

***Metacystis lagenula* Penard, 1922**

**Most likely ID:** n.a.

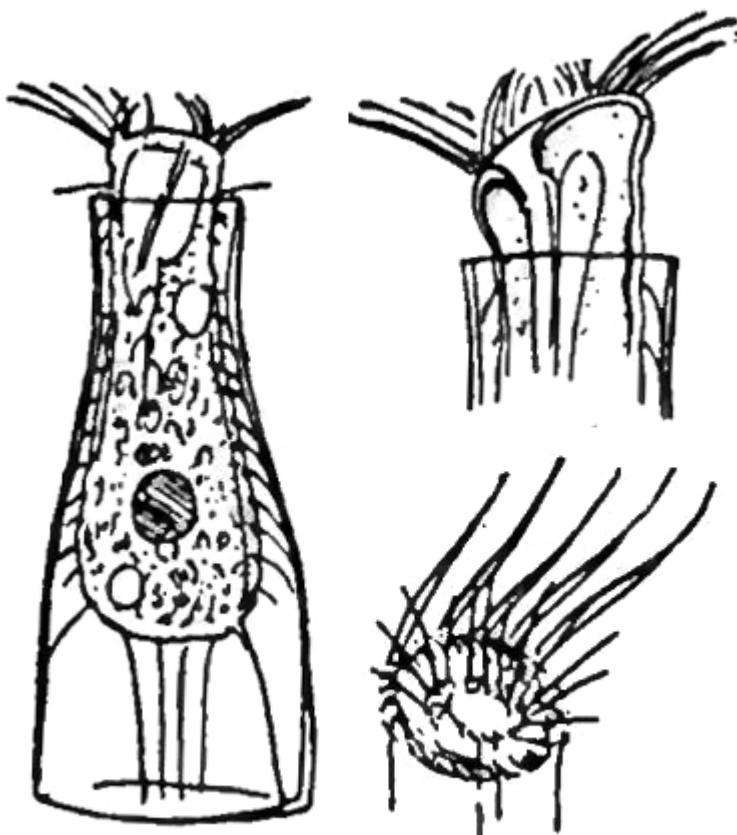
**Synonym:** n.a.

**Sampling location:** [Simmelried](#)

**Phylogenetic tree:** [\*Metacystis lagenula\*](#)

**Diagnosis:**

- body vase-shaped
- cell in lorica with shape of Erlenmeyer flask
- length (of cell) about 30 µm
- length of lorica 50–60 µm
- apical circular oral aperture
- cytoplasm green due to symbiotic algae (can be absent)
- globular macronucleus in posterior third with adjacent micronucleus
- two contractile vacuoles (anteriorly and subterminal)
- body with 8–9 transverse rows of cilia
- several caudal cilia



after Penard

### Metacystis lagenula

So far I have only found *Metacystis lagenula* in the [Simmelried](#). However, the species is very rare there. On average, I find a specimen about every 5 years. They are usually found between floating plant masses or detritus flakes.

