Thuricola folliculata Kent, 1881

Most likely ID: n.a.

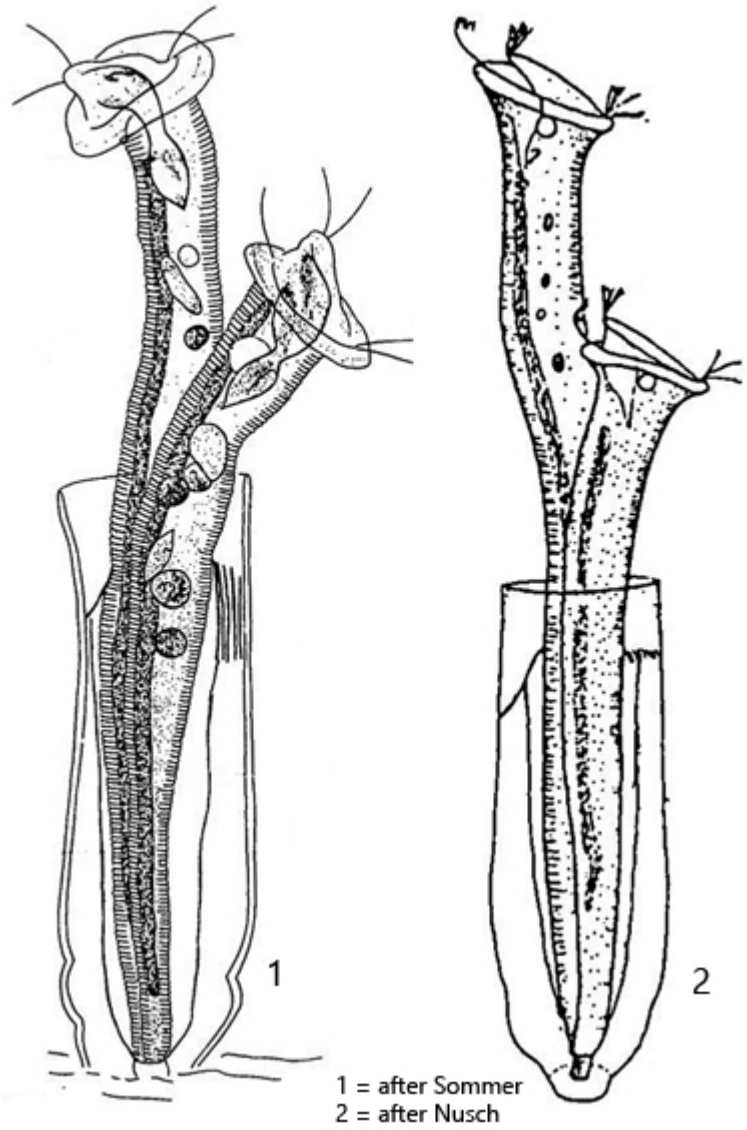
Synonym: n.a.

Sampling location: Pond of the convent Hegne, Simmelried

Phylogenetic tree: *Thuricola folliculata*

Diagnosis:

- zooids slender, trumpet-shaped
- length 240–420 µm (elongated cells)
- zooids attached to the bottom of a vase-shaped lorica
- lorica often inhabitated by 2 zooids
- lorica without stalk
- lorica equipped with a valve
- zooids can retracted completely into lorica
- cytoplasm green due to symbiotic algae, sometimes colourless
- pellicle finely striated transversely
- diameter of peristome 35–55 µm
- macronucleus thread-like, almost as long as cell
- one contractile vacuole adjacent to oral funnel
- runs through the entire cell



Thuricola folliculata

In my population of *Thuricola folliculata* I have so far only found zooids with symbiotic algae. Colorless specimens do occur, but I have not yet found any. There are usually two zooids in one lorica. I have found the largest population of *Thuricola folliculata* in the pond of the convent Hegne. Mass developments also occur there, in which algal filaments are densely colonized (s. fig. 1).

The symbiotic algae in the zooids do not appear to be of the *Chlorella* type (s. fig. 6). They have a slightly asymmetrical shape and are not always spherical like *Chlorella*. The cell wall is very thin and in young cells the chloroplast fills only half of the cell. These are atypical characteristics for *Chorella*. However, only a genetic analysis, which to my knowledge has not yet been carried out, can shed light on the nature of the symbiotic algae in *Thuricola folliculata*.

