Master's Thesis Project in Precision Cancer Immunology – CAR T Cell Therapy (9-12 months)

Dissecting the suppressive cell networks shaping response in CD19 CAR T cell treated B cell lymphoma patients

Group of Dr. med. Stefanie Kreutmair (UZH/ USZ)

The project

CD19-directed Chimeric Antigen Receptor (CAR) T cell therapy has transformed the treatment of relapsed/refractory B cell lymphoma, yet clinical outcomes remain heterogeneous and a considerable fraction of patients do not achieve durable remission. How the patient's immune landscape, comprising CAR positive T cells and CARnegative immune cells, shapes response and failure remains poorly understood. Our work builds on longitudinal high-dimensional single-cell flow cytometry data from independent patient cohorts, combined with clinical and in vitro data, with validation in a prospective trial cohort.

The candidate will be able to learn wet lab-based techniques (CAR T cell generation and more) and dry lab-based techniques (e.g. computational analysis of spectral flow cytometry).

The overarching goal is to uncover predictive immune signatures and actionable targets that can inform patient stratification and combination strategies to improve the outcome of CAR T cell therapy. The suggested project will include to

- **map multicellular immune programs** in responders and non-responders
- **identify suppressive populations and soluble factors** associated with CAR T cell therapy failure
- **mechanistically dissect suppressive mediators** through functional validation assays, e.g. co-culture and killing assays.

Your profile

- Master's student in Biomedicine, Biology, Immunology, Biochemistry, Bioinformatics, Medicine or a related field
- Genuine interest in translational and basic cancer immunology and systems immunology
- High motivation and collaborative working style
- Experience with flow cytometry, cell culture, immunological assays and/or programming (R/Python) is a plus but not a must (candidates with a wet-lab or dry-lab focus are both encouraged to apply)

We offer:

- Translational research project linking basic immunological and clinical research, with close mentorship and guidance throughout your project
- A highly dynamic young and international team in a thriving research environment in the Institute of Experimental Immunology at the University Zurich, linked to the University Hospital Zurich
- Cutting-edge equipment (spectral flow cytometer etc.) and single-cell and computational pipelines
- Weekly group meetings, one to one meetings, journal flow, seminars etc

Application

Please apply to kreutmair@immunology.uzh.ch and describe your research interests and fit for the project (max 1 page). Please also include your CV and academic transcripts.