



2017 IGBMC Summer Internship

***Ratchetaxis* and Reversal in Cell Motility**

Laboratory of Dr Daniel Riveline

Directed cell migration is usually thought to depend on the presence of long-range gradients of either chemoattractants or physical properties such as stiffness or adhesion. However, *in vivo*, chemical or mechanical gradients have not systematically been observed. In the group (Caballero et al., 2014; Comelles et al., 2014), we have shown *in vitro* that local cues can bias motility, a phenomenon coined *ratchetaxis* (Caballero et al., 2015). The internship will consist in preparing micro-contact printed surfaces, plate cells, acquire cell motion over time using microscopy, analyse trajectories and compare the measurements with a model. The stay will involve Microfabrication, Cell Biology and Physics.



References :

- Caballero, D., J. Comelles, M. Piel, R. Voituriez, and D. Riveline. 2015. Ratchetaxis: Long-Range Directed Cell Migration by Local Cues. *Trends Cell Biol.* 25:815-827.
- Caballero, D., R. Voituriez, and D. Riveline. 2014. Protrusion fluctuations direct cell motion. *Biophys J.* 107:34-42.
- Comelles, J., D. Caballero, R. Voituriez, V. Hortiguera, V. Wollrab, A.L. Godeau, J. Samitier, E. Martinez, and D. Riveline. 2014. Cells as active particles in asymmetric potentials: motility under external gradients. *Biophys J.* 107:1513-1522.