PhD position for the Project: Determining with molecular dynamics simulations what are the molecular structures and interactions responsible of photoprotection in plants

A PhD project at the interface of computational physics, chemistry and biology.

The successful candidate will be part of the Photon Harvesting in Plants and Biomolecules research group led by Prof. Dr. Nicoletta Liguori.

The goal of the project is to better understand how plant photoprotection works at the molecular level.

Sunlight is a fluctuating form of energy and as soon as irradiance becomes suddenly too strong, plants must swiftly dissipate the surplus of absorbed energy to avoid photodamage. Such energy dissipation is achieved via a molecular mechanism called photoprotection. Photoprotection is activated by a change in pH in the luminal side of the photosynthetic membrane and by the interaction between specific proteins and the light-harvesting complexes of plants. But how does this mechanism actually work?

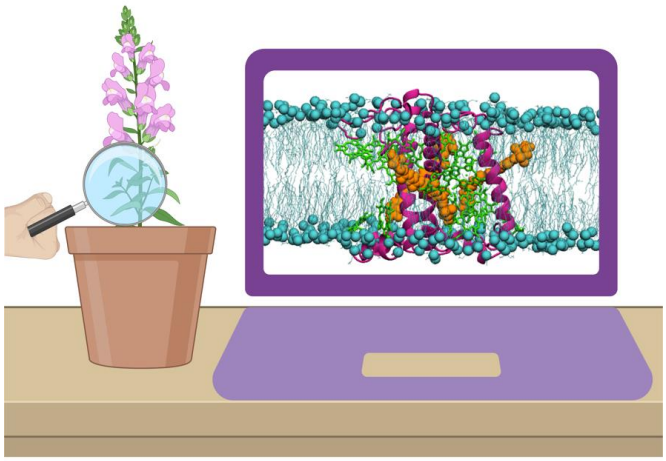
The PhD candidate will use a combination of atomistic and coarse-grained molecular dynamics methods able to capture the role of pH in activating photoprotection. The student will also apply in silico mutational analysis and pinpoint what is the set of structures and interactions responsible of activating photoprotection in plants.

The results of this project can significantly advance our knowledge on how plants regulate their response to fluctuating sunlight.

Secondment and international collaborations: The project involves an exciting network of computational and experimental collaborators and will include several secondments abroad in top European institutes and companies.

Profile of the candidate:
Students with an excellent academic track record, previous research experience with molecular dynamics simulations of protein systems at either or both atomistic and coarse-grained level and a Master degree (or equivalent) in either Physics, Chemistry or related. Previous experience with constant pH-molecular dynamics and/or ab initio methods will be considered a bonus. Strong English written and spoken communication skills are also required. Students driven by a vivid curiosity to investigate how nature works from the molecular point of view are strongly encouraged to apply. Previous knowledge of photosynthesis and light-harvesting is beneficial but not required.

Application procedure
The formal application should be submitted online via our currently open PhD Call: https://jobs.icfo.eu/?detail=751
Candidates may contact jobs@icfo.eu for informal enquiries regarding the application, as well as address scientific enquiries to Prof. Dr. Nicoletta Liguori (nicoletta.liguori@icfo.eu). Deadline: June 14, 2023.



OPEN PhD position:
Molecular dynamics simulations of photosynthetic complexes
@ICFO, Barcelona in Nicoletta Liguori's lab