Use of heterobifunctional constructs in chemical biology and materials

Summary

Networks and their architectures are central to the mathematical and computer sciences as well as to systems biology and systems medicine. This proposal aims to transcend the concepts of network science onto synthetic chemistry and materials science. From the outset, we have identified that the concept of networks in chemistry should be divided into two separate, however, strongly intertwined research streams. We will design cell-permeable heteromultifunctional constructs to probe intracellular networks using small molecules that typically go beyond Lipinski's rule. We will also build molecular networks (materials) by using single-precursor/fused hybrid linker-based approach and will apply them as electrocatalysts and in heterogenous catalysis for large-scale applications.

Research field:	Chemistry and biotechnology
Supervisor:	Dr. Pavel Starkov
Availability:	This position is available.
Offered by:	School of Science Department of Chemistry and Biotechnology
Application deadline:	Applications are accepted between June 01, 2022 00:00 and June 30, 2022 23:59 (Europe/Zurich)

Description

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Responsibilities and (foreseen) tasks

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Applicants should fulfil the following requirements:

- A very good to outstanding MSc degree or equivalent in Chemistry or Natural Sciences from a recognized university should be obtained or awarded by August 01, 2022
- A clear interest in the topic of the position
- Excellent command of English
- Strong and demonstrable writing and analytical skills
- Capacity to work both as an independent researcher and as a part of a team
- Capacity and willingness to provide assistance in organizational tasks relevant to the project

The following experience is beneficial:

- Previous hands-on experience in organic/materials/medicinal chemistry

The candidate should submit a research plan for the topic, including the overall research and data collection strategy. The candidate can expand on the listed research questions and tasks, and propose theoretical lenses to be used.

We offer:

- Paid up to 48-months PhD position
- Opportunities for conference visits, research stays and networking with globally leading universities and research institutions in Year 3 or 4 of the PhD

About the department

This PhD position will be hosted by Department of Chemistry and Biotechnology (DCB). The holder will also have opportunity to work together with colleagues across from and together with all the related departments in Estonia and abroad. DCB unites research groups in chemistry, cell and molecular biology and food technology. It offers training programmes at the BSc, MSc, and PhD levels in Chemistry, Biotechnology and Food Science. The department is developing applied chemical and life sciences technologies through the deeper understanding of the chemical nature of matter and that of biological processes at the molecular, metabolite, pathway, systems (incl. genome) and network levels. There is a particular emphasis on synthetic chemistry, catalysis, molecular technology, cell and chemical biology, sustainable chemistry, materials chemistry, plant biology, and food technology.

Additional information

For further information, please contact Dr Pavel Starkov pavel.starkov@taltech.ee or visit https://starkov.group

To get more information or to apply online, visit https://taltech.glowbase.com/positions/550 or scan the the code on the left with your smartphone.