

The University Heart Center Freiburg-Bad Krozingen is a highly-specialised center for heart, cardiovascular and circulatory diseases and enjoys an international reputation.

It is a modern academic and scientific center based both in Freiburg and Bad Krozingen with the following departments: The Department of Cardiovascular Surgery, The Departments of Cardiology and Angiology I and II, The Department of Congenital Heart Defects and Paediatric Cardiology and the Institute for Experimental Cardiovascular Medicine.

In the **Institute for Experimental Cardiovascular Medicine** in the Cell Biophysics Department there is an open position for

1 PhD student: Marie Curie Fellowship

Project Title: Characterization of cardiomyocyte-fibroblast interaction in atrial fibrillation (AF).

Objectives: AF leads to electrical and structural remodelling that contribute to the maintenance of the arrhythmia. Fibrosis is the hallmark of structural remodelling in AF, but little is known about how these cell types influence cardiomyocytes, and whether mechanical forces can modulate the involved processes. This project aims to study functional interaction between cardiomyocytes and fibroblasts obtained from atrial tissue of patients in sinus rhythm and AF, under conditions of controlled mechanical forces, and to simulate the results in computer models in order to find potential individualized therapeutic strategies

Expected Results: Electrical activity will be measured via voltage-clamp and with voltage-sensitive dyes in freshly isolated and co-cultured cardiomyocytes and fibroblasts. Cells will be cultured under conditions of controlled mechanical forces in order to assess differences between cells derived from SR and AF tissue. In addition, we will examine tissue slices from animal/human normorhythmic or fibrillating atria as a model for cardiomyocyte-fibroblast interaction in AF. AF-induced changes in gene expression will be analysed with qt-PCR; gene products of interest include ion channels, connexins, cytoskeletal proteins related to cell coupling.

Short stay abroad for planned collaborations: Madrid (Spain), optical mapping of cell cultures, patient's transcriptome analysis, clinical management in AF. **Leiden (Belgium),** drug effects on cell cultures with AF conditions.

We expect:

- self-motivated students who hold (or are about to complete) an excellent MSc in a discipline relevant to biomedical research, such as biophysics, bioengineering, physiology, cell biology
 - demonstrable hands-on expertise in at least one of the following areas: mechano-biology, molecular biology, electrophysiology, confocal/multiphoton microscopy
 - excellent communication skills in English (B2 level)
- scientific curiosity and the desire to actively shape your own research project

We offer

an outstanding scientific environment at the intersection of IEKM, Madrid University and the Biotech company NCARDIA in Belgium (all English-language-based); access to cutting-edge technologies and state-of-the-art infrastructure; highly personalized supervision at the forefront of integrative biomedical sciences; career support and transferable skills training as part of the SGBM student community; a diverse and vibrant environment in one of the most desirable places to live as a student in Europe. The salary is based on the University Hospital Trade Agreement of the Federal State Baden-Württemberg.

The position is available on a full-time contract for three years. Standard working language in all institutes is English.

For further information, you may contact Dr. Julia Verheyen via Julia.verheyen@universitaets-herzzentrum.de

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