Mycology Research Group

"Our aim is to use current methods in the deep and detailed study of fungal taxonomy, phylogeny, biodiversity and ecology and the role of fungi in ecosystem."

Offer

We offer our expertise related to identification and in-depth characterisation of fungi to partners from applied research, environment quality monitoring, industry, and other organizations.

- Molecular and phenotypic characterization of fungal strains for the purpose of health risk assessment, drug treatment or patent protection
- Expertise in the field of fungal ecophysiology (growth of fungi at various temperatures, nutrient media and water potential)
- Diversity oriented surveys of microfungi in valuable nature areas or human-spoiled fields
- Long-term cultivation and lyophilisation of strains in recognized fungal collection (CCF)

Know-how & Technologies

Mycology Represents a Broad Field of Science Dealing With a Phylogenetically Diverse Group of Organisms

- Ecology and biodiversity of fungi in temperate and boreal coniferous forests
- Ecophysilogy and stress tolerance of anamorphic ascomycetes (molds)
- Cryptic diversity in extremophilic fungi and fungi pathogenic to humans and other mammals
- Occurrence and prevalence of dermatophytes in the Czech Republic
- Symbiotic fungal associations with bark-beetle insects

Content of Research

Our group focuses on the taxonomy and ecology of members of several lineages within ascomycetes. We use up-to-date approaches to study evolutionary processes within stress-tolerant and dermatophytic fungi, saprotrophic macro- and microfungi, beetle-symbiotic fungi and the diversity of microfungi in natural ecosystems. Our long-standing experience and the use of a multiphasic approach allows us to achieve a highly accurate identification of fungal strains (into species level incl. cryptic species) contaminating food and industrial products and fungi pathogenic to humans for the purpose of their elimination and proper treatment.

Main Capabilities

- Long-standing experience with isolation, cultivation and identification of microfungi based on phenotypic data
- Molecular genetic tools inferring population structure, microevolution and cryptic speciation
- Advanced methods of optical and electron microscopy and microphotography
- Identification based on multiphasic approach

Key Research Equipment

- Fully equipped laboratory for molecular diagnostics (for DNA extraction, PCR, purification and sequencing)
- Culture laboratory (e.g. biohazard isolation, cultivation facilities including modulation of temperatures, water potential, nutrients)
- Microscopy (i.e. optical, fluorescent, SEM)
- Lyophilisation and other methods for long-term pre-servation and conservation of fungal strains

Main Projects

- 2012–2016: Ministry of Agriculture: “Czech National Programme of Protection of Genetic Resources of Economically Significant Microorganisms and Tiny Animals (NPPGR).”
- 2012–2016: Ministry of Agriculture “The development of effective measurements eliminating the impact of Chalara fraxinea in forest nursery and in subsequent aspects of forest and water management.”

- 2012–2015: Czech Science Foundation “Geomyces destructans geomycosis white-nose syndrome Myotis bats.”
- 2008–2012: Czech Science Foundation “Soil processes and microbial communities related to C and N cycles during spruce forest recovery after bark beetle outbreak.”

Partners and Collaborations

Academic Partners

Faculty of Chemical Engineering, Institute of Chemical Technology in Prague (Czech Republic) | Institute of Botany, Academy of Sciences of the Czech Republic (Průhonice, Czech Republic) | Institute of Vertebrate Biology, Academy of Sciences of the Czech Republic (Brno, Czech Republic) | Microbiological Institute, Academy of Sciences of the Czech Republic (Prague, Czech Republic) | Silva Tarouca Research Institute for Landscape and Ornamental Gardening (Průhonice, Czech Republic) | Zdravotní ústav se sídlem v Ústí nad Labem (Prague, Czech Republic) | Goethe University (Frankfurt am Main, Germany)

Private and Public Sector

Intensive collaboration with public and private sector based on identification of contaminating microfungi in various industrial processes.

Achievements

Publications in respected international journals with high impact factors: Forest Pathology, Fungal Biology, Fungal Diversity, Fungal Ecology, Mycologia, Persoonia, PLoS ONE, Soil Biology & Biochemistry, Studies in Mycology.

Are you interested in this expertise?

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Experts and their department

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