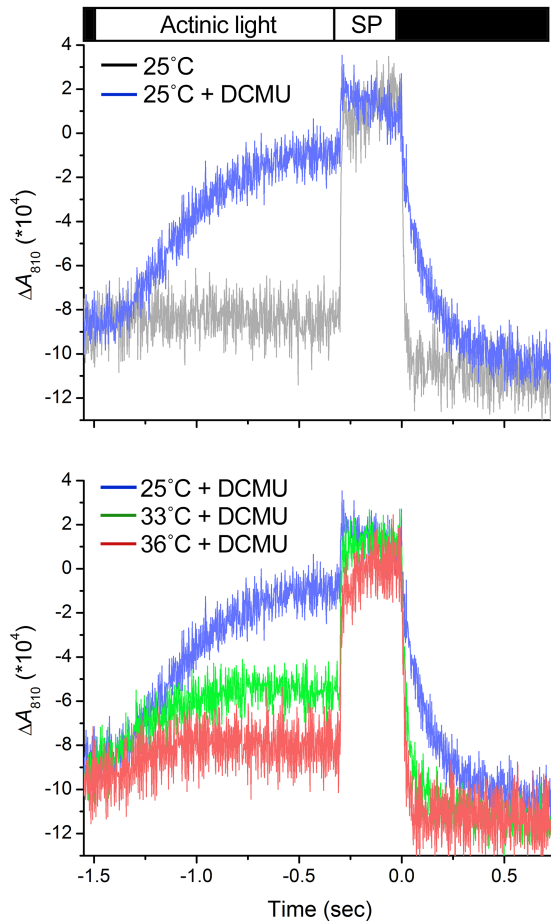
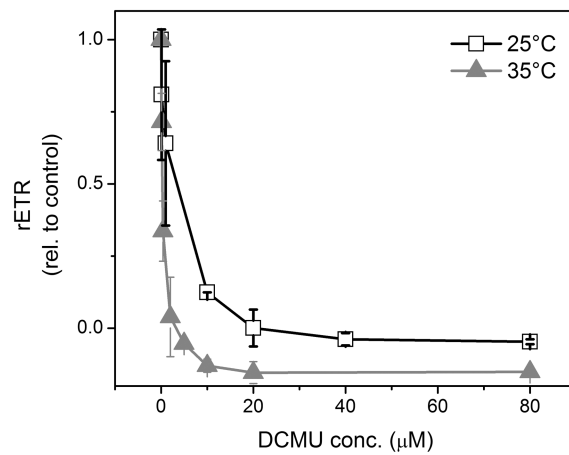


Supplemental Fig. 1



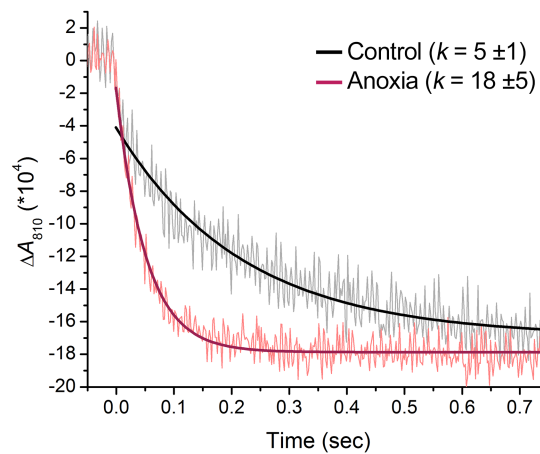
Supplemental Figure. 1. Kinetics of P700 oxidation/reduction in *Symbiodinium* OTcH-1 during light exposure. *Symbiodinium* cells were exposed to actinic light ($240 \mu\text{mol m}^{-2} \text{s}^{-1}$) for 1,200 ms followed by saturating white-light (SP; $2,000 \mu\text{mol m}^{-2} \text{s}^{-1}$) for 300 ms. Re-reduction of P700⁺ in the dark after SP (black bar) was analyzed. The upper and lower panels illustrate the original kinetics for Figs. 1A and B, respectively.

