

## Introductory Remarks to Symposium 4

## Neuronal circuit wiring in development

*Victor Tarabykin and Christian Rosenmund, Berlin*

This symposium will provide an update on mechanisms underlying establishment of neuronal circuits, an area in which many new players and interactions have been identified recently. Abnormalities of neural circuit formation underlie an increasing variety of neurological diseases, as the integrity of neuronal functions is critically dependent on the correct wiring of axono-dendritic networks. Rather than random interconnection, the wiring pattern of neurons is highly specific throughout the brain. In the developing organism, millions of axons navigate towards specific targets and make synapses with very precise neuronal types using multiple molecular pathways.

The developmental strategies and molecular mechanisms underlying pathway selection and target recognition have been extensively studied, however this symposium will focus on the particularly extraordinary progress achieved in recent years. Robin Hiesinger will discuss the mechanisms that control the brain wiring in the fly brain, followed by Sam Pfaff, who will discuss recent advances in the understanding of the molecular mechanisms driving the assembly of spinal sensorimotor circuits in the mouse. The mechanisms controlling the wiring in the mammalian neocortex will be discussed by Victor Tarabykin. Finally, Michael Wegner will highlight the role of myelinating glia in the developing circuits. The symposium also includes two student talks. Paraskevi (Eva) Bessa present her research on the cell intrinsic role of semaphorins in the guidance of cortical axons, while Barbara Wieners will speak about the developmental mechanisms underlying hydrocephalus. Together, the speakers will overview the insights that build the foundation for exciting new research into the mechanisms that govern the formation of the complex communication networks underlying our thoughts, behaviors and emotions.

## Symposium 4

*Wednesday, March 22, 2017  
14:30 - 16:30, Lecture Hall 8*

Chairs: Victor Tarabykin and Christian Rosenmund,  
Berlin

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| 14:30 | <b>Opening Remarks</b>  |
| 14:40 | Peter Robin Hiesinger, Berlin<br>SIMPLE RULES IN BRAIN WIRING:<br>A FLY PERSPECTIVE (S4-1)                                      |
| 15:00 | Samuel Pfaff, La Jolla, USA<br>CHARACTERIZATION OF SPINAL CORD<br>MOTOR CIRCUITRY (S4-2)  |
| 15:20 | Victor Tarabykin, Berlin<br>NEOCORTICAL CIRCUITS: HOW DO WE BUILD<br>THEM IN DEVELOPMENT? (S4-3)                                |
| 15:40 | Michael Wegner, Erlangen<br>REGULATION OF MYELINATION AS PART OF<br>NEURONAL CIRCUIT DEVELOPMENT (S4-4)                         |
| 16:00 | Barbara Wieners, Bonn<br>DISRUPTION OF MOUSE MTSS1 CAUSES<br>ABNORMAL CILIARY PATTERNING AND<br>CONGENITAL HYDROCEPHALUS (S4-5) |
| 16:10 | Paraskevi Bessa, Berlin<br>SEMAPHORIN7A RESCUES MIGRATION<br>AND AXON GROWTH IN SATB2 DEFICIENT<br>NEURONS (S4-6)               |
| 16:20 | <b>Concluding Remarks</b>   |