Introductory Remarks to Symposium 18

How the nervous system builds and maintains myelin

Amit Agarwal and Minou Djannatian, Heidelberg and Munich

Oligodendrocytes produce myelin, a crucial lipid-rich membrane that enhances signal conduction and shapes neuronal networks. They produce vast amounts of membrane in a well-orchestrated steps including wrapping, expansion and stabilization of the sheath, which is fundamental to ensure proper myelin formation and function. While myelin has long been considered static once it is deposited on axons, we now know that myelin formation and maintenance are dynamic processes influenced by neuronal activity, and require continuous turnover even in the adult and ageing brain.

This symposium explores recent advances in understanding myelin formation, fine-tuning, maintenance, and regulation in the CNS, utilizing mouse and zebrafish model systems, and different scales of imaging techniques, from *in vivo* optical imaging to 3D electron microscopy.

The topics will provide a glimpse of the new knowledge gathered over the last few years and our evolving understanding of myelin plasticity and its importance in CNS function and disease.

Symposium 18, Thursday, March 27, 14:30 - 16:30

Symposium 18

Thursday, March 27, 2025
14:30 - 16:30, Lecture Hall 105

Chairs: Amit Agarwal and Minou Djannatian, Heidelberg and Munich

14:30 **Opening Remarks**

14:35 Rafael Gois Almeida, Edinburgh, UK
NON-SYNAPTIC GLUTAMATE TRANSFER BETWEEN AXONS AND OLIGODENDROCYTES REGULATES MYELINATION *IN VIVO* – INSIGHTS FROM ZEBRAFISH (S18-1)

15:00 Minou Djannatian, Munich
ADHESION PROTEINS SYNERGISTICALLY REGULATE MYELIN FORMATION (S18-2)

15:25 J. Bradley Zuchero, Stanford, USA
CELL BIOLOGICAL MECHANISMS OF MYELIN TUNING AND DYNAMICS (S18-3)

15:50 Ram Dereddi, Heidelberg
OLIGODENDROCYTE MECHANOTRANSDUCTION CHANNEL TMEM63A FINE-TUNES MYELIN SHEATH GEOMETRY (S18-4)

16:05 Wiebke Möbius, Goettingen
MYELIN TURNOVER, MAINTENANCE AND DISEASE: INSIGHT FROM ELECTRON MICROSCOPY AND 3D IMAGING BY FIB-SEM (S18-5)

Symposia