

Research Group „Environmental Microbiology and Biological Control”

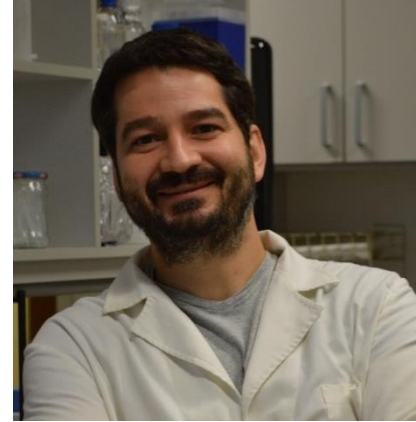
Institute of Biology, Department of Biotechnology and Microbiology



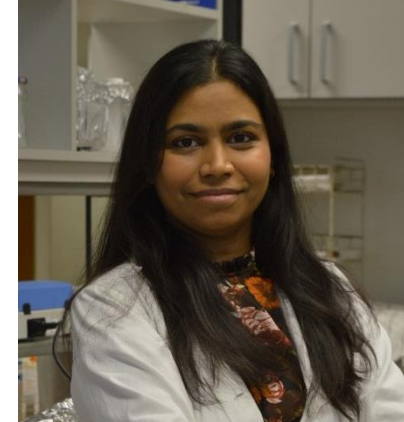
Szegedi Tudományegyetem
Természettudományi és Informatikai Kar
Biológia Intézet



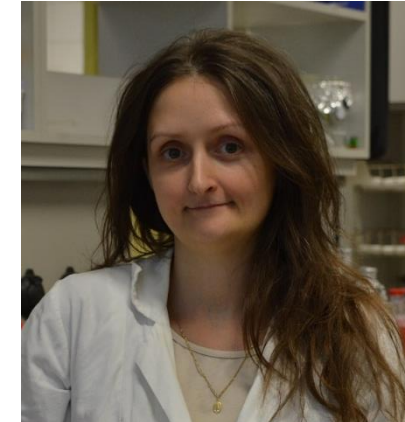
Dr. László Kredics
Associate Professor



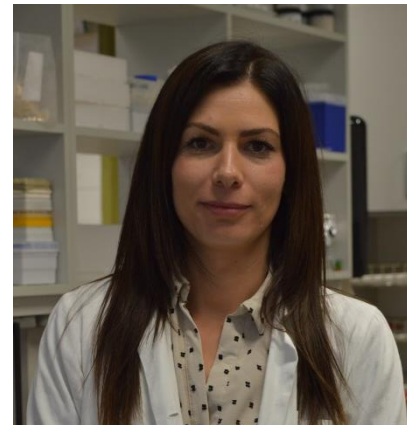
Dr. Tamás Marik
Research fellow



Dr. Chetna Tyagi
Research fellow



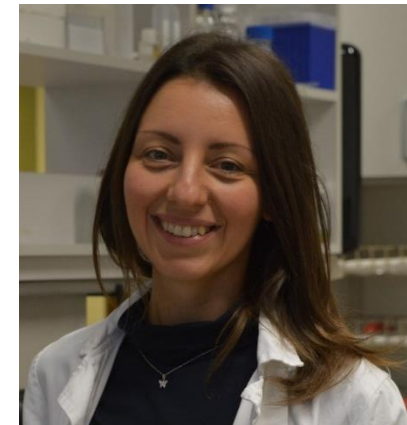
Dr. Henrietta Allaga
Research fellow



Orsolya Kedves
Assistant research fellow



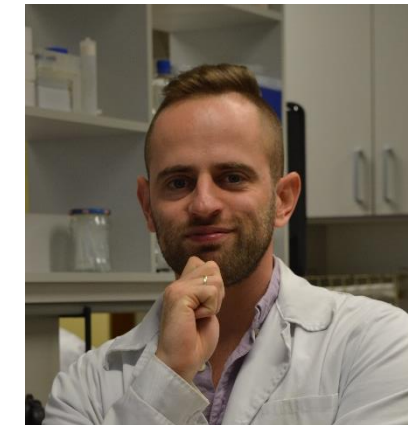
Rita Büchner
Assistant research fellow



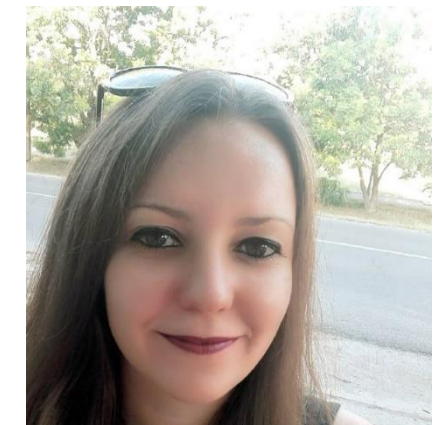
Dóra Krisztina Balázs
Assistant research fellow



