

**SCIENTIFIC PROGRAM
OF THE INTERNATIONAL CONFERENCE «GENETIC
INTEGRATION OF PRO EUKARYOTES AND EUKARYOTES:
BASIC RESEARCH AND MODERN AGRICULTURAL
TECHNOLOGIES»**

**DEVOTED TO THE 85TH ANNIVERSARY OF ALL-RUSSIAN RESEARCH INSTITUTE
FOR AGRICULTURAL MICROBIOLOGY (ARRIAM)**

**ST. PETERSBURG SCIENTIFIC CENTRE OF RUSSIAN ACADEMY OF SCIENCES
JUNE 24-27, 2015**

ORGANIZING COMMITTEE

TIKHONOVICH I.A. (RUSSIA)

SKRYABIN K.G. (RUSSIA)

POPOV V.O. (RUSSIA)

YANKOVSKY N.K. (RUSSIA)

GALCHENKO V.F. (RUSSIA)

INGE-VECHTOMOV S.G. (RUSSIA)

VALKONEN J. (FINLAND)

SHCHEGOLEV S.YU. (RUSSIA)

DYAKOV YU.T. (RUSSIA)

BUKHARIN O.V. (RUSSIA)

SHUMNY V.K. (RUSSIA)

DZHAPARIDZE L.A. (RUSSIA)

PROVOROV N.A. (RUSSIA)

LUGTENBERG B.J.J. (THE NETHERLANDS)

ST. PETERSBURG

2015

June 24, 2015

9.00 – 16.00 Arrival and registration of the Conference participants at Saint Petersburg Scientific Center of RAS (5 Universitetskaya Nab., St. Petersburg).

12.00 – 13.00 – Round Table of RFBR for grantees and grant-applicants.

**St. Petersburg Scientific Centre of Russian Academy of Sciences, Big Hall
Chair - Head of the Department for competitive projects in biology and medical sciences of RFBR, prof. Valery Smirnov**

13:00 – 13:10. Time-out

Session 7. Plant bioengineering in 21st century

St. Petersburg Scientific Centre of Russian Academy of Sciences, Big Hall

Co-Chairs: Nikolai Provorov, Elena Khlestkina

13:10 – 13:30. Elena Khlestkina (*Institute of Cytology and Genetics, Novosibirsk, Russia*) FLAVONOID COMPOUNDS IN CEREALS – FEATURES OF GENETIC REGULATION IN DIFFERENT PARTS OF THE PLANT.

13:30 – 13:50. Aleksander Shaposhnikov¹, Natalya Makarova¹, Tatiana Azarova¹, Marina Baganova¹, Andrey Belimov¹, Lev Kravchenko¹, Liudmila Beshpalova², Igor Tikhonovich¹ (¹*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*; ²*P.P.Lukyanenko Krasnodar Research and Development Institute of Agriculture, Krasnodar, Russia*) FEATURES OF ROOT EXOMETABOLITES OF MODERN WHEAT VARIETIES.

13:50 – 14:10. Yuri Gogolev, Amina Daminova, Olga Petrova, Rim Gubaev, Marina Ageeva, Vladimir Gorshkov (*Kazan Institute of Biochemistry and Biophysics, Kazan Scientific Center of the Russian Academy of Sciences, Kazan*) HOST-PARASITE INTEGRATION ON THE EXAMPLE OF BLACKLEG DISEASE OF SOLANACEAE PLANTS.

14:10 – 14:30. Nikolay Goncharov, Irina Stepanenko, Vadim Efimov (*Institute of Cytology and Genetics, Novosibirsk, Russia*) MODEL OF A NEW GENERATION CULTIVARS IN WHEAT: PRECOCITY AND NON-SYMBIOTIC NITROGEN FIXATION.

14:30 – 14:50. Alexey Brusencev (*All Russian Research Institute of Vegetable Crops, Moscow Region, Russia*) COMPARATIVE ANALYSIS OF THE SYNERGISM OF TRIPARTITE SYMBIOSIS OF PEA AND NODULE BACTERIA WITH MYCORRHIZAL FUNGI AND CYANOBACTERIA.

