Pelomyxa palustris Greeff, 1874

Most likely ID: n.a.

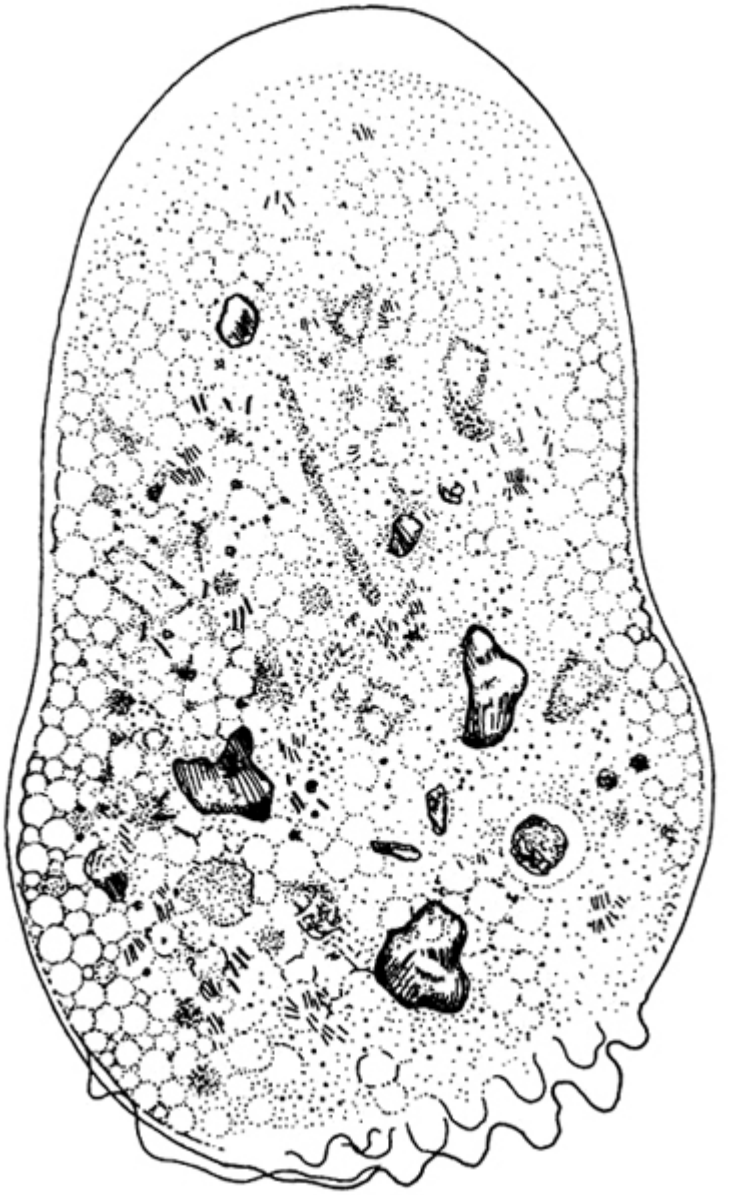
Synonym: n.a.

Sampling location: Ulmisried, Purren pond, Simmelried

Phylogenetic tree: *Pelomyxa palustris*

Diagnosis:

- cells amoeboid, often oval shape
- movement very slowly
- length up to 5000 µm
- cytoplasma vacuolated, filled with detritus and mineral grains
- up to several hundred nuclei
- large, refractive glycogen bodies
- glycogend bodies covered with symbiotic bacteria
- older nuclei covered by bacteria, young nuclei naked
- at least 2 species of symbiotic bacteria scattered in cytoplasm
- temporarely flagella can be formed
- filose uroid is formed in monopodial movement



after Siemensma

Pelomyxa palustris

Pelomyxa palustris is one of the largest amoebas and is usually visible to the naked eye as gray-white or brownish-white bodies. I often find *Pelomyxa palustris* in locations with a thicker layer of mud, because *Pelomyxa palustris* is an anaerobic amoeba and lives only in the deeper layers.

