

Figure S1. Two-dimensional gels stained with silver staining (pH 3-10) for CC124. Gels showing protein expression profiles of CC124 between different timing points (a) day 19, (b) day 32, (c) day 62, and (d) day 77 during adaptive evolution.

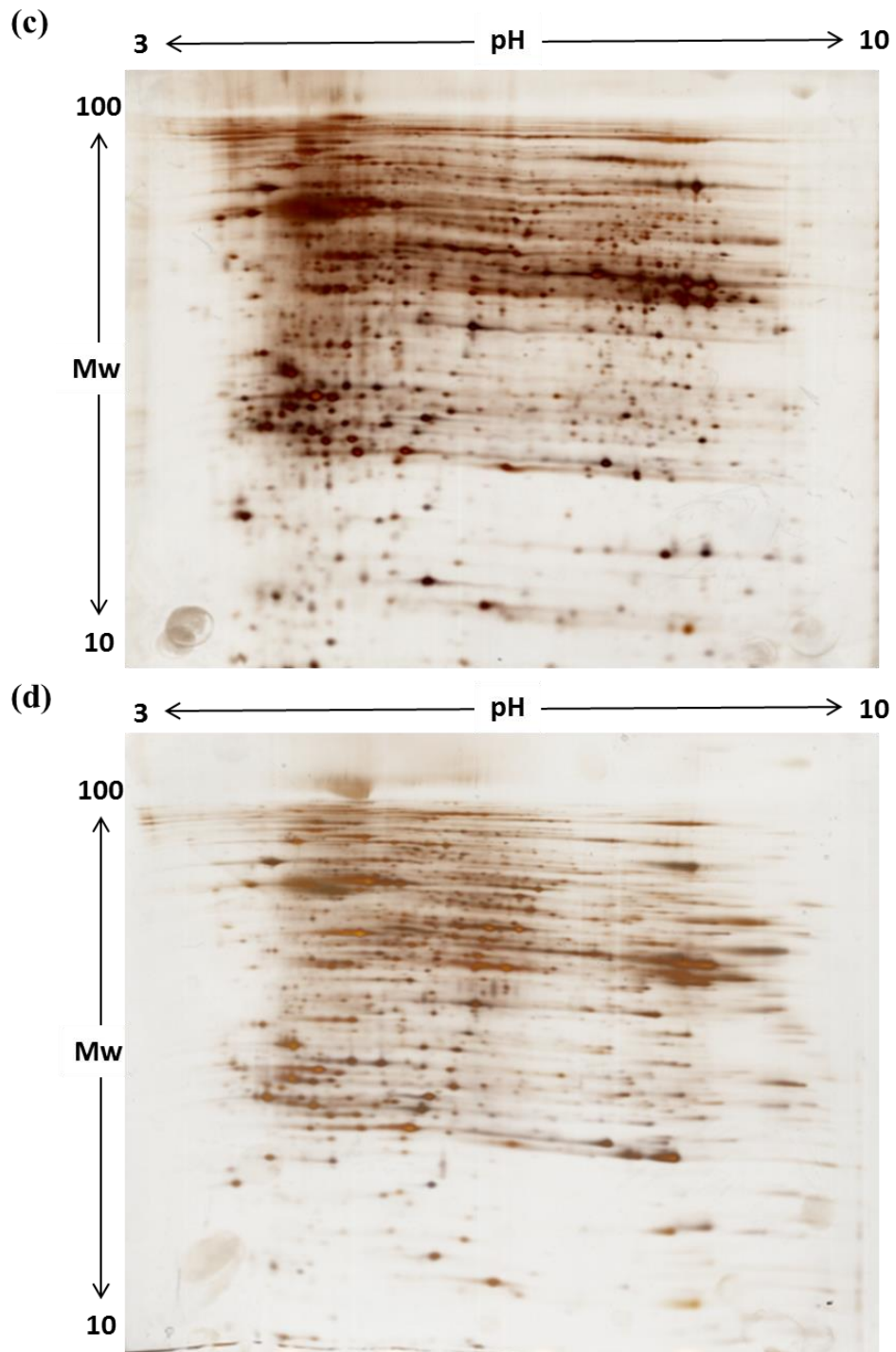


Figure S1. (*continued*) Two-dimensional gels stained with silver staining (pH 3-10) for CC124. Gels showing protein expression profiles of CC124 between different timing points (a) day 19, (b) day 32, (c) day 62, and (d) day 77 during adaptive evolution.

