Tellurarchaeum carbonatiphilum gen. nov. sp. nov.

Submitted by Park, Soo-Je

Genus *Tellurarchaeum*

Etymology

[Tel.lur.ar.chae'um] **L. fem. n.** *tellus*, the earth, ground, land, or soil; **N.L. neut. n.** *archaeum*, archaeon (from the Greek adj. archaios, ancient); **N.L. neut. n.** *Tellurarchaeum*, an archaeon of the ground, associated with the subsurface terrestrial environment

Nomenclatural type

Species *Tellurarchaeum carbonatiphilum*^{Ts}

Description

A genus within the (Thaumarchaeal) Group 1.1c archaea. Members of this genus are primarily found in CO2-rich environments and are characterized by their carbonate-loving nature.

Classification

Archaea » *Thermoproteota* » *Nitrososphaeria* » *Nitrososphaerales* » “Gagatemarchaeaceae” » *Tellurarchaeum*

References

Effective publication: Kim et al., 2026 [1]

Registry URL

https://seqco.de/i:55785

Species *Tellurarchaeum carbonatiphilum*[Ts]

Etymology

[car.bo.na.ti.phi'lum] **N.L. masc. n.** *carbonas*, carbonate; **Gr. masc. adj.** *philos*, loving; **N.L. neut. adj.** *carbonatiphilum*, carbonate-loving, referring to this organism isolated from a carbonate-rich environment

Nomenclatural type

Genome sc|0005575 [Ts]

Description

The type genomic sequence is derived from a metagenome-assembled genome (MAG) recovered from groundwater samples. The sample site is characterized by micro-oxic and carbonate-rich condition with low ionic strength and acidic pH (pH 4.8) at a temperature of 7.6 °C.

The genome size is approximately 1.77 Mbp, with a G+C content of 58%. The MAG quality is estimated by a completeness of 97.53% and a contamination of 2.8%, as estimated by CheckM2.

The potential metabolic reconstruction indicates that the organism is a heterotroph and is capable of inhabiting micro-oxic environments. The genome contains various glycoside hydrolases and carbohydrate-active enzymes (e.g., GH33, AA10, GT2), suggesting a lifestyle based on the degradation of organic carbohydrates.

It is distinguished from other related taxa in (thaumarchaeal) Group 1.1c by an Average Nucleotide Identity (ANI) values ranging from 64% to 73%, which are well below the species delimitation threshold (95%).

The type genomic sequence is named to “Tellurarchaeum carbonatiphilum”, and it is deposited in GenBank under the accession number GCA_032906765. The raw sequence reads are available under the SRA accession number SRS9415155, and the overall project information is registered under BioProject PRJNA744312.

Classification

Archaea » *Thermoproteota* » *Nitrososphaeria* » *Nitrososphaerales* » “Gagatemarchaeaceae” » *Tellurarchaeum* » *Tellurarchaeum carbonatiphilum*[Ts]

References

Effective publication: Kim et al., 2026 [1]

Registry URL

https://seqco.de/i:55784

References

1. Kim et al. (2026). Evolutionary constraints and genomic plasticity of a distinct thaumarchaeotal group 1.1c lineage from CO2-rich groundwater. *Environmental Microbiome*. DOI: 10.1186/s40793-026-00964-x

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:txtrwsi6** submitted by **Park, Soo-Je** and including 2 new names has been successfully validated.

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