Master thesis project: ‘Exploring Symbiodinium diversity and stress tolerance’

Master thesis background

Coral reefs are among the most biodiverse and productive aquatic ecosystems on the planet, with many of them currently in danger of collapse from anthropogenic global change. Most of the energy needed by coral reef organisms is produced by unicellular microalgae (dinoflagellates, genus Symbiodinium) that live as symbionts within coral tissues, absorb light and perform photosynthesis. These microalgae are therefore crucial for the health and survival of coral reefs and can affect the coral’s susceptibility to changing ocean temperatures. Therefore, exploring the diversity, ecology and stress tolerance of different Symbiodinium strains can help us to advance our understanding on how to better protect reef ecosystems from global changes in the oceans.

Master thesis project description and aims

In this master thesis, you will (i) use quantitative phase microscopy and (ii) different image analysis tools to determine the dry mass variation in and between different Symbiodinium strains (i.e. ‘weighing’ the cells). If time permits, you will then (iii) use the same system (potentially in combination with microfluidic devices) to determine the effects of different stressors on these Symbiodinium strains.

Methods

In this project, you will learn the following methods:

- Basic microbiology
- Quantitative phase microscopy
- Image and data analysis
- Potentially: Microfluidics

You should be a master-level student with some experience in e.g. image analysis, microscopy and/or phytoplankton and a keen interest for interdisciplinary science.

Students from all walks of life and backgrounds are welcome to apply!

Have a look at what else we are up to: [https://behrendtlab.com/](https://behrendtlab.com/)

Interested? Please contact Saskia Rughöft ([saskia.rughofterebc.uu.se](mailto:saskia.rughofterebc.uu.se)) or Lars Behrendt ([lars.behrendt@scilifelab.uu.se](mailto:lars.behrendt@scilifelab.uu.se)). The scope of the project is a 30-45 hp master thesis.