Handbook of Neurochemistry and Molecular Neurobiology

Development and Aging Changes in the Nervous System

- Addresses sampling of major elements of neural function at the cellular and molecular level that play important roles in development and aging
- Stresses the dynamic features of neuronal responses to internal (developmental) cues and the more harmful external events (injury and disease)
- Topics include neurotrophins, oligodendroglia, myelination, stress response, plasticity, misfolding proteins, and interventions to counteract aging-associated illness

In the animal nervous system, a very high metabolic turnover, fragile but steep ionic gradients, and morphological and structural constraints - dictated by the necessity for prompt neuronal transmission of electrical impulses and necessary plasticity - result in a highly fragile organ system. Here, we address a small sampling of major constituents of neural function at the cellular and molecular level that play important roles in development and aging, two endogenous processes that embody features of allostasis or the dynamic shifts in set points for specific homeostatic mechanisms associated with development and aging. These chapters stress the dynamic features of neuronal responses to internal (developmental) cues or the more harmful external events (injury and disease) in a modern perspective.