



Neural Plasticity

Special Issue on

Neuronal Plasticity and Neuroprotection: Dualistic Vision of Reciprocal Action

CALL FOR PAPERS

Neuroplasticity involves a complex set of processes that can be defined as the ability of the central nervous system to respond to various stimuli by reorganizing its structure, function, and connections. Although we have recently undergone a revolution in our understanding of several neurological disorders, including brain ischemia, Parkinson's disease, Alzheimer's disease, epilepsy, glaucoma, and traumatic brain injury, there is *still* much to learn and understand regarding these debilitating diseases. Since these diseases are life threatening, the demand for new and improved treatment strategies continues to increase, and ample efforts have been made to develop novel treatment modalities that protect damaged neurons in these patients. Thus, the ultimate goal of neuroprotective treatment strategies is to attenuate the dying process of a neuron via the promotion of intrinsic cell survival signals or through modulating neuroplasticity via the action of various extracellular signals and/or drugs.

Neuroprotection can be defined as the use of pharmacological agents that impede the dying process of a neuron and/or protect a healthy neuron against initiation of this process. Because neurodegeneration is a complex disease involving a multitude of factors, the development of novel neuroprotective strategies will contribute to a more complete understanding of the progression of these diseases. Recently, it was shown that neurons in various organs exhibit neuroplastic alterations that enhance the survival of cells and organs from injury and aging. Thus, the identification of novel agents that modulate or enhance neuroplasticity will be useful for the treatment of various neurodegenerative diseases. Accordingly, the use of stem cells to modulate neuroplastic activity has recently been suggested as a potential therapeutic strategy. Although the exact mechanisms underlying this process have yet to be revealed, several successful studies have demonstrated that the application of stem cells may enhance neuroplasticity and promote neuronal growth.

Therefore, we invite investigators to submit research and review articles addressing the entire range of mechanisms related to the modulation of neuroplasticity via the application of various therapeutic strategies involving drugs, stem cells, and preconditioning. In this special issue, we intend to highlight the reciprocal action between neuronal plasticity and neuroprotection.

Potential topics include, but are not limited to:

- ▶ The origins of neuroplasticity: hypotheses about and studies investigating the mechanisms underlying neuroplasticity
- ▶ The modulation of neuroplasticity in various *in vivo* and *in vitro* models
- ▶ The modulation of neuroplasticity by compounds such as natural products, drugs, and stem cells following various neurodegenerative insults
- ▶ The regulatory mechanisms of neuronal plasticity-related gene expression induced by stem cells following various neurological insults
- ▶ The cellular pathways leading to the activation of plasticity-related genes under hypoxic conditions *in vitro*
- ▶ Neuroprotection: past achievements and recent progress
- ▶ The mechanisms underlying the promotion of neuroprotection and plasticity by various compounds using various *in vivo* and/or *in vitro* models
- ▶ Neuroprotection strategies: translational studies investigating neuroprotection in stroke or other ischemic injuries

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

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