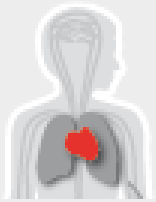
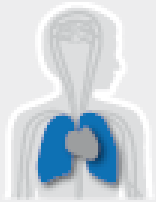


Heart Failure & Arrhythmias



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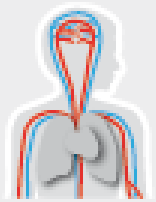
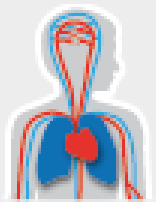
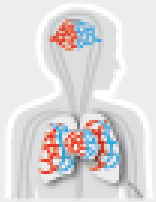


Atherosclerosis & Ischemic Syndromes



Diabetes & Metabolism



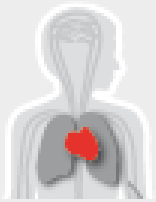
Microcirculation

# 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 interaction of endothelial cells and tissue cells in de 3D microvessel flow system at physiological conditions.**



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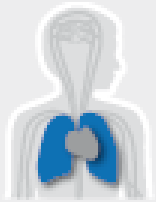

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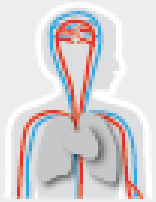

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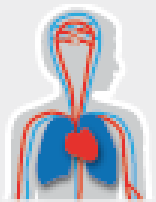

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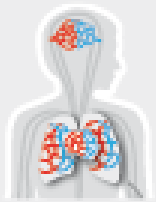


Microcirculation

# Focus of research group (II)

**Current expertise**

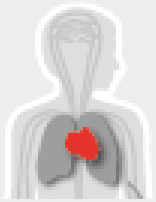
- Vascular aspects of Tissue Engineering
  - Human microvascular endothelial cells
  - Angiogenesis models (in vitro)
  - 3D in vitro microvessel flow model
- (longterm) Hypoxia/normoxia/hyperoxia and metabolism
- Interaction cardiac MVEC and cardiomyocytes

**Current funding**

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

# Snakken naar verkoeling in China


In de zwembaden in Suining, in de Chinese provincie Sichuan, is dezer dagen geen plekje meer onbezet. Vanwege de uitzonderlijke hitte – de temperatuur steeg zondag in het gebied naar 37 graden – zoeken duizenden bewoners van Suining massaal hun toevlucht tot het water. Foto Reuters



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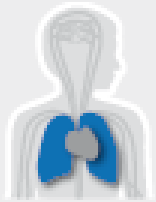

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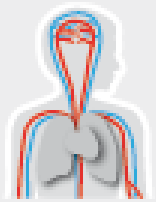

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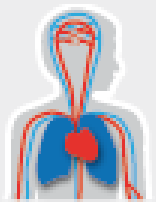
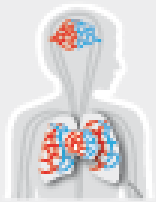
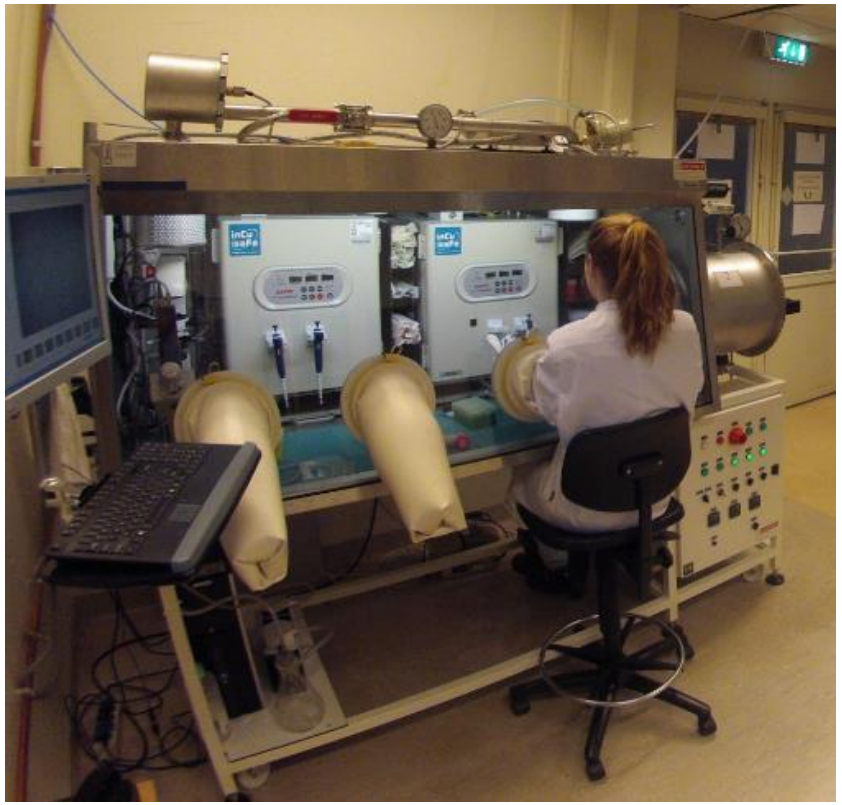


