UniversitätsKlinikum Heidelberg

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External Seminar Speaker

Prof. Dr. Ferdinand le Noble
KIT (Karlsruhe Institute of Technology)
Zoologisches Institut
Zell- und Entwicklungsbiologie

Place: Auditorium, Medical Clinic (INF 410)

Date: Monday, January 22nd

Time: 6.00 pm

Therapeutic targeting of vascular development

Arteriogenesis, the outward remodeling of pre-existing small collateral arterial networks, occurs as a response to vascular occlusion or stenosis and importantly determines the clinical outcome of ischemic cardiovascular disease. Therapeutic arteriogenesis is considered of major clinical importance to treat the increasing population with complex occlusive artery diseases. Distinct differences exist between animal strains, and patients with regard to collateral development and response to angiogenic growth factors. This may result from differences in the vascular branching architecture, number of native collaterals, or efficiency in collateral maintenance. The interaction of hemodynamics and vascular guidance genes is of central importance herein. As evidenced by recent failures of therapeutic revascularization trials, a better understanding of angiogenesis and arteriogenesis is needed to support more rational clinical revascularization approaches. We use zebrafish and mouse model systems to unravel the genetic networks and corresponding vascular cell behaviors that contribute to vascular patterning and the formation of stable functional networks. Recent developments in the field of genome

wide transcriptiomic analysis, single cell sequencing, genetic engineering including tissue specific CrisprCas mutants in zebrafish, and detailed hemodynamic analyses now provide the opportunity to dissect out signaling cascades with high cellular resolution. Here we will present data showing the importance of angiocrine communication in patterning of vascular networks, and provide evidence showing how this knowledge can be used to promote arteriogenesis.

Host: **Prof. Dr. med. Johannes Backs**
Director of the Department Molecular Cardiology and Epigenetics
Department of Internal Medicine VIII
University of Heidelberg