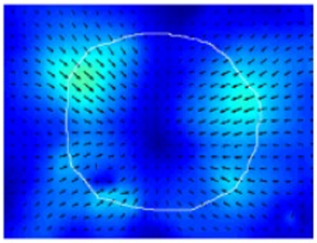

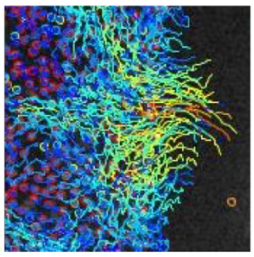

Institut Jacques Monod, Paris

POST-DOCTORAL POSITION ON MECHANICS AND METABOLISM COORDINATION DURING EPITHELIAL-TO-MESENCHYMAL TRANSITION

We are looking for a post-doctoral researcher to work at the interface between the fields of mechanobiology and cell/tissue metabolics. The project is led by Nicolas Borghi and Simon de Beco at Institut Jacques Monod, Paris, in the context of a Labex-funded consortium ('BioMechanOE' transverse project of the Labex 'Who am I?') that involves physicists and biologists from the Matière and Systèmes Complexes laboratory and the Institut Cochin.

Project

There is growing evidence of a crosstalk between cell mechanics and metabolism during cancer progression**.** The molecular mechanisms for this coupling are poorly understood at the cellular level and multi-cellular level. We expect that mechanical interactions between cells within epithelial tissues will coordinate metabolic activities throughout the tissue by mechanisms that still have to be identified. The goal of this project is to study the emergence of supra-cellular metabolic and mechanical identities during Epithelial-to-Mesenchymal Transition (EMT), using cell monolayers as tissue models. It will combine cutting edge imaging techniques to probe and actuate tissue mechanics and cell metabolism, such as FRET-FLIM imaging of molecular force and metabolic biosensors as well as optogenetics.

Profile

The candidate should have a PhD in Life and/or Physical Sciences with a strong interest in mechanobiology and prior experience in microscopy and quantitative imaging. The successful candidate is expected to work in autonomy in a multidisciplinary environment across teams within the same institute and with collaborators in neighbor institutes.

Application details

The position is initially funded for 2 years, starting in fall 2022 and may be extended depending on performance and funding Applications should be sent to nicolas.borghi@ijm.fr and simon.debeco@ijm.fr and include a CV (with a list of publications), a cover letter summarizing your past and current research and two recommendation letters, **before July 31**, 2022.

Selection of publications

Molecular Tension Microscopy of E-Cadherin During Epithelial-Mesenchymal Transition. Canever H, Carollo PS, Fleurisson R, Girard PP, **Borghi N.** Methods Mol Biol. 2021;2179:289-299.

Nesprins are mechanotransducers that discriminate epithelial-mesenchymal transition programs. Déjardin T, Carollo PS, Sipieter F, Davidson PM, Seiler C, Cuvelier D, Cadot B, Sykes C, Gomes ER, **Borghi N.** J Cell Biol. 2020 Oct 5;219(10):e201908036.

The role of single cell mechanical behavior and polarity in driving collective cell migration. Jain S, Cachoux VML, Narayana GHNS, **de Beco S**, D'Alessandro J, Cellerin V, Chen T, Heuzé ML, Marcq P, Mège RM, Kabla AJ, Lim CT, Ladoux B. Nat Phys. 2020 Jul;16(7):802-809.

Optogenetic dissection of Rac1 and Cdc42 gradient shaping. **de Beco S**, Vaidžiulytė K, Manzi J, Dalier F, di Federico F, Cornilleau G, Dahan M, Coppey M. Nat Commun. 2018 Nov 16;9(1):4816.

Src- and confinement-dependent FAK activation causes E-cadherin relaxation and β-catenin activity. Gayrard C, Bernaudin C, Déjardin T, Seiler C, **Borghi N.** J Cell Biol. 2018 Mar 5;217(3):1063-1077.