

Psilotricha viridis

(Penard 1922) Kahl 1932

Most likely ID: n.a.

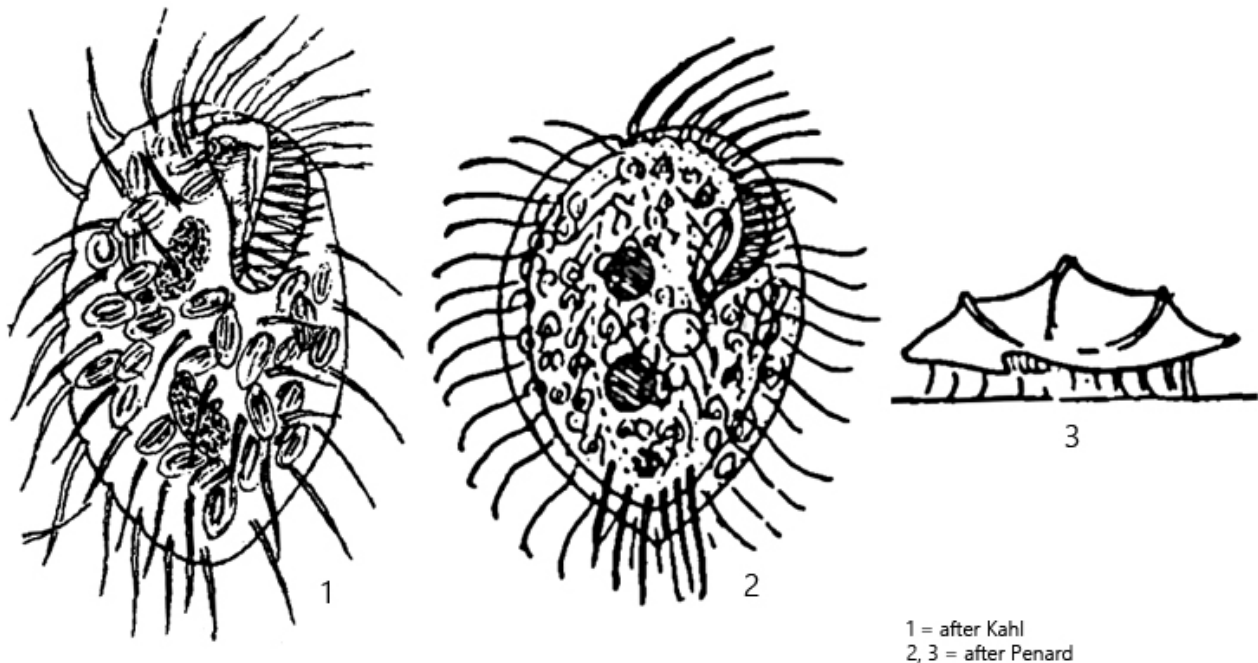
Synonym: *Balladina viridis*

Sampling location: [Simmelried](#), Mindelsee

Phylogenetic tree: [Psilotricha viridis](#)

Diagnosis:

- body irregular oval, dorso-ventrally flattened
- dorsal side convex
- length 45–50 µm
- adoral zone about one thirds of body length
- undulating membrane on right side of adoral zone
- dorsal side with three ribs
- dorsal side with three rows of bristles
- two globular macronuclei
- one spherical micronucleus between macronuclei
- one contractile vacuole, dorsal, left side
- cytoplasm green due to symbiotic algae
- symbiotic algae with eyespot, nucleus and contractile vacuole
- three rows of ventral cirri
- two postoral cirri
- left and right marginal rows of cirri
- frontal, buccal and transverse cirri absent



Psilotricha viridis

I only rarely find *Psilotricha viridis* and mostly in the cold season. Penard also found his specimens in January and Kahl mentions “widespread in the cold season”. The specimens shown below come from the [Simmelried](#) and from the silting-up area of the Mindelsee, where nutrient-poor puddles of meltwater form in spring. *Psilotricha viridis* was first assigned by Penard (1922) as *Balladina viridis* and transferred to the genus *Psilotricha* by Kahl in 1932.

Although *Psilotricha viridis* is small in size, it stands out in samples due to its green coloration and turtle-like shape. On the nearly flat ventral side, the adoral zone is particularly noticeable, which extends to the first third. On the right side of the adoral zone there is an undulating membrane, which is, however, difficult to discern. The arrangement of cirri is greatly reduced in *Psilotricha viridis*. There are no frontal, buccal and transverse cirri. Caudal cirri are also absent. Instead, there are three rows of ventral cirri, of which the left row is the shortest and consists of only two cirri. Slightly set off below the oral apparatus are two postoral cirri (s. fig. 5). On the left and right side of the body run marginal rows of cirri.

The dorsal side is slightly convex in shape and has 3 distinct ridges. Parallel to these ridges run three rows of short bristles (s. fig. 4 a-b). The contractile vacuole is also located dorsally, shifted toward the left side near the mouth opening. The nuclear apparatus consists of two spherical macronuclei, with the likewise spherical micronucleus located in their center (s. fig. 6).

Particularly interesting are the symbiotic algae of *Psilotricha viridis*. They have a distinct eyespot, which is also mentioned by Kahl (1932). I was likewise able to discern this eyespot and examined the algae more closely. They are between 6–14 µm long and fully grown cells are elliptical or oval in shape. They possess their own nucleus (s. figs. 7 and 10 b), and in some cells I was also able to identify a contractile vacuole (s. figs. 10 c and 10 g). The shape of the chloroplast is hard to see. It seems to be only a single chloroplast. The algal cells often contain oily droplets. Particularly striking is a papilla at the anterior end (s. figs. 9 a, 9 d and 10 d). It is best observed when the algal cells flow out of a squashed specimen of *Psilotricha viridis*. This papillae and the remaining features suggest that the symbiotic algae may be members of the genus *Chlamydomonas*.

In some specimens of *Psilotricha viridis* I was able to find almost colorless symbiotic algae (s. figs. 11 and 12). They were obviously located in food vacuoles (s. fig. 11). This could indicate that the symbiotic algae are occasionally digested by the host cells when other food is not available or when the population of the algae becomes too large.

In 2019, Lou et al. described the similar species *Hemiholosticha kahli* on the island of Guam. In doing so, the authors assumed that they were examining the species *Psilotricha viridis* described by Kahl and, on the basis of their investigation results, concluded that this species (*Psilotricha viridis* sensu Kahl) must be transferred to the genus *Hemiholosticha*. However, the authors could only assume that it was *Psilotricha viridis* sensu Kahl. Proof is lacking.

Because my population matches the species *Psilotricha viridis* described by Kahl in all characteristics that I am able to verify, I also, with knowledge of the publication by Lou et al. (2019), continue to regard it as *Psilotricha viridis*.

