

The **Jena School for Microbial Communication (JSMC)** is an ambitious Graduate School with over 130 doctoral and postdoctoral scientists. We offer structured, interdisciplinary PhD and career training programs based on top-level fundamental research. They conceptually combine different research areas to a comprehensive picture of microbial communication. The **'Cluster of Excellence 'Balance of the Microverse'** studies the fundamental principles underlying microbial community interactions and functions in diverse habitats, ranging from oceans and groundwater to plants and human hosts.

The research group of *'Mechanisms of Microbial Metabolic Interactions (m3i)'* at the JSMC and the 'Cluster of Excellence Balance of the Microverse' invites applications for a

Doctoral Researcher (TV-L E13, 65%) in “Modeling Growth, Metabolism, and Ecosystem Strategies of Ultrasmall Parasitic Bacteria”

commencing on 01 July 2026 or upon agreement. We offer a part-time position (65%) at the University of Jena, offered as a fixed-term position for 3 years.

We are seeking a highly motivated Doctoral Researcher to join our exciting project on modeling and understanding parasitic bacteria. Candidate Phyla Radiation (CPR) bacteria are among the most enigmatic members of the microbial tree of life: metabolically reduced, obligately host-associated, yet ecologically prominent in groundwater systems. Recent breakthroughs within the Microverse Cluster have enabled the cultivation of a CPR bacterium with its gammaproteobacterial host, revealing complex growth dynamics and joint metabolism whose nature remains unresolved. This project will develop mathematical models to understand the growth dynamics, elucidate host–symbiont resource allocation using proteomic data, and integrate CPR life history strategies into an ecosystem model of groundwater carbon cycling. The work bridges microbial ecology, metabolic modeling, and dynamical systems theory in close collaboration with experimental partners.

Your responsibilities:

- Develop and analyze ODE-based growth models of CPR stack formation and host–predator dynamics
- Reconstruct genome-scale metabolic models and integrate proteome resource allocation constraints for CPR bacterium and its host
- Build a trait- and life-history-based ecosystem model of CPR in groundwater
- Analyze project results, generate figures, and write scientific manuscripts for publication
- Present results at local, national, and international meetings and conferences
- Work closely with experimental and computational researchers within the group and the Microverse Cluster
- Contribute to the friendly, welcoming, and collaborative environment in our team

Your profile:

- A MSc in bioinformatics, computational biology, systems biology, applied mathematics, or a closely related discipline; candidates in the final stages of obtaining their MSc are encouraged to apply
- Experience with mathematical or computational modeling (e.g., ODEs, metabolic modeling, or ecological modeling) is desired
- Familiarity with microbiology or microbial ecology is an advantage but not required
- Programming skills in Python, R, or Julia are expected
- A high level of curiosity, self-motivation, enthusiasm, and attention to detail

- A cooperative personality actively seeking to contribute to our interdisciplinary and inclusive Microverse community
- Excellent written and spoken English communication skills

We offer:

- A highly communicative atmosphere within an energetic and interdisciplinary scientific network
- The Jena School for Microbial Communication offers a structured and interdisciplinary doctoral training program based on top-level fundamental research and provides comprehensive mentoring programs and soft skills courses
- Close collaboration with experimental groups generating unique cultivation and proteomic data on CPR bacteria
- Jena – City of Science, a young and lively city with a vibrant local cultural agenda
- A dedicated management team, providing support and information on non-scientific subjects, such as onboarding and family life, and organising individualised career development programs, and events on topics like mental health and communication
- Remuneration based on the provisions of the Collective Agreement for the Public Sector of the Federal States (TV-L) at salary scale E13 — depending on the candidate's personal qualifications—, including a special annual payment in accordance with the collective agreement

The 3-year doctoral researcher position (TV-L E13, 65%) will be funded through the JSMC through the Thuringian State government (2026-2028) and subsequently through the Excellence Strategy of the German Federal and State governments (2029). The University of Jena and the participating research institutes are equal opportunity employers. Part-time contracts can be discussed. Candidates with severe disabilities will be given preference in the case of equal qualifications and suitability. The employment contract will be with the University of Jena.

We particularly encourage female researchers to apply, as we are committed to increasing the representation of women in science and providing a supportive and inclusive research environment.

Are you eager to join us? Then, apply by **April 26, 2026**, using our online portal.

[Online application](#)