

2x Positions for Master Thesis available

Molecular Medicine / Molecular Life Sciences / Biochemistry / Biology

Topics

- **Functions of human immune cells in an optimized humanized mouse model.**
- **Cross-species complementation of osteoclast formation**

The lab of Prof. Claudia Waskow at Leibniz Institute on Aging - Fritz Lipmann Institute (FLI)/Jena University offers **two positions** for Master students in the field of Immunology/ Hematopoiesis/ Inflammation. Please find more information on what we do on our homepage www.WaskowLab.com

Background

Position 1: Pancreatic islet transplantation is a relevant alternative for type I diabetes treatment but the low availability of human islets limits allotransplantation strategies. Based on the molecular similarity of porcine and human insulin, porcine islet xenotransplantation represents a pertinent substitute for the clinical treatment of type I diabetes. However, it remains to control the first and the main cause of post transplantation islet loss and rejection: instant blood mediated rejection (IBMIR) mediated by innate immune system components. The Master student will participate in the characterization of the hallmarks of human IBMIR reaction following pig islets transplantation into optimized humanized mice (NOD/SCID *Il2rg*^{-/-} *Kit*^{W41/W41}, NSGW41). NSGW41 mice were developed in our laboratory and will be transplanted with human hematopoietic stem cells and show continuous human blood cell formation *in vivo* before xenogenic islet transplantation.

Position 2: Osteoclasts are multinucleated specialized macrophages cells that are critical for bone remodeling by dissolving bone. Osteoclast dysfunction can lead to osteopetrosis or osteoporosis, indications associated with severe deformations and/or alterations in bone stability. We could recently show that osteoclasts are of embryonic origin and are regenerated via the fusion with adult bone marrow-derived myeloid cells *in vivo*. To test whether this rejuvenation mechanism can be exploited for the treatment of disease we aim at understanding whether the turn-over mechanism is compatible across the human – mouse species barrier, and whether the genetic material provided by the human adult fusion partner is sufficient for the rescue of a genetic defect in mouse osteoclasts. The master student will participate in characterization of human and mouse myeloid cells osteoclast potential *in vitro* and *in vivo*.

Requirements

- Basic understanding of flow cytometry, histological staining and microscopy
- Disposition to work with mice as experimental animal models

We offer

- Training in flow cytometry and cell sorting, cell culture, differentiation assays, functional analysis
- Training in histology and imaging and quantification thereof
- Training in the dissection of mice, and the preparation of cell suspensions and histological samples

Contact

Please send your complete application including a short letter of interest and a recent CV in pdf-format to Prof. Claudia Waskow, (claudia.waskow@uni-jena.de / Tel. +49 3641 656707)

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