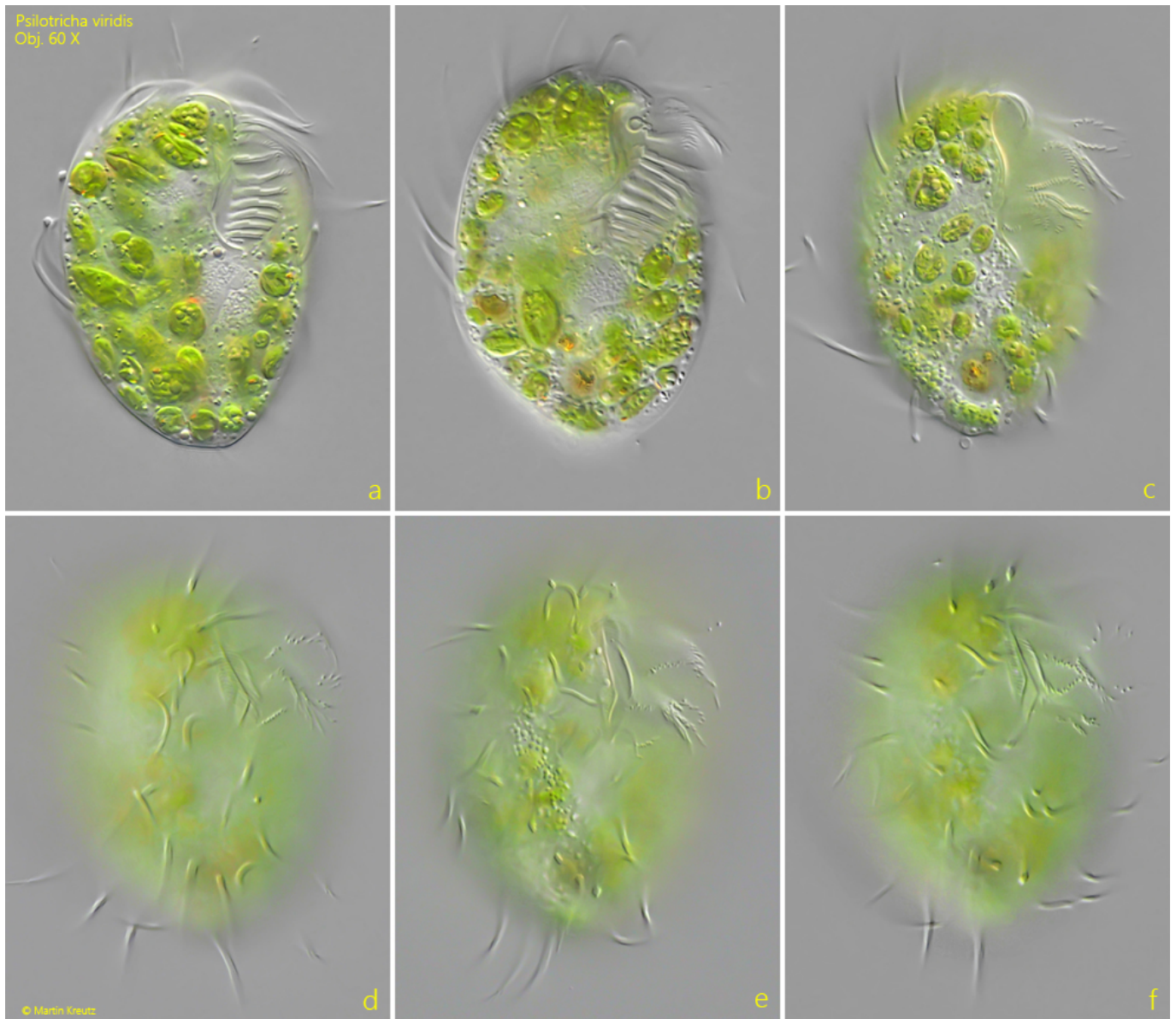


Fig. 1 a-f: *Psilotricha viridis*. L = 67 μ m. Different focal planes of a freely swimming specimen from ventral. Obj. 60 X.

