

Preface

The many improvements in the treatment of human and animal disease made over the last forty years owe much to the discovery and development of novel pharmaceuticals and the various dosage forms that allow these agents to be used in a safe and effective manner. These advances reflect collective progress in a diverse array of scientific disciplines, notably physical and organic chemistry, pharmacology, biochemistry, toxicology, physiology and pathology. These endeavours have established a firm foundation for the dramatic changes that are now occurring in experimental and clinical therapeutics as a consequence of the unprecedented scope and pace of new discoveries in cell and molecular biology which herald remarkable opportunities for the rational design of novel classes of therapeutic agents of unmatched specificity and efficacy.

Translation of these advances into clinical therapy will not occur, however, unless parallel progress is made in devising new strategies to achieve delivery of such agents to the desired site(s) of action via cost-effective procedures that prevent loss of drug activity, avoid toxicity and which are convenient to the patient and the physician. Fortunately, this priority has been recognized and research on advanced drug delivery systems is now a major focus of attention in both academic and industrial laboratories.

Current research on drug delivery systems embraces a broad array of disciplines in biology, chemistry and medicine. The impressive scope and rapid pace of discovery in this important aspect of pharmaceutical research owes much to this interdisciplinary approach and reflects the convergence and integration of concepts and techniques from previously separate fields of enquiry. This trend, coupled with the unabated pace of dramatic advances in cell and molecular biology which have profound implications for the future practice of therapeutics, makes it increasingly difficult for individuals interested in drug delivery to remain informed about relevant advances and emerging concepts outside of their own immediate speciality.

Advanced Drug Delivery Reviews will present critical and up-to-date surveys of current research on advanced drug delivery. In addition to serving as a comprehensive and authoritative source of information on the current status of particular topics, contributors will be encouraged to identify unanswered questions, discuss deficiencies in current experimental models and techniques and to outline future strategies for overcoming these problems. The level of technical discussion will be advanced, directed primarily to the needs of the active research investigator.

The series will have a broad scope, embracing all aspects of the design and development of advanced drug delivery systems. Major topics that will receive attention include: the properties and behaviour of site-specific drug delivery systems

such as particulate carriers, antibodies and other macromolecules, polymers, implantable pumps and other devices; site-specific drug delivery and strategies for targeted drug delivery; and preclinical and clinical evaluation of the safety and efficacy of different delivery systems in the therapy of specific diseases. The complexities of large-scale commercial production of delivery systems will also receive attention, together with occasional articles on the regulation and marketing of such systems. Finally, as with any important topic in science and technology, certain applications of delivery systems may raise ethical issues that will merit full debate. Examples of this kind might include concerns regarding the use of delivery systems to prolong the life of patients with advanced terminal diseases or injuries, as carriers for introducing genetic material into somatic or germ cells of man and animals, and debate of the possible environmental consequences of certain agricultural applications of delivery systems.

In short, the scope will be broad and reflect the impressive innovation and diversity that characterizes this major area of contemporary biomedical research.

It will also be a deliberate editorial policy to include articles that describe major advances occurring in fields outside of drug delivery but which are considered to offer entirely new strategies for drug delivery and/or opportunities for significant refinement of existing approaches. Obvious examples of this kind are new insights into: the structure and function of various classes of cellular receptors and cell transport systems as targets for drug action or delivery; the pathogenesis of specific disease states; advances in experimental techniques in cell and molecular biology; novel probes, analytical methods and instrumentation for evaluating organ function pertinent to analysis of the behaviour and fate of drug delivery systems; the molecular pharmacology of new drug classes and their implications for the design of delivery systems; new models of disease that will permit more critical evaluation of the safety and efficacy of delivery systems; advances in materials science relevant to the development of improved biocompatible materials; and fundamental research on the chemistry of specific target molecules and the stereochemistry of ligand interactions that can be exploited in site-specific drug delivery.

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