# *Mougeotia scalaris* Hassall, 1842

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

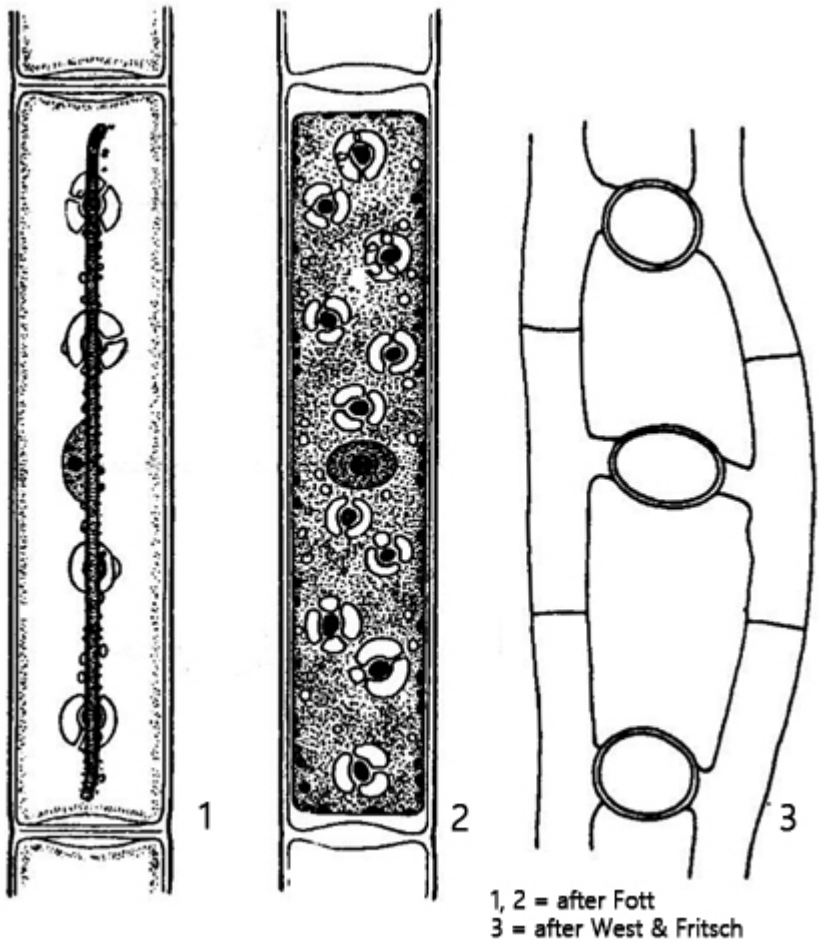
**Synonym:** n.a.

**Sampling location:** Ulmisried, Purren pond, Mainau pond, Bussenried, Bündtlisried, Simmelried

**Phylogenetic tree:** *Mougeotia scalaris*

**Diagnosis:**

- rectangular, straight cells in long, unbranched filaments
- length 40–180 µm, width 20–35 µm (of cells)
- one band-shaped chloroplast with 4–10 pyrenoids
- nucleus central
- terminal cells with convex apex
- zygotes ovoid or spharical, smooth (30–40 µm)




Mougeotia scalaris

*Mougeotia scalaris* is one of the most common filamentous algae. It can be found particularly frequently and reliably in the Simmelried.

The genus *Mougeotia* can be recognized by the band-shaped chloroplast, which can also be seen in lateral view. The apices of the terminal cells are convexly rounded (s. fig. 3). The individual species within the genus are distinguished mainly on the basis of cell size and the shape and size of the zygotes.

In the case of *Mougeotia scalaris*, classification is possible even without finding zygotes because the cells have a diameter of 20–30 µm, making it one of the largest species. *Mougeotia scalaris* is also the most common species.

*Mougeotia scalaris* has the ability to rotate the band-shaped chloroplasts within the cell depending on the incident light intensity. When there is a strong incidence of light, the chloroplasts in all cells turn with the narrow edge towards the light source

(s. fig. 2 a-b). This ensures that the optimum amount of light is always available for photosynthesis.

