



Position for a post-doc/research engineer



Remote control of cellular signaling using micromagnet arrays

Group: Light-Based Observation and Control of Cellular Organization
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The group "Light-Based Observation and Control of Cellular Organization" is an interdisciplinary team in biophysics department of the Institut Curie. We use a combination of molecular, cellular, chemical, nanotechnology and imaging methods to probe the molecular mechanisms underlying fundamental processes in living cells.

In the context of MAGNEURON, a new project funded through the FET OPEN European program, our group is seeking to recruit a post-doc to join our effort aiming at using magnetic nanoparticles (MNPs) for remote actuation of cell signaling. By means of functionalized MNPs, our goal is to control important cellular processes such as migration, differentiation or division, with the long-term objective of using these approaches in cell-based therapies.

In our assay, cells are loaded with sub50nm-MNPs (either synthetic or genetically-encoded) functionalized to recruit signaling molecules (such as GEFs or GTPases). By applying external magnetic fields, the MNPs can be displaced in the cell cytoplasm to activate signaling pathways at specific subcellular locations. The candidate will be in charge of implementing microfabrication and micropatterning methods to build magnetic microarrays enabling the parallelized stimulation of multiple cells in controlled conditions. With these tools, he/she will determine the ability of individual cells to interpret gradients of signaling molecules and will analyze the amplification and filtering processes involved in the cellular response to signaling inputs.

References: Etoc et al, Nanolett. (2015) 15, 3487-94, Chen et al, Nat. Comm. (2014) 5:5093. Etoc et al, Nat. Nano. (2013) 8, 193-198

Qualifications and Experience

The candidate is expected to have solid training in physics or material sciences and strong interest for multidisciplinary research and biophysics. Skills in microscopy, data processing and/or molecular and cellular biology are welcome. Hands-on experience in microfabrication or related high-throughput approaches is absolutely necessary.

The candidate will work in close collaboration with other lab members. He/she will have access to all the technology platforms at Institut Curie, as well as to the brand new microfabrication facilities of the neighboring Institut Pierre-Gilles de Gennes for microfluidics. (<http://www.institut-pgg.fr>).

Note that the project can be adjusted for someone looking for a research engineer position. Funding is available for 2 years (with possible extension).

Contact.

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Qualified candidates are invited to email their applications including: CV, a brief summary of previous research activities, reference details, and statement of interest.