Neural Plasticity

Special Issue on

Neural Plasticity in the Neonatal Brain in Health and Disease

CALL FOR PAPERS

The brain continuously develops during fetal and postnatal life well beyond the first decade, through production and deletion of neurons and synapses, as well as activity dependent stabilisation of neuronal networks. Overproduction of neurons in early development, programmed cell death and elimination of excessive neurons and immature synapses, and continuous establishment and stabilisation of synaptic connections are mechanisms much more active in the child's brain compared to the adult, providing enhanced plasticity and capacity to be modelled through experience which allow children to quickly learn new skills or recover from injuries to the brain. Disruption to these mechanisms in the developing brain can be due to either genetic factors or acquired injuries through stress such as oxygen and glucose deprivation. Disruption to the mechanisms of plasticity associated with abnormally structured neuronal networks is observed in several inherited neurological disorders like Fragile X and Rett syndrome. Moreover, enhanced neurogenesis resulting in excessive plasticity can cause injury to neurons and oligodendrocytes and can be associated with neurological disorders like focal hand dystonia, phantom limb pain, and epilepsy. The enhanced plasticity mechanisms in the developing brain contribute to its increased vulnerability to neonatal hypoxia-ischaemia.

The purpose of this special issue is to publish high-quality clinical, basic and translational original research and review articles that seek to address the mechanisms and significance of neural plasticity in the neonatal brain in health and disease.

Potential topics include, but are not limited to:

- Fragile X syndrome
- Rett syndrome
- Coffin-Lowry syndrome
- Neonatal hypoxia-ischaemia
- Cretinism
- Neurofibromatosis-1
- Rubinstein-Taybi syndrome
- Down's syndrome
- Sensory deprivation

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