

November 2023

Open PhD student position

At the Department of Aquatic Microbial Ecology, Institute of Hydrobiology, Biology Centre CAS, České Budějovice, Czech Republic

A PhD student position is open to study the peculiar biology of Candidate Phyla Radiation (CPR), also known as 'Ca. Patescibacteria' using metagenomics, metatranscriptomics, comparative genomics, EpicPCR and reverse genomics.

Background

'Ca. Patescibacteria' is a phylum described only in 2015 and represents one of the biggest discoveries in microbiology in the last decade. It is believed to encompass between ~15% and 26% of bacterial diversity, but only a few cultures are available to date. These few representatives were found to be obligate episymbionts on other prokaryotes. Most of what we know about 'Ca. Patescibacteria' is derived from genomic data, but in general CPRs have extremely unusual characteristics, such as a very limited number of metabolic pathways, reduced genomes and cell sizes, and peculiar ribosomes that lack proteins which were considered essential for survival. Many genomes were found to have minimal amino acid and cofactor biosynthesis pathways, and till now no CPR has been identified to produce membrane phospholipids, which adds to the enormous intrigue regarding their lifestyle strategies. In the current project, we aim to provide unique information about CPRs temporal variability, functional potential, and ecological role in freshwater lakes. Additionally, we will approach one of the most difficult aspects in need of clarification – the identity and range of CPR hosts. Our final goal is to bring new CPRs into culture using reverse genomics and study their behavior and biology in detail.

Requirements

Applicants should hold a M.Sc. in Biological Sciences (e.g., Limnology, Microbiology, Ecology) and must be strongly motivated to work in an eco-genomics laboratory. Prior experience in cultivation of fastidious bacteria (e.g., using flow cytometry) as well as in shell/perl/python/R programming might be favorably considered but is **not** a prerequisite for selection. Candidates must be proficient in English.

Please submit a professional CV (including your grades), a brief statement of your research interests and work performed (max. 1 page), a list of publications (if any) and the names and contact information of two professional references. Preferably combine all this information into a single PDF file and send via email with the subject: **CPR-PhD student** to cecilia.m.chiriac@gmail.com.

The position is available from the spring of 2024 and will remain open until a suitable candidate is found. The position can be funded for up to 5 years.

Infrastructure and Benefits

Position includes standard health insurance and social security and five weeks of holiday yearly. PhD students have access to accommodation in dormitories at the campus shared by the Biology Centre

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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.

About the employer

The Department of Aquatic Microbial is an internationally recognized high-class institution for studying freshwater microbes. The Institute of Hydrobiology is the principal institution in the Czech Republic devoted to complex freshwater research of man-made reservoirs and natural lakes. The research portfolio includes the assessment of biotic interrelations and their interactions with abiotic factors. Limnological interactions are studied both within the waterbodies and within the whole catchment. The institute performs research on different levels of interactions from the ecosystem, community, population, organismal, through cellular to molecular levels. The institute is one of the institutes associated in the Biology Centre of the Czech Academy of Sciences in České Budějovice.

About the location

České Budějovice is a medium-sized town 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.

Contact

Please don't hesitate to contact me for further information about the positions:
cecilia.m.chiriac@gmail.com

Dr. Cecilia Chiriac
Institute of Hydrobiology
Biology Centre CAS, v.v.i.
Na Sadkach 702/7
37005 České Budějovice, Czech Republic

Links

Biology Centre CAS	https://www.bc.cas.cz/en
Institute of Hydrobiology	https://www.hbu.cas.cz/en/
Department of Aquatic Microbial Ecology	https://www.hbu.cas.cz/en/structure/ame/