Fig. 1: *Thuricola folliculata.* L = 255–308 µm. Several zooids attached to an algal filament. Obj. 20 X.

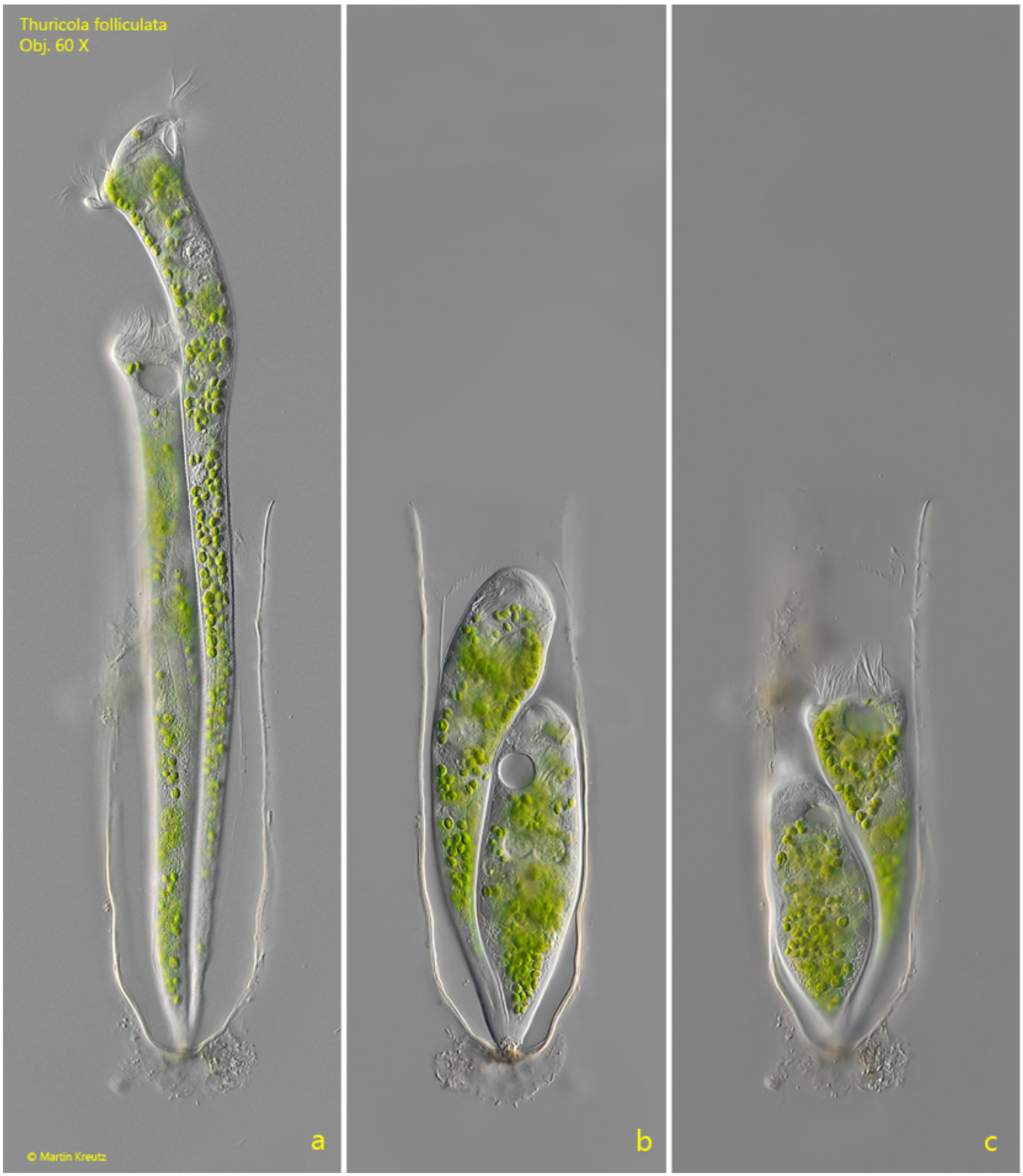


Fig. 2 a-c: *Thuricola folliculata.* L = 388 µm (of elongated cell). An elongated zooid (a) and the phases of contraction (b, c). Obj. 40 X.

