



August 2023

Master of Science Thesis Position in Developmental Haematopoiesis

Duration:

9-12 months with a flexible start date

Location:

Laboratory of Dr. Nina Schmolka, Institute of Experimental Immunology, University Zurich,
Supervisor: Dr. Nina Schmolka

Research Topic:

Unraveling the transcriptional control during early blood lineage commitment

Project aims:

Haematopoiesis is a tightly coordinated process that forms and maintains all blood cells. Intriguingly, haematopoietic differentiation during embryonic development is distinct from adult haematopoiesis and while molecular mechanisms in adult haematopoiesis have been extensively catalogued, the processes regulating early lineage-restricted blood development remain largely unexplored.

We investigate the contribution of transcriptional and chromatin-based mechanisms during early haematopoietic differentiation. Towards this, we combine a mouse embryonic stem cell-based differentiation model that closely recapitulates embryonic blood development with large-scale, targeted CRISPR-Cas9 screens, in order to identify the transcription factors and chromatin-regulators essential for lineage choice during early haematopoiesis. In this project we would like to functionally characterize novel transcription factors using timely controlled knock-out strategies (based on CRISPR-Cas9 and shRNA technologies) in combination with genome-wide binding analysis. We aim to understand the impact of a selected group of transcription factors in the haematopoietic differentiation trajectory.

Techniques:

mouse embryonic stem cell culture, *in vitro* haematopoietic differentiation, chromatin immunoprecipitation and Cut&Run, genetic manipulations employing CRISPR-Cas9 and shRNA KD

We offer:

- Exciting research project addressing relevant questions in the field of developmental haematopoiesis by making use of cutting-edge research technologies.
- Supportive environment with regular meetings and the opportunity to gain experience in presenting data.

Requirements:

- High intrinsic motivation and hands-on attitude
- Good communication skills and fluency in English

If interested, please send your application including a CV with a brief statement of research experiences to: nina.schmolka@uzh.ch