

Brachonella contorta

(Levander, 1894) Jankowski 1964

Most likely ID: n.a.

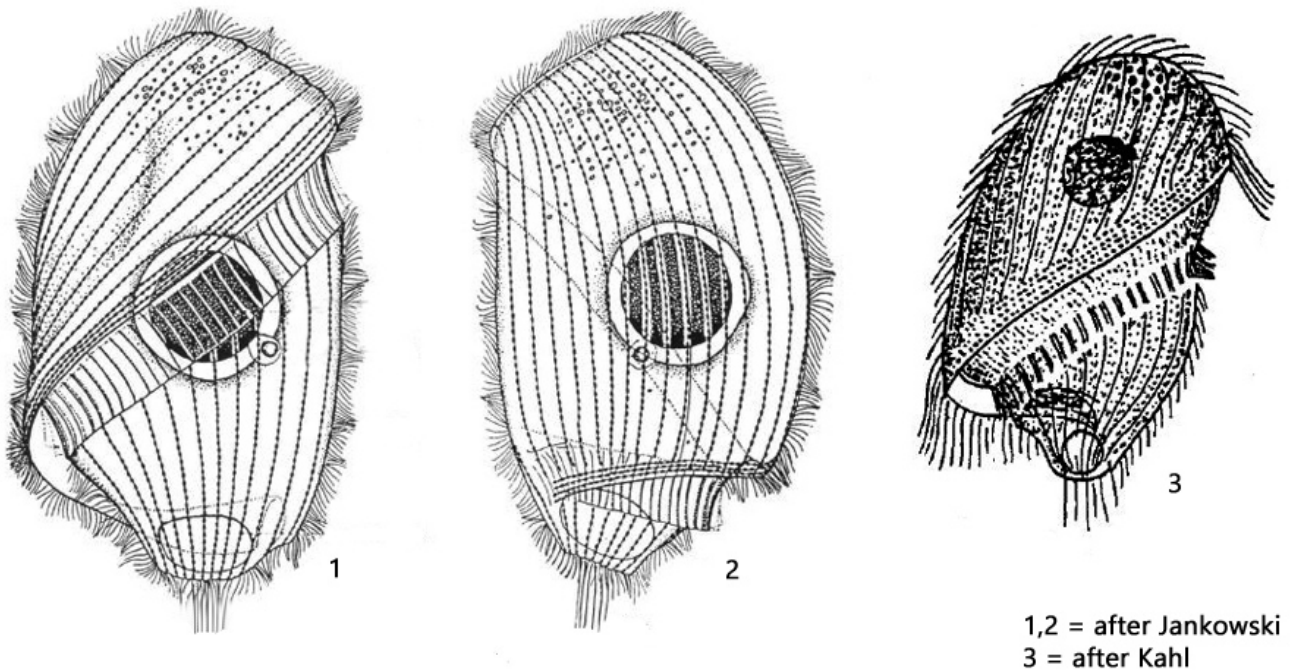
Synonym: *Brachonella spiralis*, *Metopus spiralis*

Sampling location: [Simmelried](#), [Ulmisried](#), [Purren pond](#), [Mainau Pond](#)

Phylogenetic tree: [Brachonella contorta](#)

Diagnosis:

- length about 80–150 µm
- anterior half broadly conical while posterior half narrower and obliquely truncate
- peristome runs obliquely from anterior to posterior
- cytostome is accompanied on the right by a perizonal stripe of kineties
- oral aperture located posteriorly
- macronucleus spherical with an adjacent micronucleus
- aggregate of brownish or yellowish granules anteriorly
- symbiotic bacteria are present
- contractile vacuole terminally
- tuft of longer caudal cilia
- inconspicuous extrusomes



Brachonella contorta

Brachonella contorta occurs in practically all my sampling locations and is very common. Originally this species was assigned by Kahl to the genus *Metopus*. Only in 1964 Jankowski established the genus *Brachonella*. This genus differs from *Metopus* in having a posterior end broader than the anterior end and by a spiral peristome around the body axis. *Brachonella contorta* is described by Kahl (as *Brachonella spiralis*) as very coverslip sensitive. I can confirm this observation, but have found that some specimens can be fixed comparatively well. It was not obvious to me what distinguished these “stable” specimens from the others.



