

PLANTGEN'23

10-15 July

Kazan, Tatarstan, Russia



# Abstracts

**VII** International  
scientific conference

PLANT GENETICS,  
GENOMICS,  
BIOINFORMATICS &  
BIOTECHNOLOGY



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**Vavilov Society of Geneticists and Breeders  
Russian Society of Plant Physiologists  
Federal State Budgetary Institution of Science "Kazan Scientific Center of  
Russian Academy of Sciences"  
Institute of Cytology and Genetics,  
Siberian Branch of the Russian Academy of Sciences**

**VII International scientific conference**

**“PLANT GENETICS, GENOMICS, BIOINFORMATICS  
AND BIOTECHNOLOGY”**

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Contacts email: [plantgen2023@mail.ru](mailto:plantgen2023@mail.ru) Web-сайт Конференции: <https://plantgen2023.ofr.su>. Рекомендовано к изданию Объединенным Ученым советом ФИЦ «Казанский научный центр РАН» (Протокол №5 от 13.06.2023 г.).

Сборник содержит тезисы докладов, представленных в рамках VII Международной научной конференции «Генетика, Геномика, Биоинформатика и Биотехнология растений» (PLANTGEN 2023), которая состоялась в Казани на базе Федерального исследовательского центра «Казанский научный центр Российской академии наук».

Научная программа конференции посвящена результатам исследований в области геномных технологий, генетических ресурсов растений, физиологической и экологической генетики растений, генетики устойчивости к стрессовым факторам окружающей среды, фундаментальных и прикладных аспектов изучения организации и эволюции генома растений. Часть представленных сообщений освещает вопросы селекции в изменяющихся условиях окружающей среды, генетической инженерии, клеточной биотехнологии и улучшения сельскохозяйственных культур. Все представленные тезисы докладов отражают современный уровень состояния генетики растений, ориентируют ученых на будущие тенденции развития фундаментальной науки и прикладных исследований на решение стоящих перед нами глобальных проблем.

Для широкого круга специалистов в сфере работ с биологов, генетиков, биотехнологов, селекционеров, специалистов, занимающихся генетическими ресурсами растений, и студентов биологического и сельскохозяйственного профиля, в том числе студентов, аспирантов и молодых ученых. Тезисы публикуются в авторской редакции. За объективность и достоверность представленных данных ответственность несут авторы (соавторы) публикуемых тезисов.

The Proceedings include the abstracts of papers presented at the VII International Scientific Conference "Genetics, Genomics, Bioinformatics and Plant Biotechnology" (PLANTGEN 2023), which was held in Kazan at the Federal Research Centre "Kazan Scientific Centre of the Russian Academy of Sciences".

The scientific program of the PLANTGEN 2023 conference is dedicated to the results of research in the field of genomic technologies, plant genetic resources, physiological and ecological genetics of plants, genetics of resistance to environmental stress factors, fundamental and applied aspects of studying the organization and evolution of the plant genome. Some of the submissions cover the issues of breeding under changing environmental conditions, genetic engineering, cell biotechnology, and crop improvement. The presented reports reflect the current state of plant genetics, orient scientists to future trends in the development of fundamental science and applied research to solve the global problems facing us. For a wide range of specialists in the field of works with biologists, geneticists, biotechnologists, breeders, specialists involved in plant genetic resources, and students of biological and agricultural profile, including students, postgraduates, and young scientists. Abstracts are published in the author's edition. The authors (co-authors) of published abstracts are responsible for the objectivity and reliability of the data presented.

# The creation of genetically modified plants is just another effective way of breeding

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Genetically modified organisms (GMO) are organisms whose genetic material has been altered using genetic engineering techniques. They range from genome-edited organisms to metabolically engineered ones. But in any case, target gene can be carefully controlled by the organ- and stage-specific expression. More than 430 varieties of 32 GM crops are grown on the field, demonstrating increased resistance to herbicides, diseases and pests, or improved yield quality. GM plants also can be used as bioreactors for the synthesis of pharmacologically significant compounds and biopolymers [1]. The appearance of GM crops on the market formed a negative attitude towards GMOs in public opinion, which was largely inflated by mass media. Most of the scandalous studies on GMO dangers have methodological inaccuracies. DNA transformation is a natural process commonly widespread among prokaryotes. More than 50 years of use of GM bacteria was harmless to humans and environment, and did not cause any significant objections from society. An analysis of sequenced genomes shows about 6% of dicots are natural GMOs that have been used by humans throughout their history [2].

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**The main publications of authors on the subject of the abstract:**

1) Saveleva N.V., Burlakovskiy M.S., Yemelyanov V.V., Lutova L.A. *Transgenic plants as bioreactors to produce substances for medical and veterinary uses. Russ. J. Genet. Appl. Res.* 2016. 6(6): 712–724. doi: 10.1134/S2079059716060071

2) Matveeva T.V., Otten L. *Widespread occurrence of natural genetic transformation of plants by Agrobacterium. Plant Mol. Biol.* 2019. 101(4-5): 415–437. doi: 10.1007/s11103-019-00913-y

**Take-home message:**

The creation of genetically modified crops is a high-tech, relatively safe and targeted breeding method that allows to speed up and diversify obtaining of new cultivars. Do not be afraid of GMOs, which are naturally common among bacteria and plants.