Focus of research group (I)

Name PI: Charissa van den Brom
Department, UMC: Anesthesiology, VUmc
Size of research group: 4 PhD students, 1 research technician

Current mission & vision: Targeting microvascular leakage to prevent/restore microcirculatory perfusion disturbances in critical illness to prevent organ failure

Aims:
1) Unravel molecular mechanisms involved in microvascular leakage
2) Target these mechanisms to restore microcirculatory perfusion
Focus of research group (II)

Current expertise:

**Preclinical**
- Animal models: cardiopulmonary bypass (rat), hemorrhagic shock (rat, mouse), Tie2 knockdown mouse line
- Intubation, mechanical ventilation, venous and arterial lines (continuous registration MAP, CVP, HR and temperature)
- Intravital microscopy of cremaster (rat, mouse)
- Contrast enhanced ultrasonography of heart and kidney (rat, mouse)
- Two-photon microscopy for renal perfusion/leakage (rat, mouse)
- Evans blue dye leakage
- In vitro endothelial barrier measurements in human endothelial cells

**Clinical**
- Patients undergoing cardiac surgery or following hemorrhagic shock
- Side-stream Dark Field imaging (sublingual capillary bed)
- Contrast enhanced ultrasonography (heart, kidney)
- Near-infrared spectroscopy (brain)
- Hyperspectral imaging (kidney)

Current funding:
European Society for Intensive Care Medicine (ESICM), Dutch Heart foundation (Dekker), Dutch Society for Anaesthesiology (NvA), European Society for Anaesthesia (ESA)
Future plans

Short term (1-2 year) plan
Plan: Optimize techniques to determine disturbances in perfusion and oxygenation of vital organs

Necessary infrastructure:

Long term (>2 year) plan
Plan: Targeting microvascular leakage to prevent/restore microcirculatory perfusion disturbances in critically ill patients

Necessary infrastructure:

Collaboration in ACS
- AMC: ICU (Prof Juffermans)
- Vumc: physiology (Prof Hordijk, Dr Musters), nephrology (Dr Vervloet), cardiothoracic surgery (Dr Vonk), ICU (Dr Elbers)
- Sanquin (Dr van Buul)