14:50 – 15:10. Coffee-break

15:10–15:30. Olga Guliy (*Institute of Biochemistry and Physiology of Plants and Microorganisms, Saratov, Russia*) THE MORPHOLOGY OF THE WHEAT ROOT SYSTEM INOCULATED BY *Azospirillum brasilense* SP7 AND BACTERIOPHAGE FAb-Sp7.

15:30 – 15:50. Galina Stepanova, Vladimir Kosolapov (*V.R. Williams All-Russian Fodder Research Institute, Moscow Region, Russia*) NEW WAYS OF CONJUGATE SELECTION OF VARIETY-MICROBIAL SYSTEMS OF FORAGE GRASSES.

15:50 – 16:10. Angela Asaturova, Marina Pavlova, Tatiana Sidorova, Valentina Dubyaga, (*All-Russian Research Institute of Biological Plant Protection, Krasnodar, Russia*) MECHANISMS OF BIOLOGICAL CONTROL OF WINTER WHEAT PATHOGENS BY THE BACTERIUM *Bacillus subtilis*.

16:10 – 16:30. Ilya Mikhailenko, Viktor Dragavtsev (*Agrophysical Research Institute, St. Petersburg, Russia*) FUNDAMENTALS OF MANAGEMENT OVER GENETIC-BREEDING PROCESSES IN THE PLANT INDUSTRY.

16:30 – 16:50. Lev El'konin (*Research and Development Institute of Agriculture of the South-East, Saratov*) Agrobacterium-MEDIATED TRANSFORMATION AS A TOOL FOR MODIFYING THE CHEMICAL COMPOSITION OF CEREALS SEEDS.

16:50 – 17:10. Emilia Kolomiets (*Institute of Microbiology, National Academy of Sciences of Belarus, Minsk, Belarus*) CONTRIBUTION OF MICROBIOLOGICAL SCIENCE IN THE DEVELOPMENT OF AGRICULTURAL TECHNOLOGY IN REPUBLIC OF BELARUS.

17:10 – 17:30. Andrey Kojemyakov, Yuri Laktionov (*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) ADVANCED TECHNOLOGIES OF MICROBIAL INOCULANTS PRODUCTION AND USE FOR CROPPING UNDER THE DIFFERENT AGRO-ECOLOGICAL CONDITIONS OF RUSSIAN FEDERATION.

17:30 – 17:50. Oksana Shtark (*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) GENETIC AND EVOLUTIONARY ANALYSIS AND ADAPTIVE POTENTIAL OF ARBUSCULAR MYCORRHIZA.

17:50 – 19:00. POSTER SESSION.

June 25, 2015

St. Petersburg Scientific Centre of Russian Academy of Sciences, Big Hall

9.30 – 10.00. Opening of the Conference, greetings

Chair: Igor Tikhonovich

Introductory lecture

Co-Chairs: Yury Kruglov, Nikolai Provorov.

10:00 – 10:30. Igor Tikhonovich (*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) AGRICULTURAL MICROBIOLOGY: 85 YEARS OF RESEARCH AND MOMENTS OF INSPIRATION.

Session 1. Microorganisms in "soil-plant" systems.

Co-Chairs: Vladimir Popov, Sergey Shchegolev

10:30 – 10:50. Andrey Ivanov (*V.V. Dokuchaev Soil Science Institute, Moscow*) THE ROLE OF MICROBIOLOGY IN THE EVALUATION OF SOIL RESOURCES.

10:50 – 11:10. Ian Dodd (*LANCASTER UNIVERSITY, UK*) CAN SOIL BIOTA X ROOTSTOCK INTERACTIONS AMELIORATE ABIOTIC STRESS IN TOMATO?

11:10 – 11:30. Evgeny Andronov (*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) METAGENOMIC ANALYSIS OF MICROBIAL COMMUNITIES IN RUSSIAN SOILS.

