PhD student and Postdoc Positions at the interface of Mathematics and Life Science

The University of Bonn is an internationally operating research institution, with 200 years of history, around 35,000 students, more than 6,000 employees and an excellent reputation at home and abroad: the University of Bonn is one of the most important universities in Germany. In the last excellence initiative, the University of Bonn was able to secure six Clusters of Excellence, more than any other German institution, for research topics including mathematics and immunology.

In this excellent scientific environment, our research group (https://www.mathematics-and-life-sciences.uni-bonn.de/en) develops and applies novel mathematical approaches and software tools for data analysis and modeling. The spectrum of applications spans oncology, immunology, and epidemiology. We are intensively collaborating with world-leading experts for mathematics, immunology and neurology. Currently, we are searching for multiple PhD students and Postdocs to complement our interdisciplinary team.

The open positions are:

- **Postdoc in Bioinformatics**, developing and applying statistical and machine learning methods to study causes of metaflammation, a process important in many common diseases.
- **Postdoc in Systems Biology**, developing computational methods and software for efficient numerical simulation methods, for differential equations and physics-inspired neural networks.
- **PhD student or Postdoc in Mathematics and Machine learning**, developing scalable algorithms based on invertible neural networks to accelerate the analysis of complex biological datasets.
- **PhD student or Postdoc in Systems Biology**, applying methods from machine learning and federated data analysis to a large-scale, multi-center COVID-19 data set in order to study factors relevant to the infection and disease severity for acute- and long-COVID.
- **PhD student in Applied Mathematics**, developing methods for the modelling of biological processes, focusing on efficient parameter estimation and model selection schemes.
- **PhD student in Applied Mathematics**, developing and applying methods for the mathematical modelling and analysis of metabolic disorders.
- **PhD student in Applied Mathematics**, developing mathematical models for the monitoring of disease prevalence (e.g., for SARS-CoV-2) using waste water sampling data.

For more details, see: https://www.mathematics-and-life-sciences.uni-bonn.de/en/jobs

**Job description:**

- Data management and statistical analysis of biological data (e.g., single-cell omics, high-throughput histology, patient and waste water data) and/or
- Mathematical modeling of biological processes (incl. ordinary and partial differential equations, stochastic models) and/or
- Development of statistical inference and machine learning methods.
- Interpretation of analysis results.
- Collaboration with biologists and medical researchers.
- Publication of scientific results at conferences and in journals.
• Assistance with teaching and training (e.g., in mathematics or computer sciences).
• For Postdocs, co-supervision of students.

Your profile:

• Master / PhD degree in (bio-)informatics, computational biology, computer science, mathematics, physics, or related fields
• Experience in some of the following fields: mathematical modelling (e.g., ODEs and PDEs for biological processes), numerical optimization, machine learning, bioinformatics, and high-performance computing
• Programming skills (preferably Python, C++ and/or R)
• Proficiency in written and spoken English
• Passion for science and scientific work

The precise requirements depend on the position, see https://www.mathematics-and-life-sciences.uni-bonn.de/en/jobs.

Our offer:

• Working in an innovative, well-equipped and scientifically stimulating environment
• An international and diverse group of PhD students and Postdocs
• A professional career development program for both PhD students and Postdocs
• Initial contract for 3 years for PhD students and 2 years for Postdocs both with a standard public service salary (PhD student: 75% TV-L E13; PostDoc: 100% TV-L E13).
• Postdocs will have opportunities to obtain additional external funding and develop an independent research program during postdoctoral training.

The University of Bonn is committed to diversity and equal opportunity. It is certified as a family friendly university. It aims to increase the proportion of women in areas where women are under-represented and to promote their careers in particular. It therefore urges women with relevant qualifications to apply. Applications will be handled in accordance with the Landesgleichstellungsgesetz (State Equality Act). Applications from individuals with a certified serious disability and those of equal status are particularly welcome.

The deadline for the application round is March 15, 2022. Application documents (cover letter, CV, certificates, contact details of two referees) should be submitted as soon as possible as a single PDF file via email.

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