Nanoarchaeum equitans gen. nov. sp. nov.

Submitted by St. John, Emily

Genus *Nanoarchaeum*

Etymology

[Na.no.ar.chae'um] **Gr. masc. n.** *nanos*, dwarf; **N.L. neut. n.** *archaeum*, archaeon; **N.L. neut. n.** *Nanoarchaeum*, the small archaeon

Nomenclatural type

Species *Nanoarchaeum equitans*^{Ts}

Description

Huber et al., 2002 - first description of *Nanoarchaeum equitans*:
Cells of '*N. equitans*' are spherical, and only about 400 nm in diameter. They grow attached to the surface of a specific archaeal host, a new member of the genus *Ignicoccus*. The distribution of the '*Nanoarchaeota*' is so far unknown. Owing to their unusual ss rRNA sequence, members remained undetectable by commonly used ecological studies based on the polymerase chain reaction. '*N. equitans*' harbours the smallest archaeal genome; it is only 0.5 megabases in size.

Waters et al., 2003 - genome of *Nanoarchaeum equitans* published:
The hyperthermophile *Nanoarchaeum equitans* is an obligate symbiont growing in coculture with the crenarchaeon *Ignicoccus*. Ribosomal protein and rRNA-based phylogenies place its branching point early in the archaeal lineage, representing the new archaeal kingdom *Nanoarchaeota*. The *N. equitans* genome (490,885 base pairs) encodes the machinery for information processing and repair, but lacks genes for lipid, cofactor, amino acid, or nucleotide biosyntheses. It is the smallest microbial genome sequenced to date, and also one of the most compact, with 95% of the DNA predicted to encode proteins or stable RNAs. Its limited biosynthetic and catabolic capacity indicates that *N. equitans*' symbiotic relationship to *Ignicoccus* is parasitic, making it the only known archaeal parasite. Unlike the small genomes of bacterial parasites that are undergoing reductive evolution, *N. equitans* has few pseudogenes or extensive regions of noncoding DNA. This organism represents a basal archaeal lineage and has a highly reduced genome.

Classification

Archaea » *Nanobdellota* » *Nanobdellia* » *Nanobdellales* » "Nanoarchaeaceae" » *Nanoarchaeum*

References

Effective publication: Huber et al., 2002 [1]

Registry URL

https://seqco.de/i:35130

Species *Nanoarchaeum equitans*[Ts]

Etymology

[e.qui'tans] **L. neut. part. adj.** *equitans*, riding, referencing the ectosymbiotic interaction between this organism and its archaeal host, *Ignicoccus hospitalis*

Nomenclatural type

NCBI Assembly: GCA_000008085.1 [Ts]

Reference Strain

Strain sc|0040527: Kin4-M

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References

1. Huber et al. (2002). A new phylum of Archaea represented by a nanosized hyperthermophilic symbiont. *Nature*. DOI:10.1038/417063a

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:08kd-qkd** submitted by **St. John, Emily** and including 2 new names has been successfully validated.

Date of Priority: 2025-11-20 06:04 UTC
DOI: 10.57973/seqcode.r:08kd-qkd