

Post-Doctoral position “Connectivity of a Locust’s Collision Detection Circuit”

A post-doctoral position is available as part of my Austrian Science Fund grant *Connectivity of a Locust’s Collision Detection Circuit*.

Aim: To use ATUMTome SEM (a 3D scanning electron microscope method) in order to elucidate the connectivity in a locust’s visual circuit. We can learn a lot about how a neuronal network could function by elucidating the wiring pattern of the network. This will be done by reconstructing the neurons in 3D and by mapping their synaptic connections, so that it becomes clear which neurons within the network can communicate with each other and how numerically strong the connections are.

The circuit under investigation is from the compound eye and functions to detect and avoid collisions. Avoidance reactions are mediated by two single linked motion detecting neurons one pair on each side of the locust, termed the LGMD1 and DCMD. The LGMD1 becomes excited whenever an object approaches the eye on a collision course.

We know that thousands of upstream neurons, from the compound eye, contribute to the excitation of the LGMD1. But because these TmAs have very small processes, we yet have had no definite idea as to how the neurons before the TmAs contribute to the LGMD1 excitation pattern. We assume that the TmAs signal changes in light levels in distinct facets of the compound eye and are able to inhibit each other to help the LGMD1 distinguish between approaching and passing objects.

As we now have a novel, scanning electron microscope available to reconstruct entire neurons, we aim to reconstruct the TmAs and those neurons that pass signals onto them. We also aim to map the connections made onto the TmAs, to elucidate how the LGMD1 circuit works.

The successful applicant will be part of a team with longstanding experience in electron microscopy and make use of state - of - the - art equipment, I will facilitate the project and there will be some support by technicians.

Required Education and Skills: PhD with experience in Neuroscience and / or Electron Microscopy. You should strive to forward this project independently and support PhD and Master students.

Earliest starting date: 1st June, 2019

maximum duration: 3.5 years

Please send your application documents directly to: gerd.leitinger@medunigraz.at

Assoz. Prof. Dr. Gerd LEITINGER
Division of Cell Biology, Histology and Embryology
Gottfried Schatz Research Center
Medical University of Graz
Neue Stiftingtalstraße 6
8010 Graz
Tel: +43 385 71900