András Varga
Assistant research fellow



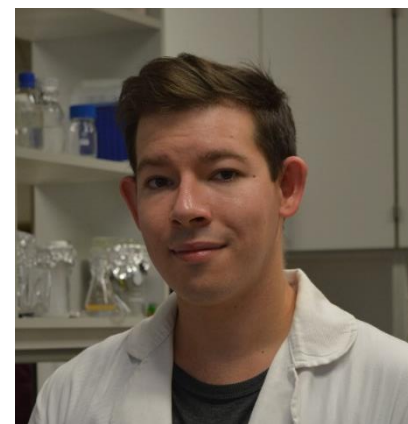
Ádám Bordé-Pavlicz
Assistant research fellow



Mónika Vörös
Assistant research fellow



Ákos Rozsnyói
PhD student



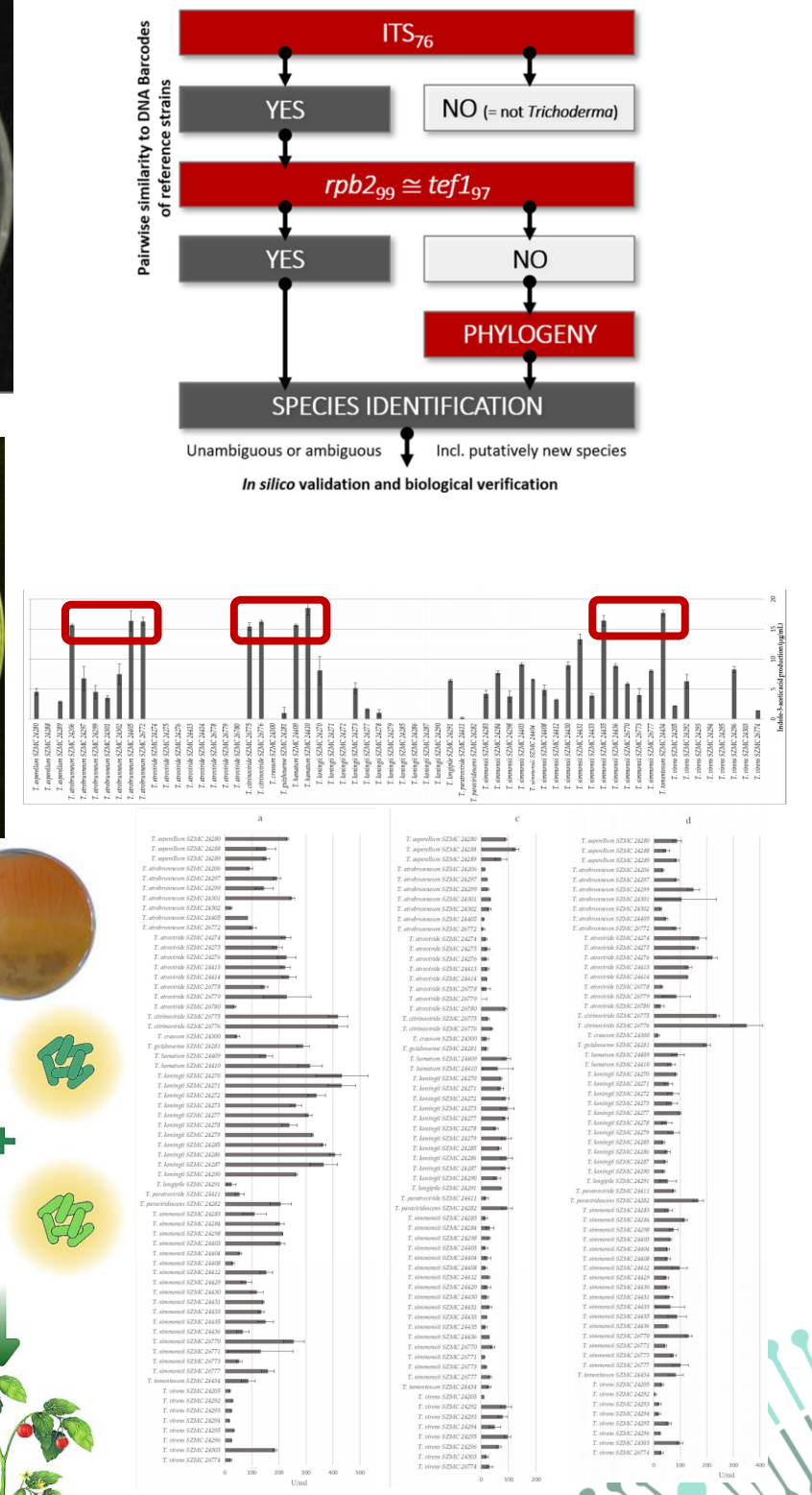
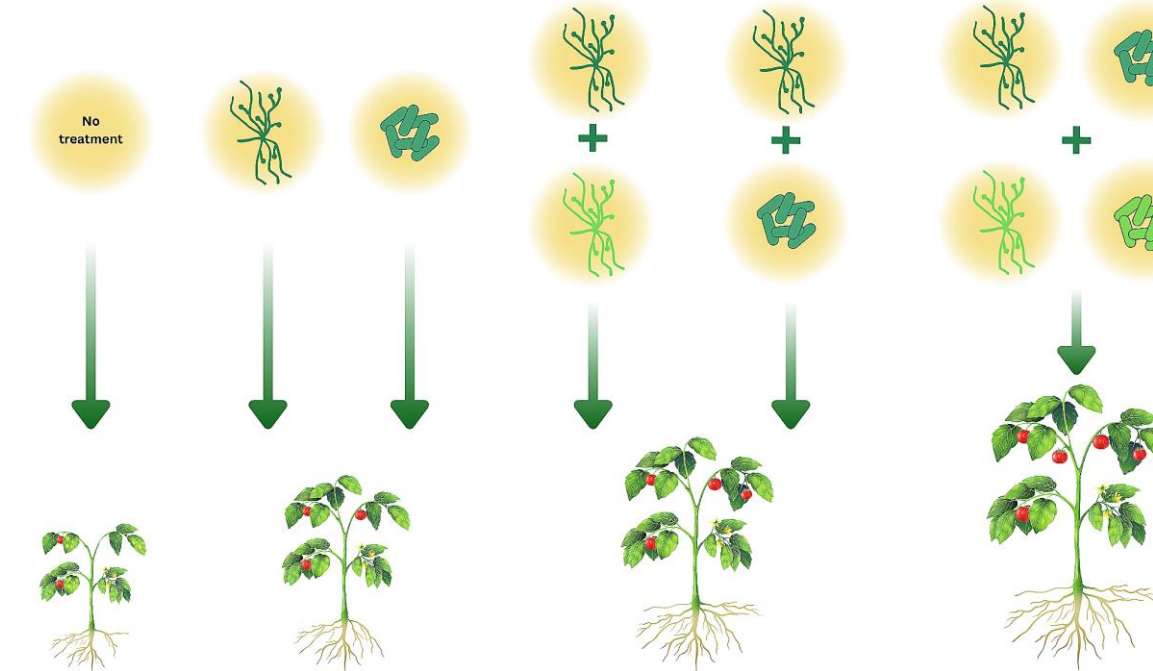
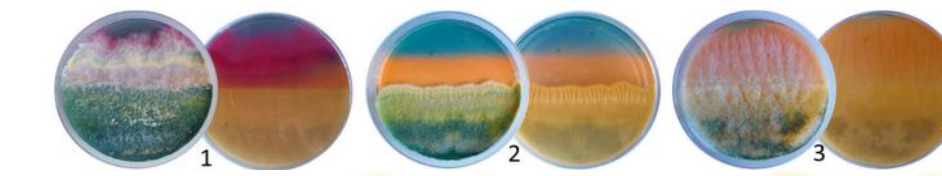
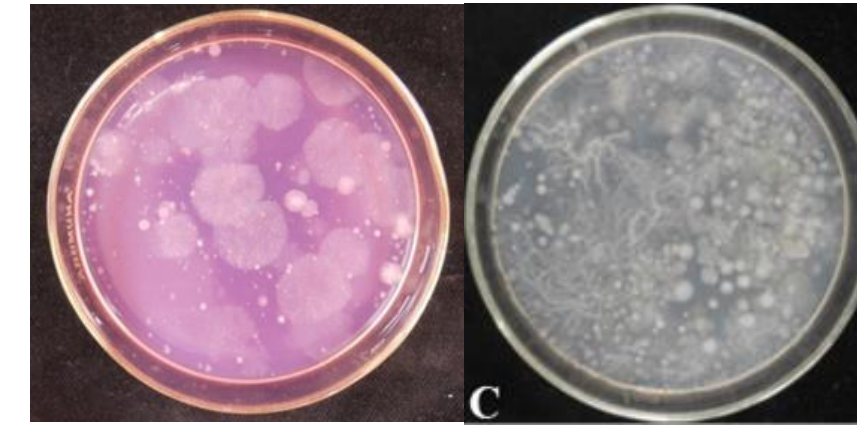
Gergő Terna
PhD student



WG: Growth promotion and biocontrol in plant production systems

Field to the lab → lab to the field

- 1 Isolation of microorganisms from plant production systems
- 2 Molecular identification and characterization of pathogenic and beneficial microorganisms
- 3 Selection of potential biocontrol agents and plant growth promoters, assembly of synthetic communities
- 4 Growth chamber and greenhouse tests
- 5 Field trials

