

# Press Release

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## Environmental change coping mechanism discovered in humble algae

A Light-Driven Proton Pump can compensate for nutrient deficiency and enhance growth

16 October 2023/Kiel/Norwich/Würzburg. Microalgae, one of the building blocks of marine life, compensate for nutrient deficiency by utilizing a light-sensitive proton pump, allowing them to cope with the effects of climate change. Researchers from the GEOMAR Helmholtz Centre for Ocean Research Kiel and the School of Environmental Sciences at the University of East Anglia (UEA) have made this discovery. They are publishing their research findings today in the journal Nature Microbiology.

Climate change is expected to exacerbate this effect: “Global warming is increasing drought on land and the same thing happens in the ocean: the warmer the surface water gets, the lower are the nutrients in these surface water layers because of reduced mixing that usually adds nutrients from the deeper ocean”, says Mock. As a result, algae were supposed to starve and therefore produce less food and take up less CO<sub>2</sub> from the atmosphere.

The research team discovered that algae have found a way to cope with nutrient starvation, particularly iron, by evolving an additional cellular machinery that allows them to use sunlight for growth without the need for iron. Dr Jan Strauss explains: “Some groups of microalgae can circumvent photosynthesis by using a light-driven proton pump to fuel growth”.

Instead of relying on photosynthetic proteins that require iron, the algae employ a light-sensier eb6.6 (a)10.