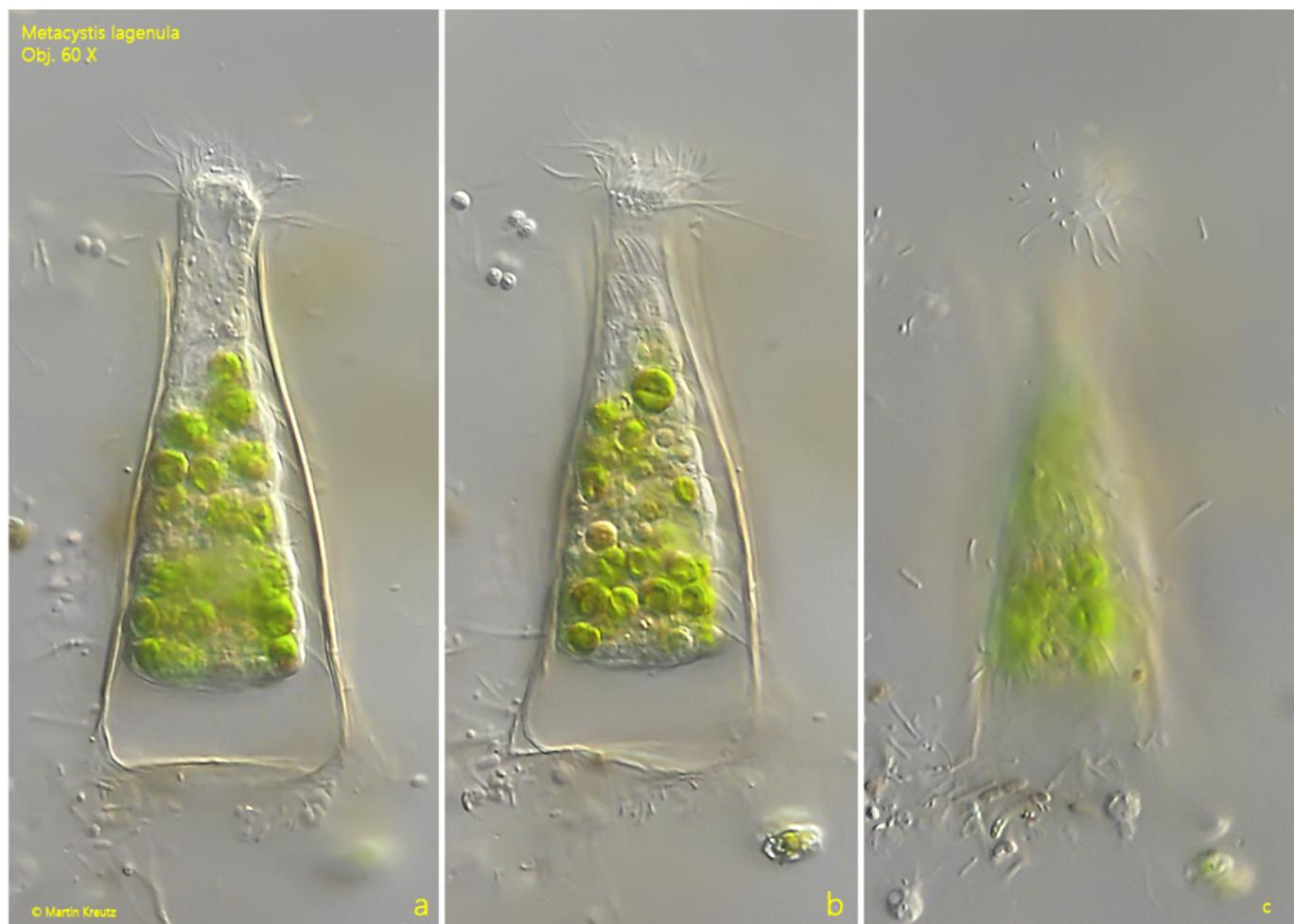
In the literature, only the descriptions by Penard (1922) and Kahl (1935) seem to be available, whereby Kahl has adopted Penard's drawing and description. I have not found any other descriptions of *Metacystis lagenula*.

*Metacystis lagenula* can be easily recognized by its Erlenmeyer flask-shaped lorica. The lorica is smooth and transparent. It is usually colorless or slightly brownish. At up to 71  $\mu\text{m}$ , the loricae of my population were about 15 % larger than indicated by Penard (50–60  $\mu\text{m}$ ). The extended cells were also more than twice as long (up to 65  $\mu\text{m}$ ) as indicated by Penard (30  $\mu\text{m}$ ). Penard may have measured retracted specimens.

