

The membrane biology group of the Biotechnology Institute Thurgau (Switzerland) invites excellent graduate students in life sciences to apply for three fully funded PhD positions.

### **The project**

Our research is aimed at understanding how the organisation the plasma membrane, intracellular trafficking and cell tension regulate the activation of T cells. The 4 years project grant associated with the positions is focused on understanding the dendritic cells of the immunological synapse.

Dendritic cells literally play a central role in the adaptive immune response. On one side, they act as the sentinels of the immune system in peripheral tissues, collecting antigens and evaluating the inflammatory environment. On the other side, dendritic cells present these antigenic peptides and co-stimulatory molecules to T cells in secondary lymphoid organs, thereby triggering and regulating the T cell-mediated immune response.

Dendritic cells activate T cells through the formation of a highly specialised cell-cell interface, the immunological synapse. While the T cell side of the immunological synapse has been extensively investigated, we have only a faint knowledge of the organisation of its dendritic cell counterpart. The overall objective of this research project is to gain a comprehensive understanding of how the dendritic cell side of the immunological synapse is organised and functions. To do so, we will use a combination of advanced fluorescence microscopy techniques, flow cytometry, mechanobiology techniques and in-house developed assays.

The projects include three main objectives, each of them being associated with one PhD student position.

- 1.** Investigate the spatial distribution, membrane dynamics and endocytic trafficking of MHC and co-stimulatory molecules at the dendritic cell side of the immunological synapse.
- 2.** Determine how co-stimulatory molecules expressed by dendritic cells regulate T cell arrest and synapse formation in a cell system recapitulating the lymph node and the tumour microenvironments.
- 3.** Investigate how dendritic cells generate forces to mechanically regulate T cell activation.

### **We are looking for:**

- Master of Sciences degree in cell biology, molecular biology, biochemistry, biotechnology, or a related topic.
- Some wet-lab experience in cell and molecular biology or biochemistry
- Ability to use Image J to quantify microscopy images or to code in R or Python would be a plus.

### **We offer:**

- State-of-the-art equipment for research in the field of cell biology and immunology (advanced light microscopy, flow cytometry, recombinant proteins production, tissue culture, plus all the facilities at the University of Konstanz)
- An interdisciplinary institution focused on cell biology and immunology
- Fully funded PhD positions with Swiss salaries
- An attractive and pleasant region: the Bodensee and the city of Konstanz
- The positions are available right now. Latest possible starting date November 2021

**Applications must include the following elements:**

- CV including your relevant professional experience and skills
- Application letter with a brief description of why you want to pursue research studies, about what your academic interests are and how they relate to your previous studies and future goals. (Maximum 2 pages)
- Copies of diplomas and grades from previous university studies
- Contact information of 1-2 references

**Please send your application as one single PDF file to [jeremie.rossy@bitg.ch](mailto:jeremie.rossy@bitg.ch)**