Under microscopic observation, the entire body is heavily filled with ingested detritus, mineral grains, algae, and fungal spores. As a result, *Pelomyxa palustris* is usually dark and translucent (s. figs. 1 a-b and 2 a-b). However, in squashed specimens, it can be seen that the cytoplasm is complexly structured. It is highly vacuolated and filled with numerous symbiotic bacteria (s. figs. 3 a and 8). In addition to the many nuclei scattered in the cytoplasm, numerous glycogen bodies

can also be seen. The glycogen bodies are homogeneously structured and always covered with symbiotic bacteria (s. fig. 5 a-b). The young nuclei, on the other hand, are not always covered by bacteria (s. fig. 6 a-b), while older, larger nuclei are covered with the larger symbiotic bacteria of type 1 (s. fig. 7 a-b). The nuclei in *Pelomyxa palustris* have their own population dynamics. They can divide but also fuse into larger nuclei.

Pelomyxa palustris possesses neither mitochondria, Golgi apparatus, nor contractile vacuoles. The functions of these organelles are at least partially taken over by the symbiotic bacteria. The population dynamics of these bacteria within the cells and also after cell division are very complex and their details are not yet fully understood. However, it is certain that these are methanogenic bacteria, which enable the amoeba to live under anaerobic conditions.

Pelomyxa palustris can form short flagella, which can be distributed over the body; they are only short and obviously without function. Movement is not possible with these flagella, as they are immobile. The presence of these flagella is interpreted as a relic because Pelomyxa palustris evolved from flagellates. The flagella are formed only temporarily. I have not been able to observe them myself so far.

More images and information on *Pelomyxa palustris*: Ferry Siemensma- Microworld- *Pelomyxa palustris*