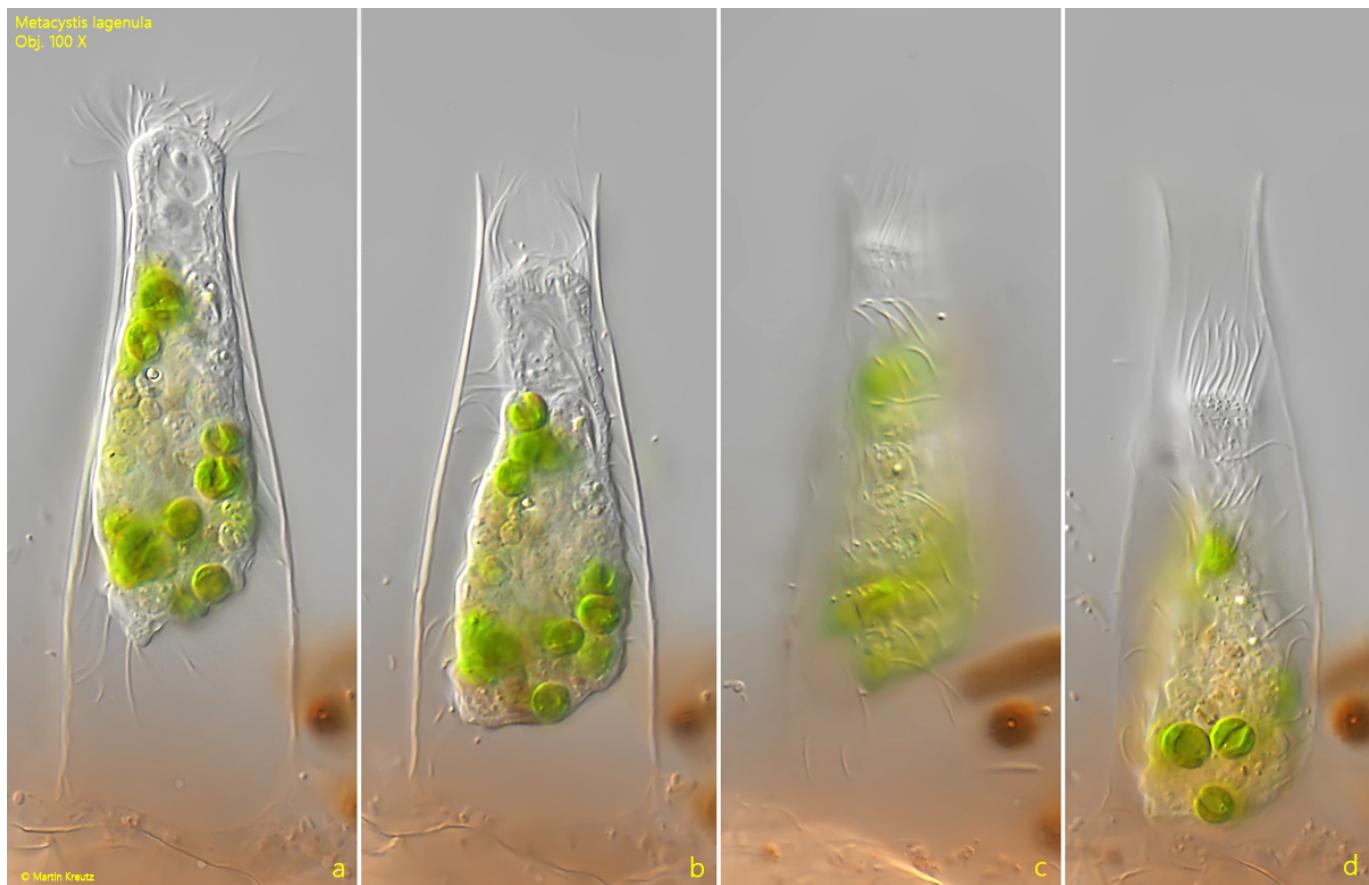
All specimens in my population contained symbiotic algae, which look similar to the

*Chlorella* type with a cup-shaped chloroplast and have a diameter of 4.2–4.6  $\mu\text{m}$  (s. fig. 3). I always found the macronucleus in the posterior third, with an attached lenticular micronucleus (s. fig. 6). There are 8–9 transverse rows of cilia on the body (s. fig. 4 b). According to Penard, there should be several caudal cilia at the posterior end. However, I could only recognize one at a time (s. fig. 5).

