Phycology Research Group

Offer

We are open to a wide spectrum of collaboration with partners from basic and applied research, industry, and state and non-profit organisations.

- Genetic characterization of algal strains for the purpose of patent protection (issuing a certificate)
- Optimization of microalgal growth at laboratory scale
- Providing an evolutionarily diverse set of valuable algal strains for subsequent bioassay screening
- Freshwater ecological assessment for development as well as conservation led projects
- Expertise in the field of algal ecophysiology
- Isolation, purifi cation and characterization of algal strains.

" ***Our main goal is elucidating the evolution and ecological role of fresh-water and terrestrial algae."***

Know-how & Technologies

- Ecology and algal biodiversity in wetland and terrestrial ecosystems
- Phylogenetics and the evolutionary history of algae
- Ecophysilogy and stress tolerance of green algae
- Experimental morphology of microalgae
- Symbiotic associations in lichens

Content of Research

Psychology is a branch of study dealing with the taxonomy, cell biology and ecology of algae, which are mainly autotrophic non-vascular organisms classified into several unrelated lineages. In general, we focus on green algae, chrysophytes, desmids and diatoms. Modern phycology applications are used in the field of water management (drinking water and sewage treatment), bioindication, searching for new productive strains for neutraceuticals (dietary supplements), pharmaceuticals (with antibacterial and antimycotic features), biofuels, the developement of methods for ship's microbial cover analysis and control.

Main Capabilities

- Detailed knowledge of biodiversity of algae and professional experience in field work including measurement of environmental characteristics (wetland and aquatic environments).
- Molecular genetics and phylogenetic methods for inferring the evolutionary history of protists.
- Advanced methods of optical, confocal and electron microscopy, as well as microphotography
- Methods of geometric morphometrics
- Statistical tools for analysis of ecological data

Key Research Equipment

- Fully equipped laboratory for molecular genetics (including cloning equipment, cyclers, in-house sequencing systems, etc.)
- Culture laboratory (e.g. isolation and cultivation facilities, column bioreactors, crossed-gradient facility)
- Microscopy (i.e. optical, fluorescent, confocal) and electron microscopy facility

Main Projects

- 2017–2019: Czech Science Foundation "Generating the species – towards a better understanding of speciation mechanisms in eukaryotic microorganisms"
- 2015–2017: Czech Science Foundation & Fonds zur Förderung der wissenschaftlichen Forschung "Colonization of land by conjugating green algae"
- 2013–2015: Czech Science Foundation "Diversity within the *Frustulia rhomboides* species complex (Bacillariophyceae): a multidisciplinary approach"
- 2012–2016: Czech Science Foundation "Integrated taxonomic and diversity research of subaerial epiphytic green algae in the Mediterranean ecosystems"- 2011–2012: EU 7th Framework Programme "Development of an innovative, completely automated anti-fouling test system for professional examinations of marine coatings"

- 2011–2013: Czech Science Foundation “Hidden diversity in the genus *Synura* (Stramenopiles): quantifying diversity and organizing functional properties in a meaningful fashion”

Partners and Collaborations

Academic Partners

Ghent University (Belgium) | University of Melbourne (Australia) | National Institute of Water & Atmospheric Research (Christchurch, New Zealand) | University of Connecticut (USA) | University of Copenhagen (Denmark) | Universit? Politecnica delle Marche (Italy) | Karl-Franzens-University Graz (Austria) | University of Innsbruck (Austria) | University of Helsinki (Finland) | University of Valencia (Spain) | Safarik University (Slovakia) | Russian Academy od Sciences (Russia) | Palacký University (Olomouc, Czech Republic) | University of South Bohemia (České Budějovice, Czech Republic) | Botanical Institute, Academy of Sciences of the Czech Republic (Třeboň, Czech Republic) | University of Ostrava (Czech Republic), West Bohemian Museum (Plzeň, Czech Republic)

Private and Public Sector

PPG Industries (Amsterdam, The Netherlands) | Electronics Design (Tallinn, Estonia) | Key Industry Engineering Group, s.r.o. (Prague, Czech Republic) | Photon Systems Instruments (Drasov, Czech Republic)

Achievements

Patent

Collaboration on Czech patent No. 301670: The use of planktonic strain Parachlorella nurekis 1904 KIEG for effective extermination of bacteria and fungi (patent holder: Key Industry Engineering Group, s.r.o).

Papers

Publications in respected international journals with high impact factors: Environmental Microbiology, Molecular Ecology, Plos ONE, FEMS Microbiology Eco-logy, Microbial Ecology, Molecular Phylogenetics and Evolution, Protist, Journal of Eukaryotic Microbiology.

See our webpage

http://botany.natur.cuni.cz/algo

Are you interested in this expertise?

Please contact CPPT UK
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Experts and their Department

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