Phalansterium digitatum Stein, 1878

Most likely ID: n.a.

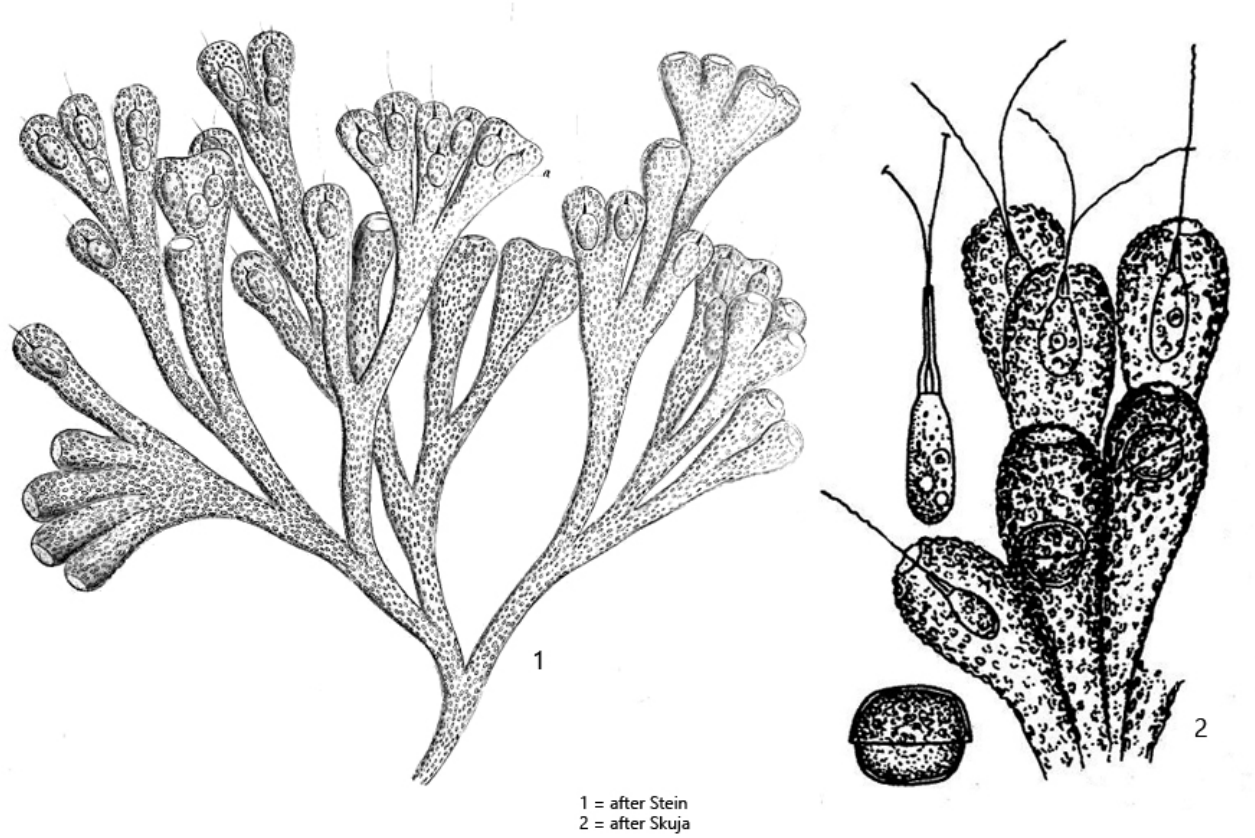
Synonym: n.a.

Sampling location: Ulmisried, Simmelried

Phylogenetic tree: *Phalansterium digitatum*

Diagnosis:

- colony of branched, gelatinous tubes
- with colorless or brownish spherules embedded in gelatinous matrix
- oval or pyriform cells located at distal end of tubes
- length of cells 13–24 µm
- 1–2 flagella, twice of body length
- base of flagella surround by a collar of cytoplasm
- nucleus with a central nucleolus in mid-body
- 2 contractile vacuoles in posterior half



Phalansterium digitatum

I find *Phalansterium digitatum* frequently and regularly between floating aquatic plants or on the top layer of mud. In old samples, the species sometimes reproduces strongly and also likes to settle on the floating coverslip.

I usually find clearly branched colonies (s. fig. 1). Only rarely have I also found free-floating, spherical colonies (s. figs. 2 and 3). The finger-shaped gelatinous tubes are interspersed with approx. 2 µm large grains, which are often brownish in color. They are excreted by the flagellates themselves. They are not detritus.