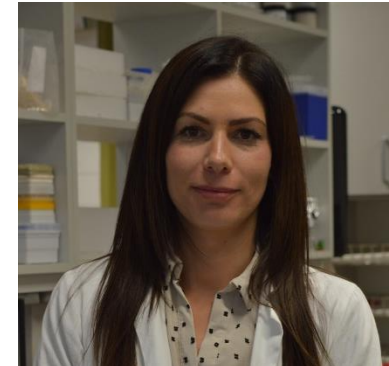
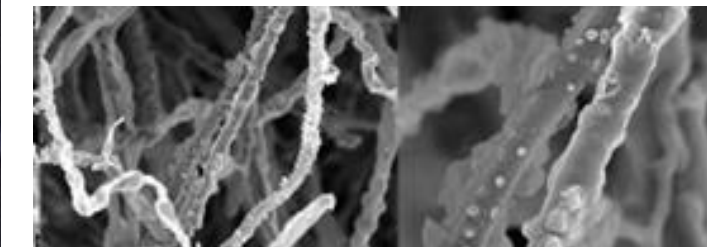
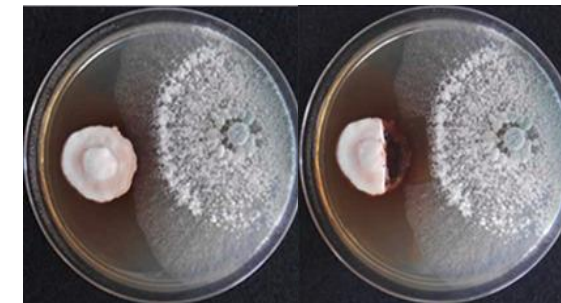


Ongoing studies

Development of microbiological products for efficient, environmentally friendly walnut production (2022-1.2.6-TÉT-IPARI-TR-2022-00009), 2024-2027



Transcriptomic and metabolomic interactions of forest pathogenic *Armillaria* and its potential biocontrol agents (OTKA 150791 – submitted)

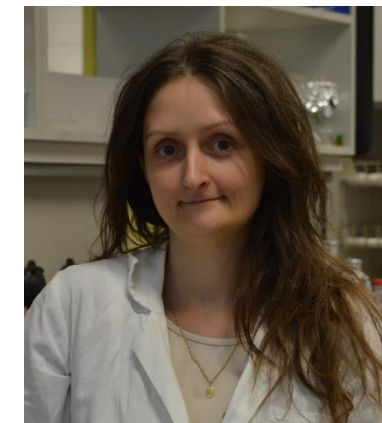


Orsolya Kedves
Assistant research fellow

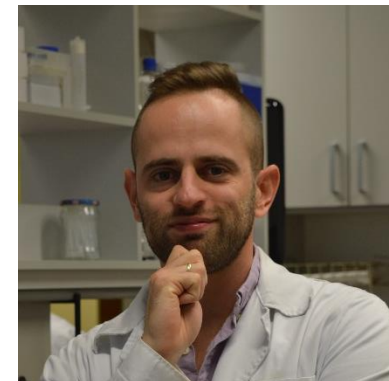
Development of multicomponent microbial soil inoculants for vegetable and industrial crop plant production (submitted proof of concept proposal)



Innovative green foliar treatment solutions for sweet potato production supported by advanced analytics (HUSRB/23S/11/027: FERTILEAVES) 2024-2026



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Plant pathogen diversity in the Botanical Garden of the University of Szeged, evaluation of soil inoculants