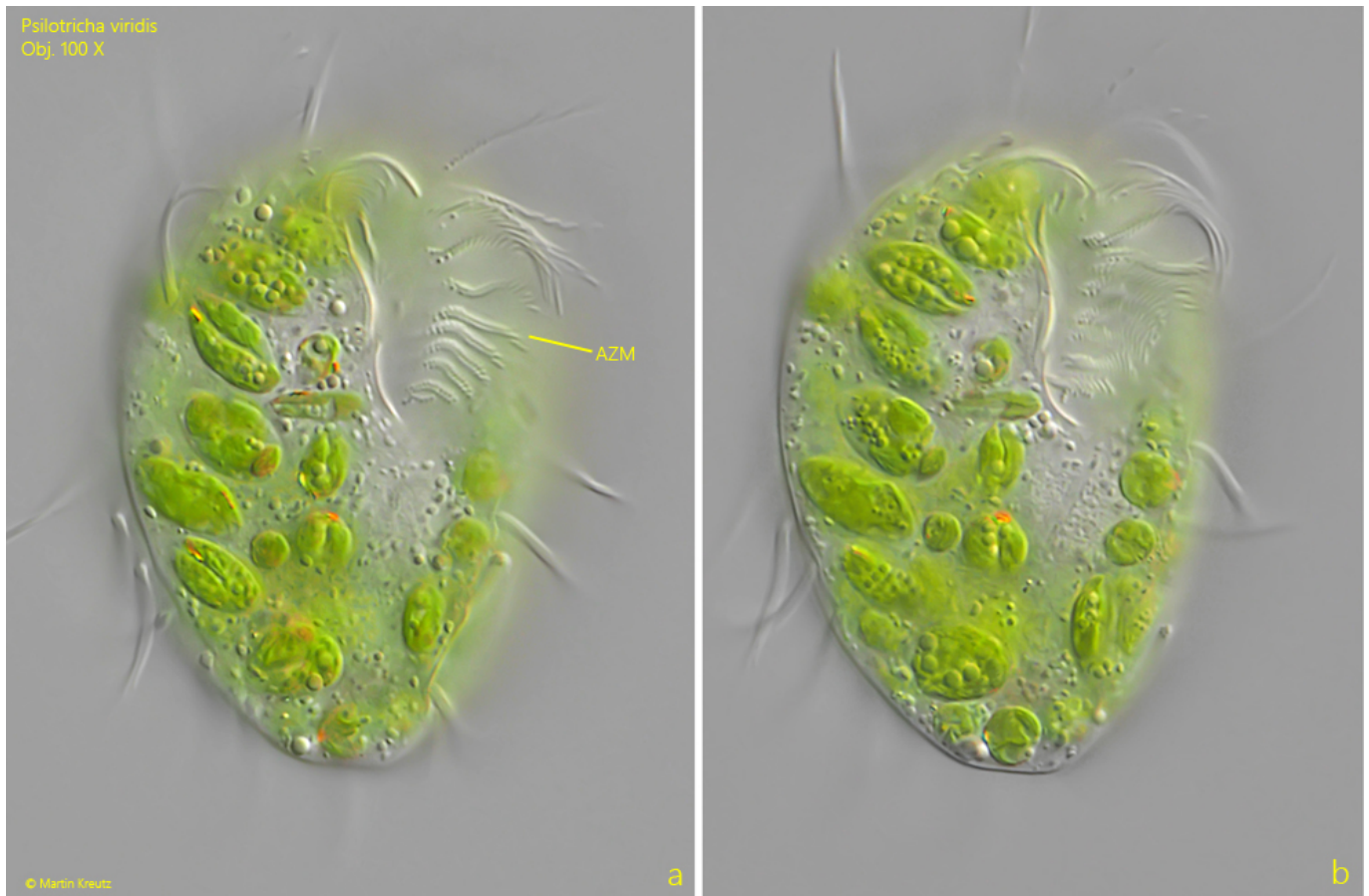


Fig. 2 a-b: *Psilotricha viridis*. L = 65 μ m. A second specimen from ventral. AZM = adoral zone of membranelles. Obj. 100 X.

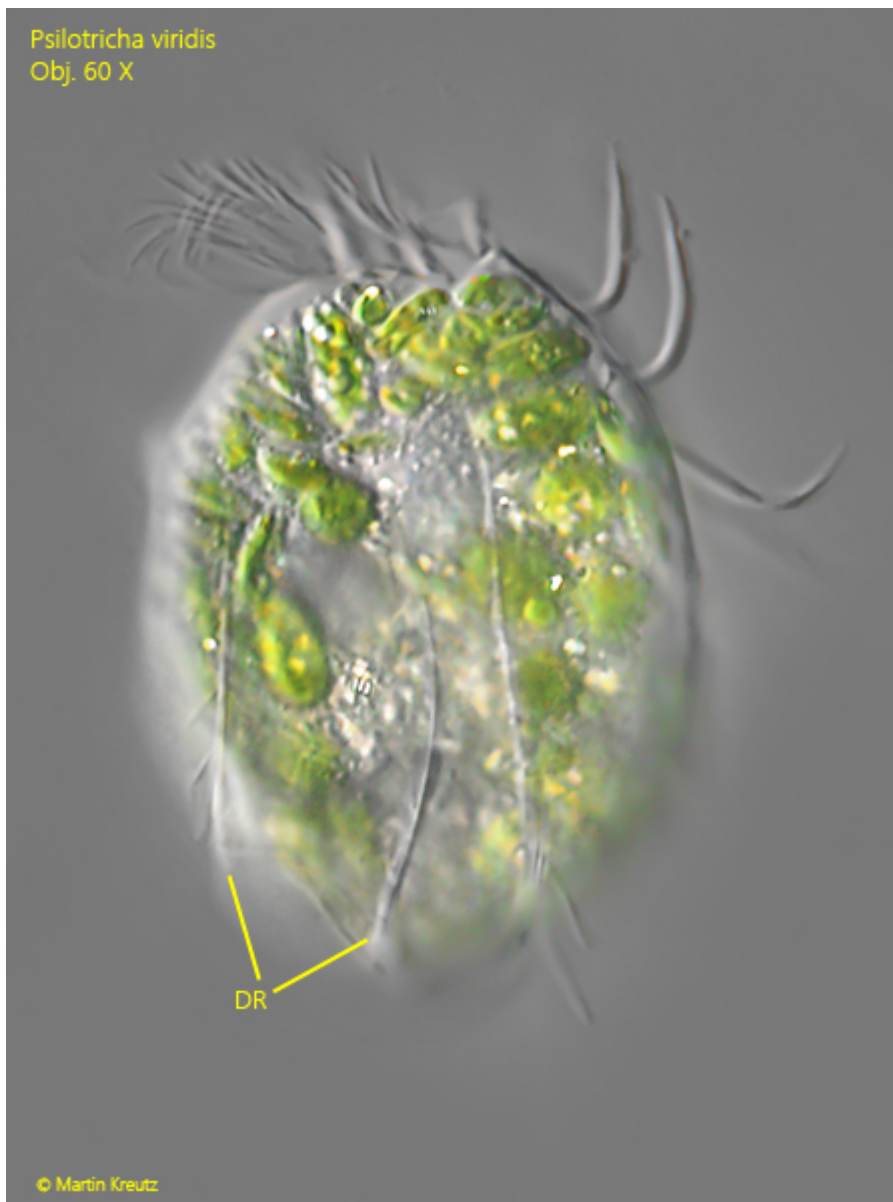


Fig. 3: *Psilotricha viridis*. L = 62 μ m. A specimen from dorsal with focal plane on the three ribs. Obj. 100 X.

