

Register list for *Penumbrarchaeum helgolandensis* gen. nov. sp. nov. and their lineage

Submitted by Maeke, Mara

Class *Penumbrarchaeia*

Etymology

[Pe.num.brar.chae'i.a] **N.L. neut. n.** *Penumbrarchaeum*, referring to the type genus *Penumbrarchaeum*; *-ia*, ending to denote a class; **N.L. neut. pl. n.** *Penumbrarchaeia*, the *Penumbrarchaeum* class

Nomenclatural type

Genus *Penumbrarchaeum*

Description

The description is the same as for *Candidatus Penumbrarchaeum* gen. nov. with the following additions: *Candidatus Penumbrarchaeia* class. nov. comprises the type order *Candidatus Penumbrarchaeales* ord. nov. and Order 2, Order 3 and Order 4, three previously unidentified orders in this class. Members of Order 3 and Order 4 are anaerobes inhabiting the water column of oxygen minimum and oxygen deficient zones, not capable of protein degradation based on metabolic potential.

Classification

Archaea » *Thermoplasmatota* » *Penumbrarchaeia*

References

Effective publication: Maeke et al., 2025 [1]

Registry URL

<https://seqco.de/i:49913>

Order *Penumbrarchaeales*

Etymology

[Pe.num.brar.chae.a'les] **N.L. neut. n.** *Penumbrarchaeum*, referring to the type genus *Penumbrarchaeum*; *-ales*, ending to denote an order; **N.L. fem. pl. n.** *Penumbrarchaeales*, the *Penumbrarchaeum* order

Nomenclatural type

Genus *Penumbrarchaeum*

Description

The description is the same as for *Candidatus Penumbrarchaeum* gen. nov. with the following additions: *Candidatus Penumbrarchaeales* ord. nov. was previously known as "EX4484-6" and comprises two families *Candidatus Penumbrarchaeaceae* fam. nov. and Family 1B, previously known as "EX4484-36".

Classification

Archaea » *Thermoplasmatota* » *Penumbrarchaeia* » *Penumbrarchaeales*

References

Effective publication: Maeke et al., 2025 [1]

Registry URL

<https://seqco.de/i:49914>

Family *Penumbrarchaeaceae*

Etymology

[Pe.num.brar.chae.a'ce.ae] **N.L. neut. n.** *Penumbrarchaeum*, referring to the type genus *Penumbrarchaeum*; *-aceae*, ending to denote a family; **N.L. fem. pl. n.** *Penumbrarchaeaceae*, the *Penumbrarchaeum* family

Nomenclatural type

Genus *Penumbrarchaeum*

Description

The description is the same as for *Candidatus Penumbrarchaeum* gen. nov. with the following additions: *Candidatus Penumbrarchaeaceae* was previously known as the family "EX4484-6". Members of the family were inferred to be found in sediments of marine and freshwater origin as well as cold seeps. Type genus: *Candidatus Penumbrarchaeum* gen. nov.

Classification

Archaea » *Thermoplasmatota* » *Penumbrarchaeia* » *Penumbrarchaeales* » *Penumbrarchaeaceae*

References

Effective publication: Maeke et al., 2025 [1]

Registry URL

<https://seqco.de/i:49915>

Genus *Penumbrarchaeum*

Etymology

[Pe.num.brar.chae'um] **N.L. fem. n.** *penumbra*, partial shadow as in partially hidden; **N.L. neut. n.** *archaeum*, ancient one, archaeon; **N.L. neut. n.** *Penumbrarchaeum*, the archaeon hidden in the biosphere at the edge of detection

Nomenclatural type

Species *Penumbrarchaeum helgolandense*^{Ts}

Description

Inferred to be of marine sediment origin, an anaerobe fermenting proteins, peptides and amino acids. Members were of low abundance (< 0.32%) and thus classified as rare biosphere.

Classification

Archaea » *Thermoplasmatota* » *Penumbrarchaeia* » *Penumbrarchaeales* » *Penumbrarchaeaceae* » *Penumbrarchaeum*

References

Effective publication: Maeke et al., 2025 [1]

Registry URL

<https://seqco.de/i:49916>

Species *Penumbrarchaeum helgolandense*^{Ts}

Etymology

[hel.go.lan.den'se] **N.L. neut. adj.** *helgolandense*, of Helgoland, the region where the Helgoland mud area is located in the North Sea, and this organism originated from

Nomenclatural type

[NCBI Assembly: GCA_965234725.1](#)^{Ts}

Description

Inferred to be of marine sediment origin, an anaerobe fermenting proteins, peptides and amino acids. Members were of low abundance (< 0.32%) and thus classified as rare biosphere. The species is represented by the MAG (metagenome-assembled genome) E3_1_d157 (3.46 Mbp), obtained from metagenomic sequences retrieved from an enrichment of Helgoland mud area sediment (54°05'15.5''N, 7°58'05.5''E) from a sediment depth of 45-70cm.

Classification

Archaea » *Thermoplasmatota* » *Penumbrarchaeia* » *Penumbrarchaeales* » *Penumbrarchaeaceae*
» *Penumbrarchaeum* » *Penumbrarchaeum helgolandense*^{Ts}

References

Effective publication: Maeke et al., 2025 [1]

Registry URL

<https://seqco.de/i:49912>

References

1. Maeke et al. (2025). Extensive data mining uncovers novel diversity among members of the rare biosphere within the Thermoplasmatota. *Microbiome*. [DOI:10.1186/s40168-025-02140-8](https://doi.org/10.1186/s40168-025-02140-8)

Register List Certificate of Validation

On behalf of the *Committee on the Systematics of Prokaryotes Described from Sequence Data* (SeqCode Committee), we hereby certify that the Register List **seqco.de/r:zcce2eqc** submitted by **Maeke, Mara** and including 5 new names has been successfully validated.

Date of Priority: 2025-07-15 11:06 UTC

DOI: 10.57973/seqcode.r:zcce2eqc

