

Activity Report CM01 mx2304 – 09 to 12 October 2020

We aim at solving the structure of temporal supercomplexes formed around Photosystem I (PSI) during steady state and under stress conditions by the cryo EM technique. So far our visits yielded four high-resolution structures of Photosystem I (PSI) from the halotolerant green algae *Dunaliella salina*, *Chlamydomonas reinhardtii* and the red algae *Cyanidioschyzon merolae* (Perez-Boerema et al., 2020; Caspy et al., 2020; PDB 6RHZ; PDB 6SL5 and two structures to be submitted). In the previous experiment we attempted solving larger complex of PSI from TSP4 temperature sensitive mutant of *Chlamydomonas reinhardtii*. 3D classification clearly shows two classes of particles; smaller one with 10 light-harvesting complexes and larger supercomplex that was not observed before. Figure 1 shows the high-resolution structure of the PSI with 10 light-harvesting complexes. The larger form was not yet solved at high resolution. In the current experiment we collected over 12,000 movies of a PSI-b6f supercomplex from *Cyanidioschyzon merolae*; the structure of which was not solved from any organism. The 3D initial structure, presented in Figure2, strongly suggests that obtaining a high-resolution structure is highly likely. We would like to continue our program and in next visit to collect data PSII isolated from a *Chlamydomonas* temperature-sensitive mutant that lacks b6f complex at elevated temperature (Schwartz et al., unpublished).

The 3 days experiment excited all my expectations. The handling of the experiment by the coordinator was superb.

Figure 1. Structure of PSI isolated from TSP4 mutant of *Chlamydomonas reinhardtii* grown at non-permissive temperature.

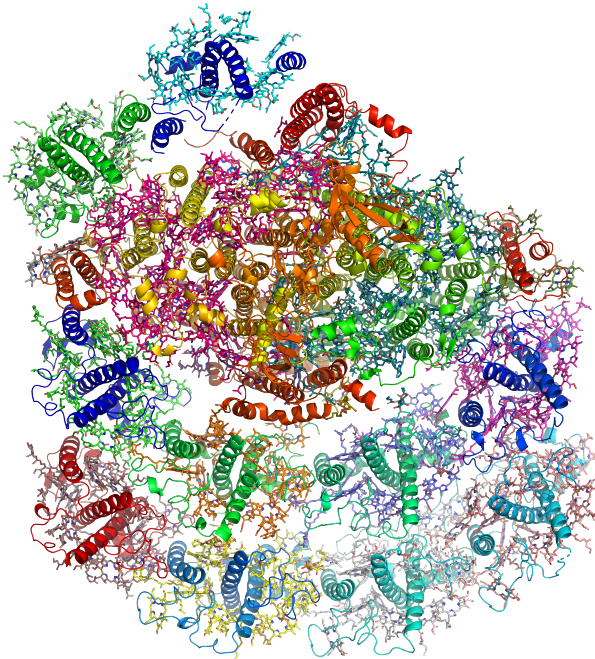


Figure 2 Initial 3D structure of PSI-b6f supercomplex from *Cyanidioschyzon merolae*.

