Investigating the Curvature-Dependent Behavior of Septins Using Single-Molecule Fluorescence Polarization

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Project Description :

Understanding biological processes at the molecular scale, particularly within the cytoskeleton, is essential to decipher how cells maintain their shape, respond to mechanical forces, and coordinate their movements. This project is part of a collaboration with the SPINN laboratory, which is developing an innovative microscope capable of imaging single fluorescent molecules with polarization resolution.

We aim to conduct a study exploring the curvature sensitivity of septins both in vitro and in vivo. The project will first focus on developing biological model systems to validate the technique. Subsequently, proteins tagged with fluorescent markers sensitive will be produced to measure molecular-scale polarization. These proteins will be deposited on controlled-curvature substrates to monitor septin assembly in vitro using polarization imaging.

This project is offered as a Master's internship, with the possibility of continuation into a PhD, funded by the ANR. It will be performed in closed collabration with the SPINN laboratory and Aurélie Bertin specialist of septin.