

Is iron toxic to cyanobacteria? Implications for biomineralization in ancient ferrous oceans.

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It has been proposed that cyanobacteria would have found the ancient ocean a toxic environment due to reactive oxygen species produced following the release of oxygen. This toxicity could have inhibited total productivity, evolution, and biomineralization of banded iron formations. To shed more light on this topic, we explored two naturally ferrous iron rich environments which have chemistry relevant to precambrian oceans. Surprisingly, while one environment has limited cyanobacterial biomass, another is replete. DNA sequencing revealed dominant community members, and laboratory studies corroborated field observations of cyanobacterial growth unaffected by iron concentrations relevant to early oceans.

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