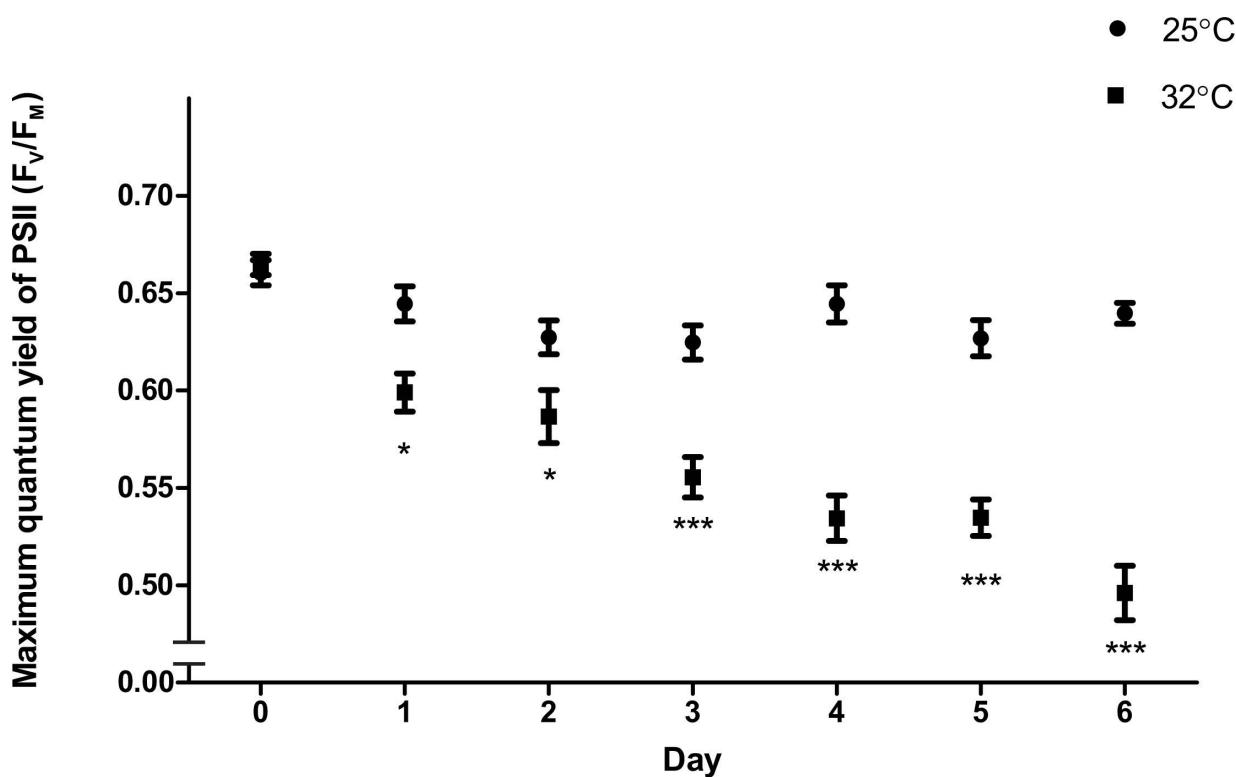


Supplementary information



**Fig. S1** Daily measurements of maximum quantum yield ( $F_v/F_m$ ) of photosystem II of individuals ( $n = 10$  per treatment) at  $25^\circ\text{C}$  and  $32^\circ\text{C}$ . Values are mean  $\pm$  S.E.M. Asterisks denote significant results between treatments at each time point, RMANOVA, pairwise post-hoc with Bonferroni correction, \*  $P < 0.05$ , \*\*\*  $P < 0.001$ .

**Table S1. Polar and semi-polar compounds identified from symbiont and host free metabolite pools of *Aiptasia* sp. under ambient conditions and thermal stress, with reference ion and retention time**

