**The 1st International Workshop**

**“Plant Genetics and Genomics for Food Security”**

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**SCIENTIFIC PROGRAM**

**PGGFS-2016**

**Novosibirsk, Russia**

**August 26 - 28, 2016**

**ORGANIZERS**

Federal Research Center Institute of Cytology and Genetics of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk State University, Federal Agency for Scientific Organizations, Siberian Branch of the Russian Academy of Sciences, Vavilov Society of Geneticists and Breeders, Faculty of Natural Sciences of the Novosibirsk State University, Food Security Research Center of the Novosibirsk State University, Council of Young Scientists of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk Branch of the Vavilov Society of Geneticists and Breeders, Vavilov Journal of Genetics and Breeding, «Scientific service» Ltd.

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**CONTACTS**

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**Thursday, August, 25 – «Golden Valley» Hotel**

**Arrival**

**18:00 – 23:00 Novosibirsk Night City tour**

**Friday, August, 26 – House of Scientists, Small Hall**

**8:00 – 9:00 - Registration**

**9:00 – 9:30 -Opening ceremony**

**Nikolay KOLCHANOV –** director of the Federal Research Center Institute of Cytology and Genetics of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk

**Mikhail FEDORUK** – rector of the Novosibirsk State University, Novosibirsk

**Vladimir SHUMNY** - Adviser of of the Russian Academy of Sciences at the Institute of Cytology and Genetics SB RAS, Novosibirsk

**9:30 – 9:50 - MODERN EQUIPMENT FOR MOLECULAR GENETIC RESEARCH, DESIGNED AND PRODUCED IN THE RUSSIAN FEDERATION - Yakov Alekseev**, All-Russia Research Institute of Agricultural Biotechnology, Moscow, Russia (20 min).

**9-50 – 13-00 - Plenary session**

**Chairpersons: Andreas Börner, Alexey Kochetov**

**Germplasm collections – The source for Future Breeding and Food sustainability – Andreas Börner**, Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben, Germany (35 min)

**THE USE OF GENOME TECHNOLOGIES FOR PLANT GENETIC PROTECTION** - **Elena Salina**, Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (35 min)

**BREEDWHEAT: Breeding for sustainable wheat varieties, an integrated approach from genomics to selection** - **Jacques Le Gouis**, Clermont-Ferrand, France (35 min)

**Coffee break (15 min)**

**TRANSGENIC PLANTS: GENETIC MODELS FOR INVESTIGATION OF STRESS TOLERANCE MECHANISMS AND DESIGN OF NEW RESISTANT GENOTYPES FOR AGRICULTURE -** **Alexey Kochetov**, Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (35 min)

**PLANT DEFENSE PEPTIDES AS VALUABLE ANTIMICROBIALS FOR CROP PROTECTION – Tatiana Odintsova,** Institute of General Genetics RAS, Moscow, Russia (35 min)

**13-00 – 14-00 - Lunch**

**14-00 – 15-00 - Poster session** (list of posters is in the end of the program)

**15-00 – 16-00 - Plenary session**

**Chairpersons: Elena Salina, Jacques Le Gouis**

**Genetic diversity of barley resistance to leaf blights and development of initial material for breeding – Olga Afanasenko*,*** All-Russian Research Institute for Plant Protection, Saint Petersburg, Russia (30 min)

**GENETIC AND BREEDING NETWORK FOR IMPROVEMENT OF BARLEY IN KAZAKHSTAN - Yerlan Turuspekov**, Institute of Pant Biology and Biotechnology, Almaty, Kazakhstan (30 min)

**Coffee break (30 min)**

**16-30 – 19-00 - Session 1. GENETIC DIVERSITY AND BREEDING**

**Chairpersons: Olga Afanasenko**, **Yerlan Turuspekov**

**APPLICATION OF GENETIC MARKERS IN THE LABORATORY SEED CONTROL OF BARLEY – Andrey Pomortsev**, Institute of General Genetics RAS, Moscow, Russia (20 min)

**NEW BREEDING TOOLS AND EFFECT OF CHANGED AGRONOMY ON PLANT ATTRIBUTES IN CENTRAL AND NORTH EAST PLAINS ZONE** **OF INDIA - Uttam Kumar**, Borlaug Institute for South Asia (BISA), Ludhiana, Punjab, India (20 min)

