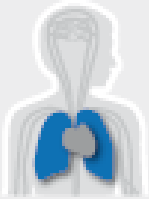
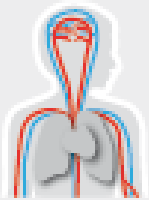


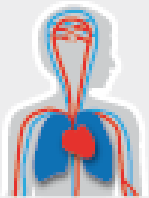
Heart Failure & Arrhythmias



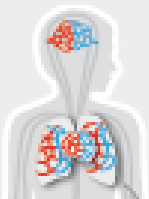
Pulmonary Hypertension
& Thrombosis



Atherosclerosis
& Ischemic Syndromes



Diabetes & Metabolism



Microcirculation

Focus of research group (I)

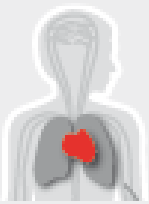
Name PI: Pieter Koolwijk and Victor van Hinsbergh

Department of Physiology, Amsterdam UMC, location VUMC

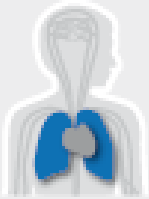
Size of research group: 5

Current mission, vision and aims

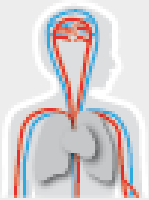
**To investigate the effect of cardiac
microvascular endothelial cells on
cardiomyocyte contractile properties.**



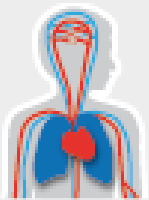
Heart Failure & Arrhythmias



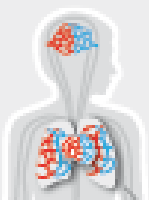
Pulmonary Hypertension
& Thrombosis



Atherosclerosis
& Ischemic Syndromes



Diabetes & Metabolism



Microcirculation

Focus of research group (II)

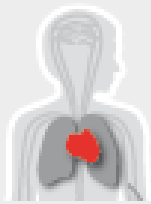
Current expertise

- Vascular aspects of Tissue Engineering
- Human microvascular endothelial cells
- Angiogenesis (in vitro)
- (longterm) Hypoxia/normoxia/hyperoxia and metabolism
- 3D in vitro microvessel flow model
- **Interaction cardiac MVEC and cardiomyocytes**

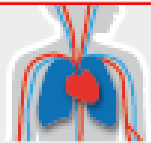
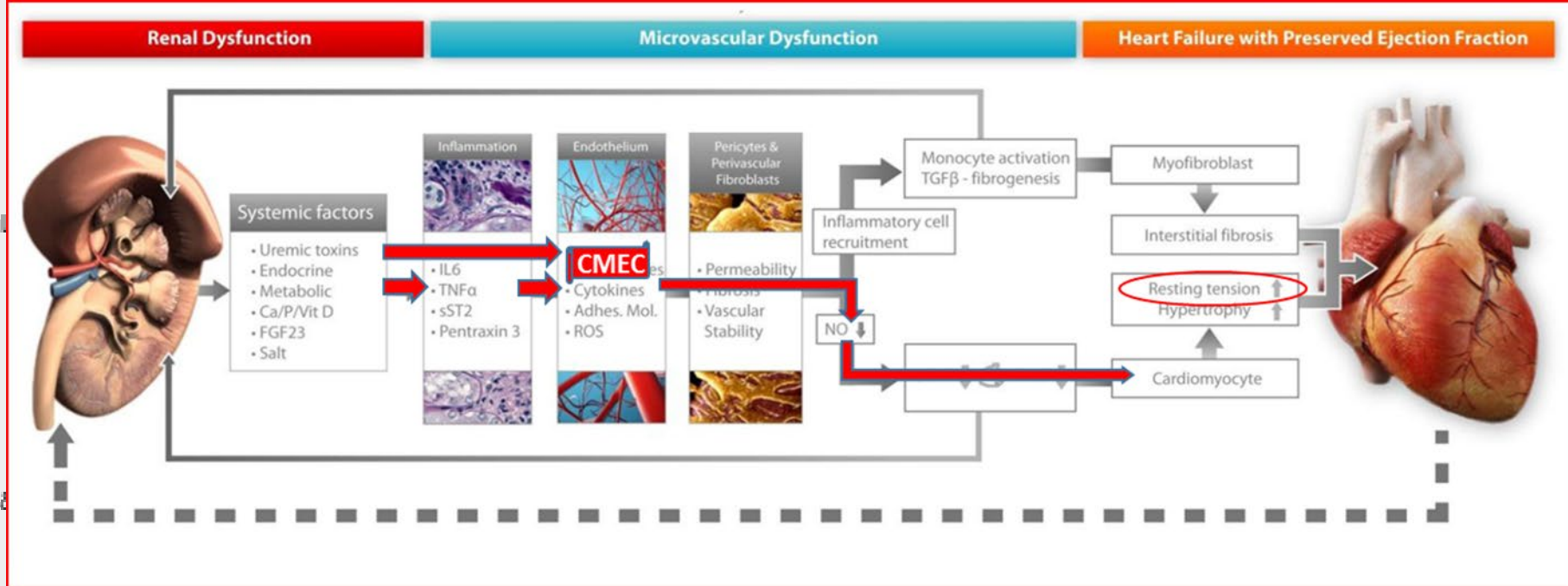
Current funding

