

Special Issue on Posttranslational Modifications of Synaptic Proteins in Control of Neuronal Plasticity

CALL FOR PAPERS

Processes like learning and memory require functional modification of neuronal networks through reorganization of existing synapses, modification of their efficacy, or modulation of neuronal endogenous excitability. The underlying mechanism is complex, and despite decades of research, many aspects of neuronal plasticity remain elusive. Last decade brought evidence on importance of protein-specific S-nitrosylation and S-palmitoylation in normal physiology and in a broad spectrum of human diseases. Thus, addition of palmitate or nitric oxide reversibly modifies numerous classes of neuronal proteins, including neurotransmitter receptors, synaptic scaffolding proteins, and secreted signaling molecules. Considering competing process that may occur simultaneously such as acetylation and ubiquitination, it is necessary to understand complex, dynamic, and reciprocal process of synaptic proteins modifications under physiological and pathological context. The function of synaptic proteins, receptors, and ion channels can be also modulated by another posttranslational modification which is proteolysis, for example, by extracellular matrix (ECM) proteases that are also able to generate molecular signals, such as products of their use-dependent proteolytic cleavage, supporting the concept of a “tripartite synapse.” In this special issue, we will focus on the recent discoveries of the role of rapid posttranslational modifications of synaptic proteins (such as PSD-95 and ionotropic glutamate receptors) in protein organization in the synapse under physiological stimuli as well as following pathological conditions (such as chronic stress). We discuss the role of posttranslational modifications of proteins that control synaptic plasticity in health and disease.

Potential topics include but are not limited to the following:

- ▶ The role of S-nitrosylation and S-palmitoylation of synaptic proteins (including GPCRs and their effectors) in physiology and in a broad spectrum of neurodiseases
- ▶ Functional characteristics of proteolysis by ECM proteases on synaptic plasticity
- ▶ Animal models of brain disorders with imbalanced pattern of posttranslational modifications
- ▶ Interplay between the posttranslational modifications in neuronal plasticity
- ▶ Novel methodical approaches to analyze posttranslational modifications

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

Papers are published upon acceptance, regardless of the Special Issue publication date.

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Submission Deadline

Friday, 18 August 2017

Publication Date

January 2018