

Poster Presentation

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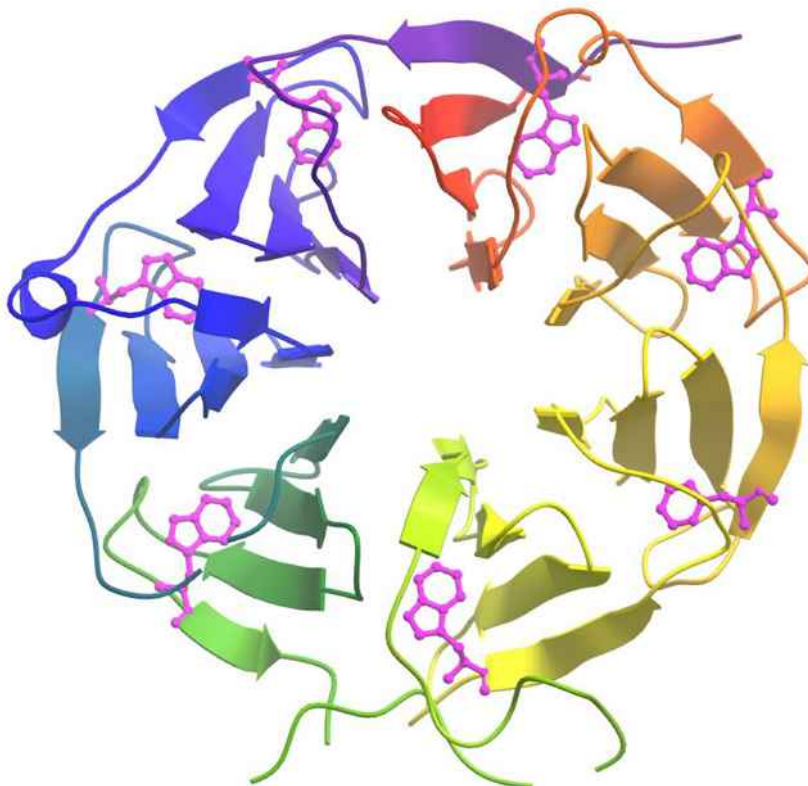
Photosystem II assembly factor HCF136 from A. thaliana at 1.67 Å resolution

R. Bergdahl¹, C. Grundström¹, P. Storm¹, W. Schröder^{1,2}, Sauer^{1,3}

¹Umea University, Department of Chemistry, Umea, Sweden, ²Umea University, Umeå Plant Science Centre, Umea, Sweden, ³Umea University, Computational Life Science Cluster, CLiC, Umea, Sweden

The High Chlorophyll Fluorescence 136 protein (HCF136) is essential for the assembly and repair of Photosystem II (PSII) and its central reaction centre (RC)[1]. HCF136 is an abundant protein in the thylakoid lumen and has been suggested to directly interact with subunits of the RC. The multi-subunit pigment-protein PSII complex is imbedded in the thylakoid membrane of the oxygenic photosynthetic organisms, and responsible for water splitting during oxygenic photosynthesis. PSII harbours more than 20 different integral and peripheral membrane proteins and its assembly requires a high level of coordination[2]. Two proteins D1 (psbA) and D2 (psbD) form the core of the complex and bind most of the redox-active co-factors. The PSII RC contains, in addition to D1 and D2, the intrinsic PsbI subunit and cytochrome b559. Light is a harmful substrate and subunits are damaged during the water-splitting reaction. The largest irreversible damage is experienced by the central D1 protein that has the highest turnover rate of all thylakoid proteins. Analysis of mutated *A. thaliana* has identified HCF136 as an essential factor for PSII RC assembly and RC turnover and repair[3]. In order to gain functional and structural insight in the way the HCF136 protein is involved in the PSII repair cycle, we have cloned, expressed, purified and crystallized the HCF136 protein from *A. thaliana*. Here we present the structure of this doughnut shaped WD40 domain family protein determined at 1.67 Å resolution. Biochemical and biophysical analysis of HCF136 and components of the PSII RC are under way.

[1] Meurer, J. et al. (1998) *EMBO J.* 17, 5286-5297., [2] Aro, E-M. et al. (2005) *J. Exp. Bot.* 56, 347-356, [3] Komenda J. et al. (2008) *JBC* 283, 22390–22399



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