



Ministry of Agriculture
of the Russian Federation



Committee on agroindustrial
and fishery complex
of the Leningrad region

INTERNATIONAL
SCIENTIFIC EVENT

GENOMIC TECHNOLOGY IN AGRICULTURE

International Scientific Conference

«**Genomic and modern selection tools in animal breeding.
Theory to Practice**»

(01.06.2018, Free admission)

Continuous Professional Development course
for breeders and specialists

«**Genome editing of agricultural animals**»

(28.05.-31.05.2018, Paid admission)



The Federal Agency
for Scientific Organizations



Federal Science Center
for Animal Husbandry
named after Academy
Member L. K. Ernst



Russian Research
Institute of Farm Animal
Genetics and Breeding

Participants in the courses will have certificates

28.05.2018**Place — RRIFAGB, hall B***Paid admission*

Dear Colleagues

Welcome to the International scientific event «**Genomic technology in agriculture**». The program includes International Scientific Conference «*Genomic and modern selection tools in animal breeding. Theory to Practice*» and Continuous Professional Development course for breeders and specialists «*Genome editing of agricultural animals*».

The targets of genetics and selection tools for highly productive herds will be considered during the conference, as well as methods to improve the effectiveness of genetic resources in poultry and livestock, reproduction intensification, feed efficiency applied in the Russian Federation and abroad.

*RRIFAGB Director, Corresponding member of Russian Academy of Science
Doctor of Veterinary science
Plemyashov Kirill*

**Lecturers:**

Denis Larkin — PhD (Biol. Sci), Reader in Comparative Genomics, Royal Veterinary College (RVC), University of London, UK.



Michael Romanov — PhD (Biol. Sci), Researcher in School of Bio-sciences, University of Kent.

09:30–11:00 Animal genomics (lecture):

1. Genome structure;
2. Source of genetic diversity;
3. Searching of candidate genes for economically important traits;
4. Modern approaches in genome decoding and mapping (Highly productive sequencing, Hi-C, Dovetail).

11:00–12:15 Bird's genomics (lecture):

1. Bird genomics;
2. Molecular-genetic markers;
3. Mapping and sequencing of birds genome;
4. Scientific results.

12:15–13:45 Lunch Break**13:45–15:30 Workshop:**

1. Soap de novo;
2. Rides mapping using bowtie.

15:30–17:30 Workshop:

1. Genomes comparing and reconstruction;
2. Ensembl/BioMart and genes ontology.

During the event, there will be a **Poster session**.
Poster session will be held every day from 11:30 to 14:00

29.05.2018

Place – RRIFAGB, hall A

Paid admission



Lecturer:

Joel Ira Weller — PhD, Department of Ruminant Science Institute of Animal Sciences, Israel.

09:30–12:15 Genomic selection of Farm Animals:

1. From Mendel to Mullis via Sax;
2. Types of genetic markers with emphasis on SNPs;
3. The paradox of dairy cattle breeding;
4. Selection schemes prior to genomic selection;
5. The individual animal model and the numerator relationship matrix;
6. Economic considerations in breeding programs;
7. Detection of the effects of individual quantitative trait loci;
8. The case of the missing heritability?;
9. Strategies for marker-assisted selection;
10. Genomic evaluation based on dense marker maps, the genomic relationship matrix;
11. Genomic evaluation based on analysis of genetic evaluations or daughter-yield evaluations;
12. Genomic evaluation based on analysis of production records;
13. Validation of methods for genomic estimated breeding values;

14. Detection and validation of quantitative trait nucleotides;
15. The 1000 bull genome project;
16. What we now know after 2 generations of genomic selection;
17. Future directions and conclusions.

