

The Leibniz Centre for Tropical Marine Research (www.leibniz-zmt.de) in Bremen is a member of the Leibniz Association, which is supported by the German Federal and State Governments. Through its research, ZMT contributes to developing science-based strategies for sustainable use of tropical coastal systems.

Master thesis project

**“Cultivation and characterization of endosymbiont communities in large benthic foraminifera
(Rescue Project, Ecophysiology and Sedimentology working groups)”**

Starting in September/October 2017

Background of the project:

Large benthic foraminifera (LBF) are vital constituents of tropical shallow reef environments, harboring a wide range of endosymbiotic algae. Like other photosymbiotic coral reef organisms, they bleach in response to ocean warming and elevated light intensities. Due to their sensitivity, they are often used for biomonitoring of marine environments and provide good model systems to test impacts on photosymbiotic calcifiers. The genus *Amphistegina* is known to mostly contain several diatom species and seems to be able to change their symbiont densities and community in response to environmental changes. Moreover, foraminiferal host-mediated photoprotection mechanisms and variations in photopigment composition of the diatoms play an important role in the adaptive strategies of LBF holobionts, allowing them to thrive in diverse habitat conditions.

Thesis:

In order to characterize the symbiont community in our laboratory, cultures of different *Amphistegina* species from the Florida Keys, Zanzibar and the Red Sea, will be cultured external of the host foraminifera. Since the endosymbiotic diatoms within a host lack their characteristic frustules used for taxonomic identification they need to be extracted, cultured, and identified using scattered electron microscopy (SEM) techniques. Furthermore, the holobionts will be photographed using a digital microscope (Keyence), coloration will be quantified and concentrations of chlorophyll a (and other photo-pigments) will be measured.

Refining the present protocols and establishing diatom cultures allows further experiments to study the influence of environmental stressors (e.g., heat or high light intensities) on the diatoms found in foraminifera.

Requirements:

- Current enrolment in a Master's program of marine ecology, biology or related subject area.
- Good team-working skills.
- Experience with labwork (optical equipment, photometer), culturing of algae

Application:

Interested candidates are invited to send a letter of interest, a CV and the contact information of one referee as a single pdf file to: Marleen Stuhr (marleen.stuhr@leibniz-zmt.de)

Review of the applications will start on August 1st, 2017 and continues until the position is filled.

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