

## Electronic Supplementary Material

# Narrow distribution of cyanophage *psbA* genes observed in two paddy waters of Northeast China by an incubation experiment

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Table S1. The closest relative of sequenced *psbA* clones from paddy waters in this study at the amino acid level.

Clone name (PW-)	Length <sup>a</sup>	Alignment	Closest relative	Source	Accession number <sup>b</sup>	Identity (%)
DA-I-1	264	263/264	NoF9	Paddy floodwater in Japan	BAH23189	99
DA-I-2	264	258/264	CM6	Paddy floodwater in Japan	BAH23213	98
DA-I-3	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
DA-I-4	264	255/264	NoF10	Paddy floodwater in Japan	BAH23190	97
DA-I-5	264	257/264	CF(-N)9	Paddy floodwater in Japan	BAH23199	97
DA-I-6	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-7	264	254/264	NoF10	Paddy floodwater in Japan	BAH23190	96
DA-I-8	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-9	264	256/264	LK20mp-22	Freshwater lake Kinneret (Israel)	AAZ93918	97
DA-I-10	264	263/264	NoF9	Paddy floodwater in Japan	BAH23189	99
DA-I-11	264	258/264	PN09-068	Clone in East China Sea	AGL79161	98
DA-I-12	264	259/264	NoF9	Paddy floodwater in Japan	BAH23189	98
DA-I-14	264	262/264	NoF9	Paddy floodwater in Japan	BAH23189	99
DA-I-15	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-16	264	258/264	CF(-N)9	Paddy floodwater in Japan	BAH23199	98
DA-I-17	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
DA-I-19	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
DA-I-20	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-21	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-22	264	255/264	NoF10	Paddy floodwater in Japan	BAH23190	97
DA-I-23	264	260/264	NoF9	Paddy floodwater in Japan	BAH23189	98
DA-I-24	264	248/264	CF(-N)7	Paddy floodwater in Japan	BAH23197	94
DA-I-25	264	258/264	CF(-N)9	Paddy floodwater in Japan	BAH23199	98
DA-I-26	264	254/264	CM10	Paddy floodwater in Japan	BAH23217	96
DA-I-27	264	260/264	NoF9	Paddy floodwater in Japan	BAH23189	98
DA-I-28	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
DA-I-29	264	262/264	NoF9	Paddy floodwater in Japan	BAH23189	99
DA-I-30	264	260/264	NoF9	Paddy floodwater in Japan	BAH23189	98
DA-I-31	264	259/264	PN09-068	Clone in East China Sea	AGL79161	98
DA-I-32	264	258/264	PN04-091	Clone in East China Sea	AGL79481	98
DA-I-33	264	260/264	NoF7	Paddy floodwater in Japan	BAH23187	98
DA-I-34	264	252/264	NoF10	Paddy floodwater in Japan	BAH23190	95
DA-I-35	264	256/264	LK20mP-22	Freshwater lake Kinneret (Israel)	AAZ93918	97
DA-I-37	264	258/264	PN09-068	Clone in East China Sea	AGL79161	98
DA-I-38	264	261/263	Cyanophage S-RIM17	Coastal marine cyanophage	ACY42497	99
DA-I-39	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-40	264	256/264	DH22-026	Clone in East China Sea	AGL78823	97
DA-I-41	264	262/264	Cyanophage S-RIM17	Coastal marine cyanophage	ACY42497	99
DA-I-42	264	254/264	NoF10	Paddy floodwater in Japan	BAH23190	96
DA-I-43	264	255/264	NoF10	Paddy floodwater in Japan	BAH23190	97

To be continued

Clone name (PW-)	Length <sup>a</sup>	Alignment	Closest relative	Source	Accession number <sup>b</sup>	Identity (%)
DA-I-44	264	253/264	NoF10	Paddy floodwater in Japan	BAH23190	96
DA-I-45	264	252/264	CM10	Paddy floodwater in Japan	BAH23217	95
DA-I-46	264	257/264	CF(-N)9	Paddy floodwater in Japan	BAH23199	97
DA-I-47	264	258/263	Cyanophage S-RIM17	Coastal marine cyanophage	ACY42497	98
DA-I-48	264	255/264	NoF10	Paddy floodwater in Japan	BAH23190	97
DA-I-49	264	257/264	PN09-068	Clone in East China Sea	AGL79161	97
DA-I-50	264	248/264	CF(-N)7	Paddy floodwater in Japan	BAH23197	94
DA-I-51	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-52	264	255/264	CF(-N)7	Paddy floodwater in Japan	BAH23197	97
DA-I-53	264	254/264	NoF10	Paddy floodwater in Japan	BAH23190	96
DA-I-54	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-55	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
DA-I-56	264	259/264	PN04-056	Clone in East China Sea	AGL79446	98
DA-I-57	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-58	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
DA-I-59	264	258/264	PN09-068	Clone in East China Sea	AGL79161	98
DA-I-60	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-61	264	256/264	LK20mp-22	Freshwater lake Kinneret (Israel)	AAZ93918	97
DA-I-62	264	252/264	CM10	Paddy floodwater in Japan	BAH23217	95
DA-I-63	264	254/264	CF(-N)8	Paddy floodwater in Japan	BAH23198	96
DA-I-64	264	249/264	CF(-N)7	Paddy floodwater in Japan	BAH23197	94
DA-I-65	264	254/264	NoF10	Paddy floodwater in Japan	BAH23190	96
DA-I-66	264	258/264	CF(-N)9	Paddy floodwater in Japan	BAH23199	98
DA-I-67	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
DA-I-68	264	258/264	PN09-068	Clone in East China Sea	AGL79161	98
DA-I-69	264	257/264	PN09-068	Clone in East China Sea	AGL79161	97
DA-I-70	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-71	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-I-72	264	251/264	NoF10	Paddy floodwater in Japan	BAH23190	95
DA-I-73	264	251/264	CM9	Paddy floodwater in Japan	BAH23216	95
DA-II-2	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-3	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-4	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-5	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-6	264	261/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	99
DA-II-7	264	260/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-8	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-9	264	261/264	CM7	Paddy floodwater in Japan	BAH23214	99
DA-II-10	264	261/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	99
DA-II-11	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99

