Special Issue

Dendritic Spines Plasticity and Glia

Message from the Guest Editors

Dendritic spines are exclusively neuronal processes; this has for a long time misled the analysis of neural plasticity toward a neurocentric approach. It has now become apparent, however, that spines serve as the gate, controller, and operator of plasticity. The ionic behavior of a spine sets the pace in terms of time, changing the frequency of the network. Moreover, some "memory spines" have a kind of coordination center for their own activity—a spine apparatus. This is why each part can modify the behavior of the whole. Recent years have clarified that neurotransmitters' fate is managed mainly by astrocytic end feet forming a cuff all around the synaptic domain. The number of the spines is controlled by microglial cells continuously pruning the neuropile modifying the nodes of the net. The shape of the spine is strictly related to the surrounding matrix, which allows or inhibits plastic changes.

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Neuroglia covers the critically important functions of the diverse range of cells within the nervous system that are collectively called glia. Our journal focuses on the development, function, and pathology of glia in the central and peripheral nervous systems, as well as how these cells can be used therapeutically to repair injuries and diseases of the nervous system. The journal welcomes research using the latest in vitro and in vivo animal and human research, with a view to its translation into potential human therapies.

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