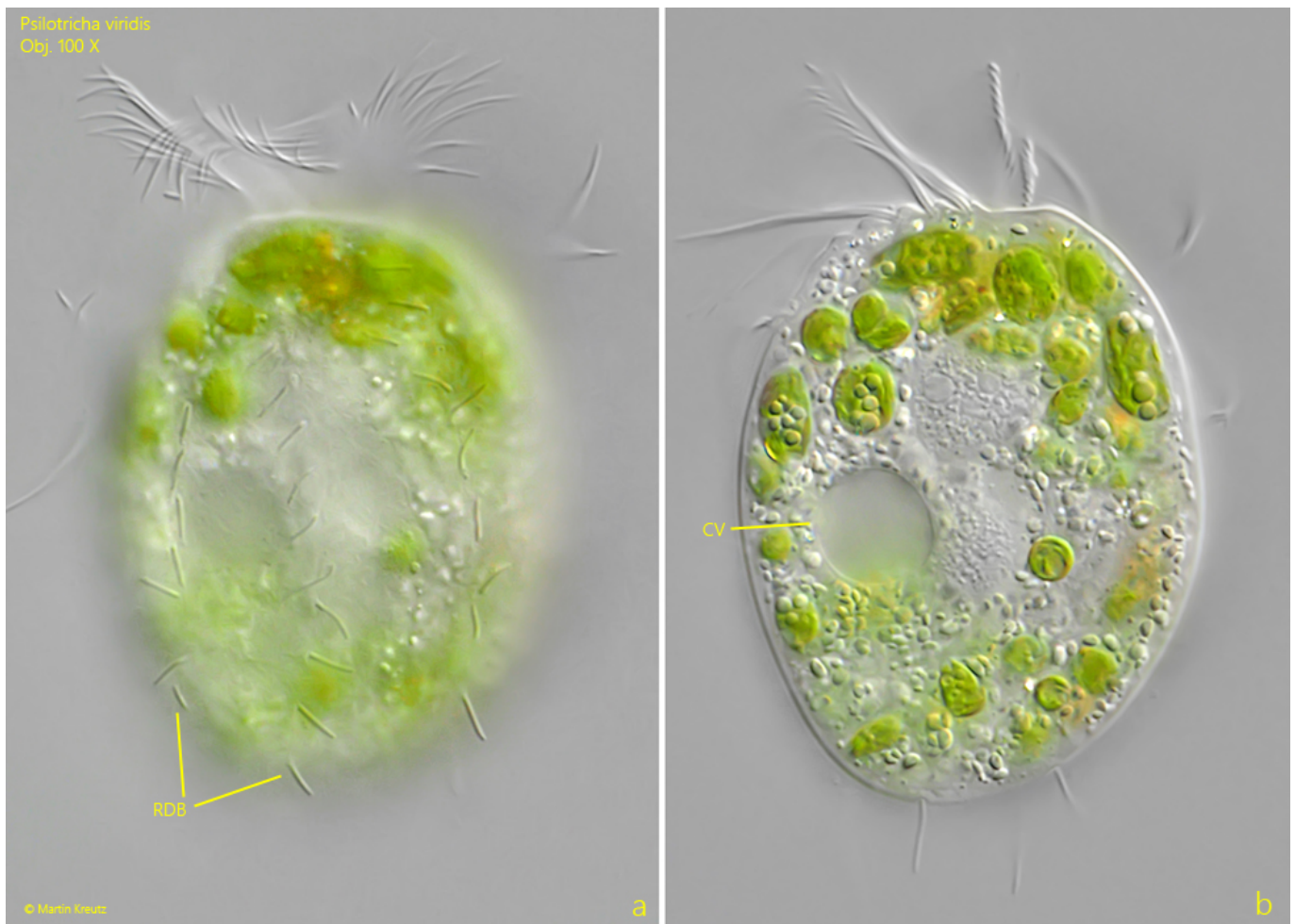


Fig. 4 a-b: *Psilotricha viridis*. A slightly squashed specimen from dorsal with focal plane on the three rows of short bristles (running parallel to the ribs) and on the contractile vacuole on the left side. Obj. 100 X.

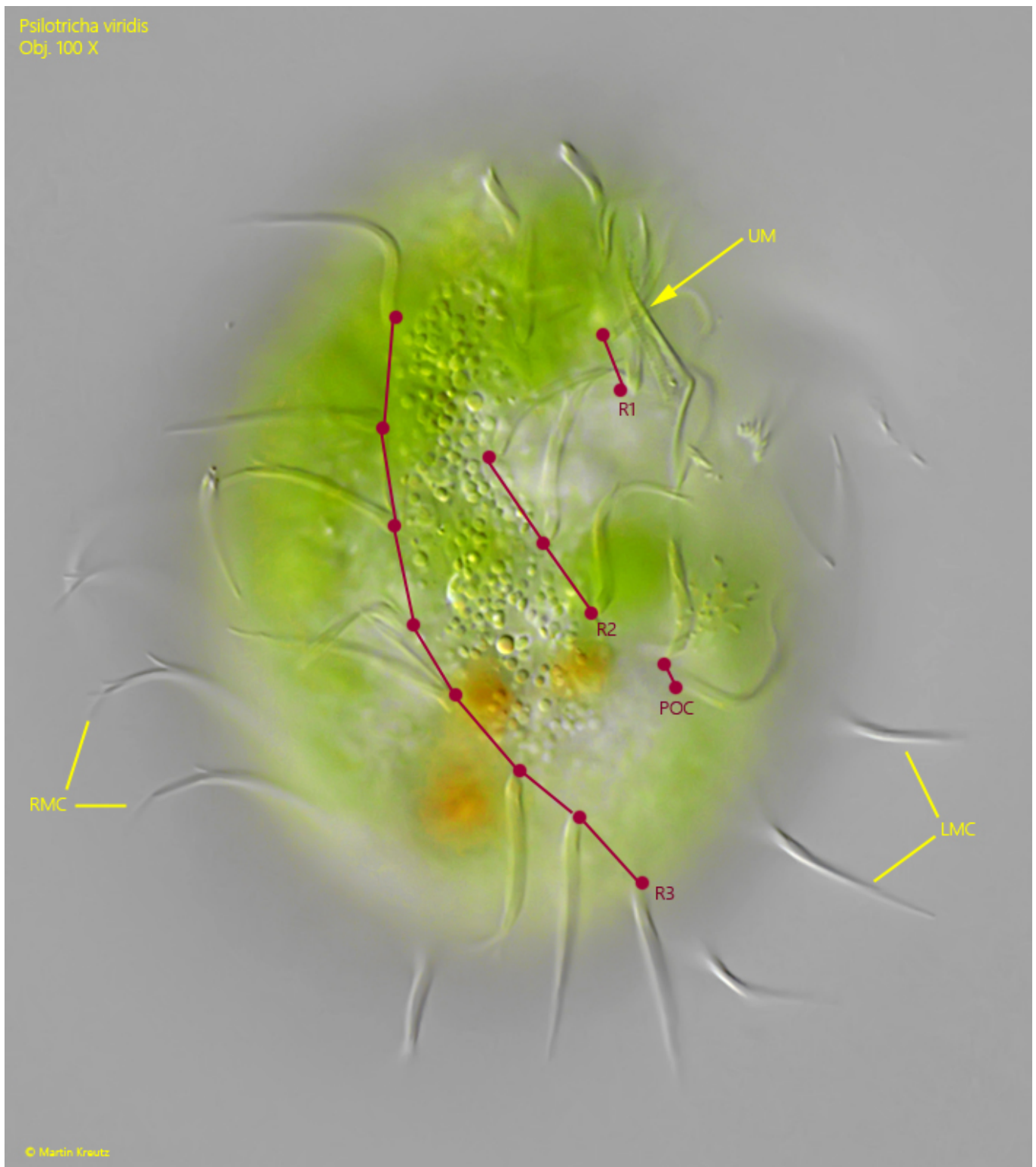


Fig. 5: *Psilotricha viridis*. The ciliation of the ventral side in a slightly squashed specimen. Note the two postoral cirri (POC) below the oral apparatus. LMC = left marginal cirri, RMC = right marginal cirri, R1-R3 = ventral rows of cirri, UM = undulating membrane. Obj. 100 X.