Industrial partners

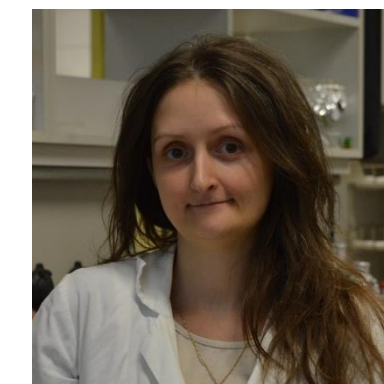
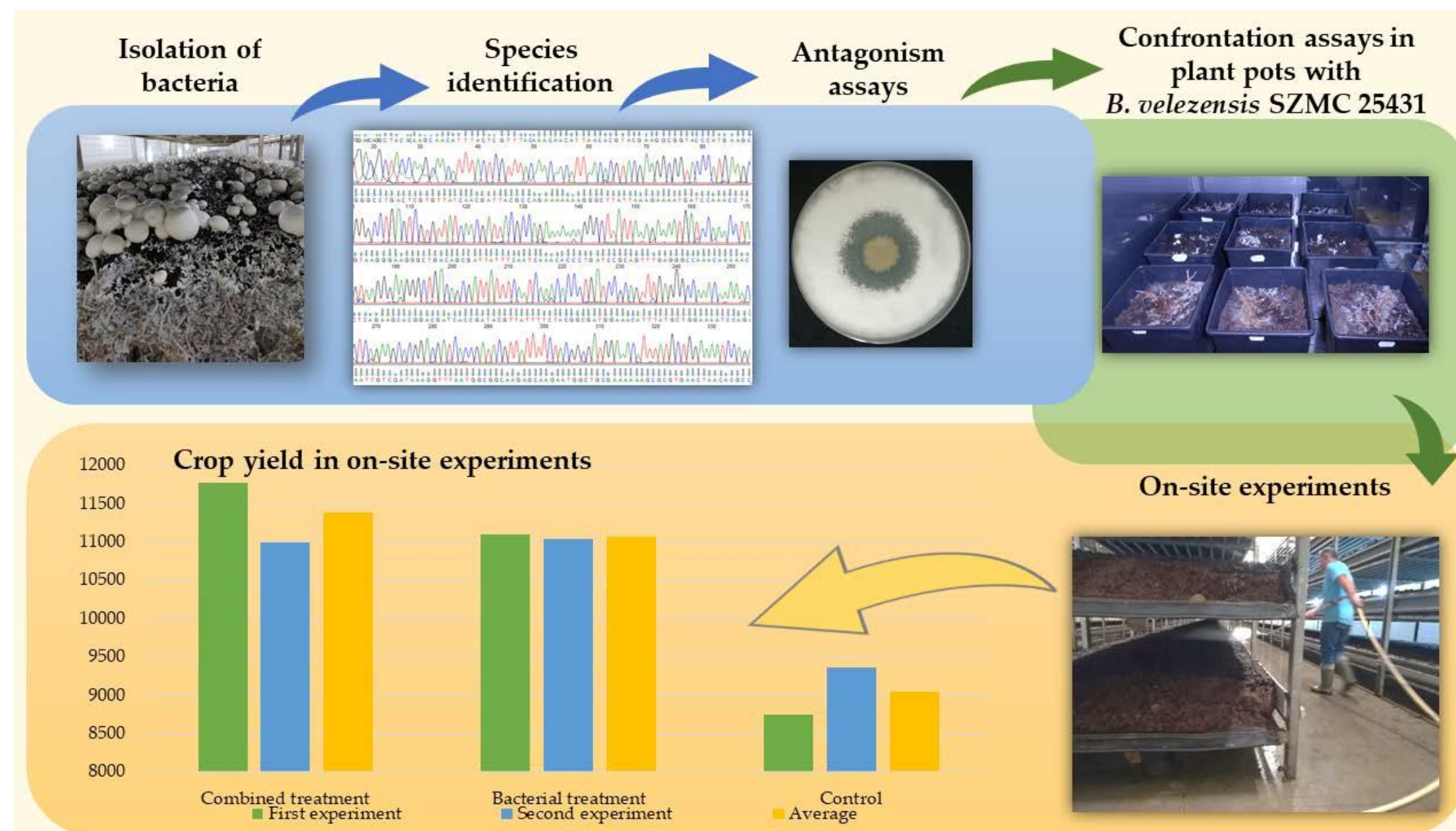


WG: Crop yield enhancement and biocontrol in mushroom production

Ongoing studies

Development of an innovative technology for the production of a new casing layer with excellent water-retention capacity for the purpose of mushroom cultivation through the microbial recomposting of spent mushroom compost (2020-1.1.2-PIACI-KFI-2020-00111), 2021-2024

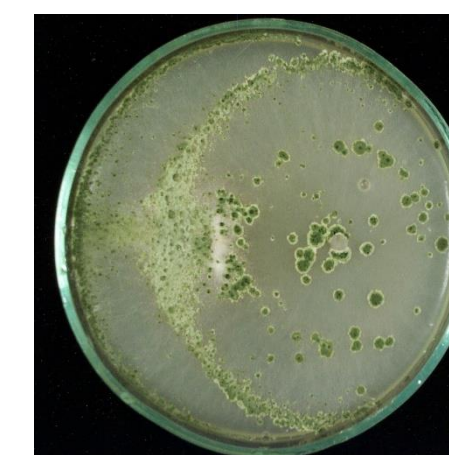
Development of a biological white button mushroom cultivation system suitable for improving both yield quantity and yield quality (2023-1.1.1-PIACI_FÓKUSZ-2024-00044), 2024-2026



