

Genus *Geocrenenecus*

Etymology

[Ge.o.cren.en.e'cus] Gr. **fem. n.** *ge*, the earth; Gr. **fem. n.** *krene*, a spring; N.L. **masc. n.** *enecus*, inhabitant; N.L. **masc. n.** *Geocrenenecus*, inhabitant of a spring of the earth

Nomenclatural type

Species *Geocrenenecus dongiae*^{Ts}

Description

Genomes of members of this genus have been recovered from metagenomic sequencing of samples from thermal springs in Yellowstone National Park, USA, and the Rehai and Ruidian geothermal fields, Tengchong, China. AAI values among different species in the genus range between 67 and 78 %. Ancestral reconstruction of character states indicated likely losses of the tungstate (Tup) transporter system, along with loss of the tungsten-dependent AOR-like encoding gene found in other members of the family. Likely gains within the genus were genes encoding dissimilatory sulfite reductase subunits (*dsrA/B*) along with sulfide:quinone oxidoreductase (*sqr*), which suggest pathways involved in sulfur metabolism and sulfide-dependent respiration within the genus. No homologs to known tungstate or molybdate transporters were identified from any of the MAGs belonging to the genus. Several putative tungsten-dependent ferredoxin oxidoreductases were identified as conserved within the genus, which included one AOR-like and one FOR-like encoding gene, respectively, conserved within the family, one AOR-like encoding gene conserved within this genus and its closest phylogenetic relative, *Wolframiiiraptor*, and an unknown protein shared with members of *Terraquivivens*. Based on the presence of cytochrome C oxidase subunits, some members of this genus may be capable of aerobic respiration. Phylogenomics, AAI and RED values, support the delineation of this taxon as a genus.

Classification

Incertae sedis (Archaea) » "Caldarchaeales" » *Wolframiiiraptoraceae* » *Geocrenenecus*

References

Effective publication: Buessecker et al., 2022 [1]

Registry URL

<https://seqco.de/i:22822>

References

1. Buessecker et al. (2022). An essential role for tungsten in the ecology and evolution of a previously uncultivated lineage of anaerobic, thermophilic Archaea. *Nature Communications*. DOI:10.1038/s41467-022-31452-8