | 51231726 |
| 29 | ARS-BFGL-NGS-12308     | 0        | 51396010 |
| 29 | ARS-BFGL-NGS-11947     | 0        | 51407498 |
| 29 | ARS-BFGL-NGS-106356    | 0        | 51438462 |
| 29 | ARS-BFGL-NGS-64321     | 0        | 51481890 |
| 29 | ARS-BFGL-NGS-29340     | 0        | 51502868 |