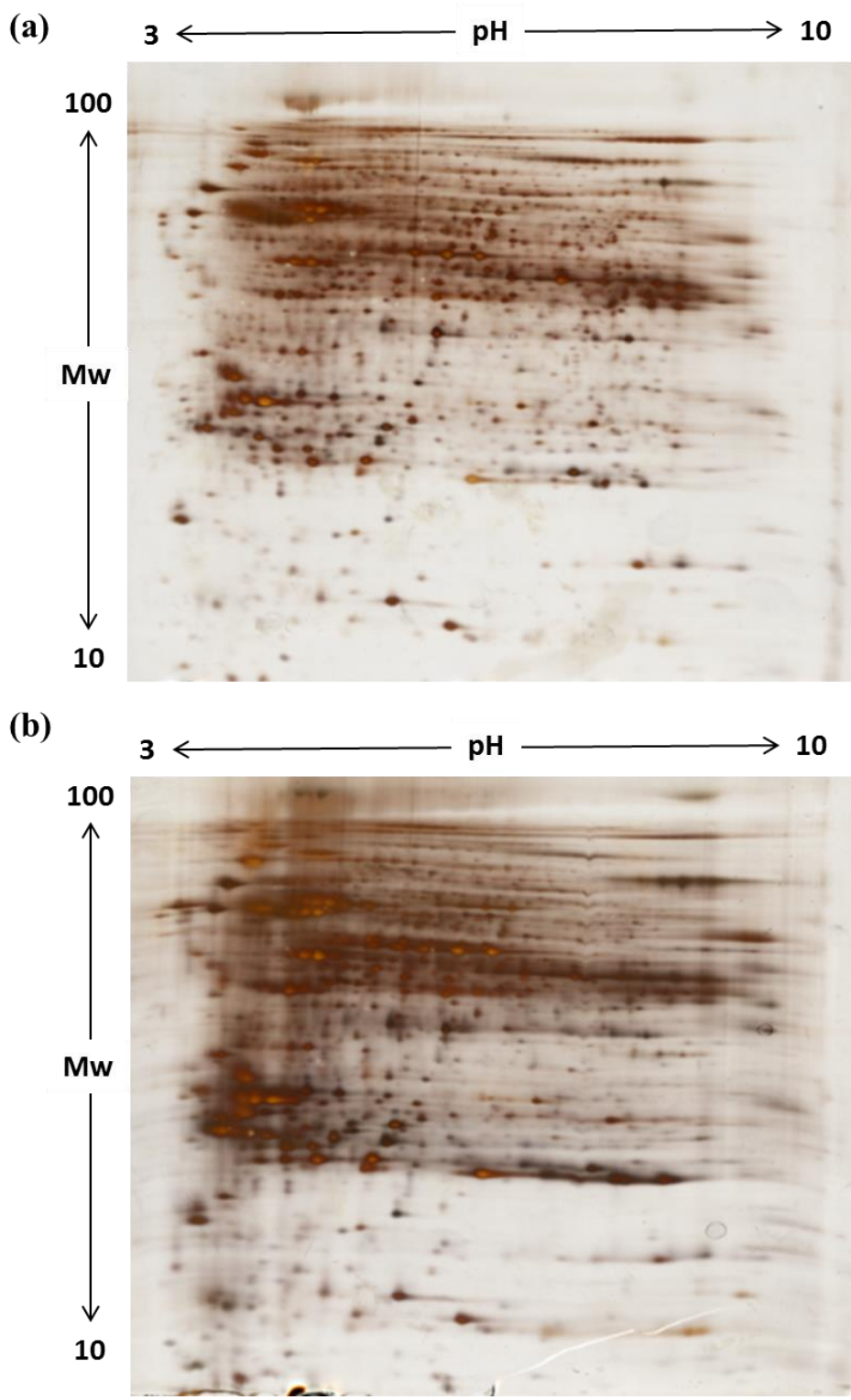


Figure S2. Two-dimensional gels stained with silver staining (pH 3-10) for *sta6-1*. Gels showing protein expression profiles of *sta6-1* between different timing points (a) day 14 and (b) day 27, and (c) day 43 during adaptive evolution.

