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Crystal structure of cyanobacterial photosystem II. Tina M. Iverson, Kristina N. Ferreira, Karim Maghlaoui, Jim Barber and So Iwata.

Photosystem II (PSII) is an integral-membrane multi subunit enzyme that uses light energy to initiate the electron transport chain in plants and cyanobacteria. This enzyme complex uses H₂O as the initial electron donor with molecular O₂ as the side product. The crystal structure of cyanobacterial PSII has been determined at 3.5 Å resolution. From this data, side chains could be assigned to the model and 19 subunits were assigned. In addition, anomalous scattering techniques have been used to identify the positions of the metals in the Mn₄CaO₄ cofactor that catalyzes the water oxidation chemistry. Modification of the protein preparation and crystallization procedure were critical for obtaining crystals and may prove to be useful as general techniques for the crystallization of membrane proteins.