Nixon, P.J. *et al.* (2012) Subunit composition of CP43-less Photosystem II complexes of Synechocystis sp. PCC 6803: implications for the assembly and repair of Photosystem II. *Philos. Trans. Roy. Soc. B* **367** (1608).

Supplementary Figures

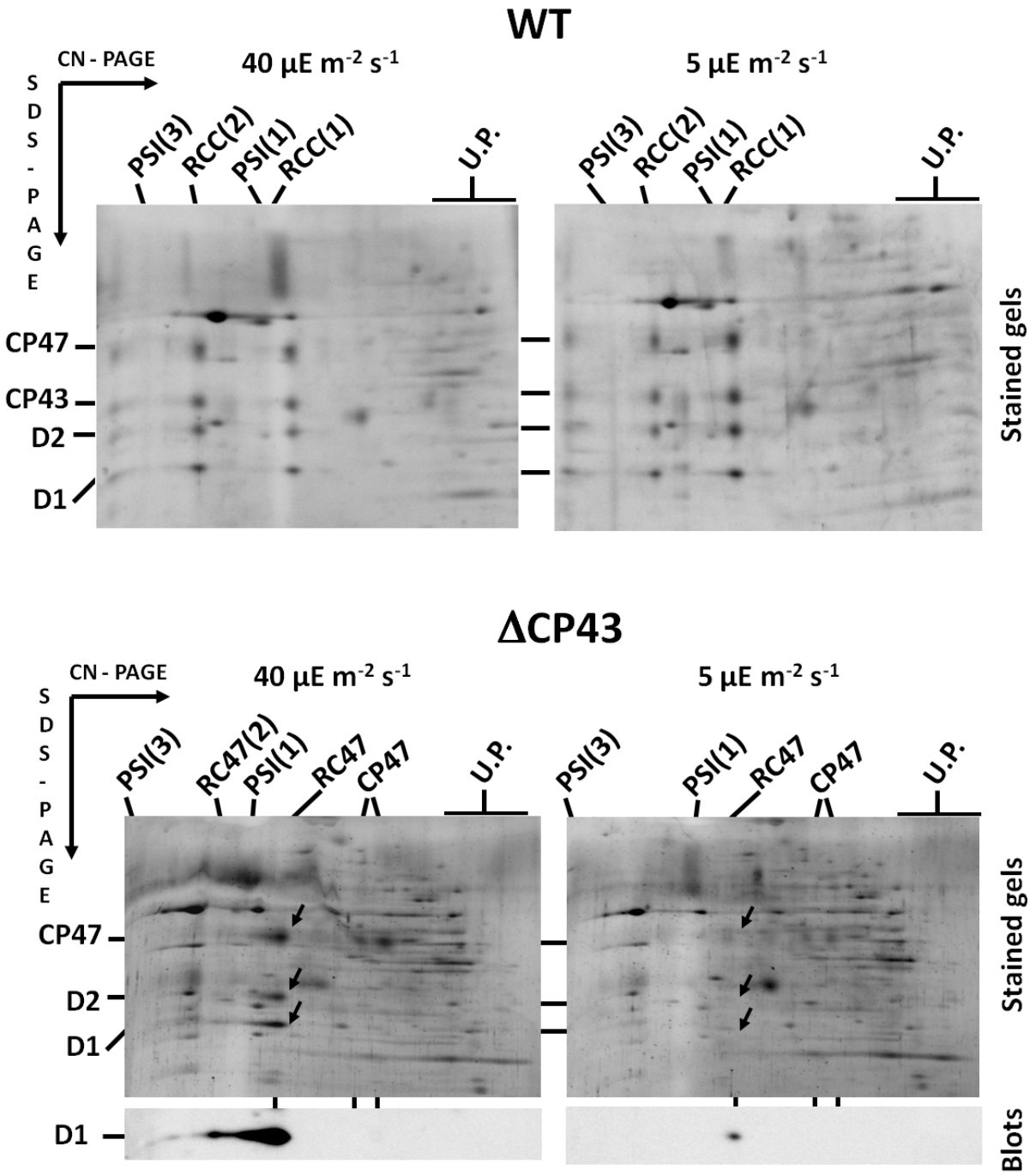

Figure S1: Comparative two-dimensional analysis of thylakoid membranes isolated from the WT *Synechocystis* 6803 and ΔCP43 strains grown at irradiance of either 40 (left panels) or 5 (right panels) µE m^{-2} s^{-1}. Thylakoid membranes corresponding to an amount of 4 µg Chl *a* were separated on 4 to 14 % (w/v) polyacrylamide (PAA) CN-PAGE linear gradient gel and another 12-20 % (w/v) PAA SDS-PAGE gel was used for the second dimension. The gels were