Some characteristics of *Phalansterium digitatum* appear to be variable. Various authors have observed either one or sometimes two contractile vacuoles. In my population there were usually two (s. fig. 6 a-b). The number of flagella also seems to be variable. Cienkowsky (1870) and Skuja (1964) have already noted that the cells in some colonies have only one flagellum and in other colonies two. I can confirm this observation, as I have also observed cells with one flagellum (s. figs. 1 and 4) but also with two flagella (s. fig. 6 a-b).

This variability of characteristics makes it difficult to distinguish it from the similar

species *Spongomonas uvella*. This species also forms branched colonies whose tubes are interspersed with brownish granules. However, the tubes are said to be shorter and not so strongly branched. According to Jeuck & Arndt (2014), the absence of a collar at the base of the flagella, which only *Phalansterium digitatum* possesses, remains a reliable distinguishing feature.

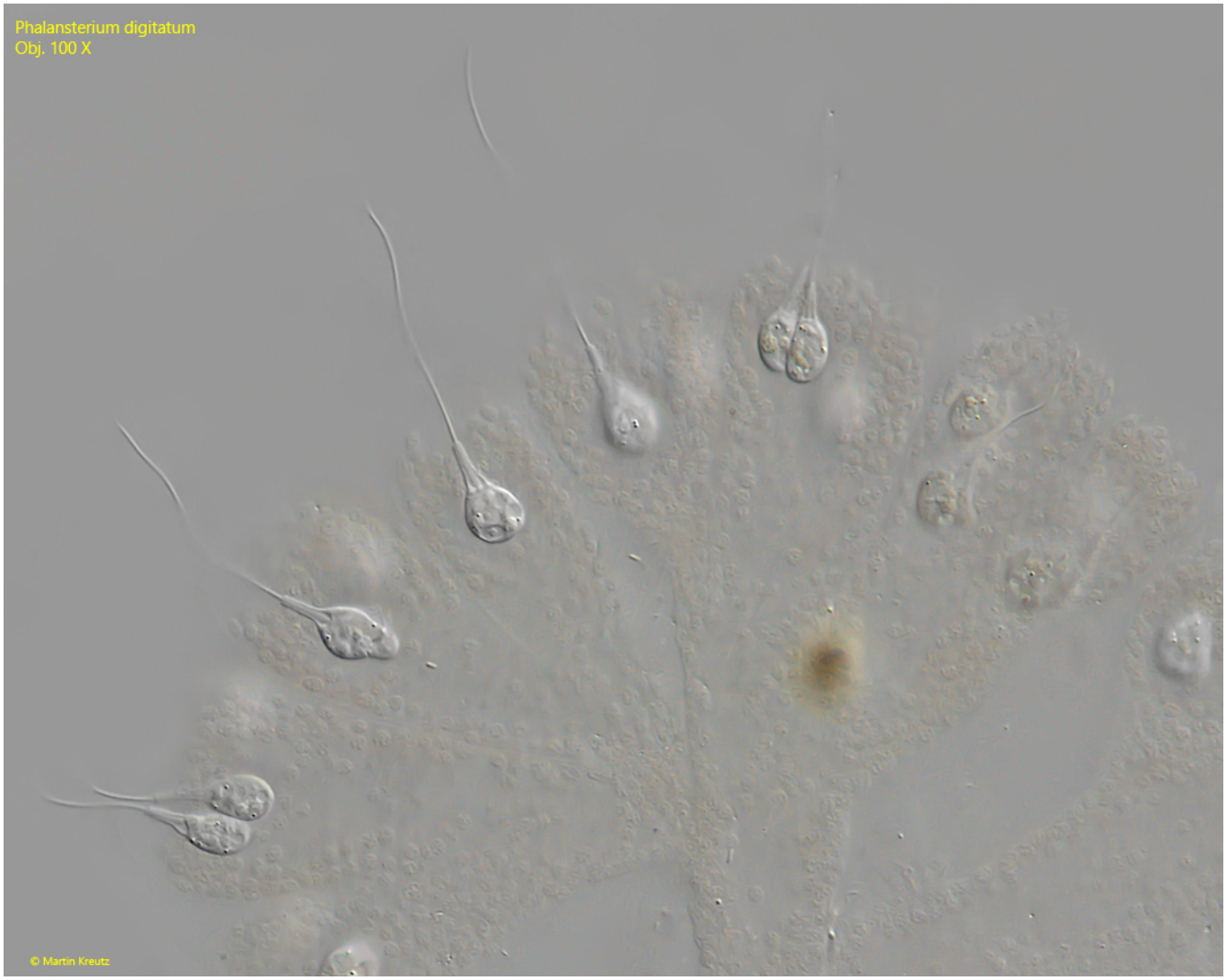


Fig. 1: *Phalansterium digitatum*. L = 13–15 µm (of cells). A part of a colony of branched tubes. The cells are located at the distal ends of the tubes have only one flagellum. In the gelatinous mass of the tubes brownish colored spherules are embedded. Obj. 100 X.

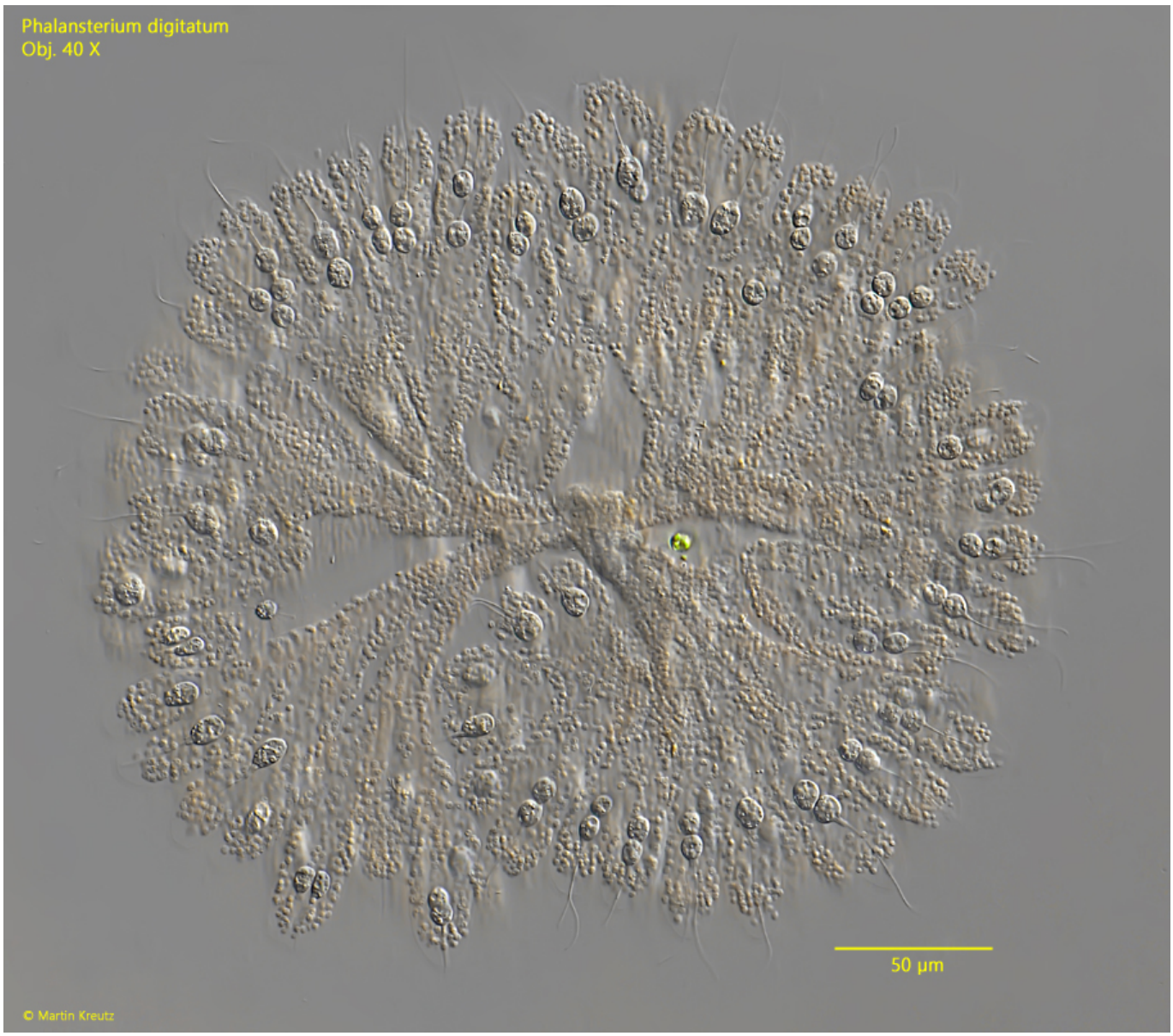


Fig. 2: *Phalansterium digitatum*. D = 290 µm (of colony). A sligthly squashed, spherical colony. Obj. 40 X.