**INTROGRESSION OF LEAF RUST RESINTANCE FROM AEGILOPS SPELTOIDES INTO BREAD WHEAT (TRITICIM AESTIVUM L.) - Rumik Davoyan*,*** Krasnodar Lukyanenko Research Institute of Agriculture, Krasnodar, Russia (20 min)

**Phenotyping of synthetic wheat with *AE.SQUARROSA* GENOME in the conditions of southern forest-steppe of Western Siberia – Inna Pototskaya,** Omsk State Agrarian University, Omsk, Russia (20 min)

**GENOTYPE-ENVIRONMENT INTERACTION PATTERNS OF SOYBEAN GROWING IN KAZAKHSTAN - Saule Abugalieva**, Institute of Plant Biology and Biotechnology, Almaty, Kazakhstan (20 min)

**Impact of differential DNA polymorphism of tomato (*SOLANUM LYCOPERSICUM* L.) into F1 hybrids performance *-* Marina Shapturenko*,*** Institute of Genetics and Cytology of NAS, Minsk, Belarus (20 min)

**RYE CHROMATIN INTROGRESSION INTO THE BREAD WHEAT GENOME. CREATION OF THE PREBRIDING FORMS – Dina Loginova,**Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (15 min)

**Intraspecific polymorphism of *Sus1* gene in *Pisum sativum –* Kseniya Boris,** Institute of Bioengineering, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russia (15 min)

**20:00 – 22-30 -Welcome dinner**

**Saturday, August, 27 – House of Scientists, Small Hall**

**9-00 – 11-50 - Session 3. GENETIC AND BREEDING IN THE CHANGING ENVIRONMENT**

**Chairpersons: Yuri Shavrukov, Tatyana Pshenichnikova**

**IDENTIFICATION OF CANDIDATE GENES FOR DROUGHT TOLERANCE IN SPRING BARLEY BASED ON SNP-KASP TECHNOLOGY - Yuri Shavrukov,** University of Adelaide, Urrbrae, SA; Flinders University, Bedford Park, SA, Australia

(25 min)

**The use of cytogenetic collections of bread wheat and their molecular-marked derivatives for the search of a new genetic variability for drought tolerance and grain quality - Tatyana Pshenichnikova*,*** Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (20 min)

**WHEAT LEAF PUBESCENCE PHENOTYPING AND ANALYSIS – Dmitry Afonnikov,** Institute of Cytology and Genetics SB RAS, Novosibirsk State University, Novosibirsk, Russia (20 min)

**Coffee break** (30 min)

**Novel regulators of cold-induced phenylpropanoid metabolism in the model plant *Arabidopsis thaliana –* Hans-Peter Mock,** Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben, Germany (25 min)

**Breeding for stem rust resistance for sustainable improvement of food security in Russia – Ekaterina Skolotneva*,*** Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (20 min)

The manifestation and phytohormone response of leaf pubescence genes in bread wheat - Alexey Doroshkov, Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (15 min)

**INFLUENCE OF A LIGNIFICATION AND MINERALIZATION OF LEAF TISSUES ON RESISTANCE OF BREAD WHEAT PLANTS TO A BROWN RUST - Alexander Konovalov,** Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (15 min)

**11:50 – 13:30 - Excursion to the Museum**

**12:00 – 13:00 - Lunch group 1 (local)**

**13:30 – 14:30 - Lunch group 2 (after excursion)**

**14-30 - 16-35 - Session 2. Quality of plant raw material - genetic, technological and economic aspects**

**Chairpersons:**  **Yulia Otmakhova, Elena Khlestkina**

**ANTHOCYANINS IN WHEAT: GENETIC STUDIES FOR FUTURE MARKER-ASSISTED BREEDING FOR NUTRITION VALUE** – **Elena Khlestkina**, Institute of Cytology and Genetics SB RAS; Novosibirsk State University, Novosibirsk, Russia (20 min)

**PROBLEM OF MANAGEMENT OF TECHNOLOGICAL WHEAT GRAIN PROPERTIES WITHIN THE FOOD CHAIN "GRAIN-FLOUR-BREAD" - Natalia Usenko,** Novosibirsk State University, Novosibirsk, Russia (15 min)

**PROBLEM OF MODERN BREAD MARKET IN RUSSIA IN THE CONTEXT OF FOOD SECURITY - Yulia Otmakhova** Institute of Economics and Industrial Engineering SB RAS; Novosibirsk State University, Novosibirsk, Russia (15 min)