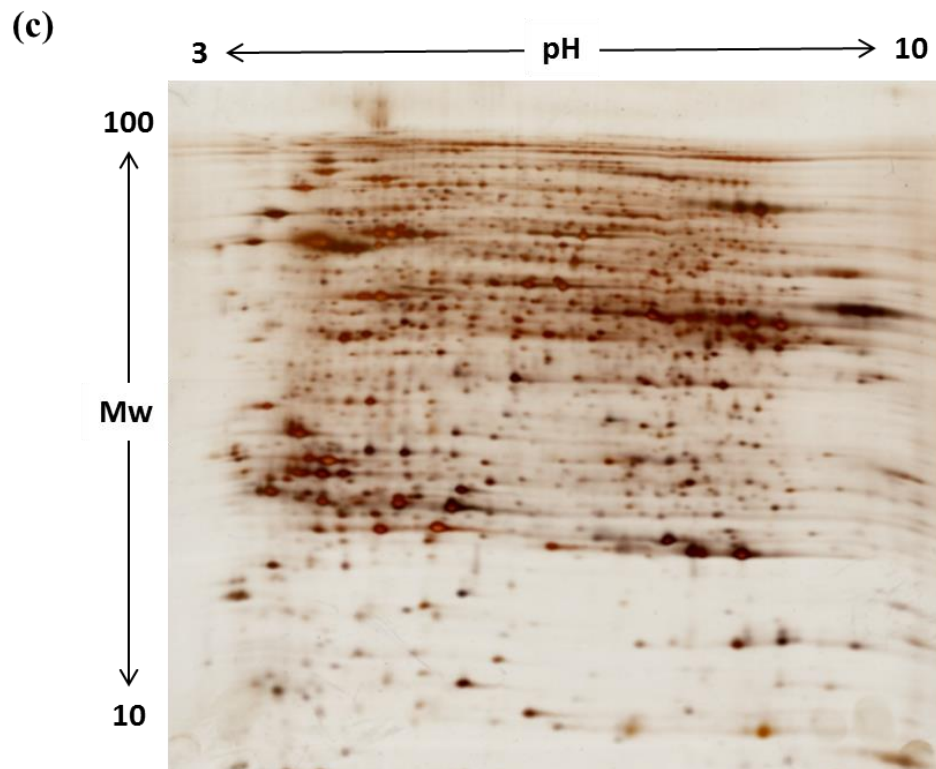


Figure S2. (*continued*) Two-dimensional gels stained with silver staining (pH 3-10) for *sta6-1*. Gels showing protein expression profiles of *sta6-1* between different timing points (a) day 14 and (b) day 27, and (c) day 43 during adaptive evolution.

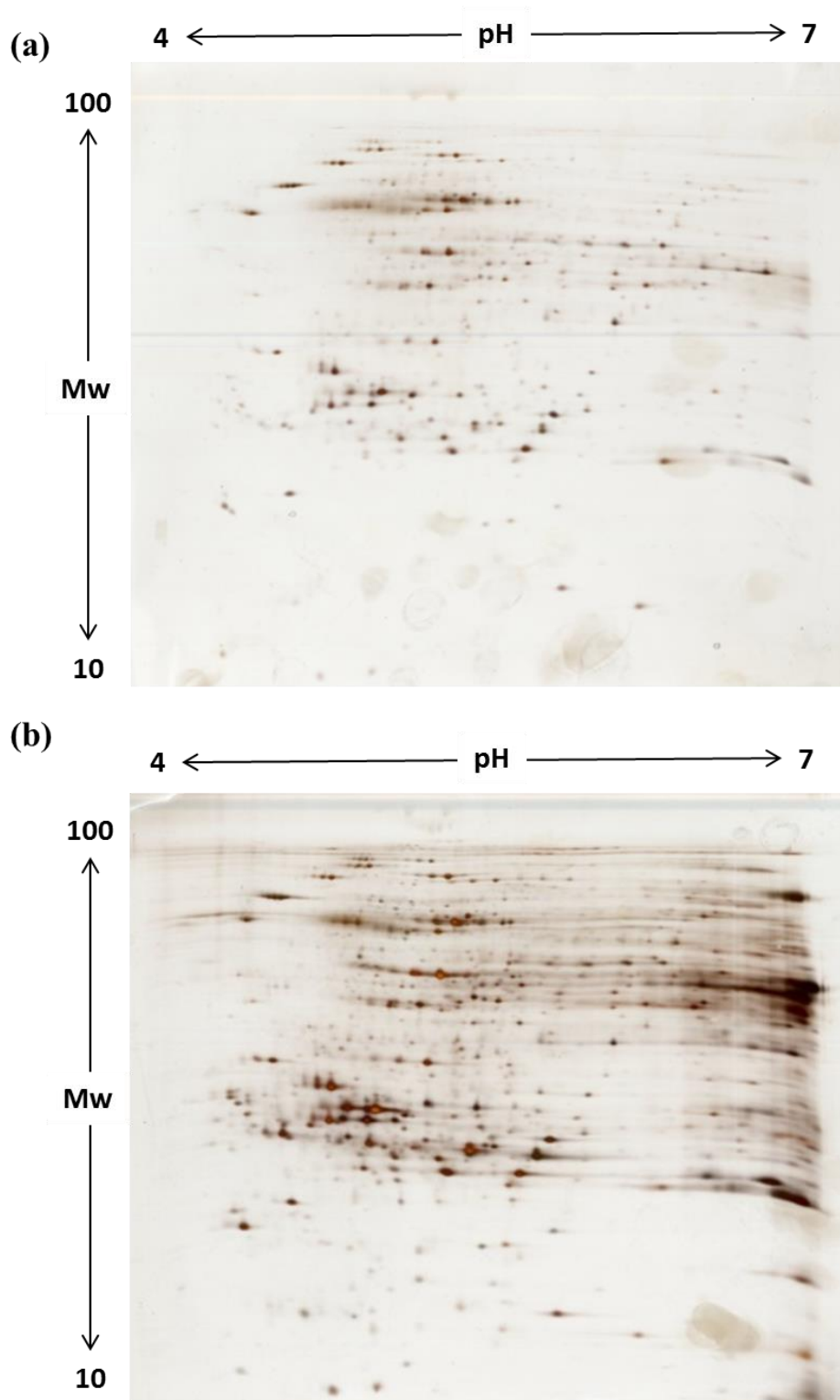


Figure S3. Two-dimensional gels stained with silver staining (pH 4-7) for CC124. Gels showing protein expression profiles of CC124 between different timing points (a) day 19 and (b) day 32, (c) day 62, and (d) day 77 during adaptive evolution.

