Volvox globator Linnaeus, 1758

Most likely ID: n.a.

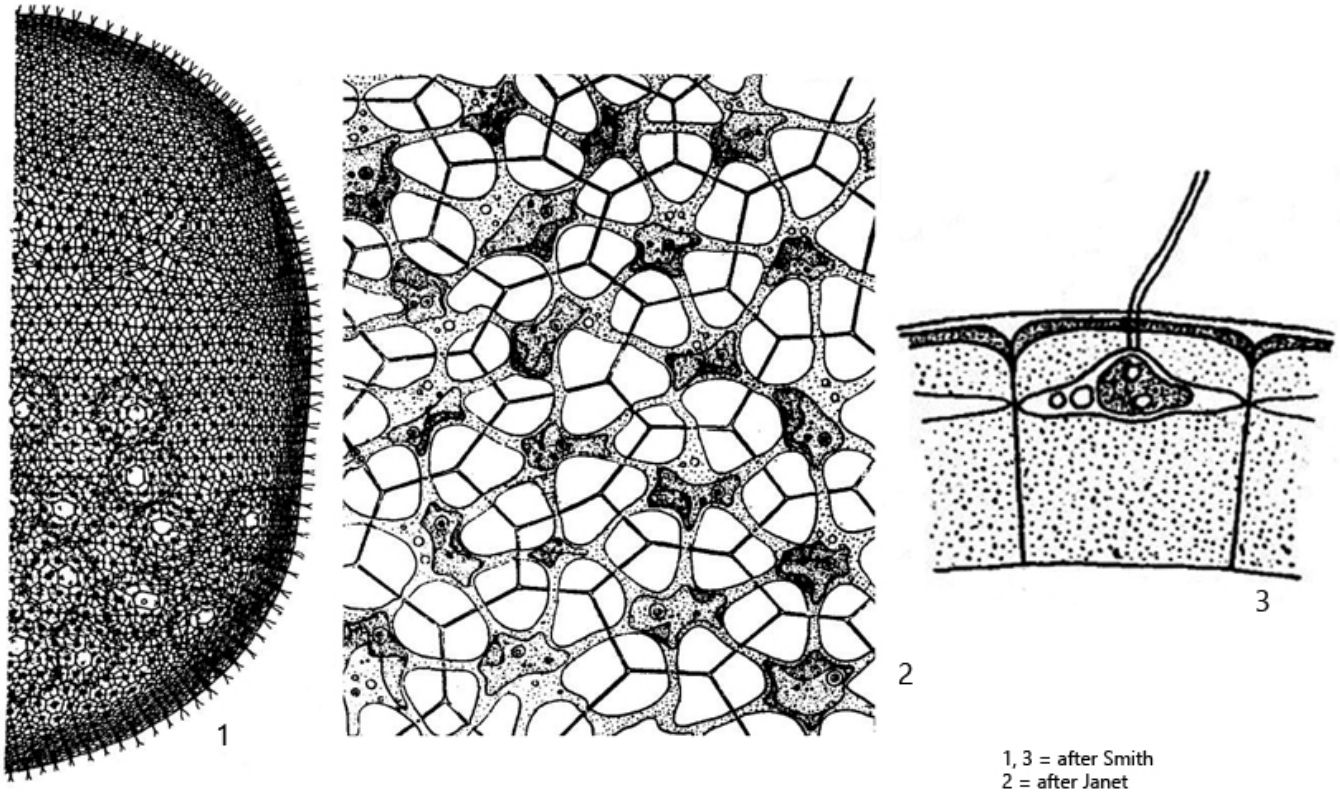
Synonym: n.a.

Sampling location: Flooded meadows along Aach river (Bohlingen)