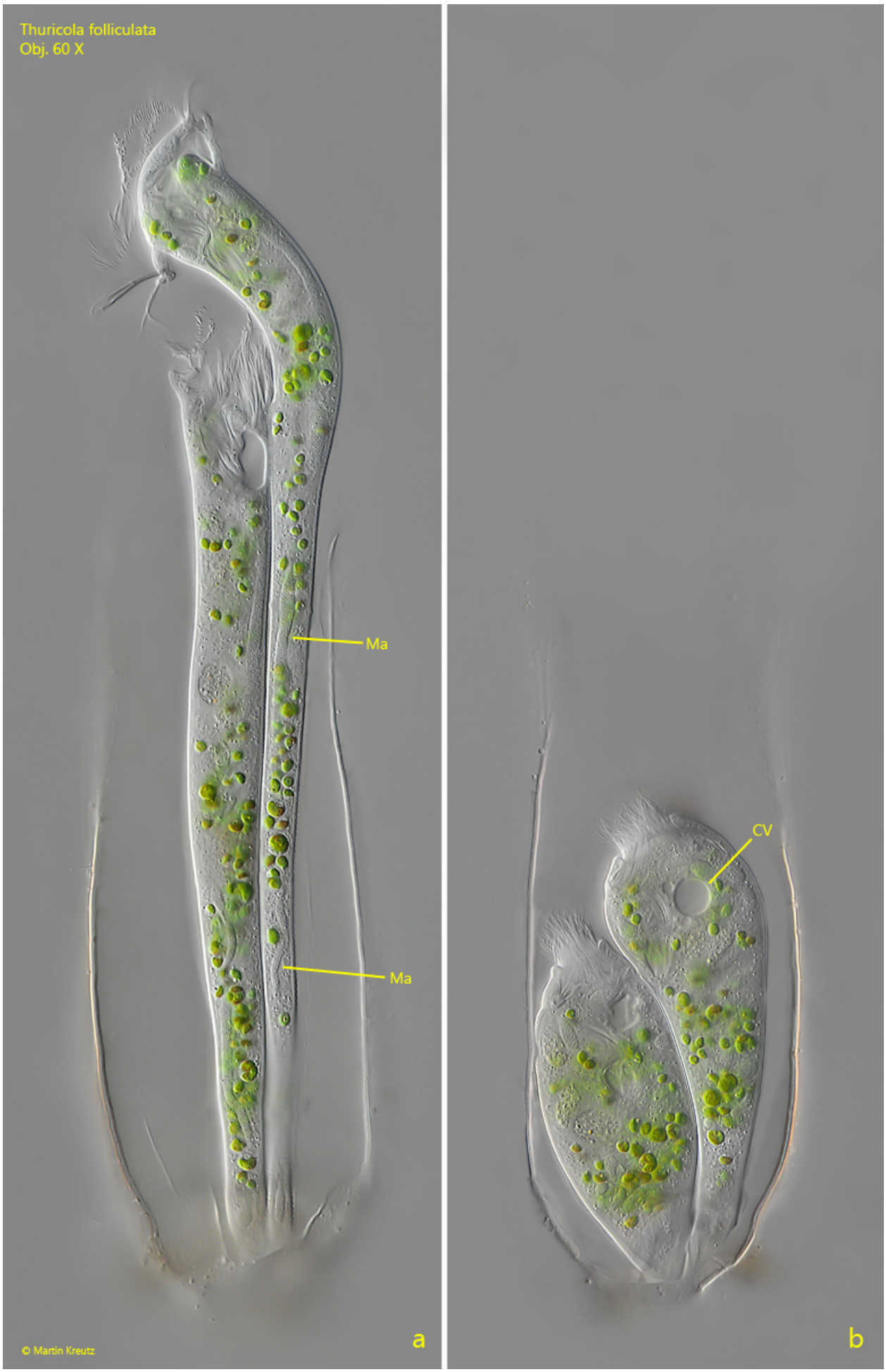

Thuricola folliculata
Obj. 60 X
Ma
Ma
© Martin Kreutz
a
CV
b

Fig. 3 a-b: *Thuricola folliculata.* L = 325 µm (of elongated zooid). A second lorica with elongated (a) and contracted zooids (b). Note the thread-shaped macronucleus (Ma) arranged along the longitudinal axis of the cell. CV = contractile vacuole. Obj. 40 X.