Compound	Reference ion	Retention time/min
<i>Amino acids and peptides</i>		
Alanine	102	10.975
Asparagine	127	16.639
beta-Alanine	88	12.652
Creatinine	202	16.661
Cysteine	192	19.873
Glutamic acid	174	17.995
Glutathione	142	19.566
Glycine	88	11.386
Isoleucine	115	13.98
Leucine	144	14.044
Methionine	147	18.087
Norvaline	130	13.336
Phenylalanine	162	19.8
Proline	128	14.89
Serine	100	17.256
Threonine	115	15.554
Tyrosine	236	28.558
Valine	130	12.69
<i>Organic acids and amides</i>		
Aspartic acid	160	16.215
cis-Aconitic acid	153	15.392
Citraconic acid	127	10.131
Citric acid	143	16.229
Fumaric acid	113	9.104
Itaconic acid	127	10.069
Lactic acid	103	9.103
Nicotinamide	57	6.026
Malonic acid	101	7.362
Quinic acid	191	16.315
Succinic acid	115	8.955
<i>Monounsaturated fatty acids</i>		
cis-Vaccenic acid (C18_1n-7c)	55	23.821
Oleic acid (C18_1n-9c)	55	23.798
Palmitoleic acid (C16_1n-7c)	55	20.744
<i>Polyunsaturated fatty acids</i>		
11,14,17-Eicosatrienoic acid (C20_3n-3,6,9c)	79	26.878
11,14-Eicosadienoic (C20_2n-6,9c)	67	26.597
13,16-Docosadienoic acid (C22_2n-6,9c)	67	29.68
Adrenic acid (C22_4n-6,9,12,15c)	79	29.362
alpha-Linolenic acid (C18_3n-3,6,9c)	79	23.723
Arachidonic acid (C20_4n-6,9,12,15c)	79	26.206
bishomo-gamma-Linolenic acid (C20_3n-6,9,12c)	79	26.429
DHA (C22_6n-3,6,9,12,15,18c)	79	29.436
DPA (C22_5n-3,6,9,12,15c)	79	29.597
EPA (C20_5n-3,6,9,12,15c)	79	26.496
gamma-Linolenic acid (C18_3n-6,9,12c)	79	24.018
Linoleic acid (C18_2n-6,9c)	67	23.848

Compound	Reference ion	Retention time/ min
<i>Saturated fatty acids</i>		
Arachidic acid (C20_0)	74	26.807
Dodecanoic acid (C12_0)	74	14.935
Myristic acid (C14_0)	74	17.458
Palmitic acid (C16_0)	74	21.093
Stearic acid (C18_0)	74	24.004

**Table S2. Symbiont (S) and host (H) quantitative MCF data summary at 6 d for control (C) and heat-treatment samples (HS). Individual compound concentration ( $\text{pg } \mu\text{g}^{-1}$  dry mass). Mean  $\pm$  S.E.M,  $n = 3$  (comprising 6 individuals per sample)**

