"Knowledge becomes health" - we are filling this motto with life every day, developing new ideas and improv-ing old-established knowledge. The University Hospital Frankfurt has existed since 1914. Our around 8,500 employees contribute with their skills and knowledge to the 33 specialist clinics, theoretical clinical institutes, and administrative departments. The close connection of health care with research and teaching, as well as a climate of collegiality, internationality, and cross-professional cooperation characterize the university hospital.

PhD Student - Computational Biology

(We are targeting applicants of all genders)
Full time | initially limited to 3 years | Announcement number: 222-2025

We are currently seeking a motivated PhD Student to work on a collaborative project between the Research Group of Computational Immunology, led by Prof. Dr. Katharina Imkeller, and the Research Group of Machine Learning in Oncology, led by Prof. Dr. Florian Buettner.

The Buettner lab (https://mlo-lab.github.io) works on the intersection of machine learning and oncology and as such is actively pursuing original research in both areas. The Imkeller lab (https://agimkeller.github.io) applies mathematical and computational methods to understand the inter- and intra-individual heterogeneity of tumor-immune interactions in humans. Both labs feature regular publications in high-impact journals. Together, we will develop statistically sound algorithms and user-friendly tools to integrate complex molecular data for comprehensively characterizing tumor microenvironments via single-cell transcriptomics, spatially-resolved proteomics and transcriptomics. The PhD position is embedded within the LOEWE program “CARISMa” (Optimierung von CAR-Zelltherapien durch Beeinflussung des ImmunSuppressiven Tumor-Mikromilieus), which aims to optimize cellular therapies by modulating the immunosupressive microenvironment of solid tumors.

For an insight into the University Hospital Frankfurt, click here.

YOUR ROLE

- The planned PhD project focuses on the development and collaboration-driven application of computational

WHO YOU ARE

- You have a master's degree in bioinformatics, statistics, biophysics or related field (or a degree in

methods to integrate different types of omics data and making them available for clinical use. Relevant data types include single cell transcriptomics, spatially-resolved multi-omics such as multiplexed immunofluoresence images and spatial transcriptomics.
- The PhD student will develop novel approaches for spatial data integration, perform analysis of multi-omics datasets generated within the CARISMa program and communicate the results with clinical collaboration partners.

biology/medicine with excellent mathematics and programming skills).
- You have hands-on experience in software development and data analysis (Python or R).
- You have a good knowledge of machine learning and statistics.
- You have a strong interest in immunology or cancer biology.
- Ability to conduct independent research and motivation to join an international and interdisciplinary research team.
- Fluency in English language.
- Due to legal regulations, valid proof of measles immunity / measles vaccination is required.

WHAT WE OFFER

- **Working environment:** Interesting collaborative research projects in immunooncology and immunotherapy. State of the art research infrastructure, an inspiring working environment and excellent basic research with translational and clinical applications. Dedicated personal mentoring and participation in training and qualification programs of the MSNZ and the Goethe University.
- **Collective agreement:** In addition to an attractive salary based on a collective agreement (TVGU E13 (65%)) with an annual special payment, you benefit from long-term security through company pension schemes.
- **Mobility:** Free public transport in all Hessen (Free State Ticket Hessen)
- **Campus:** Our attractive university hospital campus offers a modern cafeteria, various cafes, and opportunities to rest in numerous green spaces. A walk on the riverside of the Main offers relaxation during breaks
- **Work-Life-Balance:** Part-time employment is possible, we offer childcare in our daycare center (if you have any questions, please contact UKF-Familienservice), child care during holidays
- **Health Promotion:** Benefit from our attractive health offers. We offer regular online and face-to-face courses on nutrition, relaxation, sports and exercise.
- **Professional development:** Internal and external training for your professional development
- **Any questions?** Many answers can be found in our FAQs for new employees. If you have any further questions, please do not hesitate to contact us.

Disabled applicants are preferred if they have the same personal and professional qualifications.

Relevant Publications:

Moslehi Z & **Buettner F**. Learning interpretable representations of single-cell multi-omics data with multi-output Gaussian Processes, 2024, biorxiv preprint, doi: https://doi.org/10.1101/2024.11.03.621746

Maier-Hein L, Reinke A, Godau P, Tizabi MD, **Buettner F**,... & Jäger PF. Metrics reloaded: recommendations for image analysis validation. Nature methods, 1-18 2024

Qoku A & **Buettner F.** Encoding Domain Knowledge in Multi-view Latent Variable Models: A Bayesian Approach with Structured Sparsity. In International Conference on Artificial Intelligence and Statistics (AISTATS) 2023 (pp. 11545-11562). PMLR.

Buggenthin F+, **Buettner F+, …, Kokkaliaris KD**, …, Schroeder T. Prospective identification of hematopoietic lineage choice by deep learning. Nature Methods. 2017;14(4):403-6. **+co-first authors**

Jayavelu AK+, Wolf S+, **Buettner F+**, … , Oellerich T. The proteogenomic subtypes of acute myeloid leukemia. Cancer Cell. 2022; ;40(3):301-17 **+co-first authors**

Cakmak P, …, **Imkeller K.** Glioma-associated tertiary lymphoid structures are sites of lymphocyte clonal expansion and plasma cell formation. bioRxiv; 2024. doi: 10.1101/2024.07.04.602038.

Enssle JC, ..., **Imkeller K**, ..., Ullrich E. Cytokine-responsive T- and NK-cells portray SARS-CoV-2 vaccine-responders and infection in multiple myeloma patients. Leukemia. 2024 Jan;38(1):168-180. doi: 10.1038/s41375-023-02070-0.

Bexte T, ..., **Imkeller K**, Ullrich E. CRISPR/Cas9 editing of NKG2A improves the efficacy of primary CD33-directed chimeric antigen receptor natural killer cells. Nat Commun. 2024 Sep;15(1):8439. doi: 10.1038/s41467-024-52388-1

JOIN OUR TEAM

Use the time until **March 31, 2025** to apply. Please submit your online application including a possible starting date. For further information regarding the position and project, please contact Prof. Dr. Katharina Imkeller (imkeller@rz.uni-frankfurt.de) or Prof. Dr. Florian Buettner (florian.buettner@dkfz.de).

Apply now

Universitätsmedizin Frankfurt | Recruiting Team | Theodor-Stern-Kai 7 | 60590 Frankfurt am Main | Bitte reichen Sie Ihre Bewerbung ausschließlich über den Button „Online bewerben“ ein. Rückfragen können Sie gerne an bewerbung@unimedizin-ffm.de richten. Bitte beachten Sie, dass keine Unterlagen zurückgeschickt werden. | Folgen Sie uns auf Instagram (@unimedizin-ffm); XING, LinkedIn.