Supporting Information

Reynolds *et al*. 10.1073/pnas.0805187105

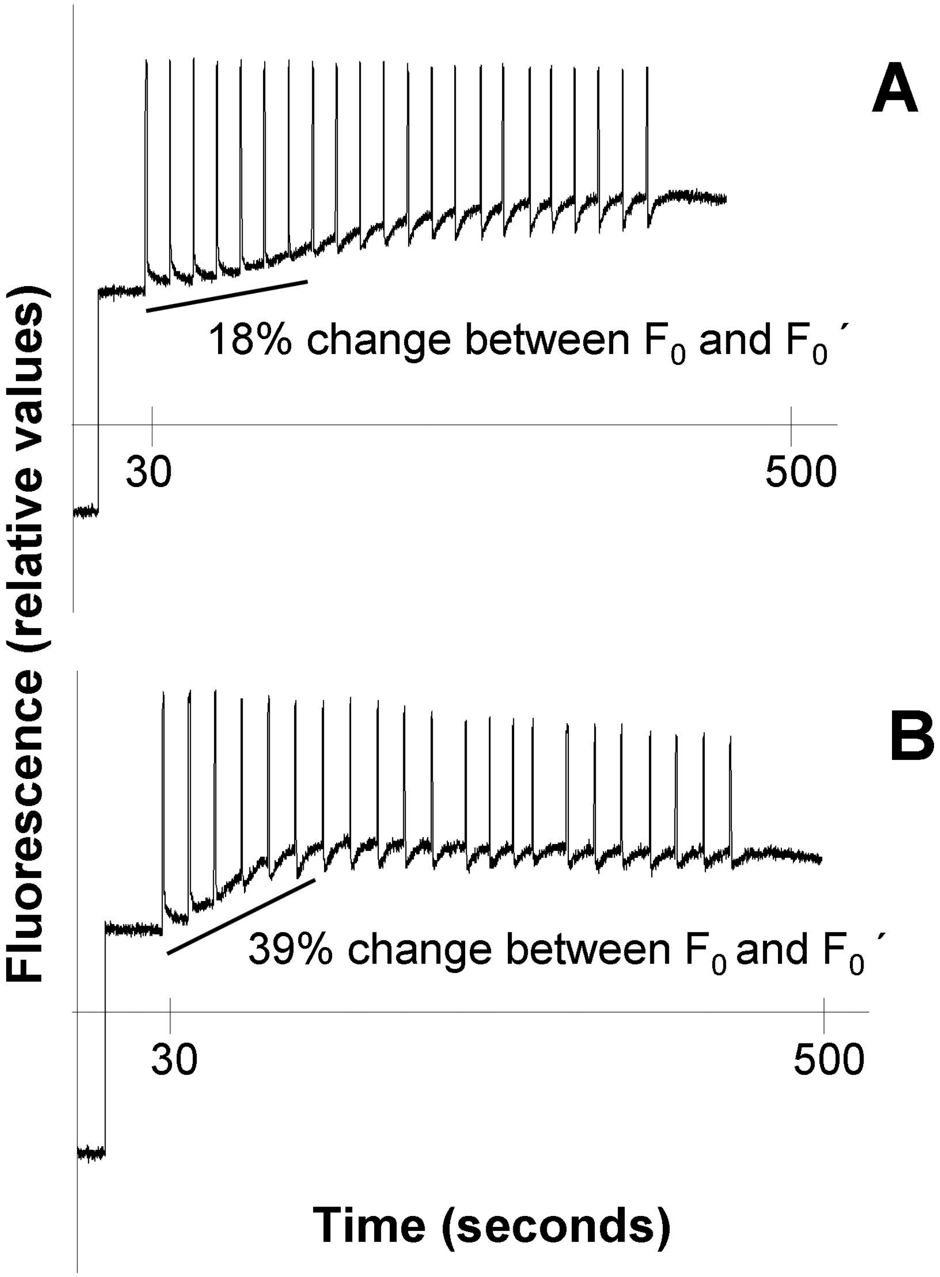

Fig. S1. Augmented non-linear electron transport under anaerobic conditions. Aerobic cells of culture subclade A4 (*A*) exhibit an 18% increase in the level of F_0' in serial irradiation pulses (SIP) progression through the sixth flash whereas an anaerobic sample of the same culture (*B*) shows a 39% F_0' increase. Oxygen as a downstream photosystem I (PSI) and chlororespiratory electron acceptor promotes both dark and flash-induced PQ oxidation and diminishes F_0' increases by SIP.

