The Team:

Head of Department: T. Seufferlein


Additional Members of Thesis Advisory Committees:
Dr. Arnold (Freiburg), Prof. Borggreve (Gießen), Prof. Eilenrieder (Marburg), Prof. Ignatius (Ulm), Dr. Kaether (Jena), Prof. Seckl (London), Prof. de Vos (Sheffield)

Department of Internal Medicine I

Development and Maintenance of Malignant and Inflammatory Phenotypes in Gastrointestinal Diseases

Head: Thomas Seufferlein

At the Department of Internal Medicine I, the focus of our research addresses primarily key signaling pathways and principles of cell biology that initiate and maintain malignant transformation in gastrointestinal cancer. These signaling events are closely linked to embryonic development and stem cell biology. Our second focus is autoimmunity and immune responses in the gut, pancreas and the liver. We aim to identify and delineate molecular pathways responsible for early events in cancer development, the tumor host interaction as well as metastasis and disease progression. In this context, we use genetically engineered animal models and state-of-the-art techniques in cell biology and biochemistry in order to identify the contribution of subcellular compartmentalization as a regulatory principle in tumor biology. Projects in our department address angiogenesis, growth control, secretion, transcriptional regulation and epigenetics in cancer, migration and metastasis as well as the identification and targeting of tumor stem cells. We further develop vaccination strategies for the specific control of chronic Hepatitis-B virus (HBV) infection and autoimmune type 1 diabetes.
The findings of our research projects will be useful for elucidating the patho-mechanisms of gastrointestinal cancer, liver diseases and diabetes, and will be used to identify novel therapeutic strategies for these diseases. Besides these efforts in basic research, the Department of Internal Medicine I is the coordinating institution for many clinical multicenter studies addressing the prevention and treatment of gastrointestinal cancers.

Mouse Models of Cancer
- Pancreatic cancer, HCC
- Carcinogenic mechanisms
- Evaluation of therapeutic strategies

Autoimmunity
- Autoantigens
- DNA-based vaccination
- Murine diabetes models
- CD8 T-cells
- Regulatory T-cells

Cytoskeleton
- Intermediate filaments
- Resistance to treatment
- Disease related function
- Transformation

Embryonic Development and Stem Cells
- Pancreas Development
- Disease modelling
- Tissue engineering

Transcription and Epigenetics
- Notch Signalling in Development and Cancer
- Transcription complexes
- Histone marks

migration and Invasion
- Role of oncogenes
- Metastasis and protein kinases
- Regulation of EMT

Translational research
- Prognostic markers
- Predictive markers
- Identification of subgroups

Clinical trials
- IITs
- Phase I/II
- Phase III

Angiogenesis
- Novel angiogenic signals
- Function of oncogenes
- Response to treatment

Protein Transport
- Protein complexes at the TGN
- Vesicle shedding
- Apoptosis and cytokinesis
- Nucleo-cytoplasmic shuttling

Selected Publications:


