

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., 2020; Eme et al., 2023; Vosseberg et al., 2024). 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]
Assigned taxonomically: Da Cunha et al., 2017 [2]

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. 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