

## **PhD position: Theoretical Ecology – population dynamics of marine bacteria**

**Institute for Chemistry and Biology of Marine Systems (ICBM)  
University of Oldenburg, Germany**

The position is available in the mathematical modelling group of Prof. Dr. Bernd Blasius within the Transregional Collaborative Research Centre “Roseobacter” ([www.roseobacter.de](http://www.roseobacter.de)).

### **Rationale**

Classical concepts of theoretical ecology were developed with large organisms in mind, but it is to date unclear how these principles translate to the microbial realm. In this project we therefore study marine heterotrophic bacteria as a paradigmatic example. Using mathematical modelling, the project aims at investigating the population dynamics and physiological bioenergetics of marine bacteria, as well as their interaction with other marine organisms.

The successful candidate will establish a population dynamics model of marine heterotrophic bacteria that captures metabolic constraints, the acquisition and regulation of energy and its utilization for growth, reproduction, and survival. In the first step the model will describe the growth of a single bacterial population. Next, the model will be extended to include the interaction between different bacterial strains, bacteria and microalgae, and bacteria and viruses. Model results will be tested in defined cultivation experiments (performed by collaborators).

The candidate will benefit from the broad experience in mathematical modelling in Prof. Dr. Bernd Blasius' group in Oldenburg and additionally from the tight interactions with experimental groups at the ICBM and Roseobacter project, which will allow for calibration and validation of model predictions with experimental measurements by the consortium.

Ultimately, we expect to gain new fundamental insights into principles of theoretical ecology. With heterotrophic bacteria playing an important role in the global ocean, the results will be key in understanding the functioning of the global ocean.

### **Requirements**

Applicants must have an above-average university degree (Master or equivalent) in Natural Sciences with a background in applied mathematics, physics, computer science, or related areas. Applicants experienced in the field of theoretical ecology or microbiology are particularly encouraged to apply. Applicants should have a strong interest to work in an interdisciplinary team and must have good knowledge of English.

### **Salary and conditions**

The position will be starting in autumn 2018 for a duration of three years. Salary will be according to TVL E13 (75%).

The Carl von Ossietzky University of Oldenburg is dedicated to increasing the percentage of women in science. Therefore, female candidates are particularly encouraged to apply. In accordance with Lower Saxony legal regulations (NHG §21), equally qualified female candidates will be given preferences. Applicants with disabilities will be preferentially considered in case of equal qualification.

### **Application**

Applications should be sent with all the usual documents (pdf) no later than August 06, 2018 to Prof. Dr. Bernd Blasius, email: [blasius@icbm.de](mailto:blasius@icbm.de)  
AG Mathematical Modelling, ICBM, D-26111 Oldenburg, Germany  
<http://www.icbm.de/en/mathematical-modelling>