*Mougeotia scalaris* has only one chloroplast, but cells that appear to have two chloroplasts are frequently found (s. figs. 3 and 4). These cells are shortly before cell division and have already divided their chloroplasts, which are then later distributed to the daughter cells. In these cells, the nucleus is located in a cytoplasm bridge between the two chloroplasts (s. fig. 4).

The chloroplast of *Mougeotia scalaris* contains several pyrenoids, which produce starch. A frontal view of the chloroplast clearly shows the round starch granules (s. fig. 4). It appears as if they are located in the chloroplast. However, in lateral view of the chloroplast laterally, it becomes visible that the starch grains are located on the surface of the chloroplast (s. fig. 5). Further starch granules are found freely floating in the cell lumen.

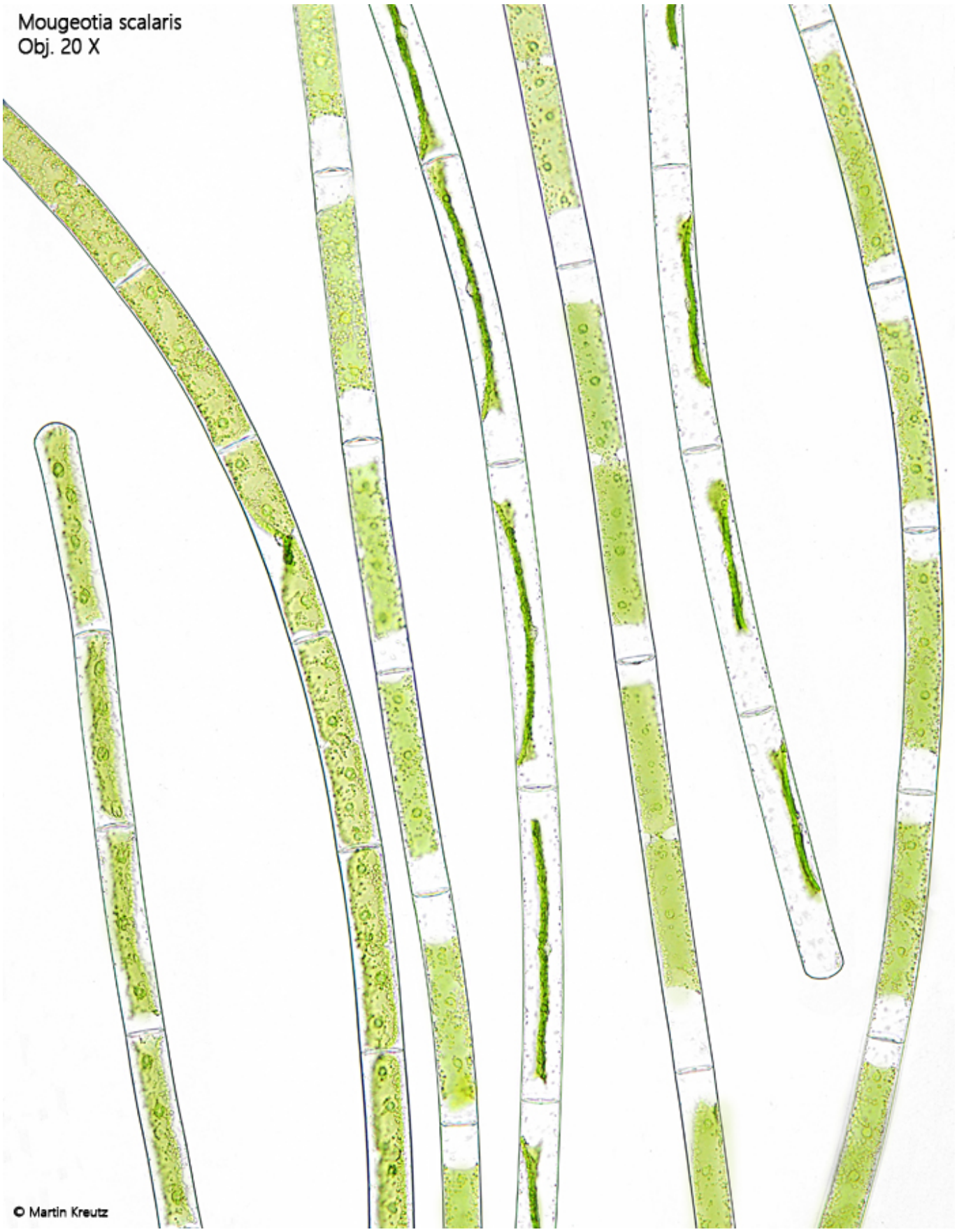



**Fig. 1:** *Mougetia scalaris*. Some filaments in brightfield illumination. Obj. 20 X.

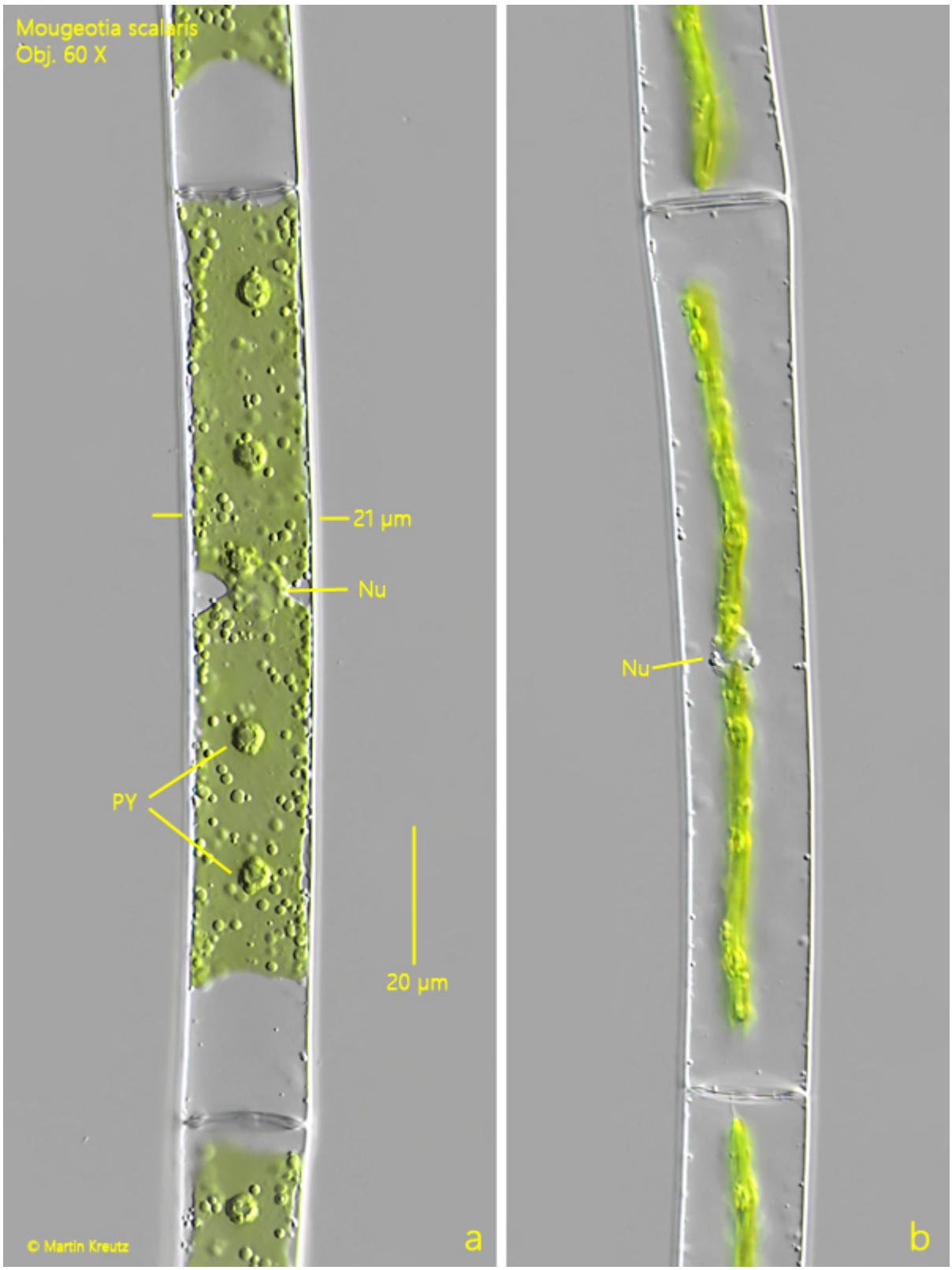



**Fig. 2 a-b:** *Mougetia scalaris*. L = 142 µm (of cell). The band-shaped chloroplast in frontal view (a) and in lateral view (b). Nu = nucleus, PY = Pyrenoids. Obj. 60 X.

