The impact of methanogens

methane producing archaea

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Methanogens

Strictly anaerobic Archaea that produce methane as a result of their metabolism, reducing CO_2 to CH_4.

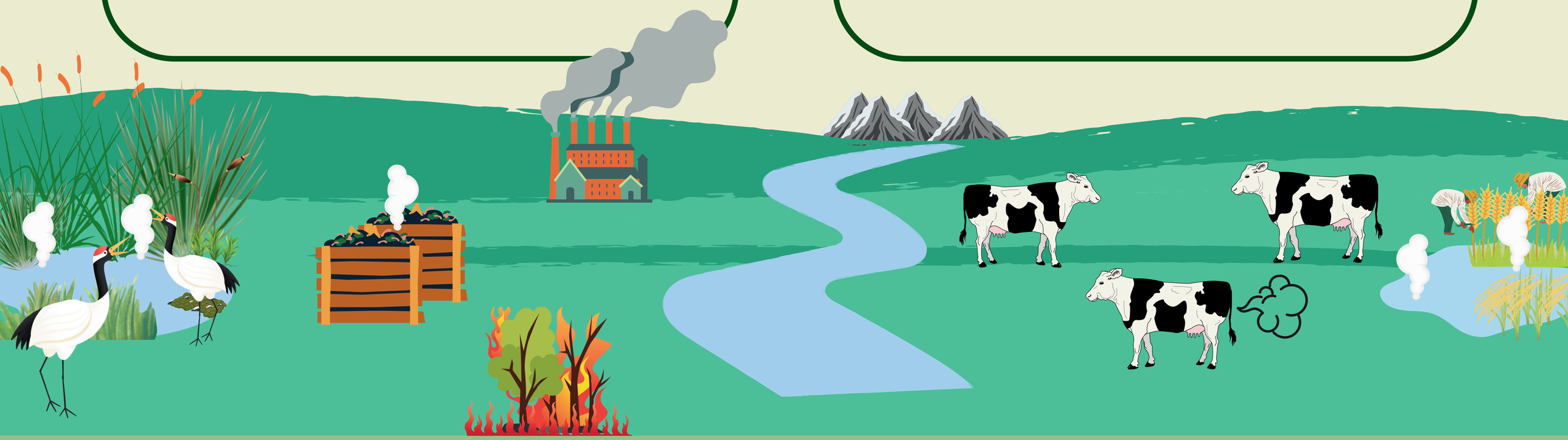
Common in freshwater sediments, wetlands, rice crops, and guts of animals

Diversity

Two major groups: with and without cytochromes, use distinct methanogenic pathways.

Eight orders in phylum Methanobacteriota with diverse physiology and cell wall configurations.

Mostly extremophiles (temperature, pH, salinity).



Environmental impact

- Methanogenesis is a natural part of Earth's carbon cycle. Methanogens promote anaerobic decomposition of organic matter.
- Methane represents 16% of greenhouse gas emissions. 70% of the world's methane production is anthropogenic, with agriculture producing 2/3rds.
- Domesticated ruminants and rice farming are the main human activities that promote methanogenesis. Glacier melting produces sub-glacial wetlands that are rapidly colonized by methanogens.
- Ruminant enteric methane production contributes to 27% of all methane production.
- Methane in the atmosphere contributes to ~16-25% of global warming

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