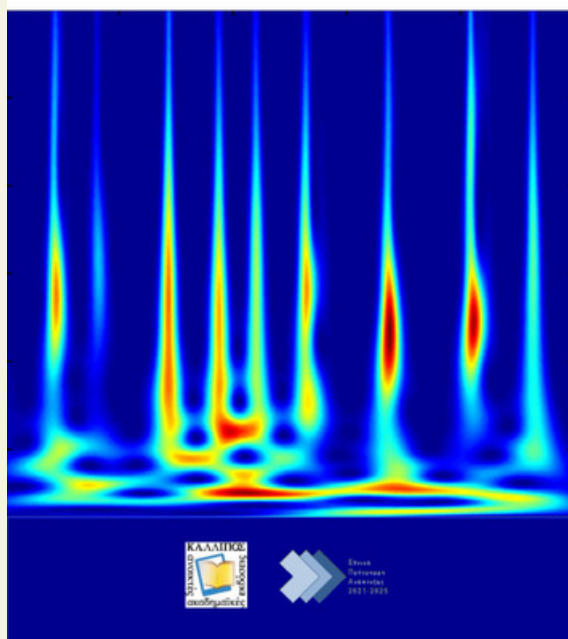


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Αρχές κυτταρικής νευροφυσιολογίας



## METADATA

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### Abstract

This book was prepared from the author's lecture notes in courses on cellular neurophysiology that have been given to first- and second-year undergraduate and postgraduate students in physiology and neuroscience for the past 20 years. This book is intended on being primarily a textbook for students and researchers of biomedical, biology and related fields, as well as other fields related to the functioning of the nervous system. The neuron is the basic structural and functional component of the nervous system and neurons are organized through specific basic patterns to form functional networks. The nervous system continuously receives and processes a great deal of information, converting it into specific types of endogenous biological signals that are used to form unified codes. In this way, the nervous system converts its "input" into its "output". The biological signals underlying information processing and integration between

input and output at the level of neural cell are changes in the electrical potential between the two sides of the cell membrane. In addition, communication among nerve cells is based on neurotransmitters, which are the information carriers in chemical synapses. In this book, several subjects are analyzed: a) the basic mechanisms of membrane potential changes, which include ion channels and the electrotonic properties of the neuron, b) the types of membrane potential changes and the mechanisms of excitability, c) the basic principles of synaptic transmission as well as the biochemistry and functions of a number of neurotransmitters, d) the basic principles of integration of synaptic potentials and synaptic plasticity, e) the basic patterns of organization of neuronal networks, f) the consequences of disturbances of cellular neurophysiological activity, and finally g) selected approaches in studying neuronal activity.