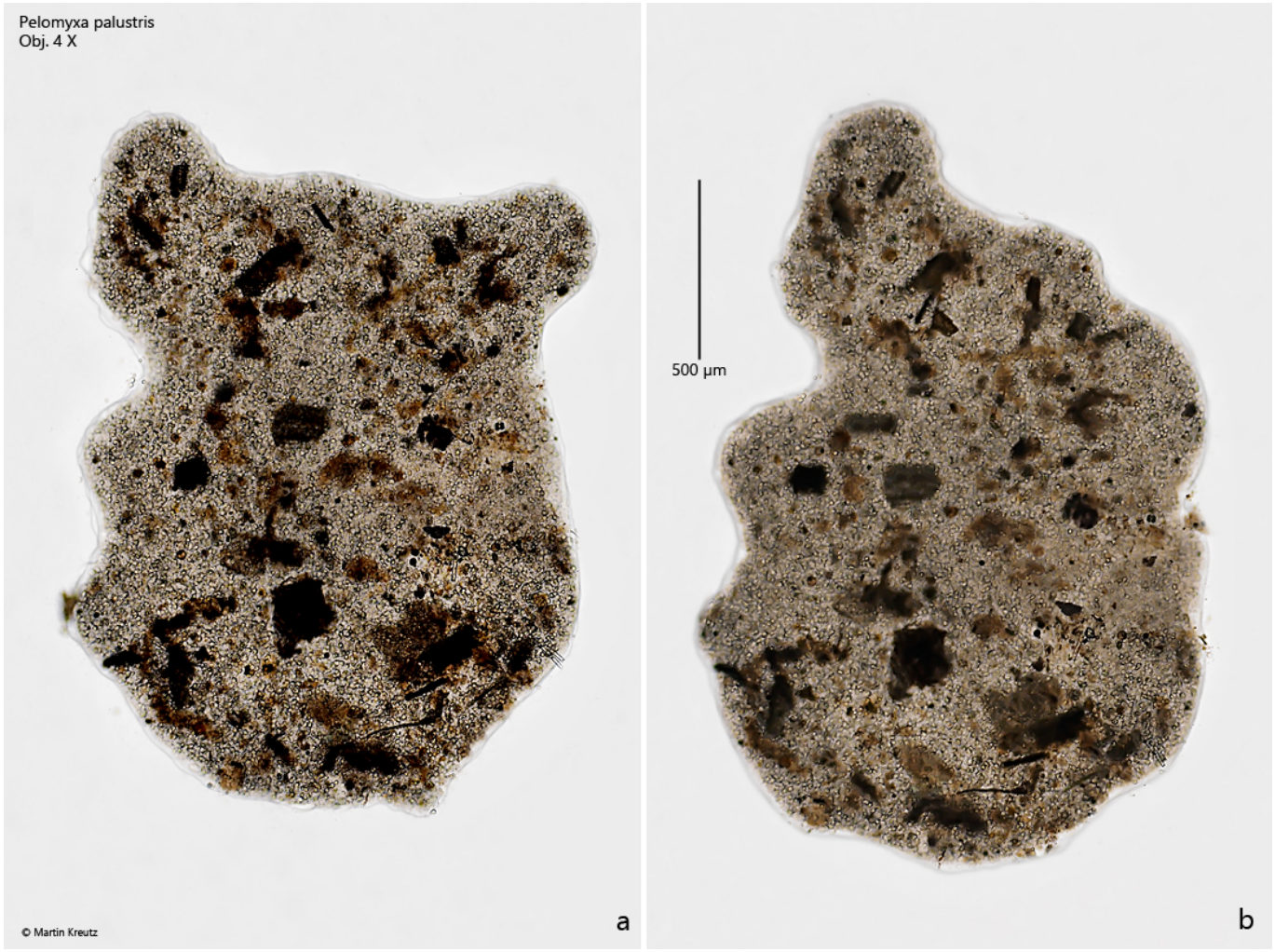


Fig. 1 a-b: *Pelomyxa palustris*. L = 2150 µm. A dark colored specimen filled up with ingested detritus particles. Obj. 4 X.

