Position for PostDoc

Title of Project: Transcriptomics and proteomics guided real-time monitoring of cardiac function

We offer
A 1-year PostDoc position within the interdisciplinary field of circulatory health (with a possibility for an extension).

We ask
- You hold a PhD degree in bioinformatics, cellular, molecular biology, biomedical sciences or in a related area.
- You have experience with computational/bioinformatic data analysis proven by your publication track.
- You have affinity with performing -omics (transcriptomics, proteomics etc) and molecular biology techniques 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 Cardiology, 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 (CARMAT). 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 apply -omics (transcriptomics, proteomics, metabolomics and functional measurements) to study temporal changes in the perfused porcine heart to understand and define the changes undergoing in artificially perfused heart over prolonged time period. The protocol to harvest hearts and restart the organs in the lab is well established. The molecular changes will be coupled to functional alterations including conduction and contractility. Results will be used to improve the perfusion concoctions.

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 prof. Folkert Asselbergs and Dr. Michal Mokry.

Requirements
You have a PhD in in cellular, molecular biology, biomedical sciences or in a related area.

You have experience with computational/bioinformatic data analysis proven by your publication track.

You have affinity with omics (transcriptomics, protomics etc), understand molecular biology techniques and principles, and thrive in a dynamic and multidisciplinary research environment. Proven by the publication track.

You are motivated, creative and hard-working.

Contact person & more information
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