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## Ecological Strategies of Sulfur-Oxidizing Bacteria in Responses to the Changing Marine Environment

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Sulfur (S) is a major element on Earth. It is also a bioessential element for all living organisms. The transformation and mobilization of sulfur in biosphere, lithosphere, atmosphere, and hydrosphere constitute the Earth's S cycle, which are mainly driven by microorganisms. Sulfur oxidation is a major process in the cycling of S that involves diverse redox reactions. Diverse marine bacteria and archaea have been found to carry out this environmentally and biogeochemically important function. Element S and reduced inorganic sulfur compounds are excellent energy sources and electron donors that support phototrophy and chemotrophy in sulfur-oxidizing bacteria (SOB). Recently, some bacteria originally thought to carry out sulfate reduction were found to actually perform sulfur oxidation instead, expanding the SOB diversity by including the *Deltaproteobacteria* and *Thermodesulfobacteria* lineages. Besides using O<sub>2</sub> as a terminal electron acceptor, many SOB can also use nitrate and nitrite as terminal electron acceptors for carrying out sulfide oxidation under anoxic condition. The diverse SOB and their metabolic pathways adds more motives for their research. With the expansion of coastal hypoxia and open ocean OMZs under the impacts of increased anthropogenic activities and global change, SOB may play more important roles in the biogeochemical cycling of carbon, nitrogen and sulfur in the future ocean.

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