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AGRI-BIOTECH

AGRIBIOTECHNOLOGY AND PRECISION BREEDING FOR FOOD SECURITY NATIONAL LABORATORY

AGRIBIOTECHNOLOGY FOR FOOD SECURITY

The main objective of the National Laboratory is to give scientifically based responses to complex challenges emerging in agriculture. Several hundred experts of the research community in the participating institutions with decades of accumulated experience and the unique infrastructure provide a solid basis for achieving the goals. The project integrates the main components of the agroecosystem and the microbe-plant-animal triangle assigning food security of „One Health View" set up by WHO as a common goal. The National Laboratory is actively involved in national higher education, the training of future generations of scientists and knowledge transfer.

MAIN RESEARCH AREAS

- Characterization of mycorrhiza-plant symbioses and their application to improve crop yields
- Investigating the substitution of antibiotic use, the spread of resistance and understanding possible resistance mechanisms
- Characterization of mycotoxins and reduction of feed-derived exposure
- Molecular mechanisms of resistance to the Ralstonia pathogen in potato
- A novel precision breeding tool and its application to produce disease-resistant small grains
- Development of innovative genome editing and breeding technologies for the improvement of drought adaptation of maize
- Development of an efficient and safe genome editing technology in mammals and birds
- Establishment of cell cultures suitable for in vitro monitoring of the combined effect of toxins

CONSORTIUM LEADER
HUN-REN Centre for Agricultural Research

CONSORTIUM PARTNERS
HUN-REN Biological Research Centre, Szeged
Hungarian University of Agriculture and Life Sciences

PROJECT NUMBER: RRF-2.3.1-21-2022-00007

FUNDING PERIOD: 01.03.2022 - 28.02.2026

OVERALL BUDGET: 2.430.500.000 HUF

HUNGARIAN NATIONAL LABORATORY

BENEFITS TO BE EXPECTED FROM LABORATORY RESEARCH

The results of the National Laboratory will be applied in almost every aspect of agriculture, including animal husbandry, crop production, food industry and animal health, enabling the improvement of food safety as well as production security and efficiency. The results will be released in the form of scientific publications, databases, patents and plant variety property rights. Besides training of manpower directly, training of young researchers and involving them in the implementation of the project, research results will bear benefits for the future as well.

THE PROFESSIONAL TEAM

Ervin Balázs MHAS, past chief director of HUN-REN ATK and the Agricultural Biotechnology Center in Gödöllő. Head of the Section of Agricultural Sciences HAS, the leader of this NL project. Scientific advisor of the first Hungarian GM law (1998), the topics of his research: molecular plant virology, plant biotechnology, genetic transformation and its environmental-biological safety issues.
https://m2.mtmt.hu/api/author/10001016

Katalin Posta's main research area is the study of the effect of arbuscular mycorrhiza-forming fungi on increasing host plant stress tolerance (biotic, abiotic), exploring their mechanism and applicability. Publications: https://m2.mtmt.hu/api/author/10009901

Ferenc Olasz's main research interests are microbiology, biotechnology and genomics, with a special focus on the study of mobile genetic elements. His research has been published in several established publications such as PNAS, NAR, EMBO Journal, https://m2.mtmt.hu/api/author/10012739

Prof. Melinda Kovács MHAS, director of the MATE Institute of Physiology and Nutrition, head of the HUN-REN supported research group. Conducts interdisciplinary research on the effects of natural toxins polluting the food chain, to promote the scientific foundation of effective risk assessment. Research areas: mycotoxins and mycotoxicoses, digestive physiology.
https://m2.mtmt.hu/api/author/10002189

Prof. András Szabó DSc, head of the MATE Doctoral School of Animal Breeding Sciences and the Department of Physiology and Animal Health of the MATE Kaposvár Campus. Research areas: mycotoxicoses, lipids. His work is mainly focused on the chromatographic analysis of lipids, clinical chemistry and physiological-biochemical research. https://m2.mtmt.hu/api/author/10000709

Zsófia Bánfalvi, plant molecular biologist with 33 years of project leader experience in potato research (h-index: 28; publications: https://m2.mtmt.hu/api/author/10001655). Number of supervised PhD students with diploma: 11.

László Sági PhD, plant molecular biologist and biotechnologist. Of the wide scope of his research topics the most relevant ones for the NL project are genetic transformation and the generation of genome-edited plants. https://m2.mtmt.hu/api/author/10000636

Dénes Dudits MHAS, plant geneticist, biotechnologist. Between 1997 and 2009, he was the general director of the Biological Center of the Hungarian Academy of Sciences in Szeged, and in 2008 he was elected vice-president of the Hungarian Academy of Sciences for life sciences. His main field of research is the application of directed mutagenesis implemented by genome editing in plant systems.
https://m2.mtmt.hu/api/author/10001884

Elen Gócza is a corresponding member of the HAS, head of the Animal Biotechnology Department of MATE GBI. She has been involved in stem cell and molecular biology research for more than thirty years and is currently investigating the role of microRNAs in cellular biological processes.
https://m2.mtmt.hu/api/author/10002499

TARGET GROUP

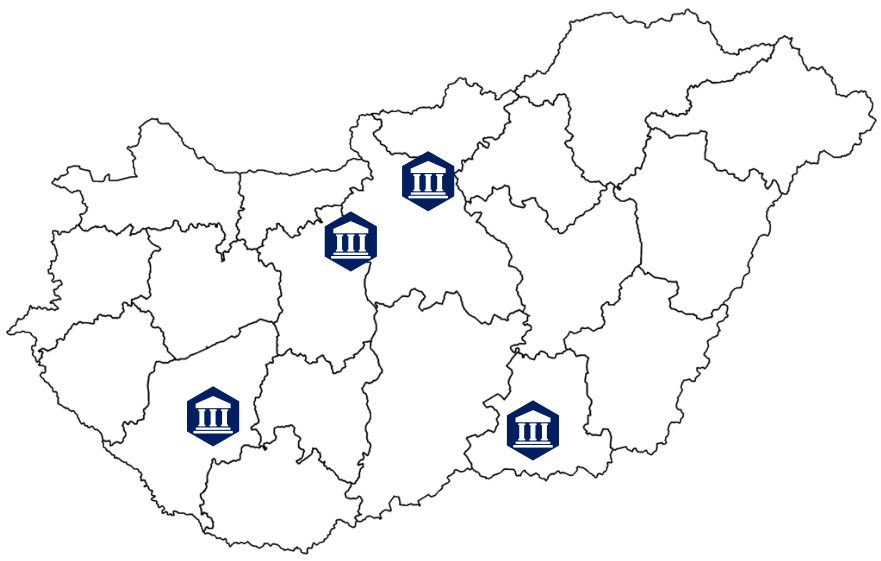
Agricultural students and researchers, farmers and farmer organizations, agricultural politicians and representatives, agricultural media

POSSIBLE PARTNERSHIPS

The National Laboratory has established ab initio a wide range of national and international contacts, which will greatly facilitate the implementation of the project. During the project the number of national and international collaborations will further increase and the links with national agricultural enterprises and the SME sector strengthen as well. Last but not least, the desired reinforcement of the innovation process will be achieved in the agro-ecosystem, a priority area in environmental, economic and social terms, contributing to the networking in this sector.

PLACES OF IMPLEMENTATION:

- Gödöllő
- Kaposvár
- Martonvásár
- Szeged



PROFESSIONAL CONTACT

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