**S1 Table. List of volvocacean species/lineage and strains used in the present phylogenetic analyses (Figs 2 and 3).**

|  |  |  |  |
| --- | --- | --- | --- |
| Species/lineage | Strain designation | Origin of strain | GenBank/EMBL/DDBJ Accession number |
| *rbc*L | *psb*C | ITS-1, 5.8S rDNA and ITS-2 |
| *Volvox* sp. Sagami | 13-614-Vx12 a (=NIES-4021）13-614-Vx13 a (=NIES-4022)13-614-Vx15 a (=NIES-4023)（ | Water sample collected from Lake Sagami, Kanagawa, Japan (water temperature 23°C; pH 8.4; N 35° 36.558’, E 139° 11.280’) in 14 June 2013. | LC191316 bLC191317 bLC191318 b | LC191326 bLC191327 bLC191328 b | LC191308 bLC191309 bLC191310 b |
|  | 14-614-Vx02 a（=NIES-4024）14-614-Vx04 a（=NIES-4025） | Water sample collected from Lake Tsukui, Kanagawa, Japan (water temperature 21°C; pH 8.3; N 35°35.332’, E 139°16.292’) in 14 June 2014. | LC191319 bLC191320 b | LC191329 bLC191330 b | LC191311 bLC191312 b |
|  | 15-Sagami8-2 a（=NIES-4027）15-Sagami12-2 a（=NIES-4028） | Water sample collected from Lake Sagami, Kanagawa, Japan (water temperature 21°C; pH 9.1; N 35° 36.625’, E 139° 11.150’) in 10 June 2015. | LC191321 bLC191322 b | LC191331 bLC191332 b | LC191313 bLC191314 b |
|  | 15-630-VVx4（=NIES-4026） | Water sample collected from Miyaike Pond, Otsu, Shiga, Japan (water temperature 28°C; pH 8.2; N 35° 08.172’, E 135° 54.440’) in 29 June 2015. | LC191323 b | LC191333 b | LC191315 b |
| *Volvox capensis* | M1-2 | USA | LC033870  | LC033872  | LC034074  |
| *Volvox kirkiorum* | NIES-2740 | Japan  | AB663322 | AB663323  | AB663324  |
| *Volvox ferrisii* | NIES-2736NIES-2737NIES-2738NIES-2739 NIES-3987NIES-3988 | Japan  | AB663334AB663337AB663331AB663328LC191324 bLC191325 b | AB663335AB663338AB663332AB663329 LC191334 bLC191335 b | AB663336AB663339AB663333AB663330LC185089LC185090 |
| *Volvox globator* | SAG 199.80(=UTEX 955) | USA | D86836 | AB044478 | AB663340  |
| *Volvox barberi* | UTEX 804 | USA | D86835 | AB044477 | AB663341  |
| *Volvox rousseletii* | UTEX 1862(=NIES-734) | South Africa | D63448 | AB044479 | AB663342  |
| *Colemanosphaera angeleri* | NIES-3382 | Japan | AB905592 | AB905598 |  |
| *Colemanosphaera charkowiensis* | NIES-3383 | Japan | AB905591  | AB905598 |  |
| *Platydorina caudata* | NIES-728(=UTEX 1658) | USA | D86828 | AB044494 |  |
| a Established in this study.b Sequenced in this study. |  |  |  |  |