

27th International conference on

Neurology and Cognitive Neuroscience

October 18-19, 2018 | Warsaw, Poland



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Neuroinflammation, microglia and mast cells in the pathophysiology of neurocognitive disorders

Cells of the immune system and the central nervous system are capable of interacting with each other. The former cell populations respond to infection, tissue injury and trauma by releasing substances capable of provoking an inflammatory reaction. Inflammation is now recognized as a key feature in nervous system pathologies such as chronic pain, neurodegenerative diseases, stroke, spinal cord injury, and neuropsychiatric disorders such as anxiety/depression and schizophrenia. Neuroinflammation may also raise the brain's sensitivity to stress, thereby effecting stress-related neuropsychiatric disorders like anxiety or depression. The cytokine network plays a large part in how immune system cells influence the central nervous system. Further, inflammation resulting from activation of innate immune system cells in the periphery can impact on central nervous system behaviors, such as depression and cognitive performance. Here, we will present the current state of knowledge which implicates both microglia and mast cells, two of the principle innate immune cell populations, in neuroinflammation. Further, we shall make the case that dysregulation of microglia and mast cells may impact cognitive performance and, even more importantly, how their cell-cell interactions can work to not only promote but also amplify neuroinflammation. Finally, we will use this information to provide a starting point to propose therapeutic approaches based upon naturally-occurring lipid signaling molecules.

Biography

Stephen D Skaper has completed his PhD in Biochemistry at University of South Dakota and; Laurea in Chemistry at the University of Padua, Italy. He is Adjunct Professor in Department of Pharmaceutical and Pharmacological Sciences at University of Padua. Prior to this, he was a Senior Group Leader for Neurodegeneration Research, GlaxoSmithKline Research and Development Limited, UK, and also held academic research positions at the University of California, San Diego. He has authored/co-authored over 300 research papers, book chapters and monographs, and he is the Editor-in-Chief of CNS and Neurological Disorders Drug Targets. His research interests focus on the role of immune cells and their interactions in neuroinflammation.

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