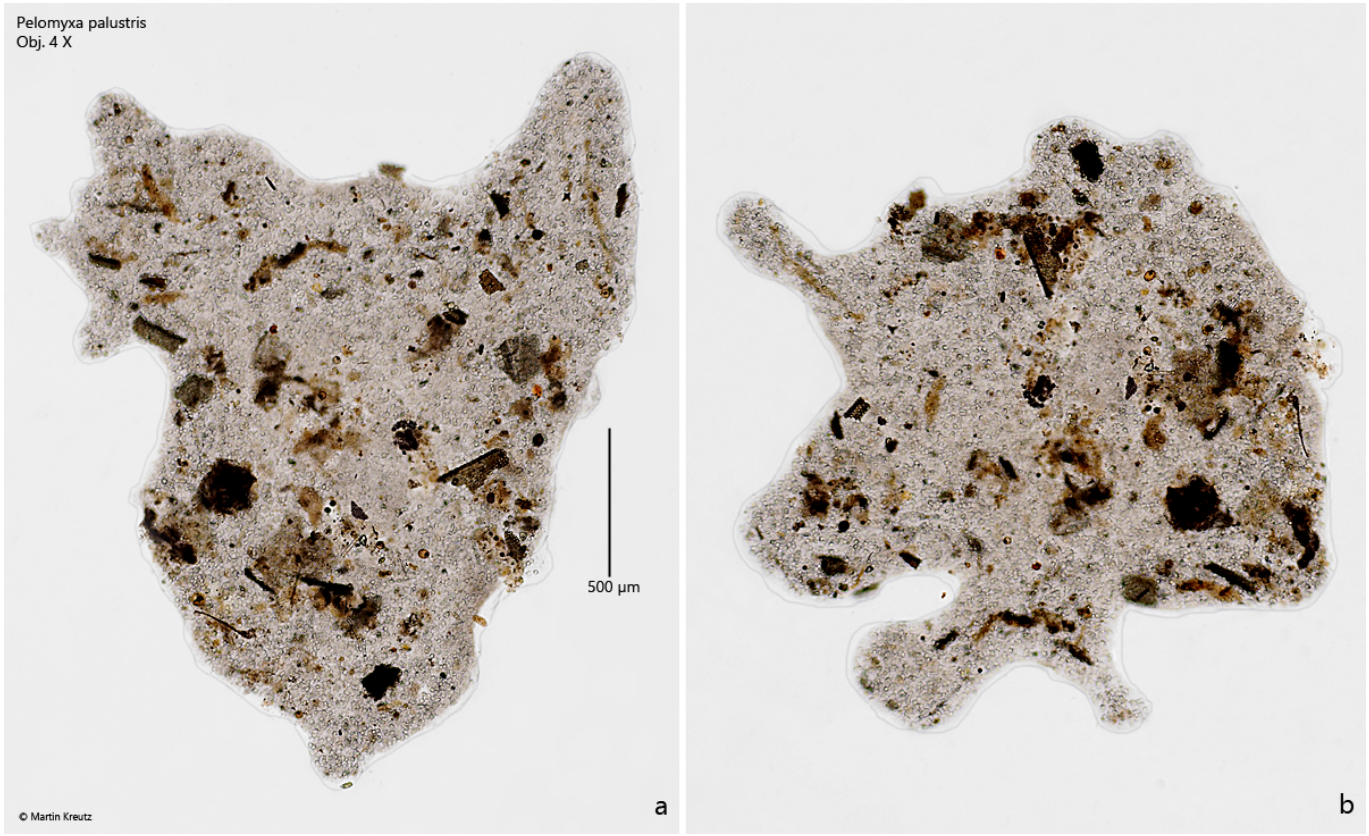


Fig. 2 a-b: *Pelomyxa palustris*. L = 2570 µm. A second, brighter specimen. Obj. 4 X.