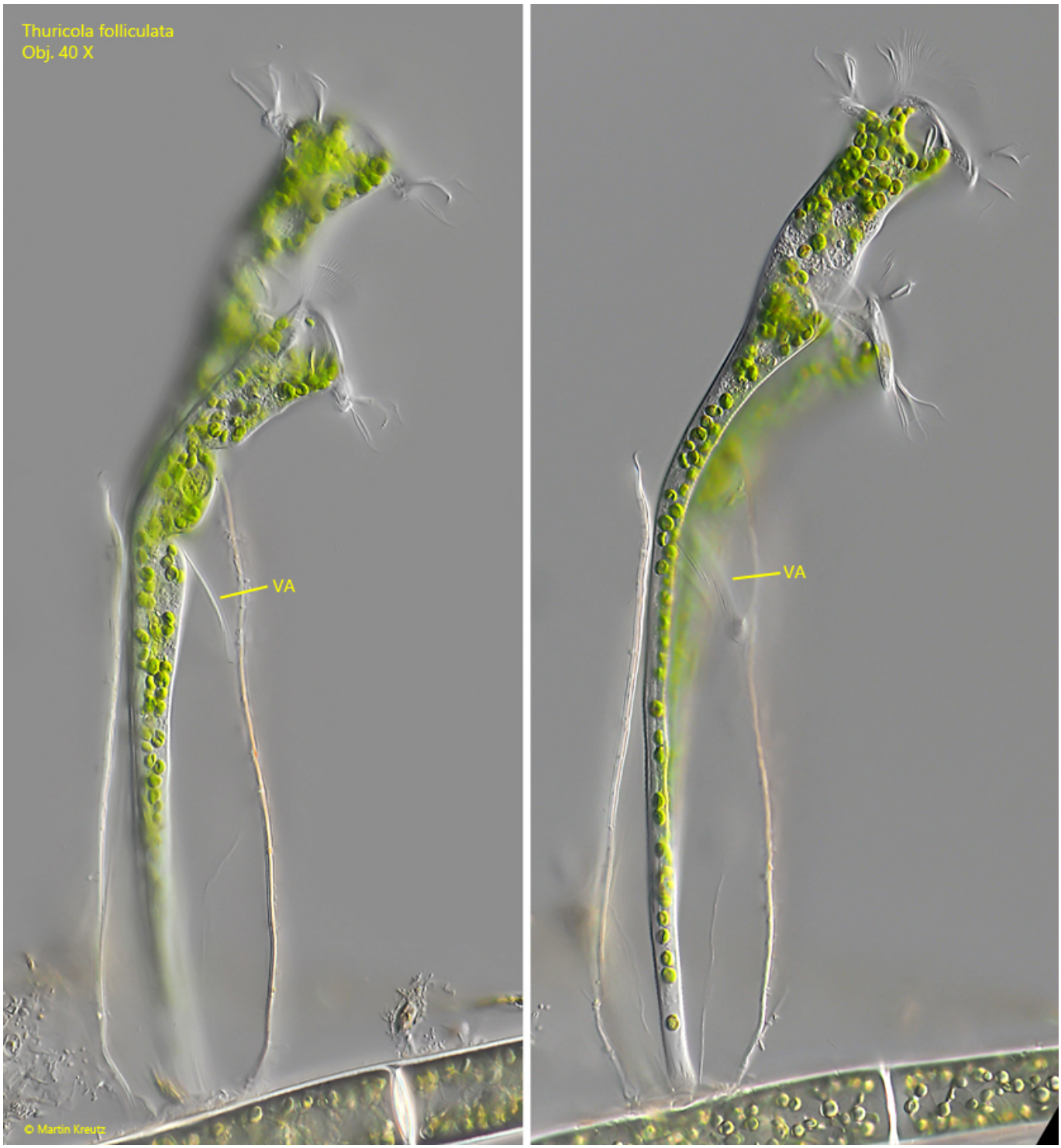


Fig. 4 a-b: *Thuricola folliculata.* L = 320 µm. Two focal planes of the valve (VA). When the zooids contract, the valve closes and the lorica is sealed. Obj. 40 X.

