'Physical Biology of Chromatin' group
Laboratory of the Biology and Modeling of the Cell, CNRS, ENS de Lyon, France
http://www.ens-lyon.fr/LBMC/equipes/biologie-physique-de-la-chromatine

FRANCE 2030
PROGRAMME DE RECHERCHE
IDENTITÉS ET DESTINS CELLULAIRES

Postdoc position in biological physics:

Polymer modeling and machine learning for 4D Genomics in normal and tumorous cells

Our group is looking for a postdoc in biological physics to work on chromosome (mis)folding in physiology and disease.

Context: Inside cells, DNA is packed into a polymer-like structure called chromatin. Characterizing how chromatin self-organizes is one of the major challenges faced in recent years by biology. During the last decade, thanks to the development of advanced experimental techniques, major progresses have been realized in our understanding of the multi-scale chromosome organization. An increasing number of evidences has suggested that the spatio-temporal organization of the genome play a decisive role in the regulation of gene expression and in diseases. In particular, chromosome misfolding may participate in gene deregulation, abnormal developmental cell trajectory and eventually in cancer.

Objectives: The candidate will develop a research activity on the modeling of chromosome folding coupling polymer modeling with machine learning. It will involve the development of original biophysical models, of efficient simulation schemes, and of machine learning/AI tools to analyze data. The candidate will collaborate with experimental biology groups of the PEPR Cell-ID working on understanding cell-fate derailment during pediatric brain cancers.

Profile of the candidate: We are looking for creative, highly motivated candidates with a strong background in statistical or polymer physics, in computer science or in computational biology. Advanced skills in programming are required and a previous interdisciplinary experience in biophysical modeling is a plus.

Environment: The candidate will integrate the team 'Physical Biology of Chromatin' that mainly focuses on understanding the fundamental bases of chromatin and gene regulation using biophysical modeling and computational approaches within a strong interdisciplinary environment. The group is part of the Laboratory of Biology and Modeling of the Cell that aims to characterize the molecular bases underlying the organization and functioning of cellular processes in normal and pathological conditions . It is based at Ecole Normale Supérieure de Lyon, a French top-leading research and educational institute.

This project is part of the national PEPR Cell-ID, funded by the French National Research Agency. Cell-ID brings together a multidisciplinary consortium of laboratories from biophysics to developmental biology and clinical medicine around a common goal: understanding how cells acquire and maintain their identity during development and why some deviate from their normal trajectory to give rise to pathologies such as pediatric brain tumors.

Admin. details. Duration: 2 years (renewable); starting date*:* from March 2026; remuneration: 2992-4167€/month (gross), depending on professional experience.

To apply, please send your CV and a motivation letter to Daniel Jost at daniel.jost@ens-lyon.fr