Supplemental Fig. 2



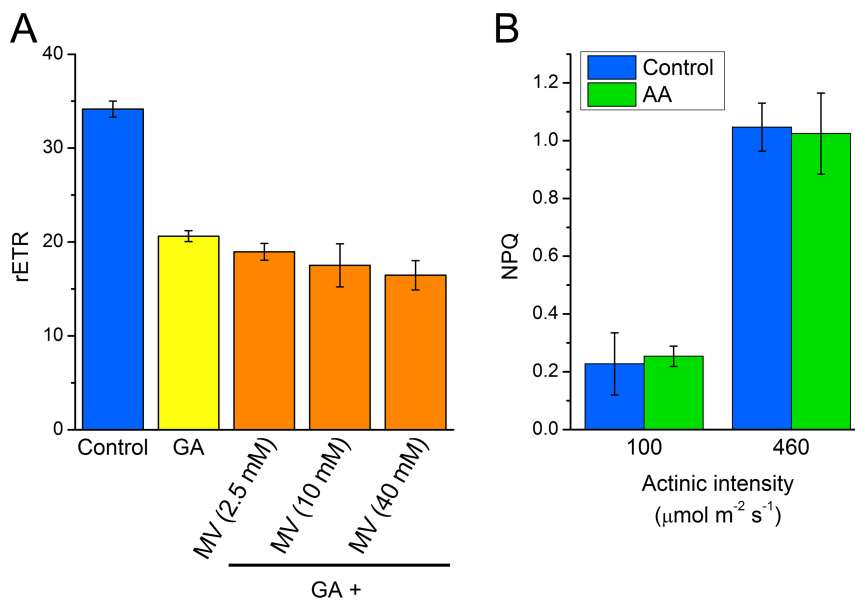
Supplemental Fig. 2. Effect of DCMU on electron transfer in PSII in *Symbiodinium* OTcH-1. Before measurements, the cells were incubated at 25°C or 35°C for 5 min in the dark, followed by the incubation in the presence of 0.1 – 80 μM DCMU at the same temperature for 10 min. rETR was determined after the cells were exposed to light at an intensity of 100 μmol photons m⁻² s⁻¹ for 1 min. The rETR values in the absence of DCMU (0 μM) at 25°C or 35°C were 37.2 ± 3 or 14.6 ± 3, respectively. The values are presented as the means ± the SDs from two independent experiments.

Supplemental Fig. 3



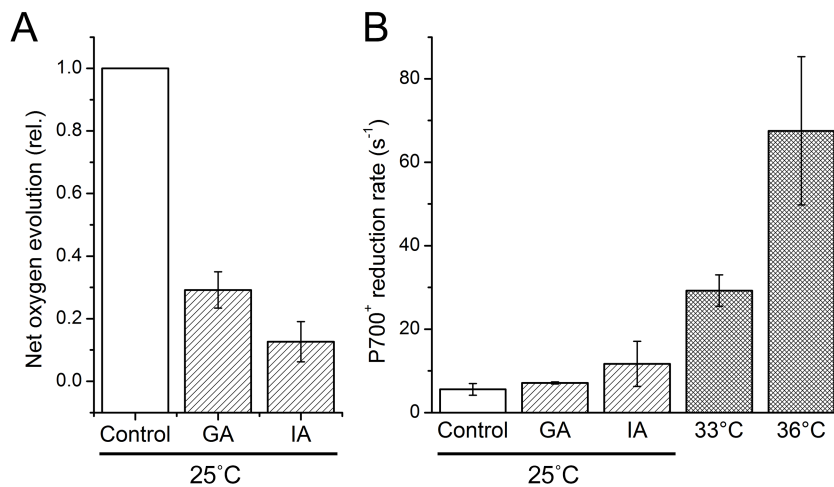
Supplemental Figure. 3. Effects of anoxia on the rate of P700⁺ reduction in *Symbiodinium* OTcH-1 in the presence of DCMU at 25°C. Anoxic conditions were induced by the addition of glucose oxidase (1 mg/ml), glucose (10 mM) and catalase (200 units/ml) to the sample medium. The data were obtained as shown in Fig. 1. The reduction rate constants shown (k) are the means \pm the SDs from three independent experiments.

