

6-Month Internship Microbiology / Biochemistry



Institut de Biologie Physico-Chimique, 75005 Paris

International & Multidisciplinary CNRS Institute, 5 scientific platforms

Team « **Physiology and Regulation of Protein Synthesis** »

Unit « **Microbial Gene Expression** » (CNRS UMR 8261)

https://egm.ibpc.fr/?page_id=32



Laura Monlezun (monlezun@ibpc.fr)



Deciphering the role of ABC-F proteins in the translation process in the model cyanobacterium *Synechocystis* sp. PCC6803

mRNA translation is at the heart of cells adaptation to the environment, yet its regulatory mechanisms remain largely unknown in cyanobacteria. Our laboratory is particularly interested in the two ABC-F proteins of *Synechocystis* sp. PCC 6803, which are novel regulators of translation.

Our preliminary results reveal their distinct roles in the response to light, motility, and the control of gene expression. During this internship, you will seek to identify the targets of these proteins and understand how ABC-F modulate translation. This project will contribute to a better understanding of cyanobacterial adaptation and, ultimately, to optimizing their use as sustainable “cell factories” for the development of more environmentally friendly energy solutions.

- ✓ **Motility phenotype (phototaxis)** on plate and by microscopy
- ✓ ***in vivo* ribosome profiling** on sucrose gradient
- ✓ **Proteins purification** (affinity, SEC)
- ✓ ***in vitro* translation assays** with *Synechocystis* purified ribosomes
- ✓ **Proteomic data analysis** and mRNA targets validation with **yfp translational fusions** (fluorescence measurements)
- ✓ **Structural characterization (cryo-EM)** of *Synechocystis* ribosomes
- ✓ **Genetic construction of a double ABC-F mutant** & phenotypic analysis



Potential opportunity to pursue a PhD, subject to funding

