Master Thesis – Developing Patient-Derived 3D Skin Models for Therapeutic Evaluation in Systemic Sclerosis

Short abstract

We are looking for a motivated master's student to join a translational project focused on developing patient-derived 3D skin models to study drug-response signatures in systemic sclerosis (SSc). SSc is a chronic autoimmune disease that causes fibrosis and vascular damage in the skin and internal organs. No effective disease-modifying therapies are currently available. Patient-derived models that can be used for drug screening and mechanistic studies are therefore urgently needed to better understand disease mechanisms and treatment responses.

Project Description

This project focuses on developing and optimizing 3D skin models from cells isolated from patient biopsies. The models will consist of stratified dermal and epidermal layers and, ideally, will incorporate vascular and immune components to better reflect the complexity of SSc skin. The student will be involved in cell isolation and expansion and in the assembly of the 3D skin equivalents. The resulting tissues will be characterized and optimized using a range of standard molecular biology techniques. Once established, the models will be used to evaluate therapeutic responses in drug screening experiments and to investigate disease mechanisms.

Project Goals

The project has three main goals: (1) Assemble and characterize 3D skin models from different donors at different stages of the disease. (2) Optimize the isolation and expansion of endothelial cells and/or immune cells and their incorporation into the model. (3) Study how the model responds to known stimuli.

Timing and location

The project lasts a **minimum of 6 months, ideally 12 months**. It can start **no earlier than February 2027 and no later than September 2027**. The project is carried out on site at:

Center of Experimental Rheumatology (CER)
University Hospital Zurich
Wagistrasse 14
8952 Schlieren, Switzerland

Contact Details

maryam.asadikorayem@uzh.ch,
Maryam Asadikorayem, PhD