11:30 – 11:50. Darya Rybakova, Gabriele Berg (*Graz University of Technology, Austria*) EXPLOITING THE PLANT-MICROBIAL NETWORK FOR ADVANCED BIOCONTROL TECHNOLOGIES.

11:50 – 12:10. Coffee Break

12:10 – 12:30. Sergey Shchegolev (*Institute of Biochemistry and Physiology of Plants and Microorganisms, Saratov, Russia*) ADVANCED TECHNOLOGY OF POTATO MICROPROPAGATION USING *in vitro* ASSOCIATIONS WITH RHIZOBACTERIA OF GENUS *Azospirillum*.

12:30 – 12:50. Ekaterina Ivanova¹, Elizaveta Pershina¹, Eugeny Andronov¹, Timofey Chernov², Olga Kutovaya² (¹*All-Russia Research Institute for Agricultural Microbiology, St.Petersburg*; ²*V.V. Dokuchaev Soil Science Institute, Moscow*) SPARTIAL ORGANIZATION OF METAGENOME OF SOIL MICROBIAL COMMUNITY.

Presentations of sponsors

12:50 – 13:00. Anna Konorova (*Qvados-Bio Company, Moscow, Russia*) ON THE QUESTION OF VALUABLE BIOLOGICAL MATERIAL STORAGE: THE MAIN OBJECTIVES, CRITERIA AND COMPLEXITY.

13:00 – 13:10. Cosmas Malin (*LiCONiC AG, Mauren, Principality of Liechtenstein*) LICONIC: INNOVATIVE TECHNICAL SOLUTIONS FOR STORAGE OF VALUABLE BIOLOGICAL SAMPLES.

13:10 – 13:25. Lev Shagam (*Helicon Company, Moscow*) THEORY AND PRACTICE OF SEMICONDUCTOR SEQUENCING USE IN RESEARCH OF THE COMPOSITION OF MICROBIAL COMMUNITIES.

13:25 – 13:40. Time-out

Session 2. Integration of plants and microorganisms in the N₂-fixing symbiosis.

Co-Chairs: Igor Tikhonovich, Nicholas Brewin

13:40 – 14:00 Vladimir Zhukov¹, Aleksander Zhernakov¹, Olga Kulaeva¹, Aleksey Borisov¹, Igor Tikhonovich¹, Pascal Ratet² (¹*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*; ²*Centre National de la Recherche Scientifique, Institut des Sciences du Végétal, Gif-sur-Yvette, France*) STUDYING THE REGULATION OF GENE EXPRESSION IN NITROGEN-FIXING NODULES OF GARDEN PEA (*Pisum sativum* L.) WITH USE OF TRANSCRIPTOME SEQUENCING.

14:00 – 14:20. Elena Dolgikh¹, Anna Kirienko¹, Yuri Porozov² (¹*All-Russia Research Institute for Agricultural Microbiology*; ²*Informational Technologies, Mechanics and Optics University, St. Petersburg, Russia*) PEA RECEPTOR-LIKE KINASE K1: A POSSIBLE ROLE IN SYMBIOSIS DEVELOPMENT.

14:20 – 14:40. Ton Timmers¹, Anna Kitaeva², Kirill Demchenko^{2,3}, Viktor Tsyganov² (¹*Institut National de la Recherche Agronomique, Laboratoire Interactions Plantes Microorganismes, Auzeville, France*, ²*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*; ³*V.L.Komarov Botanical Institute, Saint-*

Petersburg, Russia) HOSTING AND EXPLOITING RHIZOBIA IN INDETERMINATE-TYPE NODULES.

14:40 – 15:00. Liudmila Lutova (*St. Petersburg State University, Russia*) ROLE OF THE PLANT TRANSCRIPTIONAL FACTORS IN DEVELOPMENT OF SYMBIOTIC NODULES.

