

1. Record Nr.	UNINA9910254184803321
Titolo	1st World Congress on Electroporation and Pulsed Electric Fields in Biology, Medicine and Food & Environmental Technologies : Portorož, Slovenia, September 6 –10, 2015 // edited by Tomaz Jarm, Peter Kramar
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2016
ISBN	981-287-817-3
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (445 p.)
Collana	IFMBE Proceedings, , 1433-9277 ; ; 53
Disciplina	610.28
Soggetti	Biomedical engineering Microbiology - Technique Cytology Food - Microbiology Biophysics Pharmaceutical chemistry Biomedical Engineering and Bioengineering Microbiology Techniques Cell Biology Food Microbiology Pharmaceutics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes indexes.
Nota di contenuto	Preface; Satellite Events Incorporated in WC2015; Committees; Sponsors; Table of Contents; Invited Plenary Lectures; About the First Industrial Scale PEF - Plants and Heinz Doevenspeck's Role - A Historical Review; I. INTRODUCTION; II. DOEVEN SPECK'S PROJECTS FROM 1958 UNTIL 1983; III. COOPERATION DOEVEN SPECK- KRUPP UNTIL 1993; Harnessing the Structure Modifying Potential of Pulsed Electric Fields (PEF) - Food Processing Examples in Product Stabilization, Process Acceleration and Compound Extraction; I. INTRODUCTION; II. CASE STUDY 1: PEF IN HURDLE PRESERVATION III. CASE STUDY 2: PEF IN SPORE INACTIVATION IV. CASE STUDY 3: PEF IN

HYDROLYSIS/TERMINATION; V. CASE STUDY 4: PEF IN WASTE/VALORISATION; VI. CASE STUDY 5: PEF IN MEAT TENDERISATION; VII. CASE STUDY 6: PEF IN MEAT CURING; VIII. CONCLUSIONS; Fundamental and Applied Aspects of Pulsed Electric Fields for Microbial Inactivation; I. INTRODUCTION; II. BASICS/PRINCIPLES OF MICROBIAL INACTIVATION BY PULSED ELECTRIC FIELDS; III. FACTORS AFFECTING MICROBIAL INACTIVATION BY PULSED ELECTRIC FIELDS; IV. FOOD PRESERVATION BY PULSED ELECTRIC FIELDS

How Imaging Molecule Uptake into Cells can Reveal the Mechanisms of Membrane Electroporation/I. INTRODUCTION; II. MECHANISMS OF MEMBRANE ELECTROPORATION AND DNA TRANSFER INTO CELLS.; III. LIPID VESICLES AND 3D CELL CULTURES AS OTHER MODELS TO STUDY ELECTROPORATION; IV. CONCLUSIONS; Tissue Reactions to Electroporation and Electrochemotherapy: Vascular Effects that have Implications in Tumor Treatment; I. INTRODUCTION; II. VASCULAR EFFECTS OF ELECTROPORATION; III. VASCULAR EFFECTS OF ELECTROCHEMOTHERAPY; IV. CLINICAL OBSERVATIONS AND IMPLICATIONS; V. CONCLUSIONS

Nanosecond Pulses and Beyond - Towards Antenna Applications I. INTRODUCTION; II. NANOSECOND PULSED ELECTRIC FIELD EFFECTS; III. FROM NANOSECOND TO PICOSECOND PULSES; IV. PICOSECOND PULSE GENERATORS; V. BIOELECTRIC EFFECTS OF PICOSECOND PULSED ELECTRIC FIELDS (PSPEF); VI. FROM INVASIVE PULSE DELIVERY SYSTEMS TO ANTENNAS; VII. CONCLUSION; Optimal Irreversible Electroporation Techniques in the Treatment of Locally Advanced Liver and Pancreatic Cancer; I. INTRODUCTION; II. LOCAL TISSUE FACTORS THAT AFFECT IRE; III. TECHNIQUE OF PERFORMING IRE IN LIVER FOR TUMORS WITH VASCULAR PROXIMITY

IV. CLINICAL RESULTS OF IRREVERSIBLE ELECTROPORATION FOR HEPATIC MALIGNANCIES Electrotransfer of Antiangiogenic shRNA against Endoglin for Effective Cancer Treatment; I. VASCULAR TARGETED THERAPIES; II. ENDOGLIN; III. siRNA AGAINST ENDOGLIN; IV. VASCULAR TARGETED EFFECTS OF shRNA AGAINST ENDOGLIN; V. ANTITUMOR AND ANTIMETASTATIC EFFECTS OF shRNA AGAINST ENDOGLIN; VI. COMPLIANCE WITH ETHICAL REQUIREMENTS; VII. CONCLUSIONS; Abiotic Gene Transfer - A Rarity or a Ubiquity?; I. INTRODUCTION; II. DO THE THREE BIOTIC HGT MECHANISMS SUFFICE?; III. LABORATORY HGT TECHNIQUES ARE ALL ABIOTIC

IV. ABIOTIC HGT MECHANISMS IN NATURE?

Sommario/riassunto

This volume presents the proceedings of the 1st World Congress on Electroporation and Pulsed Electric Fields in Biology, Medicine and Food & Environmental Technologies (WC2015). The congress took place in Portorož, Slovenia, during the week of September 6th to 10th, 2015. The scientific part of the Congress covered different aspects of electroporation and related technologies and included the following main topics:

- Application of pulsed electric fields technology in food: challenges and opportunities
- Electrical impedance measurement for assessment of electroporation yield
- Electrochemistry and electroporation
- Electroporation meets electrostimulation
- Electrotechnologies for food and biomass treatment
- Food and biotechnology applications
- In vitro electroporation - basic mechanisms
- Interfacial behaviour of lipid-assemblies, membranes and cells in electric fields
- Irreversible electroporation in clinical use
- Medical applications: electrochemotherapy
- Medical applications: gene therapy
- Non-electric field-based physical methods inducing cell poration and enhanced molecule transfer
- Non-thermal plasmas for food safety, environmental applications and medical treatments

- PEF for the food industry: fundamentals and applications
 - PEF process integration - complex process chains and process combinations in the food industry • Predictable animal models
 - Pulsed electric fields and electroporation technologies in bioeconomy • Veterinary medical applications.
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