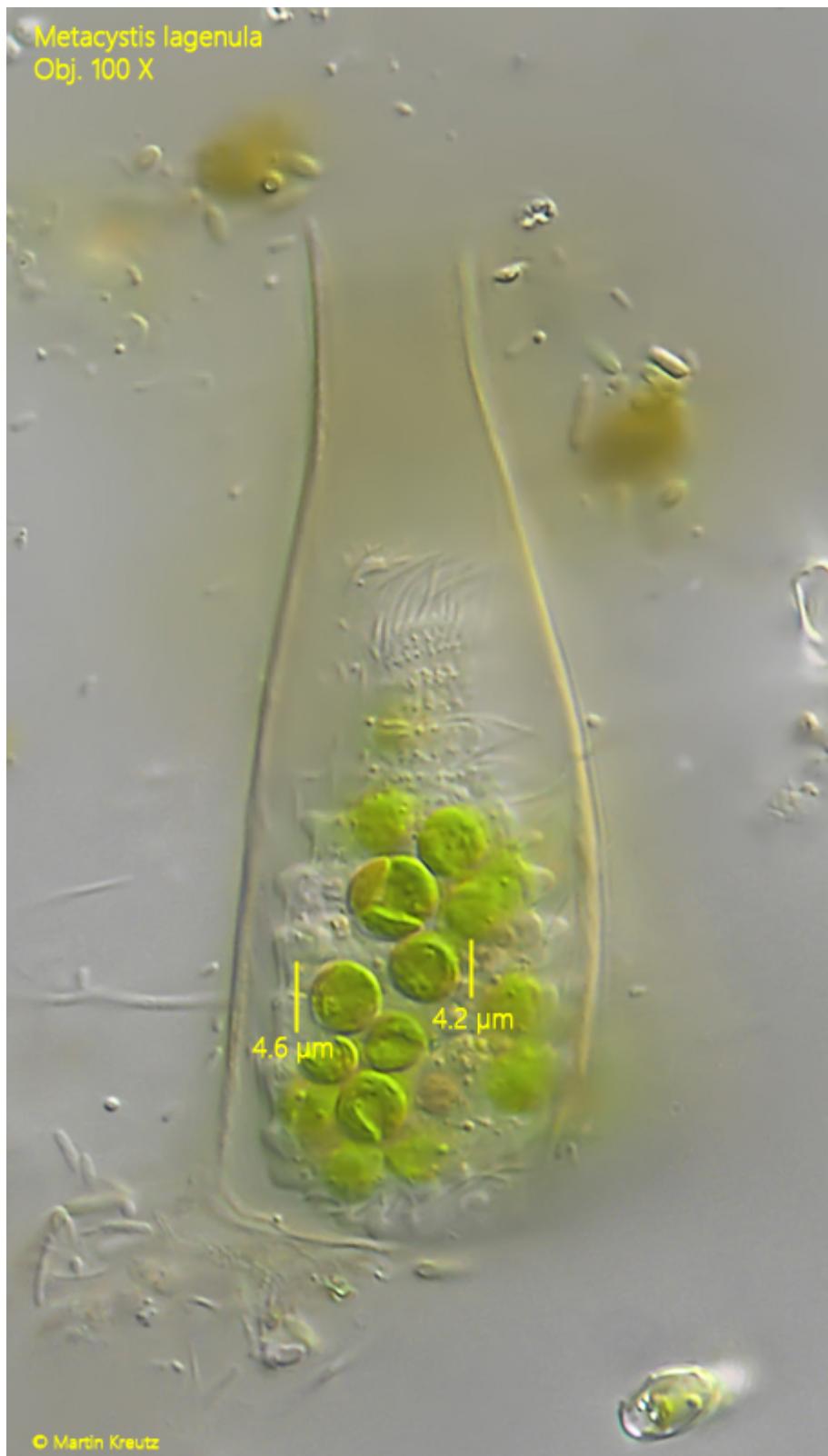
According to Penard's description, *Metacystis lagenula* has 2 contractile vacuoles. The larger of the two is said to be located subterminally and the smaller in the anterior third near the oral funnel. However, I was only ever able to recognize the larger, subterminal contractile vacuole (s. fig. 4 a). Perhaps the anterior one was covered by the symbiotic algae or food vacuoles.



**Fig. 1 a-c:** *Metacystis lagenula*. L = 68  $\mu\text{m}$  (of lorica). Different focal planes of a specimen embedded in a detritus flake. The extended cell has a length of 65  $\mu\text{m}$ . Obj. 60 X.