Clone name (PW-)	Length <sup>a</sup>	Alignment	Closest relative	Source	Accession number <sup>b</sup>	Identity (%)
DA-II-12	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-13	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-14	264	258/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-15	262	261/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	99
DA-II-16	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
DA-II-17	264	261/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	99
DA-II-18	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
DA-II-19	262	259/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-20	264	260/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-21	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-22	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-23	264	259/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-24	264	258/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-25	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
DA-II-26	264	260/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-27	264	256/264	NoF10	Paddy floodwater in Japan	BAH23190	97
DA-II-28	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-29	264	257/264	CM10	Paddy floodwater in Japan	BAH23217	97
DA-II-30	264	260/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-31	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-32	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-33	264	259/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-34	264	260/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-II-35	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-II-36	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-III-1	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
DA-III-2	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-III-3	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-III-4	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-III-5	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-III-6	264	258/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
DA-III-7	264	255/264	NoF10	Paddy floodwater in Japan	BAH23190	97
DA-III-8	264	259/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-III-9	264	255/264	NoF10	Paddy floodwater in Japan	BAH23190	97
DA-III-10	264	254/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	96
DA-III-11	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
DA-III-12	264	257/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	97
MDJ-I-1	264	256/264	<i>Synechococcus</i> phage S-CBP3	Isolation in Chesapeake Bay	AFK66481	97
MDJ-I-2	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
MDJ-I-3	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-I-4	264	257/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	97
MDJ-I-5	264	260/264	LK20mP-12	Freshwater lake Kinneret (Israel)	AAZ93917	98

Clone name (PW-)	Length <sup>a</sup>	Alignment	Closest relative	Source	Accession number <sup>b</sup>	Identity (%)
MDJ-I-6	264	255/264	uncultured <i>Synechococcus</i> sp.	Transect cruise at eastern	AAU84542	97
MDJ-I-7	264	262/264	<i>Nostoc</i> sp. PCC7107	Unknown	WP_015112088	99
MDJ-I-8	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
MDJ-II-1	264	258/264	PN09-068	Clone in East China Sea	AGL76161	98
MDJ-II-2	264	260/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
MDJ-II-3	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
MDJ-II-4	264	259/264	CF(-N)9	Paddy floodwater in Japan	BAH23199	98
MDJ-II-5	264	261/264	NoF10	Paddy floodwater in Japan	BAH23190	99
MDJ-II-6	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
MDJ-II-7	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
MDJ-II-8	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
MDJ-II-9	264	262/264	NoF10	Paddy floodwater in Japan	BAH23190	99
MDJ-II-10	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
MDJ-II-11	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
MDJ-II-12	264	254/264	<i>Synechococcus</i> phage S-CBP3	Isolation in Chesapeake Bay	AFK66481	96
MDJ-III-1	263	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-2	264	261/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	99
MDJ-III-3	264	260/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
MDJ-III-4	264	256/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-5	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
MDJ-III-6	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-7	264	260/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
MDJ-III-8	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-9	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-10	264	260/264	NoF10	Paddy floodwater in Japan	BAH23190	98
MDJ-III-11	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-12	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-13	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-14	264	247/264	<i>Anabaena oryzae</i> Ind3	Unpublished	AEZ50165	94
MDJ-III-15	264	258/264	NoF10	Paddy floodwater in Japan	BAH23190	98
MDJ-III-16	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-17	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-18	264	262/264	NoF7	Paddy floodwater in Japan	BAH23187	99
MDJ-III-19	264	260/264	<i>Trebouxiophyceae</i> sp.MX-A201	Highly acidic Geothermal Lake	YP_006666440	98
MDJ-III-20	264	257/264	NoF10	Paddy floodwater in Japan	BAH23190	97
MDJ-III-21	264	261/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	99
MDJ-III-22	264	259/264	CF(-N)1	Paddy floodwater in Japan	BAH23191	98
MDJ-III-23	264	254/264	NoF10	Paddy floodwater in Japan	BAH23190	96

NOTE: <sup>a</sup>The length of amino acid residues; <sup>b</sup>Accession number of amino acid sequences