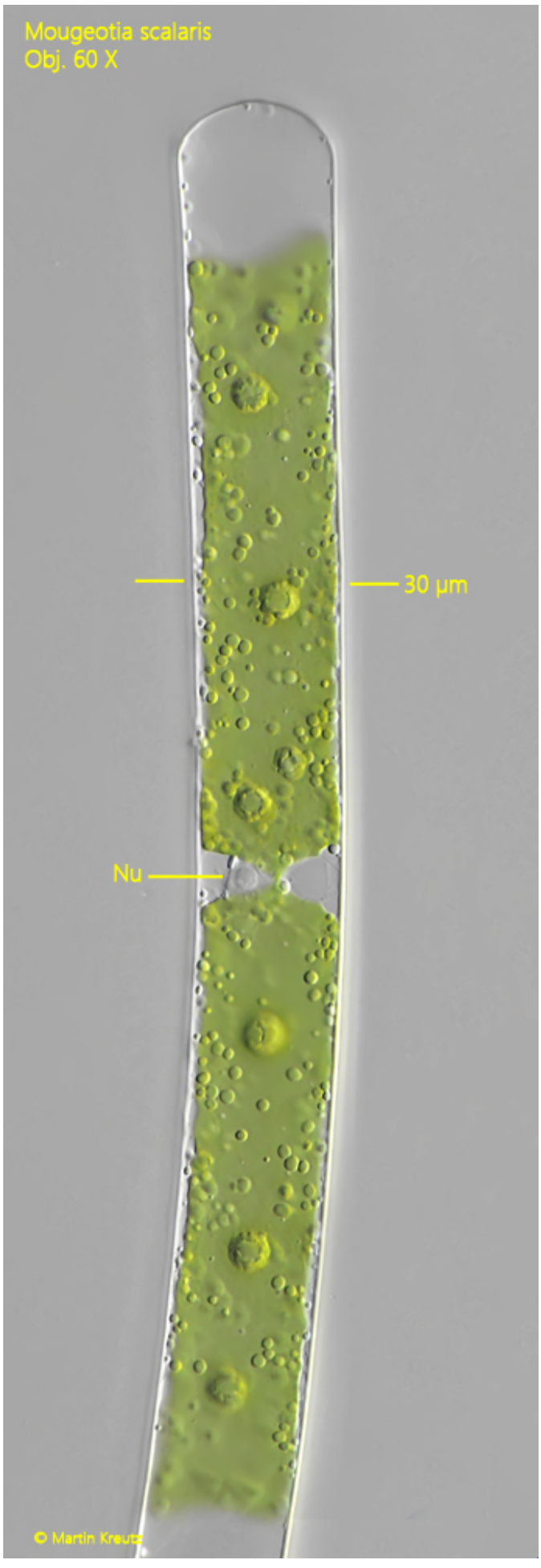

Mougeotia scalaris
Obj. 60 X
30 µm
Nu
© Martin Kreutz

**Fig. 3:** *Mougetia scalaris*. A terminal cell of a filament with the rounded, convex apex. Nu = nucleus. Obj. 60 X.

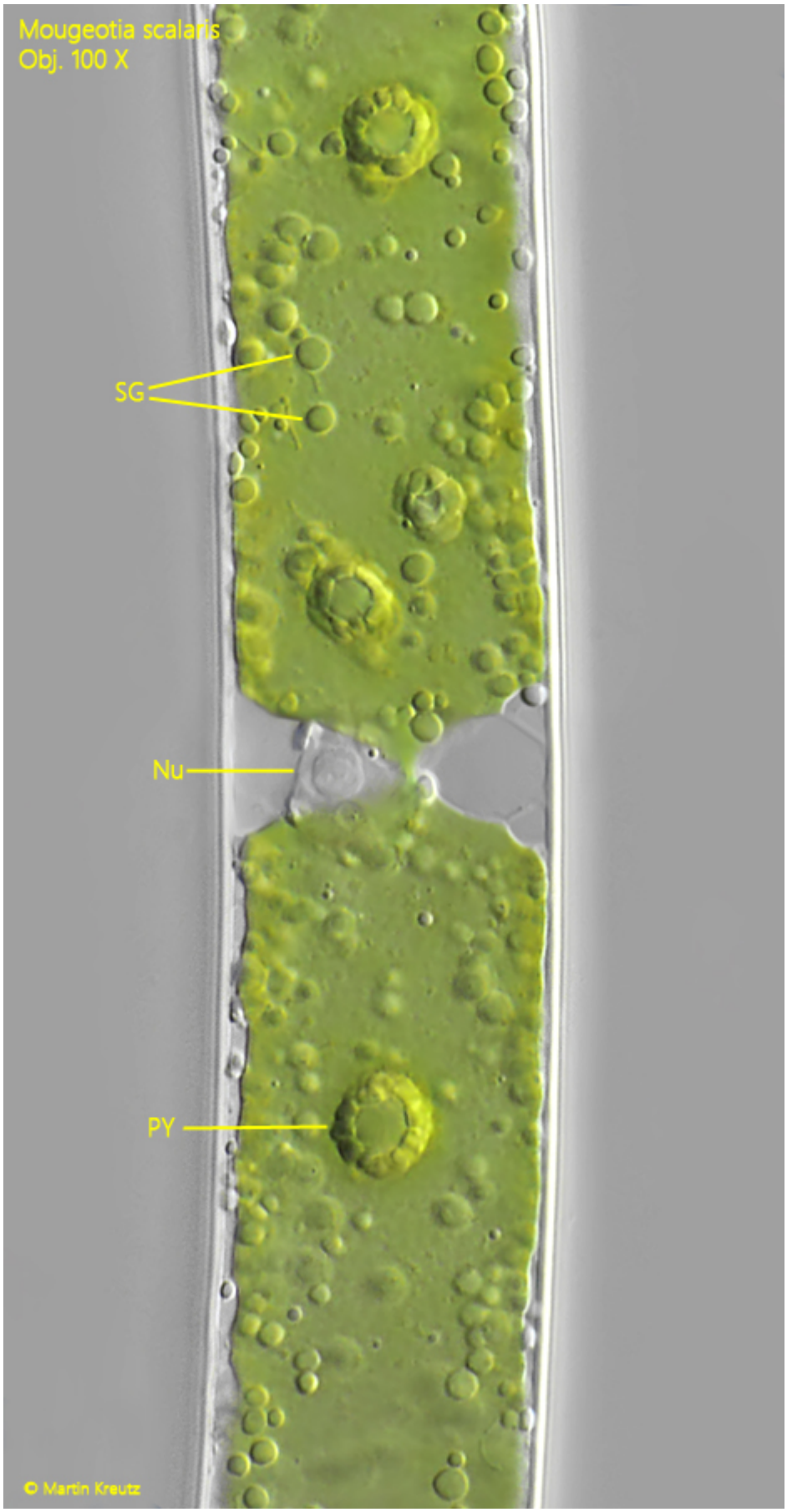


**Fig. 4:** *Mougetia scalaris*. A cell shortly before cell divison in detail. After division of the chloroplast the nucleus (Nu) is located in a gap between the two chloroplasts. PY = pyrenoids, ST = starch grains. Obj. 100 X.