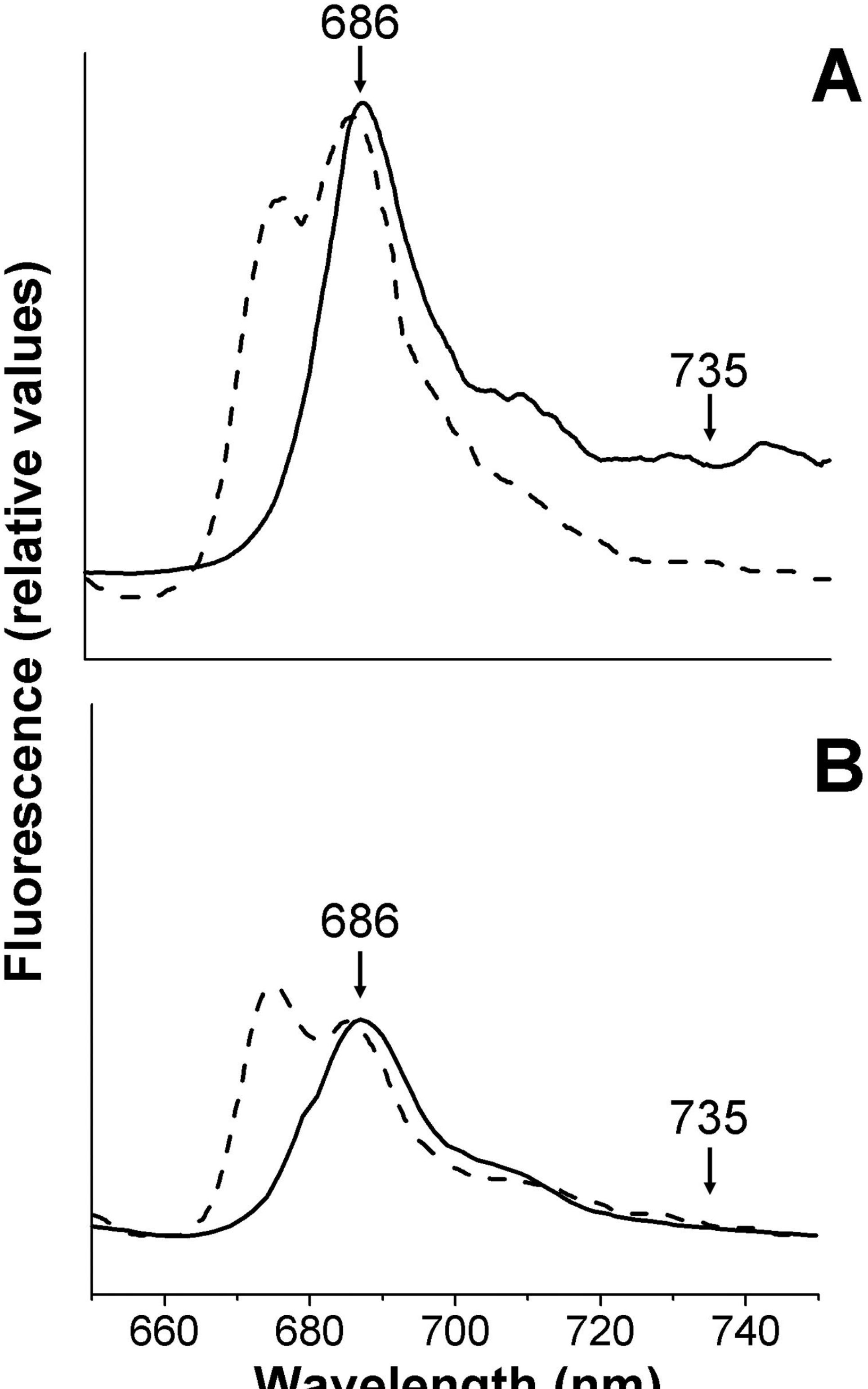

Fig. S2. Long wavelength emission spectra in clade A3 *Symbiodinium*. (*A*) The 77 K fluorescence emission spectra with excitation at 440 nm of cultured phylotype A3 *Symbiodinium* cells following a 60 min dark adaptation (solid line) and 100 min light acclimation (dashed line). (*B*) Emission spectra at excitation wavelengths of 530 nm following the same treatments. Dual peaks in both *A* and *B* under light acclimated conditions result from partial dissociation of peridinin–chlorophyll-*a*–proteins (PCPs) and intrinsic light-harvesting complexes (LHCs) from PSII. It is unclear to what extent PCPs and/or LHCs become associated with PSI because of the absence of a pronounced long-wavelength fluorescence peak. Both *A* and *B* were normalized to the 686-nm emission peak.