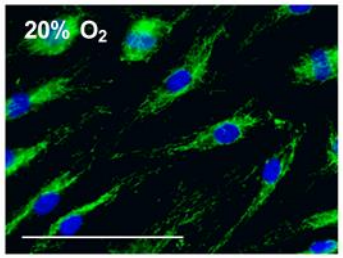
Diabetes & Metabolism

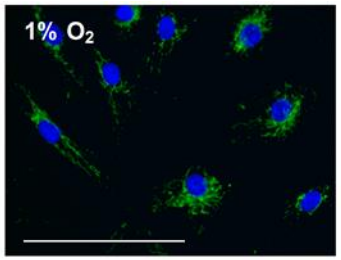


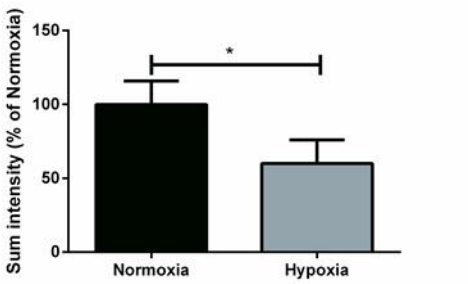
Microcirculation

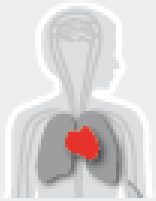
# Study effect of hypoxia in endothelial cells







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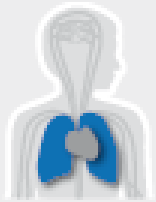

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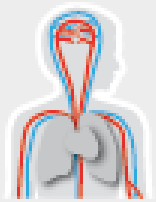

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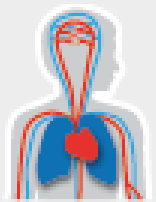

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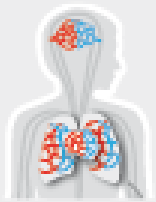

