Phylum *Asgardarchaeota*

Etymology

[As.gar.dar.chae.o'ta] **N.L. neut. n.** *Asgardarchaeum*, referring to the type genus Asgardarchaeum; *-ota*, ending to denote a phylum; **N.L. neut. pl. n.** *Asgardarchaeota*, the Asgardarchaeum phylum

Nomenclatural type

Genus *Asgardarchaeum*

Description

Asgardarchaeota, commonly referred to as Asgard archaea, are a candidatus phylum-level archaeal clade that includes the closest archaeal relatives of eukaryotes. Metagenomic discovery of new microbial life continues to expand our understanding of the diversity and evolutionary history of life on Earth. The Asgard archaea have garnered significant attention due to their close relatedness to the nucleocytoplasmic lineage of eukaryotes, offering invaluable insights into eukaryogenesis, i.e., the evolutionary transition from prokaryotic to eukaryotic cellular life (Zaremba-Niedzwiedzka et al., 2017; Williams et al., 2019; Eme et al., 2023; Vosseberg et al., 2020). Discovered first with environmental 16S rRNA sequencing in 1999 (Vetriani et al., 1999), the group was named Marine Benthic Group B (MBG-B) and later referred to as Deep-Sea Archaeal Group (DSAG) (Inagaki et al., 2003). The first draft genome was obtained 16 years later when a metagenomics survey recovered a metagenome assembled genome (MAG) from marine sediments sampled from the Arctic Ocean, next to a hydrothermal system named Loki's Castle (Spang et al., 2015), prompting the candidate name Lokiarchaeum as its first genus and "Lokiarchaeota" for its associated candidate phylum. Soon after, genomes of close relatives of Lokiarchaeum were obtained from multiple environments around the world, founding the candidate phyla Thorarchaeota (Seitz et al., 2016), Heimdallarchaeota and Odinarchaeota (Zaremba-Niedzwiedzka et al., 2017). These lineages formed a monophyletic group tentatively described as a superphylum, receiving the name Asgard archaea (Zaremba-Niedzwiedzka et al., 2017). More recently, efforts to align genome diversity within standardized taxonomic ranks (Rinke et al., 2021) led to a reclassification of the Asgard archaea as the phylum *Asgardarchaeota* and its constituent subgroups as classes.

Classification

Archaea » *Asgardarchaeota*

References

Effective publication: Tamarit et al., 2024 [1]
Original (not valid) publication: Zaremba-Niedzwiedzka et al., 2017 [2] and Rinke et al., 2021 [3]
Assigned taxonomically: Da Cunha et al., 2017 [4]

Registry URL

https://seqco.de/i:33331

References

1. Tamarit et al. (2024). Description of Asgardarchaeum abyssi gen. nov. spec. nov., a novel species within the class Asgardarchaeia and phylum Asgardarchaeota in accordance with the SeqCode. *Systematic and Applied Microbiology*. DOI: 10.1016/j.syapm.2024.126525
2. Zaremba-Niedzwiedzka et al. (2017). Asgard archaea illuminate the origin of eukaryotic cellular complexity. *Nature*. DOI: 10.1038/nature21031
3. Rinke et al. (2021). A standardized archaeal taxonomy for the Genome Taxonomy Database. *Nature Microbiology*. DOI: 10.1038/s41564-021-00918-8
4. Da Cunha et al. (2017). Lokiarchaea are close relatives of Euryarchaeota, not bridging the gap between prokaryotes and eukaryotes. *PLOS Genetics*. DOI: 10.1371/journal.pgen.1006810