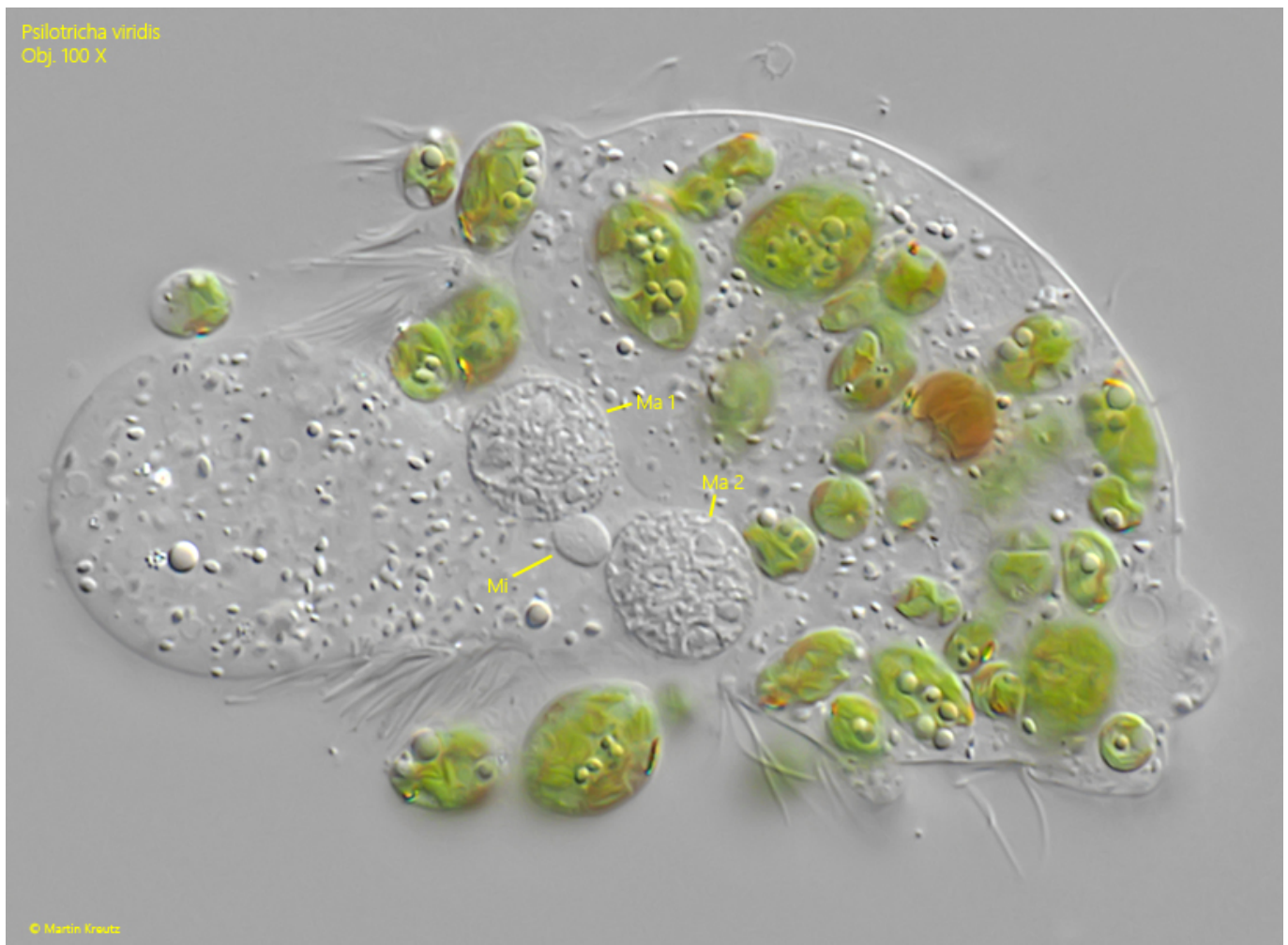


Fig. 6: *Psilotricha viridis*. The two macronuclei (Ma 1, Ma 2) and the micronucleus (Mi) in a squashed specimen. Obj. 100 X.

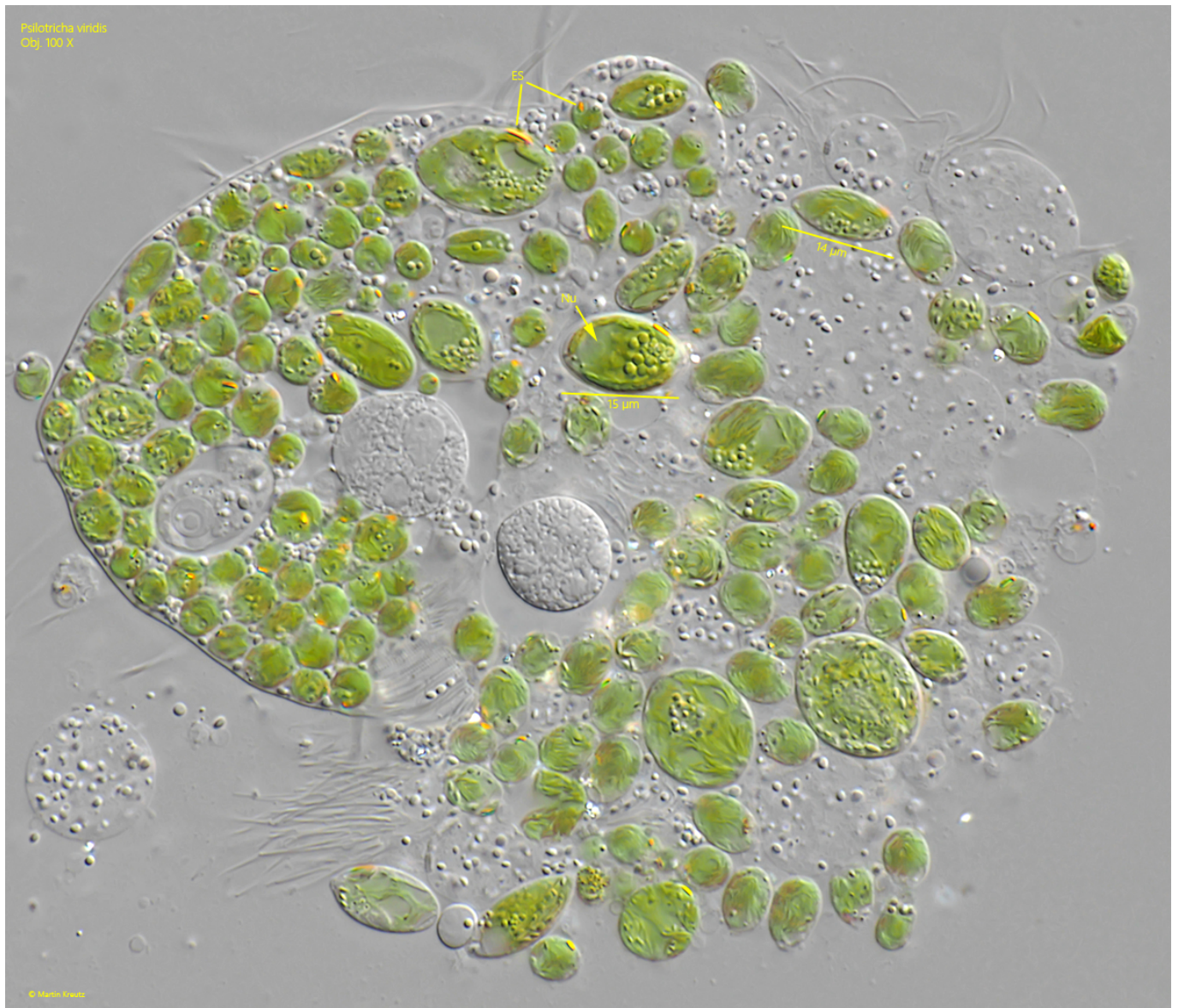


Fig. 7: *Psilotricha viridis*. Overview on the symbiotic algae in a squashed specimen. Note the orange eyespots (ES) of the symbiotic alage. Obj. 100 X.