Phylogenetic tree: *Volvox globator*

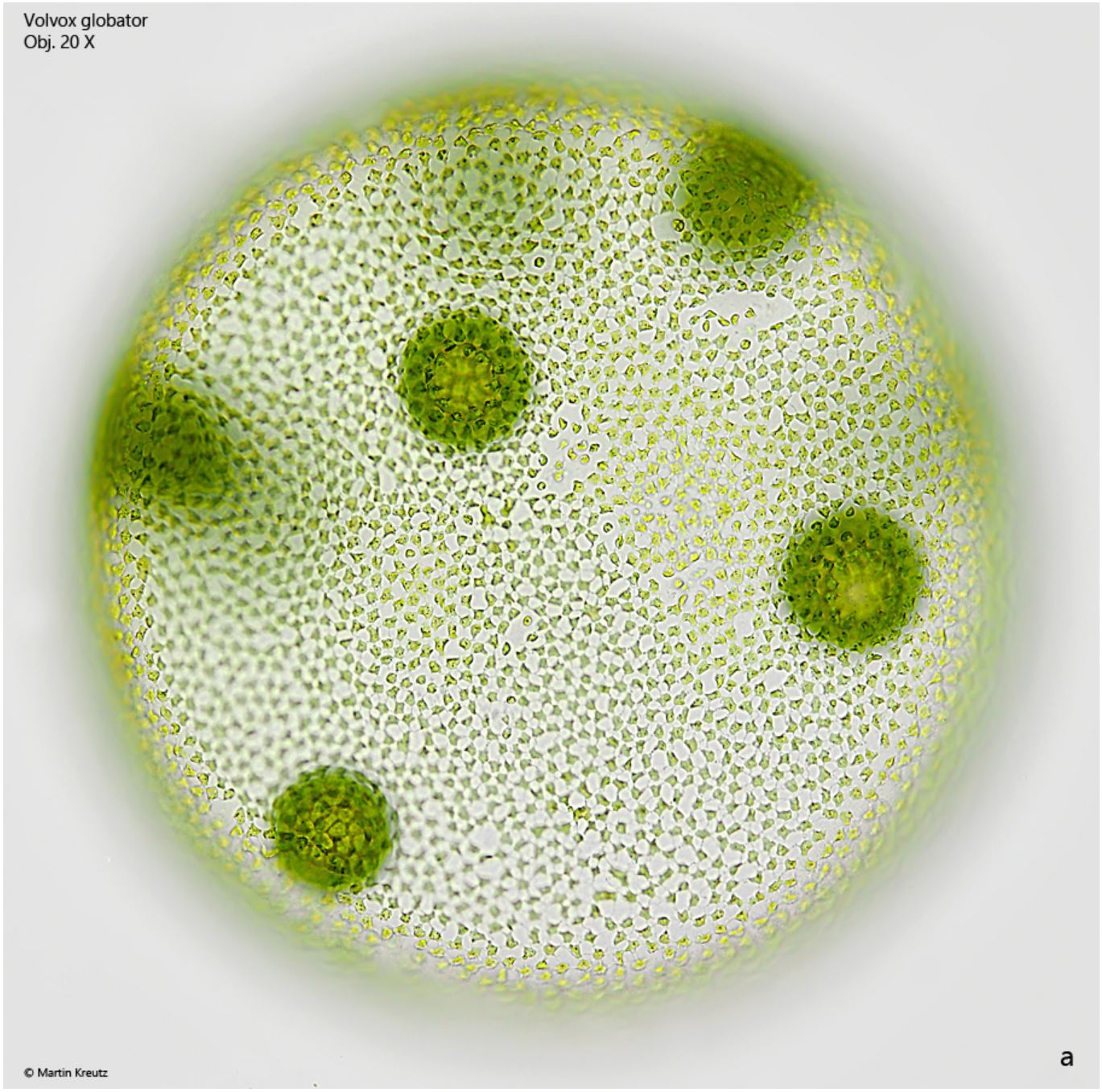
Diagnosis:

- coenobia spherical or ellipsoidal, 1500–20000 cells
- diameter of coenobia 400–575 µm
- cells 3–5 µm in diameter
- cells connected via thick strands of cytoplasm
- in apical view cells irregularly, star-shaped
- in lateral cells flat lenticular, conical or pear-shaped
- cells surrounded by polygonal pattern of zoned mucilage
- chloroplast trough-shaped, reaching in plasm connections
- chloroplast with one or several pyrenoids
- 2–6 contractile vacuoles
- 2 flagella of equal length



Volvox globator

Volvox globator resembles the much more common species *Volvox aureus* at low magnifications. However, the spherical coenobia appear much denser, as the cells are smaller and closer together. For a reliable differentiation, it is necessary to observe the cells on the spherical surface at high magnification. The cells then appear irregularly star-shaped in apical view (s. fig. 2). They are connected to each other by thick plasma strands. Each cell is also surrounded by an individual mucus sheath, which pushes against the mucus sheaths of the neighboring cells during growth. This creates fine separation lines between these mucus sheaths, which form a fine, polygonal pattern. This pattern is absent in *Volvox aureus*, where the mucus sheaths of the cells merge and appear homogeneous. When viewed laterally, the cells of *Volvox globator* usually appear lenticular and flattened. Gonidia, which are formed from cells capable of proliferation and which have withdrawn from the cell cluster, are found at greater intervals (s. fig. 4). They grow very strongly and begin to form daughter colonies with repeated cell divisions. Sexual reproduction is also possible. This involves the formation of sperm packets in males and oogonia in females. After fertilization, orange-coloured zygospores covered with spines are formed.


