Goldschmidt 2021 Abstract
https://doi.org/10.7185/gold2021.6804

Impact of photosynthesis on Mn and Mg incorporation in the benthic foraminifera *Amphistegina lessonii*

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Marine calcifiers are not only an important component of the global marine carbon cycle, they're also widely used as tools for paleo-reconstruction. The incorporation of trace metals and stable isotopes in their shell carbonate gives information about the sea water they lived in at the time of calcification. Because of their ubiquity through time and space foraminifera are one of the major phyla used to reconstruct past environments and climate. Nevertheless, many questions are still open regarding the way they form their shells and how this affects trace metal and isotope incorporation. Both biology and the physico-chemical state of the sea water probably plays a role, making it important to disentangle the relative impacts.

Here, we tried to better constrain the effects of seawater DIC and photosynthesis on the incorporation of trace metals (Mn and Mg) in shells of the benthic symbiont-bearing foraminifera *Amphistegina lessonii*. We performed culture experiments to separate the environmental parameters using a combination of high-resolution analytical technics such as Laser ablation ICP-MS and Electron Probe Micro Analyzer (EPMA) measurements. Preliminary results suggest that both Mg and Mn are affected by photosynthesis, making an accurate quantification crucial for robust reconstructions using foraminifera with symbionts.