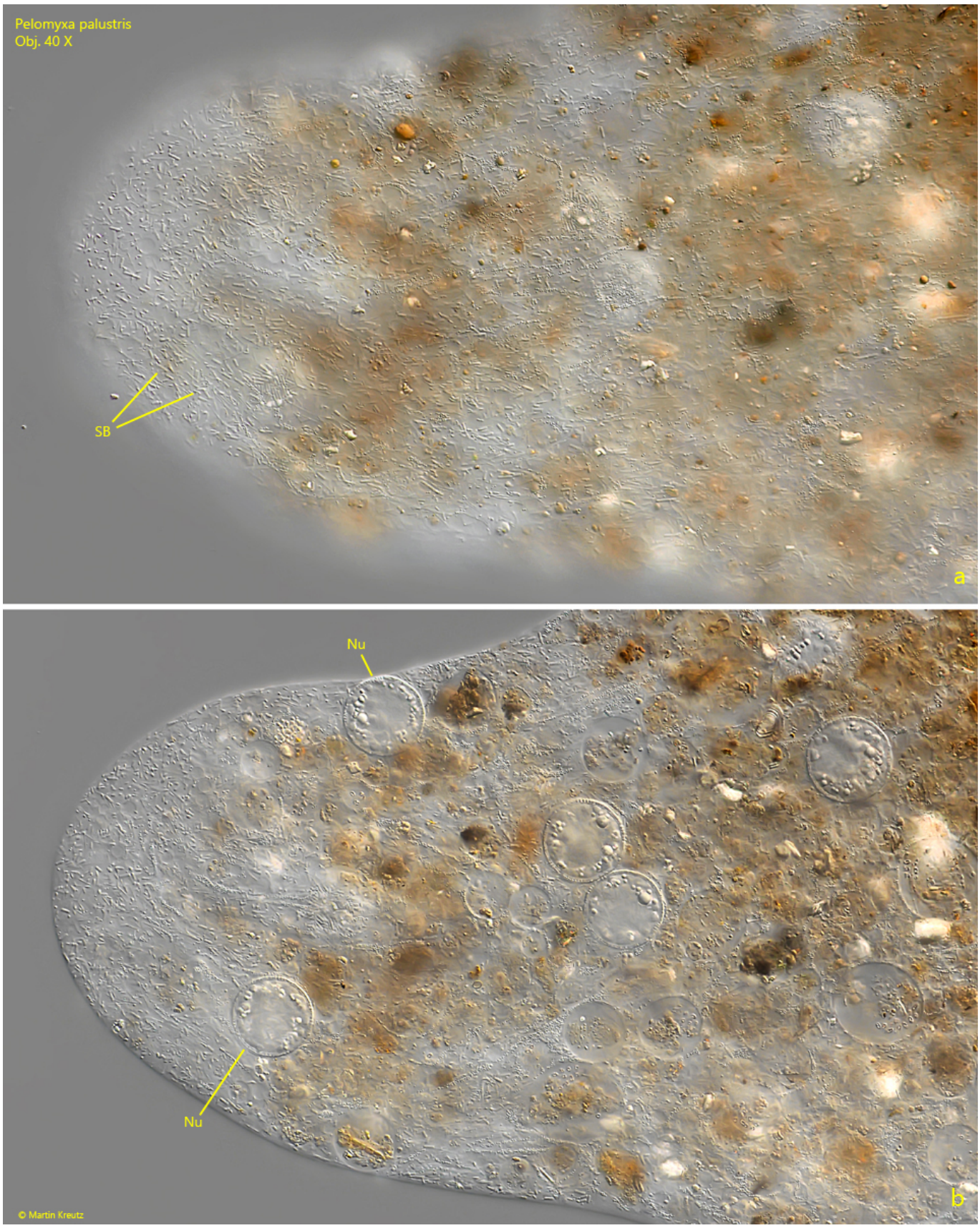


Fig. 3 a-b: *Pelomyxa palustris*. Two focal planes of a pseudopodia. In the cytoplasm large amounts of symbiotic bacteria (SB) are visible und some large nuclei (Nu). Obj. 40 X.


Pelomaxy palustris
Obj. 40 X
UR
© Martin Kreutz

Fig. 4: *Pelomyxa palustris*. L = 470 µm. A specimen in the monopodial form with a filose uroid (UR). Obj. 40 X.

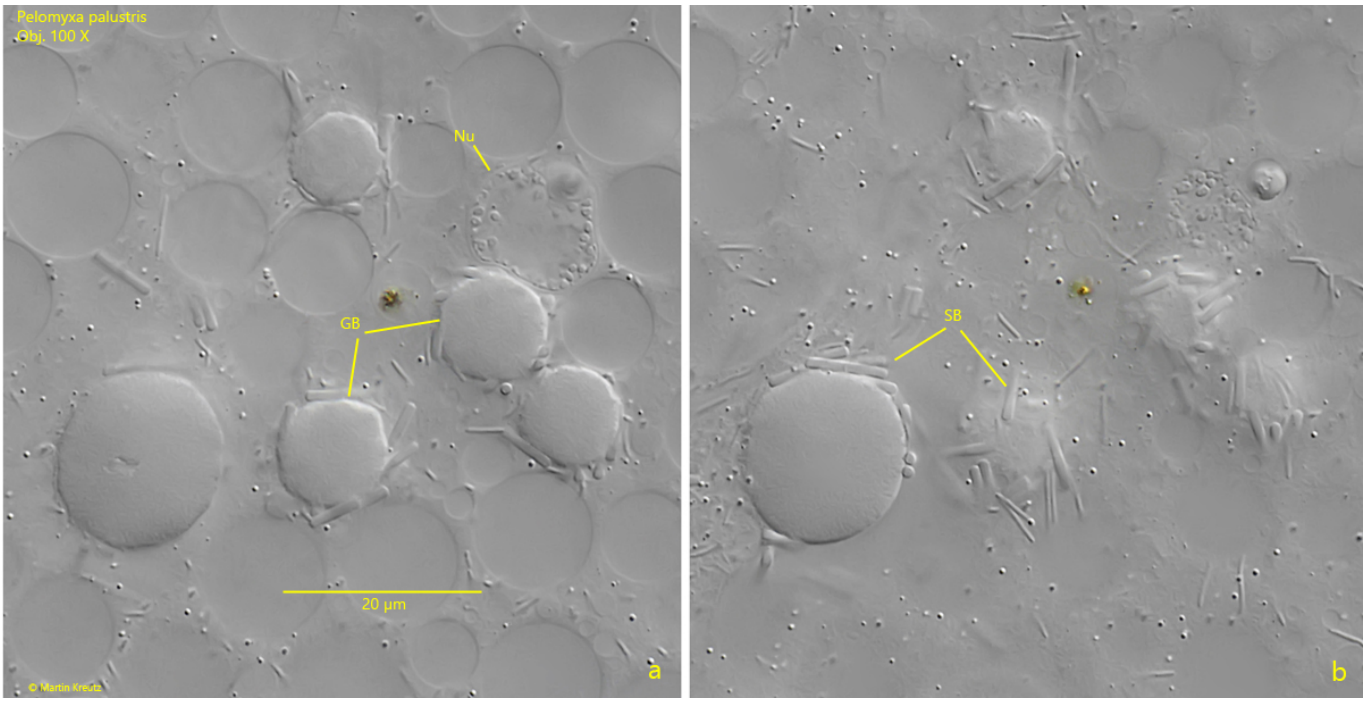


Fig. 5 a-b: *Pelomyxa palustris*. Some of the glycogen bodies (GB) scattered in the cytoplasm. The diameter of the glycogen bodies is 5–15 µm und the content is homogeneous. All glycogen bodies are covered with symbiotic bacteria (SB). Nu = nucleus. Obj. 100 X.

