Bathyarchaeota: a crucial component of the global biochemical cycle

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Abstract

Bathyarchaeota is a newly proposed phylum of archaeal organisms. Its diverse members inhabit anoxic environments such as hot springs, salt marshes, mangrove sediments, and the sub-seafloor. While Bathyarchaeota is believed to be an important driver of the global carbon cycle, little is known about the phylum's true metabolic potential. A new study constructed nine metagenome-assembled genomes of Bathyarchaeota using mangrove and mudflat sediments of the Futian and Mai Po Nature Reserves. Comparative analyses of these genomes expanded the role of this phylum in phototrophy, autotrophy, and the nitrogen and sulfur cycles. and findings suggested the Bathyarchaeotal subgroup can sense light and thrive in micro-oxygen conditions. The results provide insight into the metabolic abilities and diverse lifestyles of members of Bathyarchaeota and highlight the crucial role of this newly proposed phylum in global biochemical cycles.