

Introductory Remarks to Symposium 23

Comparative connectomics: Recent approaches and functional implications

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How is behavior output organized within a brain based on external sensory inputs, internal motivational states or even knowledge gained through prior experience? Understanding these processes is the most essential issue in the field of neuroscience. Several projects face this major challenge of today's neuroscience by investigating brain anatomy with synaptic resolution (connectomics). In several cases animals serve as model systems for these approaches to decrease the neuroanatomical complexity while at the same time increasing the technical accessibility. Given recent technical developments on 3D volume electron microscopy several groups have revisited this approach. Thus, connectome development is becoming more and more important for today's neuroscience. Ultimately these studies seek to solve neuroanatomical limitations by providing a synaptic wiring diagram of a particular brain subregion or even the entire brain. Recent approaches include (to name just some of them) the mouse retina, pieces of the mouse cortex, the olfactory bulb of Zebrafish larvae, the visual system of adult *Drosophila*, the entire brain of larval *Drosophila* and the entire nervous system of the annelid *Platynereis*. With this workshop we want to show selected examples of connectomes that differ in the applied technique, model organism and complexity of the reconstructed neuronal tissue. Gaspar Jékely from the MPI Tübingen (Germany) will talk about his recent approach to reconstruct the connectome of the larval stage of the marine annelid *Platynereis dumerilii*. Albert Cardona (HHMI Janelia, USA) will introduce recent developments in reconstructing the connectome of the *Drosophila* larva. Gaia Tavosanis (DZNE Bonn, Germany) will report on the synaptic reconstruction of the adult *Drosophila* mushroom body. Rainer Friedrich (FMI Basel, Switzerland) will provide an overview on the recent approaches in zebrafish.

Symposium 23

*Friday, March 24, 2017
11:30 - 13:30, Lecture Hall 9*

*Chairs: Andreas Thum and Michael Pankratz,
Konstanz and Bonn*

- 11:30 **Opening Remarks**
- 11:40 Gáspár Jékely, Tübingen
NEURONAL CONNECTOME OF THE PLATYNEREIS LARVA (S23-1)
- 12:00 Albert Cardona, Ashburn, USA
NEURAL CIRCUITS FOR MULTISENSORY INTEGRATION AND MEMORY-BASED BEHAVIORAL CHOICE (S23-2)
- 12:20 Gaia Tavosanis, Bonn
THE CALYCAL MICROGLOMERULUS: A SMALL CIRCUIT IN THE SPOTLIGHT (S23-3)
- 12:40 Rainer Friedrich, Basel, Switzerland
DECONSTRUCTION AND RECONSTRUCTION OF OLFACTORY COMPUTATIONS IN ZEBRAFISH (S23-4)
- 13:00 Katharina Eichler, Ashburn, USA
COMPLETE CONNECTOME OF A LEARNING CIRCUIT (S23-5)
- 13:10 Anton Miroshchnikov, Bonn
THE SENSORY-MOTOR-ARCHITECTURE OF FEEDING NETWORKS IN FLIES (S23-6)
- 13:20 **Concluding Remarks**