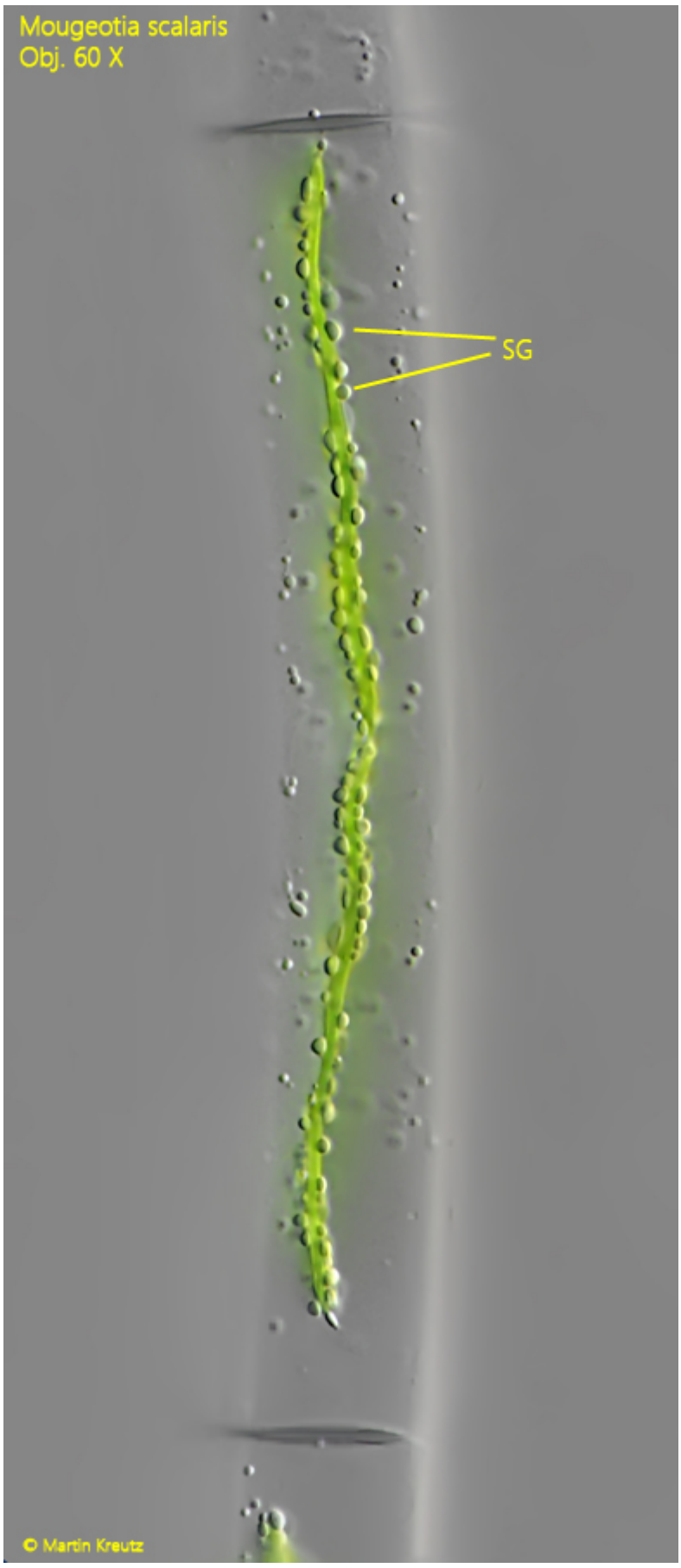



**Fig. 5:** *Mougetia scalaris*. The chloroplast in lateral view. The starch grains (SG) are located on the surface of the band-shaped chloroplast. Obj. 60 X.