

Project for the Summer School in July 2017

Supervisor: [Daniela Ewe, PhD](#)

Title: Algae - who forms an internal carbon pool?

Chromera velia is an unicellular microalga, living either as a symbiont in stony corals, which build tropical marine reefs and form unique ecosystems, or free and independent of its host in the water column. It shares a common evolutionary origin with dinoflagellates and is also the closest photosynthetic active relative to the apicomplexan parasites, such as *Plasmodium*. It has been shown that CO₂ fixation rates in *C. velia* are surprisingly high, taking its “primitive” type II ribulose-1,5-bisphosphate carboxylase/oxygenase (RubisCO) into account. Interestingly, we have observed that *C. velia* forms an internal carbon pool when being cultivated under sinusoidal light (SL) conditions. Under continuous light (CL) conditions, there is not such a pool. We are speculating that *C. velia* performs a kind of CCM under SL conditions. Additionally, we would like to know if this feature is unique in *C. velia* or if it can be found in other species of different groups as well. Therefore, I would like to repeat the experiments with the diatom *Phaeodactylum tricorutum*, the dinoflagellate *Symbiodinium minimum* and the chromerid *Vitrella brassicaformis*, the closest relative of *C. velia*.

The student will learn how to cultivate one or two of the mentioned species, how to do growth curves and how to do measurements with the oxygen electrode in order to record oxygen light curves and to determine the internal carbon pool.

Requirements:

The student should be comfortable in speaking and writing English. I would like to have a short written report at the end of the project.