

2-MeBHPs: biomarkers of oxygenic photosynthesis or something else?

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2-methylbacteriohopanes (2-MeBHPs) are commonly considered biomarkers of oxygenic photosynthesis, as their modern analogues, 2-methylbacteriohopanepolyols have, until recently, been thought to be produced in high abundance only by cyanobacteria. Last year, however, our lab reported the production of quantitatively equivalent amounts of 2-MeBHPs by the anoxygenic phototroph *Rhodospseudomonas palustris* TIE-1 under certain conditions (Rashby *et al.*, 2007). Because *R. palustris* TIE-1 can produce these molecules under strictly anaerobic conditions and is not capable of performing oxygenic photosynthesis, this called into question whether 2-MeBHPs are accurate markers of oxygenic photosynthesis. In the past year, we have followed up this discovery by performing a combination of genetic, cell biological, and physiological studies to learn more about the function of these molecules in both oxygenic and anoxygenic phototrophic bacteria. These findings, and their implications for how we interpret 2-MeBHPs in the rock record, will be discussed.

References

Rashby S.E., Sessions A.L., Summons R.E., Newman D.K. (2007) Biosynthesis of 2-methylbacteriohopanepolyols by an anoxygenic phototroph, *Proc Natl Acad Sci USA*, 104(38): 15099-15104.

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