
Woods Hole Oceanographic Institution
Biology Department Seminar



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Redfield Auditorium – 12:00 Noon

New Paradigms in Microbial Sulfur Metabolism

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Microbial sulfur metabolism plays a critical role in the transformation of nutrients, human health and disease, and drives key planetary biogeochemical cycles. Our current knowledge of the microbial ecology associated with this key element is primarily based on single gene- and cultivation-based studies that provide no reliable information on comprehensive microbial metabolism and paint a biased picture of microbial community composition.

In this presentation, I will describe the use of genome-resolved terabase-scale metagenomics to investigate the sulfur-associated microbial ecology of terrestrial and marine subsurface environments. The reconstruction and metabolic analysis of greater than 3,500 near-complete microbial genomes and 10,000 viral genomes implicates novel players in sulfur cycling including sixteen previously unrecognized bacterial and archaeal phyla, and newly discovered genes. These findings fundamentally reshape our understanding of the biogeochemical cycle of sulfur.