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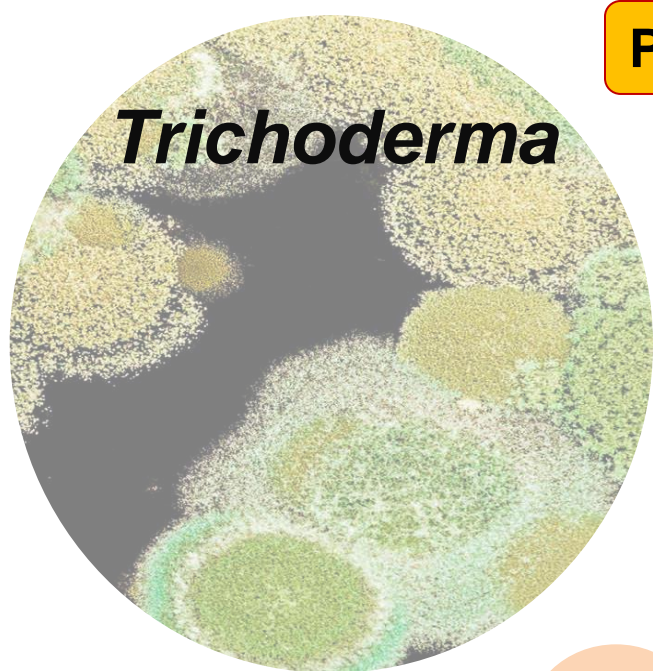
Industrial partner

Új Champignons Kft.

WG: Peptaibol Research



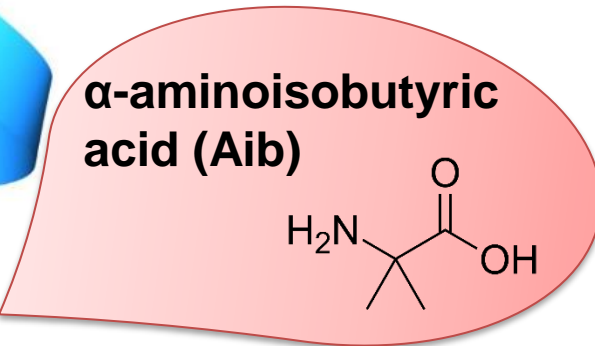
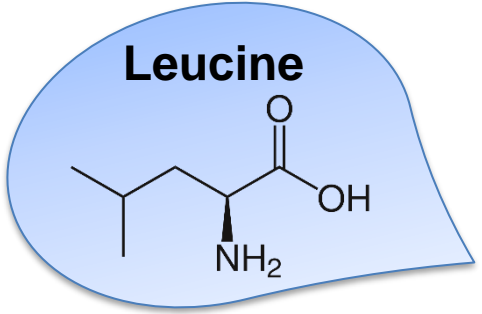
Research Group Introduction



