

Open postdoc and PhD student positions

The Department of Aquatic Microbial Ecology, Institute of Hydrobiology, Biology Centre CAS, invites applications from prospective postdoctoral scientists and PhD students

Four positions (2 postdocs, 2 PhD students) are open in the Department of Aquatic Microbial Ecology, Institute of Hydrobiology, České Budějovice, Czech Republic to study the diversity of freshwater pro- and eukaryotes using high-throughput isolation, comparative genomics and experimental approaches. These positions are in the framework of the 5-year grant PELAGICS with multinational collaboration partners (see abstract below).

Background: Prokaryotes are the most abundant cells in freshwater lakes. However, their ecology and evolutionary history remains largely elusive because of obstacles in cultivating environmentally relevant microbes. The same holds true for small freshwater eukaryotes that are the most important consumers of prokaryotes thus playing an important role in the aquatic food web. One major focus of this project lies in eco-genomics of freshwater pro- and eukaryotes aiming at a large collection of environmentally abundant strains. Semi-automated high-throughput isolation with media mimicking natural conditions will be combined with cultivation experiments and comparative genomics. Whole genome sequencing of pro- and eukaryotic strains and deep sequencing of metagenomes gained from lakes all over Europe

will allow comparative population genomics (e.g., microdiversity, biogeography, evolutionary history, etc.).

This project is planned as a collaboration of the Laboratory of Microbial Ecology and Evolution and the Laboratory of Microbial Cultivation and Eco-genomics and a large consortium from 16 European countries. We will combine sampling of 70 lakes across Europe, high-throughput isolation and cultivation, comparative (meta-) genomics, lab and in-situ experiments of environmentally relevant pro- and eukaryotic strains and environmental quantification via e.g. specific FISH probes targeting the major players in lakes to disentangle the ecology and evolution of freshwater microbes aiming at a pan-European “inventory” of abundant freshwater pro- and eukaryotes.

Requirements: Applicants for the postdoc positions should have a PhD, applicants for the PhD positions a M.Sc. in Biological Sciences (e.g. Limnology, Microbiology, Ecology, Molecular Biology, Biochemistry, Bioinformatics) and must be strongly motivated to work in an eco-genomics setting. The work is expected to be 60% computational and 40% laboratory based. Prior experience in linux/unix/perl/python programming might be favourably considered but is not a prerequisite for selection. Candidates must be proficient in English.

Please submit (preferably all information combined in a single PDF file).

For post-doc positions: (1) a detailed CV (2) a brief statement of your research interests and work performed and (3) the name and contact information for at least two referees. 1 Post-Doc position is for prokaryotic cultivation and genome analysis and 1 Post-doc position is for eukaryotic genome analysis. Please indicate your interest in your application.

For PhD positions: 1) a detailed CV (including your grades) 2) a brief statement of your research interests and work performed and 3) the name and contact information for at least one referee. 1 PhD position is for prokaryotic cultivation and genome analysis and 1 PhD position is for eukaryotic cultivation and genome analysis. Please indicate your interest in your application.

The positions will remain open until suitable candidates are found, applications will be evaluated monthly starting December 15 2019. Target starting date is spring 2020, the positions are for 4.5 years.

Contact: Please send your application to ghai.rohit@gmail.com (positions related to freshwater eukaryotes) or michaelasalcher@gmail.com (positions related to freshwater prokaryotes) and indicate “Postdoc Application or PhD Application” in the subject. Please don’t hesitate to contact us for further information about the positions.

Dr. Rohit Ghai

Laboratory of Microbial Ecology and Evolution
Department of Aquatic Microbial Ecology
Institute of Hydrobiology, Biology Centre CAS
Na Sadkach 7
37005 České Budějovice, Czech Republic

Dr. Michaela M. Salcher

Laboratory of Microbial Cultivation and Eco-genomics
Department of Aquatic Microbial Ecology
Institute of Hydrobiology, Biology Centre CAS
Na Sadkach 7
37005 České Budějovice, Czech Republic

Links

<https://www.hbu.cas.cz/en/structure/department-of-aquatic-microbial-ecology-ame-/laboratory-of-microbial-ecology-and-evolution/>

<https://www.hbu.cas.cz/en/structure/department-of-aquatic-microbial-ecology-ame-/michis-page/>

The Department of Aquatic Microbial Ecology (Institute of Hydrobiology, Biology Centre of the Czech Academy of Science) is an internationally recognized high-class institution for studying freshwater microbes. There are four well-equipped microbiological laboratories: one lab for bacterial isolation and cultivation, two for molecular biology, one for working with radioisotopes and two walk-in climate-controlled chambers for cultivation and experiments. Instrumentation: A fully automated fluorescence microscope with image analysis for high-throughput evaluation of CARD-FISH stained samples, three fluorescence microscopes equipped with image analysis systems, inverted microscopes, a micromanipulator and microinjector, a spectrofluorometer, hybridization chambers, incubators, basic equipment for cultivation and molecular biology, ultra-low temperature freezers. A flow cytometry equipped with an autosampler for 96-well plates for a semi-automated high-throughput screening of dilution-to-extinction cultures. Full equipment for sampling is available including sampling boats, water samplers, automated winch, YSI multiprobes, bbe fluoroprobe, etc. A MinION and MinIT (Oxford Nanopore) for generating ultra-long sequencing reads, three 128-core Unix servers (768 Gb RAM), two 64-core Unix servers (512 Gb RAM) and three 100/160 Tb NAS storage are available for analysis of sequence data.

České Budějovice (Budweis) is a medium-sized city ca. 150 km south of Prague with 100,000 inhabitants, a relaxed atmosphere, and a growing expat community at the Biology Centre and the University. Both the town and the surrounding countryside provide numerous opportunities for research and leisure activities. Living costs are low by international standards.

Infrastructure and Benefits: Position includes standard health insurance and social security and five weeks of holiday yearly. Postdocs and PhD students have access to accommodation in dormitories at the campus shared by the Biology Centre and the University. Czech courses are available for foreign staff and students to reach a basic level of proficiency in everyday situations. The Biology Centre provides assistance in the visa application process for foreigners.

Pan-European Lake Sampling - Microbial Eco-genomics (PELAGICS) - EXPRO-project granted by the Czech Science Foundation (GACR)

Freshwater habitats are critical for all terrestrial life, yet the vast majority of their microbial inhabitants (pro- and eukaryotes) remain enigmatic, outside the bounds of cultivation. The recent development of novel cultivation methods, coupled with advances in sequencing now provides an opportunity to finally unravel freshwater microbial diversity. The PELAGICS project plans a coordinated pan-European sampling campaign (70 lakes) with 24 collaborating scientists from 16 European countries. With novel media mimicking natural conditions and semi-automated high-throughput isolation we aim for stable cultivation and whole-genome sequencing of prokaryotes and unicellular eukaryotes from all over Europe. Moreover, terabyte scale deep-metagenomic sequencing will allow recovery of thousands of metagenome-assembled genomes for pro-, eukaryotes and viruses. This large-scale effort is aimed at uncovering the vast microbial diversity (pro- and eukaryotes), their natural interactions and ecological roles in aquatic food webs.