



Observations on

Eremosphaera viridis De Bary 1858

Most likely ID: n. a.

Synonyms: n. a.

EOL Phylogenetic tree: [Eremosphaera viridis](#)

Eremosphaera viridis from a bog near Pass Thurn (Tyrol, Austria)

Cells in vegetative state



Fig. 1: The image shows the parietal chloroplasts, each with a central pyrenoid (arrow). The bright rings that surround them are the sectional images of their starch sheaths. In green algae (Chlorophyta and Streptophyta), the pyrenoids are the production sites for the reserve substance starch. Scale bar indicates 25 µm.

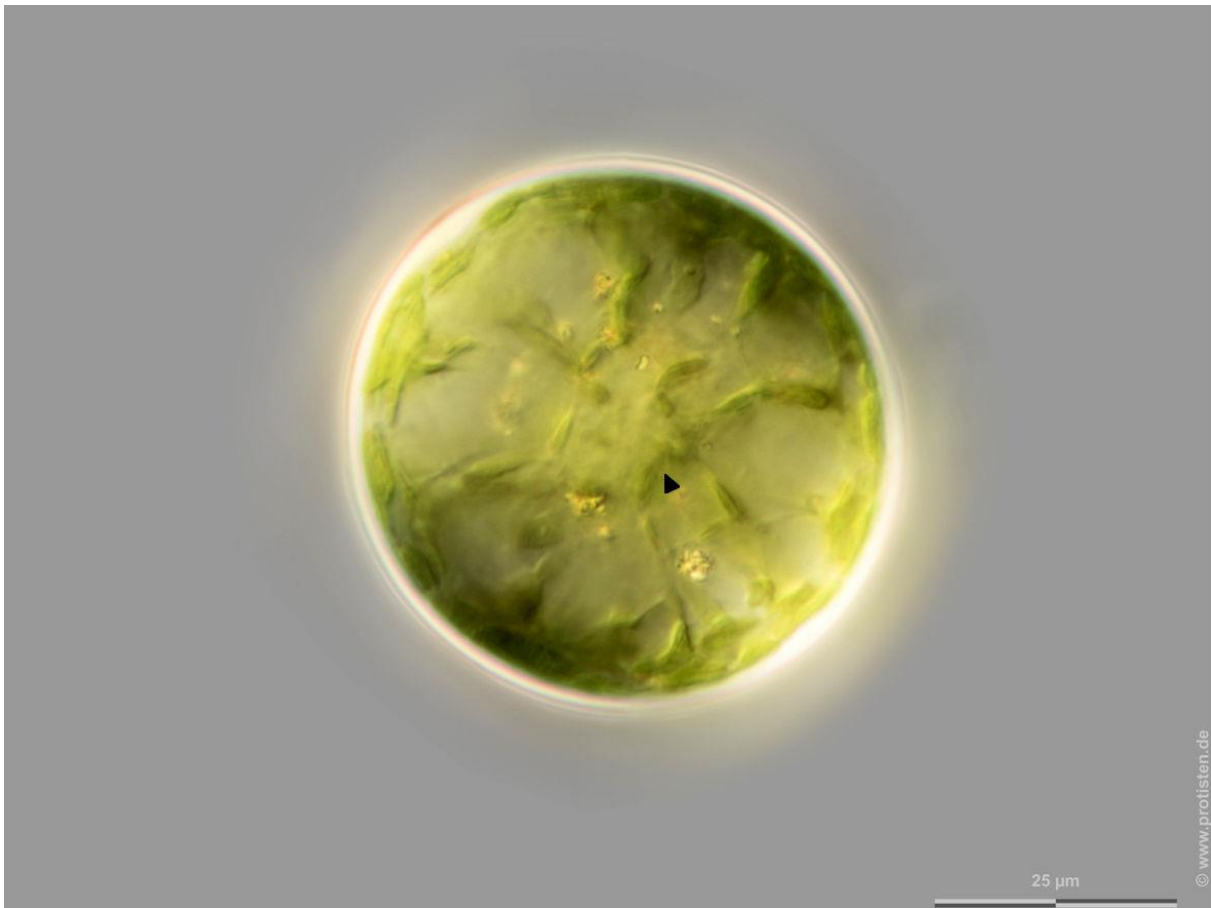


Fig. 2: The spherical cell body is largely filled with a sap vacuole. The chloroplasts are mainly on the surface of the sphere, covered by a thin layer of cell plasma, the cell nucleus (the arrowhead shows the location) is in the center. Scale bar indicates 25 µm.

