Research profile for applicants

Name of DKFZ research division/group:	**Dermal Oncoimmunology Lab (D195)**
Contact person:	**Hafsa Munir (hafsa.munir@dkfz-heidelberg.de)**
Group homepage: *Visit this website for further information on current research and recent publications.*	***https://www.dkfz.de/en/dermale-onkoimmunologie/index.php***
Eligibility:	***DKFZ Postdoctoral Fellowships***

RESEARCH PROFILE AND PROJECT TOPICS

The tumour microenvironment (TME) is a complex niche of cancer cells, immune cells, stromal cells and extracellular matrix (ECM). Recent studies have shown that TME components, much like tumour cells, are highly heterogenous and their fate and functions are often dependent on their interactions with other cell types within the evolving tumour. In particular, cancer-associated fibroblasts (CAFs) play a critical role in modulating tumour growth and invasion through cytokine release, matrix remodelling and regulation of the anti-tumour immune response. High CAF content in tumours is associated with poor prognosis, therapeutic resistance and recurrent disease. Due to the role CAFs play in tumour progression, the field is focusing on developing CAF-targeted therapies or treatment regimens that circumvent CAF-induced therapy resistance.

In the Dermal Oncoimmunology Lab, we place fibroblasts at the center of immune-regulatory networks in skin cancer. We strive to develop novel CAF-targeted therapeutic interventions to treat skin cancer, namely melanoma. We use a multi-omics approach, combining high-parameter flow cytometry, confocal microscopy, single-cell sequencing and spatial transcriptomics analyses, to identify markers on the CAFs that we can target therapeutically. Using a combination of complex 3D organ culture systems with *in vivo* models, we will then test the effects of CAF-targeted agents on the anti-tumour immune response and tumour progression. As certain CAF subsets arise in multiple tumour types, we hope that the CAF-targetd approaches identified in melanoma can be used in a pan-cancer context.

In our lab we foster a highly interdisciplinary and culturally diverse environment. We offer all candidates the opportunity to develop a number of multidisciplinary skills in Immunology, cancer and bioengineering. We also provide opportunities for all lab members to collaborate with research groups both internationally and within Germany.

Our lab is offering a project focusing on the effects of chronic exposure to ultraviolet radiation on the skin microenvironment and how this contributes to the initiation and early development of cancer. In particular, we will analyse changes in dermal fibroblasts that could promote the survival of mutated epithelial cells through effects exerted on infiltrating immune cells and the extracellular matrix.