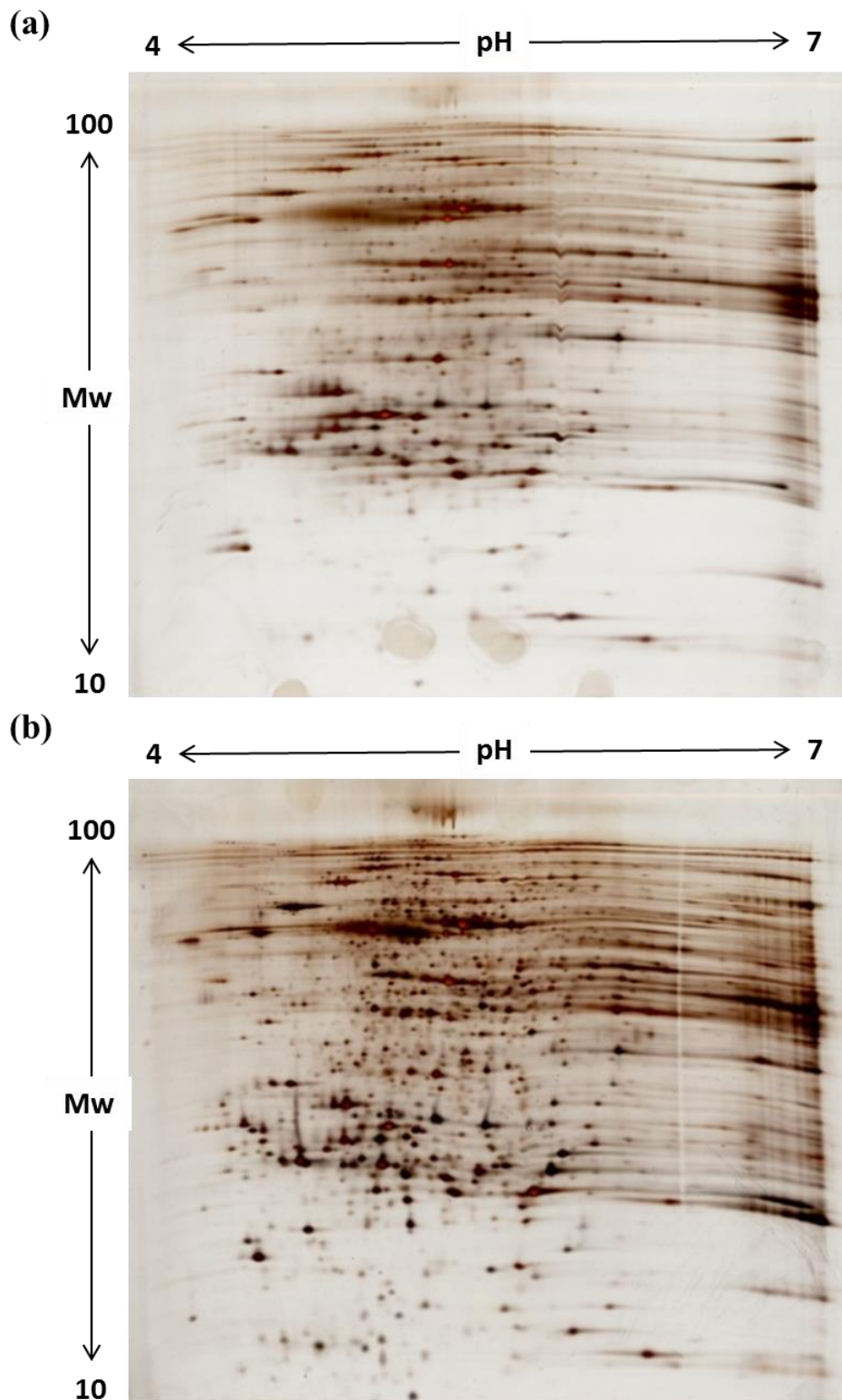


Figure S3. (*continued*) Two-dimensional gels stained with silver staining (pH 4-7) for CC124. Gels showing protein expression profiles of CC124 between different timing points (a) day 19 and (b) day 32, (c) day 62, and (d) day 77 during adaptive evolution.

