Project abstract

Name of DKFZ research division/group:	***Cell Fate Engineering and Disease Modeling (A340)***
Contact person:	***Moritz Mall, Tel: +49 6221 42-3195, E-Mail: m.mall@dkfz.de***
Group homepage: Please visit our website for further information on our research and recent publications.	***https://www.dkfz.de/en/cell-fate-engineering-and-disease-modeling***

PROJECT PROPOSAL

One of the most exciting concepts in biology is the plasticity of cell fate, which allows cellular identity to be reset. Strikingly, this plasticity is essential for normal development, but several human diseases are also associated with unwanted changes in cell identity. For example, dedifferentiation and the adoption of stem cell-like properties are hallmarks of cancer and neurological disorders.

Investigating the mechanisms safeguarding cell identity will provide new opportunities to understand and treat these devastating diseases (reviewed in Lim et al., Molecular System Biology 2024). Our group works with patient material and cohorts and employs pluripotent stem cells, cell fate engineering, organoids, and mouse models to reconstruct and investigate human development and disease. Our mission is to understand the mechanisms that determine and maintain cell fate with the goal of treating diseases associated with loss of cell identity.

Interested candidates for the clinician-scientist position could be working on the following:

• Studying austism-associated disorders using patient-derived stem cell models and performing clinical follow-ups with patients (see Weigel et al., Molecular Psychiatry 2023).

• Investigating and preventing cell fate plasticity and cell identity loss in human malignancies, focusing on brain and liver cancer (see Lim et al., Nature Genetics 2025 and Saraswat et al., bioRxiv 2025).