

Internship proposal M2/PhD

Institut Jacques Monod, Université Paris-Cité, CNRS

Team : 'Dynamique de la Régulation d'assemblage de l'actine'

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Study of the stability of branched junctions of actin filaments

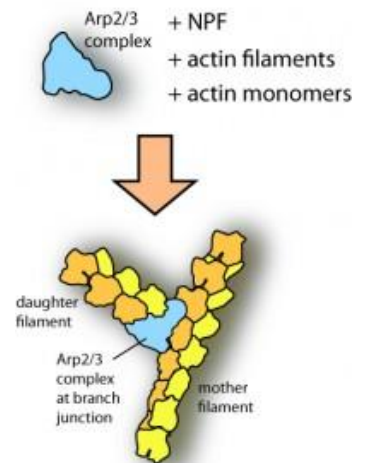
Project Summary

In cells, actin filaments form networks with different architectures and dynamics to perform important tasks. A key question is to understand how these networks are regulated.

In particular, the Arp2/3 protein complex allows the creation of a filament, in branch form, from an initial filament. The formation of branching filaments is a prominent mechanism in many actin networks, for example lamellipodia or those allowing invagination of the plasma membrane by endocytosis.

However, if the formation of branches by Arp2/3 is relatively well understood, their disassembly by biochemical or mechanical processes remains poorly studied despite its important role in the dynamics of actin networks.

The objective of this internship is to study, using original microfluidic approaches, coupled with fluorescence microscopy, how a branch junction can be targeted by other proteins to accelerate their disassembly. On the other hand, we will characterize how mechanical constraints applied to actin filaments can influence the lifetime of an Arp2/3 junction.



The 'Dynamics of Actin Assembly Regulation' team (www.actindynamics.net)

Our laboratory conducts research at the interface between biochemistry, cell biology and physics. Over the years, we have developed biophysical experimental approaches based on microfluidics and micropatterning to decipher the individual molecular reactions regulating the emergence of actin networks.

The team gathers, in a very dynamic atmosphere, 16 researchers/students/engineers with multidisciplinary skills, from 5 different nationalities.

