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The first photosynthesis was purple

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Molecular phylogenies of bacteria are mostly built on the analysis of conserved molecules such as 16S ribosomal RNA. But there is evidence for horizontal gene transfer of photosynthesis genes, so any debate about the origin of photosynthesis must look directly at the evolution of that gene group, independent of its bacterial host. This is what Xiong *et al.* undertake in the September 8 *Science*, using 100 kb of newly generated sequence that identifies many genes for photosynthetic pigment synthesis. Their phylogenetic analysis leads them to the conclusion that the photosynthetic system used by purple bacteria was the first to evolve. This challenges previous conclusions based on 16S rRNA and heat-shock protein sequences, and suggests that the synthetic pathway for the more complex bacteriochlorophyll evolved before being truncated to yield chlorophyll.

References

1. Bacterial evolution.
2. Science magazine, [<http://www.sciencemag.org/>]