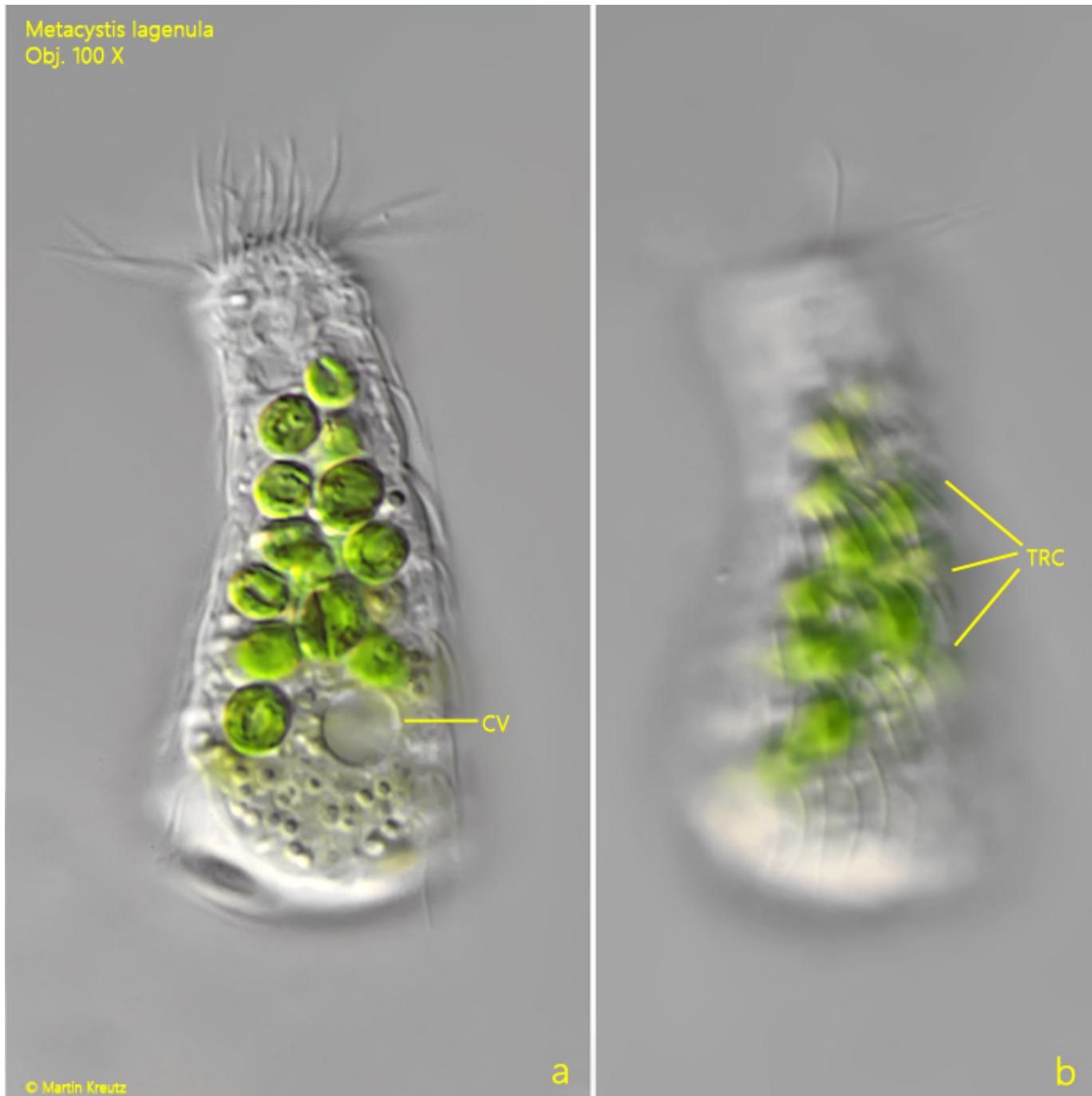


**Fig. 2 a-d:** *Metacystis lagenula*. L = 71  $\mu$ m (of lorica). An extended (a) and retracted (b) second specimen. The extended specimen (a) has a length of 55  $\mu$ m. The retracted specimen (d) shows distinct transere folds. The cytoplasm is filled with about 20 symbiotic algae. Obj. 100 X.



**Fig. 3:** *Metacystis lagenula*. Focal plane on the symbiotic algae in an retracted specimen. The algae cells have a diameter of 4.2–4.6  $\mu\text{m}$ . Obj. 100 X.

Metacystis lagenula  
Obj. 100 X



**Fig. 4 a-b:** *Metacystis lagenula*. L = 71 µm (of lorica). An extended (a) and contracted (b) second specimen. The extended specimen (a) has a length of 55 µm. The retracted specimen (d) shows distinct transverse folds. The cytoplasm is filled with about 20 symbiotic algae. Obj. 100 X.

Metacystis lagenula  
Obj. 100 X



**Fig. 5:** *Metacystis lagenula*. L = 60  $\mu\text{m}$  (of lorica). Focal plane on one of the caudal cilia (CC). Obj. 100 X.

Metacystis lagenula  
Obj. 100 X



**Fig. 6:** *Metacystis lagenula*. The macronucleus (Ma) and the adjacent micronucleus (Mi) in a squashed specimen. CC = probably a caudal cilium, SA = symbiotic algae. Obj. 100 X.