

PhD/Master's position in Anti-virulence compounds from cyanobacteria

Project:

We are looking for a motivated candidate who graduated in biology, ecology, microbiology, chemistry or similar fields to join our project: **Cyanobacterial chemical warfare or co-operation? Co-existence of quorum sensing and quorum sensing inhibition.**

Overuse of antibiotics is one of the factors involved in the emergence of drug resistant pathogens. The understanding of how inter-cellular microbial communication (Quorum sensing, QS) is involved in bacterial pathogenesis has revealed potential for alternative strategies to treat bacteria-mediated diseases (LaSarre, B. et al., 2013). QS regulate coordinated responses across a bacterial population. In many cases, the responses elicited by QS signals contribute directly to pathogenesis through the synchronized production of virulence determinants, such as toxins and proteases. It has been theorized that, if the signal communication that coordinates these pathogenic behaviors was blocked, bacteria would lose their ability to mount an organized assault on the host and thus their ability to form organized community structures with antibiotic resistance would be compromised. QS inhibitory (QSI) compounds inactivate QS by different quenching mechanisms including enzymatic inactivation of the signal molecule, inhibition of signal biosynthesis and inhibition of signal detection (Saurav, K. et al., 2017). In this study we are interested in novel antimicrobials that are based on the QSI mechanism of action and determine its role in the development of co-habitation in non-axenic cultures. The successful applicant will investigate the anti-virulence potential of cyanobacterial isolates and isolate the lead molecule. She/He will learn state of art interdisciplinary approach consisting of microbiology and analytical chemistry for the isolation of novel bioactive compounds. She/He will have the opportunity to gain teaching experience and present results at international conferences.

Work place

The Laboratory of Algal Biotechnology at the Institute of Microbiology of the Czech Academy of Sciences in Třeboň is an international, competitive group working on algal bioactive metabolites, genomics and ecology of fresh water cyanobacteria. The communication language is English. Our team collaborates with laboratories in Europe, China, India and Israel. The Institute of Microbiology of the Czech Academy of Sciences is one of the top research institutes in the Czech Republic and Central Europe. We provide a friendly working environment, as well as assistance with the

administrative aspects of moving to the Czech Republic, and affordable accommodation if required.

Třeboň is located in the south of the Czech Republic, close to Austrian and German border, and lies in the centre of a nature protected lake-land area. Třeboň and the neighbouring town České Budějovice are renowned for their local breweries, historical centres and cultural heritage sites.

Recruitment procedure - committed to equality and valuing diversity:

Motivational letter (together with reference letter and master/bachelor certificate) and CV should be sent to saurav@alga.cz by **November 10th, 2019**. Interviews with selected candidates will be held in **December**. The expected start is at the earliest convenience, no later than **February 2020**.

Kumar Saurav, Ph.D. (project leader)

Pavel Hrouzek, Ph.D. (group leader)

Inst. of Microbiology CAS,

379 81 Trebon, Czech Republic.