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| Autore | Feng Zhouyan |
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| Descrizione fisica | 1 online resource (XIX, 376 p. 185 illus., 163 illus. in color.) |
| Collana | Ethnobotany of Mountain Regions Series |
| Altri autori (Persone) | Bussmann |
| Disciplina | 610.28 |
| Soggetti | Biomedical engineering<br>Electrical engineering<br>Neural circuitry<br>Biomedical Engineering and Bioengineering<br>Electrical and Electronic Engineering<br>Neural Circuits |
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| Nota di contenuto | Fundamentals of Neuro-electrophysiology -- Neural Circuits and Evoked Potentials -- Experimental Methods and Setup -- Neural Signal Recording and Processing -- Neuronal Responses to Axonal High-Frequency Pulse Stimulations. |
| Sommario/riassunto | This open access book explores the mechanisms and modulation of invasive neural electrical stimulation in the brain. Drawing from the author's extensive research experience, it offers in-depth yet accessible content, enriched with vivid illustrations and practical applications. Notably, the book provides detailed techniques for animal experiments and methods for recording and processing neural electrical signals with a depth rare in similar works. The book is divided into two parts. Part I introduces fundamental electrophysiological theories and experimental methods. It covers the basic electrical properties of neuronal membranes, the famous Hodgkin-Huxley mathematical model, hippocampal neural networks and electrically evoked potentials, in-vivo rat experimental methods and equipment, and techniques for recording and processing neural electrical signals. Part II focuses on neural modulation through various electrical stimulations. It examines how |

various patterns of high-frequency pulse stimulations affect individual neurons, neuronal populations, and neural networks. In addition to exploring neuronal responses to electrical stimulation under normal physiological conditions, this part also investigates the inhibitory effects of high-frequency stimulation on epileptiform activity. This comprehensive book can serve as a valuable reference for researchers, teachers, students, and enthusiasts in the fields of neurophysiology, neural signal analysis, neural engineering, neuromodulation, brain stimulation, and brain-computer interfaces. It also provides excellent supplementary material for undergraduate and graduate courses in biomedical signal processing, neural engineering, and neuroscience.