
Takashi NAKADA,a,b,*, Takuro ITO,a,b and Masaru TOMITA,a,b

aInstitute for Advanced Biosciences, Keio University, Kakuganji, Tsuruoka, Yamagata, 997-0052 JAPAN; bSystems Biology Program, Graduate School of Media and Governance, Keio University, Fujisawa, Kanagawa, 252-0882 JAPAN; *Corresponding author: naktak@ttck.keio.ac.jp

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The lineage of colonial green algae consisting of *Tetrabaenaceae, Goniaceae,* and *Volvocaceae* (TGV-clade) belongs to the clade *Reinhardtinia* within *Volvocales* (*Chlorophyceae*). *Reinhardtinia* is closely related to some species in the unicellular genera *Chlamydomonas* and *Vitreochlamys*. Although 18S rRNA gene sequences are preferred phylogenetic markers for many volvocalean species, phylogenetic relationships among the TGV-clade and its relatives have been examined mainly based on chloroplast genes and ITS2 sequences. To determine the candidate unicellular sister, 18S rRNA gene sequences of 41 species of the TGV-clade and its relatives were newly determined, and single and 6-gene phylogenetic analyses performed. No unicellular sister was determined by 18S rRNA gene analyses, but 6 unicellular clades and 11 ribospecies were recognized as candidates. Five of the candidate lineages and 27 taxa of the TGV-clade were examined by 6-gene phylogeny, revealing one clade including *Chlamydomonas reinhardtii, Chlamydomonas debaryana,* and *Vitreochlamys ordinata* to be more closely related than that containing *Vitreochlamys aulata* and *Vitreochlamys pinguis.*

**Key words:** 18S rRNA, colonial, green algae, molecular phylogeny, unicellular, *Volvocales*.

*Tetrabaenaceae, Goniaceae,* and *Volvocaceae* constitute a colonial green algal clade (TGV-clade) within *Volvocales* (*Chlorophyceae*), and include simple to complex colonial forms (e.g., Nozaki 2003a, Nozaki et al. 2014, Nakada and Nozaki 2015). *Tetrabaenaceae* includes undifferentiated 4-celled genera (*Tetrabaena, Basiclhamys*), *Goniaceae* undifferentiated 8- to 128-celled genera (*Gonium, Astrephomene*), and *Volvocaceae* both undifferentiated and differentiated (with somatic and reproductive cells) 8- to 50,000-celled genera (*Pandorina, Volvulina, Platydorina, Colemanosphaera, Yamagishiella, Eudorina, Pleodorina,* and *Volvoc*) Only colonies of *Volvocaceae* have a shared colonial envelope.

**Within Volvocales,** the TGV-clade belongs to the clade *Reinhardtinia* (Nakada et al. 2008, 2010a). To understand the evolutionary origin of coloniality of the TGV-clade, determination of its unicellular sister is first required. Previous phylogenetic analyses showed that the TGV-clade is more closely related to some species