- **RECONNECT-CVON**: Effect of renal drivers on the microvasculature of the heart and the development of HFpEF.

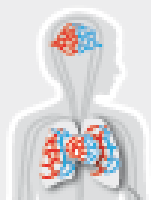
Schematic representation of the proposed relation between renal dysfunction and HFpEF



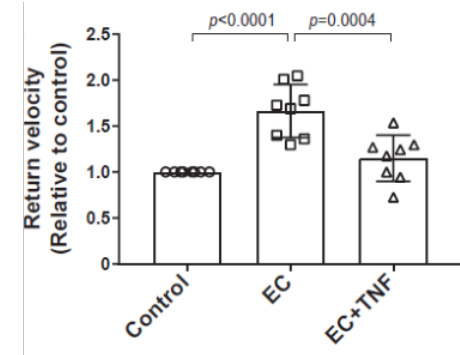
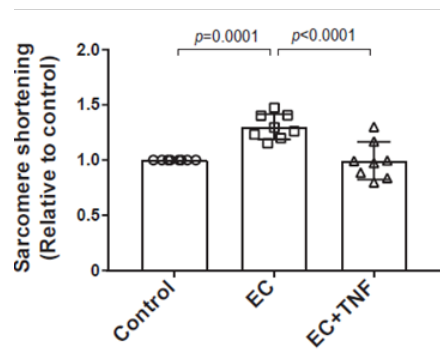
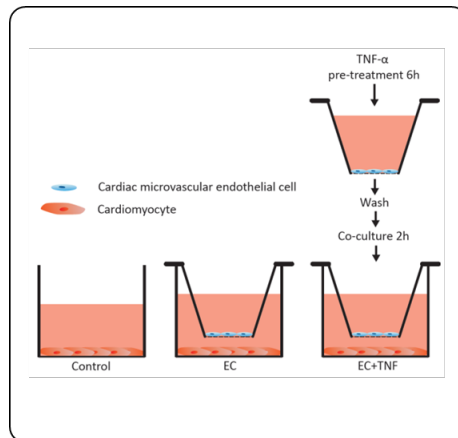
Heart Failure & Arrhythmias

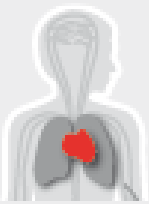


Diabetes & Metabolism

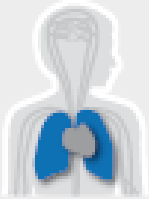


Microcirculation

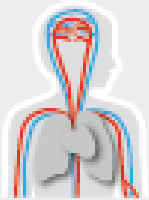




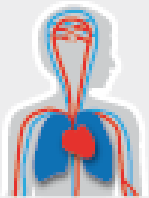
Heart Failure & Arrhythmias



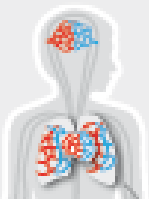
Pulmonary Hypertension
& Thrombosis



Atherosclerosis
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Diabetes & Metabolism



