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KEY=APPLICATIONS - PIPER HOBBS

HANDBOOK OF NONMEDICAL APPLICATIONS OF LIPOSOMES

THEORY AND BASIC SCIENCES

CRC Press Liposomes have become an important model in fundamental biomembrane research, including biophysical, biochemical, and cell biological studies of membranes and cell function. They are thoroughly studied in several applications, such as drug delivery systems in medical applications and as controlled release systems, microencapsulating media, signal carriers, support matrices, and solubilizers in other applications. While medical applications have been extensively reviewed in recent literature, there is a need for easily accessible information on applications for liposomes beyond pharmacology and medicine. The Handbook of Nonmedical Applications of Liposomes fills this void. This unique new handbook series presents recent developments in the use of liposomes in many scientific disciplines, from studies on the origin of life, protein function, and vesicle shapes, to applications in cosmetics, diagnostics, ecology, bioreclamation, and the food industry. In these volumes many of the top experts contribute extensive reviews of their work.

HANDBOOK OF NONMEDICAL APPLICATIONS OF LIPOSOMES

VOLUME III: FROM DESIGN TO MICROREACTORS

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HANDBOOK OF NONMEDICAL APPLICATIONS OF LIPOSOMES

FROM GENE DELIVERY AND DIAGNOSIS TO ECOLOGY

CRC Press First published in 1996, liposomes have become an important model in fundamental biomembrane research, including biophysical, biochemical, and cell biological studies of membranes and cell function. They are thoroughly studied in several applications, such as drug delivery systems in medical applications and as controlled release systems, microencapsulating media, signal carriers, support matrices, and solubilizers in other applications. While medical applications have been extensively reviewed in recent literature, there is a need for easily accessible information on applications for liposomes beyond pharmacology and medicine. The Handbook of Nonmedical Applications of Liposomes fills this void. This unique new handbook series presents recent developments in the use of liposomes in many scientific disciplines, from studies on the origin of life, protein function, and vesicle shapes, to applications in cosmetics, diagnostics, ecology, bioreclamation, and the

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VOLUME IV: FROM GENE DELIVERY AND DIAGNOSTICS TO ECOLOGY

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HANDBOOK OF NONMEDICAL APPLICATIONS

LIPOSOMES SET

CRC Press This four-volume collection of reviews on vesicle shapes and topology from the world's leading laboratories. It covers cholesterol interactions with lipid bilayers, and the thermodynamics of liposomal systems. There are also computer simulations and molecular dynamics of lipid systems.

HANDBOOK OF NONMEDICAL APPLICATIONS OF LIPOSOMES: MODELS FOR BIOLOGICAL PHENOMENA

HANDBOOK OF NONMEDICAL APPLICATIONS OF LIPOSOMES: THEORY AND BASIC SCIENCES

HANDBOOK OF NONMEDICAL APPLICATIONS OF LIPOSOMES

THEORY AND BASIC SCIENCES

HANDBOOK OF NONMEDICAL APPLICATIONS OF LIPOSOMES: FROM GENE DELIVERY AND DIAGNOSTICS TO ECOLOGY

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MEDICAL APPLICATIONS OF LIPOSOMES

Elsevier The development of liposomes as a drug delivery system has fluctuated since its introduction in the late 1960's by A.D. Bangham. While academic research of liposomes as a model membrane system has always flourished, as the exponential growth of papers can testify, the application of these findings to medically useful products has gone through several crises. Following the original optimism in the 70's and early 80's, a period of severe skepticism ensued at the end of the 80's and beginning of the 90's, culminating in a moderate but real optimism in the mid 90's, as a result of a successful launch of the first products in the US and Europe. In this collection of papers, the editors have gathered the most promising ideas, approaches, applications and commercial developments, thereby presenting an up-

to-date compilation of the present status of the field. This includes such broad areas as anti-cancer chemotherapy immune stimulation and infectious diseases. Currently, the major areas of progress are in delivery of anti-fungal agents by conventional liposomes or lipid-based carriers and systemic anticancer therapy using long-circulating liposomes. The future applications as characterized by the direction of present day research is in specific targeting and delivery of informational molecules such as DNA plasmids (genes), antisense oligonucleotides or ribozymes. Other future developments may be in topical delivery, vaccination and in diagnostics. Features of this book: • Contributions from almost all the leading labs in the field • Up-to-date, critical reviews bridged by editors' introductions • Organized into a logical framework.