Fig. 1: *Brachonella contorta*. L = 105 μm . Ventral view of a freely swimming specimen. Obj. 100 X.



Fig. 2: *Brachonella contorta*. L = 130 μm . View from the right side. UM = undulating membranelle. Obj. 100 X.



Fig. 3: *Brachonella contorta*. L = 105 μ m. Ventral view with focal plane on the macronucleus (Ma) and the adjacent micronucleus (Mi) in the anterior half. Obj. 100 X.

Brachonella contorta
Obj. 100 X



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Fig. 4: *Brachonella contorta*. L = 110 μ m. Dorsal view with focal plane on the adoral zone of membranelles (AZM) at the posterior end leading to the mouth opening and the undulating

membrane (UM). CC = caudal cilia, Ma = macronucleus. Obj. 100 X.

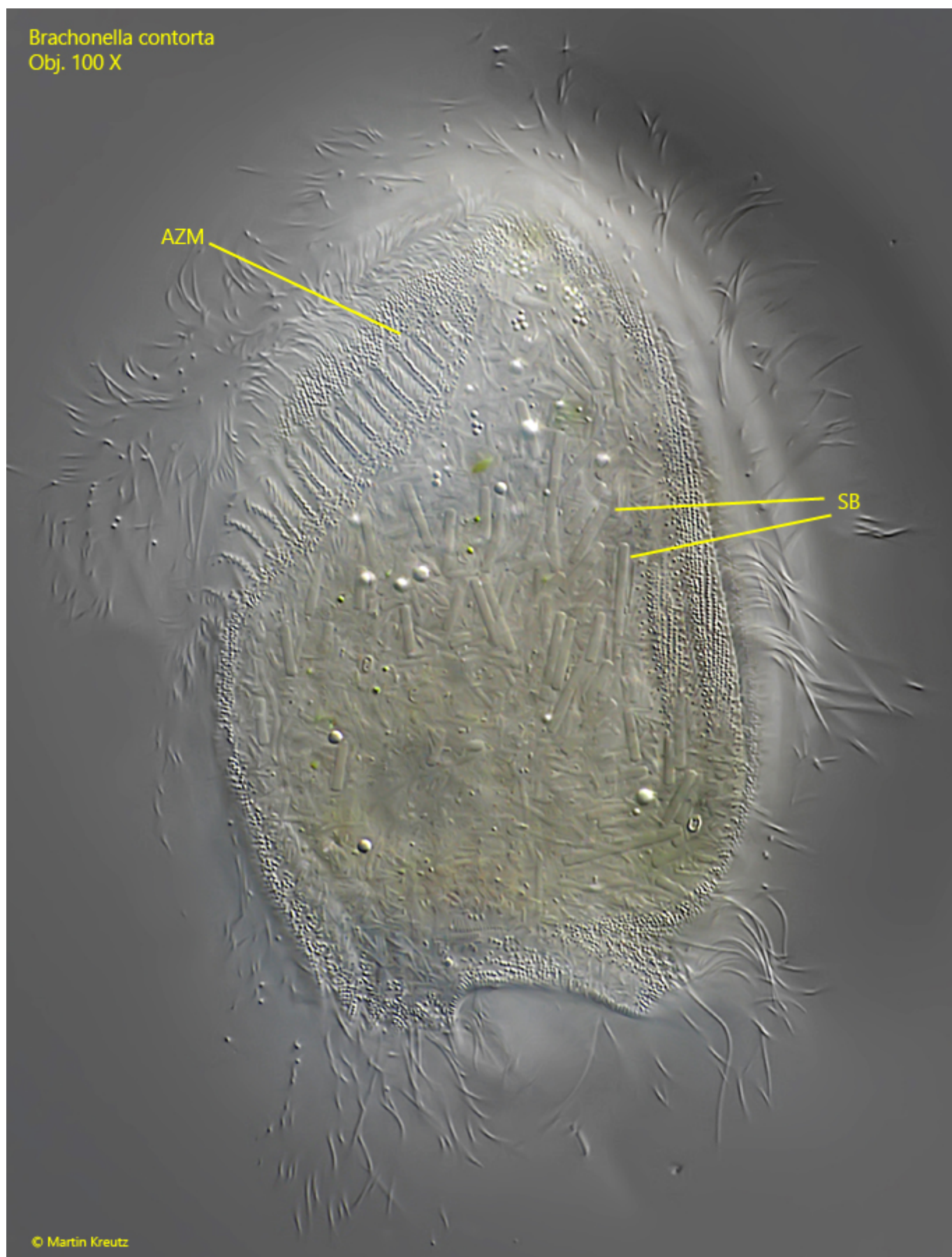


Fig. 5: *Brachonella contorta*. L = 115 μm . Dorsal view of the same specimen shown in fig. 4 with focal plane on the symbiotic bacteria (SB) in the cytoplasm and on the adoral zone of membranelles (AZM) beginning on the dorsal side. Obj. 100 X.

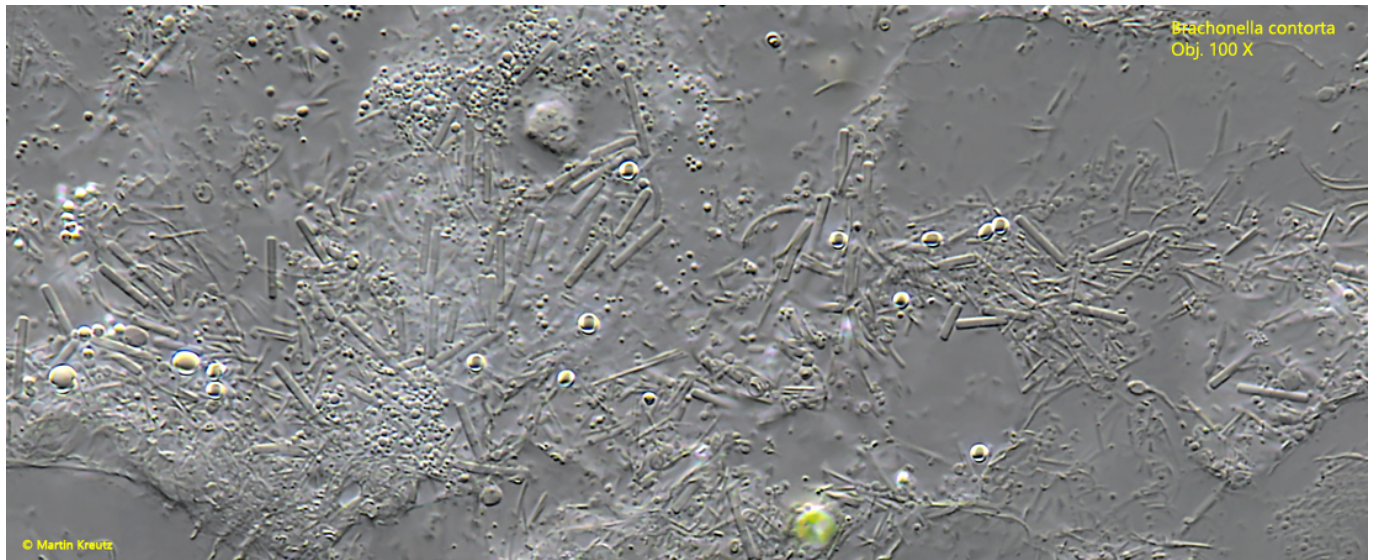


Fig. 6: *Brachonella contorta*. The scattered symbiotic bacteria in a squashed specimen. Obj. 100 X.



