Hosting group information for applicants

Name of DKFZ research division/group:

Clinical Cooperation Unit Molecular Hematology/Oncology (A360)

Contact person: **Prof. Dr. med. Alwin Krämer (email: a.kraemer@dkfz.de, phone: 1440)**

Group homepage: **https://www.dkfz.de/en/mol-haem_onk/index.php**

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

RESEARCH PROFILE AND PROJECT TOPICS:

Chromosomal instability is a universal feature of human malignancies and a major contributor to genetic heterogeneity, clonal evolution and metastasis. Our basic research focuses on how amplified centrosomes – the spindle pole organizers responsible for correct chromosome segregation during mitosis – lead to chromosomal instability. We explore how amplified centrosomes induce karyotype abnormalities, tumor formation and metastasis in vitro as well as in transgenic mouse models. In addition, we map the landscapes of centrosome aberrations in primary tumor specimens and pre-neoplastic lesions using automated high resolution 3D electron microscopy approaches, to unravel their contribution to cancer progression.

In carcinoma of unknown primary (CUP), a paradigm metastatic malignancy in which only metastases but no primary tumor can be identified, we have initiated a large international, clinical trials, examining the benefits of mutation-based targeted treatments and immunotherapy compared to standard chemotherapy.

Within the frame of these clinical trials and as a synthesis of our basic and clinical research efforts, our translational research program explores the contribution of chromosomal instability to the metastatic process and the poor prognosis of patients with CUP. For that, tumor and liquid biopsy/ctDNA samples of patients are examined using multi-omics technologies and organoid-based drug screening. Overarching goal is the development of novel treatment options in patients with metastatic cancers.

Potential projects for postdoctoral fellows in our department comprise (i) the establishment and characterization of a mouse model of multiple myeloma - a hematological malignancy - by induction of centrosome amplification via overexpression of STIL, a centriole replication factor, and (ii) the development of patient-derived organoid cultures from patients with CUP syndrome to allow for pathophysiologic/mechanistic analyses of the metastatic process and in vitro drug screening to establish novel treatment options for this devastating malignancy.