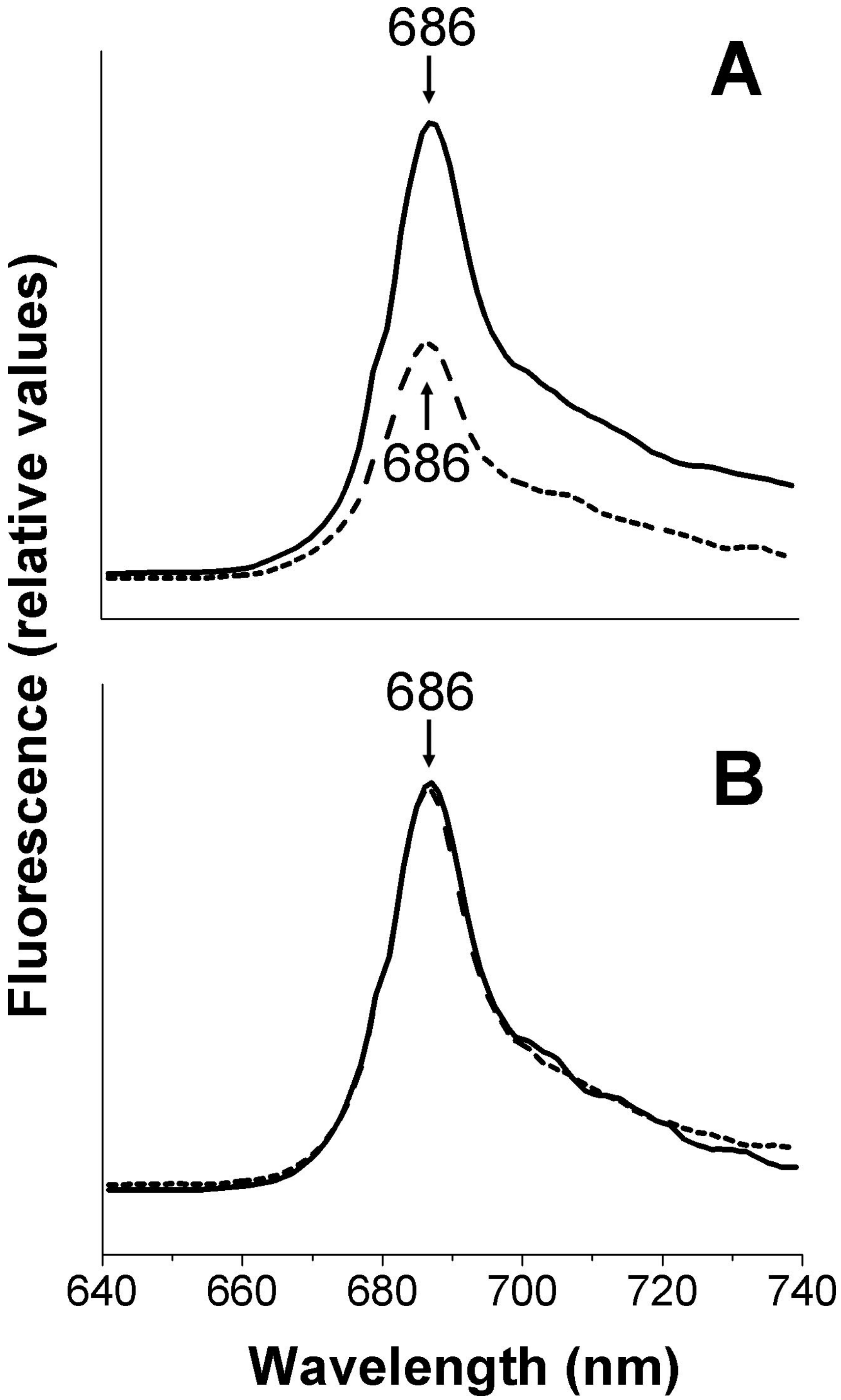

Fig. S3. Clades B and C LHC remain connected to PSII under high light conditions. The 77 K fluorescence emission spectra with a 440-nm excitation of phylotypes B2.1 (*A*) and C1 (*B*) from cultured *Symbiodinium* cells are identical after 60 min of dark (solid line) or high light (dashed line) acclimation. As compared with Clade A *Symbiodinium* (Fig. 4), clades B and C do not exhibit photoprotective antenna dissociation from PSII.

Table S1. SIP detection of CET in cultured and *in hospice Symbiodinium**

Clade/subclade[†]	Isolate number	*Symbiodinium* species	Geographic origin	Host origin	CET, present or absent
A1	61	*Symbiodinium microadriaticum*	Gulf of Aquaba	*Stylophora pistillata*	Present
A1	370	*S. microadriaticum*	Florida	*Cassiopeia xamachana*	Present
A2	97	*Symbiodinium sp.*	Puerto Rico	*Gorgonia ventalina*	Absent[‡]
A2	185	*Symbiodinium pilosum*	Jamaica	*Zoanthus sociatus*	Present
A2	350	*Symbiodinium corculorum*	Palau	*Corculum cardissa*	Absent
A3	292	*Symbiodinium sp.*	Palau	*Tridacna maxima*	Present
A3a[§]	PHMS TDIe 3.4[¶]	*Symbiodinium sp.*	Philippines	*Tridacna derasa*	Present
A4	379	*Symbiodinium sp.*	Bahamas	*Plexaura homamalla*	Present
B1	2	*Symbiodinium sp.*	Florida	*Aiptasia pallida*	Absent
B1	13	*Symbiodinium bermudense*	Bermuda	*Aiptasia tagetes*	Absent
