PhD Thesis Offer (M/F)
“Temperature-dependent Dynamics of Transcription and Cell-Fate Acquisition during Post-Embryonic Development”

The hosting structure

Institut Curie Research Center
Institut Curie is a major player in the research and fight against cancer. It consists of a Hospital group and a Research Center of more than 1000 employees with a strong international representativeness. The objective of the Research Center is to develop basic research and to use the knowledge produced to improve the diagnosis, prognosis, and therapeutics of cancers as part of the continuum between basic research and innovation serving the patient.

Context

Laboratory
The Keil team is composed of scientists with various expertise that cover a large range of disciplines including cell & developmental biology, computer science and biophysics. This project will be developed in close collaboration with the Hammell lab at Cold-Spring Harbor Laboratories, USA. Several lab visits and joint retreats with this group are planned. To develop mathematical and computational methods, we collaborate with groups at The Rockefeller University, New York City and Paris.

Since its creation in 1996, the Physico-Chemie Curie laboratory pioneers fundamental research at the interface between physics, chemistry and biology. It is an interdisciplinary research laboratory exploring the role of physical laws in the architecture and functions of cellular systems. Its 13 research teams, all internationally recognized for their unique expertise, study the emergence of behavior in living organisms across spatial and temporal scales.

The doctoral degree will be awarded by PSL Research University within the Physique en Île-de-France doctoral school (EDPIF). The EDPIF hosts more than 500 PhD candidates preparing their doctorate in its 40 laboratories throughout the Paris region.
Project
One of the most remarkable properties of developing multicellular systems is their ability to generate precise outcomes, e.g., cell fate patterns or morphogenetic events, even in the face of considerable fluctuations in their environment. To maintain developmental precision, organisms have evolved molecular mechanisms to change and adjust their developmental rates or even arrest development and resume at later time points. Combining microscopy, image analysis, genetics and mathematical modeling, our group investigates how this kind of robustness emerges during development, using C. elegans as a model organism with powerful genetics, genome-editing, and live-imaging tools. In this PhD project, we will focus on the development and cell-fate specification of hypodermal stem cells. Using real-time live-imaging of transcription as well as transcription factor dynamics, we will try to uncover how the underlying gene regulatory networks achieve an invariant stem-cell fate-progression over a wide range of growth temperatures.

Publications related to the project

Candidate Profile
Applicants should have a strong desire to explore cell biological phenomena in an in-vivo context. They should show solid capacity for independent and creative thinking. Background and training in biophysics, developmental biology and/or cell biology is strongly recommended. The project relies heavily on microscopy and microfluidics techniques for live imaging, as well as quantitative image analysis for which the applicant should have either experience or a strong motivation to learn.

All our opportunities are open to people with disabilities

Contract information
Type of contract: Fixed-term contract, doctoral contract
Starting date: no later than January 2024
Duration: 3 years
Working time: full time
Remuneration: according to the current grids
Benefits: Collective catering, reimbursement of transportation fees up to 70%, supplementary health insurance
Location of the position: Paris, Institut Pierre-Gilles de Gennes
Reference: 2023-08-UMR168-DOCT01

Contact
Please send your CV, two letters of recommendation and a letter of motivation to wolfgang.keil@curie.fr

Publication date: August 18th, 2023
Deadline for application: October 31st, 2023

Institut Curie is an inclusive, equal opportunity employer and is dedicated to the highest standards of research integrity.