



Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 7,500 employees in one of Europe's biggest research centres and help us to shape change!

How can we predict the complex behavior of cells in health and disease? As part of the VirtualCell project, a consortium consisting of Forschungszentrum Jülich, Helmholtz Munich, MDC Berlin, and NVIDIA is developing a multimodal foundation model that integrates diverse single-cell and spatial omics data as well as imaging data. The goal is to create a virtual cell model that provides deeper insights into cellular functions, disease progression, and therapy responses. The central computing resource is JUPITER, Europe's first exascale supercomputer at the Jülich Supercomputing Centre (JSC) at Forschungszentrum Jülich. Join us at JSC on JUPITER and help shape the future of biomedical AI.

Join our team to the next possible date as

Postdoc – High-Performance Computing & Foundation Models for Biomedicine

Your Job:

In this position, you will work in an interdisciplinary team of experts in HPC, ML, and biomedicine. You will contribute your individual strengths while also developing in adjacent fields. Depending on your profile, you can set your own focus (e.g. on scalable training, data/feature pipelines, or model development) working closely with Helmholtz Munich, MDC Berlin, and NVIDIA.

You will:

- Set up and optimize large-scale training and inference runs for foundation models on JUPITER (multi-GPU/node, mixed precision, parallelization, I/O optimization)
- Integrate multimodal data sources (e.g., scRNA-seq, ATAC-seq, spatial transcriptomics, ...) into modeling and develop efficient data/training pipelines
- Drive application cases with Helmholtz Munich, MDC Berlin, and NVIDIA—for example, disease modeling, prediction of cell states, or patient stratification
- Contribute to the further development of model architectures (e.g., transformers,

The job will be advertised until the position has been successfully filled. You should therefore submit your application as soon as possible. We look forward to receiving your application via our

Online-Recruitment-System!

Questions about the vacancy?

Get in touch with us by using **our contact form**.

Please note that for technical reasons we cannot accept applications via email. www.fz-juelich.de

multimodal fusion, generative models)

- Present results at conferences and publish in peer-reviewed journals

Your Profile:

- Master and preferable subsequent PhD in computer science, natural sciences, mathematics, or a related field, with a strong scientific record documented through publications in relevant journals; solid quantitative/statistical background (e.g., probability theory, linear algebra, optimization)
- Strong expertise in at least one of the following areas, with willingness to learn: High-performance computing (distributed systems, profiling, performance optimization), Training large AI models (PyTorch/JAX/TensorFlow, parallelization, mixed precision), Data analysis/statistics (experimental design, evaluation, uncertainty quantification)
- Excellent programming skills in Python (C/C++ is a plus); experience with HPC environments (e.g., SLURM) is welcome
- Interest in biological questions and enthusiasm for interdisciplinary collaboration
- Very good English skills; German is an advantage
- Desirable: experience with multimodal omics data (e.g., scRNA-seq, ATAC-seq, spatial transcriptomics, CITE-seq) or medical imaging data (H&E)
- Also desirable: contributions to open-source projects, benchmarks, or reproducibility pipelines

Our Offer:

We work on the very latest issues that impact our society and are offering you the chance to actively help in shaping the change! We support you in your work with:

- **KNOWLEDGE & FURTHER TRAINING:** Comprehensive training courses and individual opportunities for personal and professional further development
- **HEALTH & WELL-BEING:** Your health is important to us. You can look forward to a comprehensive company health management programme with a wide range of options, including a beach volleyball court, running groups, yoga classes and much more. In addition, our company medical service and an experienced social counselling team are available to assist you on site
- **WORK-LIFE-BALANCE:** Flexible working arrangements (including remote working) are generally possible upon agreement and in line with upcoming tasks and (on-site) appointments
- **FLEXIBILITY:** Flexible working time models, including options close to full-time, allow you to tailor your working hours to suit your individual needs. For more information, visit: <https://go.fzj.de/near-full-time>
- **LEAVE:** You will receive 30 days of leave plus additional days off (e.g. between Christmas and New Year's Day)
- **FAIR REMUNERATION:** Depending on your existing qualifications and the tasks assigned to you, you will be classified in pay grade 13 of the TVöD-Bund (Collective Agreement for the Public Service). All information on the TVöD-Bund collective agreement can be found on the BMI website: <https://go.fzj.de/bmi.tvöed>. The monthly salaries in euro can be found here: <https://go.fzj.de/bmi.tvöed.entgelt>

The position is for a fixed term of 2 years. In addition to exciting tasks and a collegial working environment, we offer you much more: <https://go.fzj.de/benefits>

We welcome applications from people with diverse backgrounds, e.g. in terms of age, gender, disability, sexual orientation / identity, and social, ethnic and religious origin. A diverse and inclusive working environment with equal opportunities in which everyone can realize their potential is important to us.

Further information on diversity and equal opportunities: <https://go.fzj.de/equality> and on specific support options: <https://go.fzj.de/womens-job-journey>