



	Experiment title: Structure analysis of light-responsive and human disease related proteins	Experiment number: MX-539
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Shifts: 3	Local contact(s): Dr. Olivia SLEATOR	
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Report:

Photosystem II (PSII) is multisubunit complex embedded in the thylakoid membrane of higher plants, algae and cyanobacteria that catalyzes the oxidation of water to atmospheric oxygen.

So far the highest resolved structure of PSII with resolution of 3Å was obtained in the previous proposal period MX-335. But there is strong need to obtain higher resolution structure to overcome limitations of current model.

Apart from improving the preparation and crystallization of dimeric PSII, we have isolated PSII monomer that is enzymatically as active as dimer and shows the same subunit composition.

Dataset from monomer crystals has been collected. Data were less mosaic than before, but crystals were still prone to radiation damage, the strong decay in resolution was observed leading from starting 5 Å to less than 6 Å after total collection. Due to limited size of crystals, technique which we used before to collect full dataset by joining partial datasets collected from different places of one crystal, was not applicable.

Additional native dataset was collected from small crystals of recombinant PsbO with resolution limit up to 2.1 Å, but resolved structures showed no presence of PsbO, but only of cocrystallized diffusion protein.

During the same experiment we checked the quality of crystals of dimeric PSII grown under slightly different conditions and with other cryo protectants, as crystals still suffer from

anisotropy and diffusing scattering. But we didn't get any significant improvement in comparison with previous results.