

Special Issue

Light-Controlled Modulation and Analysis of Neuronal Functions

Message from the Guest Editors

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. This Special Issue is intended to highlight the latest experimental and methodological advances in these areas, as well as to present review articles with a primary focus on light-based analysis and control of neuronal functions. A discussion of the difficulties and limitations of using light as a modulator of cellular activity is also planned.

Guest Editors

Prof. Dr. Piotr Bregestovski

1. Institut de Neurosciences des Systèmes, Aix-Marseille University, INSERM, INS, 13005 Marseille, France
2. Institute of Neurosciences, Kazan State Medical University, 420111 Kazan, Russia
3. Department of Normal Physiology, Kazan State Medical University, 420111 Kazan, Russia

Dr. Carlo Matera

Department of Pharmaceutical Sciences, University of Milan, Via L. Mangiagalli 25, 20133 Milan, Italy

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MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
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The International Journal of Molecular Sciences (*IJMS*, ISSN 1422-0067) is an open access journal, which was established in 2000. The journal aims to provide a forum for scholarly research on a range of topics, including biochemistry, molecular and cell biology, molecular biophysics, molecular medicine, and all aspects of molecular research in chemistry. *IJMS* publishes both original research and review articles, and regularly publishes special issues to highlight advances at the cutting edge of research. We invite you to read recent articles published in *IJMS* and consider publishing your next paper with us.

Editor-in-Chief

Prof. Dr. Maurizio Battino

Department of Odontostomatologic and Specialized Clinical Sciences,
Sez-Biochimica, Faculty of Medicine, Università Politecnica delle
Marche, Via Ranieri 65, 60100 Ancona, Italy

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