

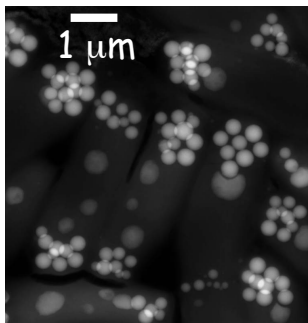
Intracellular Ca-carbonate biomineralization in cyanobacteria: New facts and some speculations

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Some cyanobacteria have recently been shown to form amorphous intracellular Ca-carbonates [1]. This contradicts the usual assumption that Ca-carbonate biomineralization by cyanobacteria is extracellular and passive and questions our knowledge about involved mechanisms in cyanobacterial calcification. Phylogenetically diverse cyanobacterial species can biomineralize intracellularly, including all strains belonging to the *Thermosynechococcus elongatus* BP-1 clade [2]. A link between biomineralization and cell division is obvious in the latter ones. Moreover, several of the species known to biomineralize intracellularly can be found in diverse aqueous environments around the world [3]. Here, we will review the latest results obtained on these bacteria. We will show that the stabilization of intracellular amorphous Ca-carbonates is an active mechanism. We will detail how different form of intracellular calcium can be quantified at the single-cell scale using scanning transmission x-ray microscopy (STXM). Based on these results, we will speculate about some potential mechanisms involved in cyanobacterial intracellular calcification.



[1] Couradeau, Benzerara, Gérard, Moreira, Bernard, Brown Jr., López-García (2012) *Science* **336**, 459-462.

[2] Benzerara., Skouri-Panet, Li, Férad, Gugger, et al (2014) *Proc. Natl. Acad. Sci. USA* **111**, 10933-10938.

[3] Ragon, Benzerara, Moreira, Tavera and López-García (2014) *Frontiers in Microbiology* **5**, #331.