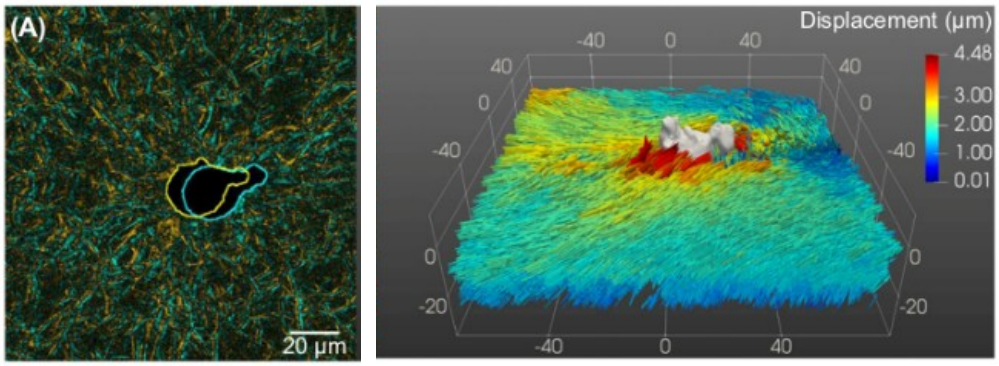
Post-Doctoral Position
«3D mechanics of cells in complex fibrous media»

Summary of the project

The forces generated by cells in complex media are important in various physiological/pathological phenomena such as wound healing, cancer metastasis or embryogenesis. The aim of this project is to precisely investigate cell migration in biological networks by studying the interactions between cancer cells and the surrounding fibrous medium.
The main tasks of this post-doctoral position will be:

- A morphological characterization of different fibrous media (collagen networks at different concentrations) using confocal microscopy (e.g. quantification of the initial orientation and the volume fraction of the fibers).
- The mechanical characterization of the fibrous samples using micromechanical tests (compression/shear) coupled with confocal microscopy. The deformation mechanisms of fibrous networks will be studied using kinematic field measurements (DVC image correlation) and microstructure analyses. The mechanical behavior of the different media will also be characterized using a nanoindenter and an AFM.
- The analysis of cell migration in the different fibrous media (deformations of fibers during the migration process).



Contour of a migrating cell in a collagen network (left picture) and associated displacement field of collagen fibres (right picture)

This project will benefit from an existing collaboration between researchers in physics of biological systems, imaging and mechanical engineering.

Location and practical aspects

The successful applicant will be hosted by the **LIPhy** (Interdisciplinary Laboratory of Physics – Grenoble, France – www-liphy.univ-grenoble-alpes.fr/) in the "MC2" team, and by the **3SR Laboratory** (Soils, Solids, Structures, Risks – Grenoble, France – www.3sr-grenoble.fr/) in the "CoMHet" team. He/She will work under the supervision of Dr. Laurent, Dr. Verdier at the LIPhy and Dr. Bouzid, Dr. Bailly at 3SR.
The post-doctoral fellowship offer is available starting **february 2023** for a period of **16 months**. The gross salary will be 2656 €/months, equivalent to a net salary of 2134 €/month.

Required qualification

The post-doctoral candidate should have academic backgrounds in cell biophysics and mechanobiology or/and mechanics of fibrous media, with a strong motivation to work at

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the interface between physics and biology. Specific skills in microscopic imaging, structural characterization of fibrous media and/or experimental mechanics of soft (bio)materials/gels will be strongly examined.

Applications

Interested candidates should send their CV, a cover letter and recommendation letters to Dr Valérie Laurent (valerie.laurent@univ-grenoble-alpes.fr), Dr. Claude Verdier (claude.verdier@univ-grenoble-alpes.fr), and Dr. Lucie Bailly (lucie.bailly@3sr-grenoble.fr). Deadline for the application: **31/12/2022.**