Org-BOOST

DFG Deutsche Forschungsgemeinschaft

Call for Applications: Doctoral Fellowships
DFG Research Training Group – Org-BOOST
Ulm University Medical Centre

Join the forefront of translational cancer research!
The newly established DFG-funded Research Training Group Org-BOOST at Ulm University Medical Center is recruiting **10 fully funded Ph.D. candidates starting 1 May 2026**. Become part of an interdisciplinary team advancing next-generation organoid-based tumor modelling and precision oncology.

Positions Available
• Life sciences: TV-L E13 (65%)
• Computational biology: TV-L E13 (100%)
All positions are 48-month appointments leading to a doctoral degree through the International Graduate School in Molecular Medicine (IGradU).

Scientific Scope and Training Environment
Org-BOOST integrates human organoid technologies, bioengineering, single-cell and spatial multiomics, advanced imaging, and machine-learning-based analysis to unravel mechanisms of tumor initiation, plasticity, therapy resistance, and tumor–microenvironment interactions across multiple solid tumors. Embedded in the well-running frame of the International Graduate School at Ulm University (IGradU), Ph.D. fellows receive structured and excellent training through a Org-BOOST tailored qualification program. Training includes hands-on organoid and imaging workshops, a comprehensive bioinformatics course, seminars, journal clubs, and guidance from a dual-PI mentorship team and a Thesis Advisory Committee. Fellows gain access to cutting-edge facilities including organoid and single-cell sequencing cores, advanced microscopy, and bioprinting technologies.

Applicant Profile & Requirements
• Master's degree in life sciences, computational biology, bioinformatics, or bioengineering (German grade ≤2.0 preferred)
• Strong interest in organoid technologies, cancer biology, or translational research
• Experience in laboratory or computational workflows beneficial
• R/Python skills and omics know-how required for computational students
• Commitment to full-time 48-month doctoral research and interdisciplinary collaboration
• Excellent English communication skills

Application and Selection Procedure

Pre-selection step:
• Motivation letter (1–2 pages)
• CV (including scans of certificates academic transcripts, and references)
• Three preferred project choices (see the abstracts below)
Deadline for submission: 15th February 2026

Pre-selected candidates will be invited to:
• A virtual interview incl. presentation of a paper related to a preferred project
• IGradU selection day incl. presentation of prior work to the IGradU PhD Commission
• Face-to-face interviews with PIs
• Final matching based on candidate's preferences

Please upload your application on the Org-BOOST portal

For further information, please contact Org-BOOST Coordination Office:
PD Dr. Ninel Azoitei
Institute of Molecular Oncology and Stem Cell Biology
Albert-Einstein-Allee 23 89081-Ulm, Germany
Phone office: +49 (0) 731 500 45763
e-mail: ninel.azoitei@uni-ulm.de

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Org-BOOST Doctoral Research Projects

P1: Dissecting high-risk bladder cancer/stroma evolution in an hPSC-based assembloid model

You will develop hPSC-derived urothelial organoids carrying TP53 mutations, co-cultured with fibroblasts as assembloids on decellularized porcine urinary bladder (PUB) scaffolds to recapitulate high-risk bladder cancer onset. Induce dysplasia via chemical carcinogenesis (e.g., BBN), then apply scRNA-seq, multiplex IHC, and ligand-receptor mapping to characterize early cancer-associated fibroblast polarization and identify novel therapeutic targets in tumor-stroma interactions.

P2: Stratification of neuroendocrine pancreatic tumors by cell-type-of-origin and mutation

You will generate genetically defined hPSC-derived designer organoids to model cell-of-origin dependencies and early oncogenic transformation in pancreatic neuroendocrine tumors. Integrate multiomics profiling, long-term *ex vivo* cultures, and functional biomarker validation to dissect mutational signatures driving tumor heterogeneity and reveal precision therapy vulnerabilities.

P3: Characterization, subtyping and therapeutic interference of biliary tract cancer

You will engineer hPSC organoids with patient-relevant mutations to faithfully recapitulate biliary tract cancer subtypes and initiation events. Employ multiomics, spatial transcriptomics, and core facility analytics to map cell-of-origin effects, mutational landscapes, and conserved oncogenic pathways for improved patient stratification and early detection biomarkers.

P4: Identification of the tumor-stroma interaction mechanisms involved in the development of chemoresistance using next-generation pancreatic cancer patient-derived assembloids

You will culture patient-derived PDAC organoids with stromal cells in bioprinted matrices and organ-on-chip platforms to dissect chemotherapy resistance mechanisms mediated by dynamic tumor microenvironment remodeling. Conduct scRNA-seq, functional drug screens, and co-culture assays to uncover subgroup-specific vulnerabilities and design tailored therapeutic strategies.

P5: Regulation of PDAC cancer stem cell plasticity, maintenance, and treatment-resistance by small extracellular vesicle-mediated intercellular communication in the PDAC tumor microenvironment

You will investigate cancer stem cell plasticity and exosome-driven tumor-stroma communication in PDAC patient-derived organoids using advanced assembloids and single-cell multiomics. Identify key resistance pathways and validate precision intervention targets through functional perturbation and extracellular vesicle profiling.

P6: New strategies for targeting the CXCR4 and ACKR3 axis in colorectal cancer

You will probe the CXCR4/ACKR3 signaling axis underlying cancer stem cell-mediated therapy resistance in colorectal cancer patient-derived organoids. Combine spatial transcriptomics, single-molecule imaging, and pharmacological inhibition to discover predictive biomarkers and develop stem cell-targeted therapies.

P7: Glucocorticoid receptor and RAS-dependent growth in lung tumors

You will model glucocorticoid receptor-RAS crosstalk and its impact on tumor microenvironment modulation in lung cancer patient-derived organoids. Use multiomics, advanced co-cultures, and drug repurposing screens to identify biomarkers enabling stratified therapies and overcome resistance.

P8: Uncovering breast cancer dormancy for developing novel therapies

You will establish breast cancer patient-derived organoids within humanized bone marrow niche models using decellularized *ex vivo* scaffolds to elucidate dormancy establishment and reactivation triggers. Test pharmacological interventions to prevent metastatic relapse and develop dormancy-breaking strategies.

P9: Single molecule studies of NOTCH transcriptional networks in pancreatic cancer

You will analyze acinar-to-ductal metaplasia progression and real-time NOTCH transcription factor kinetics in pancreatic explants and patient-derived organoids via single-cell multiomics and live-cell imaging. Uncover early oncogenic trajectories to inform preventive and interceptive therapeutic approaches.

P10: Modelling disease progression and clonal evolution in CRC via Artificial Intelligence (AI)-based single-cell multiomics analyses

You will profile clonal evolution, intratumoral heterogeneity, and therapy responses in matched colorectal cancer patient-derived organoids and healthy colon organoids using comprehensive multiomics. Generate robust biomarkers to enable personalized patient stratification and predict treatment outcomes.