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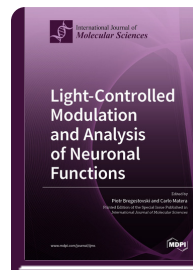
Special Issue Reprint

Light-Controlled Modulation and Analysis of Neuronal Functions

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Contemporary research has been enriched by new directions in which light plays a key role as a tool for the modulation of cellular activity and the invasive monitoring of intracellular ions and other components. The progress in molecular biology, imaging techniques and other modern technologies has led to the emergence of three main areas in which light is the main tool: optogenetics, photopharmacology, and optosensorics. The main advantages of these approaches are the possibilities to investigate the functions of cells; modulate the activity of ion channels, synaptic transmission and neuronal circuits; measure concentrations of ions and other cellular components; and even control the behaviour of organisms.

Due to the development of these powerful molecular and genetic tools, our understanding of the mechanisms underlying the functioning of the nervous system has greatly advanced. This reprint is intended to highlight the latest advances in these areas with a primary focus on light-based analysis and control of neuronal functions.



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