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Sorokin, Dimitry Y.; Merkel, Alexander Y.

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Family

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Thiohalorhabdaceae fam. nov.

Dimitry Y. Sorokin, *Winogradsky Institute of Microbiology, Research Centre of Biotechnology, Russian Academy of Sciences, Moscow, Russia and Department of Biotechnology, Delft University of Technology, Delft, The Netherlands*

Alexander Y. Merkel, *Winogradsky Institute of Microbiology, Research Centre of Biotechnology, Russian Academy of Sciences, Moscow, Russia*

Edited by: William Whitman, *University of Georgia, Athens, GA, USA*

Thi.o.ha.lo.rhab.da.ce'ae N.L. fem. n. *Thiohalorhabdus*, the type genus of the family; L. fem. pl. n. suff.-*aceae*, ending to denote a family; N.L. fem. pl. n. *Thiohalorhabdaceae*, the *Thiohalorhabdus* family.

The family *Thiohalorhabdaceae* incorporates facultatively anaerobic, chemolithoautotrophic, sulfur-oxidizing bacteria from hypersaline habitats. They are extreme halophiles utilizing reduced sulfur compounds as energy sources with either O_2 or nitrate as the electron acceptor and assimilating CO_2 via the Calvin–Benson–Bassham cycle. The family is a member of the order *Thiohalorhabdales* in the *Gammaproteobacteria*, and it consists of a single genus *Thiohalorhabdus*. The family-level status was established by phylogenomic analysis based on the Genome Taxonomy DataBase classification.

DNA G + C content (%): 68.9 (genome of the type strain).

Type genus: **Thiohalorhabdus** Sorokin et al. 2008[VP].

In the original description, the genus *Thiohalorhabdus* was not classified into any family and order in the *Gammaproteobacteria* since the phylogenetic analysis based on 16S rRNA gene sequence comparison produced inconclusive results (Sorokin et al., 2008). A more comprehensive phylogenomic analysis based on the set of 120 bacterial single copy conserved proteins demonstrated that this genus should be classified into a separate family *Thiohalorhabdaceae* and an order *Thiohalorhabdales* positioned at the root of the *Gammaproteobacteria* (see *Thiohalorhabdales*). The family consists of a single genus *Thiohalorhabdus,* currently including a single species *Thiohalorhabdus denitrificans* represented by multiple isolates from hypersaline lakes and solar salterns with neutral pH. These bacteria are extremely halophilic, facultatively anaerobic chemolithoautotrophs utilizing reduced sulfur compounds as the energy source with either O_2 or nitrate as the electron acceptor and fixing CO_2 via the Calvin–Benson–Bassham cycle. Cells are long, slender nonmotile rods with the Gram-negative type of cell wall. They accumulate glycine betaine as a compatible solute (Sorokin, 2008; Sorokin et al., 2006, 2008, 2020).

DNA G+ C content (%): 68.9 (genome sequence of the type strain).

Type genus: **Thiohalorhabdus** Sorokin et al. 2008[VP].

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