



Neural Plasticity

Special Issue on
**Molecular Mechanisms of Dendritic Spine
Development and Plasticity**

CALL FOR PAPERS

The majority of excitatory synapses of postsynaptic neurons are located on specialized cellular compartments called dendritic spines, which are highly dynamic and morphologically heterogeneous. The formation, maturation, and maintenance of dendritic spines are tightly regulated by different extracellular signals. The density and morphology of dendritic spines are also regulated by electrical stimulation upon activation of glutamate receptors, which represents a major mechanism by which synaptic strength is modulated during various forms of synaptic plasticity. Elucidating the underlying mechanisms of dendritic spine morphogenesis is fundamental to our understanding of how neuronal connectivity is changed by experience, a phenomenon that is crucial for brain development and function. In addition, dendritic spine abnormality is often associated with neurodevelopmental and psychiatric disorders, such as Fragile-X syndrome, Rett syndrome, and schizophrenia as well as drug addiction and depression. Precise control of spine development and remodeling is therefore essential for normal brain function. Knowledge on the molecular mechanisms behind spine morphogenesis will lead to better insights on the pathophysiology of brain diseases.

It has become increasingly clear that the molecular complexity in neurons far exceeds what we have previously appreciated, and many novel molecular players and regulatory pathways that control dendritic spine morphogenesis have recently been identified. We therefore invite authors to submit original research articles and reviews that will contribute to the understanding of how dendritic spine development and plasticity are regulated.

Potential topics include, but are not limited to:

- ▶ Control of spine morphogenesis by different Rho-GTPases and their upstream regulators
- ▶ Role of protein phosphorylation and dephosphorylation in spine development and plasticity
- ▶ Importance of dendritic RNA trafficking and local protein synthesis
- ▶ Molecular mechanisms behind dendritic spine abnormality in neurodevelopmental and neurodegenerative diseases

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

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