Job advertisement

Vacancy ID:
Closing date: 15.04.2024

FRIEDRICH-SCHILLER-
UNIVERSITÄT
JENA

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

The Theoretical Microbial Ecology group, led by Professor Rosalind Allen, is part of the Institute of Microbiology, Faculty of Biosciences, at the Friedrich Schiller University. The group was founded in 2021 as part of the Cluster of Excellence *Balance of the Microverse.* The group combines theoretical and computational modelling with microbiological and biophysical experiments to investigate how microbes survive, grow and interact in complex and changing environments, with a special focus on antibiotic action. The group is now starting a new collaborative project "A Matter of life or death - an integrated understanding of MRSA", funded by the Wellcome Trust, together with researchers at the University of Sheffield and Harvard University.

The theoretical microbial ecology group invites applications for a

Postdoctoral Researcher Position (full-time) in Theoretical biophysical modelling of bacterial growth, division and antibiotic response (m/f/d)

commencing on or after 01.05.2024

Funded by the Wellcome Trust, we are beginning a programme of research aimed at combining microbial physiology, biochemistry and genetics with biophysics, mathematical modelling and imaging, to understand bacterial growth, division and antibiotic resistance. Our project focuses on the bacterium *Staphylococcus aureus*, which is an important human pathogen. *S. aureus* is a Gram positive, round-shaped bacterium with a thick peptidoglycan (PG) cell wall. PG synthesis is the target of the most important antibiotics that are used to treat *S. aureus* infections, yet the molecular and biophysical mechanisms that underpin PG homeostasis, and the disruption of the PG balance by antibiotics, are not well understood. Furthermore, many of the mechanisms for cell cycle homeostasis, that are well-studied in Gram negative bacteria such as *E. coli*, are less well understood in *S. aureus*. This programme is in collaboration with researchers at Sheffield University (UK; Prof. Simon Foster, Prof. Jamie Hobbs, Prof. Jeff Green, Dr. Rebecca Corrigan) and Harvard University (USA; Prof. Ethan Garner).

Within the TME group, we have developed biophysical models that predict how mechanical stresses change within the PG cell wall during the cell cycle of *S. aureus*, and how the molecular mesh of PG responds to stress. We seek a postdoctoral research to take these efforts further, in collaboration with experimental work being performed by our partners as well as in our own lab in Jena. The project is flexible, depending on the expertise and interests of the applicant, but could involve metabolic modelling (using flux balance analysis or other methods), modelling of gene regulation, biophysical modelling of the PG molecular structure, coarse-grained modelling of bacterial physiology and/or mechanical modelling of the cell as a whole. You will be expected to take a leading role in project direction, and in developing collaborations with other researchers within our group, with the Wellcome Trust team and more broadly. The project is planned as a full-time position, over 3 years. However, we are open to other suggestions, e.g. for part-time work.

Your responsibilities:

- P Develop theoretical /computational models for *S. aureus* growth, division, metabolism and/or PG homeostasis, to a high standard.
- Contribute to the development of the project direction, as the project evolves.
- Produce high-quality written reports and draft papers. Present your results at local meetings and national and international conferences.

- Assist with training other researchers, including PhD candidates, 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 group.

Your profile

- A PhD in Biophysics, Statistical or Computational Physics, Bioinformatics, Theoretical Chemistry, Computer Science, Biology (with theoretical component), Microbial ecology (with theoretical component) or related discipline. Candidates in the final stages of obtaining their doctorate are also eligible to apply.
- Specialist knowledge and practical expertise in one or more relevant methods, such as metabolic modelling, molecular simulation, statistical analysis, stochastic / deterministic differential equations, modelling microbial physiology, biophysical modelling.
- Track record of developing, managing, performing, presenting and publishing high-level scientific research.
- Enthusiasm and talent for interdisciplinary and collaborative research, and for interaction with experimental microbiologists and biophysicists.
- The ability to work creatively and independently towards developing your own research project
- An integrative and cooperative personality with enthusiasm for actively participating in the dynamic community in Jena and in the Wellcome Trust project team
- English communication skills, both written and spoken

Are you hesitating because you don't meet one or some of our requirements? Please do not hesitate to apply and give us a chance to get to know you.

We offer:

- A highly communicative atmosphere within an energetic scientific network
- The opportunity to join an internationally renowned group of researchers from different countries working on a fundamental science problem that is also clinically important
- A comprehensive mentoring program and soft skill courses for early career researchers as part of the early career program of the *Jena School for Microbial Communication* (JSMC)
- 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) up to salary scale E 13 (depending on the candidate's personal qualifications) including a special annual payment in accordance with the collective agreement

This three-year full-time position will be funded by the Wellcome Trust. Other contract arrangements can be discussed. A part-time contract can be discussed. To promote gender equality in science, applications by women are especially welcome. Candidates with severe disabilities will be given preference in the case of equal qualifications and suitability.

Are you eager to work with us? Then apply by 15.04.2024 using our online form.

Online application

For further information on your application and the collection of personal data, please refer to our Privacy Statement for Applicants