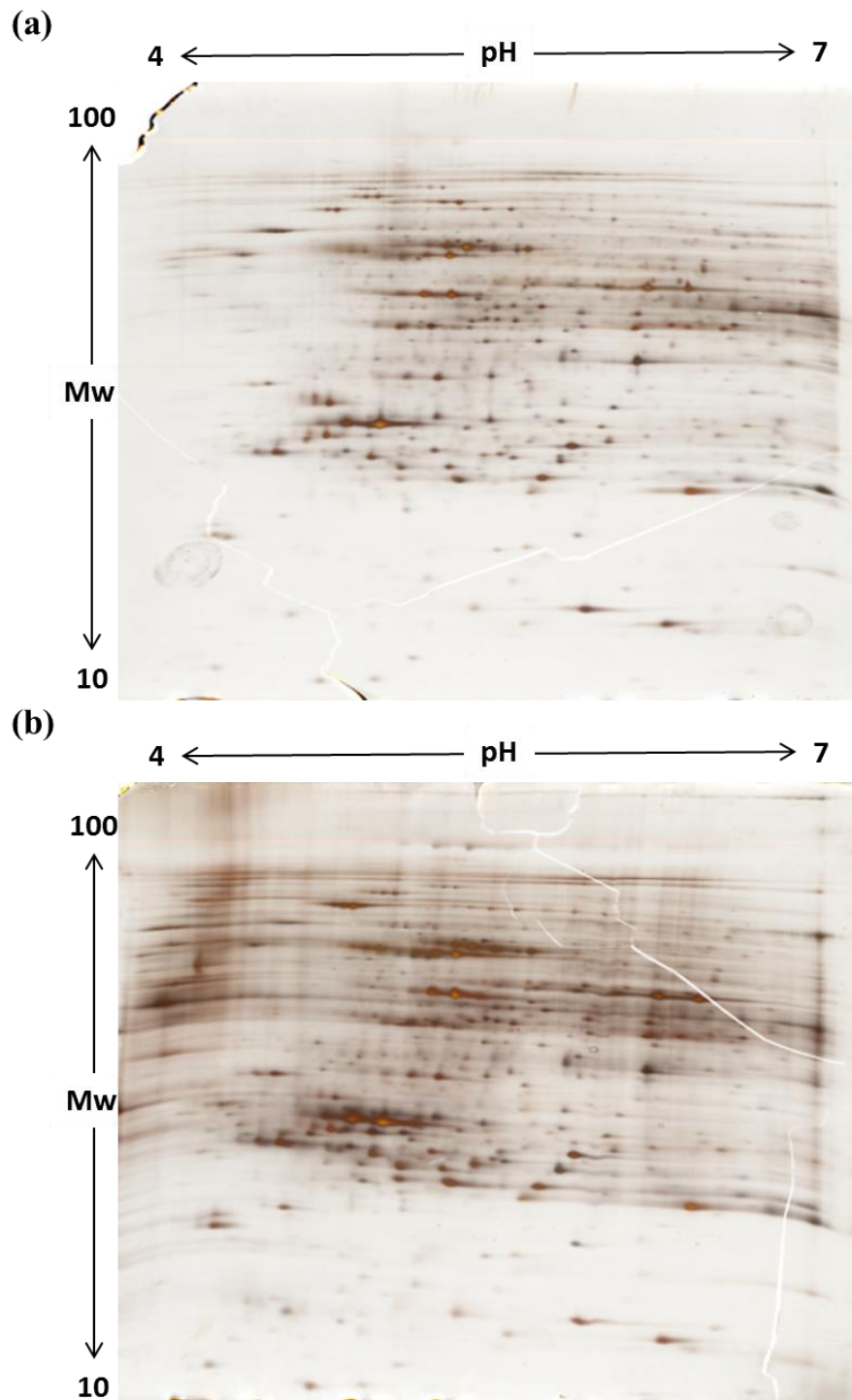


Figure S4. Two-dimensional gels stained with silver staining (pH 4-7) for *sta6-1*. Gels showing protein expression profiles of *sta6-1* between different timing points (a) day 14, (b) day 27, and (c) day 43 during adaptive evolution.