LIPOSOMES: A PRACTICAL APPROACH

Oxford University Press This book is an up-to-date and unique collection of experimental protocols from an area of pharmaceutical research that is essential for the development of new, highly specific drugs as well as for the exploration of completely new therapeutic approaches to disease treatments.

PERCUTANEOUS PENETRATION ENHANCERS CHEMICAL METHODS IN PENETRATION ENHANCEMENT

NANOCARRIERS

Springer Percutaneous Penetration Enhancers in a mini-series format comprising five volumes, represents the most comprehensive reference on enhancement methods – both well established and recently introduced – in the field of dermal/transdermal drug delivery. In detail the broad range of both chemical and physical methods used to enhance the skin delivery of drugs is described. All aspects of drug delivery and measurement of penetration are covered and the latest findings are provided on skin structure and function, mathematics in skin permeation and modern analytical techniques adapted to assess and measure penetration. In offering a detailed description of the methods currently in use for penetration enhancement, this book will be of value for researchers, pharmaceutical scientists, practitioners and also students.

LIPOSOMES IN GENE DELIVERY

CRC Press Many specialists are not familiar with both drug delivery and the molecular biology of DNA vectors. Liposomes in Gene Delivery covers both-molecular biologists will gain a basic knowledge of lipids, liposomes, and other gene delivery vehicles; lipid and drug delivery scientists will better understand DNA, molecular biology, and DNA manipulation. Topics include an introduction to nucleic acids, a theoretical description of DNA, recombinant technology, lipids and liposomes, stability and interaction properties of lipids and liposomes, complexation of lipids and liposomes with DNA plasmids, gene expression of genomes in various models, structure-activity relationships, and transfection models. This is an excellent introductory text for graduate students, scientists, and researchers in molecular and

cell biology, genetics, biochemistry, physical chemistry, colloid science, pharmacology, molecular science, and medicine.

LIPOSOMES

Elsevier Liposomes are cellular structures made up of lipid molecules. Important as a cellular model in the study of basic biology liposomes are also used in clinical applications such as drug delivery and virus studies. *Liposomes in Immunology *Liposomes in Diagnostics *Liposomes in Gene Delivery and Gene Therapy

NUTRITION AND BIOCHEMISTRY OF PHOSPHOLIPIDS

The American Oil Chemists Society Phospholipids are involved in many intrinsic applications within the cell and are part of all major tissue and concentrated in vital organs that require neuronal interactions. This book contains the program presented at the 8th International Congress of ILPS and includes sessions covering phospholipids metabolism in brain function, choline and galactosphingolipids in health and disease, phospholipids in cardiovascular, liver, and muscle health, and finally, phospholipids in infant nutrition. This book, which contains these current research activities and updates, should stimulate the scientific community to continue working on phospholipids in biochemistry and nutrition.

BIOSENSORS AND THEIR APPLICATIONS

Springer Science & Business Media A biosensor is a device in which a bioactive layer lies in direct contact with a transducer whose responses to change in the bioactive layer generate electronic signals for interpretation. The bioactive layer may consist of membrane-bound enzymes, anti-bodies, or receptors. The potential of this blend of electronics and biotechnology includes the direct assay of clinically important substrates (e.g. blood glucose) and of substances too unstable for storage or whose concentrations fluctuate rapidly. Written by the leading researchers in the field, this book reflects the most current developments in successfully constructing a biosensor. Major applications are in the fields of pharmacology, molecular biology, virology and electronics.

LIPOSOMES, LIPID BILAYERS AND MODEL MEMBRANES

FROM BASIC RESEARCH TO APPLICATION

CRC Press As a result of their unique physical properties, biological membrane mimetics, such as liposomes, are used in a broad range of scientific and technological applications. Liposomes, Lipid Bilayers and Model Membranes: From Basic Research to Application describes state-of-the-art research and future directions in the field of membranes, which has evo

SCIENTIFIC AND CLINICAL APPLICATIONS OF MAGNETIC CARRIERS

Springer Science & Business Media Proceedings of an international conference held in Rostock, Germany, September 5-7, 1996

PHYSICAL CHEMISTRY OF BIOLOGICAL INTERFACES

CRC Press An introduction to the most important fundamental concepts of physicochemical interface science and a description of experimental techniques and applications of surface science in relation to biological systems. It explores artificial assemblies of lipids, proteins and polysaccharides that perform novel functions that living systems cannot duplicate.

