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Comment on bg-2021-62

Susan T. Goldstein (Referee)

Referee comment on "Permanent ectoplasmic structures in deep-sea *Cibicides/oides* taxa – long-term observations at in situ pressure" by Jutta Wollenburg et al., *Biogeosciences Discuss.*, <https://doi.org/10.5194/bg-2021-62-RC1>, 2021

The authors report observations on living specimens of several species of *Cibicides* / *Cibicidoides*, species that are important epibenthic taxa widely used in paleoceanographic studies. Individuals were maintained at ambient or near ambient pressures in a highly specialized culturing system with circulating seawater. The authors report highly resistant structures formed by the individual foraminifera, and the ability of individuals to move along some of these structures. Although observations are limited by the thickness of the walls of the culture system, they are nonetheless novel and demonstrate the extent to which these foraminifera modify their surroundings by constructing a useful "scaffolding" to aid in motility and feeding. How many of the individuals observed made these structures? It would be good to know what these structures are composed of and whether these materials might be unique to these particular species. Perhaps this will be addressed in future research.

I have just a few comments:

1. Who was the first to describe the granular appearance of reticulopodia in foraminifera? The authors cite Goldstein (1999), but this has been known for quite a long time. I (vaguely) recall reading this description in Rhumbler (1909). Given the content of the paper, I suggest that the authors track down the origin of this observation.
2. Who was the first to refer to the foraminiferal shell as a test that is internal? Cushman (1948) talks about the test as an internal structure, and judging from the associated illustration, the observation may date as far back as Schultze (1854). Again, if this point is to be reviewed in the Discussion, the authors should track down these earlier descriptions.
3. When the pumps are 'shut down', does the pressure also drop, or does this just affect the currents?

4. A couple of typos: line 83, convocal: confocal; line 121: inversed: inverted.

5. The authors used calcein, but I didn't see any mention of the occurrence of calcification. Did any calcification occur?

6. "Et al." has been omitted from a number of the in-text citations, and these should be corrected.