Internship project @ Biomedical Engineering and physics department, Amsterdam

* NL/EN
* 6-9(+) months
* Own working space at the department (Amsterdam AUMC, location AMC)
* Interdisciplinary department
* React before 1st of February 2023!!!

**Who:**

* Biomedical science student (master) or equivalent

**Title:**

Human and rat skin: Vascular and neurological differences

**Project goal:**

The goal of this project is to image the vascular network in rat skin and human skin through confocal microscopy and automated cryomicrotome imaging and quantify differences in the skin morphology, vascular network properties, nerve fiber density, collagen and elastin composition, and other properties of the skin.

You will learn tissue preparation of ex vivo material, cryosectioning, multiplex immunofluorescence, confocal imaging, analysis in ImageJ/IMARIS, and project management.

**Background:**

Pulsed Dye laser (PDL) therapy has been shown to be a successful tool to improve psoriasis in humans. However, the mechanisms of thermal destruction remain unclear. Pulsed dye laser therapy consists of the emission of a 585 or 595nm wavelength that is absorbed by the (oxy)hemoglobin in the red blood cells within the blood vessels. The absorption of this light is converted into heat, but the maximal temperatures are not easily determined. Therefore, we are building a mathematical model of the vasculature in the skin so we can translate the vasculature into an in-silico environment where we can perform simulations of the laser and estimate temperatures within the blood vessels. However, one major problem is that we are conducting part of this work on rat skin, and the other part on human skin. For this research to be clinically applicable, it is the main interest to have good translational knowledge of how information on rat skin relates to human skin. Your role will be to close the gap between animal and human data on the skin. This is not only relevant for our project, but also the scientific community in general, as many studies are focused on the health of human individuals whereas data is retrieved from animal studies.

**Supervision:**

You will have a daily supervisor (PhD student) with weekly meetings and a senior researcher for other questions.

If you are interested, please contact Meagan Doppegieter; [m.doppegieter@amsterdamumc.nl](mailto:m.doppegieter@amsterdamumc.nl).