12:15–13:30 Lunch Break

13:30–17:00 Modern dairy cattle breeding in small populations, the Israeli experience:

1. General characteristics of agriculture in Israel;
2. The structure of the Israeli dairy cattle enterprise;
3. Entities involved in dairy cattle breeding in Israel;
4. Principles of the national breeding program;
5. Data collection and preliminary analysis;
6. Statistical methods and models used for genetic evaluation in Israel;
7. Development of the Israeli breeding index;
8. The Israeli dairy cattle breeding program prior to genomics;
9. Application of genomics to large and small populations;
10. The current Israeli breeding program, based on genomics;
11. Phenotypic and genetic trends for production and nonproduction traits;
12. Comparison of realized to expected traits;
13. Future directions, including dairy recording, disease traits, and methane production.

30.05.2018**Place — RRIFAGB, hall A***Free admission***Lecturer:**

Dmitri Nikulin — PhD in veterinary science, CEO LLC «Dairy company “Genetica”», Nizniy-Novgorod.

Sire evaluation systems, USA and CRI indexes

09:30–11:30 Utilization of selection indexes in breeding work;

11:30–12:15 Experience of utilization of new selection index ICC (index of ideal industrial cow) in Russian Federation;

12:15–13:30 **Lunch Break**

13:30–14:30 Experience of utilization of new selection index ICC (index of ideal industrial cow) in Russian Federation;

14:30–15:30 Control of haplotypes and recessives in dairy cattle breeding;

15:30–16:30 Genomic evaluation of cows in farms. Experience from USA dairy industry.

Place — RRIFAGB, hall B*Paid admission***Lecturer:**

Heiner Niemann — Dr. (Vet. Sci), professor, Director and Professor Head of Institut für Nutztiergenetik (FLI) (Institute of Farm Animal Genetics) and Head of Department Biotechnology.

Frenzel Heidorn, Bjorn Petersen, Hendrik Johannes — Institut für Nutztiergenetik (FLI) (Institute of Farm Animal Genetics).

Editing the genome of livestock species-a workshop

9:30–10:30 The principles of Genome Editing Tools, mechanisms and possibilities;

10:30–11:30 HDR or NHEJ? Two ways to alter the genome;

11:30–12:15 Applications of Genome Editing in livestock;

12:15–13:30 **Lunch Break**

13:30–16:30 Practical session (How to find the right guide RNA?, Ligating the gRNA into the expression vector.

31.05.2018

Place — RRIFAGB, hall A

Paid admission



Lecturer:

Heiner Niemann — Dr. (Vet. Sci), professor, Director and Professor Head of Institut für Nutztiergenetik (FLI) (Institute of Farm Animal Genetics) and Head of Department Biotechnology.

Frenzel Heidorn, Bjorn Petersen, Hendrik Johannes — Institut für Nutztiergenetik (FLI) (Institute of Farm Animal Genetics).

9:30–12:15 Practical session (controlling the ligation success, T7EN1 Assay to detect mutations, calculating the efficiency of genome editing);

12:15–13:30 **Lunch Break**

13:30–14:30 Chances and Risks of Genome Editing in livestock;

14:30–15:00 Ethical and legal aspects of Genome Editing;

15:00–15:30 Open discussion.

Place — RRIFAGB, hall B

Paid admission

Lecturers:

9:30–11:00 **Ms Romy Morrin O'Donnell** — Weatherbys Scientific International Sales Director.

High Throughput SNP genotyping services and genetic disease testing for cattle and other livestock species.

11:00–12:15 **Andrew Cromie** — Head of Innovation of Irish Cattle Breeding Federation.

Impact of Genomic Technology on the Irish Dairy Industry.

12:15–13:30 **Lunch Break**

13:30–14:15 **Deirdre Purefield** — Post Doctoral Research Officer, Quantitative geneticist in Teagasc;

Mr. Bernard Eivers — CEO of National Cattle Breeding Centre.

Application of Genomic Technology to Irish Livestock.

14:15–15:30 **Mr. Edmund Harty & Mr. Fergus O'Mara** — Dairy Master (Ireland).
Collecting phenotypic data.

