Special Issue

Understanding the Functioning of Brain Networks in Health and Disease

Message from the Guest Editor

In healthy brains, networks such as the Default Mode Network (DMN), Central Executive Network (CEN), and Salience Network dynamically interact based on cognitive demands, displaying adaptability and plasticity. In disease states, disruptions in functional connectivity and signal complexity within and between networks are common. In Alzheimer's Disease, there is reduced DMN connectivity, correlating with memory loss. Schizophrenia shows altered connectivity in networks related to thought and perception, while depression involves abnormal DMN and limbic system interactions, contributing to emotional dysregulation. Neurodevelopmental disorders exhibit atypical social and emotional network functioning.fMRI, EEG, MEG, and DTI help map brain network activity, revealing patterns of disruption in various conditions. These insights have led to clinical applications like neurofeedback and personalized medicine, allowing for targeted therapies and interventions. Understanding brain networks is crucial for developing more effective treatments for neurological and psychiatric disorders, fostering better outcomes in mental health and cognitive rehabilitation.

Guest Editor

Dr. Moses O. Sokunbi

1. Leicester School of Allied Health Sciences, De Montfort University, Leicester LE1 9BH, UK
2. Leicester Institute for Pharmaceutical, Health and Social Care Innovations (LIPHSCI), De Montfort University, Leicester LE1 9BH, UK

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Editor-in-Chief

Prof. Dr. Stephen D. Meriney
Department of Neuroscience, University of Pittsburgh, Pittsburgh, PA 15260, USA

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