

**Validation of “*Chlamydomonas priscui*” (“*Chlamydomonas* sp. UWO241”; *Chlamydomonadaceae*, *Chlorophyceae*), a psychrophilic organism from the Antarctic widely used in research on cold adaptation of photosynthesis**

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The designation “*Chlamydomonas priscui*” was introduced by Stahl-Rommel & al. (2021: 247) for a psychrophilic organism, “*Chlamydomonas* sp. UWO 241” (culture strains NCMA/CCMP 1619; SAG 75.94; CCAP 11/131) from material collected in Lake Bonney, Antarctica (77°43'2.766"S, 162°22'59.84"E) by M. Lizotte & M. Lesser and isolated into culture by John C. Priscu.

Lake Bonney is a highly stratified, saline lake with permanent ice cover about 7 km long and up to 0.9 km wide (3.2 km<sup>2</sup>) at the western end of Taylor Valley in the McMurdo Dry Valleys of Victoria Land, Antarctica. The lake has a mean depth of 18.7 m and a maximal temperature of 7°C coinciding with a chemocline at about 15 m, with ice cover preventing turbulence and disruption of the stratification (Angino & al. 1964). “*Chlamydomonas* sp. UWO 241”, which occurs at depths of 17–30 m (Neale & Priscu 1995), has been extensively used in studies of cold adaptation of photosynthesis (cf. Dolhi & al. 2013).

The taxonomic identity of this taxon has experienced much change: initially wrongly identified on morphological grounds as *C. subcaudata* Wille (1903: 136, pl. III: figs 12–18, type locality, Ålesund, Norway) by J. Priscu in Neale & Priscu (1995), the organism was again identified incorrectly as *C. raudensis* Ettl (1976, 580, pl. 132, type locality, Rudná, Noedmähren, Czechia) by Pocock & al. (2004, 2011), and this latter name is generally used in culture collections.

A thorough analysis of the taxonomy of the strain carried out by Possmayer & al. (2016) who concluded that UWO 241 represented a unique lineage within the *Moewusinia* clade of *Chlamydomonas*, and it was therefore renamed with the informal designation “*Chlamydomonas* sp. UWO 241”; see also Temraleeva & Budkin (2022: fig. 3) who illustrated CCAP 11/131 as belonging to the “*Alvikia* clade”.

Unfortunately, however, “*Chlamydomonas priscui*” as introduced by Stahl-Rommel & al. (2021: 247) is an invalid designation under the *International Code of Nomenclature for algae, fungi, and plants* (Shenzhen Code; Turland 2018, and the current Madrid Code, in preparation) because a formal description was not provided (Shenzhen Code Arts. 38.1 and 39.2), a type was not indicated (Shenzhen Code Art. 40.6) a statement in accordance with Art 40.8 is missing, and an illustration was not provided nor indicated (Shenzhen Code Art. 44.2). We here rectify this invalidity as follows.

***Chlamydomonas priscui*, sp. nov.**

Description: Unicellular, biflagellate, oval green alga, 5–12 µm wide x 10–15 µm long; flagella long, orientated at right angles to the long axis; single cup-shaped parietal chloroplast with the nucleus centrally or anteriorly located between the chloroplast lobes. Starch accumulating as plates within and surrounding the basally located pyrenoid. Apical papilla flat and broad. Eyespots small or absent, elliptic located in an anterior position within the chloroplast. Palmelloids (previously referred to as ‘colonies’ and as ‘sporangia’, but also known as ‘Palmella’-stage cells) in irregular groups of 16–32 cells with cell coverings, but lacking flagella

(Szyska-Mroz & al. 2022). Representing a unique lineage within the *Moewusinia* clade of the *Chlamydomonadaceae* (Chlorophyceae).

Holotype: Fig. 1 A–C in Pocock & al. *Journal of Phycology* 40: 1141 (as ‘*Chlamydomonas raudensis*’), 2004.

Type locality: Lake Bonney, McMurdo Dry Valleys, Victoria Land, Antarctica; leg. M. Lizotte & M. Lesser.

PhycoBank registration: <http://phycobank.org/104878>

Etymology: Named for John Charles Priscu (Montana State University), who originally isolated the strain in 1995 (Neale & Priscu 1995). He is a principal investigator in the [McMurdo Dry Valleys](#) Long Term Ecological Research (LTER) project.

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