LIPOSOMES

A PRACTICAL APPROACH

Irl Press Over the last twenty years, liposomes, useful models for cell membranes, have become a powerful research tool whose study has resulted in many advances in cell physiology. This conveniently spiral-bound handbook covers many of these industrial and medical applications. The "hands-on" treatment includes information on liposome structure, tailoring liposomes to specific applications, the handling of lipids, active loading, purification, and chemical analysis and characterization. The book is fully illustrated, and readers will find step-by-step instruction on fluorescence techniques, instrumentation, interactions of liposomes with cells, using markers to determine the fate of liposome components, and retrieval of liposome components.

HISTORY OF LECITHIN AND PHOSPHOLIPIDS (1850-2016)

EXTENSIVELY ANNOTATED BIBLIOGRAPHY AND SOURCEBOOK, INCLUDING PHOSPHATIDES AND LIPOSOMES

Soyinfo Center The world's most comprehensive, well documented, and well illustrated book on this subject. With extensive subject and geographical index. 292 photographs and illustrations. Free of charge in digital PDF format on Google Books.

LIPOSOMES

Elsevier Liposomes are cellular structures made up of lipid molecules. Important as a cellular model in the study of basic biology, liposomes are also used in clinical applications such as drug delivery and virus studies. Liposomes Part D is a continuation of previous Methods in Enzymology Liposome volumes A, B, and C. Covers antibody or ligand targeted liposomes; environment sensitive liposomes; liposomal oligonucleotides; liposomes in vivo

LONG ACTING INJECTIONS AND IMPLANTS

Springer Science & Business Media Long acting injections and implants improve therapy, enhance patient compliance, improve dosing convenience, and are the most appropriate formulation choice for drugs that undergo extensive first pass metabolism or that exhibit poor oral bioavailability. An intriguing variety of technologies have been developed to provide long acting injections and implants. Many considerations need to go into the design of these systems in order to translate a concept from the lab bench to actual therapy for a patient. This book

surveys and summarizes the field. Topics covered in Long Acting Injections and Implants include the historical development of the field, drugs, diseases and clinical applications for long acting injections and implants, anatomy and physiology for these systems, specific injectable technologies (including lipophilic solutions, aqueous suspensions, microspheres, liposomes, in situ forming depots and self-assembling lipid formulations), specific implantable technologies (including osmotic implants, drug eluting stents and microfabricated systems), peptide, protein and vaccine delivery, sterilization, drug release testing and regulatory aspects of long acting injections and implants. This volume provides essential information for experienced development professionals but was also written to be useful for scientists just beginning work in the field and for others who need an understanding of long acting injections and implants. This book will also be ideal as a graduate textbook.

POLYMERIC BIOMATERIALS, REVISED AND EXPANDED

CRC Press Offering nearly 7000 references-3900 more than the first edition- Polymeric Biomaterials, Second Edition is an up-to-the-minute source for plastics and biomedical engineers, polymer scientists, biochemists, molecular biologists, macromolecular chemists, pharmacists, cardiovascular and plastic surgeons, and graduate and medical students in these disciplines. Completely revised and updated, it includes coverage of genetic engineering, synthesis of biodegradable polymers, hydrogels, and mucoadhesive polymers, as well as polymers for dermacosmetic treatments, burn and wound dressings, orthopedic surgery, artificial joints, vascular prostheses, and in blood contacting systems.