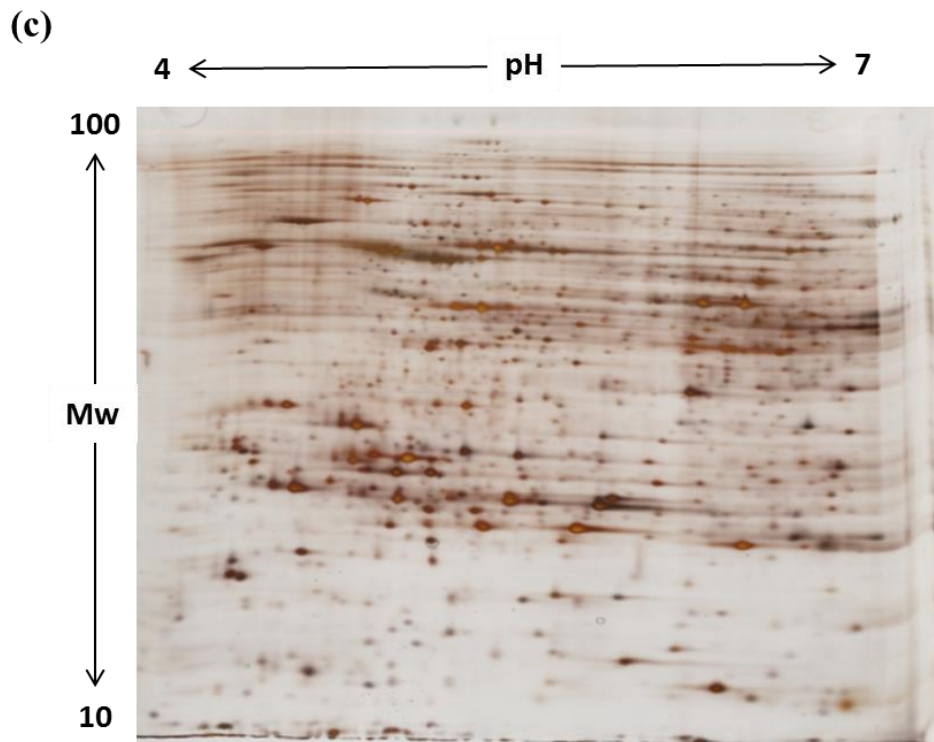


Figure S4. (*continued*) Two-dimensional gels stained with silver staining (pH 4-7) for *sta6-1*. Gels showing protein expression profiles of *sta6-1* between different timing points (a) day 14, (b) day 27, and (c) day 43 during adaptive evolution.

