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Order

Firmicutes/Desulfuribacillia/

Desulfuribacillales ord. nov.

Sorokin et al., 2012; Sorokin et al., this publication

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De.sul.fu.ri.ba.cil.la'les. N.L. masc. n. *Desulfuribacillales*, the order of the genus *Desulfuribacillus*.

Order *Desulfuribacillales* is the only order of the class *Desulfuribacillia*, which forms a deep-branching phylogenetic lineage at the base of the phylum *Firmicutes*. It consists of a single-family *Desulfuribacillaceae* and a genus *Desulfuribacillus*, whose species are haloalkaliphilic anaerobes with a respiratory metabolism.

DNA G + C content (mol%): 37.5–38.2 (genome).

Type genus: **Desulfuribacillus** Sorokin et al. 2014, VL160.

The order *Desulfuribacillales* incorporates obligately anaerobic, spore-forming bacteria living in alkaline saline lakes. They grow by anaerobic respiration, utilizing a limited number of electron donors, such as H_2, formate, pyruvate, and lactate and a range of electron acceptors, including sulfur compounds [sulfur and thiosulfate, dimethylsulfoxide (DMSO)], nitrogen compounds (nitrate and nitrite, which are reduced to ammonia), and several oxyanions, including arsenate, (reduced to arsenite), selenate and selenite (reduced to elemental selenium), and antimonate (reduced to antimonite). Pyruvate can be fermented. The only product of pyruvate and lactate oxidation is acetate. The species are low to moderately salt-tolerant alkaliphiles. The family consists of a single genus *Desulfuribacillus*, which includes the type species *D. alkaliarsenatis* (Sorokin et al., 2012) and *D. stibiiarsenatis* (Abin and Hollibaugh, 2017).

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Type genus: **Desulfuribacillus** Sorokin et al. 2014, VL160.

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