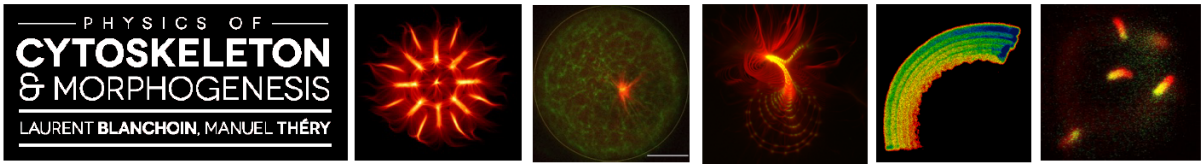


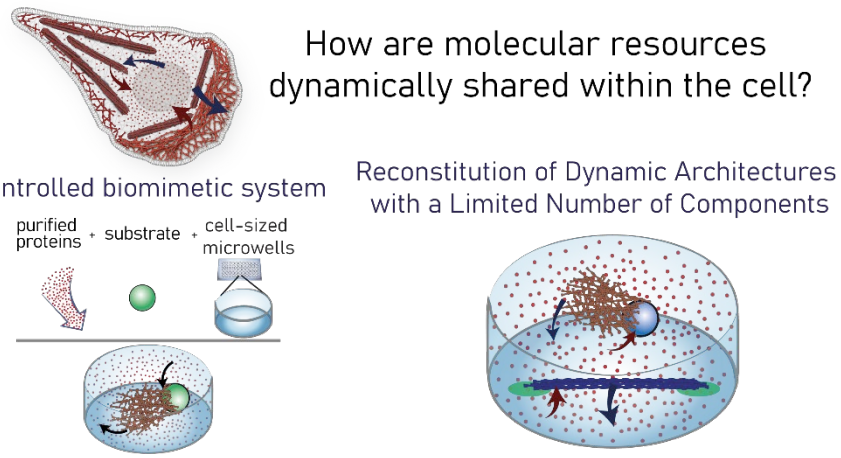
4-6 months Internship Offer

Sharing Limited Resources Among Competing Actin Architectures

A 4-6 months internship position is available in the Cytomorpholab in Grenoble, http://cytomorpholab.com/

Actin is a constitutive protein of the cytoskeleton, regulating cell shape, movement and division. It polymerizes into filaments that form dynamic networks in the presence of specific proteins. Within the cell, as access to resources is limited, there is competition for their use: networks have to share the same resources in order to coexist and perform their respective functions.

As part of this internship, we propose using a biomimetic system to carry out the first reconstitution of the coexistence of dynamic architectures competing for the same resources. To that aim, the student will manufacture **cell-sized microwells** to impose 3D boundaries to his/her experimental system and control precisely the finite biochemical composition of the system. Then, different architectures will be generated from polystyrene beads or lipid-coated micropatterns. In this defined and controlled environment, the **minimal elements for the coexistence of different architectures** will be evaluated. These experiments will enable us to demonstrate the basic **mechanisms** of actin architecture coexistence in cells.



This project was recently awarded funding from the European Research Council (ERC Starting Grant). The selected student will have the unique opportunity to participate in this innovative project, which will take place over the next five years. In addition, the project is taking place in an internationally renowned lab, working in a creative and lively environment, providing access to state-of-the-art techniques (microfabrication techniques, advanced microscopy, biophysics). We are looking for young scientists with a strong interest in academic research and interdisciplinary projects. Highly motivated candidates are encouraged to apply by sending their CV and motivation letter to Alexandra Colin (alexandra.colin@cnrs.fr).

Recent significant papers of the lab related to this topic:

- Guérin *et al.,* Balancing limited resources in competitive actin networks. *Current Biology* 2025
- Cantat and Colin, Reconstituted systems for studying the architecture and dynamics of actin networks. *Biochemical Journal* 2025
- Colin *et al.,* Friction patterns guide actin network contraction. *PNAS* 2023
- Colin *et al.*, Recycling of the Actin Monomer Pool Limits the Lifetime of Network Turnover. *The EMBO Journal* 2023