15:00 – 15:20. Anna Tsyganova¹, Anna Kitaeva¹, Kira Ivanova¹, Tatiana Serova¹, Petr Kusakin¹, Ton Timmers², Nicholas J. Brewin³, Kirill Demchenko^{1,4}, Viktor Tsyganov¹ (¹*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*; ²*Institut National de la Recherche Agronomique, Laboratoire Interactions Plantes Microorganismes, Auzeville, France*; ³*John Innes Centre, Norwich, UK*; ⁴*V.L.Komarov Botanical Institute, St. Petersburg, Russia*) MOLECULAR AND CELLULAR ASPECTS OF PEA SYMBIOTIC NODULE DEVELOPMENT.

Session 3. Biotechnology of animals.

Co-Chairs: Sergey Inge-Vechtomov, Vugar Bagirov

15:20 - 15:40. Marat Umarov, Maksim Vechersky, Maksim Golichenkov, Natalya Kostina, A. Kotova, Tatiana Kuznetsova, Elena Naumova (M.V. LOMONOSOV MOSCOW STATE UNIVERSITY, MOSCOW, RUSSIA) MICROBIAL NITROGEN FIXATION IN ANIMALS.

15:40 – 16:00. Natalya Zinovieva, Elena Gladyr', Aleksander Sermyagin, Veronika Kharzinova, Olga Kostyunina, Gotfrid Brem (*L.K.Ernst Research Institute for Animal Husbandry, Moscow Region, Russia*) GENOMIC TECHNOLOGIES IN ASSESSING OF BIODIVERSITY AND BREEDING VALUE OF AGRICULTURAL ANIMALS.

16:00 – 16:20. Vugar Bagirov, Igor Gusev, Olga Artem'eva, Tatiana Deniskova, Pavel Klenovitsky, Vladimir Dvalishvili, Roman Rykov, Elena Gladyr', Natalya Zinovieva (*L.K.Ernst Research Institute for Animal Husbandry, Moscow Region, Russia*) GENETIC, BIOLOGICAL AND PRODUCTIVE FEATURES OF NEW BREEDING VARIATIONS OF SHEEPS OBTAINED BY DISTANT HYBRIDIZATION.

16:20 – 16:40. Georgy Laptev, Elena Yildirim (*Biotrof Company, St. Petersburg, Russia*) EPIPHYTIC MICROFLORA AS A SOURCE FOR SILAGE MICROBIOCENOSIS FORMATION: MOLECULAR AND GENETIC ANALYSIS.

16:40 – 17:00. Anton Nizhnikov, Kirill Antonec, Sergey Inge-Vechtomov (*Saint Petersburg State University, Russia*) PROTEOMIC SCREENING OF AMYLOID-FORMING PROTEINS IN *Escherichia coli*.

17:00 – 18:30. Transfer of Conference participants to Park Inn by Radisson "Pribaltiyskaya" hotel by charter bus (hotel address: 14 Korablestroiteley Street, St. Petersburg)

18:30 – 23:00 Welcome party and the Continuation of Opening Ceremony.

June 26, 2015

Session 4. Supraspecific systems under stress conditions.

Co-Chairs: Dmitry Matishov, Emilia Kolomiets

9:00 – 9:20. Nicholas Brewin (*John Innes Centre, Norwich, UK*) STRESSES AND STRAINS IN THE RHIZOBIUM-LEGUME SYMBIOSIS.

9:20 – 9:40. Mark Levitin (*All-Russian Research Institute of Plant Protection, St. Petersburg, Russia*) MICROORGANISMS UNDER THE CONDITIONS OF GLOBAL CLIMATE CHANGE.

9:40 – 10:00. Marina Roumyantseva, Boris Simarov (*All-Russian Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) GENOMIC AND POPULATION DYNAMICS OF NODULE BACTERIA UNDER SALT STRESS.

10:00 – 10:20. Andrey Belimov (*All-Russian Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) SYMBIOSES OF LEGUME PLANTS WITH MICROORGANISMS HAVING INCREASED TOLERANCE TO TOXIC METALS.

10:20 – 10:40. Liudmila Il'ina, Dmitry Matishov (*Institute of Arid Zones, Rostov-on-Don, Russia*) MODERN AGRICULTURAL TECHNOLOGIES IMPROVING THE FERTILITY OF COMPLEX ALKALINE SOILS OF SOUTHERN RUSSIA.