B1	64	*Symbiodinium sp.*	Jamaica	*Cassiopeia xamachana*	Absent
B1	74	*Symbiodinium sp.*	Jamaica	*C. xamachana*	Absent
B1	146	*Symbiodinium sp.*	Jamaica	*Oculina diffusa*	Absent
B2	141	*Symbiodinium sp.*	Bermuda	*Oculina diffusa*	Absent
C1	152	*Symbiodinium goreaui*	Jamaica	*Discsoma sancti-thomae*	Absent
C2	203	*Symbiodinium sp.*	Palau	*Hippopus hippopus*	Absent
D1a	A001	*Symbiodinium sp.*	Okinawa, Japan	*Acropora sp.*	Absent*
D1a	CCMP2556	*Symbiodinium sp.*	Florida Keys	*Montastraea faveolata*	Absent
D2	401	*Symbiodinium sp.*		*Soritid*	Absent
F2	133	*Symbiodinium sp.*	Jamaica	*Meandrina meandrites*	Absent
A3	*In hospice*	*Symbiodinium sp.*	Bahamas	*Acropora cervicornis*	Present
A3	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Acropora cervicornis*	Present
A3	*In hospice*	*Symbiodinium sp.*	Bahamas	*Acropora palmata*	Present
A3	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Acropora palmata*	Present
A4a	*In hospice*	*Symbiodinium sp.*	Bahamas	*Porites astreoides*	Present
A4a + B1	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Porites astreoides*	Present
C	*In hospice*	*Symbiodinium sp.*	Bahamas - deep	*Porites astreoides*	Absent
B1	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Montastraea faveolata*	Absent
B1 shallow	*In hospice*	*Symbiodinium sp.*	Bahamas	*Montastraea faveolata*	Absent