Production of peptaibiotics

1 Peptaibols

2 Lipopeptaibols



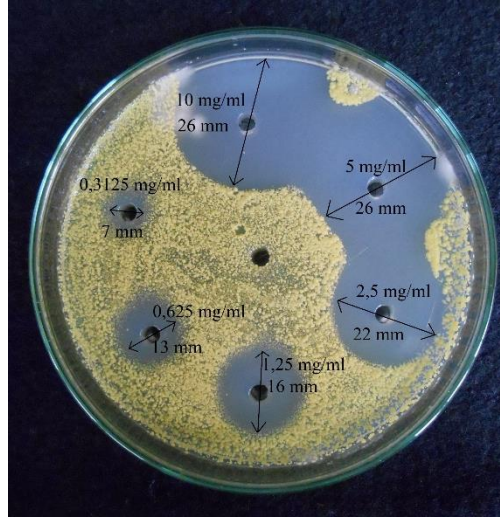
Cultivation

Chloroform/MeOH
2/1
→
Extraction of
Peptaibols



Semi-preparative HPLC

Purification and identification of peptaibols

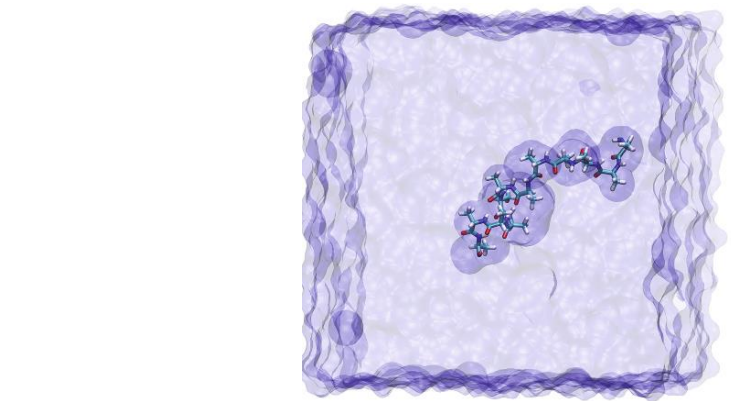


Biotest → Active fractions



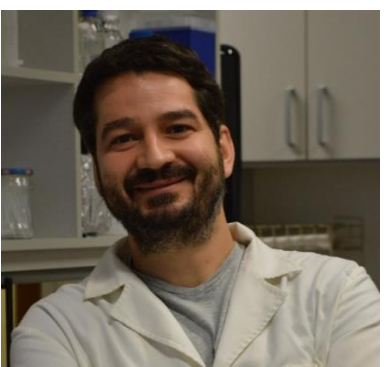
HPLC-MS → Peptaibol sequences

Instruments: Laboratory of Dr. András Szekeres



Computational modelling

Simulation in water box



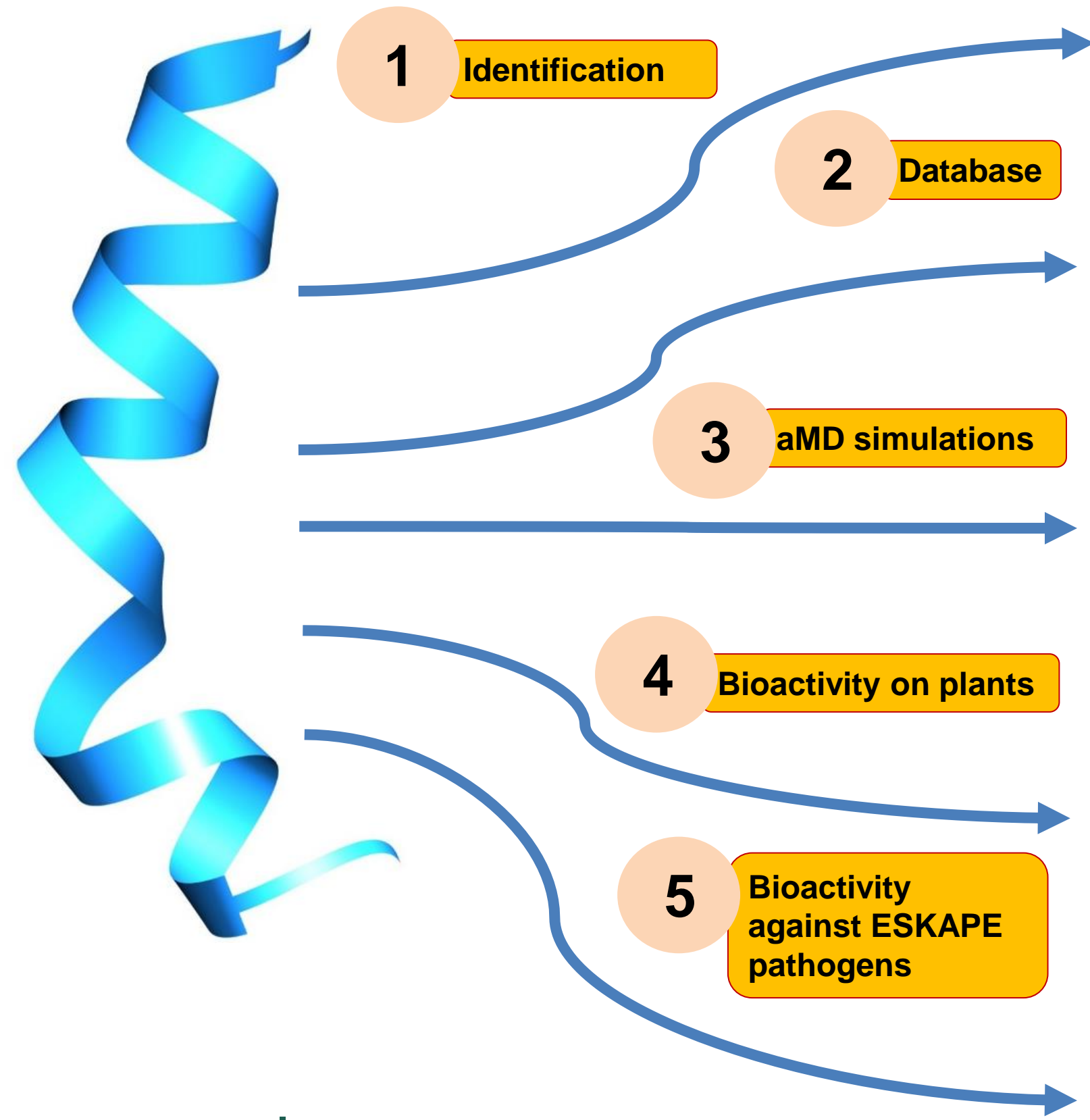
Dr. Tamás Marik
Research fellow





Peptaibols

Workflow



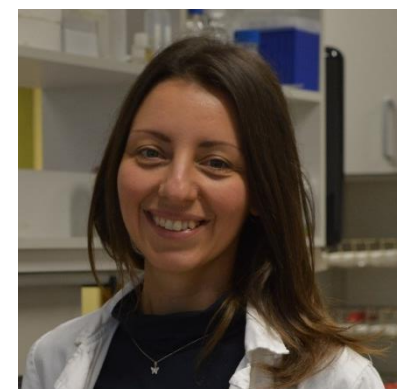
OTKA 105972 (closed)