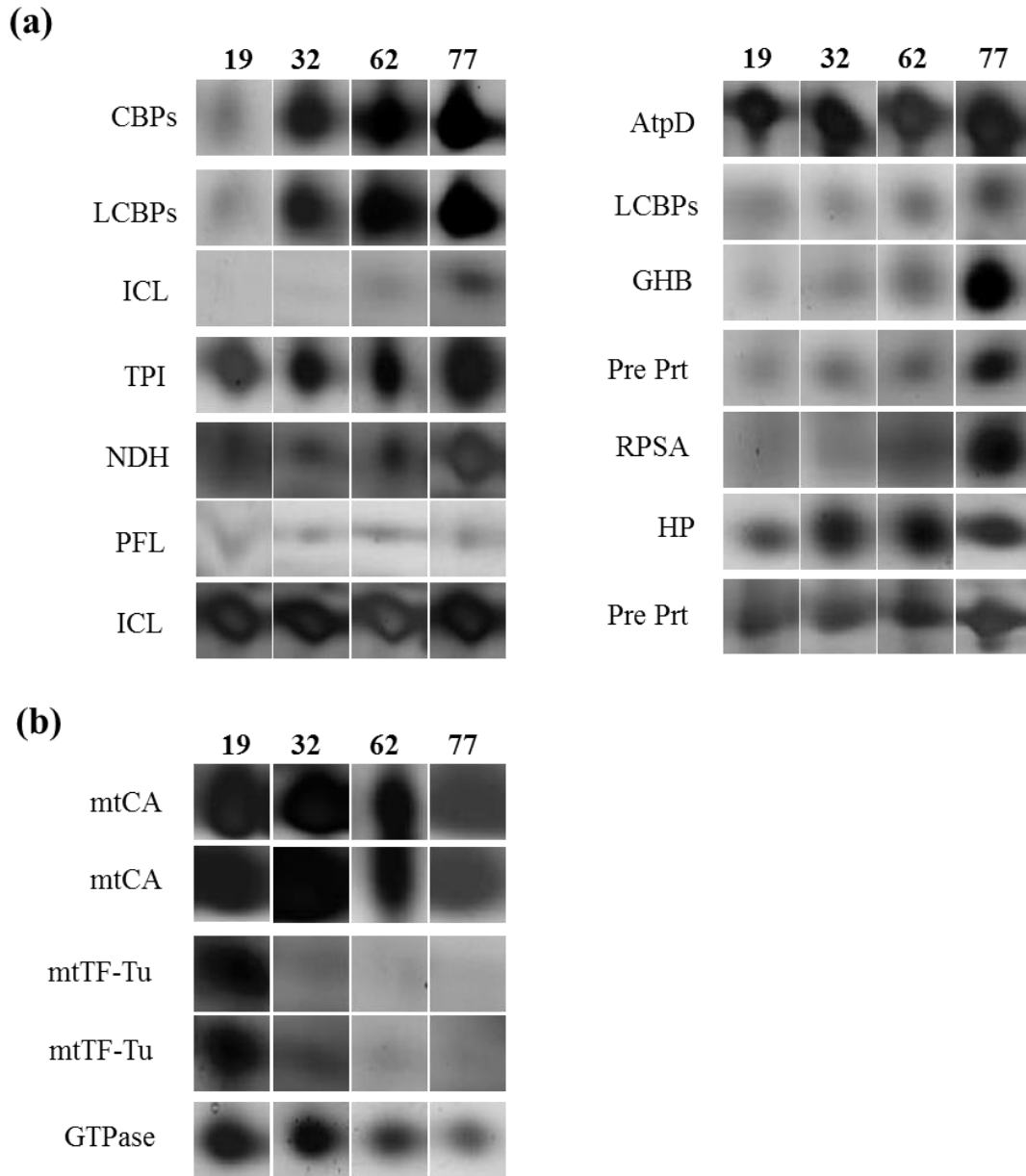


Figure S5. Proteome profiles of CC124 during adaptive evolution period. (a) The zoom-in image of protein spots which were (a) up-regulated or (b) down-regulated during adaptive evolution period. The abbreviations for the enzymes included are as follows: CBP, Chlorophyll-ab-binding protein of LHCII type I, chloroplast precursor; LCBP, Light-harvesting complex II chlorophyll a-b binding protein M3; ICL, Isocitrate lyase; TPI, Triose phosphate isomerase; NDH, NADP-Malate dehydrogenase; PFL, Pyruvate-formate lyase; AtpD, ATP synthase CF1 beta subunit; GHB, Gamma-hydroxybutyrate dehydrogenase; Pre Prt, Predicted protein; RPSA, Ribosomal protein Sa, component of cytosolic 80S ribosome and 40S small subunit; HP, Hypothetical protein; mtCA, Mitochondrial carbonic anhydrase β type; mtTF-Tu, Mitochondrial translation factor Tu; GTPase, Ran-like small GTPase.

