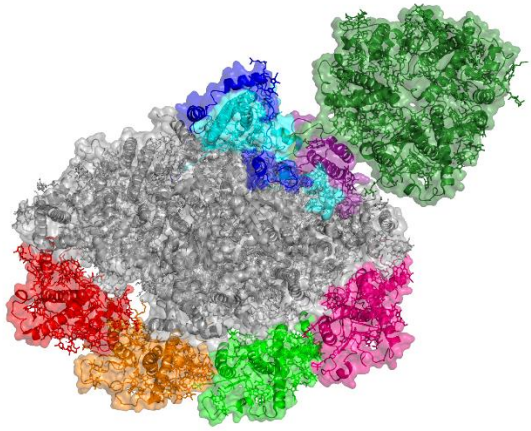
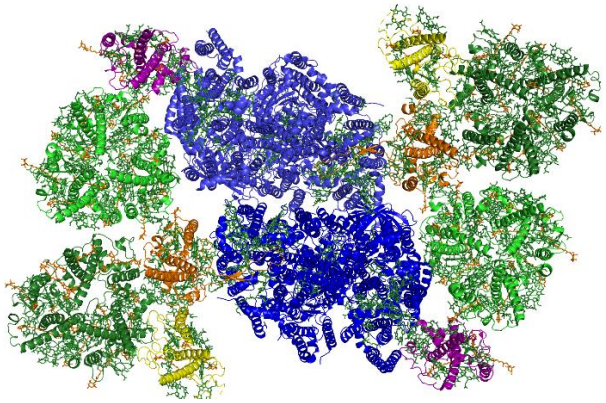
Improving the light harvesting capacity by mutational analysis of LHCII

Thesis about the efficiency of photosynthesis at Biophysics, as part of a MSc (can be adjusted to BSc) internship in the programs of Biotechnology or Molecular Life Sciences.

LHCII is the major light harvesting antenna protein expanding the absorption cross-section of both PSII and PSI. However, only recently it became possible, using CRISPR-Cas9, to obtain mutants lacking LHCII with which the role of LHCII in light-harvesting and state-transitions can be further elucidated. Furthermore, specific mutations in LHCII will most probably increase the photosynthetic efficiency of plants, thereby increasing the biomass production. In this project you'll create mutations and re-introduce the mutated LHCII back into the mutants. You'll then assess the effects these mutations have on the photosynthetic efficiency.



PSI-core with LHCII in dark-green and the monomers of LHCI (in red, orange, light-green and magenta)



PSII (blue) with the monomeric antenna Lhcb4 (orange), Lhcb5 (purple) and Lhcb6 (yellow) and LHCII in dark-green

You will learn:

- How to work with *E. coli*, *A. tumefaciens* and *A. thaliana*
- How to create mutations and constructs for the transformation of plants
- How to use chlorophyll fluorescence to assess the photosynthetic efficiency
- Literature research and data interpretation

MSc-thesis project:

In-vivo mutational analysis of LHCII in *A. thaliana*

Further information:

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