LIPOSOMES

Elsevier Liposomes are cellular structures made up of lipid molecules. Important as a cellular model in the study of basic biology, liposomes are also used in clinical applications such as drug delivery and virus studies. Methods in Liposome Preparation Physicochemical Characterization of Liposomes

BIONANOTECHNOLOGY II

GLOBAL PROSPECTS

CRC Press The impact and importance of nanotechnology continues to grow, and nanomedicine and biotechnology have become areas of increased development. Biomedical engineers who work with biological processes and structures must have a deeply rooted understanding of the role of bionanotechnology, a rapidly evolving sector of the nanotechnology field. Bionanotechnology II: Global Prospects, a follow-up to the editor's highly successful first volume, contains 26 entirely new contributions that provide a broad survey of research shaping this critical field. With coverage of technical and nontechnical areas, the book offers representative reporting on a wide variety of activity from around the world. It discusses the role of nanotechnology in novel medical devices, bioanalytical technologies, and nanobiomaterials. Topics discussed include: Emerging microscale technologies

Bionanotech-based water treatment Tissue engineering and drug delivery Antimicrobial nanomaterials in the textile industry Bionanotechnology applications in plants and agriculture With contributions from researchers in Israel, Egypt, Iran, Jordan, Singapore, South Africa, Turkey, Thailand, Argentina, the United Kingdom, and the United States, this volume presents a worldwide perspective on some of the critical areas shaping bionanotechnology today.

NANOSCALE MATERIALS IN TARGETED DRUG DELIVERY, THERAGNOSIS AND TISSUE REGENERATION

Springer This book is the first of its kind to offer a comprehensive and up-to-date discussion of the use of nanoscale materials for biomedical applications, with a particular focus on drug delivery, theragnosis and tissue regeneration. It also describes in detail the methods used in the preparation of nanoparticles. Response of nanoparticles in biological systems are also explored. Nanotechnology has led to the advent of a new field, nanomedicine, which focuses on the use of nanomaterials as drug-delivery vehicles to develop highly selective and effective drugs. The combination of molecular imaging and nanotechnology has produced theragnostic nanoparticles, which allow the simultaneous detection and monitoring of diseases. Nanotechnology can also be combined with biomaterials to create scaffolds for tissue regeneration. Further, significant advances have been made in the areas of drug delivery, theragnostic nanoparticles and tissue regeneration materials. Some nanomedicines and tissue regeneration materials are already commercially available, while others are undergoing clinical trials, and promising results have been documented. Despite the rapid advances in nanomedicine, there is a relative dearth of literature on the biomedical applications of nanoscale materials.

LIPOSOMES, PART F

Academic Press Liposomes are cellular structures made up of lipid molecules, which are water insoluble organic molecules and the basis of biological membranes. Important as a cellular model in the study of basic biology, liposomes are also used in clinical applications such as drug delivery and virus studies. Liposomes Part F is a continuation of previous MIE Liposome volumes A through E. * One of the most highly respected publications in the field of biochemistry since 1955 * Frequently consulted and praised by researchers and reviewers alike * Truly an essential publication for anyone in any field of the life sciences

BIOMIMETIC MEMBRANES FOR SENSOR AND SEPARATION APPLICATIONS

Springer Science & Business Media This book addresses the possibilities and challenges in mimicking biological membranes and creating membrane-based sensor and separation devices. Recent advances in developing biomimetic membranes for technological applications will be presented with focus on the use of integral membrane protein mediated transport for sensing and separation. It describes the fundamentals of biosensing as well as separation and shows how the two processes are working in a cooperative manner in biological systems. Biomimetics is a truly

cross-disciplinary approach and this is exemplified using the process of forward osmosis will be presented as an illustration of how advances in membrane technology may be directly stimulated by an increased understanding of biological membrane transport. In the development of a biomimetic sensor/separation technology, both channels (ion and water channels) and carriers (transporters) are important. An ideal sensor/separation device requires the supporting biomimetic matrix to be virtually impermeable to anything but the solute in question. In practice, however, a biomimetic support matrix will generally have finite permeabilities to water, electrolytes, and non-electrolytes. These non-protein mediated membrane transport contributions will be presented and the implications for biomimetic device construction will be discussed. New developments in our understanding of the reciprocal coupling between the material properties of the biomimetic matrix and the embedded proteins will be presented and strategies for inducing biomimetic matrix stability will be discussed. Once reconstituted in its final host biomimetic matrix the protein stability also needs to be maintained and controlled. Beta-barrel proteins exemplified by the E. Coli outer membrane channels or small peptides are inherently more stable than alpha-helical bundle proteins which may require additional stabilizing modifications. The challenges associated with insertion and stabilization of alpha-helical bundle proteins including many carriers and ligand and voltage gated ion (and water) channels will be discussed and exemplified using the aquaporin protein. Many biomimetic membrane applications require that the final device can be used in the macroscopic realm. Thus a biomimetic separation device must have the ability to process hundred of liters of permeate in hours - effectively demanding square-meter size membranes. Scalability is a general issue for all nano-inspired technology developments and will be addressed here in the context biomimetic membrane array fabrication. Finally a robust working biomimetic device based on membrane transport must be encapsulated and protected yet allowing massive transport through the encapsulation material. This challenge will be discussed using microfluidic design strategies as examples of how to use microfluidic systems to create and encapsulate biomimetic membranes. The book provides an overview of what is known in the field, where additional research is needed, and where the field is heading.

