



April 5, 2022

In the research laboratory of the Department of Pediatrics and Adolescent Medicine of Ulm University (Prof. Dr. Klaus-Michael Debatin) there is an immediate vacancy for a

PHD STUDENT IN IMMUNOLOGY (M/ W/ D)

in the research group "Molecular Immunology" of PD Marcin Łyszkiewicz, PhD.

The projects focus on the identification of **key drivers of the adaptive immune system in humans**. A systematic approach will be taken **to study the response of the adaptive immune system of infants to vaccination**. A picture of the dynamic changes in the transcriptome of B and T cells during controlled immunisation with single cell resolution will be taken as a model for understanding the basic mechanisms of maturation of the adaptive immune system. Particular attention will be paid to the question of how the expression of the genome is regulated and how those changes impact the efficiency of the immune response elicited. Finally, using bioinformatical tools to compare single-cell trajectories with their transcriptional profiles, we will identify key drivers of lymphocyte expansion and thus deepen our understanding of the fundamental processes in which B and T cells act.

The experimental focus of this work will be on both human blood samples and cell culture models. Multiparameter flow cytometry (FACS) and cytometry by time of flight (CyTOF) will be employed to follow the expansion of the adaptive immune system after vaccination. Changes in transcriptional programme of lymphocytes will be studied by mRNA and non-coding RNA (ncRNA) single cell sequencing. The numerical data obtained will be used to calculate cell developmental trajectories to derive T and B cell trajectories and identify key genes that regulate responsiveness to vaccines or infections.

We are looking for a highly motivated and flexible student with a strong interest in laboratory work and experience in cell and molecular biology laboratory work. In addition, good communication skills and the ability to work in an interdisciplinary team are a requirement.

Desired skills:

- Master degree in natural sciences. Experience in immunology would be a distinct advantage
- Standard molecular biology methods (PCR, cloning, Western Blot, basic protein chemistry; flow cytometry and CRISPR/Cas9 gene editing would be advantageous, but is not a prerequisite)
- Good research skills, including experiments with cells and blood samples (cell culture, cell transfection and assays).
- Experience in computational work would be advantageous
- Lab management and organisation, commitment and team-oriented working style
- Excellent communication skills in English

Our offer:

- Innovative and multidisciplinary project that is at the centre of the Institute's attention.
- Participation in national and international collaboration
- Employment at 65% and payment according to E13 TV-L
- Support in balancing family and career
- Company health promotion

Application documents (motivation letter, curriculum vitae and 2 letters of reference) should be sent to Marcin Łyszkiewicz (marcin.lyszkiewicz@uni-ulm.de), Department of Pediatrics and Adolescent Medicine, Ulm University.