Master thesis research proposal chemistry and chemical engineering

Synthesis and characterization of mitochondria-targeted nanoparticles

Laboratory of Experimental Biophysics, IPHYS

We are calling for applications from highly motivated masters students with a background in chemistry and chemical engineering to conduct their masters thesis at the Laboratory of Experimental Biophysics at the Swiss Federal Institute of Technology in Lausanne (EPFL), Switzerland. This short-term research position is available to work closely with two interdisciplinary groups with expertise in biophysics and super-resolution microscopy (LEB), and organic synthesis and chemical functionalization (GBF).

One of the focuses of our group are the dynamics and mechanical properties of mitochondria. The position in organic chemistry will focus on synthesis of blended nanoparticles for delivery to mitochondria\(^1\,^2\). These blended nanoparticles are composed of mitochondria targeted PLGA-b-PEG-TPP and PLGA-b-PEG-QD containing a fluorescent quantum dot, and can be well controlled in particle size and charge\(^1\,^2\). The goal is to synthesize a library of particles ranging in particle size, characterize them and test integration into mitochondria, to help characterize the mechanical properties of the mitochondrial matrix.

The project duration is usually six months with a possibility for financial support. If interested, candidates are invited to send their CV and letter of interest to: suliana.manley@epfl.ch and cc dora.maheieic@epfl.ch.