Compound	S6C	S6HS	Concentration ( $\text{pg } \mu\text{g}^{-1}$ dry mass)	
			H6C	H6HS
11,14,17-Eicosatrienoic acid (C20_3n-3,6,9c)	207.322 $\pm$ 38.12	397.274 $\pm$ 46.92	196.311 $\pm$ 41.76	290.064 $\pm$ 130.74
11,14-Eicosadienoic (C20_2n-6,9c)	193.073 $\pm$ 49.39	379.374 $\pm$ 75.81	215.255 $\pm$ 34.17	242.235 $\pm$ 70.25
13,16-Docosadienoic acid (C22_2n-6,9c)	291.097 $\pm$ 62.12	586.304 $\pm$ 133.86	302.949 $\pm$ 48.09	341.664 $\pm$ 99.62
Adipic acid	0.537 $\pm$ 0.08	7.061 $\pm$ 6.03	5.871 $\pm$ 0.92	12.645 $\pm$ 3.07
Adrenic acid (C22_4n-6,9,12,15c)	173.313 $\pm$ 45.63	357.673 $\pm$ 26.99	372.559 $\pm$ 29.51	272.682 $\pm$ 151.46
Alanine	3.799 $\pm$ 1.03	6.845 $\pm$ 1.53	108.256 $\pm$ 24.39	311.390 $\pm$ 71.17
alpha-Linolenic acid (C18_3n-3,6,9c)	72.055 $\pm$ 18.40	150.300 $\pm$ 9.02	160.003 $\pm$ 12.19	113.765 $\pm$ 61.30
Arachidic acid (C20_0)	13.742 $\pm$ 4.42	24.537 $\pm$ 6.44	15.030 $\pm$ 2.02	21.127 $\pm$ 8.61
Arachidonic acid (C20_4n-6,9,12,15c)	90.653 $\pm$ 24.00	191.262 $\pm$ 21.46	230.993 $\pm$ 23.73	175.390 $\pm$ 103.59
Aspartic acid	0.127 $\pm$ 0.03	0.446 $\pm$ 0.09	133.977 $\pm$ 17.04	263.280 $\pm$ 54.30
beta-Alanine	0.311 $\pm$ 0.03	0.925 $\pm$ 0.22	371.597 $\pm$ 71.01	341.407 $\pm$ 20.21
bishomo-gamma-Linolenic acid (C20_3n-6,9,12c)	61.583 $\pm$ 15.77	107.895 $\pm$ 28.74	85.807 $\pm$ 20.72	66.769 $\pm$ 49.29
cis-Aconitic acid	0.925 $\pm$ 0.17	3.036 $\pm$ 1.13	362.531 $\pm$ 121.05	381.470 $\pm$ 52.52
Citric acid	4.974 $\pm$ 0.98	13.283 $\pm$ 2.32	2620.966 $\pm$ 338.74	2264.430 $\pm$ 254.17
Creatinine	0.399 $\pm$ 0.05	0.644 $\pm$ 0.15	16.265 $\pm$ 6.15	19.955 $\pm$ 6.86
Cysteine	0.220 $\pm$ 0.04	0.904 $\pm$ 0.28	136.212 $\pm$ 18.44	196.637 $\pm$ 67.36
DHA (C22_6n-3,6,9,12,15,18c)	144.072 $\pm$ 38.14	297.947 $\pm$ 38.79	356.277 $\pm$ 35.05	277.710 $\pm$ 165.08
Dodecanoic acid (C12_0)	12.258 $\pm$ 3.76	7.975 $\pm$ 1.84	7.838 $\pm$ 0.50	17.363 $\pm$ 3.43
DPA (C22_5n-3,6,9,12,15c)	162.190 $\pm$ 42.95	342.193 $\pm$ 38.40	413.275 $\pm$ 42.46	313.795 $\pm$ 185.34
EPA (C20_5n-3,6,9,12,15c)	85.097 $\pm$ 22.89	179.002 $\pm$ 19.54	217.762 $\pm$ 22.37	165.344 $\pm$ 97.66
Fumaric acid	0.365 $\pm$ 0.03	1.035 $\pm$ 0.24	1.723 $\pm$ 0.30	5.246 $\pm$ 0.78
gamma-Linolenic acid (C18_3n-6,9,12c)	134.211 $\pm$ 24.68	257.177 $\pm$ 30.38	127.083 $\pm$ 27.04	187.774 $\pm$ 84.64
Glutamic acid	0.382 $\pm$ 0.02	1.277 $\pm$ 0.37	1727.299 $\pm$ 403.88	3800.340 $\pm$ 796.19
Glutathione	1.579 $\pm$ 0.30	5.170 $\pm$ 1.82	815.381 $\pm$ 184.87	1968.489 $\pm$ 428.28
Glycine	0.673 $\pm$ 0.10	2.003 $\pm$ 0.26	226.544 $\pm$ 19.47	294.700 $\pm$ 55.29
Isoleucine	1.277 $\pm$ 0.14	3.281 $\pm$ 0.51	30.754 $\pm$ 3.92	35.860 $\pm$ 8.24
Itaconic acid	3.168 $\pm$ 0.79	8.112 $\pm$ 1.36	248.923 $\pm$ 58.42	266.668 $\pm$ 35.54
Lactic acid	78.988 $\pm$ 13.57	198.179 $\pm$ 24.66	223.116 $\pm$ 29.89	597.862 $\pm$ 161.96

