

# Multiclavula mucida

Andrus Voitk

Photo: Roger Smith

Wherever students of lichenized ascomycetes gather, if talk turns to *Multiclavula mucida*, the room of previously collegial scientists polarizes into two acrimonious camps. Democrats argue that *M. mucida* should be allowed free access to the land of lichens, while isolationists clamour to build a wall barring its entry; they maintain that although it grows near algae, maybe even has an obligatory association, the relationship lacks structure, i.e. a **thallus** (a fungal structure containing algae). The HVGB area provided several good fruitings of *M. mucida*, allowing us to conduct our own investigation to see whose argument can be substantiated.

The thick algal mat in which these small clubs grow is readily seen in the title banner. Algae have covered the soil, fallen conifer duff, and surrounding moss, everything but the beetle in the middle. The mat is magnified in Figure 1. Although enlarged beyond its optimal resolution, the photo clearly shows that the algae are not present as a loose film, but definitely structured, arranged in small adjacent globules—indistinguishable from the thallus of many lichenomphalias, whose lichenized state is readily acknowledged by students of lichenized ascomycetes.

Microscopic examination may have been easier, using fresh globules and a dissecting microscope. Preparing slides from dried collections with unaided 76-year-old eyes was more challenging. Despite several washings, tiny silt fragments clung to algal globules, impeding a flattened preparation, requiring considerable up and

down focussing to reconstruct a 3-D concept of the ultrastructure. This is attempted in Figure 2 on the next page (original magnification 400 ×), showing,

**A:** Visible granules are irregularly ovoid, enclosed by flat mycelial cells, visible as flat tiles on the upper surface (cyan lines), and as a thin enveloping cell layer around the perimeter (yellow lines). The content is made up of multiple individual packets of algae contained within similar enveloping cells (orange line), compartmentalized by walls of flat fungal cells. **B:** Small globule, a single packet containing compressed algae (note few visible chloroplasts). **C:** Fungal hyphae course between and through granules making intimate contact with packets and algal cells.

This is the common “*Botrydina* type” thallus structure built by basidiolichens a) to protect algae from UV light, b) to guard them from drying by sun and wind, and c) to maintain intimate contact with them by a hyphal network constantly delivering water and minerals for their survival.

## Conclusions

1. Algal globules of *M. mucida* have a definite thallus: alga contained within fungal tissue. Ergo, *M. mucida* is a basidiolichen, not an “ally” or other casual bystander.
2. Score one for the democrats. No need for a wall.
3. Obviously, algae are the original farmers, keeping a stable of *M. mucida* to house, protect and nurture them, in exchange for a little bit of sugar. Sweet deal!



Photo: Roger Smith

Figure 1

I thank Robert Lücking for reviewing the manuscript.

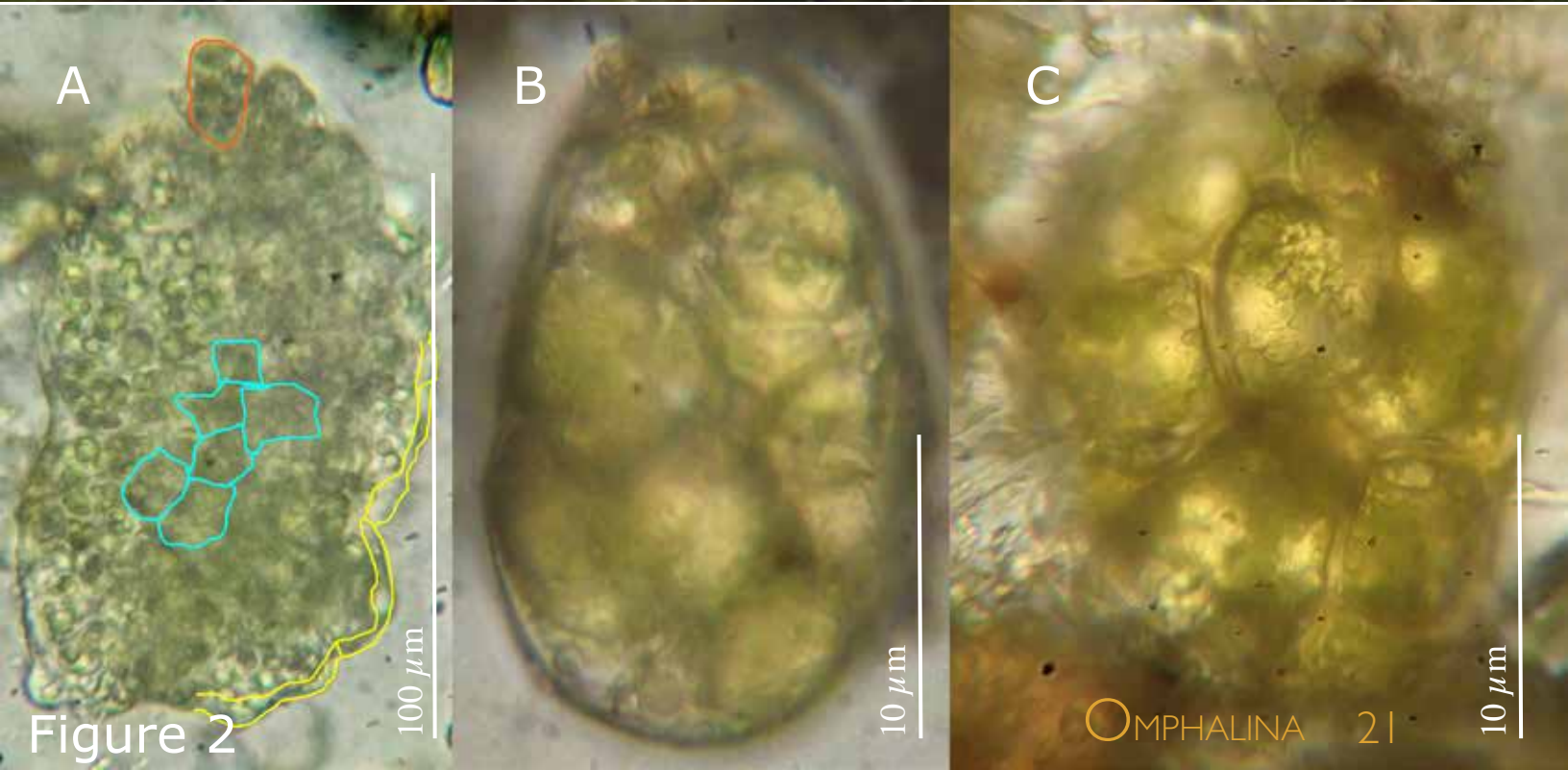


Figure 2

OMPHALINA 21