Project abstract

Name of DKFZ research division/group:	***Division of Stem Cells and Cancer (A010)***
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Group homepage: Please visit our website for further information on our research and recent publications.	*https://www.dkfz.de/en/stem-cells-and-cancer*

PROJECT PROPOSAL

Our research group investigates how normal stem cell programs are hijacked to drive cancer progression, therapy resistance, relapse, and metastasis. We focus on cancer stem cells (CSCs) and tumor plasticity across hematologic and solid malignancies, integrating stem cell biology, metastasis research, and cancer neuroscience.

Our core research areas include:

- Hematopoietic stem cell self-renewal and multipotency
- Leukemic stem cells in AML and mechanisms of resistance and relapse
- Development of predictive biomarkers for Venetoclax response (MAC-Score)
- Development of novel therapeutic strategies
- Circulating tumor cells and metastasis-initiating stem cells in breast cancer
- Influence of the peripheral nervous system on cancer progression and metastasis
- Novel therapeutic strategies by blocking neuronal innervation of carcinomas

We combine single-cell multi-omics, metabolomics, advanced flow cytometry and imaging, CRISPR gene editing, engineered mouse models, and patient-derived organoids and PDX models from longitudinal clinical samples. This enables us to directly bridge mechanistic discovery with translational and clinically relevant applications.

We are particularly interested in motivated clinician scientists who aim to integrate laboratory research with patient-oriented questions. Our environment offers close interaction with clinical departments, access to well-annotated patient samples and cohorts, and the opportunity to develop translational projects with significant diagnostic and therapeutic impact. Importantly, potential projects can be tailored and fine-tuned according to the candidate's scientific interests, clinical background, and long-term career goals.