Fig. 3: *Phalansterium digitatum*. D = 180 µm (of colony) A freely floating, spherical colony with focal plane on the surface with an apical view on the gelatinous tubes. Obj. 60 X.



Fig. 4: *Phalansterium digitatum*. 12–16 µm. A part of the colony as shown in fig. 2 in detail. Obj. 100 X.

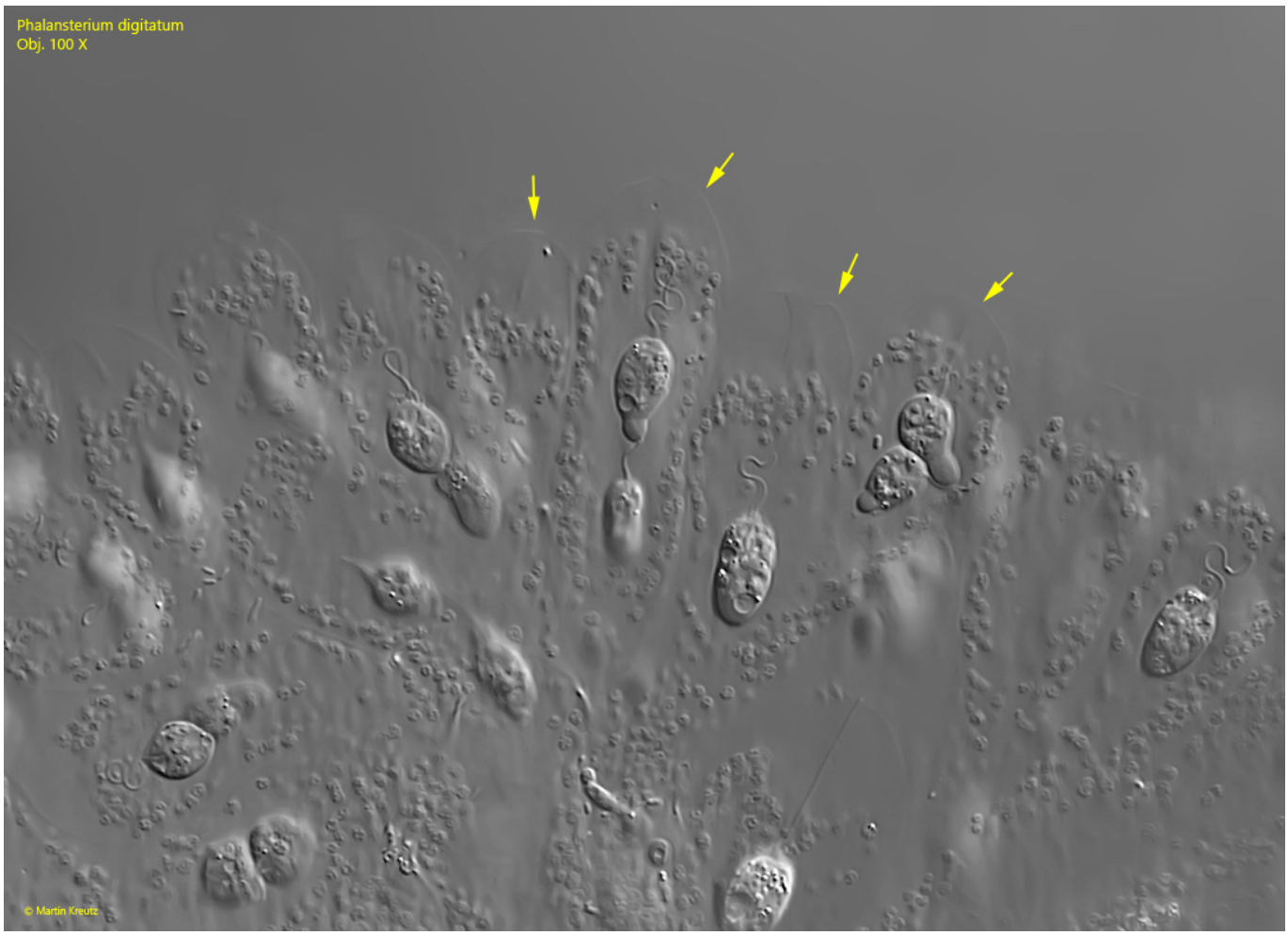


Fig. 5: *Phalansterium digitatum*. In a slightly squashed colony the delicate distal ends of the gelatinous tubes are visible (arrows). Obj. 100 X.

