

## Introductory Remarks to Symposium 33

## Non-canonical contribution of oligodendrocyte precursors in brain circuits

*Xianshu Bai and Friederike Pfeiffer, Homburg and Tuebingen*

In the central nervous system (CNS), oligodendrocyte precursor cells (OPCs) are recognized as the progenitors responsible for the generation of oligodendrocytes, pivotal for myelination. Extensive research has shed light on the mechanisms underlying OPC proliferation and differentiation into mature myelin-forming oligodendrocytes. Recent advances in the field indicates that OPCs are key players in various CNS processes that go beyond producing oligodendrocytes. OPCs guide migrating interneurons during development, regulate the neuronal circuitry, mediate angiogenesis and even exhibit phagocytic properties connected to immune responses. Moreover, although we are just beginning to understand these various processes, it is possible that they exert multifaceted control over neuronal function and neural circuits, primarily through direct interactions with neurons.

In this symposium, we will unveil fresh insights into molecular mechanisms illustrating how OPCs respond to and modulate changes in neuronal activity, both in healthy conditions and during diseases. Additionally, OPCs' interaction with interneurons during embryonic brain development to facilitate brain expansion will be addressed and new insights into the crucial role of OPCs in shaping axonal maturation during developmental stages will be presented. Variations in the potential of OPCs to differentiate into oligodendrocytes during developmental stages and in disease will be discussed. The symposium aims to offer a comprehensive view of how OPCs influence neural circuits and brain function, focusing on their molecular mechanisms, but not only with regard to their primary role in myelin formation.

## Symposium 33

*Saturday, March 29, 2025  
11:30 - 13:30, Lecture Hall 103*

Chairs: Xianshu Bai and Friederike Pfeiffer,  
Homburg and Tuebingen

- 11:30 **Opening Remarks / RWD introduction**
- 11:40 Laurent Nguyen, Liège, Belgium  
NEURO-GLIA CROSSTALK SHAPES BRAIN MORPHOGENESIS ACROSS SPECIES (S33-1)
- 12:05 Tim Czopka, Edinburgh, UK  
HOW NEURONAL CONNECTIVITY IS SHAPED BY OLIGODENDROCYTE PRECURSOR CELLS (S33-2)
- 12:30 Quentin Brassart, Illkirch, France  
RXRG REGULATES BRAIN OLIGODENDROGENESIS DURING KEY EVENTS OF LIFE (S33-3)
- 12:40 Friederike Pfeiffer, Tuebingen  
CHANGES IN OPC-NEURON INTERACTIONS IN THE HIPPOCAMPUS UPON INCREASED NEURONAL ACTIVITY (S33-4)
- 13:05 Xianshu Bai, Homburg  
OLIGODENDROCYTE PROGENITOR CELLS FACILITATE EXOCYTOSIS OF NEURONAL LYSOSOMES (S33-5)



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