



PlantGen2019

The Fifth International Scientific Conference

**Plant Genetics,
Genomics, Bioinformatics,
and Biotechnology**



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Institute of Cytology and Genetics, Siberian Branch of the Russian Academy of Sciences
Novosibirsk State University

**PLANT GENETICS, GENOMICS,
BIOINFORMATICS, AND BIOTECHNOLOGY
(PlantGen2019)**

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Abstracts

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Study of <i>Sorghum bicolor</i> L. for bioethanol production in the conditions of the South-East of Kazakhstan. <i>Iskakova K.M., Anapiyayev B.B., Beisenbek E.B., Omarova A.S., Sagimbaeva A.M.</i>	88
WildPetotaDB – a database for genotype and phenotype of wild tuber-bearing species of the genus <i>Solanum</i> . <i>Ivanova K.A., Komyshev E.G., Genaev M.A., Egorova A.A., Koloshina K.A., Erst T.V., Doroshkov A.V., Chalaya N.A., Rogozina E.V., Ibragimova S.M., Afonnikov D.A., Kochetov A.V., Khlestkina E.K., Gerasimova S.V.</i>	89
Creation and characterization of the soft wheat line with centric translocation T2R.2D. <i>Ivanova Yu.N., Loginova D.B., Silkova O.G.</i>	90
miRNA and genes of the MYB plant family involved in the response to stress. <i>Ivashchenko A.T., Rakhmetullina A.K., Pyrkova A.U.</i>	91
Redesign of starch biosynthetic pathway in rice by CRISPR/Cas9-mediated genome editing toward human diets. <i>Jung Yu Jin, Cho Yong-Gu, Kang Kwon Kyoo</i>	92
Reduced ethylene production in tomato fruits upon CRISPR/Cas9-mediated LeMADS-RIN mutagenesis. <i>Jung Yu Jin, Lee Geung-Joo, Bae Sangsu, Kang Kwon Kyoo</i>	93
Study of the introduction collection of the <i>Miscanthus</i> . <i>Kapustyanchik S.Iu., Kapko T.N., Totsky I.V., Khlestkina E.K., Potseluev O.M.</i>	94
Expression in potato plants of phosphomimetically mutated gene <i>AteIF2α</i> , coding for alpha subunit of translation initiation factor 2 from <i>Arabidopsis thaliana</i> , provides resistance to drought. <i>Karpova O., Alexandrova A., Nargilova R., Beisenov D., Stanbekova G., Kryldakov R., Yeriskina E., Nizkorodova A., Polimbetova N., Zhigailov A., Iskakov B.</i>	95
MIGREW database: typical use cases. <i>Kazantsev F.V., Skolotneva E.S., Salina E.A., Lashin S.A.</i>	96
Assessment of genetic diversity among Siberian stem rust isolates using SSR markers. <i>Kelbin V.N., Nesterov M.A., Vidich S., Skolotneva E.S., Sergeeva E.M., Salina E.A.</i>	97
New breakthrough CRISPR/Cas9 biotechnology of genome editing is a powerful tool for improvement of agricultural crops. <i>Kershanskaya O.I., Nelidova D.S., Esenbaeva G.L., Mukiyanova G.S., Nelidov S.N.</i>	98
Genetic diversity of genes involved in fatty acid biosynthesis in a collection of flax cultivars. <i>Kezimana P., Rozhmina T.A., Krasnov G.S., Novakovskiy R.O., Povkhova L.V., Pushkova E.N., Romanova E.V., Dmitriev A.A., Melnikova N.V.</i>	99
Expression analysis of intracellular vesicle trafficking superfamily genes, CaRab-GTP, in response to drought, dehydration and salinity in leaves of chickpea (<i>Cicer arietinum</i> L.). <i>Khassanova G., Jatayev S., Kurishbayev A., Langridge P., Schramm C., Jenkins C., Soole K., Shavrukov Y.</i>	100
DNA barcodes from four loci provides poor resolution on phylogenetic relationships between the <i>Triticum</i> species. <i>Kim Seong-Hoon, Raveendar Sebastin, Hyun Do Yoon, Lee Gi-An, Xiaohan Wang, Lee Kyung Jun, Shin Myoung-Jae, Lee Jung-Ro, Lee Sookyeong, Han Sea-hee, Cho Gyu-Taek</i>	101
Identification of grain and flour quality determinants in common wheat using GWAS. <i>Kiseleva A.A., Leonova I.N., Pshenichnikova T.A., Likhenko I.E., Ageeva E.V., Stepochkina N.I., Salina E.A.</i>	102

miRNA and genes of the MYB plant family involved in the response to stress

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MYB transcription factors (TFs) family play a great role in the development, metabolism and plant responses to biotic and abiotic stress. The free energy of miRNA binding, the value of free energy of interaction, the position and schemes of potential binding sites (BS) were calculated using the MirTarget program. To identify miRNAs whose targets are genes of the TF MYB family, a search of 738 miRNAs BS in mRNAs of 124 MYB family genes of *O. sativa* was performed. 56 genes were identified as targets for 40 miRNAs. The BS of osa-miR529a-3p, osa-miR414-5p, osa-miR2919, osa-miR2868-5p, osa-miR2097-5p, osa-miR156a-5p, osa-miR1442-5p in the mRNAs of the *O. sativa* MYB family genes were located in 5'UTR, while osa-miR818a-3p BS in the mRNA of MYB family genes of the *O. sativa* were located in 3'UTR. The osa-miR5075-3p and osa-miR159c-3p BS were located in 5'UTR and CDS mRNA of the *O. sativa* MYB family genes. osa-miR2102 binds to mRNAs of 21 MYB genes. The free energy of interaction of osa-miR2102-5p with the mRNA of these genes varied. osa-miR5809-3p had BS in the mRNA of nine target genes. osa-miR5075-3p and osa-miR5833-5p had four and six target genes, respectively. The remaining miRNAs had only one or two target genes. Studying the binding of 125 miRNAs to the mRNAs of 258 genes of the *T. aestivum* MYB family resulted in a finding that 48 genes were targets for 28 miRNAs. miRNA BS in the mRNA of MYB family genes were located only in the CDS. tae-miR159b-3p, tae-miR164-5p and tae-miR444b-3p had BS in the mRNA of seven genes. tae-miR10518-5p had five target genes. For tae-miR5084-3p, tae-miR171a-3p, and tae-miR10517-5p, targets were mRNA of three genes. tae-miR9676-5p, tae-miR9666a-3p, tae-miR9662b-3p, tae-miR5384-3p, tae-miR398-3p, tae-miR319-3p, tae-miR1127b-3p had two BS in the mRNA MYB genes. The remaining miRNAs had only one target gene. The target genes from MYB family of *O. sativa* and *T. aestivum* for miRNAs have been identified, the associations of which were identical for both plant species.