



Structure/ function analysis of the centriole using UltraExM

6 months internship – January to June 2019

Centrioles are evolutionarily conserved microtubule-based cylindrical structures that in human cells are ~450 nm long and ~250 nm in outer diameter. The centriole composes the centrosome in animal cells and can act as a basal body to template cilia or flagella in many eukaryotes. Centrioles are critical for the proper execution of several important biological processes, such as spindle assembly and cell signaling through the primary cilium as well as cells and fluids motion thanks to motile cilia/flagella. Therefore, centriolar defects have been associated to several pathologies including ciliopathies, sterility, microcephaly and cancer.

We are seeking an enthusiastic and highly motivated master student to study the centriole architecture in the green algae *Chlamydomonas reinhardtii* using UltraExM, a method of super-resolution microscopy that we recently developed:

<https://www.biorxiv.org/content/early/2018/04/25/308270>

Using a collection of several *Chlamydomonas* mutants for centriole genes, the master student will analyze the ultrastructural defect to better understand the role of several proteins in centriole biogenesis.



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