Register list for Methylaequorum cenaphilum gen. nov. sp. nov. and their lineage

Submitted by Glass, Jennifer

Order *Methylaequorales*

Etymology
[Me.thy.lae.quo.ra'les] **N.L. neut. n.** *Methylaequor*, the type genus of the order; *-ales*, ending to denote an order; **N.L. fem. pl. n.** *Methylaequorales*, the Methylaequor order

Nomenclatural type
Genus *Methylaequor*

Description
Uncultivated bacteria in the order Methylaequorales (previously GTDB o__TMED127) have small, streamlined genomes (~1.5 Mb) and appear to be obligate lanthanide-dependent methylotrophs that use the serine cycle for carbon assimilation.

Classification
Bacteria » *Pseudomonadota* » *Alphaproteobacteria* » *Methylaequorales*

References
Effective publication: Glass et al., 2025 [1]

Registry URL
https://seqco.de/i:51452

Family *Methylaequoraceae*

Etymology
[Me.thy.lae.quo.ra'ce.ae] **N.L. neut. n.** *Methylaequor*, the type genus of the family; *-aceae*, ending to denote a family; **N.L. fem. pl. n.** *Methylaequoraceae*, the Methylaequor family

Nomenclatural type
Genus *Methylaequor*

Description
Uncultivated bacteria in the order Methylaequorales (previously GTDB o__TMED127) and family Methylaequoraceae (previously GTDB f__TMED127) have small, streamlined genomes (~1.5 Mb) and appear to be obligate lanthanide-dependent methylotrophs that use the serine cycle for carbon assimilation.

Classification
Bacteria » *Pseudomonadota* » *Alphaproteobacteria* » *Methylaequorales* » *Methylaequoraceae*

References
Effective publication: Glass et al., 2025 [1]

Registry URL
https://seqco.de/i:51451

Genus *Methylaequor*

Etymology
[Me.thyl.ae'quor] **N.L. neut. n.** *methyl*, the methyl group; **L. neut. n.** *aequor*, surface of the sea; **N.L. neut. n.** *Methylaequor*, a methyl group-oxidizing organism of the sea surface

Nomenclatural type
Species *Methylaequor ceniphilum*[Ts]

Description
Uncultivated bacteria in the order Methylaequorales (previously GTDB o__TMED127) and family Methylaequoraceae (previously GTDB f__TMED127) have small, streamlined genomes (~1.5 Mb) and appear to be obligate lanthanide-dependent methylotrophs that use the serine cycle for carbon assimilation.

Classification
Bacteria » *Pseudomonadota* » *Alphaproteobacteria* » *Methylaequorales* » *Methylaequoraceae* » *Methylaequor*

References
Effective publication: Glass et al., 2025 [1]

Registry URL
https://seqco.de/i:51450

Species *Methylaequor ceniphilum*[Ts]

Etymology
[ce.ni.phi'lum] **L. fem. n.** *cena*, the principal meal of the day in ancient Roman culture, originally taken in the afternoon; **N.L. masc. adj. suff.** *-philus*, loving; **N.L. neut. adj.** *ceniphilum*, late afternoon meal loving

Nomenclatural type
NCBI Assembly: GCA_902617375.1 [Ts]

Description
Uncultivated bacteria in the order *Methylaequorales* (previously GTDB o__TMED127) and family *Methylaequoraceae* (previously GTDB f__TMED127) have small, streamlined genomes (~1.5 Mb) and appear to be obligate lanthanide-dependent methylotrophs that use the serine cycle for carbon assimilation. *Methylaequor ceniphilum* showed a diel pattern of lanthanide-dependent methanol dehydrogenase (*xoxF5)* and glucose dehydrogenase (*gdh*) transcription, peaking in the late afternoon, in oligotrophic surface water of the Sargasso Sea.

Classification
Bacteria » *Pseudomonadota* » *Alphaproteobacteria* » *Methylaequorales* » *Methylaequoraceae* » *Methylaequor* » *Methylaequor ceniphilum*[Ts]

References
Effective publication: Glass et al., 2025 [1]

Registry URL
https://seqco.de/i:51448

References

1. Glass et al. (2025). Diel cycle of lanthanide-dependent methylotrophy by TMED127/Methylaequorales bacteria in oligotrophic surface seawater. *Applied and Environmental Microbiology*. DOI:10.1128/aem.01181-25

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:_v7atfaf** submitted by **Glass, Jennifer** and including 4 new names has been successfully validated.

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