stained with Sypro Orange (Stained gel), then blotted onto PVDF membrane and sequentially probed with antibodies against the D1 protein (Blots). The positions of the trimeric (PSI(3) and monomeric (PSI(1)) PSI complexes, dimeric (RCC(2)) and monomeric (RCC(1)) PSII core complexes, putative dimeric (RC47(2)) and monomeric RC47 and unassembled CP47 complexes are indicated.

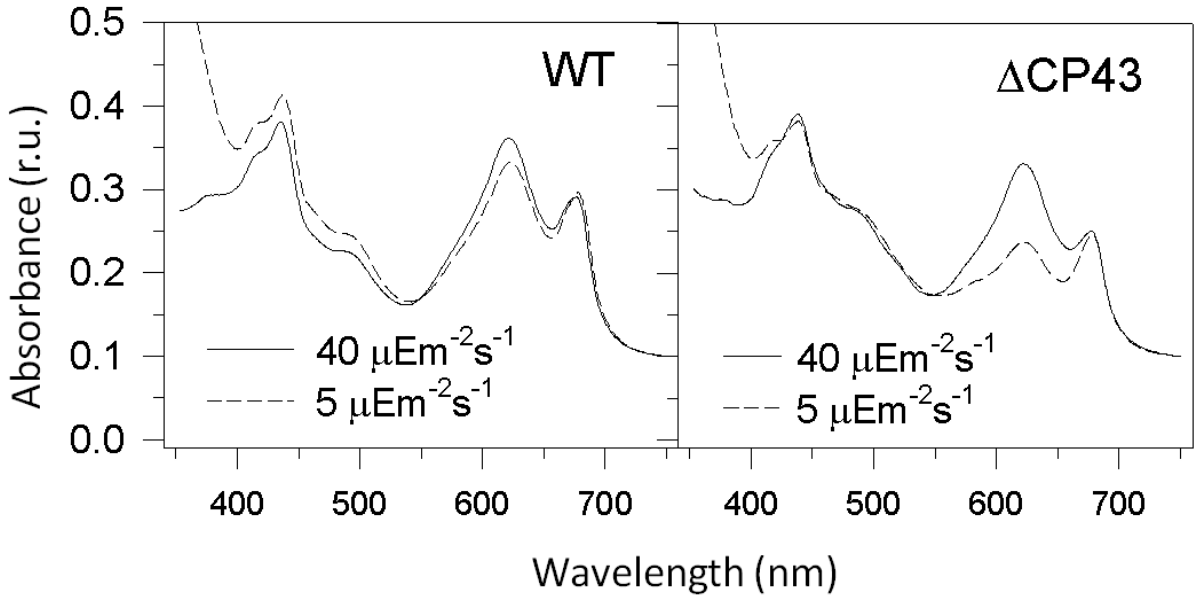

Figure S2: Absorption spectra of cells of the WT and ΔCP43 strains cultivated at an irradiance of 40 or 5 µE m^{-2} s^{-1} and then transferred to 100 µE m^{-2} s^{-1}. All spectra were measured using a Shimadzu UV3000 spectrophotometer using cultures with an identical OD_{750nm}.

