Neural Plasticity

Hindawi

Special Issue on
Molecular and Cellular Mechanisms of Synaptopathies

CALL FOR PAPERS

The integrity and functionality of synaptic contacts are essential for neuronal communication and they depend on the molecular repertoire of synaptic proteins. Advances in proteomic analysis of synapses have revealed a great complexity in composition, organization, and interaction of the synaptic proteins, which work together to support many varied functions including synaptic assembly, stability, maturation, and transmission. Mutations in genes encoding synaptic proteins are implicated in human neurological diseases, including neurodevelopmental and psychiatric and as well as neurodegenerative disorders. A common feature observed in these different pathologies is the disruption of synaptic morphology and function, which has led to the term "Synaptopathies" to indicate these disorders. Strikingly, many of the synaptopathy-associated genes encode proteins with known roles in synaptic and neural plasticity.

Several transgenic mice lines harboring mutations identified in human synaptic proteins linked to disease have been developed to model a variety of synaptopathies and have yielded a wealth of information about their underlying mechanisms. In particular, considerable attention has been focused on synaptopathies whose onset and progression are due to mutations of synaptic proteins linked to autism spectrum disorder. However, despite the advances in our understanding of the etiology of these synaptopathies, much is still unknown about the molecular interactions underlying synaptic protein networks and the complex signaling pathways activated by synaptic proteins and how they modulate the physiology of neural circuits impacting dynamic processes such as neural plasticity and behavior.

We invite authors to contribute original research articles as well as review articles that seek to address recent advances in our understanding of cellular and molecular aspects of synaptic mechanisms involved in different synaptopathic disorders.

Potential topics include but are not limited to the following:

- Identification and characterization of novel genes and mutations with functional roles at synapses linked to neuropsychiatric and neurodevelopmental diseases
- Gene-environment interaction on synaptic level
- Key modulators in synaptic dysfunction mechanisms
- Adaptive and compensatory mechanisms of synaptic impairments
- Cytoskeletal dysregulation and synaptic remodeling of critical circuits
- Aberrant synaptic connectivity in cerebral circuities of synaptopathies
- The role of neuromodulatory systems on synaptopathies
- Pharmacological approaches to develop new diagnostic tools and therapies targeting synaptopathies
- Bioinformatic and proteomic approaches to identify key interactions between synaptic proteins and their relation to disease
- Latest methodologies and technologies for studying synaptopathies

Authors can submit their manuscripts through the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/np/nggf/.

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Manuscript Due
Friday, 13 January 2017

First Round of Reviews
Friday, 7 April 2017

Publication Date
Friday, 2 June 2017