Research profile for applicants

Name of DKFZ research division/group:	*Immunodynamics and Cancer – D280*
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Group homepage: *Visit this website for further information on current research and recent publications.*	*https://www.dkfz.de/en/immunodynamics-and-cancer*

RESEARCH PROFILE AND PROJECT TOPICS

Our group investigates the cellular and molecular mechanisms by which the immune system interacts with pathological tissues. We are particularly interested in **how peripheral immune cells adapt to novel environments**. Currently, we focus on the central nervous system (CNS) during neurological disease, ranging from brain tumors to neuroinflammation. For our discoveries **we develop and apply cutting-edge genomic technologies**.

A key technology of our lab is Zman-seq (time-resolved single-cell RNA sequencing), which combines fluorescent pulse-labeling of newly recruited cells with single-cell transcriptomics. This approach enables the reconstruction of cell state trajectories over time, revealing not just static phenotypes, but the step-by-step transcriptional changes that occur as immune cells adapt to a disease environment. By doing so, Zman-seq uncovers the dynamic reprogramming events that drive dysfunction, tolerance, or activation.

We are seeking motivated postdoctoral researchers interested in technology development and/or applying Zman-seq to study fundamental principles of immune adaptation across diverse disease contexts.

Possible directions include:

- Identifying early transcriptional switches that drive pathogenic or protective programs in infiltrating immune cells
- Dissecting how specific ligand–receptor interactions shape cell-state trajectories
- Causally linking transcriptional dynamics to function via functional assays or in vivo perturbations

We are open-minded but it is helpful if you have:

- Background in immunology, neurobiology, cancer biology or related fields.
- Experience with single-cell RNA sequencing and/or other transcriptomic approaches.
- Bioinformatics proficiency (R or Python) for high-dimensional data analysis.
- Skills in in vivo mouse models, tissue processing, and flow cytometry.
- Ability to design and execute hypothesis-driven experiments integrating multi-omics data.
- Strong scientific writing and communication skills, with peer-reviewed publications.

We offer an interdisciplinary environment with close collaborations within DKFZ and with external partners in neuro-oncology, neuroimmunology, and computational biology. Candidates will gain expertise in advanced microscopy, multi-omics integration, genetic engineering, and translational immunology, equipping them for independent research careers at the interface of immunology, oncology, and systems biology.