**APPLICATIONS OF METABOLOMICS FOR PLANT RESEARCH - Nitsara Karoonuthaisiri,** Biosensing Technology Research Unit, National Center for Genetic Engineering and Biotechnology (BIOTEC), Pathumtani, Thailand (15 min)

**RFBR-SUPPORTED RUSSIAN-VIETNAMESE SCIENTIFIC COOPERATION FOR RESEARCH MUSHROOMS AS FOOD AND IN VIEW OF BIOTECHNOLOGICAL BENEFITS - Olga Tsivileva*,*** Institute of Biochemistry and Physiology of Plants and Microorganisms RAS, Saratov, Russia (15 min)

**RESULTS AND THE PROSPECTS FOR THE QUALITY BREEDING OF VEGETABLE PEPPER - Olga Timina,**Transnistrian State University, Tiraspol, Transnistria (15 min)

**MAPPING OF QTLS ASSOCIATED WITH THE TECHNOLOGICAL PROPERTIES OF GRAIN AND FLOUR USING INTERVARIETAL SINGLE CHROMOSOME SUBSTITUTION LINES AND SUBSTITUTION RECOMBINANT DOUBLE HAPLOID LINES SARATOVSKAYA 29 (YANETSZKIS PROBAT 4D\*7A) – Ludmilla Shchukina,** Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (15 min)

**COPIES OF THE *TaMyc1*****GENE DETERMINING ANTHOCYANIN PIGMENTATION OF WHEAT GRAIN: IDENTIFICATION AND ANALYSIS OF THE EVOLUTIONARY FEATURES - Kseniya Strygina,** Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (15 min)

**Coffee break** (35 min)

**17-10 - 19-00 - Session 5. GENETIC ENGINEERING**

**Chairpersons: Alexander Gaponenko, Lev Elkonin**

**USE OF A TRANSCRIPTION FACTORS FOR ENHANCING CROPS TOLERANCE TO ENVIRONMENTAL STRESSES SUCH AS DROUGHT, SALINITY AND FREEZING BY TRANSGENIC TECHNOLOGY - Alexander Gaponenko,** Koltzov Institute of Developmental Biology RAS, Moscow, Russia (20 min)

**PEPTIDE CLE41 IS A REGULATOR OF SECONDARY ROOT GROWTH AND DEVELOPMENT OF ABNORMAL MERISTEMS** – **Irina Dodueva**, St. Petersburg State University, St. Petersburg, Russia (20 min)

**THE TRANSGENIC SORGHUM WITH IMPROVED DIGESTIBILITY OF STORAGE PROTEINS OBTAINED USING RNAi TECHNOLOGY - Lev Elkonin*,*** Agricultural Research Institute of South-East Region, Saratov, Russia (20 min)

**SPECIFIC FEATURES OF ORGANIZATION OF CELLULAR T-DNA IN NATURALY TRANSGENIC PLANTS – Tatiana Matveeva,**St. Petersburg State University, St.Petersburg (20 min)

**GENETICALLY RECONSTRUCTED SOYBEAN SOMACLONES DEVELOPED USING BIOTECHNOLOGY AND GENETIC ENGINEERING** – **Olga Efremova**, Primorsky Scientific Researсh Institute of Agriculture, Ussuriysk, Russia (15 min)

**CRISPR/CAS SYSTEM FOR GENE TARGETING IN BARLEY**- **Sofia Gerasimova**, Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (15 min)

**Sunday, August 28, Institute of Cytology and Genetics**

**9-30 - 12-30 - Session 4. “OMICS” AND BIOINFOMATICS**

**Chairpersons: Ivo Groβe, Dmitry Afonnikov**

**Plenary lecture: PHYLOTRANSCRIPTOMIC HOURGLASS PATTERNS OF EMBRYONIC AND POST-EMBRYONIC PLANT DEVELOPMENT – Ivo Groβe**, Martin-Luther University, Halle-Wittenberg, Germany; Novosibirsk State University, Novosibirsk, Russia (45 min)

**FINE ANALYSIS OF ChIP-SEQ DATA FOR EIN3 BINDING IN *A. THALIANA* L. REVEALS DIFFERENT LAYERS OF EIN3 REGULATION IN ETHYLENE SIGNALING – Elena Zemlyanskaya**, Institute of Cytology and Genetics SB RAS; Novosibirsk State University, Novosibirsk, Russia (20 min)

**Pea (*Pisum sativum* L.) transcriptomics as a modern approach in agricultural science – Alexander Zhernakov*,*** All-Russia Research Institute for Agricultural Microbiology, St.-Petersburg, Russia (20 min)