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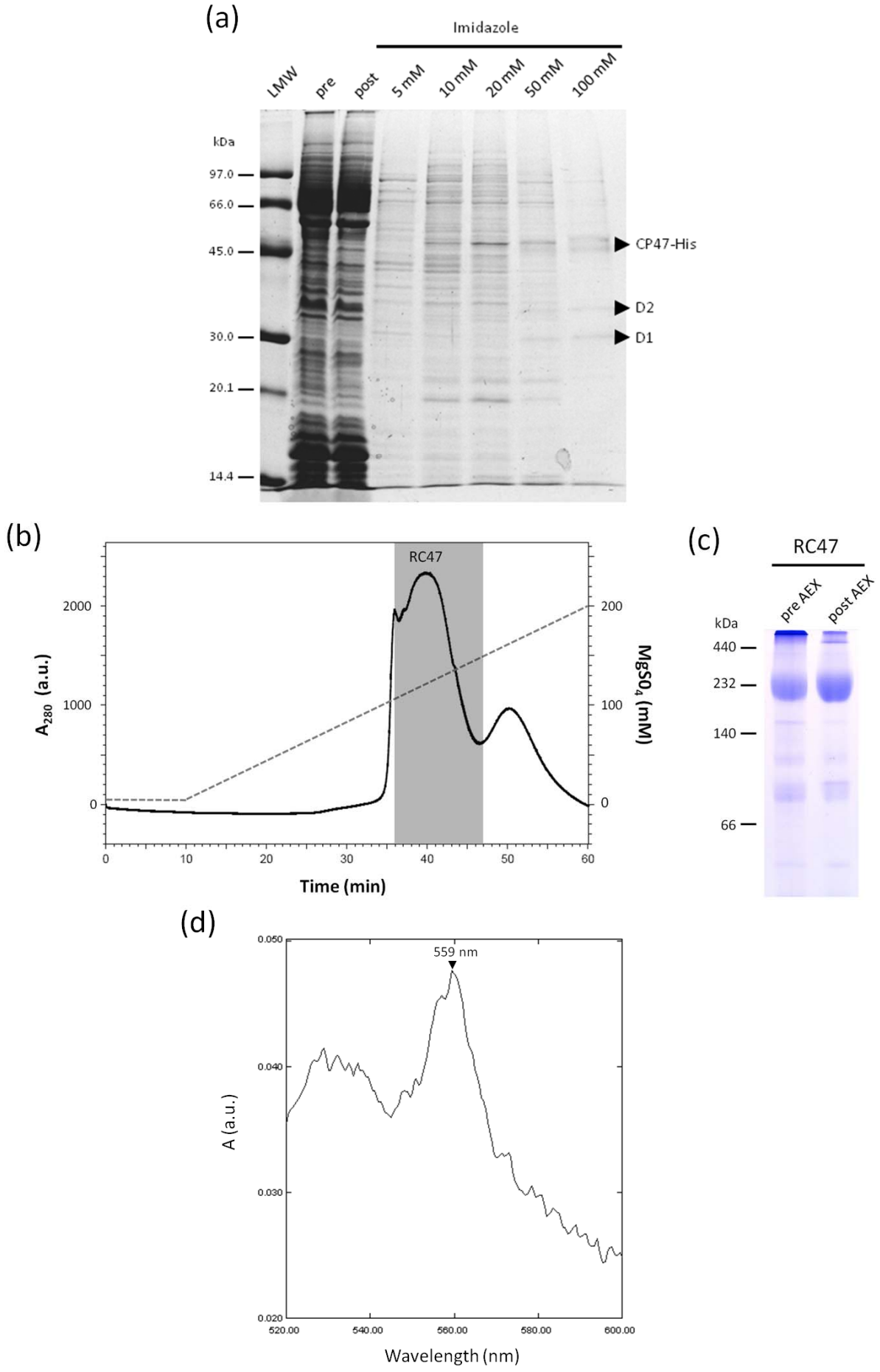

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Fig S3: Isolation and analysis of the RC47-His protein complex of *Synechocystis* sp. PCC 6803. (A) The fractions collected during the Ni^{2+}-affinity purification of the RC47-His protein complex from *Synechocystis* sp. PCC 6803 were analysed by SDS-PAGE. Pre and Post incubation samples (corresponding to an amount of 1 µg of Chl *a*) as well as equal amounts of samples taken from the various washes (5, 10 and 20 mM imidazole) and elutions (50 and 100 mM imidazole) were analysed on a 12.5 % (w/v) PAA SDS PAGE gel that was subsequently silver-stained. The positions of the D1, D2 and CP47-His proteins are indicated. (B) After the Ni^{2+}-affinity purification, the RC47-His complex was further purified by anion-exchange chromatography. The elution profile of the anion exchange chromatography run was monitored at 280 nm with the fractions that were later pooled marked by the gray area. The profile of the $MgSO_4$ linear gradient from 5 to 200 mM is indicated by the dashed line. (C) RC47-His protein complex samples (pre and post anion-exchange chromatography, Pre AEX and Post AEX, respectively) were analysed on an 8 to 12 % (w/v) PAA BN-PAGE linear gradient gel that was subsequently Coomassie-stained. Samples corresponding to an amount of 0.5 µg of Chl *a* were loaded per lane. High molecular weight (HMW) marker was obtained from GE Healthcare, UK. (D) Reduced-minus-oxidized difference spectrum of RC47-His complexes showing presence of the typical absorption peak for Cyt *b*-559 at 559 nm (indicated by an arrowhead).

