PHD RESEARCHER POSITION
(f/m/d, 100%, TV-L 13, temporary until 12/2025) on the topic

„Methodology for the calibration and analysis of stochastic models for heterogeneous intracellular processes with applications in cancer development“

The University of Stuttgart represents outstanding, world-renowned research and first-class teaching in one of Europe’s most dynamic industrial regions. As a reliable employer, the university supports and promotes the academic careers of its researchers. It is proud of its employees, who currently come from over 100 different countries. The university is a partner for knowledge and technology transfer and focuses on multidisciplinarity.

The Cluster of Excellence "Data-Integrated Simulation Science" (EXC 2075) is an interdisciplinary research center with more than 200 scientists of different ages, gender identities, nationalities and different subject areas, jointly performing research towards a common goal: We target a new class of modeling and computational methods based on available data from various sources, in order to take the usability, precision and reliability of simulations to a new level.

The project / The position:

This position is funded by the Cluster of Excellence EXC 2075 and part of the Project Network 2 „In silico Models of Coupled Biological Systems“. The project aims to develop methodology for the calibration of stochastic modelling approaches to single cell and bulk data, with applications to cancer development. While deterministic modeling approaches for cellular processes are a standard approach in systems biology, and many tools are available for parameter estimation and analysis beyond, the integration of data into stochastic modeling approaches is still challenging. Studying sources of heterogeneity in cell populations, which are key to understand emerging heterogeneity on larger scales, is highly facilitated by a rapid development of (time resolved) single cell measurement techniques. In an application-driven setting, you will extend stochastic modeling approaches for cellular processes and develop methodology towards an upscaling to larger systems. We will focus on data integration, model evaluation and detection of model discrepancies, which ultimately allows to study heterogeneity in signaling pathways and deregulations in cancer cells, a prerequisite to understand patient-specific responses to treatment strategies. You will be a member of Prof. Nicole Radde’s working group “Systems Theory in Systems Biology” at the Institute for Systems Theory and Automatic Control.

Your tasks:

- Development of computational approaches for the integration of data into stochastic models of intracellular processes
- Implementation of models and methods in Python by using F.A.I.R. data and model principles (e.g. SBML, PEtab, COMBINE archives)
- Close collaboration with our project partners Prof. Markus Morrison and Dr. Anneli Guthke within PN2
- Publication of research results
- Active participation in SimTech events (Status seminars, Project Network meetings, further events)
- Commitment for the working group and the institute
- Acting as teaching assistant for up to 2 SWS

Your qualifications:
You are a talented person with a very good Master degree in mathematics, natural sciences, engineering or a related field and a genuine interest in cell biology / biochemistry / cancer biology.

You have thorough knowledge in one or more of the following subjects:
- Stochastic processes
- Dynamic modeling
- Model calibration
- Bayesian analysis
- Computational biology

You are motivated to work in an interdisciplinary project team and want to foster collaborations between biologists and modelers.

We search for an open-minded person with good communication skills.

Basic programming skills (preferably in Python) are an asset.

Proficiency in English is required, knowledge of German is welcome but not compulsory.

We offer:

- An inspirational and supportive research environment at the Cluster of Excellence SimTech with ample networking opportunities
- A nationally and internationally well-connected research group with a good team spirit
- Fully funded conference visits and a fully funded research stay abroad as well as training programs to support your first steps as an early career scientist
- Diverse and responsible tasks in a growing interdisciplinary and intercultural team
- Respectful supervision and guidance with many ways for direct interactions and prompt feedback
- A family-friendly and all-welcoming atmosphere with flexible working hours and openness for home office models

Please submit your application (motivation letter, curriculum vitae, transcript of records and names of 2 references) until September 12th in one single PDF file via the JoinUS portal (https://careers.uni-stuttgart.de). If you have any questions, do not hesitate to contact us via nicole.radde@simtech.uni-stuttgart.de. Please be aware that we cannot reimburse any costs arising from the performance of job interviews.

At the University of Stuttgart and the Cluster of Excellence EXC 2075, we actively promote diversity among our employees. We have set ourselves the goal of recruiting more women scientists and employing more people with an international background, as well as people with disabilities. We are therefore particularly pleased to receive applications from such people. Regardless, we welcome any good application.

Women who apply will be given preferential consideration in areas in which they are underrepresented, provided they have the same aptitude, qualifications, and professional performance. Severely disabled applicants with equal qualifications will be given priority.

As a certified family-friendly university, we support the compatibility of work and family, and of professional and private life in general, through various flexible modules. We have an employee health management system that has won several awards and offers our employees a wide range of continuing education programs. We are consistently improving our accessibility. Our Welcome Center helps international scientists get started in Stuttgart.

Information in accordance with Article 13 DS-GVO on the processing of applicant data can be found at https://careers.uni-stuttgart.de/content/privacy-policy/?locale=en_US