

NEW!

Electroporation makes the move from journal pages to book covers

Advanced Electroporation Techniques in Biology and Medicine


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A Comprehensive Examination of Electroporation and Its Emerging Applications

A reflection of the intense study of the effects of electromagnetic fields on living tissues that has taken place during the last decades, **Advanced Electroporation Techniques in Biology and Medicine** summarizes most recent experimental findings and theories related to permeabilization of biomembranes by pulsed electric fields. Edited by experts and including contributions from pioneers in the field, the book focuses on biophysical mechanisms of electroporation and applications of this phenomenon in biomedical research and medicine.

The field of electroporation is now mature enough to move from journal pages to book covers. The book leads readers from the basics and history of electroporation, through mechanisms of membrane permeabilization in lipid bilayers and living cells, to electrically-mediated gene delivery and cancer therapy in animals and humans. This book is an interdisciplinary compilation intended broadly for biomedical and physical scientists, engineers, and clinicians. It can also be used as a textbook for students in advanced courses in biomedical engineering, molecular and cell biology, as well as in biophysics and clinical medicine.

FEATURES

- Discusses the contemporary physical chemical theory of membrane electroporation
- Reviews the application of dyes and fluorescent probes to test the efficiency and selectivity of the molecular transport through permeabilized membranes
- Describes a recently proposed molecular dynamics method of membrane electroporation that better “mimics” the experimental conditions, therefore avoiding several shortcomings and supplementing the electric field method
- Examines the impact of physical parameters of the applied electric field on the efficiency of electroporation and its applications
- Covers the basic processes and biophysical mechanism of electrically mediated gene transfer
- Reviews the results and experience with electrochemotherapy of cancer in animal models and in humans

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