Volvox globator
Obj. 20 X
© Martin Kreutz
a

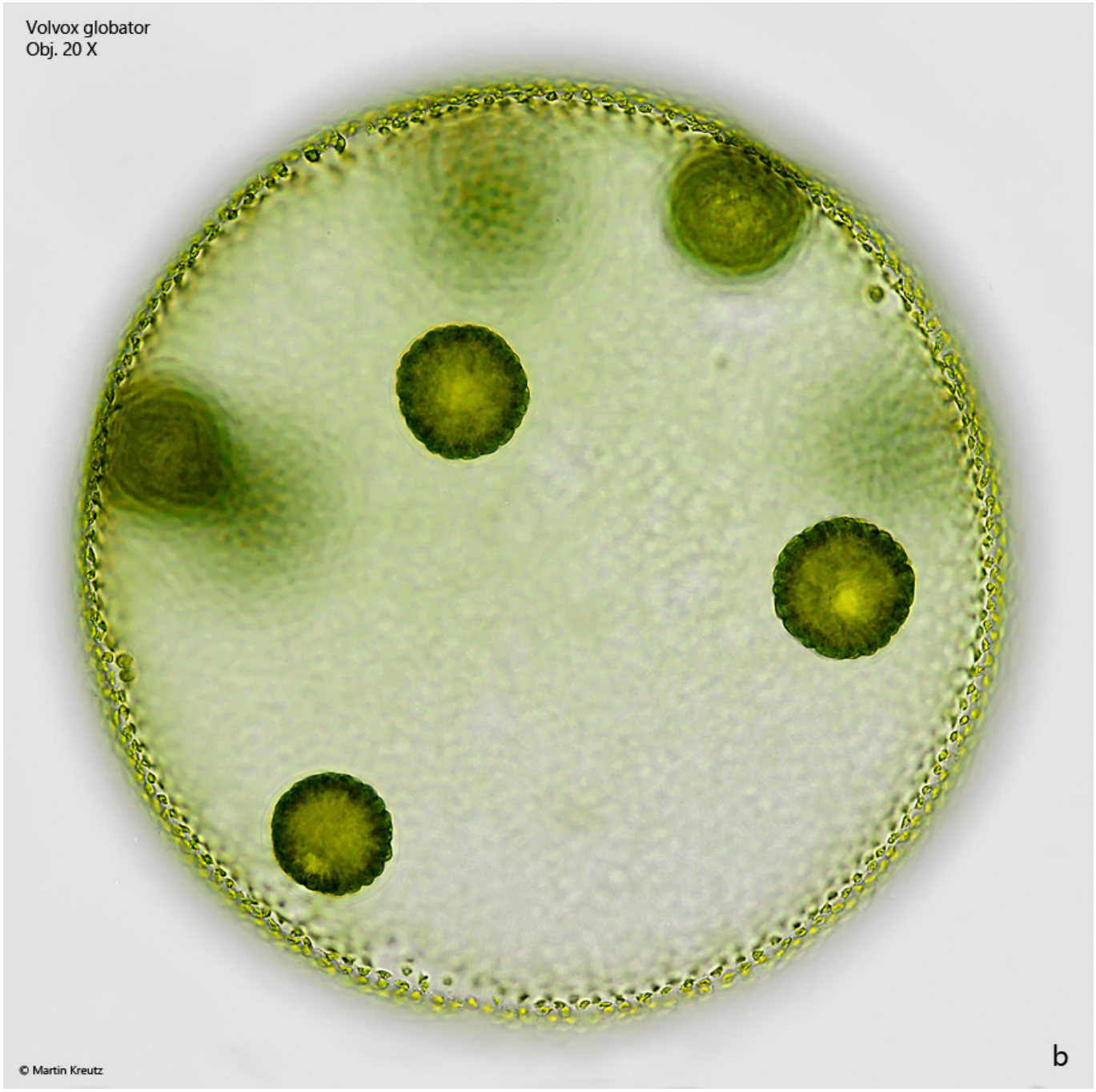


Fig. 1 a-b: *Volvox globator*. D = 530 µm (of coenobium). Two focal planes of a slightly squashed specimen. Obj. 20 X.

