PhD Positions & Postdoctoral Positions
Tracking Cell Plasticity in the Cardiovascular System

The Feil Lab (Interfaculty Institute of Biochemistry, University of Tübingen, Germany) has openings for PhD students and postdoctoral fellows funded by the DFG, EU/BMBF and Eberle-Stiftung. We use state-of-the-art transgenic mouse and imaging technology to “watch” biochemical processes and cell behavior in real time in living tissues and mice. We are particularly interested in cell plasticity in the cardiovascular system and how it is regulated by the signaling molecule cGMP and cGMP-elevating drugs (e.g. Viagra®). The projects are based on recent discoveries in our lab and involve analyses at the whole organism, cellular and molecular level.

Project 1: Transdifferentiation in atherosclerosis
We showed that atherosclerotic plaques contain previously unknown macrophage-like cells that are derived by clonal growth and transdifferentiation of vascular smooth muscle cells (VSMCs).

Aim: Characterize VSMC-derived macrophage-like cells and their pathophysiological and therapeutic relevance in atherosclerosis and related diseases.

Methods: Mouse models of atherosclerosis; Cre/lox-switchable genetic cell tracking in vivo; fluorescence imaging; PET imaging; biochemical analysis of primary cells; FACS; RNAseq


Project 2: cGMP in cell growth and survival
The cGMP signaling axis turned out to promote the growth of multiple cell types in the context of cardiovascular disorders as well as cancer.

Aim: Dissect the mechanism of cGMP-regulated cell plasticity including regulation of VSMC transdifferentiation. We are also interested to characterize the effects of experimental and clinically used cGMP-elevating drugs (e.g. Viagra®) on the growth of vascular cells and tumor cells.

Methods: Mouse models of vascular disease; cGMP sensor mice for visualization of cGMP in real time; Cre/lox-based lineage tracing; growth monitoring of primary cells; biochemical analysis of cGMP signaling


Thunemann M.*, Wen L.*,..., de Wit C., Feil R. (2013). Transgenic mice for cGMP imaging. Circ Res 113, 365-371. [* contributed equally] [Abstract] [Article] [also featured "In This Issue"] [News Article]

**Project 3: cGMP & vascular mechanobiology**

Recently, we found that cGMP production in platelets is dramatically stimulated by shear stress and acts as a shear-dependent “brake” of thrombosis. This finding provides an exciting new perspective on mechanotransduction, i.e. how mechanical force is converted into biochemical information.

**Aim:** Identify the molecular players involved in mechanosensitive cGMP signaling. Evaluate its physiological and pathophysiological roles in platelets and other cells of the cardiovascular system.

**Methods:** Mouse models of thrombosis; cGMP sensor mice for real-time imaging of cGMP; functional analysis of platelets and other cardiovascular cells; biochemical characterization of signaling complexes


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**Your profile?** You should be interested to work at the interface of biochemistry and biomedicine, with a focus on cell signaling under native conditions. Specifically, you will use Cre/lox-assisted genetic approaches combined with live cell imaging to dissect the mechanisms that regulate cell plasticity in the cardiovascular system. **The ideal candidate would have experience in one or more of the following areas:** signal transduction, cGMP signaling, cardiovascular (patho)-physiology, mouse models of cardiovascular diseases, tumor biology, transgenic mice, Cre/lox system, optical imaging, intravital microscopy, PET imaging. Depending on your qualification, you will work as PhD student or as postdoc/junior group leader and perform research in the framework of an expanding cardiovascular/cGMP research community in Tübingen, Germany.

**Need more information?** For more information, please go to the Feil Lab Homepage (https://uni-tuebingen.de/en/10030)

**How to apply?** Please send your application by e-mail to Prof. Dr. Robert Feil (robert.feil@uni-tuebingen.de), Indicate whether you apply for a PhD or postdoc/junior group leader position, your preference for project 1-2-3, and names/e-mails of two referees.

Disabled candidates will be given preference over other equally qualified applicants. The University seeks to raise the number of women in research and teaching and therefore urges qualified women to apply.

**Application deadline:** 31 October 2018