# Sulfate-reducing bacteria: breathless saviours from the deep-sea

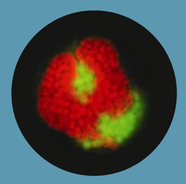
Sulfate-reducing microbes are abundant in marine environments. Most are strictly anaerobic bacteria that obtain energy by oxidizing organic compounds or hydrogen while reducing sulfate ($SO_4^{2-}$) to hydrogen sulfide ($H_2S$)

## From sulfate to sulfide...

The oceans constitute the **largest reservoir** of sulfate in the biosphere, which sulfate-reducing bacteria use to generate energy.

### ANME/SRB

Sulfate-reducing bacteria team up with methanotrophs, enabling the oxidation of methane from anoxic marine sediments.



### Microbial methane filter

Up to **90%** of deep-sea methane is consumed before it reaches the atmosphere, significantly reducing methane emissions and mitigating **climate warming.**

**sulfate-reducers**

$SO_4^{2-}$

Sulfate

$H_2S$

Hydrogen sulfide

**sulfur-oxidizers**

## ...from sulfide to sulfate

Hydrogen sulfide, toxic to most life, is **recycled** by sulfur-oxidising microbes into sulfate, sustaining the biogeochemical cycle.

### Essential symbionts of the deep-sea

Without sulfur oxidising symbionts, many organisms could **not survive** in the deep-sea, such as tubeworms and yeti crabs.

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