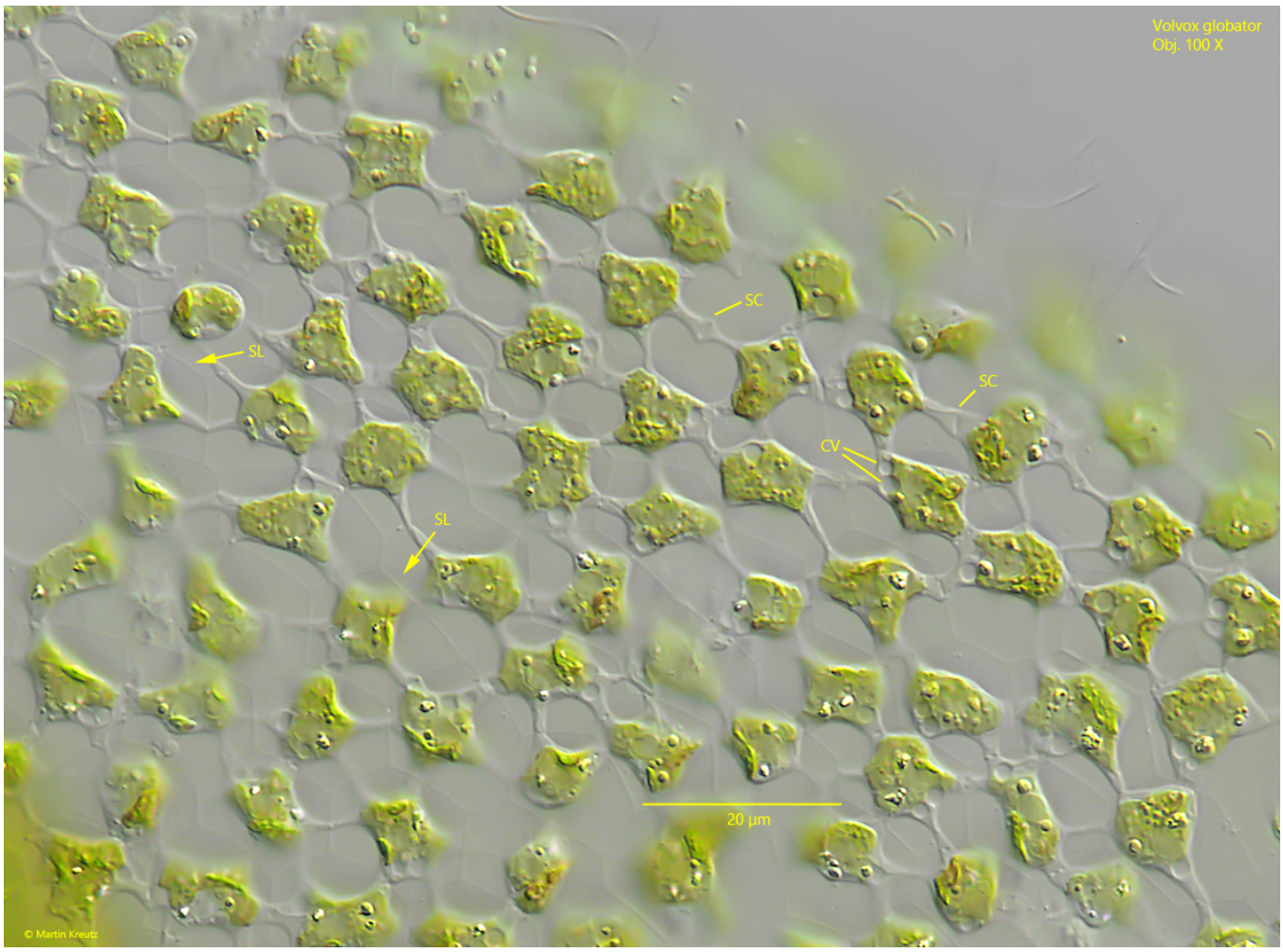


Fig. 2: *Volvox globator*. In apical view the cells are irregularly star-shaped. Note the thick strands of cytoplasm (SC) between the cells and the fine separation lines (SL) between the mucus sheath of each cell. CV = contractile vacuoles. Obj. 100 X.

