

PhD Position in Translational Prostate Cancer Research

Decoding the Tumor Microenvironment of Primary Neuroendocrine Prostate Cancer

Medical University of Innsbruck, Department of Urology, Austria



Research Focus

Primary neuroendocrine prostate cancer (NEPC) is a rare and highly aggressive disease with poor outcomes and limited therapeutic options. Despite its clinical relevance, its biology and particularly its tumor microenvironment (TME) remain poorly understood. NEPC is characterized by profound changes in tumor–microenvironment interactions, including reduced antigen presentation, sparse T-cell infiltration, and a stroma enriched in fibroblasts, myeloid cells, and neural components. Understanding these interactions is essential to identify novel therapeutic vulnerabilities.

Using our rare, deeply characterized cohort of primary NEPC patients, this project will integrate single-cell, spatial, and proteomic profiling with functional studies in cell lines and patient-derived models. The aim is to identify and validate actionable tumor–stromal, tumor–myeloid, and tumor–neural interactions that drive immune exclusion and disease progression.

Your tasks

- Map tumor, stromal, immune, and nerve compartments in primary NEPC patient tissue together with urologists and pathologists, using multiplex immunofluorescence, immunohistochemistry, and spatial profiling
- Establish and characterize NEPC models, including cell lines, 3D cultures and use them to dissect how neuroendocrine plasticity shapes tumor–microenvironment crosstalk and innate immune responses
- Build functional readouts of tumor–microenvironment interactions using genetic (e.g., CRISPR/Cas9) and pharmacological perturbation, co-cultures and patient-derived models
- Translate single-cell, spatial transcriptomic, proteomic, and digital pathology data from patient samples into mechanistic hypotheses, in close partnership with the lab's computational team

What we are looking for

- A cancer biologist or immunologist with an MSc or equivalent in molecular biology, biomedicine, biotechnology, medicine, or a related discipline
- Solid hands-on wet-lab experience, including mammalian cell culture and core molecular and cellular techniques (qPCR, Western blot, immunofluorescence or IHC, flow cytometry)
- Genuine curiosity about tumor immunology, tumor microenvironment biology, and translational oncology
- Basic familiarity with omics data analysis in R or Python is welcome but not required

- Ability to work independently and within an interdisciplinary team of clinicians, pathologists, and computational scientists
- Good command of written and spoken English; German is an advantage

We offer

- A fully funded position (75%, ~30 hours/week) with a current annual gross base salary of EUR 39,649.05 per the university collective agreement; this may increase based on relevant prior experience
- Participation in a translational research program bridging tumor microenvironment biology, innate immunity, and immunotherapy in one of the most aggressive prostate cancer subtypes
- Access to a rare, clinically deeply characterized cohort of primary NEPC patient samples and direct integration into the clinical Department of Urology
- Close collaboration with the lab's computational team and single-cell genomics partners at Medical University of Innsbruck, grounding every experiment in patient data
- Enrollment in a PhD program at Medical University of Innsbruck, e.g., Molecular and Cellular Basis of Diseases (MCBD) or Clinical Cancer Research program
- Strong support for publications, conference presentations, and the development of an independent scientific profile

How to apply

Please send your application, including a CV and a cover letter outlining your motivation and relevant experience, to Isabel Heidegger-Pircher (isabel-maria.heidegger@i-med.ac.at)