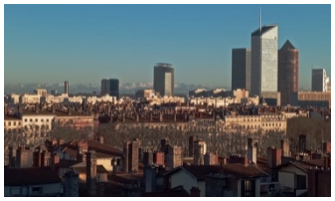
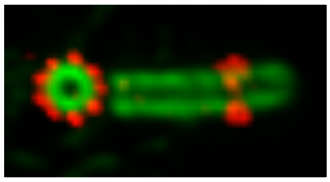


Fully funded PhD project in Cell Biology

Host institute: Mechanisms of integrative Life Sciences (MeLiS)
Université Claude Bernard Lyon 1 (UCBL), Lyon, France
Team : Cilia assembly and Development, Prof. Bénédicte Durand,
https://inmg.fr/melis/en/team_durand.php
PhD supervisor : Bénédicte Durand, durand-b@univ-lyon1.fr; Véronique Morel, veronique.morel@univ-lyon1.fr

Research project

Characterizing the function of proteins associated with ciliopathies



STED observation of the primary cilia of Expanded (U-ExM) Drosophila male germ cells

Funding grants

CEFIPRA joint project with S.C. Jana, NCBS, Bangalore India, UCBL

Project description:

Eukaryotic cilia and flagella are highly conserved microtubule-based organelles that play important roles in cell/fluid motility and cell signaling. In humans, an increasing number of inherited disorders are associated with defects in cilia assembly or function and are now classified as ciliopathies. Their surprising characteristic is the manifestation of a wide range of symptoms, from chronic respiratory infections to cystic kidneys, obesity, diabetes, retinal degeneration or mental retardation. The range of organs affected in ciliopathies is still expanding and new syndromes are likely to emerge as ciliopathies in the future.

We are using *Drosophila* to understand how candidate genes affect cilia formation and stability. *Drosophila* is a powerful model system as it contains only a few types of ciliated cells that recapitulate the different types of cilia found in humans. This model allows efficient functional analysis using genetic approaches and is amenable to biochemical studies.

The PhD project aims to understand the precise function of two proteins whose mutations in humans are associated with retinal ciliopathy. In this project, the PhD candidate will combine the power of functional genetic approaches in *Drosophila* (RNAi and/or CrispR-Cas9 genome editing) with cutting-edge imaging strategies (Expansion microscopy coupled with spinning-confocal and STED microscopies) and biochemical strategies to determine the contribution of each protein to cilia assembly and maintenance.

This PhD proposal is part of a collaborative project with the group of S.C. Jana lab, NCBS in Bangalore (India) and involves two reciprocal meetings in India (Bangalore) and France (Lyon) for the PhD students involved in each country.

Qualifications :

-Candidates should hold a Master's degree in Biological Sciences with qualifications in Genetics, Cell Biology and Developmental Biology.
-Knowledge of imaging approaches is an advantage. Experience with model organisms will be considered positively, but experience with the *Drosophila* model is not required.
-An interest in basic cell and developmental biology is important.
-Proficiency in English (International collaborative program)
-A strong interest in challenging experimental work is desirable.
-Good interpersonal, communication, organizational and presentation skills

Advantages in joining the lab:

- Join a team with leading expertise in *Drosophila* genetics and Expansion microscopy approaches
- International exchange with **S.C. Jana lab, NCBS, Bangalore India** (2x2 weeks)
- Join a highly dynamic research institute devoted to basic science
- Benefit from living in a vibrant city and University
- Enjoy a workplace designed to support your quality of life

Starting date : October 1st 2024, CV and names of referees should be sent to Prof. Bénédicte Durand, durand-b@univ-lyon1.fr