Thiothrix phosphatis sp. nov.

Submitted by Nguyen, Huong

Species *Thiothrix phosphatis*

Etymology
[phos.pha'tis] **N.L. gen. n.** *phosphatis*, pertaining to phosphate

Nomenclatural type
NCBI Assembly: GCA_035668035.1 [Ts]

Description
Chen et al. (2024), modified: A novel coccus *Thiothrix*-related polyphosphate-accumulating organism recovered from an acetate-fed enhanced biological phosphorus removal systen in a lab-scale sequencing batch reactor innoculated with activated sludge from a wastewater treatment plant in Guangzhou, China.
Its acetate uptake rate (6.20 mmol C/g VSS/h) surpassed most *Ca.* Accumulibacter and known glycogen-accumulating organisms (GAOs), conferring their predominance in the acetate-fed system.
Metatranscriptomic analysis suggested that *Thiothrix phosphatis* SCUT-1 employed both low- and high-affinity pathways for acetate activation, and both the conventional (PhaABC) pathway and the fatty acid β-oxidation pathway for PHA synthesis; additionally, a much more efficient FAD-dependent malate: quinone oxidoreductase (MQO) were encoded and employed than the traditional malate dehydrogenase (MDH) to oxidize malate to oxaloacetate in the TCA and glyoxylate cycle, collectively contributing to a higher acetate utilization and processing rate of this microorganism. Batch tests further demonstrated the versatile ability of this PAO in using VFA (acetate, propionate, and butyrate), lactate, amino acids (aspartate and glutamate), and glucose as carbon sources for EBPR, showing a partially overlapped but unique ecological niche of this microorganism comparing to *Ca.* Accumulibacter and known GAOs.

Classification
Bacteria » *Pseudomonadota* » *Gammaproteobacteria* » *Thiotrichales* » *Thiotrichaceae* » *Thiothrix* » *Thiothrix phosphatis*

References
Effective publication: Chen et al., 2024 [1]

Registry URL
https://seqco.de/i:49035

References

1. Chen et al. (2024). Candidatus Thiothrix phosphatis SCUT-1: A novel polyphosphate-accumulating organism abundant in the enhanced biological phosphorus removal system. *Water Research*. DOI:10.1016/j.watres.2024.122479

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:dj3crgg3** submitted by **Nguyen, Huong** and including 1 new name has been successfully validated.

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