



PhD Position in Combinatorial Chemistry / HTS / Gene Therapy

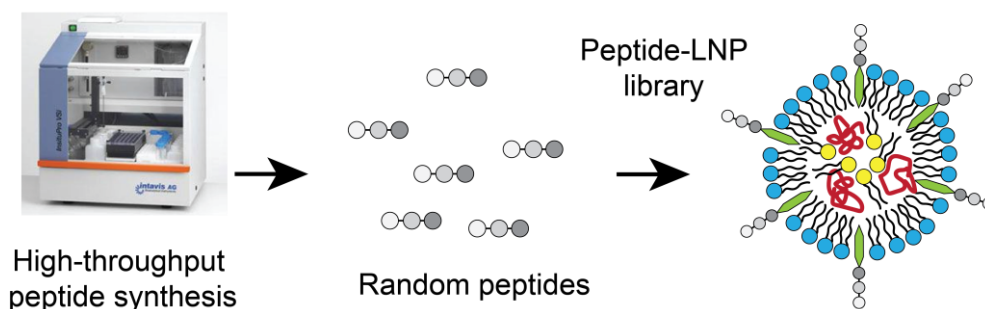
Lipid nanoparticles (LNPs) are suited for the delivery of RNA into cells, as demonstrated impressively with RNA-based COVID-19 vaccines, and they hold great promise as delivery vehicles in gene therapy. A limitation of current LNPs is the rather low delivery efficiency to the cytosol of cells and the lack of cell specificity. To address this gap, our laboratory at EPFL, Switzerland, aims at generating large combinatorial libraries of LNPs that all display on their surface a different peptide sequence. Screening such libraries should identify LNP variants that display a higher RNA delivery efficiency and/or new cell tropisms. For generating the large combinatorial peptide libraries, we have recently established powerful methods that allow the synthesis of large numbers of peptides in parallel.

For this new, fully funded project, we are seeking for a PhD student collaborator. The goal of the PhD project is to establish methods for generating LNPs decorated with peptides, to synthesize large combinatorial libraries of peptide-LNPs, and to screen the libraries for LNP formats that display a higher RNA delivery efficiency. The experimental work involves methods such as LNP assembly, cell culturing, peptide chemistry, molecular biology techniques, analytical techniques, and lab automation.

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, molecular biology, biotechnology, biochemistry or a related subject. Entrance date: first half of 2023. Annual salary: around US\$ 55,000.

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 lipid nanoparticles (LNPs) decorated with different peptides. Libraries of such LNPs will be screened for i) improved RNA delivery and ii) new tissue tropisms.