

## Species *Geocrenenecus dongiae*<sup>Ts</sup>

### Etymology

[dong'i.æ] N.L. gen. n. *dongiae*, named for the Chinese microbiologist, Prof. Xiuzhu Dong (1958-), for her contributions to the study of ecology and taxonomic classification of extremophiles

### Nomenclatural type

[NCBI Assembly: GCA\\_023267855.1](#)<sup>Ts</sup>

### Description

Fifteen MAGs representing this species were recovered from metagenomic sequencing efforts of thermal springs in the Rehai and Ruidian geothermal fields, Tengchong, China. The genomes ranged in size from 1,322,968 bp to 1,558,478 bp, in 21 to 188 contigs, and ranged in G+C content between 37.4 and 37.6 %. The genomes were estimated to be between 90.9 and 99.1 % complete, with limited contamination (0-0.97 %) based on CheckM. Phylogenomic analysis of 122 conserved archaeal markers robustly placed this taxon in the novel genus *Geocrenenecus*, in the family *Wolframiiiraptoraceae*. ANI comparisons within the species resulted in values above 99 %, while all comparisons to closest relatives were below 90 %. Similar to other members of the genus, no homologs to known tungstate or molybdate transporters were identified from members of this species, although one genome contained genes that were identified as *tupA*-like, as well as a homolog to the proposed *wtpA/modA*-like genes identified in *Pyrobaculum* species previously. This genome also encoded *nirK*, *nosZ* and *coxAC*, while *mcmA1* and *mcmA2* were identified in two genomes, however, all other members identified in this study belonging to this species lacked these genes. In addition to the several tungsten-dependent ferredoxin oxidoreductases conserved within the genus, all members of this species encode a GAPOR-like enzyme. The genomes of most members in the species encode the genes for cytochrome C oxidase subunits (*coxA/B*), cytochrome bd ubiquinol oxidase subunit I (*cydA*), and the aerobic carbon-monoxide dehydrogenase large subunit (*coxL*), which may indicate that members of this species can perform aerobic respiration.

### Classification

*Incertae sedis* (Archaea) » "Caldarchaeales" » *Wolframiiiraptoraceae* » *Geocrenenecus* » *Geocrenenecus dongiae*<sup>Ts</sup>

### References

Proposed: Buessecker et al., 2022

### Registry URL

<https://seqco.de/i:22823>

## 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