

Post-doc in theoretical biophysics on collective cell migration

LPENS and Institut Curie, PSL University, Paris

Collective cell migration, a key process in living systems, remains largely underexplored in the intermediate-density subconfluent regime, where cell clusters coexist with isolated cells, as is often the case in morphogenesis and tumor progression.

A 2-year postdoctoral position in theoretical biophysics is opening in the **Physics of Cells and Cancer Lab (Institut Curie - Paule Dagenais, Pascal Silberzan)** and **LPENS (Xiaowen Chen, Vincent Hakim)**. Working between the two labs, the project will focus on computational analysis and theoretical understanding of **collective cell migration on patterned surfaces**. In the subconfluent regime, we recently observed *in vitro* a new mode of collective migration driven by asymmetric micro-rails (ratchets) whose period is smaller than a cell size.

The project will study how directed collective flows emerge from cell-cell collisions, governed by cell density and substrate geometry. In the long run, the aim includes the exploitation of controlled collective migration to design new cell-sorting strategies, where collective effects can amplify subtle mechanical differences between cell types.

Applicants should hold or expect to complete a PhD in physics or a related field, with strong background in soft matter / nonequilibrium statistical physics / numerical simulation / statistical inference. Previous experience with data analysis would be a plus but not required. Applicants should be able to work interactively in a collaborative research environment, including physicists and biologists.

Funding: PSL Grand Program Engineering Life (EnLife)

Duration: 2 years.

Ideal starting date: summer/fall 2026.

Applications will be reviewed starting from **April 15, 2026**, on a rolling basis until the position is filled. To apply, please send your CV, a brief research statement, and two letters of reference to xiaowen.chen@phys.ens.fr.