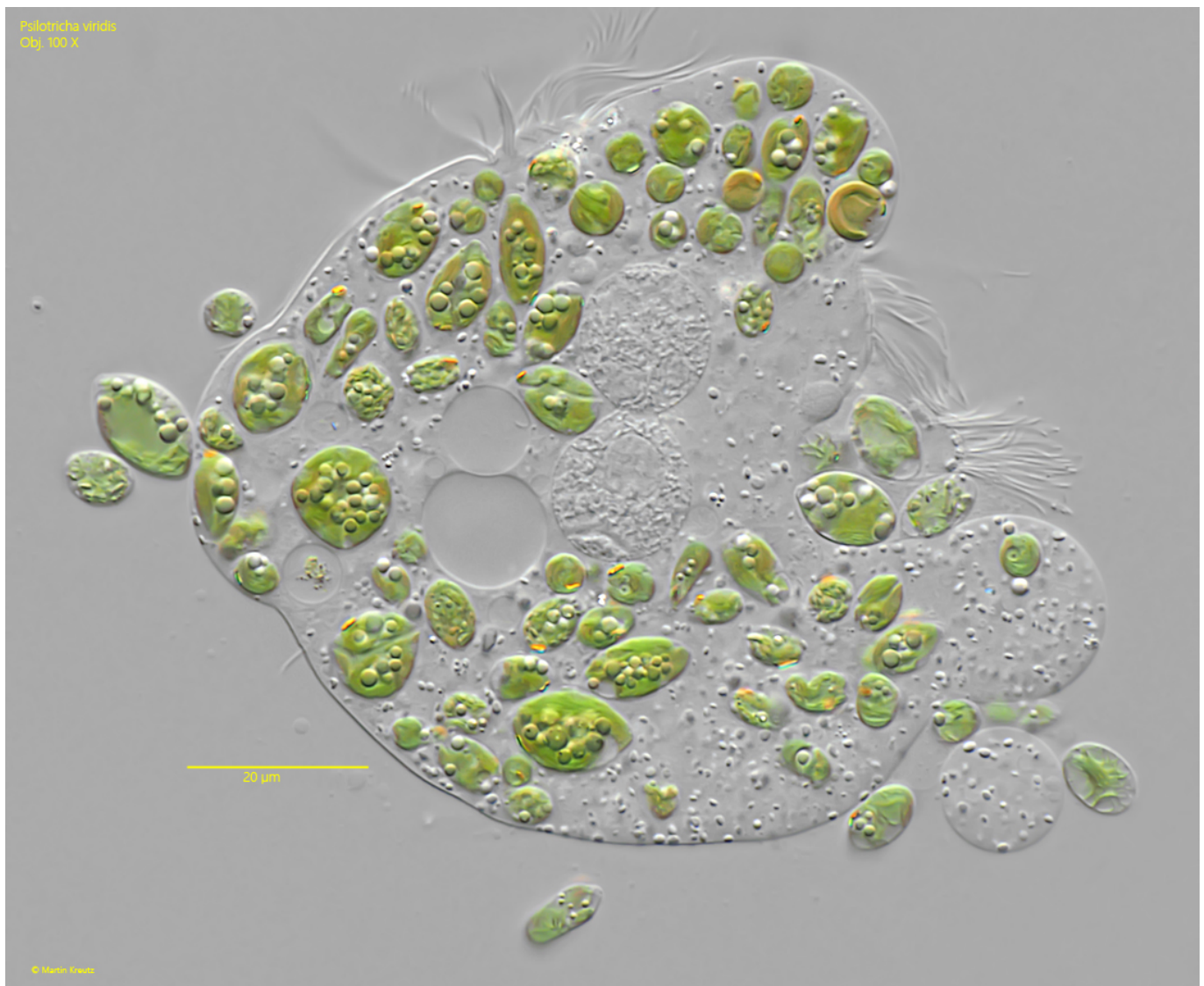


Fig. 8: *Psilotricha viridis*. Overview on the symbiotic algae in a second squashed specimen. Obj. 100 X.

