

Université de Paris, Master 1 BMC  
**Parcours Biologie Cellulaire**  
 Fiche de Projet de Stage, Année 2022-2023

<p><b>Unité CNRS : Institut Jacques Monod, UMR7592</b></p> <p><b>Intitulé Equipe :</b> Dynamique de la Régulation d'assemblage de l'actine</p> <p><b>Responsables de l'Equipe :</b> Antoine Jégou / Guillaume Romet-Lemonne</p>	<p><b>Responsable du Stage :</b> Antoine Jégou</p> <p><b>Contacts</b>  <a href="mailto:antoine.jegou@ijm.fr">antoine.jegou@ijm.fr</a>          tel.: +33 1 57 27 80 13</p>
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**Titre du projet : Deciphering the Role of Myosins in the Architecture of Actin Networks**

**Résumé du Projet de Stage** (en 300 mots maximum, mots clés en gras)

The **actin cytoskeleton**, consisting of interconnected filaments, plays a major role in many cellular functions. The roles of the **molecular motors** of the myosin family have often been limited to the contractility of the network or to transport cargoes. We now know that myosins heavily contribute to the dynamic organization of actin filaments into networks. Still how molecular motors work in cooperation with actin regulatory proteins is not fully understood.

The project is based on experimental approaches and aims at better understanding the molecular events that govern the **architecture and dynamics of actin networks**. In particular, using **in vitro approaches (microfluidics, micropatterning and fluorescence microscopy)**, we will study the growth rate of actin networks in the presence of myosins, their organization, as well as their mechanosensitivity.

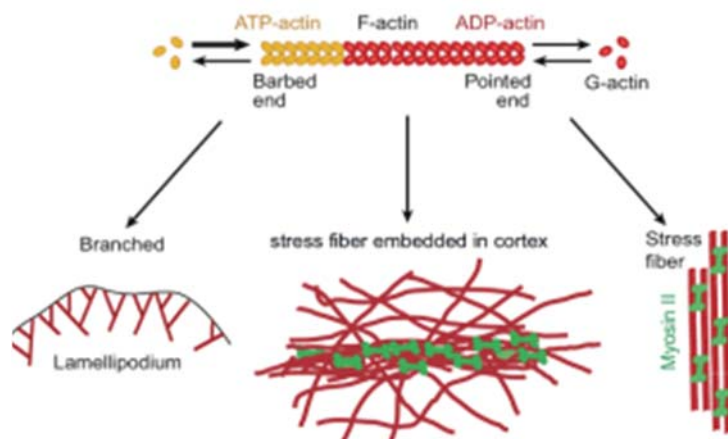
This internship will be carried out jointly with a Phd student, in order to work in pairs and thus be quickly productive. The experiments will allow us to discover the bases of actin cytoskeleton regulation, to discover the advantages of in vitro experiments with purified proteins to have a great control of the experimental conditions.

We are looking for curiosity-driven and motivated students who are open to original experimental approaches.

**The 'Regulation of Actin Assembly Dynamic' lab** ([www.actindynamics.net](http://www.actindynamics.net))

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

The team gathers 12 researchers/students/engineers with multidisciplinary skills, and from 5 different nationalities, to create a very dynamic atmosphere.



**Publications de l'équipe, relatives au stage proposé**

Suzuki et al. *Nano Letters* (2020) <https://pubs.acs.org/doi/full/10.1021/acs.nanolett.9b02241>  
 Jégou et al. *Nature Communications* (2013) <https://www.nature.com/articles/ncomms2888>