Microcirculation

Future plans

Short term (1-2 year) plan

Plan:

- unravel mechanism(s) of the effect of endothelial cells on cardiomyocyte function(s).
- Further development of the 3D microvessel flow model

Necessary infrastructure:

- Present within the department of Physiology

Long term (>2 year) plan

Plan:

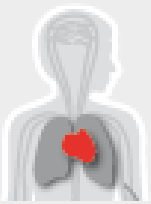
- Study the interaction between endothelial cells and tissue cells (SMC, cardiomyocytes,) in the 3D microvessel flow model.

Necessary infrastructure:

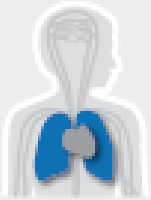
- 3D quantification system of the 3D microvessel flow model

Collaboration in ACS

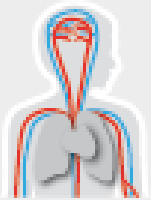
- Mark Vervloet – Nephrology, VUMC (hypoxia and FGF-23 expression)
- Jolanda van der Velden / Walter Paulus – Physiology, VUMC (RECONNECT)
- Coert Zuurbier - Department Anesthesiology, AMC (Empagliflozin)
- Michiel Helmes - Cytocypher BV (CM contractility measurements)



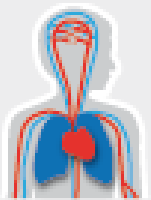
Heart Failure & Arrhythmias



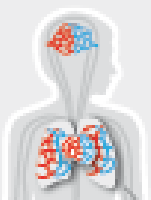
Pulmonary Hypertension
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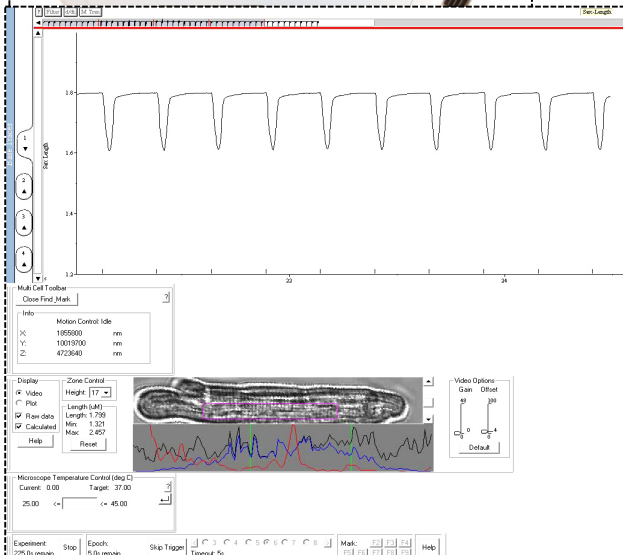
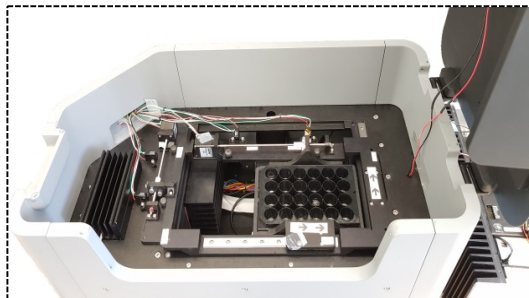
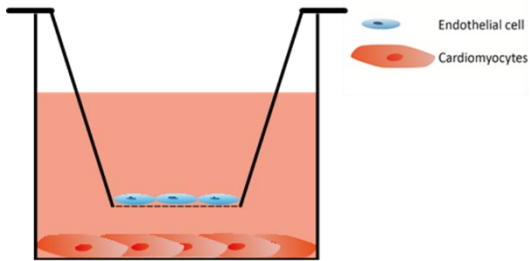


Diabetes & Metabolism



Microcirculation

Cardiomyocyte contractile profile measurement



Fluorescence area
 Region of interest
 Previously selected cell

Region of interest

Stage Z Control

Manual move Z Pos.