

Master internship:

The crosstalk between reactive oxygen species and endoplasmic reticulum stress in podocytes

Department: Pediatric Nephrology

Project duration: At least 6 months

Project starts: End of November (negotiable)

Background: Podocyte injury is a hallmark of idiopathic nephrotic syndrome (iNS), which is characterized by proteinuria, hypoalbuminemia, and oedema. Although the exact molecular mechanism of NS remains elusive, it is assumed that NS results from diverse pathogenic events leading to podocyte injury, which is characterized by podocyte foot process effacement and structural changes to the slit diaphragm as well as the actin cytoskeleton (Eddy A et al. Lancet 2003). Various studies have shown that both oxidative stress (reactive oxygen species (ROS)) and endoplasmic reticulum (ER) stress are associated with podocyte injury and podocyte loss. Recently, production of ROS has been reported to induce ER stress. There is some evidence for crosstalk between oxidative stress and ER stress. However, the molecular mechanism by which the crosstalk between ROS and ER stress may be evoked in podocytes remains largely elusive (Cybulsky A Kid Int 2010).

Student project: The aim of this project is to elucidate the molecular mechanism by which the crosstalk between ROS and ER stress in podocytes is evoked. You will use human conditionally immortalized podocytes and iNS patient-derived plasma to unravel the molecular mechanism by which crosstalk between ROS and ER stress occurs.

Techniques:

- Cell culture
- Primer design
- qPCR
- Western blot
- Enzyme activity assay
- Immunofluorescence imaging

Requirements: We are looking for a motivated MSc who learns quickly and can work independently. We offer experience in molecular biology techniques, possibility to get an in depth knowledge of renal diseases, possibility to expand your network. The applicants should have a biology related background such as Molecular Biology, Medical Biology, Biomedical Sciences, etc. Experience with cell culture, qPCR and/or western blot is an advantage but not necessary.

To apply please send your CV and a short motivation letter to Susan Veissi

(susan.veissi@radboudumc.nl)