2023: New National Excellence Program Scholarship

HAS grant for researchers raising young children (KGYNK)

2019, 2022, 2023: New National Excellence Program Scholarship
2020: Scholarship for Young Talents of the Nation
2024: University Research Fellowship Programme
2024: Innovation Prize, USZ
2024: Proof of Concept

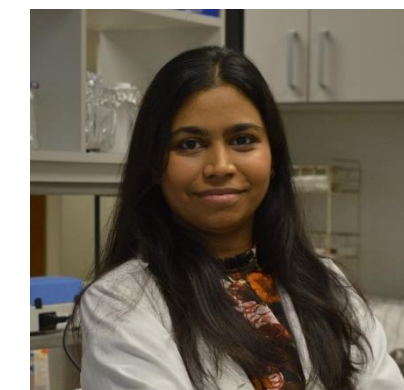
2024: University Research Fellowship Programme



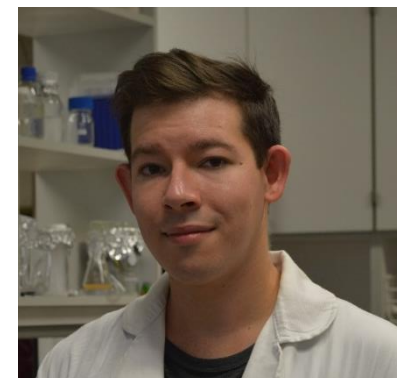
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PhD student



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Gergő Terna
PhD student



Fungal diversity in unique habitats

Grain warehouse

Orchid greenhouse

Stemflow

Washing machines

Bottled water dispensers

Water-damaged buildings

Buildings damaged by the red mud spill

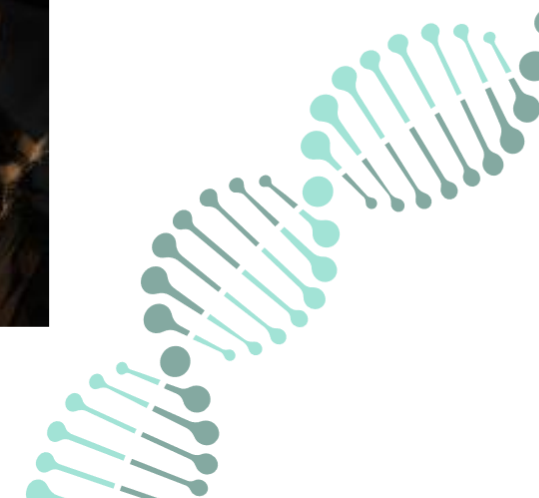
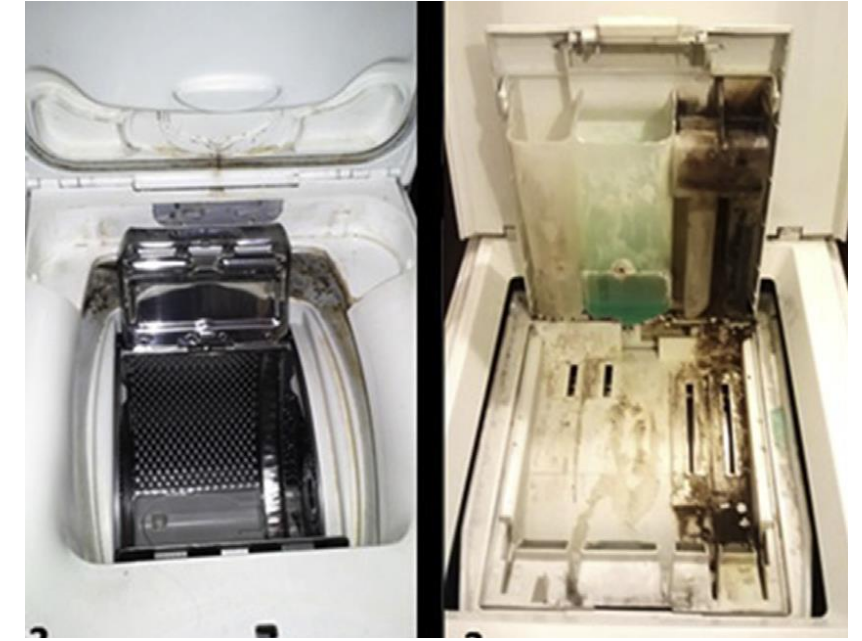
Mummies of the Museum of Fine Arts

Decaying artistic paintings

Collaborators

Dr. Donát Magyar (National Public Health Centre)

Dr. Maria A. Andersson (Aalto University)



Thank you!