Fig. 7: *Brachonella contorta*. The symbiotic bacteria in a strongly squashed specimen. There are at least two different types of bacteria. The larger ones are about 5 μm long and oblong. The smaller ones are thin rods with a length of about 4 μm . Obj. 100 X.

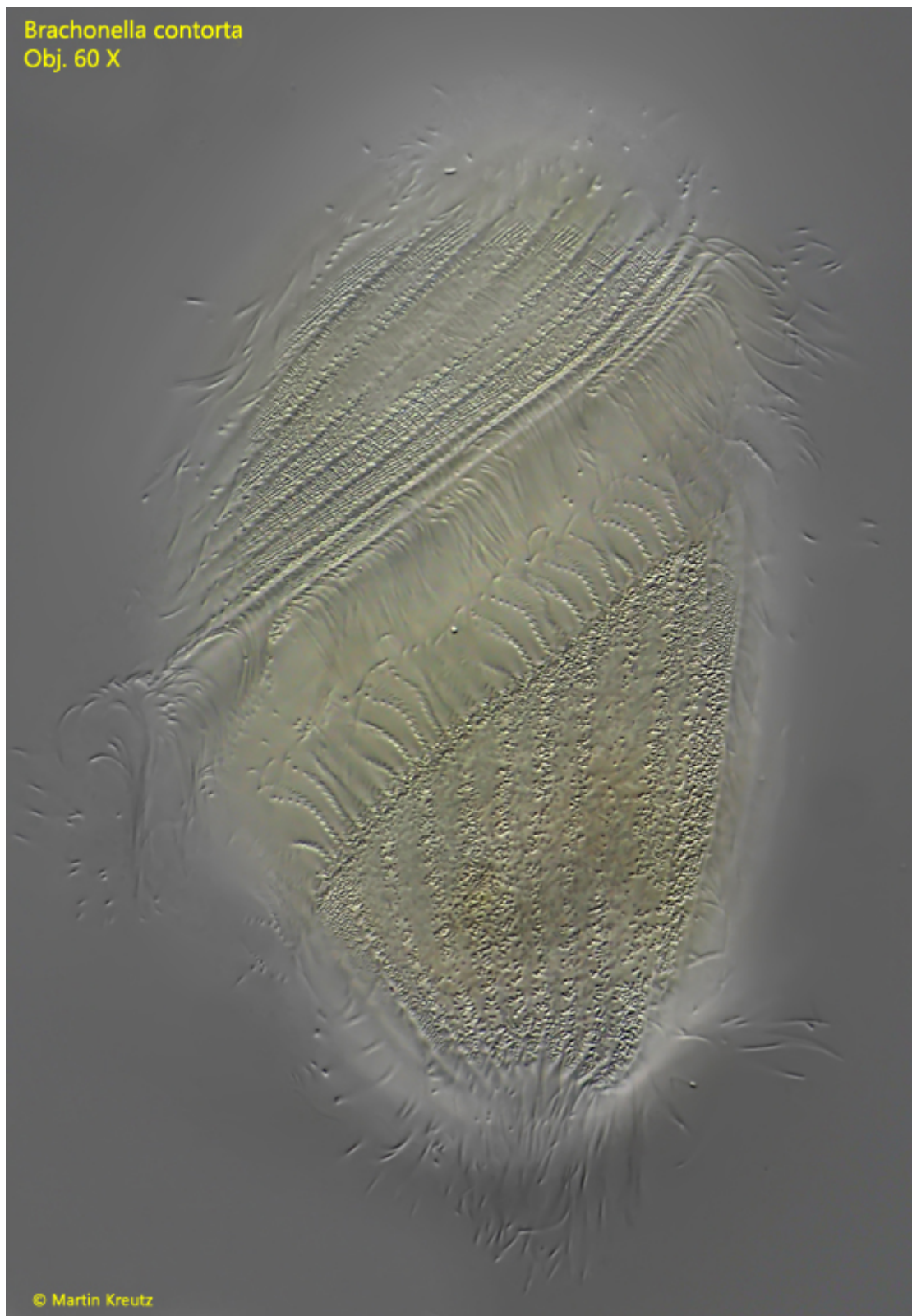


Fig. 8: *Brachonella contorta*. L = 130 μm . Ventral view of a second, larger specimen with a distinctly yellowish color. Obj. 60 X.



Fig. 9: *Brachonella contorta*. L = 130 μm . Dorsal view of a second specimen with a yellowish color. Obj. 60 X.