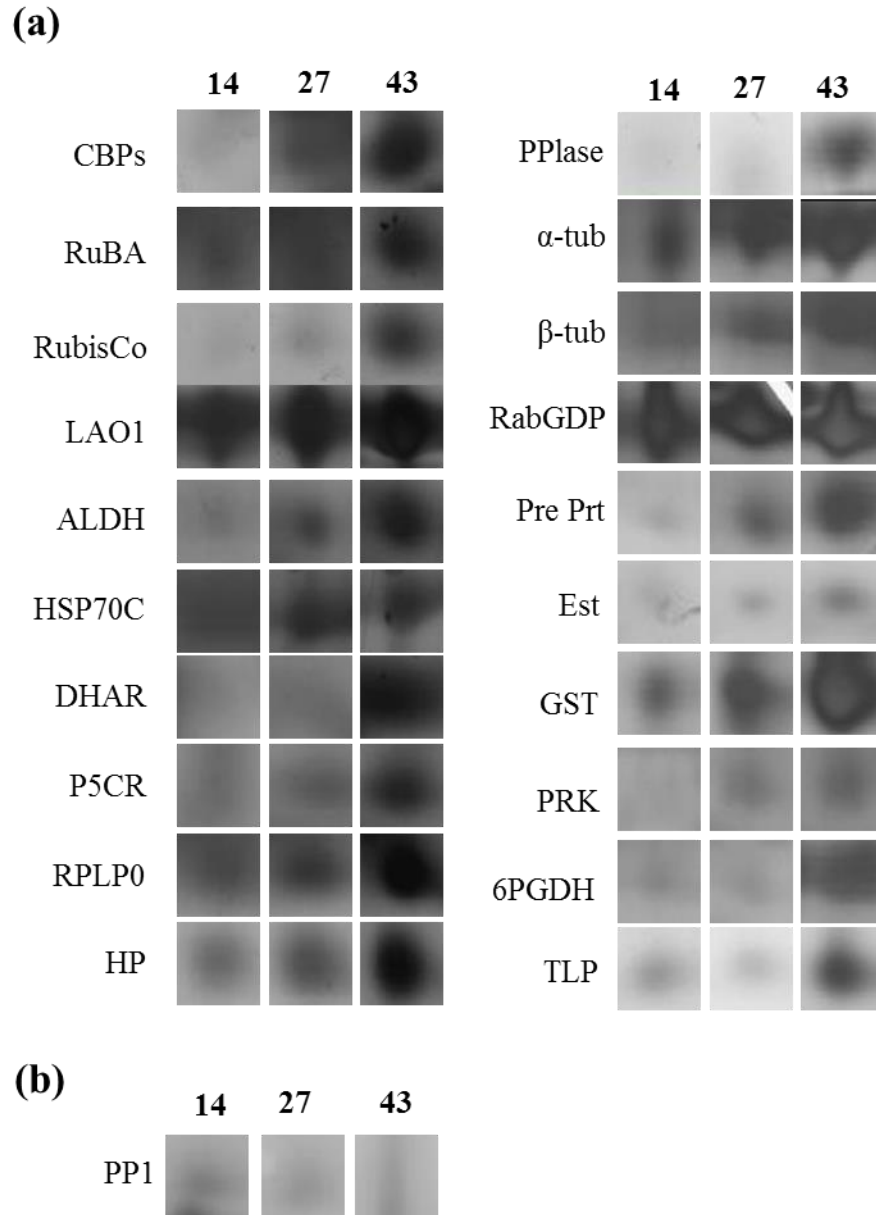


Figure S6. Proteome profiles of *sta6-1* during adaptive evolution period. (a) The zoom-in image of protein spots which were (a) up-regulated or (b) down-regulated during adaptive evolution period. The abbreviations for the enzymes included are as follows: CBP, Chlorophyll-ab-binding protein of LHCII type I, chloroplast precursor; RuBA, Rubisco activase; RubisCo, Ribulose-1,5-biphosphate carboxylase/oxygenase large subunit; LAO1, Periplasmic L-amino acid oxidase catalytic subunit; ALDH, Aldehyde dehydrogenase; HSP70C, Heat shock protein 70C; DHAR, Dehydroascorbate reductase; P5CR, Pyrroline-5-carboxylate reductase; RPLP0, Acidic ribosomal protein P0; HP, Hypothetical protein; PPlase, Peptidyl-prolyl cis-trans isomerase, FKBP-type; α -tub, α -tubulin 1; β -tub, β -tubulin 2; RabGDP; Pre Prt, Predicted protein; Est, Esterase; GST, Glutathione-S-transferase; PRK, Phosphoribulokinase Rubisco activase; 6PGDH, 6-phosphogluconate dehydrogenase; TLP, Thylakoid lumen protein; PP1, Protein phosphatase 1.

Table S1. Complete list of differentially expressed proteins of adaptive evolved *C. reinhardtii* cells.

No	Functional category and protein description	pI	Mr
1	Esterase (EST)	5.90	31411
2	NADP-Malate dehydrogenase (NDH)	8.04	45280
3	Pyruvate-formate lyase (PRL)	6.49	91431
4	Glutathione-S-transferase (GST)	5.34	24000
5	Glutathione-S-transferase (GST)	5.34	24000
6	Stress-related chlorophyll a/b binding protein 2 (CBP)	4.88	28207
7	Rubisco activase (RuBA)	8.71	45229
8	Rubisco activase (RuBA)	8.71	45229
9	Phosphoribulokinase Rubisco activase (PRK)	8.11	42151
10	Dehydroascorbate reductase (DHAR)	6.34	25052
11	Light-harvesting complex II chlorophyll a-b binding protein M3 (LCBP)	5.68	27420
12	Light-harvesting protein of photosystem I (LCBPs)	9.12	26075
13	Pyrroline-5-carboxylate reductase (P5CR)	6.31	28608
14	Acidic ribosomal protein P0 (RPLP0)	6.07	34667
15	ATP synthase CF1 beta subunit (AtpD)	5.21	53243
16	Isocitrate lyase (ICL)	5.90	45948
17	Isocitrate lyase (ICL)	5.90	45948
18	Mitochondrial translation factor Tu (mtTF-Tu)	8.26	42942
19	Mitochondrial translation factor Tu (mtTF-Tu)	8.26	42942

20	Rab GDP dissociation inhibitor protein (RabGDP)	5.88	49720
21	Peptidyl-prolyl cis-trans isomerase, FKBP-type (Pplase)	6.06	11662
22	Ribosomal protein Sa, component of cytosolic 80S ribosome and 40S small subunit (RPSA)	5.07	30971
23	Ran-like small GTPase (GTPase)	6.24	25705
24	Protein phosphatase 1 (PPI)	5.08	35567
25	6-phosphogluconate dehydrogenase (6PGDH)	5.72	53617
26	Predicted protein (Pre Prt)	6.28	42690
27	Thylakoid lumen protein (TLP)	9.00	26710
28	Hypothetical protein CHLREDRAFT_132186 (HP)	6.30	29761
29	Hypothetical protein CHLREDRAFT_184895 (HP)	4.92	44286
30	Ribulose-1,5-biphosphate carboxylase/oxygenase large subunit (Rubisco)	6.29	45866
31	Periplasmic L-amino acid oxidase catalytic subunit (LAO1)	8.70	61272
32	Periplasmic L-amino acid oxidase catalytic subunit (LAO1)	8.70	61272
33	Aldehyde dehydrogenase (ALD)	7.30	59613
34	β -tubulin 2 (β -tub)	4.82	50157
35	α -tubulin 1 (α -tub)	5.01	50182
36	Heat shock protein 70C (HSP)	5.60	65435
37	Chlorophyll-ab-binding protein of LHCII type I, chloroplast precursor (CBPs)	5.96	27058

38	Gamma-hydroxybutyrate dehydrogenase (GHB)	5.22	29991
39	Triose phosphate isomerase (TPI)	7.56	30433
40	Mitochondrial carbonic anhydrase β type (mtCA)	9.04	28193
41	Mitochondrial carbonic anhydrase β type (mtCA)	9.04	28193
42	Predicted protein (Pre Prt)	4.90	33488
43	Conserved hypothetical protein	5.06	21304
44	Predicted protein (Pre Prt)	5.84	59842