Development of vegetative cells from cystozygotes in resting state

Green algae can develop resistant permanent forms in the course of sexual reproduction. Reserve substances (starch, oil) are accumulated in the cells, and carotenoids cover the green of the chlorophyll. These cystozygotes survive habitat desiccation and winter cold with freezing water bodies and usually require a short or longer dormancy period before they can germinate again. Many resting stages of chlorophytes have carotenoids in plasma, so they are colored yellow/orange/red/brown. The carotenoids protect against UV radiation. This is especially important for the chromosomes.

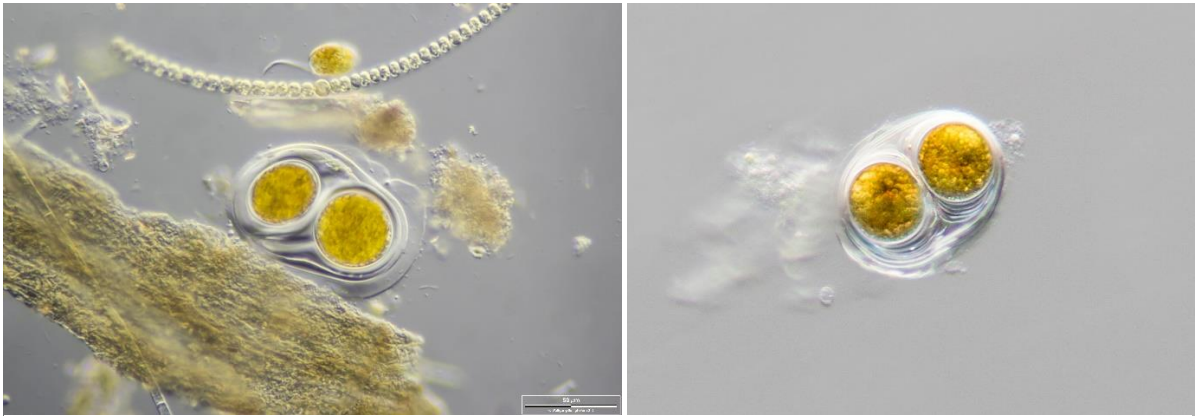


Fig. 3: Cystozygotes of *Eremosphaera viridis*. Scale bar indicates 50 µm.



Fig. 4: In the first step, the cystozygote cells divide in their protective gelatinous shell (left image). In the further division steps, the original gelatinous protective layer is dissolved (right image). Scale bars indicate 25 µm (left) and 250 µm (right).



Fig. 5: Cell in division. The reserve substances (oil) and the protective carotenoids from the cystozygote phase are still clearly visible. In the overview picture on the right a cell in asexual division (left), producing two autospores; in the middle of the picture is an empty cell envelope of a mother cell, which remains after autospore production. Scale bars indicate 100 µm (left) and 250 µm (right).

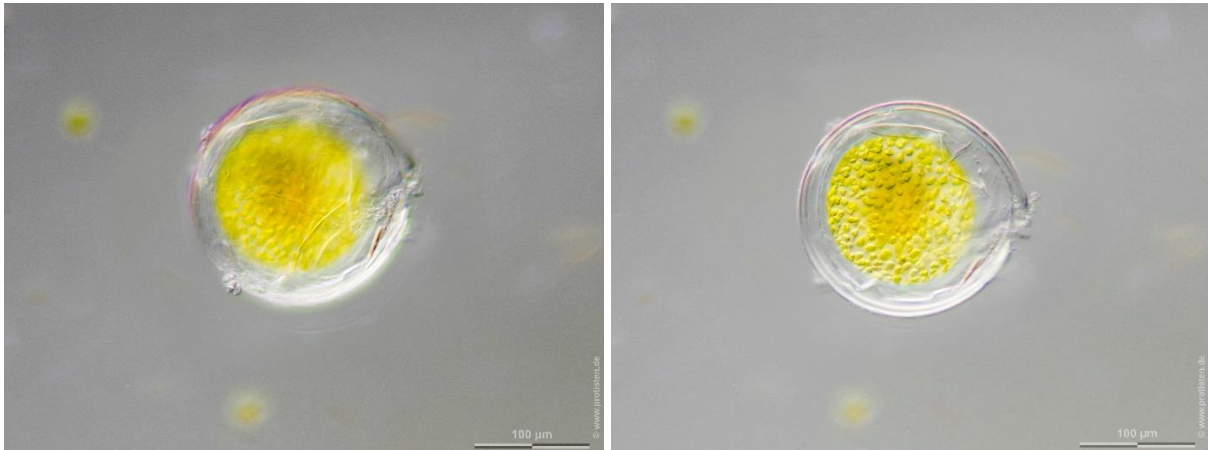


Fig. 6: After asexual division, in which the cell envelope of the mother cell usually bursts and releases (in the case of *Eremosphaera viridis*) two autospores. In this case a autospore remained in the old envelope. Remnants of the carotenoids can still be seen in the core area in the middle of the cell. Scale bars indicate 100 μm .