

Project abstract

Name of DKFZ research division/group:	Clinical Cooperation Unit Pediatric Oncology B310 Translational Immunotherapy group
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Group homepage: Please visit our website for further information on our research and recent publications.	https://www.dkfz.de/en/pediatric-oncology https://www.kitz-heidelberg.de/en/research/research-groups/group-translational-immunotherapy

PROJECT PROPOSAL

Project proposal:

With our work, we are pioneering the development and implementation of next-generation cell therapeutics to cure childhood cancer. Our research aims to advance the generation of immune cell and tumor profiles, optimize immunomodulatory strategies, and develop CAR- and TCR-T cell therapies to improve efficacy against solid tumors.

To overcome the limitations of cell therapies in solid tumors, a deeper understanding of the tumor microenvironment (TME), its cellular composition, and mechanisms of immune evasion is required. We employ state-of-the-art spatial single-cell omics using ultra-high-content imaging to decipher individual immune-evasion signatures in primary patient samples and samples derived from mouse models.

This approach enhances our ability to predict therapeutic responses and guides the development of combinatorial treatment strategies and immune-cell engineering approaches. In parallel, we are working on reprogramming the TME to unleash its full antitumor potential and to promote a microenvironment that strengthens and sustains T-cell responses.

Ultimately, we are at the forefront of developing next-generation CAR-T and TCR-T cell therapies tailored to solid tumors, with the goal of improving efficacy and overcoming barriers to durable therapeutic responses.

Example projects include:

- Early clinical study of a B7-H3–targeted IL-2/IL-12 fusion protein in relapsed/refractory pediatric and AYA sarcomas
- Evaluation of graft vs host reactions in pediatric patients having undergone stem cell transplants with liquid biopsies
- Evaluation of the activity profile of different immunotherapies with liquid biopsies
- Single-cell profiling in patients with immunotherapies



FROM BEDSIDE TO BENCH
AND BACK

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