

Engineer in Biochemistry and/or in-vitro cell biology Montpellier, France

A research engineer position in Biochemistry and *in-vitro* cell biology is opening at Montpellier Cell Biology Research Center, in the Centrosome, Cilia and Pathologies team. The proposed contract (two years, "Ingénieur d'étude (IE) level) is supported by the French Agence Nationale de la Recherche (ANR JCJC) grant.

The selected candidate will work under the supervision of Benjamin Vitre. He/She will contribute to a project focused on understanding how **the IntraFlagellar Transport machinery could regulate motors and microtubules dynamics in-vitro**.

Proteins of the IFT machinery are polarized cargo transport complexes that function in non-dividing and dividing cells in association with microtubules (MTs) and motors. Recent works from our team have demonstrated IFT proteins involvement in mitotic events in association with motors[1,2]. However, the precise characterization of the molecular interactions between IFTs and microtubule or IFTs and motors is challenging in the cellular environment. In order to circumvent the difficulties arising from the complex nature of this environment, we are proposing to develop simplified *in-vitro* systems. Using purified proteins in an *in vitro* setup primarily based on TIRF microscopy[3], we propose to decipher, at the molecular level, IFT-MTs-motors interactions and their influence on MT dynamics and organization.

The selected candidate will be involved in generating purified recombinant proteins. Experience working on the expression and purification of large proteins using baculovirus-insect cell expression systems is recommended. Experience in molecular biology (cloning, DNA purification...) will be a valuable addition.

The candidate will also contribute to setup imaging chambers and acquire images of molecular motors/IFTs activity on microtubules using TIRF microscopy approaches.

The team, which also develops *in-cellulo* and *in-vivo* (zebrafish) approaches to elucidate non-ciliary function of IFT proteins, is located in the Montpellier Cell Biology Research Center (CRBM; <http://www.crbm.cnrs.fr/en/>). The CRBM is supported by Montpellier University and the CNRS. CRBM is located on the CNRS campus in Montpellier, and host on its new building a state of the art imaging platform (<https://www.mri.cnrs.fr/en/>) where the TIRF imaging approaches will be carried-out.

Starting date, first semester of 2019.

Applications will be open until December 31, 2018.

Please submit a cover letter, your CV (1 page max) and contact information of two referees to:

- Dr. Benjamin Vitre (benjamin.vitre@crbm.cnrs.fr)
- Dr. Bénédicte Delaval (benedicte.delaval@crbm.cnrs.fr)

[1] Taulet N, Vitre B, Anguille C, Douanier A, Rocancourt M, Taschner M, et al. IFT proteins spatially control the geometry of cleavage furrow ingression and lumen positioning. *Nature Communications* 2017;8:1928. doi:10.1038/s41467-017-01479-3.

[2] Delaval B, Bright A, Lawson ND, Doxsey S. The cilia protein IFT88 is required for spindle orientation in mitosis. *Nat Cell Biol* 2011;13:461–8. doi:10.1038/ncb2202.

[3] Gudimchuk* N, Vitre* B, Kim Y, Kiyatkin A, Cleveland DW, Ataullakhanov FI, et al. Kinetochore kinesin CENP-E is a processive bi-directional tracker of dynamic microtubule tips. *Nat Cell Biol* 2013;15:1079–88. doi:10.1038/ncb2831.