

Figure S1. Verification of Flv protein double-mutant $\Delta flv1/\Delta flv3$ in *Synechocystis*. PCR was performed using isolated genomic DNA from WT, $\Delta flv1$, $\Delta flv3$ single-mutants or $\Delta flv1/\Delta flv3$ double-mutant and specific primers for *flv1* and *flv3*, respectively. Expected fragment lengths for WT are 1.6 kb for *flv1* and 0.9 kb for *flv3*. Expected fragment lengths for mutant alleles are 2.0 kb for *flv1* and 2.6 kb for *flv3*.

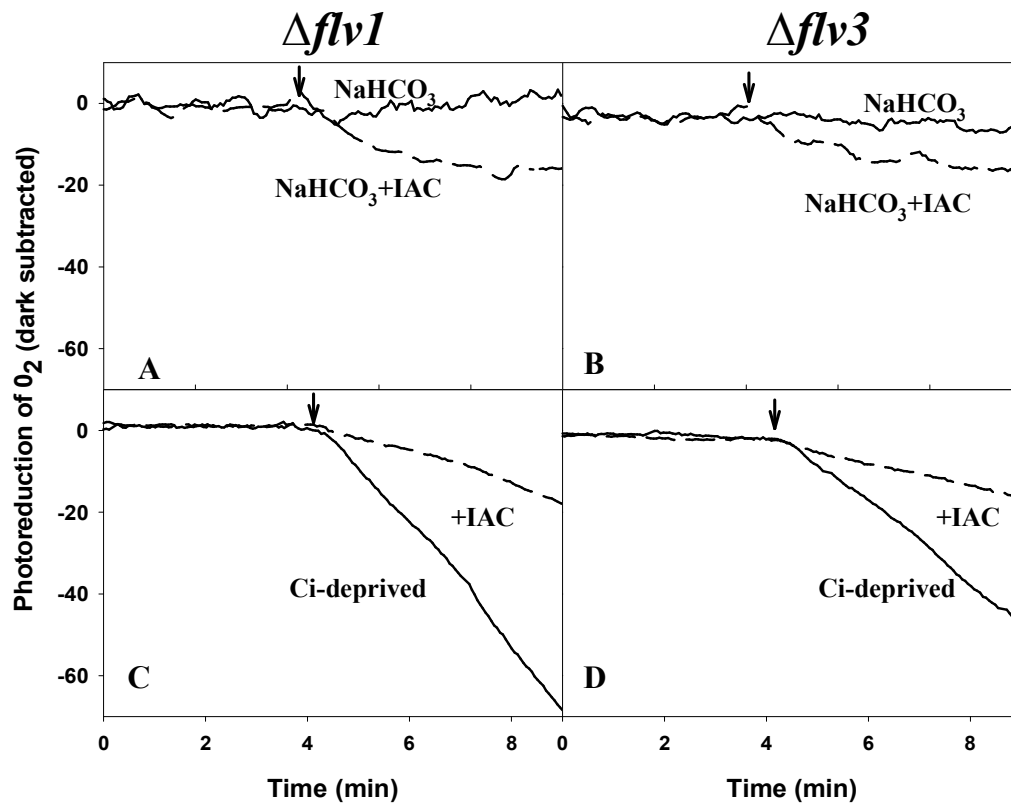


Figure S2. Effect of IAC on photoreduction of O₂ in the $\Delta flv1$ and $\Delta flv3$ mutant cells. O₂ photoreduction was monitored in the presence of 5mM NaHCO₃ (solid line) and in the presence of both 5 mM NaHCO₃ and 8 mM IAC (dashed line) from the $\Delta flv1$ (A) and $\Delta flv3$ mutant cells (B). Similar measurements were performed from the $\Delta flv1$ (C) and $\Delta flv3$ (D) cells after Ci-deprivation. Arrays show turning on the light. Cumulative O₂ uptake curve was calculated from ¹⁸O₂/¹⁶O₂ exchange measurements and is presented here after subtraction of dark O₂ uptake rate for better legibility.

