

Master Thesis Position – Arnold Lab, University of Zurich

Duration: 6-12 Months (start: flexible, as soon as possible)

Supervisor: James King (Post-doc) and Daniel Crepaz (PhD student)

Research Topic: The impact of inflammation on eosinophil function and homeostasis

In the Arnold lab, our main interest is eosinophils. Eosinophils are granulocytes that are key in protecting the host from pathogens and supporting tissue homeostasis. However, these cells are also implicated in multiple inflammatory diseases and are a key target to treat disease. In the lab we investigate how eosinophil responses are key to health and disease, and how this can be targeted to treat disease pathology. If you are interested in the immune system and would like to investigate the interesting roles that eosinophils play, then this is a promising project to explore for a master's thesis.

Developing in the bone marrow, circulating in the blood, and then entering tissues such as the lungs and the gastrointestinal (GI) tract, eosinophils are present throughout the body and accumulate at sites of inflammation. Interestingly, the function of eosinophils is tissue-specific, adapting to the local environment that they are present in. This adaptability highlights their significant plasticity that can be driven by homeostatic or inflammatory signals present in the specific tissue (e.g. microbiota in the gut, specialized stromal cells in the lungs). Here, we use a combination of techniques to explore what signals drive eosinophil specialization and how inflammation (allergy, infection) changes eosinophil responses. Additionally, we investigate eosinophil-intrinsic adaptations (metabolism, ROS production, epigenetics) that also modify eosinophil responses. By identifying mechanism that can condition the eosinophil response, we can identify new targets to inhibit inflammatory eosinophil responses to alleviate disease severity.

Aims:

- Characterization of eosinophil phenotypes in different tissues in healthy and inflammatory states (Spectral flow cytometry, PCR)
- Identify signals that could drive tissue-specific eosinophil adaptation (In vitro co-culture)
- Use blocking antibodies or inhibitors to block inflammatory eosinophil responses

We offer:

- Becoming part of an exciting research project that aims to promote research independence and individuality with opportunities to add your own creativity and ideas to the project
- Joining a dynamic young and international team with dedicated supervision that will provide personal scientific development
- Training in/ Application of cutting-edge methods (Spectral flow cytometry, scRNAseq etc.)
- Weekly group meetings, journal flow and scientific seminars

Requirements:

- Enthusiasm
- Highly motivated and curious
- Willing to work with mouse tissue samples and human blood samples
- Experience with mouse work and flow cytometry is a plus

Applications:

Please send your CV and a brief statement of research interest to jamesian.king@uzh.ch