

Position for PostDoc

Title of Project: real-time monitoring of both local cell function and global cardiac function

We offer

Two 1-year PostDoc positions within the interdisciplinary field of circulatory health (with a possibility for extension).

We ask

- You hold a PhD degree in organ perfusion or cardiac physiology.
- You have affinity with building a platform for cardiac long term perfusion and thrive in a multidisciplinary research environment. Proven by your publication track.
- Experience with reporting of scientific results to grant agencies
- Willingness to apply for extra funding

Department

Department of Cardio Thoracic Surgery, Division Heart & Lungs, University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands

Description

For patients with end-stage cardiac failure, the best treatment option is to receive a heart transplant. Unfortunately, there is a global shortage of donor organs and there are limitations to the use of the organs that are available. Indeed, currently, a donor heart is stored on ice and kept alive *ex vivo* for only 4-6 hours. *Ex vivo* perfusion of the heart has several potential advantages, like extending the storage time without a negative effect on function, thereby offering enormous opportunities for extending the current transplantation program to more patients. Yet, *ex vivo* organ improvement and options for storage time extension need to be developed for the human heart. Once we are able to extend the survival time, it also becomes possible to perform *ex vivo* valvular repair, arterial regeneration or replacement, and induction of cardiomyocyte division. Ongoing monitoring of cardiac function can be performed to evaluate temporal changes and define the optimal interval for transplantation. The ultimate goal is to repair the human heart *ex vivo* and return it to the patient after approximately one week of mechanical support and prolonged narcosis. In case of failure of cardiac repair, alternative therapy becomes available through the development of the total artificial heart. Eventually, and in order to prevent the necessity of *ex vivo* cardiac repair, all obtained knowledge can be exploited to try to repair the heart - or components thereof - *in vivo*.

As part of the project, you will be hired to study the current decline in cardiac function *ex vivo*. You will contribute to the generation of a robotic platform for cardiac perfusion and preservation. and work on continuous improvement of the system. The protocol to harvest hearts and restart the organs in the lab is well established. In addition, real-time protocols to monitor cardiac function will be developed based on the aforementioned coupling between molecular and functional state.

This project is part of RegMed XB Cardiovascular Moonshot and is supervised by dr Niels van der Kaaij and Prof Joost Sluijter. Prof Pieter A. Doevendans

Requirements

You have a PhD in in technical medicine or organ physiology/perfusion

You have affinity with cardiac physiology, organ perfusion and technical innovation and thrive in a dynamic and multidisciplinary research environment. Proven by the publication track.

You are motivated, creative and hard-working, willing to travel between institutes.

Contact person & more information

Pieter A. Doevendans: p.doevendans@umcutrecht.nl

Joost Sluiter: j.sluiter@umcutrecht.nl