

## PhD Student: Multiplex Super-Resolution Microscopy of Synaptic Nanoarchitecture

Department of Functional Neuroanatomy of Heidelberg University is searching for a PhD student for multiplex STORM imaging in neuronal tissue.

### Project

The aim of this project is to delineate the **presynaptic nanoarchitecture** with a particular focus on the **distribution of synaptic vesicle proteins**.

While the molecular players of presynaptic function are mostly known, their organization in three dimensional (3D) space is only poorly understood. Yet, given that action potential-induced transmitter release is a highly precise mechanism, the underlying protein machinery needs to be highly organized in 3D space. This project will employ the super-resolution microscopy method **3D dSTORM** (direct stochastic optical reconstruction microscopy) equipped with an **automated pipetting system** to investigate the **spatial arrangement of synaptic proteins**. Our fully automated system enables the acquisition of multi-color experiments with more than 10 target proteins, while with conventional super-resolution microscopy set-ups only few epitopes can be resolved in one sample. To determine the nanoscopic distribution of selected synaptic proteins as well as their spatial localization relative to each other, we use thin brain tissue slices (400 nm) of the calyx of Held, a biophysically well-studied glutamatergic synapse of the mammalian central nervous system. For more information on this project, please contact Maja Klevanski via [klevanski@ana.uni-heidelberg.de](mailto:klevanski@ana.uni-heidelberg.de).

### Profile

- You hold a master's degree in the domain of life sciences: **neurobiology**, biology, biotechnology, biochemistry, bio-engineering, bio-medical sciences. Also candidates with a degree in physics, chemistry or technology will be considered.
- You have a **good understanding of neurobiology** and a **keen interest in super-resolution microscopy**.
- You have a clear interest in quantitative approaches and have experience with **image analysis**.
- A background in mathematics, physics, statistics and **programming** is highly advantageous.
- A critical scientific and quantitative attitude is encouraged.

### Supervision

Prof. Dr. Thomas Kuner  
Prof. Dr. Mike Heilemann  
Dr. Maja Klevanski

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### Procedure

- Please send your application, containing a motivation letter, CV, certificates, and contacts of referees to Maja Klevanski: [klevanski@ana.uni-heidelberg.de](mailto:klevanski@ana.uni-heidelberg.de).
- We look forward to receiving your application by the end of **July, 2018**.
- Starting date **September 1<sup>st</sup>, 2018**.
- Please consider a three-week practical before you officially start with your PhD position.