



Special Lecture :

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„Non-coding RNAs in vascular disease detection and therapy “

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Lecture Hall H, 5:00 p.m. s.t.

Host: Katrin Eichler, 0511 532 5162



Abstract

Non-coding RNAs have been identified as essential maintaining factors in cardiovascular homeostasis. Our work aims at the development of novel diagnostic and therapeutic strategies using microRNAs and long non-coding RNAs (lncRNAs), in particular ‘natural antisense transcripts’ (NATs), to limit the burden of vascular diseases, such as abdominal aortic aneurysms as well as carotid stenosis and subsequent stroke. Using transcriptomic-profiling techniques on human diseased tissue samples, we have identified several miRNAs and NATs as novel crucial regulators of smooth muscle cell survival via targeting distinct growth factors, as well as tumor suppressor and cell cycle regulatory genes in the vascular system. We are using disease relevant experimental *in vivo* models (rodents and LDLR^{-/-} mini-pigs) to functionally assess how their modulation influences aneurysm progression and atherosclerotic plaque vulnerability. One focus of our studies is to utilize local delivery mechanisms for non-coding RNA modulators, such as drug eluting balloons and stents, to enhance the translational feasibility of our findings. Furthermore, we have access to unique human plasma material from patients with early and advanced forms of aneurysm disease, enabling us to investigate the biomarker value of non-coding RNAs in recognizing patients with acutely ruptured aneurysms, as well as predicting the future risk of rupture.