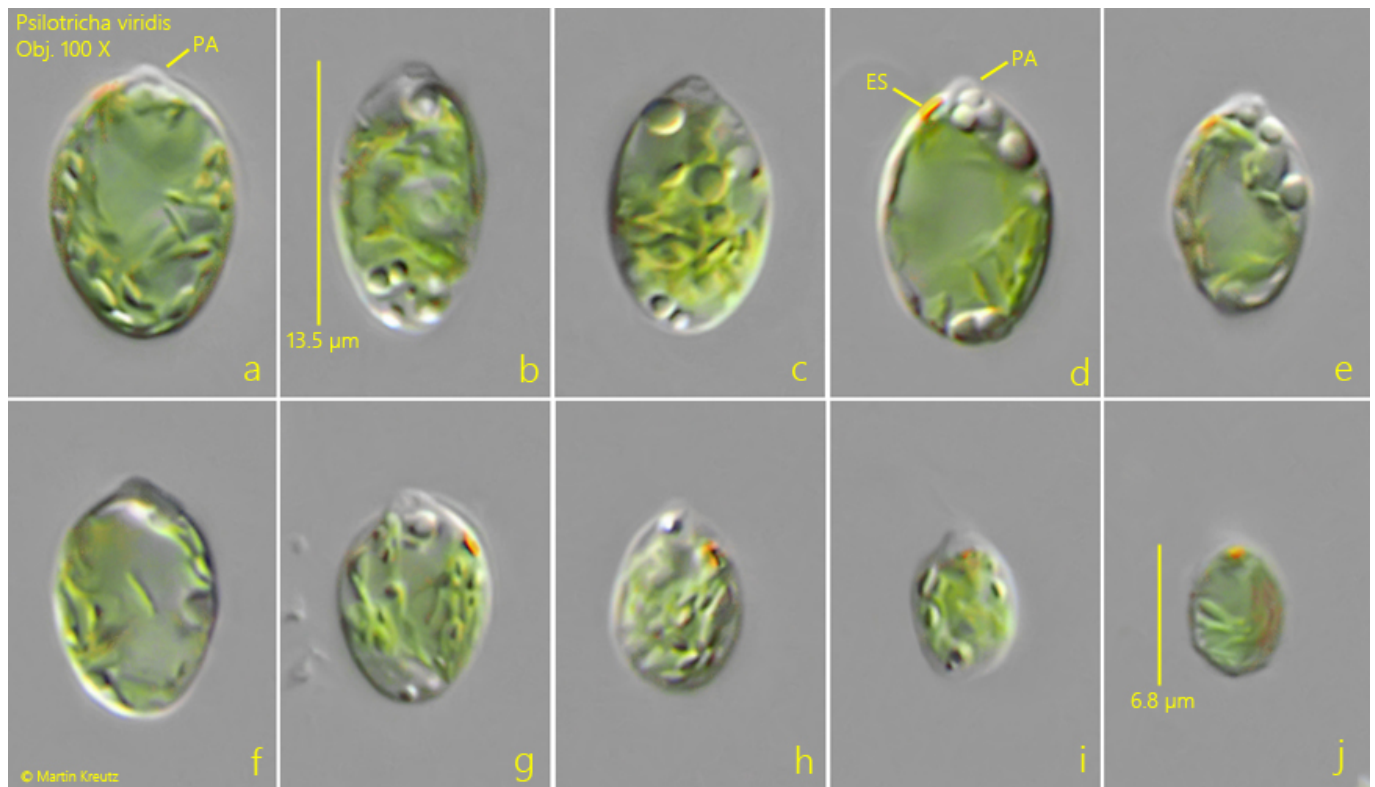


Fig. 9 a-j: *Psilotricha viridis*. Some selected symbiotic algae in detail. They have a length of about 6–14 μm. Note the papillae (PA) at the anterior end. ES = eyespot. Obj. 100 X.

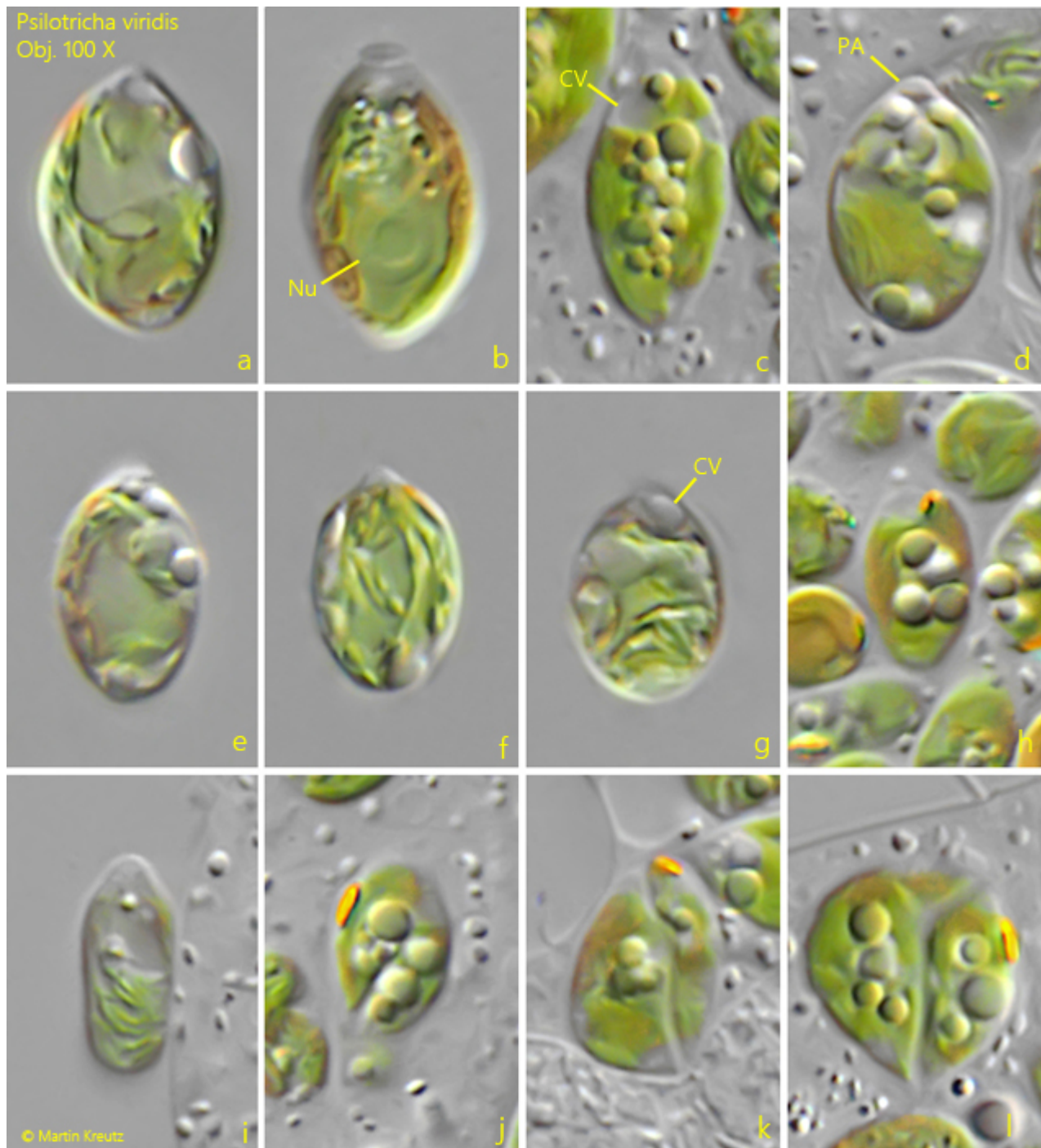


Fig. 10 a-l: *Psilotricha viridis*. Some selected symbiotic algae of a second specimen. In some algae cell a contractile vacuole (CV) and nucleus (Nu) is visible. Other algae are in the process of cell division (i-l). Obj. 100 X.

