



Regulation and Deregulation of Cell Metabolism in the Brain: Molecular Aspects, Functional Outcomes

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Message from the Guest Editors

Metabolism comprises the enzyme-mediated chemical processes that regulate the synthesis and the degradation of biological molecules required for cellular viability. A tight regulation of metabolic processes is of paramount importance in the cell, especially in the brain, where homeostasis maintenance is highly dynamic. Despite the central nervous system only accounts for 2% of the body mass, the energy demand is one of the highest in the whole organism. Lipids, such as long-chain polyunsaturated fatty acids and cholesterol, play pivotal structural and functional roles in brain cells. Furthermore, spatial and temporal regulation of protein homeostasis is essential for proper brain functioning and development. Thus, it is not surprising that alterations of the processes regulating ATP, redox status, glucose, lipids and protein metabolism can lead to severe neurodevelopmental and neurodegenerative disorders. For instance, reactive oxygen/nitrogen species (ROS/RNS) imbalance during development or in adult brain is a defect observed in most of neurologic conditions.





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