Microcirculation

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**Current expertise**

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  - Angiogenesis (in vitro)
  - 3D in vitro microvessel flow model
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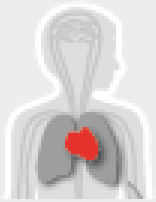
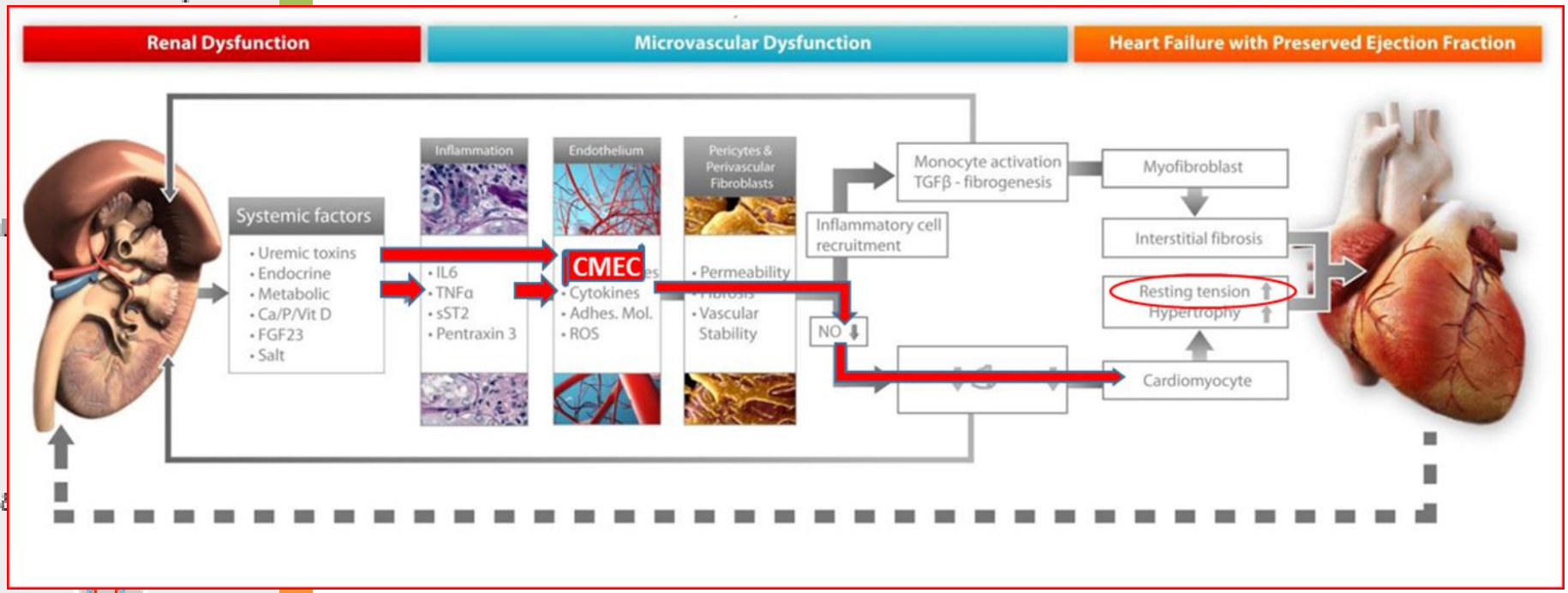
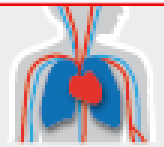


Heart Failure & Arrhythmias

# Schematic representation of the proposed relation between renal dysfunction and HFpEF

reconnect



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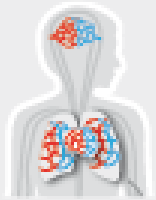
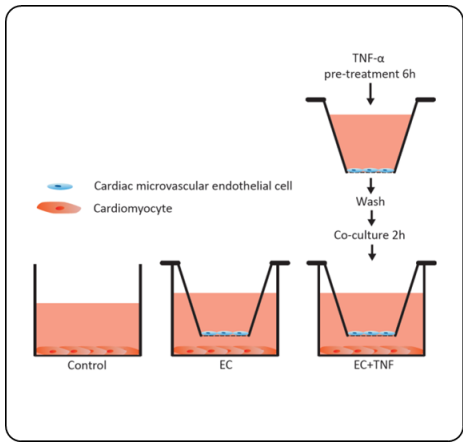
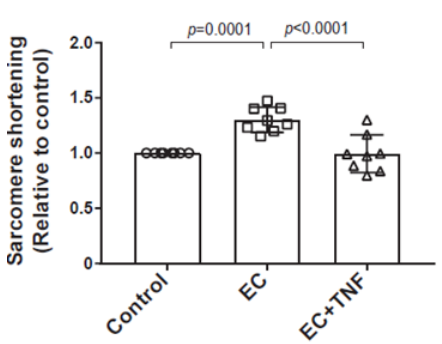
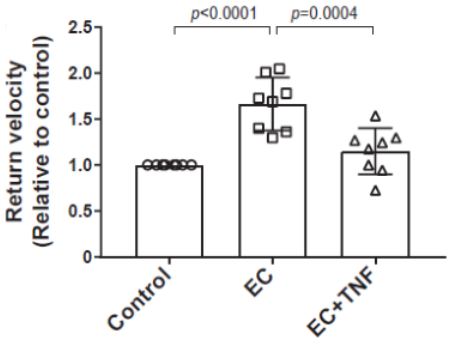


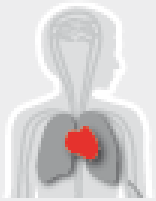
Microcirculation




**Postdoc: Rio Juni**



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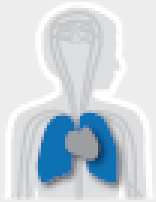

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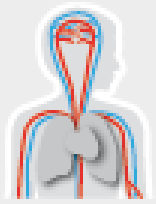

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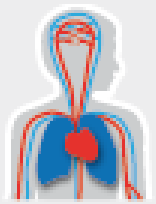

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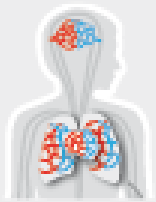


Microcirculation

# Future plans

## Short term (1-2 year) plan

Plan:

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

Necessary infrastructure:

- Present within the department of Physiology

## Long term (>2 year) plan

Plan:

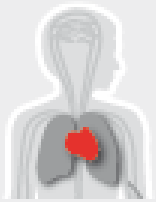
- Study the interaction between endothelial cells and tissue cells (SMC, cardiomyocytes, ….. ) in the 3D microvessel flow model.

