Scientists discover how essential methane catalyst is made

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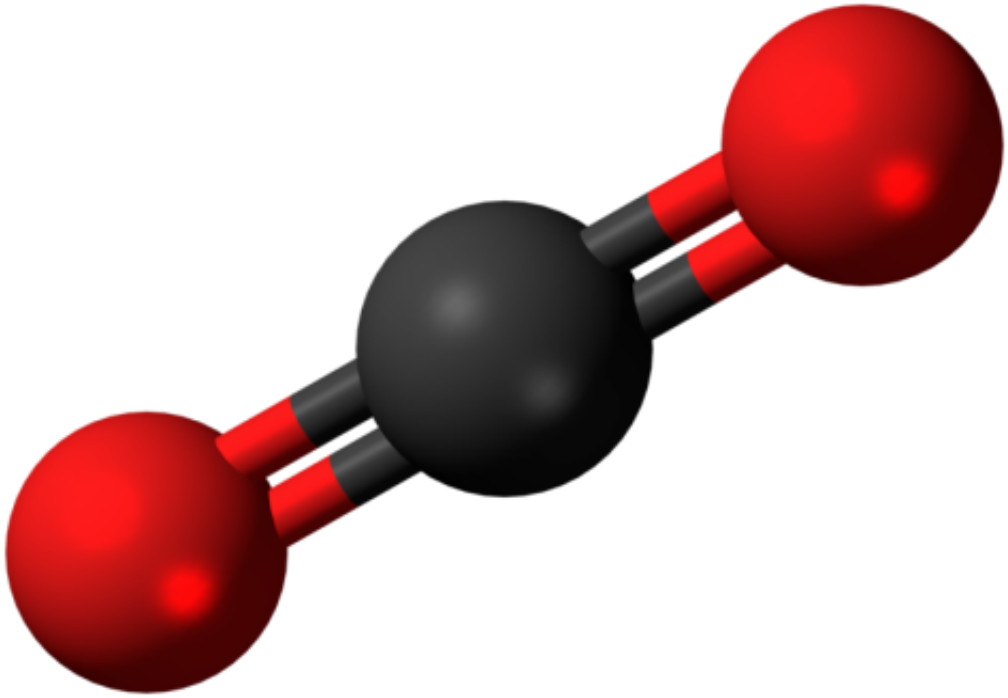

Ball-and-stick model of carbon dioxide. Credit: Wikipedia

New ways to convert carbon dioxide (CO_2) into methane gas for energy use are a step closer after scientists discovered how bacteria make a component that facilitates the process.

Recycling CO_2 into energy has immense potential for making these

emissions useful rather than a major factor in global warming. However, because the bacteria that can convert CO2 into methane, methanogens, are notoriously difficult to grow, their use in gas production remains limited.

This challenge inspired a team of scientists led by Professor Martin Warren, of the University of Kent's School of Biosciences, to investigate how a key molecule, coenzyme F430, is made in these bacteria.

Although F430 - the catalyst for the production process - is structurally very similar to the red pigment found in red blood cells (haem) and the green pigment found in plants (chlorophyll), the properties of this bright yellow coenzyme allow methanogenic bacteria to breathe in carbon dioxide and exhale methane.

By understanding how essential components of the process of biological methane production, methanogenesis, such as coenzyme F430 are made scientists are one step closer to being able to engineer a more effective and obliging methane-producing bacterium.

More information: Simon J. Moore et al, Elucidation of the biosynthesis of the methane catalyst coenzyme F430, *Nature* (2017). DOI: 10.1038/nature21427

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