

3-year PhD position available to study the cellular basis and functional impact of inhibitory interactions in the olfactory system of *Drosophila melanogaster*

Background

Most animals depend on their sense of smell to perform essential tasks for their survival and reproduction. Olfactory systems across phylae require special strategies to detect, recognize, and evaluate the numerous potential odors in their environments. Despite the morphological differences between antennae and noses, odor ligands interact with olfactory sensory neurons via similar mechanisms in vertebrates and insects. Moreover, the primary olfactory processing centers, the olfactory bulb in vertebrates and the antennal lobe in insects, exhibit remarkable similarities in their fundamental organization. In collaboration with Prof. Veronica Egger's lab at the University of Regensburg, this project aims to reveal the cellular basis of inhibitory circuits that modulate the impact of sensory neuron input and mediate interactions between second-order principal neurons in the rat olfactory bulb and fly antennal lobe.

Project

We aim to identify and compare specific inhibitory interactions in the primary olfactory center of *Drosophila* to inhibitory mechanisms in the olfactory bulb of vertebrates. As a key technique, we will employ 2-photon functional imaging to monitor odor-evoked activities of inhibitory local interneurons in the *Drosophila* antennal lobe. Ultimately, we aim to assign specific roles to defined interneuron types in rats and flies, integrating the results into a new, generic network model of the convergent olfactory system in collaboration with computational neuroscience experts.

Other information

Position starting date: August 1st, 2025. The project is funded by the priority program 2205 'Evolutionary optimization of neuronal circuits' of the DFG. Payment will be based on the tariff contracts for the public service (TV-L 65%). We provide an excellent research environment with enthusiastic scientists from different nationalities at the Julius-Maximilians University of Würzburg. The PhD student can be associated with the Graduate School of Life Sciences (<https://www.graduateschools.uni-wuerzburg.de/life-sciences/>).

Candidate requirements:

- Master's degree in Biology or related subject
- strong interest in Neuroscience
- interest in method development/refinement; ideally, prior experience in fly genetics and neurophysiology
- very good skills in English (both in speaking and writing)

How to apply:

Please send your application preferably by e-mail in one PDF-file including a motivation letter (1 page max), full CV and contact details for three references to neurogenetics@uni-wuerzburg.de by **June 15th, 2025**.