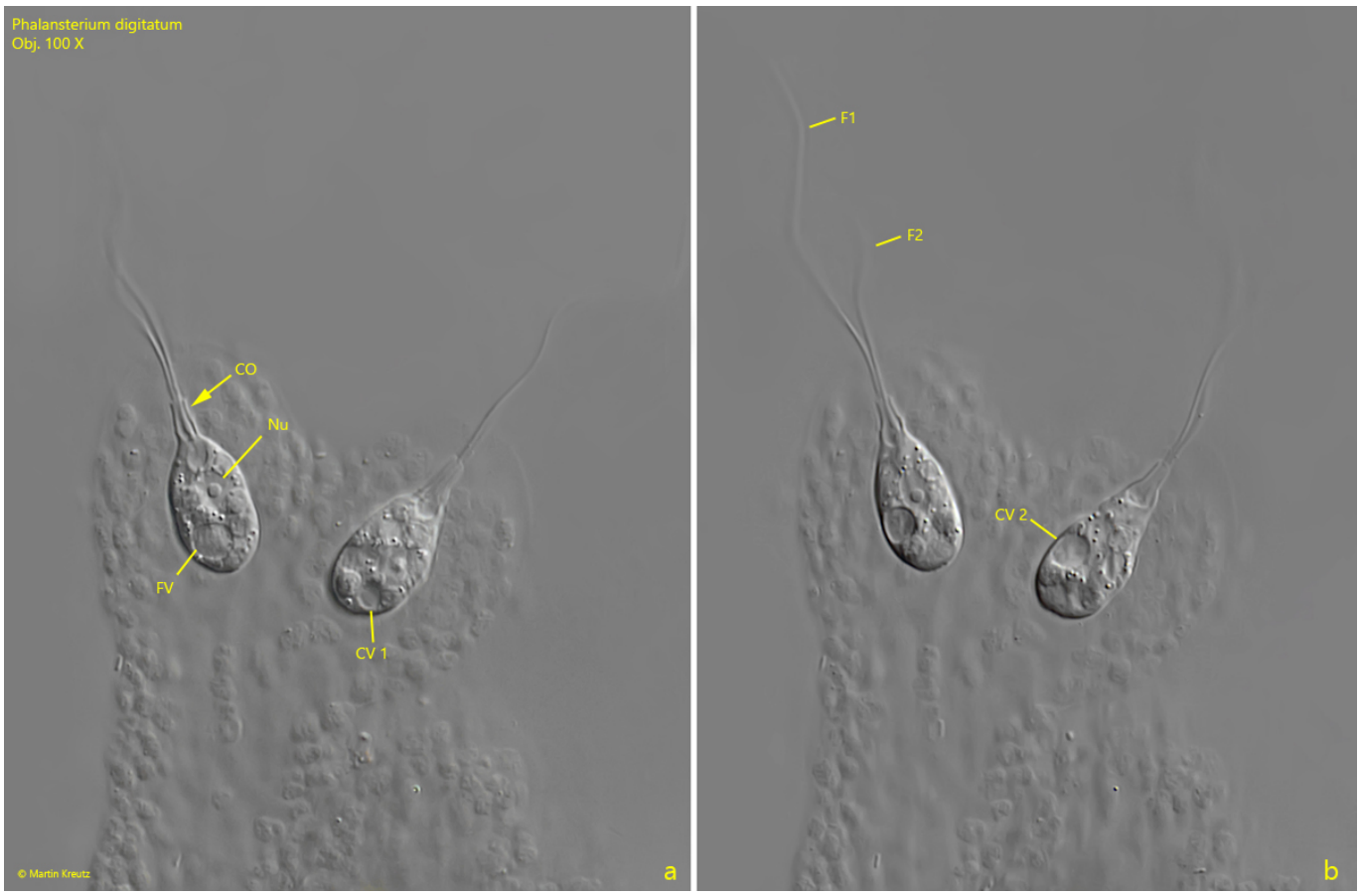


Fig. 6 a-b: *Phalansterium digitatum*. Two cells of a colony with each two flagella (F1, F2). The two contractile vacuoles (CV 1, CV 2) are located in the posterior half. CO = collar of cytoplasm, NU = nucleus with a central nucleolus. Obj. 100 X.

