

May 2<sup>nd</sup> 2023 – 3 PM



## The first methanogens from outside the Euryarchaeota

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 **Zoom** Online seminar, access upon request

### Abstract

Methane is the second most abundant climate-active gas and understanding its sources and sinks is a crucial endeavor in microbiology, biogeochemistry, and climate sciences. Since the discovery that methanogens are members of a separate domain of life, the Archaea, in 1977, it was assumed that methanogenesis is restricted to a metabolically highly specialized group of archaea within the phylum Euryarchaeota. However, the discovery of methanogenesis marker genes on metagenome-assembled genomes obtained from diverse habitats has led to the proposal that several other previously unknown archaeal phyla are involved in methanogenesis. However, these hypotheses from genomics have yet not been put to an experimental test. Our lab has recently obtained cultures of the first methanogens from outside the Euryarchaeota from hot springs in Yellowstone National Park. The enriched archaea are affiliated to the previously un-cultured lineage Verstraetearchaeota and Korarchaeota and grow by methyl-reducing hydrogenotrophic methanogenesis using methanol. Our results transform our understanding of the biology of the methane cycle and will lead to the rewriting of microbiology textbooks.