TARGETING OF DRUGS 6

STRATEGIES FOR STEALTH THERAPEUTIC SYSTEMS

Springer Science & Business Media Proceedings of a NATO ASI held in Cape Sounion Beach, Greece, June 24-July 5, 1997

NOVEL APPROACHES FOR DRUG DELIVERY

IGI Global Providing optimal care to patients is a primary concern in the healthcare field. By utilizing the latest resources and research in biomedical applications, the needs and expectations of patients can be successfully exceeded. Novel Approaches for Drug Delivery is an authoritative reference source for the latest scholarly research on emerging developments within the pharmaceutical industry, examining

the current state and future directions of drug delivery systems. Highlighting therapeutic applications, predictive toxicology, and risk assessment perspectives, this book is ideally designed for medical practitioners, pharmacists, graduate-level students, scientists, and researchers.

BIOMIMETIC LIPID MEMBRANES: FUNDAMENTALS, APPLICATIONS, AND COMMERCIALIZATION

Springer This book compiles the fundamentals, applications and viable product strategies of biomimetic lipid membranes into a single, comprehensive source. It broadens its perspective to interdisciplinary realms incorporating medicine, biology, physics, chemistry, materials science, as well as engineering and pharmacy at large. The book guides readers from membrane structure and models to biophysical chemistry and functionalization of membrane surfaces. It then takes the reader through a myriad of surface-sensitive techniques before delving into cutting-edge applications that could help inspire new research directions. With more than half the world's drugs and various toxins targeting these crucial structures, the book addresses a topic of major importance in the field of medicine, particularly biosensor design, diagnostic tool development, vaccine formulation, micro/nano-array systems, and drug screening/development. Provides fundamental knowledge on biomimetic lipid membranes; Addresses some of biomimetic membrane types, preparation methods, properties and characterization techniques; Explains state-of-art technological developments that incorporate microfluidic systems, array technologies, lab-on-a-chip-tools, biosensing, and bioprinting techniques; Describes the integration of biomimetic membranes with current top-notch tools and platforms; Examines applications in medicine, pharmaceutical industry, and environmental monitoring.

DRUG DELIVERY

Springer Science & Business Media In the view of most experts pharmacology is on drugs, targets, and actions. In the context the drug as a rule is seen as an active pharmaceutical ingredient and not as a complex mixture of chemical entities of a well defined structure. Today, we are becoming more and more aware of the fact that delivery of the active compound to the target site is a key. The present volume gives a topical overview on various modern approaches to drug targeting covering today's options for specific carrier systems allowing successful drug treatment at various sites of the body difficult to address and allowing to increase the benefit-risk-ratio to the optimum possible.

ADVANCED GENE DELIVERY

CRC Press A practical resource for everyone involved in the gene therapy field and in the design of effective gene delivery systems, this volume presents an overview and update of recent advances in the field of non-viral methods for the in vivo transfer of therapeutic genes to biological targets using conventional routes of administration. Methods to control the spatial and temporal modulation of gene function in vivo as well as the level, duration, specificity, and fidelity of gene expression are described.

The rational design and the applications of a variety of non-viral gene delivery systems, such as cationic lipid-, polymer-, and (poly) peptide-based systems, are exemplified for the control of location of therapeutic genes administered by various routes. Current and potential clinical applications of gene-based medicines are presented for the prevention, correction or modulation of diseases. Examples of current applications of plasmid-based systems for genetic vaccination, treatment of genetic disorders such as cystic fibrosis, and treatment of acquired diseases such as cancer are also provided.