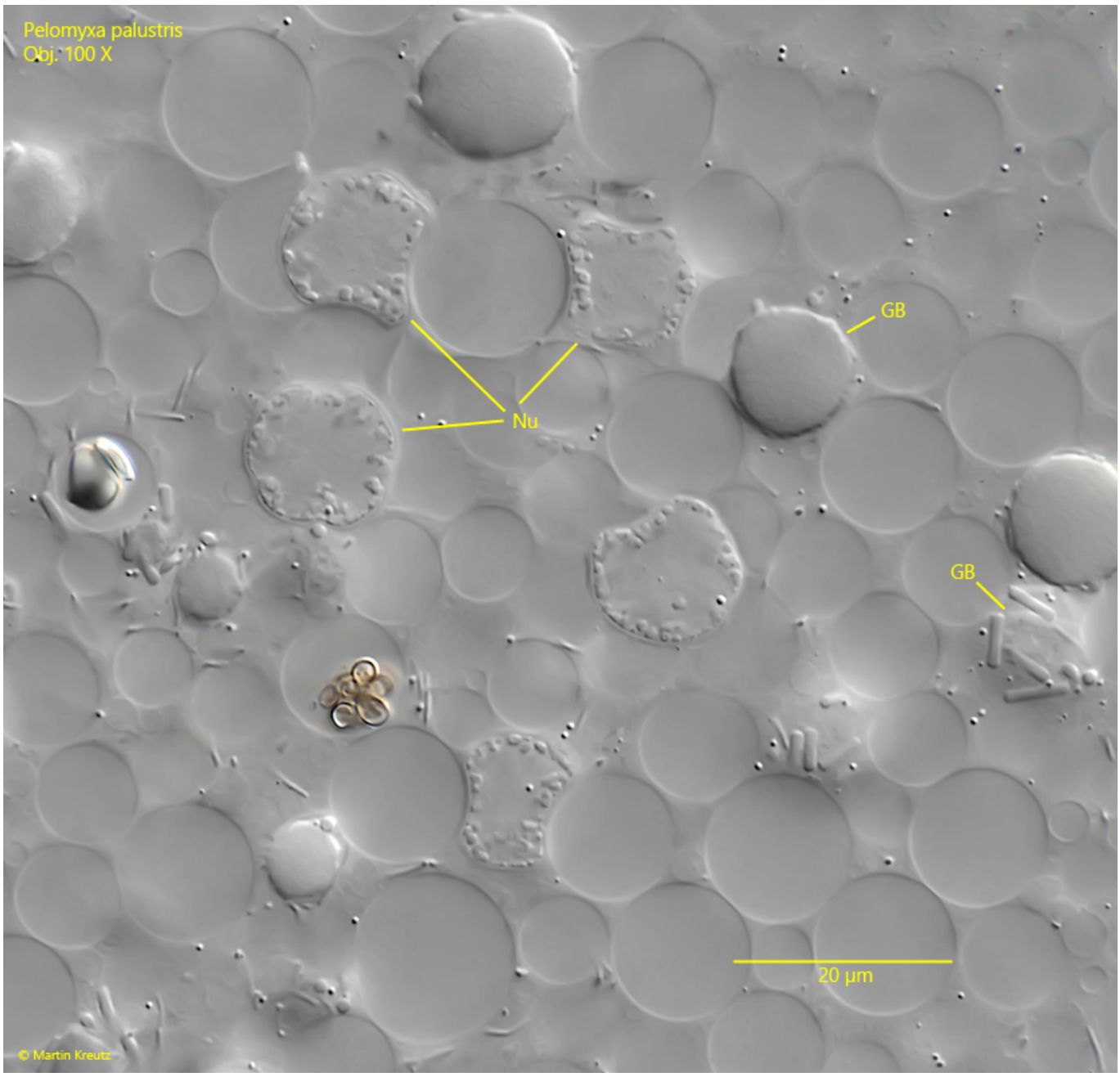


Fig. 6: *Pelomyxa palustris*. Some of the nuclei (Nu) scattered in the cytoplasm. In this specimen, the nuclei are not covered with symbiotic bacteria. GB = glycogen bodies. Obj. 100 X.

