

Friedrich Schiller University is a traditional university with a strong research profile rooted in the heart of Germany. As a university covering all disciplines, it offers a wide range of subjects. Its research is focused on the areas Light—Life—Liberty. It is closely networked with non-research institutions, research companies and renowned cultural institutions. With around 18,000 students and more than 8,600 employees, the university plays a major role in shaping Jena's character as a cosmopolitan and future-oriented city.

The Collaborative Research Center 1127 "ChemBioSys – Chemical Mediators in Complex Biosystems" is funded by the Deutsche Forschungsgemeinschaft (DFG) (www.chembiosys.de). The goal of ChemBioSys is to explore the regulation, activity and function of natural products in complex communities. This includes elucidation of novel chemical mediators and targets that are involved in structuring complex communities and understanding the mechanisms that generate community structures and maintain their diversity.

Within ChemBioSys, project C07 is a collaboration between the groups of Professor Rosalind Allen and Professor Stefan Schuster. Project C07 uses a combination of microbiological/biophysical experiments and mathematical modelling to investigate complex ecological phenomena arising from enzymatic modification of chemical effectors.

At the Faculty of Biological Science applications are invited for a

Doctoral Researcher Position

associated with ChemBioSys project C07, to conduct research on

“Tracking the dynamics of interacting microbial populations”

This position is associated with the research group of Professor Rosalind Allen. The Allen group seeks to understand how microbes grow and interact, and the consequences of these interactions for microbial ecology. The group combines biophysical and microbiological lab experiments with computational and theoretical models. This project focuses on microbial interactions that occur in when one microbial species produces a chemical effector (e.g. a toxin), while a second species produces an enzyme that modifies the effector (e.g. activates or deactivates it). Enzymatic modification of a chemical effector is a common theme in ecological interactions, which has emerged from several other ChemBioSys projects. This project seeks to understand how such interactions influence the dynamics of microbial communities and hence ecological outcomes. We will work with several model microbial communities that have been established in other ChemBioSys research groups, including combinations of soil bacteria with amoebae and combinations of pathogenic and helper bacteria with fungi. We will quantify the growth dynamics of single and mixed cultures using microbiological batch culture experiments, as well as advanced techniques such as culture in microfluidic droplets, allowing us to investigate stochastic effects in small populations. Questions to be addressed may include how sensitive is the ecological behavior of the community to changes in the initial population sizes of the different component species? The advertised project is mainly experimental, but will be carried out in collaboration with mathematical modellers in the Schuster group. There is also scope for the appointed doctoral researcher to perform some modelling themselves, if desired.

Your responsibilities:

- Conduct experimental research measuring the growth dynamics of microbial populations in which different species interact via enzyme-effector interactions.
- Collaborate closely with mathematical modellers within the ChemBioSys C07 project (Schuster group) and with other experimental groups within ChemBioSys.
- Produce and analyse results and contribute to the development of project direction, as the project evolves.



- Produce high-quality written reports and draft papers.
- Present your results at local meetings within the Allen research group, the C07 project, the ChemBioSys network, and national and international conferences.
- Assist with training other researchers, including Masters' and undergraduate project students, where required.
- Assist with the teaching activities of the group where required.
- Contribute to maintaining the friendly, welcoming and collaborative environment within the Allen research group.

Your profile

- An MSc (or equivalent) in Biology, Chemistry, Physics or a related discipline. Candidates in the final stages of obtaining their degree are also eligible to apply.
- Experience of laboratory work is essential
- Experience of microbiological or biophysical laboratory work is desirable
- Interest in working collaboratively across disciplines and in integrating experimental results with mathematical models is essential.
- You should be a highly motivated individual with an interest in joining an interdisciplinary research environment.
- Excellent skills at writing and oral communication, in English, are essential.

We offer:

- A highly communicative atmosphere within an energetic scientific network
- A comprehensive mentoring program and soft skill courses for early career researchers
- *Jena – City of Science*: a young and lively town with a vibrant local cultural agenda
- A family-friendly working environment with a variety of offers for families: University Family Office 'JUniFamilie' and flexible childcare ('JUniKinder');
- University health promotion and a wide range of university sports activities;
- Attractive fringe benefits, e.g. capital formation benefits (VL), Job Ticket (benefits for public transport), and an occupational pension (VBL)
- Remuneration based on the provisions of the Collective Agreement for the Public Sector of the Federal States (TV-L) at salary scale E 13 — depending on the candidate's personal qualifications—, including a special annual payment in accordance with the collective agreement.

This is a three and a half year doctoral researcher position (65% TV-L E13) to start as soon as possible.

To promote gender equality in science, applications by woman are especially welcome. Candidates with severe disabilities will be given preference in the case of equal qualifications and suitability.

Applications in English should comprise a cover letter, a detailed curriculum vitae and copies of academic certificates. Please submit your application via the JSMC Online Application Portal stating the vacancy ID 285/2022 by 25.08.2022

<https://apply.jsmc.uni-jena.de/>

Since all application documents will be duly destroyed after the recruitment process, we ask you to submit only copies of your documents.

For further information for applicants, please also refer to www4.uni-jena.de/stellenmarkt_hinweis.html (in German)

Please also note the information on the collection of personal data <https://www.uni-jena.de/en/job-market#dataprotection>