



PhD position in Neuroscience: “Neural circuits for colour processing in time and space”

A PhD position (3 years) is available in the Schnaitmann lab at the Institute of Developmental Biology and Neurobiology of the Johannes Gutenberg University Mainz, Germany. Our research group studies neural mechanisms underlying colour vision by employing a range of genetic, physiological and behavioural approaches in the *Drosophila* model.

Previous work has identified circuit mechanisms mediating the first steps of colour processing in the *Drosophila* visual system. The neural computations in circuits downstream of photoreceptors and their behavioural role, however, remain largely unknown. What kind of colour-opponent pathways exist? How is spectral information temporally processed and what is the size and structure of the receptive fields of colour sensitive neurons? Are pathways encoding hue and/or saturation? Are they encoding colour constant information? And do these pathways serve discrimination of objects or non-image forming vision? **In the advertised PhD research project, you will analyse the diversity of neural circuits and how these encode different features of the spectral visual environment.** You will use a newly developed multi-spectral spatial visual stimulation device adapted to the fly visual system in combination with two-photon calcium imaging which will finally allow the analysis of spectral, spatial, and temporal response properties in genetically targeted cell types. You will also genetically manipulate neural activity and gene expression in specific circuit elements to identify underlying synaptic mechanisms and reveal how neural computations are implemented in the visual circuitry. To disclose the ultimate role of specific cell types in colour guided behaviour, you will conduct colour choice experiments combined with (opto-)genetic neural manipulation. Together, this work will contribute to a detailed mechanistic understanding of colour vision by linking molecules, physiological properties of cell types, circuits, and behaviour.

Our lab is housed in the brand new JGU Biocentre, with a vibrant neuroscience community (<https://idn.biologie.uni-mainz.de>). We offer state of the art research facilities in a collegial and international environment. Applicants should be excited about experimental lab work, have a strong interest in physiology, and behaviour, and hold a M.Sc. degree in neuroscience, biology, physics, or related disciplines. Please provide information why you are interested in joining our group, a CV and contact details for two referees to cschnait@uni-mainz.de. The application deadline is October 31st 2022, or until a suitable candidate is found.

For more information, visit <https://schnaitmannlab.uni-mainz.de>.