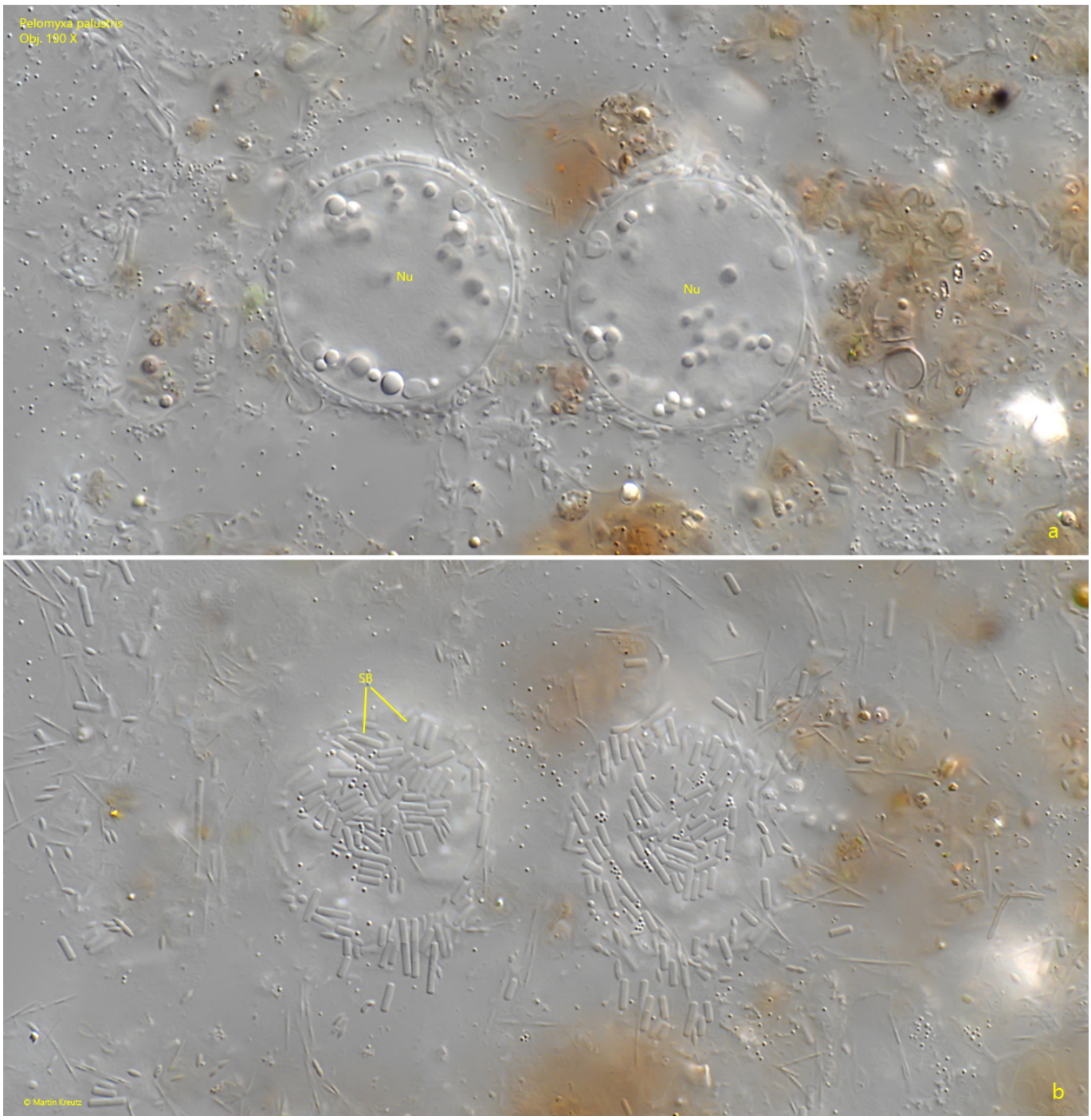


Fig. 7 a-b: *Pelomyxa palustris*. Two large nuclei (Nu) with a diameter of 30 µm each. Both nuclei are covered with symbiotic bacteria (SB). Obj. 100 X.

