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Titolo	All-Optical Methods to Study Neuronal Function / / edited by Eirini Papagiakoumou
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Optical Manipulation and Recording of Neural Activity with Wavefront Engineering -- Balancing the Fluorescence Imaging Budget for All-Optical Neurophysiology Experiments -- Light-Based Neuronal Circuit Probing in Living Brains at High-Resolution: Constraints and Layouts for Integrating Neuronal Activity Recording and Modulation in Three Dimensions -- High Speed All-Optical Neural Interfaces with 3D Temporally Focused Holography -- An All-Optical Physiology Pipeline towards Highly Specific and Artefact-Free Circuit Mapping -- Spatial and Temporal Considerations of Optogenetic Tools in an All-Optical Single-Beam Experiment -- Miniature Multiphoton Microscopes for Recording Neural Activity in Freely Moving Animals -- Optogenetics and Light Sheet Microscopy -- Widefield Multiphoton Imaging at Depth with Temporal Focusing -- High-Speed Neural Imaging with Synaptic Resolution: Bessel Focus Scanning Two-Photon Microscopy and Optical-Sectioning Widefield Microscopy -- Optical and Analytical Methods to Visualize and Manipulate Contrical Ensembles and Behavior -- Illuminating Neural Computation using Precision Optogenetics-Controlled Synthetic Perception -- Spectrally-Focused Stimulated Raman Scattering (sf-SRS) Microscopy for Label-Free Investigations of Molecular Mechanisms in Living Organisms.
Sommario/riassunto	This open access volume provides an overview of the latest methods used to study neuronal function with all-optical experimental

approaches, where light is used for both stimulation and monitoring of neuronal activity. The chapters in this book cover topics over a broad range, from fundamental background information in both physiology and optics in the context of all-optical neurophysiology experiments, to the design principles and hardware implementation of optical methods used for photoactivation and imaging. In the Neuromethods series style, chapters include the kind of detail and key advice from the specialists needed to get successful results in your laboratory. Comprehensive and cutting-edge, All-Optical Methods to Study Neuronal Function is a valuable resource for researchers in various disciplines such as physics, engineering, and neuroscience. This book will serve as a guide to establish useful references for groups starting out in this field, and provide insight on the optical systems, actuators, and sensors. .