10:40 – 11:00. Aleksander Ignatov (*Federal Research Centre for Fundamentals of Biotechnology, Moscow, Russia*) AGGRESSIVENESS OF VASCULAR BACTERIOSIS PATHOGEN OF BRASSICA CROPS *Xanthomonas campestris* DEPENDS ON THE AMBIENT TEMPERATURE AND ON THE GENOTYPE OF PATHOGEN.

11:00 – 11:20. Coffee-break

Session 5. Biodiversity and evolution of symbiosis.

Co-Chairs: Simonetta Bullitta, Nikolay Yankovsky

11:20 – 11:40. Simonetta Bullitta¹, Giovanna Piluzza¹, Vera Safronova², Andrey Belimov² (¹*Istituto per il Sistema Produzione Animale in Ambiente Mediterraneo, Sassari, Italy*; ²*All-Russian Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) THE SEARCH FOR EFFECTIVE SYMBIOSES BETWEEN PLANTS AND MICROORGANISMS INHABITING SOILS OF SARDINIA.

11:40 – 12:00. Nikolay Yankovsky (*Vavilov Institute of General Genetics, Russia*) MODIFICATIONS OF NUCLEOTIDES IN ONTOGENESIS CAN BECOME EPIALLELES IN PHYLOGENESIS?

12:00 – 12:20. Nikolay Ravin (*Centre "Bioengineering" of RAS, Moscow, Russia*) FEATURES OF PLASTID GENOME EVOLUTION IN PLANTS-PARASITES AND PREDATORS.

12:20 – 12:40. Mikhail Chumakov (*Institute of Biochemistry and Physiology of Plants and Microorganisms, Saratov, Russia*) *Agrobacterium*-MEDIATED DNA INTEGRATION INTO THE GENOMES OF EUKARYOTES: BASIC RESEARCH AND MODERN AGRICULTURAL TECHNOLOGIES.

12:40 – 13:00. Vera Safronova (*All-Russian Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) PHYLOGENETIC DIVERSITY OF RHIZOBIA ISOLATED FROM THE RELICT LEGUME *Vavilovia formosa*.

13:00 – 13:20. Nikolai Vorobyov, Nikolai Provorov (*All-Russian Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) MATHEMATICAL MODELING OF EVOLUTIONARY DYNAMICS OF MICROBIAL-PLANT SYMBIOTIC SYSTEMS.

13.20 – 13.40. Coffee-break

Session 6A. Microbiology and agro-technology

Co-Chairs: Natalya Sanzharova, Marion Meyer

13:40 – 14:00. Aleksey Zavalin (*D.N.Pryanishnikov All-Russia Research Institute of Agrochemistry, Moscow, Russia*) APPLICATION OF MICROBIAL PREPARATIONS FOR THE REGULATION OF MINERAL NUTRITION AND PRODUCTIVITY OF AGRICULTURAL CROPS.

14:00 – 14:20. Marion Meyer¹, Vladimir Chebotar², François Senejoux¹, Heino Martin Heyman¹, N.L. Meyer^{1, 2}, M.A. Meyer¹ (¹*Department of Plant Science, University of Pretoria, Pretoria, South Africa*; ²*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) IS THE CAUSE OF THE FAIRY CIRCLES OF NAMIBIA EUPHORBIAS AND THE MAINTENANCE OF THESE MYSTERIOUS CIRCLES THE ABSENCE OF PLANT GROWTH PROMOTING MICROBES?

14:20 – 14:40. Natalya Sanzharova (*All-Russian Institute of Agricultural Radiology and AgroEcology, Obninsk, Russia*) RADIATION AND AGRICULTURAL BIOTECHNOLOGIES: THE STUDY OF MICROBIOLOGICAL SAFETY AND QUALITY OF IRRADIATED PRODUCTS.