Continued

Table S1. Continued*

Clade/subclade[†]	Isolate number	*Symbiodinium* species	Geographic origin	Host origin	CET, present or absent
B1 shallow	*In hospice*	*Symbiodinium sp.*	Bahamas	*Montastraea faveolata*	Absent
C12 deep	*In hospice*	*Symbiodinium sp.*	Bahamas	*Montastraea faveolata*	Absent
B1	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Montastraea annularis*	Absent
B1	*In hospice*	*Symbiodinium sp.*	Bahamas	*Montastraea annularis*	Absent
C3	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Montastraea cavernosa*	Absent
C3	*In hospice*	*Symbiodinium sp.*	Bahamas	*Montastraea cavernosa*	Absent
B1 or C3	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Montastraea franksi*	Absent
B1 or C12	*In hospice*	*Symbiodinium sp.*	Bahamas	*Montastraea franski*	Absent
C3	*In hospice*	*Symbiodinium sp.*	Bahamas	*Siderastrea siderea*	Absent
B5a or C3	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*S. siderea*	Absent
B5	*In hospice*	*Symbiodinium sp.*	Florida Bay	*Siderastrea radians*	Absent
B1	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Mancinia aereolata*	Absent
A4 + B1	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Porites furcata*	Present
ND	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*P. furcata*	Absent
B1	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Solenastrea hyades*	Absent
ND	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Millipora alcicornis*	Absent
ND	*In hospice*	*Symbiodinium sp.*	Key Largo, FL	*Porites porites*	Absent
ND	*In hospice*	*Symbiodinium sp.*	Bahamas	*Agaricia agaricites*	Absent
A4	*In hospice*	*Symbiodinium sp.*	Florida Bay	*Aiptasia tagetes*	Present
A4	*In hospice*	*Symbiodinium sp.*	Florida Bay	*Bartholomea annulata*	Present
A1	*In hospice*	*S. microadriaticum*	Florida Bay	*C. xamachana*	Present

ND, Not determined.

*Certain conditions such as increased high light exposure or high temperatures may change the response.

[†] Unless otherwise noted, all numbered culture clade/subclades are referenced in LaJeunesse (1).

[‡] *G. ventalina* has been documented as hosting a B1 *Symbiodinium* in the Florida Keys (2, 3). Culture 97 likely arose as a nonsymbiotic epiphyte.

[§] Referenced in Baillie *et al.* (4).

[¶] Referenced in LaJeunesse *et al.* (5).

1. LaJeunesse TC (2001) Investigating the biodiversity, ecology, and phylogeny of endosymbiotic dinoflagellates in the genus *Symbiodinium* using the ITS region: In search of a ‘‘species’’ level marker *J Phycol* 37: 866–880.
2. Santos SR, Shearer TL, Hannes AR, Coffroth MA (2004) Fine-scale diversity and specificity in the most prevalent lineage of symbiotic dinoflagellates (Symbiodinium, Dinophyceae) of the Caribbean *Mol Ecol* 13: 459–469.
3. Kirk NL, Ward J, Coffroth MA (2005) Stable *Symbiodinium* composition in the sea fan *Gorgonia ventalina* during temperature and disease stress *Biol Bull* 209: 227–234.
4. Baillie BK*, et al.* (1998) Allozyme electrophoresis as a tool for distinguishing different zooxanthellae symbiotic with giant clams. *Proc R Soc London Ser B* 265.
5. LaJeunesse TC*, et al.* (2005) *Symbiodinium* (Pyrrhophyta) genome sizes (DNA content) are smallest among dinoflagellates *J Phycol* 41: 880–886.