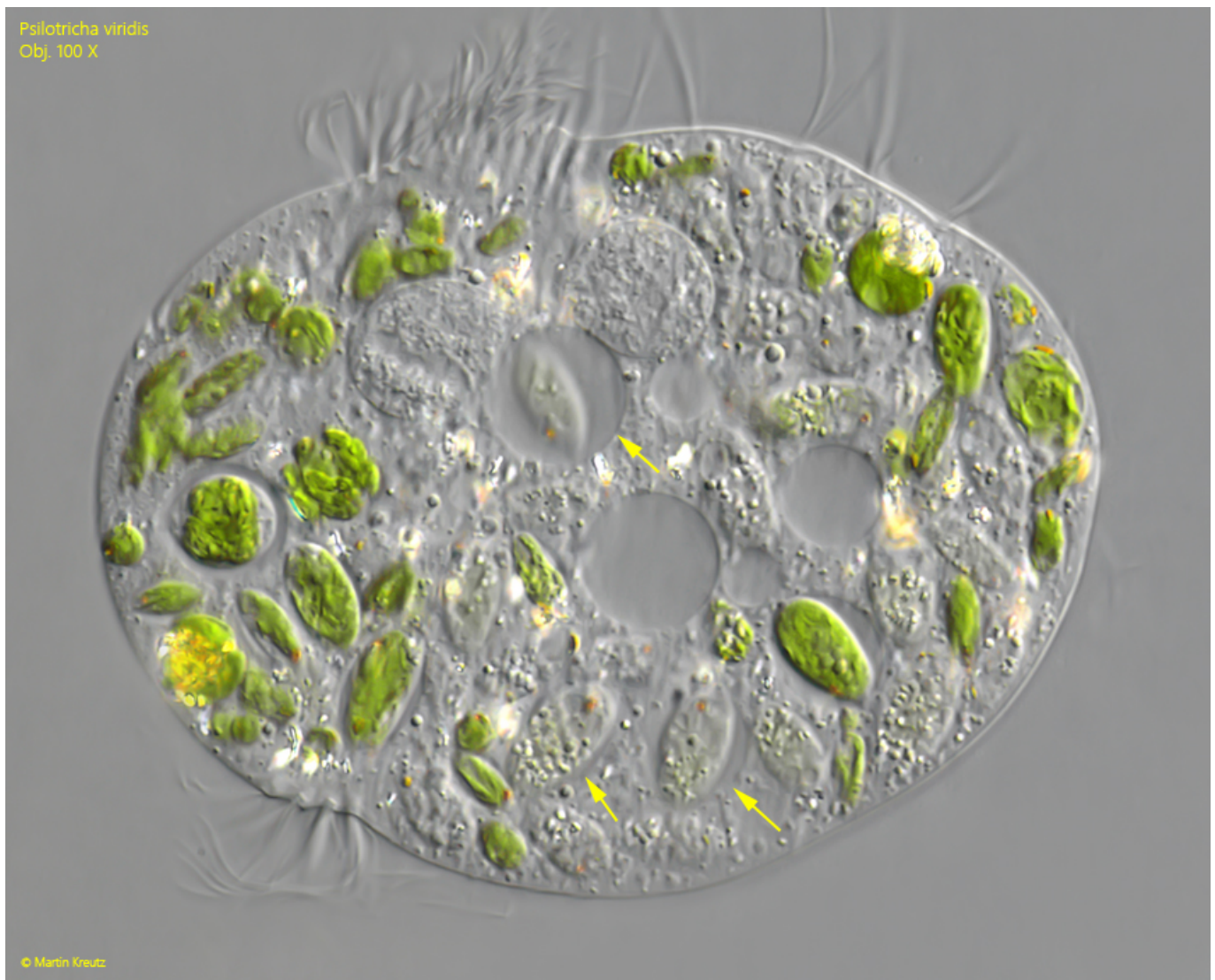


Fig. 11: *Psilotricha viridis*. In this specimen found in December 2007 in the [Simmelried](#) some of the symbiotic algae are apparently enclosed in food vacuoles and almost colorless (arrows). Likely the symbiotic algae will be occasionally digested by the host cell. Obj. 100 X.

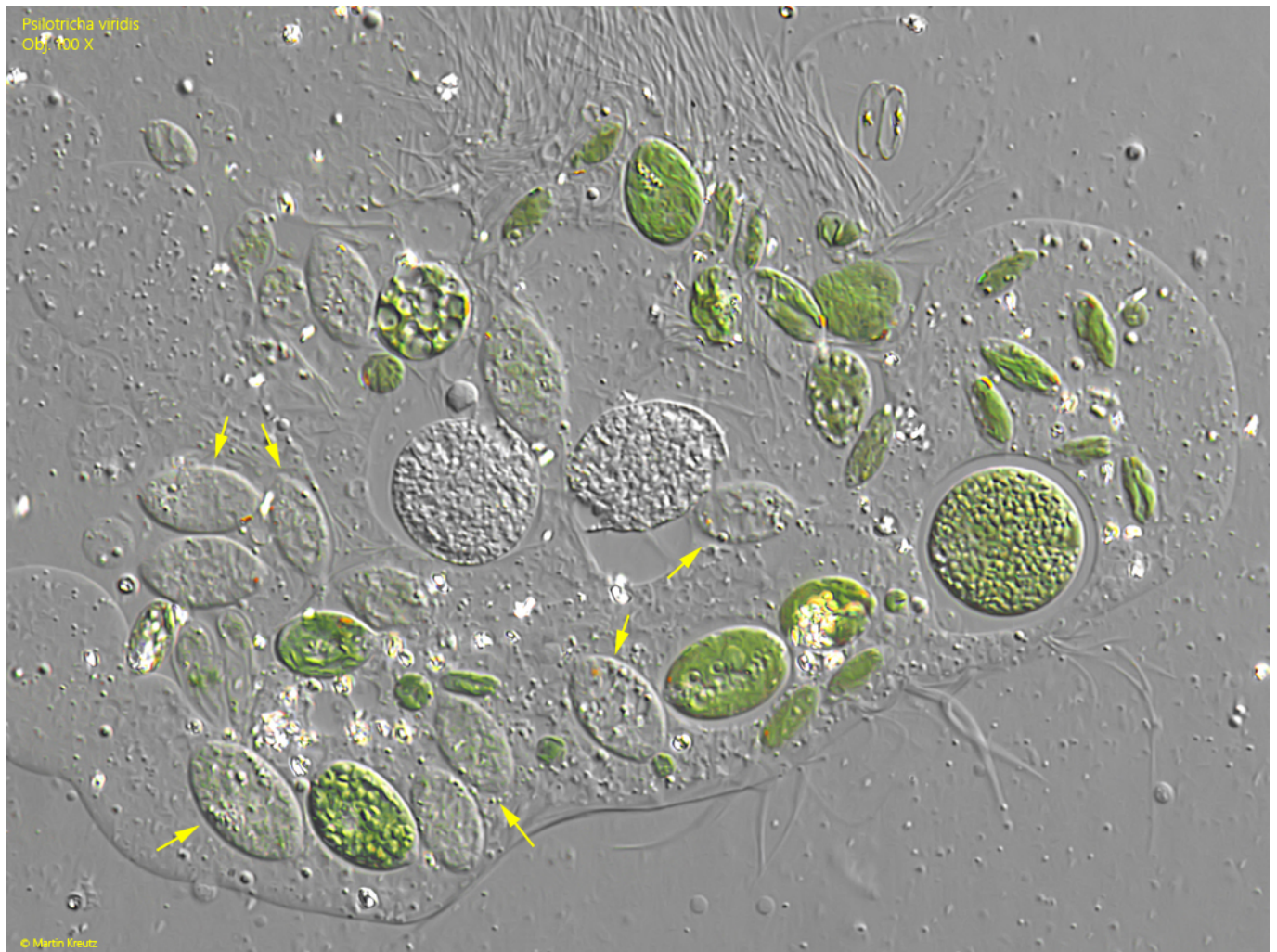


Fig. 12: *Psilotricha viridis*. A second squashed specimen with almost colorless symbiotic algae (arrows). Obj. 100 X.