Chemosynthesis Encyclopedia Article

Chemosynthesis

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Chemosynthesis

Chemosynthesis is a metabolic pathway used by some bacteria to synthesize new organic compounds such as carbohydrates by using energy derived from the oxidation of inorganic molecules—hydrogen sulfide (H_2S) or ammonia (NH_3). Chemosynthesis can occur in environments such as the deep ocean around **hydrothermal vents**, where sunlight does not penetrate, but where **chemicals** like **hydrogen** sulfide are available. Chemosynthesis is also a critical part of the **nitrogen cycle**, where bacteria that live in the **soil**, or in special plant structures called heterocysts, utilize ammonia for energy and produce **nitrates and nitrites** which can subsequently be used as nutrients for plants. Some bacteria can also utilize hydrogen gas (H_2) and **carbon dioxide** (CO_2) in a chemosynthetic pathway that results in the production of new organic compounds and **methane** (CH_4).