**Chapter 10**

**General**

**Reverse electron transport**

**Nitrification**

He, T. *et al*. (2023). *Klebsiella oxytoca* (EN-B2): A novel type of simultaneous nitrification and denitrification strain for excellent total nitrogen removal during multiple nitrogen pollution wastewater treatment. *Bioresource Technology* **367**, 128236. <https://doi.org/10.1016/j.biortech.2022.128236>

Huang, T. *et al*. (2022). Comammox *Nitrospira* bacteria are dominant ammonia oxidizers in mainstream nitrification bioreactors emended with sponge carriers. *Environmental Science & Technology* **56**(17), 12584-12591. <https://doi.org/10.1021/acs.est.2c03641>

Kraft, B. *et al*. (2022). Oxygen and nitrogen production by an ammonia-oxidizing archaeon. *Science* **375**(6576), 97-100. <https://www.science.org/doi/abs/10.1126/science.abe6733>

Leung, P. M. *et al*. (2022). A nitrite-oxidising bacterium constitutively consumes atmospheric hydrogen. *The ISME Journal* **16**(9), 2213-2219. <https://doi.org/10.1038/s41396-022-01265-0>

Luo, S. *et al*. (2022). Research progress and prospects of complete ammonia oxidizing bacteria in wastewater treatment. *Frontiers of Environmental Science & Engineering* **16**(9), 123. <https://doi.org/10.1007/s11783-022-1555-2>

Palomo, A. *et al*. (2022). Evolutionary ecology of natural comammox *Nitrospira* populations. *mSystems* **7**(1), e01139-21. <https://journals.asm.org/doi/abs/10.1128/msystems.01139-21>

Xu, S.-Q. *et al*. (2022). Genetic foundations of direct ammonia oxidation (Dirammox) to N2 and MocR-like transcriptional regulator DnfR in *Alcaligenes faecalis* strain JQ135. *Applied & Environmental Microbiology* **88**(6), e02261-21. <https://journals.asm.org/doi/abs/10.1128/aem.02261-21>

**Colourless sulfur bacteria**

Fukazawa, S. *et al*. (2022). *Nitrosophilus kaiyonis* sp. nov., a hydrogen-, sulfur- and thiosulfate-oxidizing chemolithoautotroph within “Campylobacteria” isolated from a deep-sea hydrothermal vent in the Mid-Okinawa Trough. *Archives of Microbiology* **205**(1), 12. <https://doi.org/10.1007/s00203-022-03350-6>

Geerlings, N. M. *et al*. (2022). Polyphosphate dynamics in cable bacteria. *Frontiers in Microbiology* **13**, 883807. <https://www.frontiersin.org/article/10.3389/fmicb.2022.883807>

Gwak, J.-H. *et al*. (2022). Sulfur and methane oxidation by a single microorganism. *Proceedings of the National Academy of Sciences of the USA* **119**(32), e2114799119. <https://www.pnas.org/doi/abs/10.1073/pnas.2114799119>

Hashimoto, Y. *et al*. (2022). Physiological and comparative proteomic characterization of *Desulfolithobacter dissulfuricans* gen. nov., sp. nov., a novel mesophilic, sulfur-disproportionating chemolithoautotroph from a deep-sea hydrothermal vent. *Frontiers in Microbiology* **13**, 1042116. <https://www.frontiersin.org/articles/10.3389/fmicb.2022.1042116>

Volland, J.-M. *et al*. (2022). A centimeter-long bacterium with DNA contained in metabolically active, membrane-bound organelles. *Science* **376**(6600), 1453-1458. <https://www.science.org/doi/abs/10.1126/science.abb3634>

**Ferrous iron and other metal oxides**

Brown, R. M. *et al*. (2023). Current nature-based biological practices for rare earth elements extraction and recovery: Bioleaching and biosorption. *Renewable & Sustainable Energy Reviews* **173**, 113099. <https://doi.org/10.1016/j.rser.2022.113099>

Cheng, K. *et al*. (in press). Hematite-promoted nitrate-reducing Fe(II) oxidation by *Acidovorax* sp. strain BoFeN1: Roles of mineral catalysis and cell encrustation. *Geobiology*. <https://doi.org/10.1111/gbi.12510>

Jain, A. *et al*. (2022). Reconstructing electron transfer components from an Fe(II) oxidizing bacterium. *Microbiology* **168**(9), 0.001240. <https://doi.org/10.1099/mic.0.001240>

Min, D. *et al*. (2022). Single strain-triggered biogeochemical cycle of arsenic. *Environmental Science & Technology* **56**(22), 16410-16418. <https://doi.org/10.1021/acs.est.2c02015>

