IMMUNOLOGY, LIPID RESEARCH, OPTO-GENETICS

The **University of Freiburg**, Germany, is looking for

two Postdoctoral Fellows or PhD students

in the Area of Immunology, Biochemistry and Optogenetics for an initial two-years appointment. The position is available in the Department of Immunology of the Faculty of Biology and the Excellence Cluster BIOSS. Contact persons are Dr. **Susana Minguet** and Prof. Dr. **Wolfgang Schamel**.

The **T cell receptor (TCR)** serves a critical function in the immune system and represents one of the most complex and fascinating receptor structures. We are since many years thrilled by the molecular mechanisms regulating the activation of this receptor. We have elucidated **conformational switches** defining the activation state of the TCR (Gil et al., 2002; Minguet et al., 2007) and the impact of **membrane lipids** on the activity of the TCR (Schamel et al., 2017; Swamy et al., 2016; Wang et al., 2016). We have very recently developed an **optogenetic TCR** to regulate ligand-binding reversibly and precisely by light (Yousefi et al., submitted).

Position 1: Using our knowledge on TCR functioning, this project aims to modulate the threshold for T cell activation by perturbing the conformational equilibrium of the TCR and to test the impact on T cell activation. The project is in close cooperation with a **pharmaceutical partner** and will be supported by **a full technician** and all the infrastructure of the Department and the **Excellence Cluster BIOSS**.

Position 2: This project aims to understand how dynamic inputs are processed by T cells to decide whether to mount an immune response or not, by using the opto-TCR and by developing new optogenetic tools. We want to **understand principles of signal processing** to achieve a new level of understanding of cellular programmes. This knowledge will be applied to design safer and more effective chimeric antigen receptors (**CARs**). The project will be part of the **Excellence Cluster BIOSS**.

Both positions should start as soon as possible, and payment and social benefits will be in accordance with the regulations of the German TVoeD (salary agreement for public service employees). Women are especially encouraged to apply and

handicapped applicants with equal qualification will be given preferential treatment. A childcare facility is attached to the Institute.

Applicants should send their application **as one single pdf** to miriam.Vitt@bioss.uni-freiburg.de

Deadline for application is November 30th, 2018!

We are looking forward hearing from you.

For further information please contact:
wolfgang.schamel@biologie.uni-freiburg.de
https://www.bioss.uni-freiburg.de/departmentimmunology/home/

Freiburg is the “capital” of the black forest and a lively university town located in the trinational Biovalley area between Switzerland, France and Germany. The Institute has a high percentage of foreign researchers as well as a nursery for children of 6 month to 3 years of age. Our group is also part of the “excellence programs” of the University of Freiburg.

References

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Schamel, W.W., Alarcon, B., Hofer, T., and Minguet, S. (2017). The Allostery Model of TCR Regulation. **J Immunol** *198*, 47-52.

Swamy, M., Beck-Garcia, K., Beck-Garcia, E., Hartl, F.A., Morath, A., Yousefi, O.S., Dopfer, E.P., Molnar, E., Schulze, A.K., Blanco, R.*, et al.* (2016). A Cholesterol-Based Allostery Model of T Cell Receptor Phosphorylation. **Immunity** *44*, 1091-1101.

Wang, F., Beck-Garcia, K., Zorzin, C., Schamel, W.W., and Davis, M.M. (2016). Inhibition of T cell receptor signaling by cholesterol sulfate, a naturally occurring derivative of membrane cholesterol. **Nature Immunol** *17*, 844-850.