

Master Thesis Position

Lab of Prof. Burkhard Becher, Institute of Experimental Immunology, University of Zurich

Start: as soon as possible, duration: 6 months – 1 year

Supervisor: Emma Troesch, PharmD (PhD student)

Research Topic: Comprehensive characterization of GM-CSF expression and function during pregnancy

Healthy pregnancy relies on uterine tissue remodelling and immune adaptations supporting implantation, placentation, and fetal growth. Cytokine mediated communication is central to this process. Among these cytokines, granulocyte macrophage colony stimulating factor (GM-CSF) is an important regulator of pregnancy outcomes. The absence of GM-CSF in mice leads to increased fetal resorption, reduced fetal growth and postnatal survival. In vitro, GM-CSF facilitates trophoblast and blastocyst development, as well as live birth rates in clinical studies. However, the specific mechanisms by which GM-CSF supports a healthy pregnancy and its specific role in shaping immune responses in the uterine or decidual microenvironment remain unclear.

Aims:

- validating preliminary data of GM-CSF producers during the estrous cycle using the *Frog^{Ai14}* mouse model, compare it to menstrual cycle in human with public available single cell data set
- Validating alterations in the decidua immune cell compartments in *Csf2^{-/-}* dams using flow cytometry and histology
- characterize vascular/ remodelling changes in the placenta of *Csf2^{-/-}* mice using qPCR and histology

Requirements:

- Strong interest in immunology
- Interest in working with mouse models
- Experience with flow cytometry and images analysis is advantageous (but not necessary).

Application:

Please send your CV and a short description of your motivation to:

troesch@immunology.uzh.ch