
Postdoctoral position in cell biophysics and cancer

Mechanics of patient-derived glioblastoma cells

A postdoctoral position starting in October 2021 is available in the 'Physics of living systems' team within the 'Matter and complex systems' (MSC) laboratory at Université de Paris, to study the mechanical properties of tumour cells.

Background

It is becoming increasingly clear that the mechanical properties of cancer cells differ from that of normal cells [1]. In most cases, cancer cells are thought to become softer as the disease progresses. Surprisingly, we have recently found that in the case of glioblastomas (GBMs), extremely aggressive and heterogeneous brain tumours originating from glial cells, the cytoplasm and the nucleus of a high grade GBM cell line are stiffer than those of a low grade GBM cell line [2]. The successful candidate will quantify the mechanical properties of clinically annotated primary patient-derived glioblastoma cells obtained from glioma banks. He/she will use several techniques available in the lab to probe cell and nuclear mechanics at different scales: optical tweezers and micropatterning [3], single cell microplate rheometer (coll. A. Asnacios, U. Paris), magnetic tweezers and nanowires (coll. S. Hénon and J-F. Berret, U. Paris), microchannels and invasion assays (coll. S. Etienne-Manneville, Institut Pasteur, Paris). He/she will correlate the expression levels of different proteins involved in cell and nuclear mechanics (focussing on the intermediate filament proteins vimentin and lamins) with the measured mechanical properties.

Qualification and offer details

We are looking for a highly motivated scientist with validated experience in cell biology or biophysics and in cellular imaging. Training in cell culture, biochemistry and molecular cell biology, as well as in optics and fluorescence microscopy is necessary. Experience or background in cancer cells and spheroids, micromanipulation (optical tweezers, AFM, micropipettes), micropatterning, traction force microscopy or migration assays would be ideal. Knowledge in programming and image analysis (Python, Matlab, ImageJ, Labview) will be a plus. Applications from candidates with a strong track-record of publications in peer-reviewed journals, a PhD in either biology or physics and 0-3 years of relevant postdoctoral experience will be considered. A high personal motivation to develop a challenging project is required. The working language is English. The position is funded by a one-year grant from the Université de Paris ('Chaires d'excellence 2021 - Nouvelle équipe' program) with potential extension and covers social benefits. The position is to start between October 2021 and the end of December 2021.

How to Apply

Candidates should send a CV including a short summary of previous research and a publication list, a cover letter and at least two reference letters or contact details for two references to Jean-Baptiste.Manneville@curie.fr

References

- [1] C. Alibert, B. Goud, and J.-B. Manneville, *Biol. Cell* **109**, 167 (2017).
- [2] C. Alibert, D. Pereira, N. Lardier, S. Etienne-Manneville, B. Goud, A. Asnacios, and J.-B. Manneville, *Biomaterials* 120903 (2021).
- [3] K. Mandal, A. Asnacios, B. Goud, and J.-B. Manneville, *Proc. Natl. Acad. Sci.* **113**, E7159 (2016).