Supplemental Fig. 4



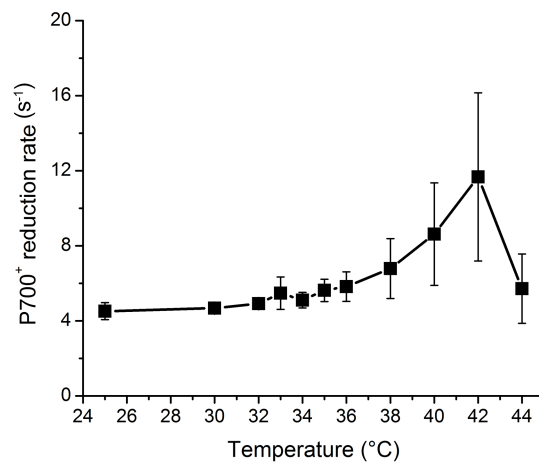
Supplemental Figure. 4. Methylviologen (MV) and antimycin A (AA) were not effective in *Symbiodinium* OTcH-1. A, Relative electron transfer rates (rETRs) in the presence and absence of 120 mM glycolaldehyde (GA) or 2.5 – 40 mM MV. rETR was determined after the cells were exposed to light at an intensity of $60 \mu\text{mol m}^{-2} \text{s}^{-1}$ for 3 min at 25°C . B, Non-photochemical quenching (NPQ) in the presence or absence of $100 \mu\text{M}$ AA. NPQ was measured after the cells were exposed to light at an intensity of 100 or $460 \mu\text{mol m}^{-2} \text{s}^{-1}$ for 5 min at 25°C . The values are presented as the means \pm the SDs of three independent experiments.

Supplemental Fig. 5



Supplemental Figure. 5. Effects of glycolaldehyde and iodoacetamide on the reduction of P700⁺ in the presence of DCMU in *Symbiodinium* OTcH-1. The cells were incubated at 25°C for 30 min in the dark in the presence or absence of glycolaldehyde (GA; 120 mM) or iodoacetoamide (IA; 5 mM) and used for the experiments. A, Relative photosynthetic oxygen production rates under light exposure at 2,000 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$. The photosynthetic oxygen production rate in the absence of inhibitor (control) was $109 \pm 13 \mu\text{mol O}_2 \text{ mg Chl}^{-1} \text{ hr}^{-1}$. B, The rate constants for P700⁺ reduction in the presence of DCMU. The rates at 33 and 36°C are from Fig. 1B. The values are presented as the means \pm the SDs of three independent experiments.

Supplemental Fig. 6



Supplemental Figure. 6. Effects of elevated temperatures on the P700⁺ reduction rates in *Chlamydomonas reinhardtii*. The cells were incubated at temperatures ranging from 25 to 36°C for 15 min in the dark before the measurements. The rate constants for P700⁺ reduction were assessed as in Fig. 1 in the presence of DCMU. The values are presented as the means \pm the SDs from three independent experiments.

Supplemental Table 1

| Description | <i>C. reinhardtii</i> | <i>Symbiodinium. sp</i> (Mf1.05b) | e-value |
|-------------|-----------------------|-----------------------------------|---------|
| PGR5 | EDP07159 | symbB1.v1.2.021026.t1 | 1.E-08 |
| PGRL1 | AEE84678 | symbB1.v1.2.019752.t1 | 2.E-13 |
| NDH2 | EDO96450.1 | symbB1.v1.2.028732.t1 | 3.E-25 |
| PTOX | EDP04078.1 | symbB1.v1.2.019638.t1 | 3.E-62 |

Supplemental Table. 1. Possible CEF components in *Symbiodinium*. The amino acid sequences of the proteins possibly involved in CEF or chlororespiration in *C. reinhardtii* were used as queries to search for counterparts in the genome of *Symbiodinium* Mf1.05b (Shoguchi et al., 2013). The accession numbers and e-values for the BlastP searches are shown.