

Hosting group information for applicants

Name of DKFZ research division/group:

Cell Fate Engineering and Disease Modeling (A340)

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Group homepage: **<https://www.dkfz.de/en/cell-fate-engineering>**

Please visit our website for further information on our research and recent publications.

RESEARCH PROFILE AND PROJECT TOPICS:

The Mall laboratory combines animal models, pluripotent stem cells, and genetic engineering to reconstruct and investigate human development and disease (Mall and Wernig, JMM 2017). Our mission is to understand the mechanisms that determine and maintain cell fate with the goal to treat diseases associated with loss of cell identity (Mall, Nature 2017). Embedded within the Hector Institute of Translational Brain Research (HITBR) at the German Cancer Research Center (DKFZ) in Heidelberg our lab offers the unique opportunity to be part of our energetic and ERC-funded research team to work at the interface of cancer and neuroscience.

We offer:

- State-of-the-art infrastructure
- International and inclusive team
- Comprehensive training program
- Exciting research projects and environment
- Collaborative and interdisciplinary workplace

One of the most exciting concepts in biology is the plasticity of cell fate that 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 adoption of stem cell-like properties are hallmarks of cancer and investigating the mechanisms that safeguard cell identity will therefore provide new opportunities to understand and treat these devastating diseases.

Projects in our lab aim to push the new field of cancer neuroscience with a focus on understanding the role of genetic mutations and epigenetic changes on cell identity during induction and progression of brain malignancies that affect patients worldwide



and are a major medical and economic challenge. Combining classical mouse models with novel genetic engineering and stem cell technologies has great potential to better understand complex human brain disorders and to identify strategies to treat these diseases.

Possible projects:

- Generate and characterize new mouse brain cancer models
- Optimize human stem cell culture and genetic engineering approaches
- Develop novel 2 and 3D brain cancer models using human stem cells
- Generate and analyze next-generation functional genomics data

We are looking for a highly motivated physicians preferably with a background in cancer biology and/or neurology who are keen on developing novel *in vivo* and *in vitro* models to investigate the etiology of brain cancers and who want to identify novel treatment strategies.

