PhD Position - Biophysics of planar-polarised tissue

SECTOR: Higher Education Institution

LOCATION: France, Grenoble

RESEARCHER PROFILE:

- First stage researcher,

INSTITUTION: Univ. Grenoble Alpes, University of Innovation

One of the major research-intensive French universities, Univ. Grenoble Alpes enjoys an international reputation in many scientific fields, as confirmed by international rankings. It benefits from the presence of major European instruments (ESRF, ILL, EMBL, IRAM, EMFL*). The vibrant ecosystem, based on a close interaction between research, education and companies, has earned Grenoble to be ranked as the 5th most innovative city in the world. Surrounded by mountains, the campus benefits from its natural environment and a high quality of life and work environment. With 7000 foreign students and the annual visit of more than 8000 researchers from all over the world, Univ. Grenoble Alps is a bustling international university.

A Welcome Center for international students, PhDs and researchers will ensure that you find everything you need upon arrival.

In 2016, Univ. Grenoble Alpes was labeled «Initiative of Excellence». This label aims at the emergence of around ten French world class research universities. By joining Univ. Grenoble Alpes, you have the opportunity to conduct world-class research, and to contribute to the social and economic challenges of the 21st century ("sustainable planet and society", "health, well-being and technology", "understanding and supporting innovation: culture, technology, organizations", "Digital technology").

* ESRF (European Synchrotron Radiation Facility), ILL (Institut Laue-Langevin), IRAM (International Institute for Radio Astronomy), EMBL (European Molecular Biology Laboratory), EMFL (European Magnetic Field Laboratory)

Key figures:

- + 50,000 students including 7,000 international students
- 3,700 PhD students, 45% international
- 5,500 faculty members
- 180 different nationalities
- 1st city in France where it feels good to study and 5th city where it feels good to work
- ISSO: International Students & Scholars Office affiliated to EURAXESS
REFERENCES:
IRS Project: Anisotropy of the cytoskeleton and tissue mechanics
SUBJECT TITLE: Biophysics of planar-polarised tissue
RESEARCH FIELD: Physics > Biophysics
SCIENTIFIC DEPARTMENT (LABORATORY’S NAME): LTM and LIPHY
DOCTORAL SCHOOL’S: Physique
SUPERVISOR’S NAME: Alice Nicolas and Jocelyn Etienne

SUBJECT DESCRIPTION:
Morphogenesis, the development of the complex, beautiful but above all functional shape of embryos and organs, has so far mainly been addressed in terms of genetic control. The more recent integration of mechanical approaches have led to surprising re-interpretations of how developmental patterns emerge. In this context, the so-called planar-polarised anisotropic organisation of the cytoskeleton is known to be key to convergence-extension in e.g. Drosophila axis extension.

The objective of this PhD is to quantify the contribution of actomyosin anisotropy on the tissue passive and active dynamics.

The PhD student will first aim at establishing an in-vitro model of planar-polarised tissue. For this, microfabrication techniques developed in LTM will be employed to grow a convergent cell monolayer on a substrate exhibiting mechanical anisotropy. The response of cells in terms of cytoskeletal organisation will be quantified. Next, mechanical measurements including traction force microscopy and, in collaboration with IGDR Rennes, laser nano-ablations will be used to characterise the mechanical behaviour of the monolayer. The experimental data will then be compared with analytical and numerical results from models developed in LIPHY, in collaboration with the PhD student and LTM.

ELIGIBILITY CRITERIA
Applicants must hold a Master's degree (or be about to earn one) or have a university degree equivalent to a European Master’s (5-year duration),

Applicants will have to send an application letter in English and attach:
- Their last diploma
- Their CV
- A short presentation of their scientific project (2 to 3 pages max)
- A copy of any report that they have written for previous research projects (internship, master's project, ...)
- Letters of recommendation are welcome.

Address to send their application: alice.nicolas@cea.fr and jocelyn.etienne@univ-grenoble-alpes.fr

SELECTION PROCESS
Application deadline: 13 June 2018 at 17:00 (CET)
Applications will be evaluated through a three-step process:

1. Eligibility check of applications in June 2018
2. 1st round of selection: the applications will be evaluated by a Review Board in June 2018. Results will be given in June 2018.
3. 2nd round of selection: shortlisted candidates will be invited for an interview session in Grenoble on 20 June 2018. (if necessary)

TYPE of CONTRACT: temporary-3 years of doctoral contract, Full time
HOURS PER WEEK: 35
APPLICATION DEADLINE: 13/6/2018
Salary: gross monthly salary between 1768.55 € and 2100 € (depending on complementary activity or not)