SPP 1757

Coordination Funds

Speaker:

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Project description:

Neuroscience research has long established that the major classes of neurones such as projection neurones and interneurones each consist of a multitude of specialized subtypes adapted to performing defined tasks in the network. In stark contrast, each class of macroglia is often still considered a homogeneous population of cells and thus commonly addressed as "the astrocyte" or "the oligodendrocyte".Recent studies have, however, provided compelling evidence that this picture is way too simplistic, indicating that each class of glial cells embodies a much more diverse cell population than commonly thought. Glial cells appear to have distinct physiological properties in different brain regions, at different developmental stages and at different activity levels of the organism. These observations suggest that functional specializations of glia might have developed to meet the specific requirements of distinct networks which might as such be critical determinants of brain activity. This new concept will change the way we think about brain function and puts glial cells into an even more prominent focus of attention. It is, however, still based on rather anecdotal evidence and as such, research on glial heterogeneity is in its infancy. We will address this fundamental question of neuroscience in the SPP 1757. The main goals of this new Priority Programme are to understand glial cell specialization and to elucidate its contribution to brain function and behaviour. Ultimately, the Priority Programme will pave the way for a better understanding of the molecular and cellular role of glia in brain pathologies that is urgently needed to develop novel, more customized and targeted strategies for the treatment of brain injury and disease.To unravel how glial heterogeneity develops and what its functional consequences are, we will consolidate molecular data from state-of-the-art high- throughput techniques, from cell biology approaches and from physiological studies using electrophysiology, cellular and functional imaging. Furthermore, we will analyse the impact of glial specializations on the surrounding neurons, on the given brain region and on brain performance.

Quelle:
https://gepris.dfg.de/gepris/projekt/255292882?language=en