# Project abstract

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| Name of DKFZ research division/group: | ***Epithelium Microbiome Interactions (D300)*** |
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| Group homepage:<br>Please visit our website for further information on our research and recent publications. | ***https://www.dkfz.de/en/Epithel-Mikrobiom-Interaktionen/index.php*** |

## PROJECT PROPOSAL

In the EMIL group, we study how bacteria contribute to cancer development, metastasis and treatment response. Our team includes cancer researchers, tissue engineers, microbiologists, clinicians, and bioinformaticians working together to help patients by deciphering the functional impacts of bacteria in human tumors. Using tissue samples from patients, we isolate bacterial strains and create organoids. These models can be combined with additional features of the human gut on USB stick-sized devices, “organ chips”, for detailed studies. In different projects, we also transplant organoid-bacteria mixtures into mouse models to study their migration and interaction in a whole-body context. Through close collaborations with clinical partners, we work towards the rapid translation of our findings towards new microbiome-based detection, prevention and treatment strategies of cancer.

The clinician scientist project in our group is meant to allow you to follow your own scientific interests in collaboration with the team and boost your scientific profile. It is aimed to leverage the tissue models and tumor-derived bacterial strains to understand microbial impacts on patient tumor phenotypes, especially on genotoxic bacteria as targets for microbiome-informed colorectal cancer prevention. To achieve this, the successful candidate will be able to co-lead the patient cohort-based exploration of diet, mucus, microbe patterns at pre-neoplastic sites of juvenile FAP patients. To uncover these patterns and integrate them with clinical features, the clinician scientist will become deeply acquainted with R- or python-based data analysis with support from our bioinformatics team. Functional validation will be performed using a broad portfolio of techniques, including organoid and organ chip culturing, bacterial culturing, co-culture development and, if desired, mouse model transplantations.
If you like working in a young team with flat hierarchies, a collaborative spirit and a keen interest in functional cancer microenvironment work, get in touch!