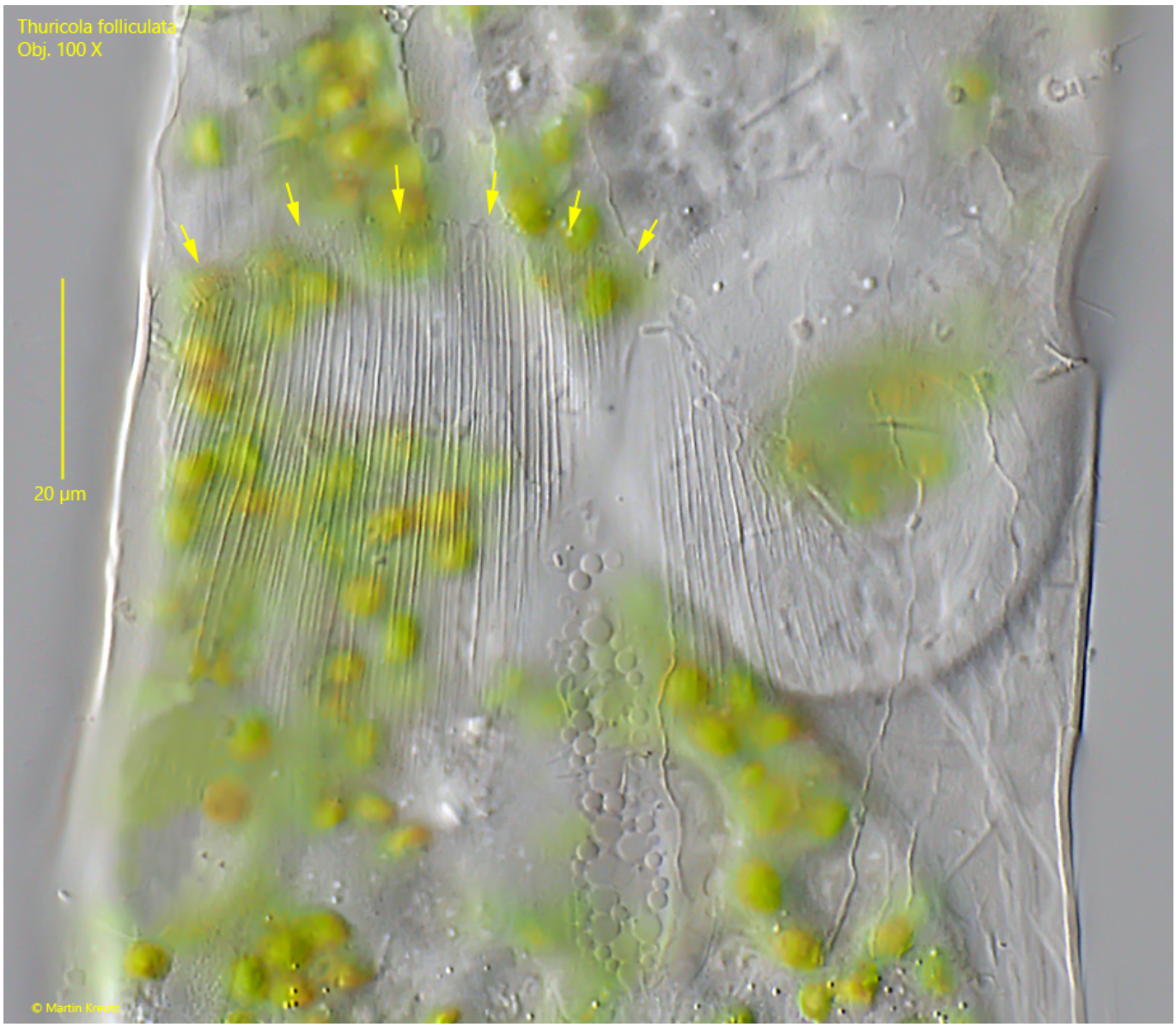


Fig. 5: *Thuricola folliculata.* The valve in detail. It consists of a membrane, which is reinforced by thin fibers. The membrane is attached to the inner wall of the lorica (arrows). Obj. 100 X.

