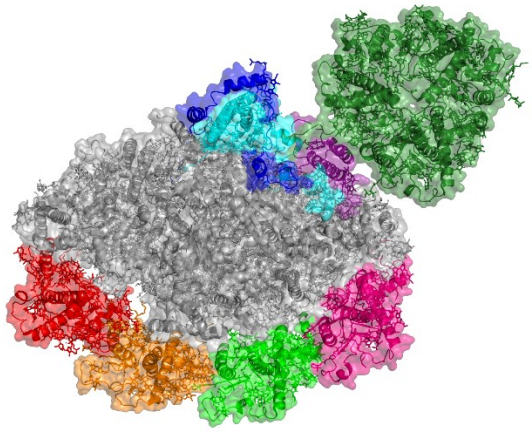
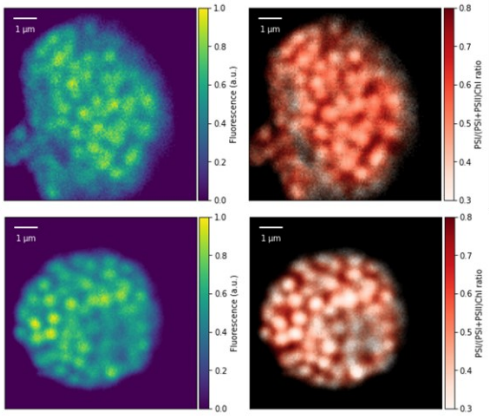
In-vivo localization of Photosystem I by fluorescent tagging using molecular genetics

Thesis about localizing Photosystem I (PSI) *in-vivo* using fluorescent tags in plants (*A. thaliana*) at Biophysics, as part of a MSc (can be adjusted to BSc) internship in the programs of Biology, Biotechnology or Molecular Life Sciences.

In plants, the chloroplasts harbor Photosystem II and I (PSII and PSI) which work in tandem to drive the electron transport chain that powers CO_2-assimilation. The two photosystems are well separated in so-called grana (PSII) and stroma (PSI) membranes. However, while PSII is strongly fluorescent and as such the grana stacks are easy to image using fluorescence microscopy, the PSI fluorescence is very dim. To visualize PSI it needs to be tagged with a fluorescent protein such as GFP. In this thesis-project you'll be responsible for designing and creating such a construct, followed by the transformation of *A. thaliana* and the *in-vivo* localization of PSI in the chloroplasts using fluorescence microscopy.



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



Fluorescence Microscope images of isolated A. thaliana chloroplasts, The brighter spots are the grana-stacks containing PSII

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 a fluorescence microscope
- Literature research and data interpretation

Further information:

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