

Unpacking a secret of photosynthesis

March 27 2018



Credit: University of Stavanger

Researchers at University of Stavanger have brought us one step closer to solving the fundamental question how plants build the photosynthetic machinery.

In a new research paper published in the journal PlosOne, professor Lutz Eichacker and postdoc Astrid Mork-Jansson at the Centre for organelle

research (CORE), UiS, provide the proof that a protein called Lil3 which has been found earlier to be key to the process is binding [chlorophyll](#).

In barley plants germinating in the darkness of soil, the Lil3 protein accumulates when the leaf perceives the first light and the first [chlorophyll molecules](#) are made. In contrast, plants were struggling to survive, and accumulation of chlorophyll and of the [photosynthetic machinery](#) failed, when the Lil3 gene was removed from the genome.

It appeared that binding of chlorophyll by LiL3 could be a crucial step in the development of photosynthesis.

In the work now published, the researchers cloned the Lil3 gene and synthesized the Lil3 protein in the bacterium *Escherichia coli*. When they isolated the Lil3 protein and incubated it in the test tube with chlorophyll, they found that Lil3 binds one molecule of chlorophyll per protein.

Follow-up research will investigate further how LiL3 uses the bound chlorophyll to promote building the photosynthetic machinery.

More information: Astrid Elisabeth Mork-Jansson et al.
Characterization of chlorophyll binding to LIL3, *PLOS ONE* (2018).
[DOI: 10.1371/journal.pone.0192228](https://doi.org/10.1371/journal.pone.0192228)

Provided by University of Stavanger

Citation: Unpacking a secret of photosynthesis (2018, March 27) retrieved 23 April 2024 from <https://phys.org/news/2018-03-secret-photosynthesis.html>

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