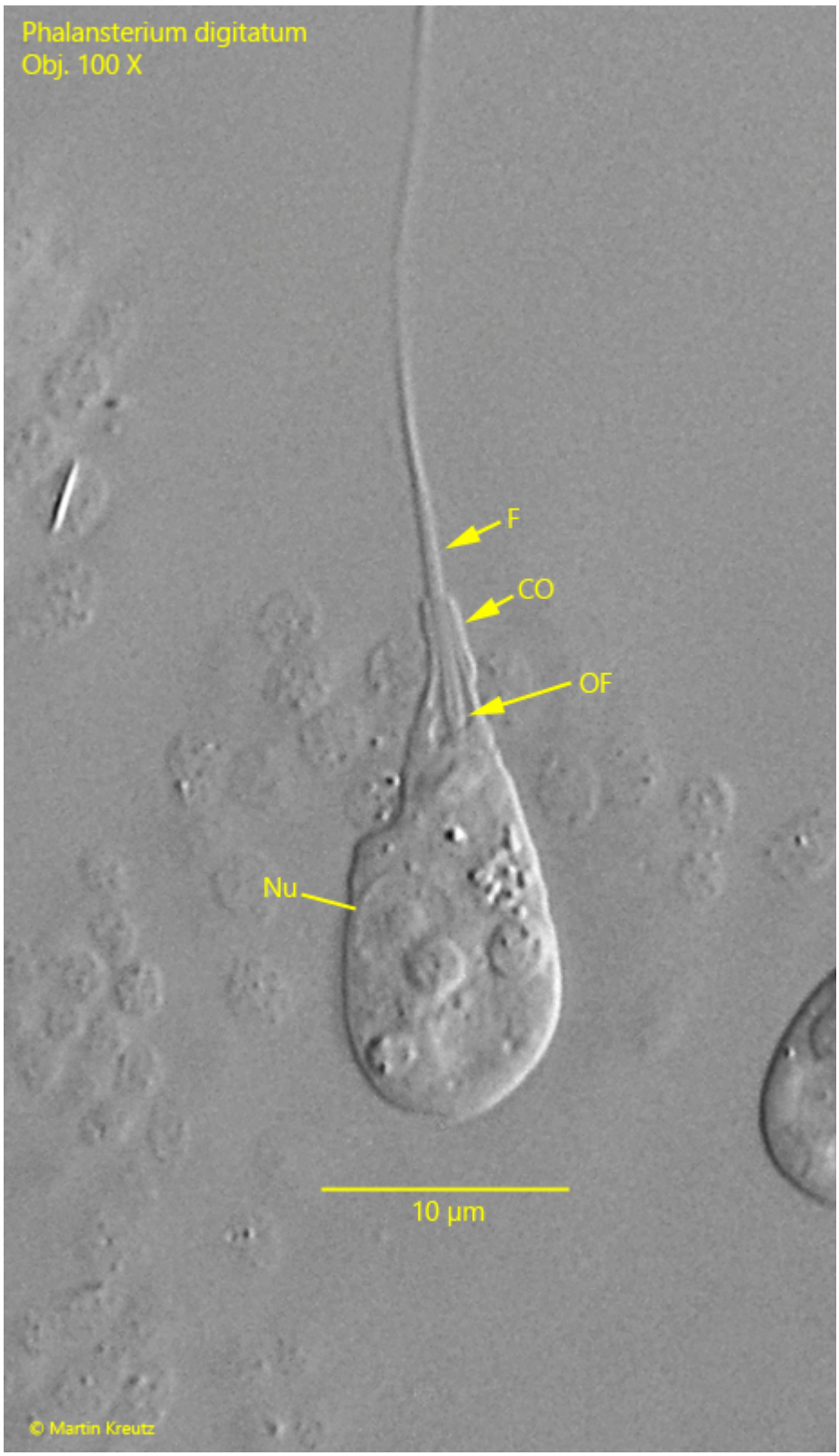


Fig. 7: *Phalansterium digitatum*. L = 20 µm. A cell with 2 flagella (F) in detail. The base of the flagella is surrounded by a narrow collar (CO) of cytoplasm. The spherules embedded in the gelatinous mass of the tubes have a diameter of about 2 µm. Obj. 100 X.

