Fully Funded PhD studentship

Impact of paused polymerase on transcriptional noise during development

Project :

Live cell imaging of transcription revealed that transcription is discontinuous and occurs in bursts. These have a great potential for generating cell-to-cell variability but, in the context of a developing organism, must be regulated to ensure reproducible outcomes. In this project, **the PhD student will decipher the impact of paused polymerase on transcriptional noise in Drosophila embryos.** Indeed, during early development, there is a switch in transcriptional regulation whereby developmental promoters acquire paused polymerases as a major regulatory checkpoint. The effects of pausing on transcriptional noise have not yet been characterized and could in principle either buffer or increase noise.

The student will employ quantitative live imaging of transcription (MS2/MCP) combined to mathematical approaches, to detect each polymerase initiation event for each nucleus *in vivo* and to model extrinsic and intrinsic noise.

Techniques: Confocal imaging, Genetics, Molecular Biology, Image Analysis

Candidate : Motivation, perseverance, rigor, creativity and curiosity.
Candidates should be cell/developmental biologists with interest in gene expression and quantitative biology. Prior experience in Drosophila genetics and coding are a plus but not mandatory. Required diploma: A research master degree from a University, Engineering School or “Grande Ecole”, in a field relevant to the project (biology, biophysics, engineering). Students with interdisciplinary profile are strongly encouraged to apply.

Environment:
This project belongs to a LabMuse international PhD training network, supported by the University of Montpellier. In this network, **we will decipher the mechanism and functions of transcriptional noise during development and disease.** We will use two biological models: Drosophila embryos where noise buffering is important, and HIV-1 latency where stochasticity is beneficial.
The network will train 3 PhD Students by 4 teams located in Montpellier (E. Bertrand, S. Chambeyron, M. Lagha, O. Radulescu). It will provide common activities, interdisciplinary training and an environment uniting biologists and mathematicians.

How to apply: Please send an email containing "[LabMuse PhD]" in its subject, with your motivation letter, CV and reference names to **mounia.lagha@igmm.cnrs.fr** and on the LabMuse Epigenmed.

deadline: May 30th 2020

Funding : Start date: 01/10/2020. Salary: ~ 2130 euros/month (brut).