



Introductory Remarks to Symposium 8

From astrocytes to behaviors: searching the cellular and molecular roots of emotion dysfunctions

Barbara Di Benedetto and Inga Neumann, Regensburg

In the central nervous system, astrocytes actively regulate the shaping and functions of the synaptic compartment at the so-called "tripartite synapse". Modifications in the efficacy of synaptic communication enable nerve cells to acquire and store information to favor the proper adaptation of an organism to its changing environment. Any alteration in synaptic activity can lead to the onset of neuropsychiatric disorders. Therefore, astrocytes play essential roles in both healthy and diseased brains.

Astrocytes additionally represent bridging elements between synaptic and vascular compartments, thereby forming a functional neurovascular unit (NVU) that might "sense" the brain state and adjust its molecular profile or secrete factors in the bloodstream as a reflection of this state. Thus, astrocyte-specific molecular prints may become useful biomarkers of distinct cellular (dys)functions in health and disease. In a translational perspective, their characterization in pathological conditions may support the development of diagnostic tools or the selection of tailored treatment options for individual patients.

Among cellular dysfunctions, impaired oxytocinergic tone, glutamatergic synaptic activity or astrocyte morphology are hallmarks of emotion dysfunctions and animal models have been pivotal to identify various pathophysiological mechanisms.

In the frame of the DFG-funded Research Training Group 2174 "Neurobiology of emotion dysfunctions", this symposium aims at presenting novel insights about: 1. how extremely painful experiences such as partner loss might impact the CRF/oxytocin signaling pathways, leading to the onset of a depressive-like behavior (Oliver Bosch); 2. how the endocannabinoid system modulates astroglial functions and impacts learning processes (Giovanni Marsicano); 3. the role of the astrocytic-neuronal ephrinA/EphA system, membrane-bound proteins which can be released upon activation, on the distribution and functions of AMPA glutamate receptors in health and mood disorders (Barbara Di Benedetto); 4. the application of sophisticated electrophysiological measurements to study the regulatory functions of astrocytes on synaptic communication (Christine Rose).

Symposium 8

Thursday, March 21, 2019
11:30 - 13:30, Lecture Hall 9

Chairs: Barbara Di Benedetto and Inga Neumann,
Regensburg

- 11:30 **Opening Remarks**
- 11:40 Oliver Bosch, Regensburg
PARTNER LOSS IMPAIRS BRAIN OXYTOCIN
SIGNALLING: PHYSIOLOGICAL AND
EMOTIONAL CONSEQUENCES IN MONO-
GAMOUS PRAIRIE VOLES (S8-1)
- 12:00 Giovanni Marsicano, Bordeaux, France
CB1 RECEPTOR SIGNALING IN THE BRAIN:
THE WHERE MATTERS (S8-2)
- 12:20 Barbara Di Benedetto, Regensburg
ASTROCYTIC EPHRINA IMPACTS THE DISTRI-
BUTION OF SYNAPTIC AMPA RECEPTORS IN
HEALTH AND DEPRESSION (S8-3)
- 12:40 Christine Rose, Düsseldorf
ASTROCYTE REGULATION OF NEURONAL
EXCITABILITY (S8-4)
- 13:00 Celia Roman, Regensburg
ANTIDEPRESSANT DRUGS REQUIRE ASTRO-
CYTES TO PRIME AN EARLY SYNAPTIC
PRUNING AND REMODELLING IN THE
PREFRONTAL CORTEX (S8-5)
- 13:10 Carl Meinung, Regensburg
OXYTOCIN RAPIDLY AFFECTS ASTROCYTIC
MORPHOLOGY (S8-6)
- 13:20 **Concluding Remarks**

