

- **Location** : Physico-Chimie Curie (Institut Curie, [Paris city center](#), 75005)
- **Team**: Membrane and Cellular Function group led by Patricia Bassereau ([webpage](#))
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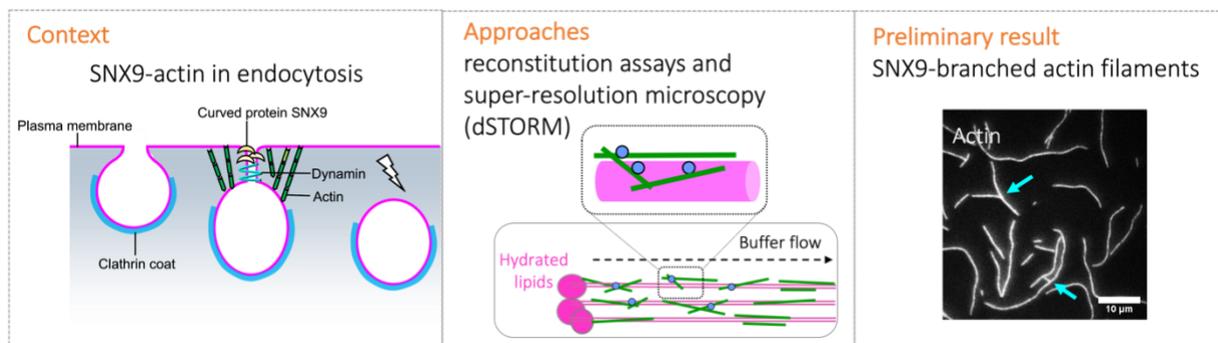
Title: Actin assembly mediated by curved membrane protein SNX9

Context

The actin cytoskeleton plays an important role in many cellular functions. A prominent example is endocytosis by which a cell can uptake nutrients or proteins from its surrounding environment. In endocytosis, the plasma membrane is bent inwards into the cell to form a spherical bud or a thin tube, and this bud or tube is then cut from the plasma membrane to generate a transport vesicle. Here, actin assembly facilitates the deformation of the plasma membrane. For actin to fulfill its cellular functions, it is crucial that actin assembly is precisely regulated. Cell biology studies have provided a never-ending list of proteins that regulate actin dynamics. Understanding how these actin regulatory proteins mediate actin assembly is critical to deepen our knowledge of actin's cellular functions. Here, we focus on one of the key actin regulatory proteins, a curved membrane protein called sorting nexin 9 (SNX9). SNX9 has been shown to regulate actin assembly during endocytosis. Yet, it is poorly understood how SNX9 mediates actin assembly on endocytic-like curved membranes.

Approaches

We will perform experiments using **cell-free model systems** composed of purified SNX9, actin and artificial model membranes. We will generate **cylindrical membrane tubes using microfluidic devices**. We will examine how SNX9 self-assembles on the tubes and mediates actin assembly using **super-resolution microscopy** (dSTORM, PAINT, and single particle tracking technique). To realize this project, our team is equipped with cutting edge super-resolution microscope, [Abbelight® 3D nanoscope](#) (SAFe 360 and RedSTROM).



Our team is part of the interdisciplinary lab, [Physico-Chimie Curie](#), at the Curie Institute, a highly stimulating and dynamic research institute located in Paris city center.

We are looking for highly motivated candidates with backgrounds in biophysics, biochemistry or biology who are interested in interdisciplinary research.