***ALBINO LEMMA AND PERICARP* MUTATION IN BARLEY: CHANGING EXPRESSION OF TARGET GENES, PLEIOTRPIC EFFECT ON PHENOTYPE AND PRODUCTIVITY** **- Nikolay Shmakov**, Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia (15 min)

**Coffee break** (20 min)

**FUNCTIONAL GENOMICS TO IMPROVE WHEAT DISEASE RESISTANCE – Dina Raats**, The Genome Analysis Centre, Norwich Research Park, Colney Lane, Norwich, UK (20 min)

**SLEEP OF REASON IN THE ANALYSIS OF THE RESULTS OF RESEARCH ON MATERIALS «**[**PROTEOMIC**](http://en.wikipedia.org/wiki/Proteomics) **INFORMATION OFSPRING WHEAT VARIETIES DIFFERING IN RESISTANCE TO INFECTION AFTER *PUCCINIA RECONDITA* INOCULATION» – Kanat Sarsenbayev,** Gumilyov Eurasian National University, Astana, Kazakhstan (20 min)

**ELEMENTAL METABOLOMICS: REFERENCE VALUES AND CLASSIFICATION BY ELEMENTAL SIGNATURES IN RICE - Vladimir Brusic**, School of Medicine and Bioinformatics Center, Nazarbayev University, Kazakhstan; Menzies Health Institute Queensland, Griffith University, Australia (20 min)

**12:30 – 13:00 - Closing ceremony**

**13:30 – 14:30 - Excursion around ICG**

POSTER SESSION

**USE OF MOLECULAR MARKERS FOR IDENTIFICATION OF THE LEAF RUST RESISTANCE GENES *LR21, LR22A, LR32, LR39* IN *AEGILOPS TAUSCHII*, SYNTHETIC FORMS AND INTROGRESSIVE LINES OF WHEAT** *Davoyan E.R., Davoyan R.O., Zubanova Yu.S., Mikov**D.S. -*Krasnodar Lukyanenko Research Institute of Agriculture, Krasnodar, Russia

**INTEGRATED BIOINFORMATICS ANALYSIS OF FREEZING AND DROUGHT RESISTANT PLANTS *Dobrovolskaya O.B., Babenko V.N., Orlov Y.L., Chen H., Li X., Zhou Y., Zhang P., Chen M.*** - Novosibirsk state University; Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia; Zhejiang University, Hangzhou, China

**THE STUDY OF THE DEVELOPMENTAL PHASES OF SPRING OCTOPLOID AND HEXAPLOID TRITICALES UNDER CONDITIONS OF NEAR OB REGION OF WESTERN SIBERIA** *Emtseva M.V., Stepochkin P.I. -* Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia

**Plastid genome polymorphism in *Allium sativum* accessions of different ecological and geographical origin** *Filyushin M.A., Boris K.V. -* Institute of Bioengineering, Research Center of Biotechnology of the Russian Academy of Sciences, Moscow, Russia

**BREAD WHEAT LINES HAVING DIFFERENT COMBINATIONS OF ANTHOCYANIN BIOSYNTHESIS REGULATORYGENES**: **MARKER-ASSISTED DEVELOPMENT AND PRACTICAL VALUE** *Gordeeva E. , BadaevaE.D., Yudina R., Usenko N., Otmakhova Y., Amstislavskaya T., Khlestkina E.*- Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia; Engelhardt Institute of Molecular Biology of Russian Academy of Sciences, Moscow; Novosibirsk State University, Novosibirsk, Russia

**SeedCounter APPLICATION AND WHEAT EAR RECOGNIZING ALGORITHM FOR HIGH THROUGHPUT WHEAT PHENOTYPING** *Komyshev E.G., Genaev M. A., AfonnikovD. A.* - Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia; Novosibirsk State University, Novosibirsk, Russia

**IDENTIFICATION AND TAGGING OF ALLELIC VARIANTS OF THE *NUD* GENE IN THE SIBERIAN BARLEY COLLECTION** *Korotkova A., Kukoeva T., Gerasimova S., Khlestkina E.* - Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia

**PURPLE-GRAINED BARLEY: MARKER ASSISTED DEVLOPMENT OF NILs AND GENETIC DISSECTION** *Kukoeva T., Gordeeva E., Glagoleva N., Shoeva O., Börner A., Khlestkina E.* - Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia

