

# Scientists discover first organism with chlorophyll genes that doesn't photosynthesize

April 3 2019

---



Corallicolids are found in 70 percent of corals around the world. Credit: Patrick Keeling Lab, UBC.

For the first time scientists have found an organism that can produce chlorophyll but does not engage in photosynthesis.

The peculiar organism is dubbed 'corallicolid' because it is found in 70 per cent of corals around the world and may provide clues as to how to protect [coral reefs](#) in the future.

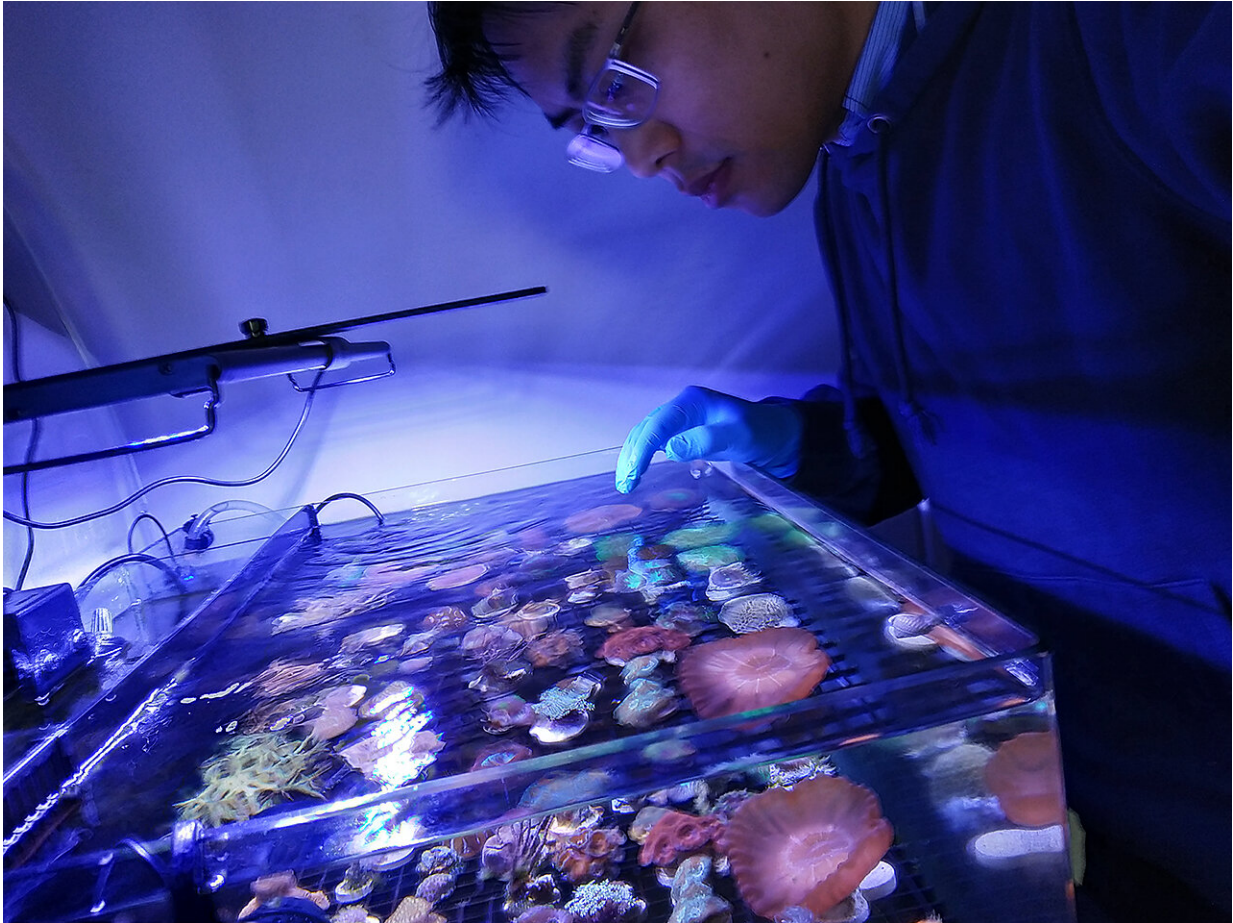
"This is the second most abundant cohabitant of coral on the planet and it hasn't been seen until now," says Patrick Keeling, a University of British Columbia botanist and senior researcher overseeing the study published in *Nature*. "This organism poses completely new biochemical questions. It looks like a parasite, and it's definitely not photosynthetic. But it still makes chlorophyll."

Chlorophyll is the green pigment found in plants and algae that allows them to absorb energy from sunlight during [photosynthesis](#).

"Having chlorophyll without photosynthesis is actually very dangerous because chlorophyll is very good at capturing energy, but without photosynthesis to release the energy slowly it is like living with a bomb in your cells," Keeling says.

Corallicolids live in the gastric cavity of a wide array of corals responsible for building reefs, as well as [black corals](#), fan corals, mushroom corals, and anemones. They are an apicomplexan, part of a vast group of [parasites](#) that have a cellular compartment called a plastid, which is the part of plant and algal cells where photosynthesis takes place. The most famous apicomplexan is the parasite responsible for

malaria.



UBC biologist Waldan Kwong looks at corals in the lab. Credit: Waldan Kwong, Patrick Keeling Lab.

More than a decade ago, photosynthetic algae related to apicomplexans were discovered in healthy corals, indicating they might have evolved from benign photosynthesising organisms attached to corals before turning into the parasites we know today.

Ecological data showed that coral reefs contain several apicomplexans,



but corallicolids, the most most common one, had not been studied until now. The organism has revealed a new puzzle: not only does it have a plastid, but it contains all four plastid genes used in [chlorophyll](#) production.

"It's quite a head scratcher," says Waldan Kwong, a UBC postdoctoral research fellow and lead author of the study. "We don't know why these [organisms](#) are holding on to these photosynthesis genes. There's some novel biology going on here, something we haven't seen before."

The researchers hope further research on corallicolids will provide a more sophisticated understanding of [coral](#) habitats and allow us to better preserve them.



Researchers examining corals underwater. Credit: Varsha Mathur

**More information:** A widespread coral-infecting apicomplexan with chlorophyll biosynthesis genes, *Nature* (2019). [DOI: 10.1038/s41586-019-1072-z](https://doi.org/10.1038/s41586-019-1072-z) ,  
[www.nature.com/articles/s41586-019-1072-z](https://www.nature.com/articles/s41586-019-1072-z)

Provided by University of British Columbia

Citation: Scientists discover first organism with chlorophyll genes that doesn't photosynthesize (2019, April 3) retrieved 27 April 2024 from <https://phys.org/news/2019-04-scientists-chlorophyll-genes-doesnt-photosynthesize.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.