Roberto, F. F. & Schippers, A. (2022). Progress in bioleaching: part B, applications of microbial processes by the minerals industries. *Applied Microbiology & Biotechnology* **106**(18), 5913-5928. <https://doi.org/10.1007/s00253-022-12085-9>

Vera, M. *et al*. (2022). Progress in bioleaching: fundamentals and mechanisms of microbial metal sulfide oxidation – part A. *Applied Microbiology & Biotechnology* **106**(21), 6933-6952. <https://doi.org/10.1007/s00253-022-12168-7>

Wang, X. *et al*. (2022). Ferrous iron oxidation microflora from rust deposits improve the performance of bioelectrochemical system. *Bioresource Technology* **364**, 128048. <https://doi.org/10.1016/j.biortech.2022.128048>

Wu, J. *et al*. (2022). Manganese removal and product characteristics of a marine manganese-oxidizing bacterium *Bacillus* sp. FF-1. *International Microbiology* **25**(4), 701-708. <https://doi.org/10.1007/s10123-022-00254-9>

Zhou, N. *et al*. (2022). Biological oxidation of Fe(II)-bearing smectite by microaerophilic iron oxidizer *Sideroxydans lithotrophicus* using dual Mto and Cyc2 iron oxidation pathways. *Environmental Science & Technology* **56**(23), 17443-17453. <https://doi.org/10.1021/acs.est.2c05142>

**Hydrogen oxidizers and carboxydobacteria**

Fan, X. *et al*. (2022). Aerobic hydrogen-oxidizing bacteria in soil: from cells to ecosystems. *Reviews in Environmental Science & Bio/Technology* **21**(4), 877-904. <https://doi.org/10.1007/s11157-022-09633-0>

Fukazawa, S. *et al*. (2022). *Nitrosophilus kaiyonis* sp. nov., a hydrogen-, sulfur- and thiosulfate-oxidizing chemolithoautotroph within “Campylobacteria” isolated from a deep-sea hydrothermal vent in the Mid-Okinawa Trough. *Archives of Microbiology* **205**(1), 12. <https://doi.org/10.1007/s00203-022-03350-6>

Greening, C. & Grinter, R. (2022). Microbial oxidation of atmospheric trace gases. *Nature Reviews Microbiology* **20**(9), 513-528. <https://doi.org/10.1038/s41579-022-00724-x>

Leung, P. M. *et al*. (2022). A nitrite-oxidising bacterium constitutively consumes atmospheric hydrogen. *The ISME Journal* **16**(9), 2213-2219. <https://doi.org/10.1038/s41396-022-01265-0>

**Other inorganic electron donors**

Eddie, B. J. *et al*. (2022). Conservation of energetic pathways for electroautotrophy in the uncultivated candidate order *Tenderiales*. *mSphere* **7**(5), e00223-22. <https://journals.asm.org/doi/abs/10.1128/msphere.00223-22>

Pillot, G. *et al*. (2022). Optimization of growth and electrosynthesis of polyhydroxyalkanoates by the thermophilic bacterium *Kyrpidia spormannii*. *Bioresource Technology Reports* **17**, 100949. <https://doi.org/10.1016/j.biteb.2022.100949>

Sackett, J. D. *et al*. (2022). Genome-scale mutational analysis of cathode-oxidizing *Thioclava electrotropha* ElOx9T. *Frontiers in Microbiology* **13**, 909824. <https://www.frontiersin.org/article/10.3389/fmicb.2022.909824>

Wang, X. *et al*. (2022). Ferrous iron oxidation microflora from rust deposits improve the performance of bioelectrochemical system. *Bioresource Technology* **364**, 128048. <https://doi.org/10.1016/j.biortech.2022.128048>

Yamamoto, M. *et al*. (2023). In situ electrosynthetic bacterial growth using electricity generated by a deep-sea hydrothermal vent. *The ISME Journal* **17**(1), 12-20. <https://doi.org/10.1038/s41396-022-01316-6>

**CO2 fixation**

Ivanovsky, R. N. *et al*. (2022). A new glance on the mechanism of autotrophic CO2 assimilation in green sulfur bacteria. *Microbiology-Moscow* **91**(3), 225-234. <https://doi.org/10.1134/S0026261722300026>

**Calvin cycle**

**Reductive TCA cycle**

**Acetyl-CoA pathway**

Trischler, R. *et al*. (2022). A functional Wood–Ljungdahl pathway devoid of a formate dehydrogenase in the gut acetogens *Blautia wexlerae*, *Blautia luti* and beyond. *Environmental Microbiology* **24**(7), 3111-3123. <https://doi.org/10.1111/1462-2920.16029>

**3-hydroxypropionate cycle**

**4-hydroxybutyrate cycles**