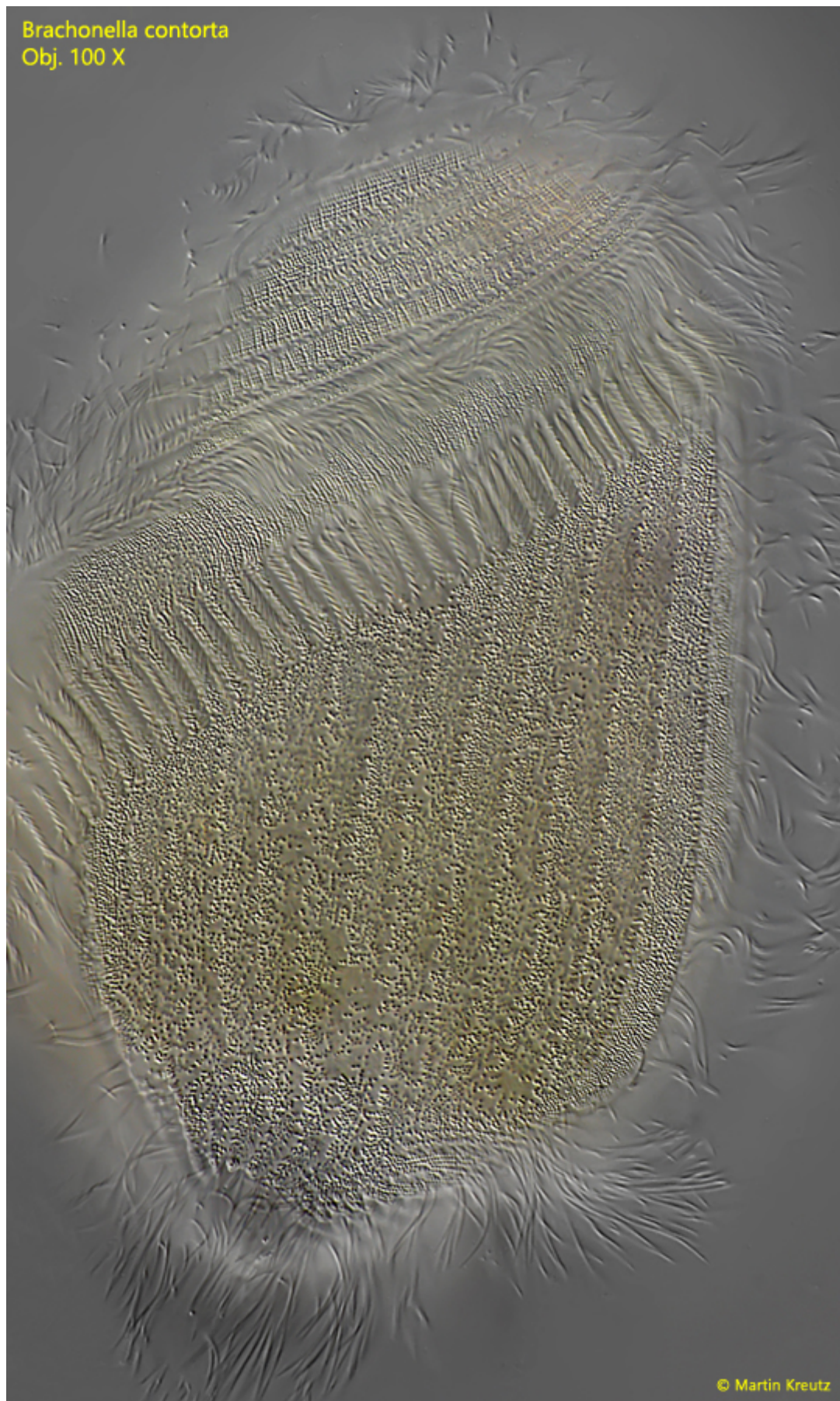


Fig. 10: *Brachonella contorta*. L = 130 μ m. Detailed ventral view of a second specimen with a yellowish color. Obj. 100 X.

This yellowish specimen lacked the larger symbiotic bacteria (s. Fig. 10). This could be an indication of different compositions of symbiotic bacteria depending on the habitat.

A detailed micrograph of a Brachonella contorta larva. The larva is elongated and oval-shaped, with a textured, translucent body. A large, circular, light-colored structure is visible in the upper left quadrant. A cluster of small, dark, circular structures is located in the lower right quadrant. The larva is surrounded by a dense layer of fine, hair-like structures. Labels with yellow lines point to specific features: 'AG' points to a small, dark, circular structure near the top right; 'EX' points to a small, dark, circular structure near the bottom right; 'CV' points to a large, clear, circular structure near the bottom left; and 'MO' points to a small, dark, circular structure near the bottom center.

A detailed micrograph of a Brachonella contorta larva. The larva is elongated and oval-shaped, with a textured, translucent body. A large, circular, clear structure (CV) is visible in the lower-left quadrant. A smaller, circular, clear structure (AG) is located in the upper-right quadrant. A cluster of small, dark, circular structures (EX) is situated in the middle-right area. A small, dark, circular structure (MO) is located in the lower-right quadrant. The larva is surrounded by a dense layer of fine, hair-like structures. Labels AG, EX, CV, and MO are placed around the larva with lines pointing to the corresponding structures.

