Introductory Remarks to Symposium 28

Glia – all the same? Increasing evidence for glial heterogeneity

Stephanie Griemsmann and Felix Beyer, Düsseldorf

Historically, glial cells have been regarded as passive glue located between neurons. This dogma has changed over the past decades and glial cells are now recognized as active partners controlling brain function by various means, e.g. metabolic support, ion homeostasis and insulation of axons for high velocity conduction. At least four major classes of central nervous system glial cells are described, namely astrocytes, microglia, NG2 cells and oligodendrocytes. In order to shed light on glial heterogeneity it is essential to investigate cellular and molecular aspects of glial subpopulations and to describe their development and differentiation - starting from neural stem cells, leading to precursors and finally giving rise to fully matured cells. To this end a number of different in vitro and in vivo approaches are currently applied.

In this symposium we will present results of the German-Japanese "YoungGlia" consortium which is a common effort of the DFG priority research programme 1757 on "Glial heterogeneity" and the Japanese Grant-in-Aid for Scientific Research on Innovative Ideas "Glial Assembly: A new regulatory machinery of brain function and disorders". This consortium promotes collaborative research projects of young investigators (PhD students or postdocs) of the two countries. Presentations will focus on the genetic control of oligodendroglial differentiation by inhibition of p57kip2 (CDKN1C) and the role of phosphatase Dusp15 in myelinating oligodendrocytes. Further we will address glial receptor profiles, such as AMPA receptors, metabolic aspects and network activities of astrocytes.

The role of Dusp15, which was recently identified as a novel target of the transcription factors Sox10 and Myrf and is a promising candidate regulator of oligodendrocyte differentiation, will be presented by Melanie Küspert. Felix Beyer presents insights into the role of p57kip2 during neural stem cell differentiation. New insights on metabolic coupling of neurons and astrocytes and the heterogeneity of the metabolic response of astrocytes even in the same region will be presented by Rodrigo Lerchundi. Stephanie Griemsmann will report on AMPA receptor targeting in glial cells. These new data will provide further insights into glial heterogeneity serving as critical determinant of the functional specialization of the brain.

Symposium 28

Friday, March 24, 2017
14:30 -16:30, Lecture Hall 104

Chairs: Stephanie Griemsmann and Felix Beyer, Düsseldorf

14:30 **Opening Remarks**

14:40 Felix Beyer, Düsseldorf
MECHANISTIC INSIGHTS OF OLIGODENDROGLIAL CELL GENERATION FROM NEURAL STEM CELLS (S28-1)

15:00 Melanie Küspert, Erlangen
THE DUAL-SPECIFICITY PHOSPHATASE DUSP15 IS A DOWNSTREAM EFFECTOR OF SOX10 AND MYRF IN MYELINATING OLIGODENDROCYTES (S28-2)

15:20 Stephanie Griemsmann, Düsseldorf
GLUTAMATE RECEPTOR TARGETING IN GLIAL CELLS (S28-3)

15:40 Rodrigo Lerchundi, Düsseldorf
STUDY OF BRAIN METABOLISM BY SINGLE CELL IMAGING (S28-4)

16:00 Carmen V. Bohn, Homburg
ANALYSIS OF PURINERGIC P2Y1 RECEPTOR FUNCTION IN CORTICAL ASTROCYTES AND CEREBELLAR BERGMANN GLIA (S28-5)

16:10 Laura Schlosser, Homburg
STUDY OF ASTROCYTE-SPECIFIC AND INDUCIBLE GABAB RECEPTOR DELETION IN THE MOUSE BRAIN (S28-6)

16:20 **Concluding Remarks**

glial heterogeneity
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