15:30–17:00 **Mr. John Rae** — Project manager of Sustainable Food Systems Ireland.

The Potential for Russian Dairy and Livestock Production.

International Scientific Conference «Genomic and modern selection tools in animal breeding. Theory to Practice»**Place — RRIFAGB, hall B***Free admission*

With the financial support of RSF (Project 16-16-04060 «Development of the Methodology of Genomic Selection for the Conservation and Effective Use of the Potential of Genetic Resources, and Creation of Highly Productive Strains in the Poultry Industry of Russia»)

Lecturers:

09:30–09:35 **Kirill Plemyashov** — RRIFAGB Director, Dr. (Vet. Sci), Corresponding member of Russian Academy of Science.

Welcome speech.

09:35–09:40 **Idris Idiatullin** — Head of veterinary service in Leningrad region, main state veterinary inspector of Leningrad region.

Welcome speech.

09:40–09:55 **Joel Ira Weller** — PhD, Department of Ruminant Science Institute of Animal Sciences, Israel.

Some thoughts about future of genomic selection in dairy cattle.

09:55–10:10 **Heiner NIEMANN** — Dr. (Vet. Sci), Director and professor head of Institut für Nutztiergenetik (FLI) (Institute of Farm Animal Genetics) and Head of Department Biotechnology.

Xenotransplantation.

10:10–10:30 **Björn Petersen** — Dr. (Vet. Sci). Friedrich-Loeffler-Institut Institut für Nutztiergenetik Höltystrasse.

Gene Editing in Livestock.

10:30–10:45 **Denis Larkin** — PhD (Biol. Sci), Reader in Comparative Genomics, Royal Veterinary College (RVC), University of London.

Animal genomics.

10:45–11:00 **Ms Romy Morrin O'Donnell** — Weatherbys Scientific International Sales Director.

Utilization of SNP technologies in cattle selection.

11:00–11:15 **Michael Romanov** — PhD (Biol. Sci), Researcher in School of Biosciences, University of Kent.

Features of genetic architecture in poultry gene-pool populations.

11:15–11:30 **Sergey Djaparidze** — PhD (Biol. Sci), Head of LLC «Dairy company «Genetica».

Role of genetics in profitability of dairy industry.

11:30–11:45 **Larisa Kozikova** — Dr. (Biol. Sci), leading researcher in laboratory of genetics, RRIFARB.

Transgenic technologies in agriculture.

11:45–12:00 **Irina Makarenko** — PhD (Biol. Sci), manager on the development of the direction of Agrigenomika («ALBIOGEN», distributor of Illumina).

Illumina technologies for genomic selection of cattle and plants.

12:00–13:00 **Lunch Break**

13:00–13:15 **Sergey Kuznets** — general director of ArgusSoft.

Software for cytogenetic research ARGUS-KARIO.

13:15–13:30 **Tatyana Kuzmina** — Dr. (Biol. Sci), professor, Chief of the Lab. Developmental Biology, RRIFARB.

Strategy of utilization of cell reproduction and DNA technologies in cattle breeding.

13:30–13:45 **Jarmo Juga** — Dr. Agr. Sci), Adjunct professor, Dept. of Agricultural Sciences, University of Helsinki.

Dairy cattle breeding goals and farmer preferences in genomic era.

13:45–14:00 **Andrei Kudinov** — researcher, RRIFAGB.

Genomic technologies in selection of dairy cattle of Leningrad region.

14:00–14:15 **Alexander Sermyagin** — PhD (Agr. Sci), Ernst All-Russia Research Institute for Animal Husbandry.

Genomic selection as a method of improvement of breeds and animal populations within regional and national breeding resources monitoring.

14:15–16:00 **Reports at the stage of agreement.**

16:00 **Open discussion.**

02.06.2018

Social program «White nights in St. Petersburg»

Contacts:

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WEATHERBYS

During the event, there will be a **Poster session**.
Poster session will be held every day from 11:30 to 14:00