Fig. 11: *Brachonella contorta*. L = 130 µm. Focal plane on the macronucleus of a second, yellowish colored specimen. In this specimen the larger symbiotic bacteria are not present. AG = anterior aggregation of granules, CV = contractile vacuole, EX = extrusomes, MO = mouth opening. Obj. 100 X.

Not all specimens of *Brachonella contorta* could be examined in as much detail as the specimens shown above. Most specimens burst already after careful placement of the coverslip. Whether this reaction is caused by the hydrostatic generated pressure of the coverslip or by the reduced “vertical freedom of movement” is hard to say exactly. At least in most cases it leads to the extrusomes (mucocysts) being abruptly ejected with simultaneous shrinkage and denaturation of the cell body and forming a kind of mucuous envelope around the ciliate (s. fig. 11). This self-destructive reaction is in my opinion in no case a beginning encystment. Other ciliates with extrusomes and/or mucocysts can expel them locally over a limited area and usually continue swimming afterwards (e.g. *Paramecium caudatum* or *Frontonia leucas*). Why such a self-destructive reaction starts in *Brachonella* (and especially in the genus *Metopus*) remains enigmatic for the time being.



Fig. 12: *Brachonella contorta*. A denatured specimen after the coverslip has been applied. Obj. 100 X.



Fig. 13: *Brachonella spiralis*. A squashed denatured specimen in detail. Ma = macronucleus, ME = mucuous envelope, Mi = micronucleus. Obj. 100 X.

Brachonella contorta
Obj. 60 X



a



b



c



d

Fig. 14 a-d: *Brachonella contorta*. L = 110 μm . A freely swimming, almost colorless specimen from ventral (a), dorsal (b, c) and right (d). Obj. 60 X.