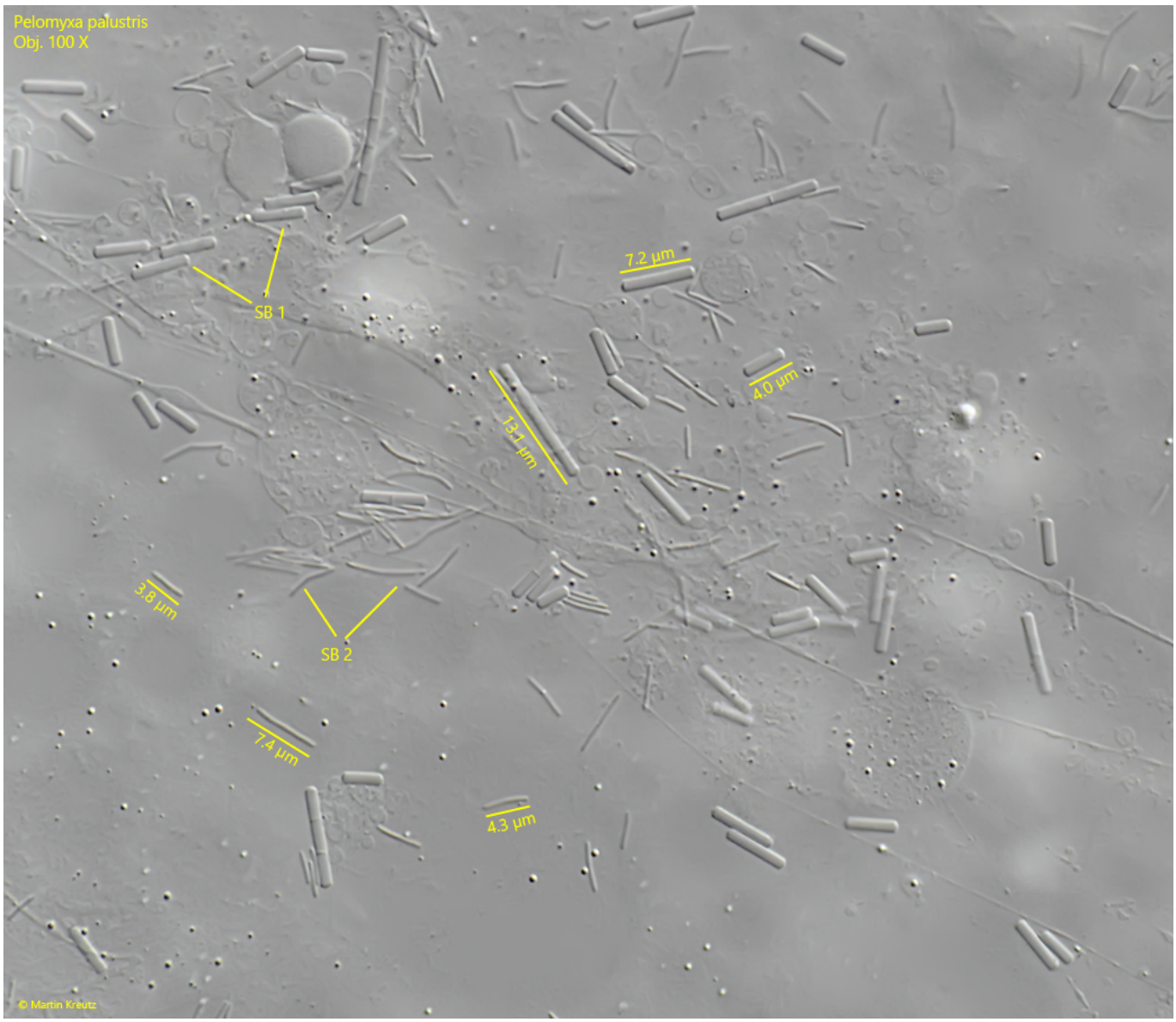


Fig. 8: *Pelomyxa palustris*. In the cytoplasm at least 2 types of symbiotic bacteria are scattered. The type 1 bacteria (SB 1) are thick rods with a length of 4–15 µm, while the type 2 bacteria (SB 2) are thin rods with a length of 3-10 µm. Obj. 100 X.