

THE *Synechocystis* FTSH PROTEASE SLR0228 IS INVOLVED IN THE CONTROL OF SELECTIVE D1 TURNOVER AS WELL AS CELLULAR LEVEL OF UNASSEMBLED CP47 AND D2.

STANISLAVA KUVIKOVÁ^{1,2}, JOSEF KOMENDA^{1,2}, PETER NIXON³
and MARTIN TICHÝ^{1,2}

¹Laboratory of Photosynthesis, Institute of Microbiology, Opatovický Mlýn, Trebon, Czech Republic, ²Institute of Physical Biology, University of South Bohemia, Zámek 136, Nové Hrady, Czech Republic, ³Department of Biological Science, Imperial College, London, SW7 2AY, UK

A homologue of the bacterial protease FtsH (slr0228) has been recently shown to affect the selective D1 turnover in the cyanobacterium *Synechocystis* PCC 6803 [1]. Detailed analysis of synthesis and accumulation of Photosystem II proteins in the FtsH deletion mutant (Δ FtsH) by native electrophoresis showed similar level of D1, D2 and CP43 synthesis confirming the lack of the D1 selective turnover in the strain. In addition, increased levels of PSII core complex lacking CP43 and especially unassembled CP47 were found in the mutant. When the gene encoding FtsH protease was removed from the strain lacking D2 due to deleted psbEFLJ operon, the overall level of the unassembled CP47 markedly increased reaching the level of the PSII assembled protein in the wild type. In contrast, levels of free unassembled D1 and CP43 proteins remained nearly unchanged. Similarly, in the Δ FtsH mutant lacking the D1 protein the level of free CP43 was unaffected while the cellular content of the D2 protein increased to the wild type level. The results confirmed the role of the FtsH protease 0228 in the selective D1 turnover and, in addition, they showed that also the levels of free CP47 and D2 proteins are regulated by this protease.

REFERENCE

1. Silva, P.A., Thompson, E., Bailey, S., Kruse, O., Mullineaux, C.W., Robinson, C., Mann, N.H. and Nixon, P.J. FtsH is involved in the early stages of repair of Photosystem II in *Synechocystis* sp PCC 6803. **Plant Cell** 15 (2003) 2152-2164.