

Master 2 Internship

Title: Photoresponse of a microalgae swimming in a complex environment

Type: experimental

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PhD funding (if any): No

Project:

Photosynthetic micro-organisms contribute for half of dioxygen production, consume carbon dioxide, and are promising regarding biofuel production. This project aims to develop a quantitative approach describing the energetic state of these micro-organisms exploring their environment, a crucial aspect to better understand their motility behaviour. To tackle this problem, we will use the motile micro-algae *Chlamydomonas reinhardtii*, a model unicellular organism, performing photosynthesis (light-to-chemical energy conversion) and phototaxis (cell re-orientation along the light direction).

During this internship, the student will (i) observe and characterise the trajectories of cell exploring a confined environment, and (ii) measure the spatio-temporal evolution of photosynthetic properties of algae. To do so, the student would learn expertise in various domain, such as optics, instrumentation, cell culture and microfluidics.

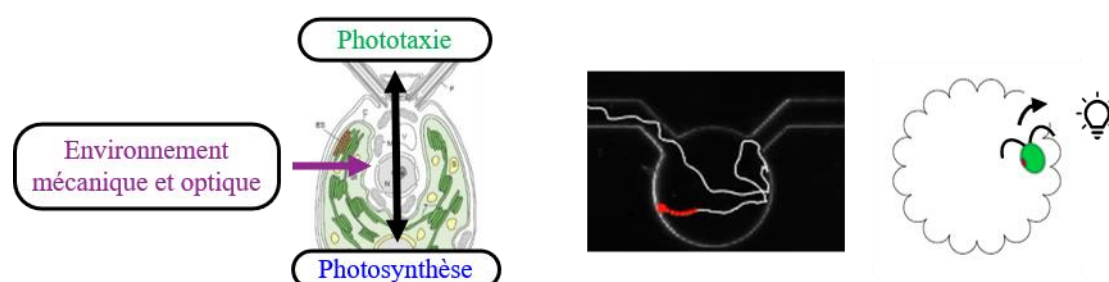


Figure 1: (Left) Project picture: Role of the environment on the link between phototaxis and photosynthesis in the model micro-algae *Chlamydomonas reinhardtii*. (Center) Presence of walls facilitates algae escape with narrow aperture [Souzy*, Allard* et al., 2022, PRR]. (Right) One aspect of the project would look at the cell behavior while confined in different physical and/or optical environment.

Techniques/methods in use: optics, microfluidics

Possibility for a Doctoral thesis: Yes (not already financed)