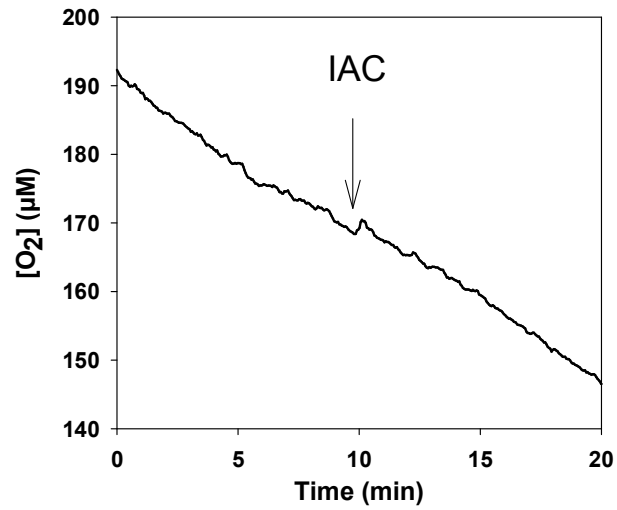


Figure S3. Effect of IAC on dark respiration.

Array shows the addition of 8 mM IAC to $\Delta flv1/\Delta flv3$ cells in the darkness.

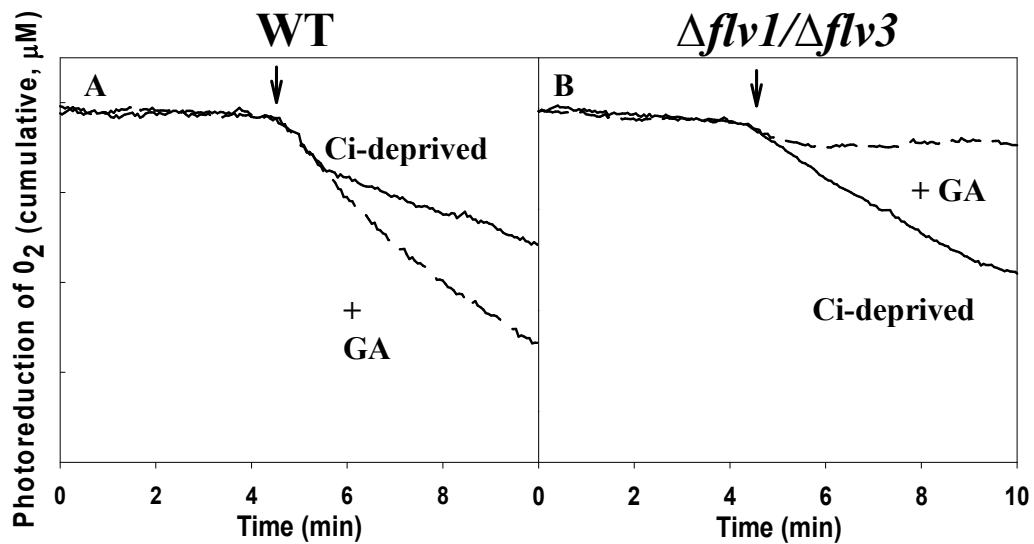


Figure S4. Effect of glycolaldehyde (GA) on photoreduction of O₂ in the WT and $\Delta flv1/\Delta flv3$ cells. O₂ photoreduction was monitored from the WT (A) and $\Delta flv1/\Delta flv3$ (B) cells after Ci-deprivation (solid line) and after addition of 10 mM glycolaldehyde (GA) to the Ci-deprived cells (dashed line). Arrays show turning on the light. Cumulative O₂ uptake curve was calculated from ¹⁸O₂/¹⁶O₂ exchange measurements and is presented here after subtraction of dark O₂ uptake rate for better legibility.