

Challenging our understanding of a fundamental mechanism in vascular physiology

For decades, researchers, lecturers and textbooks divulged outdated and imprecise information on a physiologically important aspect of vascular function. This project aims to clear up this confusion, and ultimately re-write the textbooks.

A master thesis position is available at the Vascular Biology Research Group at the Department of Biomedical Sciences, University of Copenhagen. In our group, research is performed to help understand how arterial tone is regulated and to identify the molecular mechanisms that contribute to vascular diseases, such as hypertension.

Background

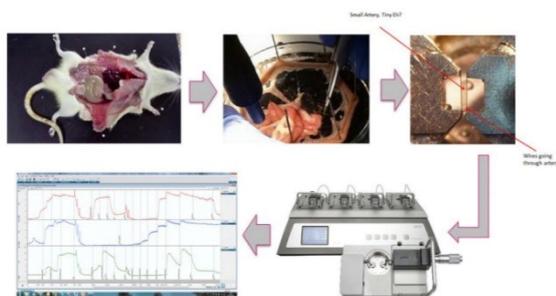
Blood vessels can contract and relax to control blood flow to particular organs and the body's blood pressure. Various relaxing and contracting factors control the diameter of the blood vessels by targeting the vascular smooth muscle cells found in the artery wall. Importantly, many cardiovascular diseases - such as strokes, heart attacks and heart failure - are often caused by the arterial smooth muscle no longer contracting and relaxing appropriately, often resulting in high blood pressure (hypertension). Our laboratory has recently discovered that the function of a physiologically important vasorelaxant mechanism is dependent on which vasoconstrictor mechanism it is opposing. This vasorelaxant mechanism is a fundamental pathway in vascular physiology and is attenuated in hypertension; however, we do not understand how different vasoconstrictors are able to regulate this pathway. This work will contribute to the identification of pathways and ion channels that are involved in the distinct response to this vasodilator, which has the potential to change the outdated "textbook" knowledge in this area.

Project description

In this project, you will have the opportunity to work with state-of-the-art techniques, starting with myography. For these experiments, we will take rat blood vessels and apply vasoconstrictors and vasodilators in presence of different pharmacological compounds to reveal the mechanisms and signaling pathways controlling vascular tone.

The student

You should be enthusiastic about research! We are looking for a Master student with a biomedical/medical background and an interest in the cardiovascular system. You will have the opportunity to direct your research and we encourage you to give suggestions for further extensions of the work. You will work in a motivated environment existing of an interdisciplinary and international research group where you will acquire many competences including scientific writing and presentation skills. The start date of the project is flexible.



Contact

Please contact Thomas Jepps (tjepps@sund.ku.dk) if you are interested or would like more information.

Work flow for myography experiments that investigate how blood vessels work.