

Genus *Hestiella*

Etymology

[he.sti.el.'la] N.L. dim. fem. n. *Hestiella*, little Hestia, named for the Greek goddess of the hearth and home

Nomenclatural type

Species *Hestiella acidicharens*^{Ts}

Description

Identification of this genus is supported by phylogenomic analysis, 16S rRNA comparison, AAI, environmental distribution and functional genomic differences. MAGs belonging to this genus were identified from multiple samples, over several years, from the Mariner deep-sea vent field on the Valu Fa Ridge in the Lau Basin, and from Upper and Lower Cone at the deep-sea Brothers volcano along the Kermadec arc. Based on ANI analysis, the genus includes two distinct species (92% ANI between spp.). In a concatenated gene tree using 53 archaeal marker genes, this genus forms a highly supported monophyletic clade most closely related to terrestrial *Caldisphaera*. AAI between members of this genus and *Caldisphaera lagunensis* is approximately 64.05 to 64.29%, and a full-length 16S rRNA gene recovered from the type species is 94.07% similar to *C. lagunensis*. Functional genomic analysis suggests this genus are motile anaerobic heterotrophs that degrade protein-rich carbon sources and potentially starch and/or glycogen. It may be distinguished from *Caldisphaera* by coding potential for a perchlorate/nitrate reductase gene likely used in anaerobic respiration, NAD(P)+ and pyridoxal 5-phosphate biosynthesis and, in some cases, inosine monophosphate biosynthesis. The apparent absence of superoxide dismutase genes also suggests members of this genus may be strictly anaerobic unlike their mildly aero-tolerant relative *C. lagunensis*. The name proposed for this genus references the lifestyle of these *Archaea* which thrive in the 'home-like' oasis of warmth and nourishment provided by deep-sea vents.

Classification

Archaea » *Thermoproteota* » *Thermoprotei* » *Acidilobales* » *Acidilobaceae* » *Hestiella*

References

Effective publication: St. John, Reysenbach, 2024 [1]

Registry URL

<https://seqco.de/i:32607>

References

1. St. John, Reysenbach (2024). Genomic comparison of deep-sea hydrothermal genera related to *Aeropyrum*, *Thermodiscus* and *Caldisphaera*, and proposed emended description of the family Acidilobaceae. *Systematic and Applied Microbiology*. DOI:10.1016/j.syapm.2024.126507