

PhD position : spatial & functional characterization of photoreceptors lipids during retinal degeneration and neuroprotection.

The Lipid Cell Biology Laboratory, directed by Giovanni d'Angelo (<https://www.epfl.ch/labs/dangelo-lab/>) has an open position in collaboration with the Lausanne University Ophthalmology department (<https://www.ophtalmique.ch/centre-de-recherche/>) on photoreceptors lipid characterization during retinal degeneration and retinal neuroprotection.

Project description:

Specifically, the project plans to investigate the lipid composition of the retina throughout degeneration processes and genetically-encoded neuroprotective therapy. Inherited retinal degeneration are characterized by altered phototransduction cascade and progressive death of retinal photoreceptors. Photoreceptor lipid rafts microdomains are associated with the phototransduction cascade and altered during retinal degeneration. This project will broaden our understanding of the lipid composition in photoreceptors and their role in the degeneration process, with the objective of developing a neuroprotective approach targeting cell signaling in lipid microdomains.

This project will make advantage of stem cells culture techniques, mass spectrometry (MALDI imaging), high-resolution cellular imaging, chemical biology and histochemistry techniques with the following aims:

1. Development of an iPSCD-derived organoid model for retinal and photoreceptor lipids characterization
2. Spatial & functional characterization of photoreceptor lipids in retinal organoids and mice models of retinal degeneration
3. Evaluation of a neuroprotective therapy effects on photoreceptor lipid composition and photoreceptor metabolism

The ideal candidate should have a Master's degree (or equivalent degree) in life science, engineering, neuroscience, or biology, and be strongly motivated with a keen interest in stem cells technologies, cellular neuroscience and imaging analysis. Previous research experience with molecular biology and cell cultures techniques is an advantage.

Working environment:

The successful applicant will join the Lipid Cell Biology Laboratory – Kristian Gerhard Jebsen Chair on Metabolism research group and the Ophtalmogenetics research group of Lausanne University. The PhD candidate will be embedded in a highly international and dynamic environment in close collaboration with clinical research. The lab is based in the Jules Gonin Ophtalmic Hospital, in the city center of Lausanne. The PhD candidate will be enrolled in the EPFL Ph.D programm in Molecular Life Sciences (EDMS).

Start of position:

Fall 2024

Application procedure:

Interested candidates must submit their application to the EDMS doctoral school (<https://www.epfl.ch/education/phd/edms-molecular-life-sciences/edms-how-to-apply/>)