

Research profile for applicants

Name of DKFZ research division/group:	Translational Radiotheranostics (E270)
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Group homepage: <i>Visit this website for further information on current research and recent publications.</i>	https://www.dkfz.de/en/translational-radiotheranostics

RESEARCH PROFILE AND PROJECT TOPICS

The Junior Research Group Translational Radiotheranostics pursues highly innovative projects at the forefront of interdisciplinary cancer research, with the overarching goal of translating novel radiopharmaceuticals from bench to bedside. The concept of theranostics uniquely combines molecular imaging with targeted radionuclide therapy, enabling a single precision medicine framework. Among these approaches, radiotheranostics has emerged as one of the fastest-growing fields in oncology, fundamentally transforming the management of thyroid cancer (radioiodine), neuroendocrine tumors (Lutathera®), and metastatic prostate cancer (Pluvicto®). This remarkable clinical success is driving the development of next-generation radiotheranostic strategies with significant scientific, clinical, and socioeconomic impact.

Our research focuses on extending these breakthroughs to malignancies with the greatest unmet clinical need, particularly breast cancer and hypoxia-driven aggressive solid tumors. We develop and evaluate innovative radioligands targeting clinically relevant biomarkers for molecular imaging by positron emission tomography (PET) and single-photon emission computed tomography (SPECT), targeted radionuclide therapy using both β - and α -emitting radionuclides, therapy monitoring, and post-therapeutic imaging. A complementary research pillar addresses tumor hypoxia, a hallmark of treatment resistance and poor prognosis across many cancer types. By developing radiocopper- and other hypoxia-targeted imaging and therapeutic agents, we aim to improve patient stratification, identify resistant disease at an early stage, and enable personalized therapeutic interventions.

Our long-term vision is to provide new treatment opportunities for patients who have exhausted current therapeutic options. Through the integration of radiochemistry, molecular biology, preclinical imaging, translational oncology, and clinical collaboration, we strive to deliver first-in-class radiopharmaceuticals for precision nuclear medicine.



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