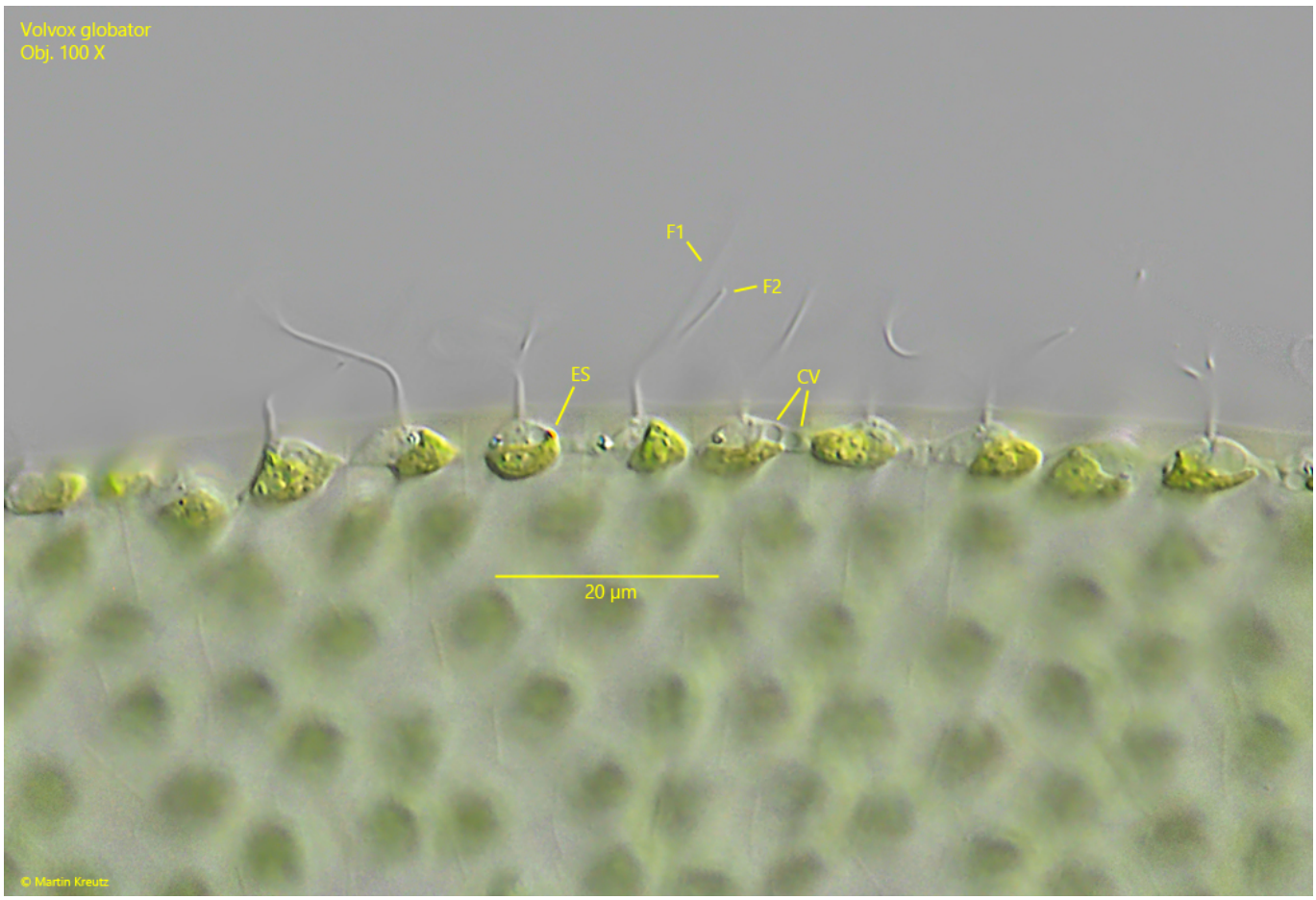


Fig. 3: *Volvox globator*. In lateral view the cells appear almost lenticular. CV = contractile vacuoles, ES = eyespot, F1 + F2 = flagella of equal length. Obj. 100 X.

Fig. 4: *Volvox globator*. The four-cell stage of a gonidium (GO) that will develop into an asexually formed daughter colony. Obj. 100 X.