PhD Position in Combinatorial Library Synthesis / High-Throughput Screening / Macrocycle Drug Development

Macrocyclic compounds offer an attractive modality for drug development due to their ability to bind challenging targets while being membrane permeable and orally available. However, a current challenge is the identification of macrocyclic molecules that bind to disease targets of interest, mostly due to the lack of large macrocycle compound libraries. To address this gab, our laboratory at EPFL, Switzerland, has recently developed methods for the combinatorial synthesis of large numbers of small cyclic peptides in microwell plates at a nanoscale using acoustic liquid transfer (please see references and graphical abstract below).

For a new, fully funded project, we are seeking a collaborator who will apply the new methods to challenging disease targets. The goal of the PhD project will be to design and synthesize macrocycle libraries, potentially test/develop new synthesis methods, automate the combinatorial working steps by robotics, and screen the libraries for ligands to challenging protein targets. The experimental work involves peptide chemistry, molecular biology techniques, analytical techniques, and lab automation.

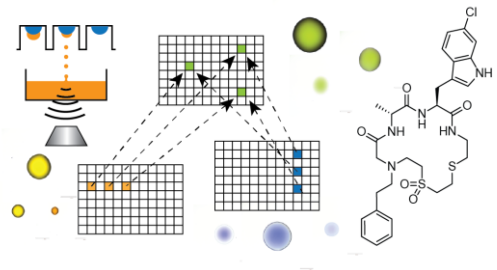
The position is funded by the Doctoral Network MC4DD "MC4DD – Macrocycles for Drug Discovery" within the framework of the Marie Skłodowska-Curie Actions (MSCA). The MC4DD network follows an interdisciplinary and cross-sectoral approach by bringing together leading experts in macrocyclic drug discovery from academia and industry from the fields of organic synthesis, medicinal, high-throughput and computational chemistry, pharmacological and structural analytics, and modelling. The PhD student will regularly interact and exchange with all members of the MC4DD network for research collaboration and training.

Applicants need to be highly motivated, capable to lead a project independently, and able to interact and communicate well. They should have an education in chemistry, biochemistry or a related subject. Entrance date: November 2024 - May 2024. Annual salary: around CHF 50,000.

To apply for the position, please send a short letter of motivation, a CV and a list of references to Christian Heinis (christian.heinis@epfl.ch).

Laboratory website: https://www.epfl.ch/labs/lppt

Combinatorial synthesis of macrocyclic compounds at a nanomole scale using acoustic dispensing.



Literature:
1. Kong, X.D., et al., Nature Biomedical Engineering, 2020
1. Sangouard, G. et al., Angewandte Chemie, 2021
3. Habeshian, S., et al., Nature Communications, 2022
4. Merz, M., et al., Nature Chemical Biology, 2023
5. Nielsen, A.L. et al., Angewandte Chemie, 2024