

Project Summary

John Hansen Research Grant 2023

The role of recirculating Tregs in endogenous thymic regeneration

Andri Leo Lemarquis, MD, PhD

Memorial Sloan Kettering Cancer Center, USA

T cells are a major component of adaptive immunity and are needed for proper immune reconstitution after hematopoietic cell transplantation (HCT). The thymus is an organ in the mediastinal cavity that's needed for normal T cell development. The thymus is extremely sensitive to injury and transplantation related thymic toxicity but does harbor considerable endogenous regenerative capacity. Post thymic injury contributes to morbidity and mortality due to immunosuppression, leading to infections and malignant relapse in the post transplantation period. We hypothesize that by targeting the pathways and cells responsible for thymic regeneration we can potentiate post transplantation immune reconstitution and patient care. While Tregs are known to play an important role in promoting tissue regeneration in multiple organs, their regenerative role is not known in the thymus. Our aim is to use both murine models of injury and thymic regeneration and human thymic samples to understand the role of recirculating thymic Tregs in endogenous thymic regeneration and develop strategies to use them to boost immune reconstitution in the context of HCT.