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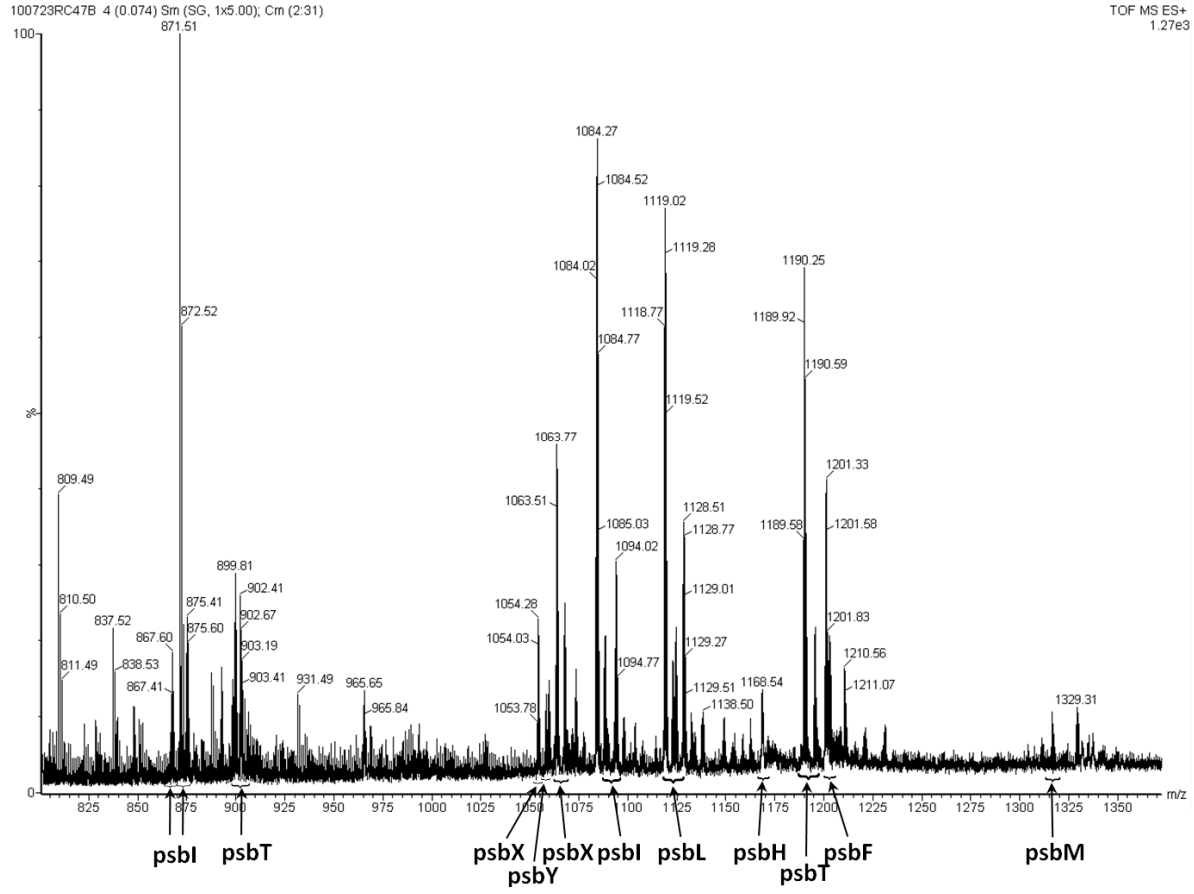

Figure S4: ESI-MS spectrum of the low-molecular-mass (LMM) proteins present in the RC47-His complex isolated from *Synechocystis* sp. PCC 6803. LMM proteins were precipitated in 80 % (v/v) acetone and dissolved in 70 % (v/v) acetone, 10 % (v/v) propan-2-ol and 1 % (v/v) formic acid for analysis by static nanoESI-MS. The following PSII subunits were detected: PsbF, -H, -I, -L, -M, -T, -X and -Y. Multiple signals for the same protein, represent different charge states or modifications.