Leucine	$0.100 \pm 0.02$	$0.263 \pm 0.08$	$50.848 \pm 9.31$	$63.713 \pm 15.711$
Linoleic acid (C18_2n-6,9c)	$105.548 \pm 27.01$	$207.393 \pm 41.44$	$117.674 \pm 18.68$	$132.423 \pm 38.41$
Methionine	$0.284 \pm 0.04$	$0.871 \pm 0.20$	$33.922 \pm 4.40$	$55.388 \pm 9.74$
Myristic acid (C14_0)	$202.190 \pm 69.77$	$100.206 \pm 26.52$	$50.633 \pm 8.71$	$52.564 \pm 11.54$
Nicotinamide	$3.132 \pm 0.56$	$9.581 \pm 2.10$	$7.403 \pm 0.75$	$15.320 \pm 3.06$
Norvaline	$0.062 \pm 0.01$	$0.145 \pm 0.02$	$117.869 \pm 14.05$	$156.369 \pm 17.11$
Oleic acid (C18_1n-9c)	$559.457 \pm 150.71$	$1069.883 \pm 266.52$	$647.429 \pm 112.99$	$766.758 \pm 230.85$
Palmitic acid (C16_0)	$672.062 \pm 180.22$	$1185.424 \pm 165.77$	$1033.564 \pm 127.11$	$1265.585 \pm 281.44$
Palmitoleic acid (C16_1n-7c)	$47.715 \pm 17.03$	$109.967 \pm 20.85$	$79.278 \pm 17.15$	$106.159 \pm 32.82$
Phenylalanine	$0.526 \pm 0.12$	$0.449 \pm 0.05$	$108.746 \pm 13.81$	$123.563 \pm 24.41$
Proline	$0.186 \pm 0.09$	$0.160 \pm 0.03$	$198.188 \pm 36.21$	$135.627 \pm 21.31$
Serine	$0.796 \pm 0.04$	$2.229 \pm 0.70$	$63.522 \pm 16.57$	$103.430 \pm 22.74$
Stearic acid (C18_0)	$325.926 \pm 92.26$	$637.585 \pm 112.57$	$375.651 \pm 28.45$	$558.445 \pm 142.17$
Succinic acid	$19.544 \pm 4.21$	$50.798 \pm 8.54$	$134.309 \pm 14.93$	$189.181 \pm 36.02$
Threonine	$1.480 \pm 0.20$	$4.062 \pm 0.76$	$34.993 \pm 11.84$	$47.498 \pm 12.87$
Tyrosine	$0.066 \pm 0.01$	$0.978 \pm 0.76$	$7.085 \pm 6.04$	$6.374 \pm 5.78$
Valine	$0.056 \pm 0.01$	$0.129 \pm 0.02$	$105.043 \pm 12.52$	$139.354 \pm 15.24$

**Table S3** Symbiont heat-responsive compounds at day 6 from quantitative MCF data (fold change and t-test, metabolite x treatment,  $P < 0.05$ )

Compound	Fold change	log2(FC)	<i>P</i> value
<i>Amino acids and peptides</i>			
Aspartic acid	3.516	1.814	0.017
beta-Alanine	2.975	1.573	0.014
Cysteine	4.102	2.036	0.032
Glutamic acid	3.340	1.740	0.037
Glutathione	3.274	1.711	0.061
Glycine	2.977	1.574	0.006
Isoleucine	2.570	1.362	0.010
Methionine	3.061	1.614	0.026
Norvaline	2.325	1.217	0.024
Threonine	2.745	1.457	0.019
Valine	2.325	1.217	0.024
<i>Organic acids and amides</i>			
Citric acid	2.671	1.417	0.027
Fumaric acid	2.839	1.505	0.017
Itaconic acid	2.561	1.357	0.045
Lactic acid	2.509	1.327	0.010
Nicotinamide	3.059	1.613	0.028
Succinic acid	2.599	1.378	0.034
<i>Fatty acids</i>			
Adrenic acid (C22_4n-6,9,12,15c)	2.064	1.045	0.044
alpha-Linolenic acid (C18_3n-3,6,9c)	2.086	1.061	0.036
Arachidonic acid (C20_4n-6,9,12,15c)	2.110	1.077	0.049
DHA (C22_6n-3,6,9,12,15,18c)	2.068	1.048	0.058
DPA (C22_5n-3,6,9,12,15c)	2.110	1.077	0.049
EPA (C20_5n-3,6,9,12,15c)	2.104	1.073	0.050
Palmitoleic acid (C16_1n-7c)	2.305	1.205	0.087

**Table S4.** Host heat-responsive compounds at day 6 from quantitative MCF data (fold change and t-test, metabolite x treatment,  $P < 0.05$ )

Compound	Fold change	log2(FC)	<i>P</i> value
<i>Amino acids and peptides</i>			
Alanine	2.876	1.524	0.035
Glutamic acid	2.200	1.138	0.078
Glutathione	2.414	1.272	0.047
<i>Organic acids and amides</i>			
Adipic acid	2.154	1.107	0.096
Fumaric acid	3.044	1.606	0.007
Lactic acid	2.680	1.422	0.057
Nicotinamide	2.070	1.049	0.030
<i>Fatty acids</i>			
Dodecanoic acid (C12_0)	2.215	1.148	0.019