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Carbon dioxide uptake and biochemical routing in microalgae

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Microalgae are photosynthetic microorganisms that can be used to develop strategies for conversion of carbon dioxide (CO_2) to products of value, and mitigate the environmental impact of CO2 emissions. Microalgae constitute a very diverse group of photosynthetic microorganisms that can grow rapidly and in very different environments, including those with extreme conditions such as frozen surfaces or waters with very high salinity[2]. However, only a handful of the species have been characterized and compared. Development of effective strategies for CO2 utilisation using microalgae will require sufficient understanding of the capabilities of these organisms and the differences in their behaviour.

Different species of microalgae utilize the carbon supplied to them differently depending on the conditions of cultivation. We have been studying some of these characteristics[1-4] and will present and discuss our observations, including newer insights.

The observations we have made relate to freshwater species including *Chlamydomonas reinhardtii*, brackish water strains of *Chlorella vulgaris*, and marine species including *Phaeodactylum tricornutum* and *Nannochloropsis oceanica*.

We will be presenting the theoretical considerations of carbon uptake and the observed differences in nutrient uptake and routing of carbon to different biochemicals, some of which can be towards products of value.

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