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 (RECONNECT)
- Elga de Vries / Ruud Fontijn – MCBI, VUMC (3D in vitro vessels)
- Rob Wüst - Biomedical Engineering and Physics, AMC (hypoxia and metabolism)



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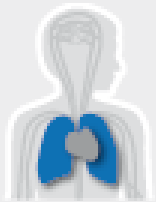

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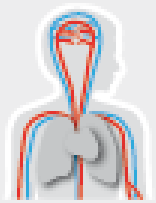

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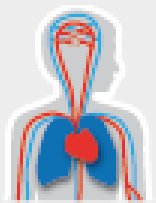

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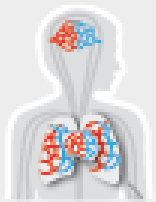
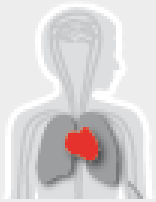


Microcirculation



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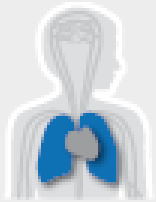

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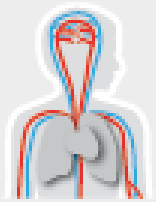

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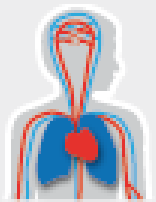

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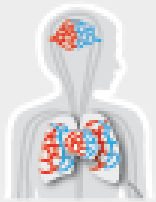

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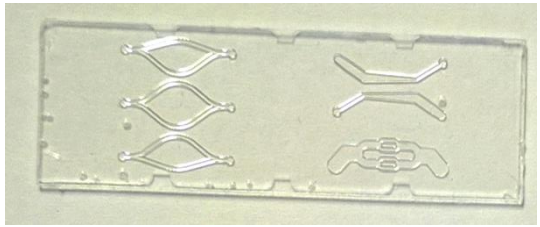
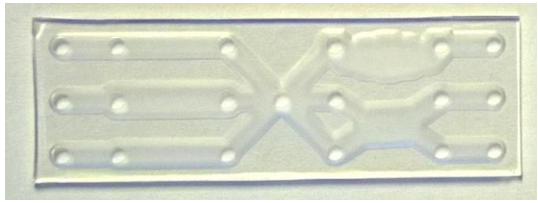
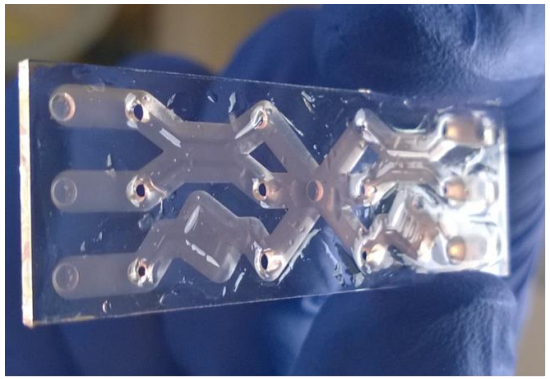
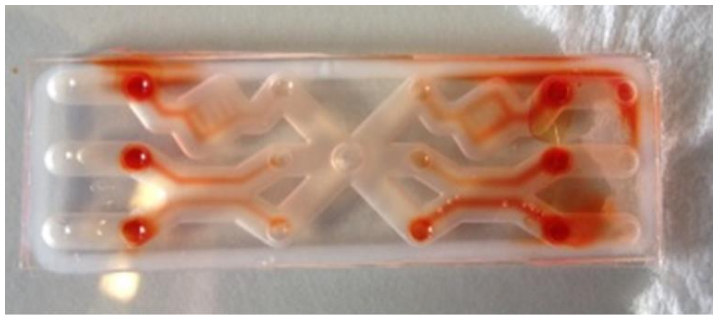






Structures in collagen



Perfusion through vessels