**GENETIC DIVERSITY OF SPRING BARLEY VARIETIES FROM RUSSIA ASSESSED BY ALLELES OF HORDEIN-CODING LOCI** *Lyalina E., Boldyrev S., Pomortsev A.*N.I. Vavilov Institute of General Genetics, RAS, Moscow, Russia

**ADAPTATION OF *GLOBODERA ROSTOCHIENSIS* TO MODERATE RESISTANT POTATO HYBRID CLONES** *Mironenko N., Khiutti A., Rogozina E., Afanasenko O.* All-Russian Institute of Plant Protection; N.I. Vavilov Institute of Plant Industry, St Petersburg, Russia

**FINGERPRINTING FOR DROUGHT AND HEAT TOLERANCE IN SOME EGYPTIAN WHEAT CULTIVARS *Mohamed S.E.S., Dobrovolskaya O.B., Orlov Y.L.-*** Genetic Engineering and Biotechnology Research Institute (GEBRI), Sadat City, Egypt; Institute of Cytology and Genetics SB RAS; Novosibirsk state University Novosibirsk, Russia

**Association of introgressions in 2A, 2B and 5A chromosomes of bread wheat from *triticum timofeevii* Tausch. with parameters of gas exchange, chlorophyll fluorescence and activity of antioxidant enzymes under normal and water deficit conditions *Pshenichnikova T.A., Permyakov A.V., Osipova S.V.., Permyakova M.D.., Verchoturov V.V.*** - Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia; Siberian Institute of Plant Physiology and Biochemistry SB RAS, Irkutsk, Russia; Irkutsk State University, Irkutsk, Russia; National Research Irkutsk State Technical University, Irkutsk, Russia

**DEVELOPMENT OF SUPERSOFT LINES OF BREAD WHEAT, THE CARRIES OF TWO GENES *HA* AND *HA-SP* FOR SOFT ENDOSPERM TEXTURE** *Simonov A.V., Pshenichnikova T.A., Morozova E.V., Shchukina L.V., Chistyakova A.K.***-** Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia

**MAPPING OF SPOT BLOTCH DISEASE RESISTANCE USING NDVI AS SUBSTITUTE TO VISUAL OBSERVATION IN WHEAT** *Kumar S., Röder M. S., Kumar S., Singh R. P., Joshi A. K., Kumar U.**-*Borlaug Institute for South Asia (BISA), PAU Campus, Ludhiana, Punjab, India; Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben, Germany; National Bureau of Plant Genetics Resources (NBPGR), New Delhi, India; International Maize and Wheat Improvement Center (CIMMYT), El Batan, Texcoco, Mexico; CIMMYT South Asia, Singha Durbar Road, Kathmandu, Nepal

**RECONSTRUCTION OF THE GENE NETWORK OF THE WHEAT RESPONSE TO FUNGAL PATHOGENS *Smirnova O.G., Kochetov A.V. -***Institute of Cytology and Genetics SB RAS, Novosibirsk State University, Novosibirsk, Russia

**GENE CASCADE CONROLS EARLY FLOWERING TIME IN UNIQUE SPRING BREAD WHEAT SST843 FROM SOUTH AFRICA** *Shavrukov Y., Jenkins C., Visser M., Koekemoer F., Soole K.* - Flinders University, Bedford Park, SA, Australia; University of Adelaide, Urrbrae, SA, Australia; Sensako Breeding Co., Bethlehem, South Africa

**Molecular-genetic divergence as a criterion for the selection promising cross-combinations in crop** *Shapturenko M.N.\*, Khotyleva L.V. -* Institute of Genetics and Cytology of NAS, Minsk, Belarus

**DEVELOPING OF THE GENETIC CLASSIFICATION OF *AEGILOPS COLUMNARIS* ZHUK.** *Shishkina A.A., Dragovich A.Yu., Rouban A.S., Badaeva E.D.* - Vavilov Institute of General Genetics, Russian Academy of Sciences, Moscow, Russia; 2Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, Moscow, Russia

**ANALYSIS OF *DDM1* AND *DRM2* ORTHOLOGS REVEALS SPECIFIC FEATURES OF RICE DNA METHYLATION PATHWAYS** *Tan F., Zhou C., Zhou Q., Zhou S., Yang W., Zhao Y., Li G., Zhou D.-X.* - National Key Laboratory of Crop Genetic Improvement, Huazhong Agricultural University, Wuhan, China