14.40 – 15.00 Tatiana Melnichuk (*The Crimean Agricultural Institute, Simferopol, Russia*) FORMING OF RHIZOBACTERIA-PLANT ASSOCIATIONS FOR AGROCENOSSES.

15:00 – 15:20. Tatiana Naumkina¹, Vladimir Zotikov¹, Andrey Vasil'chikov¹, Marya Donskaya¹, Aleksey Borisov², Oksana Shtark² (¹*All-Russia Research Institute of Legumes and Groat Crops, Orel, Russia*; ²*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) SELECTION OF LEGUMES TO IMPROVE THE EFFICIENCY OF SYMBIOSIS.

15:20 – 15:40. Guzel Kudoyarova (*Ufa Institute of Biology of Russian Academy of Sciences, Ufa, Russia*) HORMONES, PLANT GROWTH REGULATION AND INCREASING OF PRODUCTIVITY BY GROWTH-STIMULATING BACTERIA.

Session 6B. Microbiology and agricultural technologies

Co-Chairs: Tatiana Melnychuk, Aleksey Zavalin

15:40 – 16:00. Nikolai Kolchanov (*Institute of Cytology and Genetics, Novosibirsk, Russia*) MICROBIAL TECHNOLOGIES OF PROCESSING THE RENEWABLE PLANT MATTER INTO THE FINAL PRODUCTS.

16:00 – 16:20. Vitaly Yahno, Vladislav Eliseyev (*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) PRODUCTION AND MARKETING OF MICROBIOLOGICAL PREPARATIONS FOR CROP CULTIVATION IN RUSSIA.

16:20 – 16:40. Andrey Baymiev, Ekaterina Ivanova, Roman Gumenko, Aleksey Baymiev (*Institute of Biochemistry and Genetics, Ufa, Russia*) GENETIC CHARACTERISTICS OF NODULE BACTERIA FROM WILD-GROWING LEGUMES OF SOUTHERN URALS.

16:40 – 17:00. Vladimir Chebotar, Andrey Shcherbakov, Elena Shcherbakova, Svetlana Maslennikova, Marina Baganova, Alex Zaplatkin, Alex Borisov (*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*) BIODIVERSITY OF ENDOPHYTIC BACTERIA: A PROMISING BIOTECHNOLOGY RESOURCE.

17:00 – 17:20. Vitaly Lebedev, Gennady Vorobeykov (*A.I.Herzen State Pedagogical University, St.Petersburg, Russia*) INCREASING THE PRODUCTIVITY OF

BRASSICACEAE FAMILY PLANTS BY SEED INOCULATION WITH BACTERIAL PREPARATIONS BASED ON ASSOCIATIVE STRAINS.

17:20 – 17:40. Valery Ladatko (*All-Russia Rice Research Institute, Krasnodar, Russia*) **EFFECT OF BIOPREPARATIONS ON THE GROWTH, DEVELOPMENT AND PRODUCTIVITY OF RICE.**

17:40 – 18:00. Olga Orlova¹, Nikolai Vorobyov¹, Olga Sviridova¹, Eugeny Andronov¹, Aleksander Kolodyazhny², Yulia Moskalevskaya², Nikolay Patyka² (¹*All-Russia Research Institute for Agricultural Microbiology, St. Petersburg, Russia*; ²*Institute of Agriculture of NAASU, Kiev region, Ukraine*) **COMPOSITION AND FUNCTIONING OF MICROBIAL COMMUNITY IN THE DECAY OF CEREAL STRAW IN THE SOD-PODZOLIC SOIL.**

18.00 – 18.10. Closing of the Conference.

June 27, 2015

9.30 – 10.00 Registration of participants of the Plenum of Vavilov Society of Geneticists and Breeders at Saint Petersburg Scientific Center of RAS (5 Universitetskaya Nab., St. Petersburg).

10.00 – 15.00 Plenum of the Central Council of Vavilov Society of Geneticists and Breeders (obligatory attendance for members of Central Council of Vavilov Society of Geneticists and Breeders).

13.15 – 13.40. Coffee-break