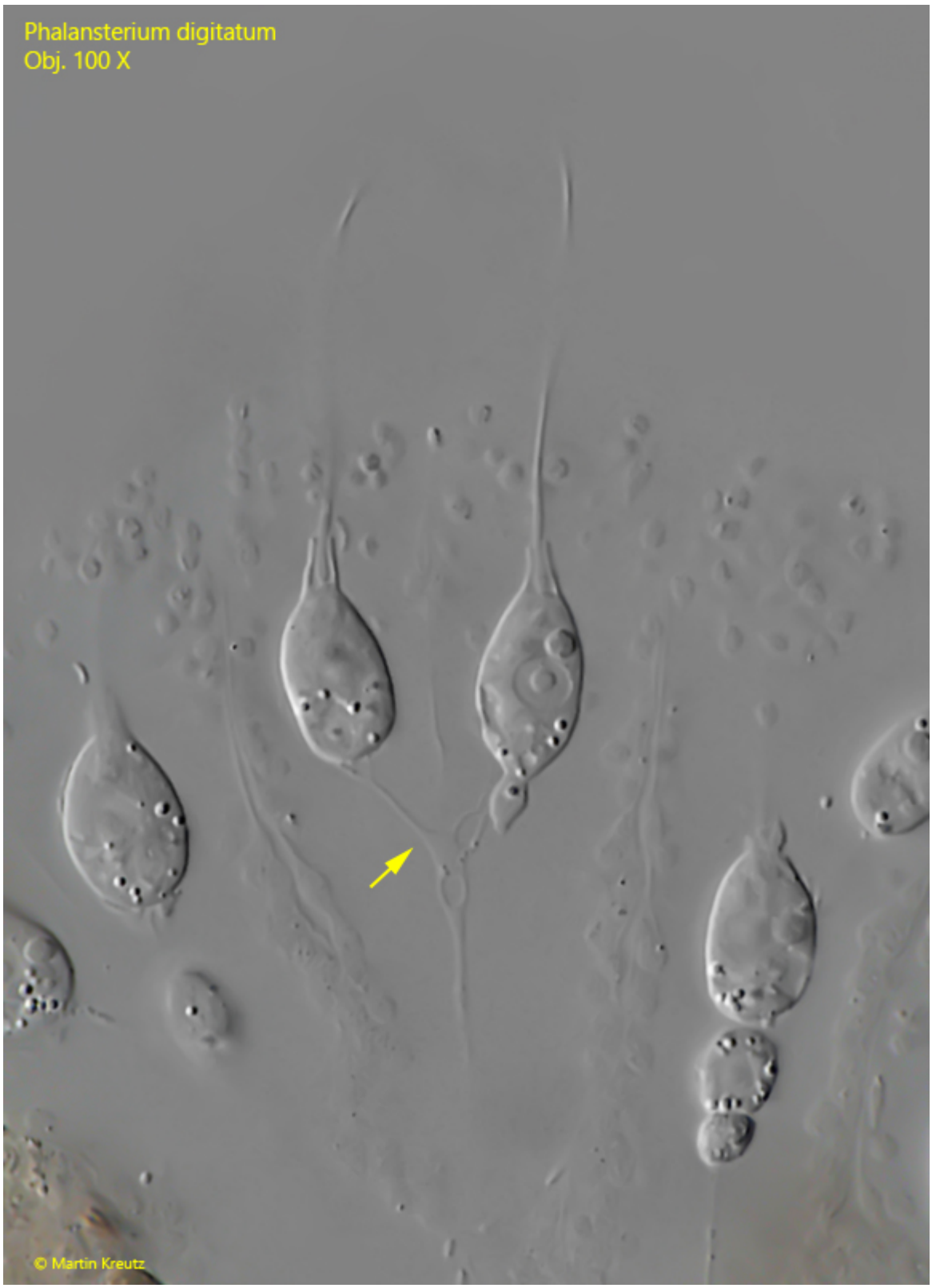


Fig. 8: *Phalansterium digitatum*. L = 16 µm. After cell division the daughter cells are connected with the posterior ends via a filament of cytoplasm (arrow). Obj. 100 X.