

Research profile for applicants

Name of DKFZ research division/group:	<i>Multiparametric methods for early detection of prostate cancer, E250</i>
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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/multiparametric-methods-for-early-detection-of-prostate-cancer

RESEARCH PROFILE AND PROJECT TOPICS

Our research focuses on developing clinically applicable artificial intelligence approaches for cancer detection, risk stratification and precision medicine. By combining machine learning, computational biology and clinical data science, our group integrates large-scale longitudinal and multimodal datasets, including electronic health records, imaging, proteomic, and outcome data.

A central objective is to model complete patient trajectories over time, from early cancer detection and diagnosis to disease progression and recurrence. Our group develops interpretable prediction models that identify clinically meaningful disease representations and generate realistic future health trajectories. Particular emphasis is placed on methodological transparency, external validation and the translation of computational advances into clinically actionable tools. The research is conducted in close collaboration with data scientists, clinicians and experimental researchers within leading national and international consortia.

The postdoctoral project will focus on the next generation of AI-supported precision medicine for prostate cancer. The successful candidate will take a leading role in the computational analysis of deeply characterized multimodal cohorts. Potential research directions include novel architectures for longitudinal multimodal data, integration of clinical records with imaging and molecular profiles, biomarker discovery, recurrence prediction, explainable machine learning and agentic AI systems for clinical decision support.

The candidate will perform rigorous internal and external validation, quantify clinical utility and develop transparent visualizations and interpretations of model predictions. The project offers access to unique clinical datasets, exceptional computational infrastructure and an interdisciplinary research environment at DKFZ. It provides substantial opportunities to lead high-impact publications within established international collaborations and develop computational methods with the potential to transform patient care.



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