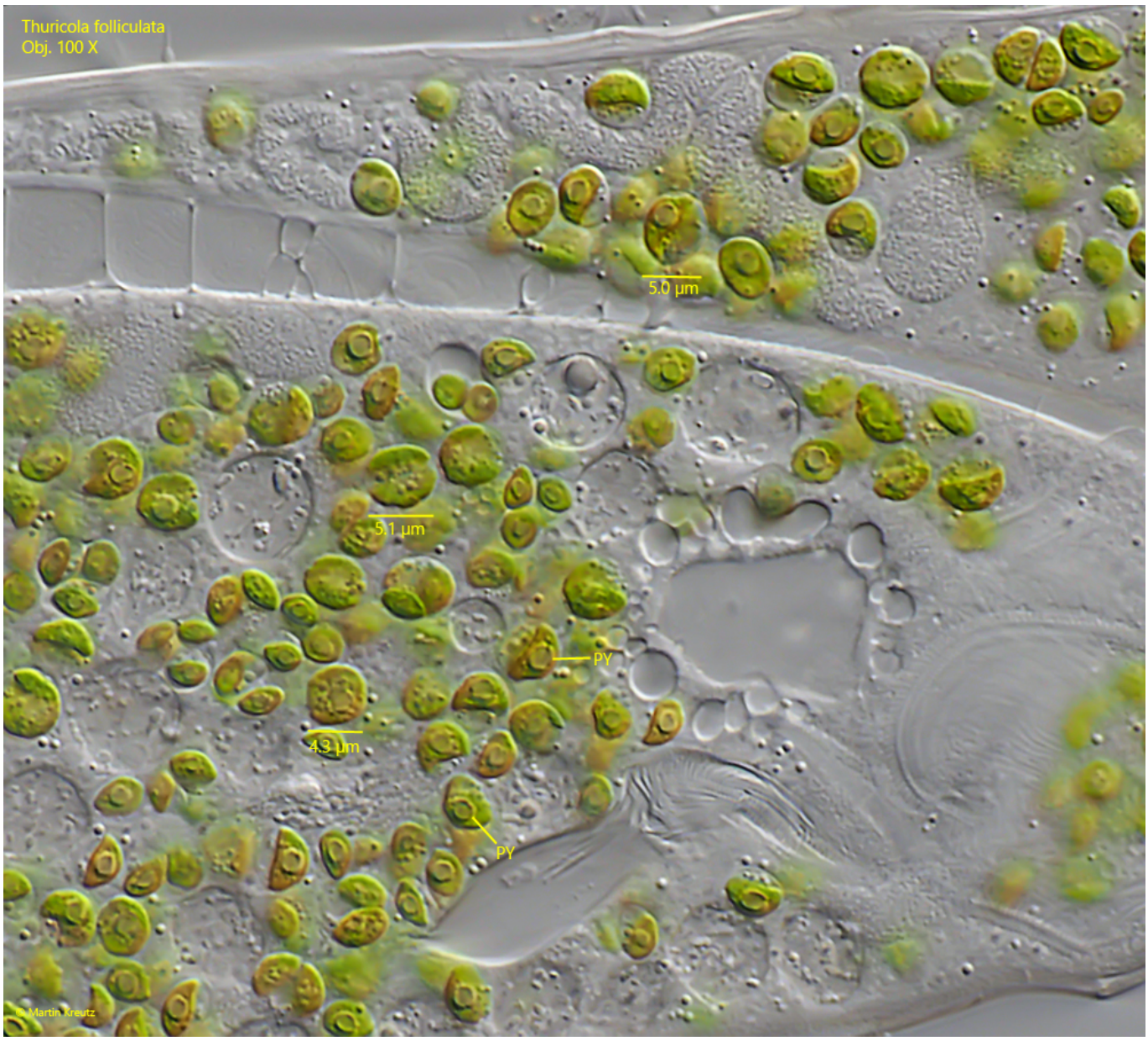


Fig. 6: *Thuricola folliculata.* The symbiotic algae are apparently not from the *Chlorella* type. They have have a diameter of 4.0–5.2 µm and a slightly irregular shape. The cup-shaped chloroplast has one pyrenoid. In young cells the chloroplast occupy only the half of the cell. Obj. 100 X.

Besides cell divisions, sessile peritrichs are able to undergo a sexual reproduction. This takes place in by the fusion of a mobile microgamete with the sessile macrogamete (= the sessile zooid). It can be recognized microscopically by the fact that the microgamete is much smaller than the macrogamete and fuses with it. Once the microgamete is fused with the macrogamete, the macronuclei in the both cells begin to disintegrate. At the same time, the two micronuclei in both cells begin a meiotic reduction division. The resulting haploid micronuclei later fuse in the macrogamete and then the re-creation of a new macronucleus starts. I could not follow the whole process of conjugation, but found a microgamete attached to a macrogamete in the process of conjugation (s. fig. 7).

Fig. 7: *Thuricola folliculata.* A zooid (= macrogamete) which is in conjugation with a microgamete (MG). After conjugation a meiotic reduction division will start to create finally

a new, diploid macro- and micronucleus in the macrogamete. Obj. 100 X.

Fig. 8: *Thuricola folliculata.* L = 266 µm. Two zooids lacking symbiotic algae in a lorica. Obj. 40 X.