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~~Design And Ysis Of Bioavailability~~

AVL DRIVINGCUBE to advance R&D for on-road and passenger vehicle applications A new way to speed up the validation and approval process of ADAS/AD systems PLYMOUTH, Mich., May 5, 2022 /PRNewswire ...

~~AVL and Clemson University Accelerate ADAS/AD Research and Development~~

For the past year, 5 PSU students have been working on a project that could change the lives of children with movement disabilities: a prototype chassis for a customizable powered toy car. This item ...

Understand and assess the design, delivery, and efficacy of orally administered drugs A practical guide to understanding oral bioavailability, one of the major hurdles in drug development and delivery, Oral Bioavailability: Basic Principles, Advanced Concepts, and Applications is designed to help chemists, biologists, life science researchers, pharmaceutical scientists, pharmacologists, clinicians, and graduate and students become familiar with the fundamentals and practices of the science of oral bioavailability. The difference in rate and extent between a drug taken orally and the actual amount of a drug reaching the circulatory system, oral bioavailability is an essential parameter for determining the efficacy and adverse effects of new and developing medications, as well as finding an optimal dosing regimen. This book provides a much-needed one-stop resource to help readers better understand and appreciate the many facets and complex problems of oral bioavailability, including the basic barriers to oral bioavailability, the methods used to determine relevant parameters, and the

challenges of drug delivery. In addition, this comprehensive book discusses biological and physicochemical methods for improving bioavailability, integrates physicochemistry with physiology and molecular biology, and includes several state-of-the-art technologies and approaches—Caco-2 cell culture model, MDCK, and other related cell culture models—which are used to study the science of oral bioavailability.

Of the thousands of novel compounds that a drug discovery project team invents and that bind to the therapeutic target, typically only a fraction of these have sufficient ADME/Tox properties to become a drug product. Understanding ADME/Tox is critical for all drug researchers, owing to its increasing importance in advancing high quality candidates to clinical studies and the processes of drug discovery. If the properties are weak, the candidate will have a high risk of failure or be less desirable as a drug product. This book is a tool and resource for scientists engaged in, or preparing for, the selection and optimization process. The authors describe how properties affect in vivo pharmacological activity and impact in vitro assays. Individual drug-like properties are discussed from a practical point of view, such as solubility, permeability and metabolic stability, with regard to fundamental understanding, applications of property data in drug discovery and examples of structural modifications that have achieved improved property performance. The authors also review various methods for the screening (high throughput), diagnosis (medium throughput) and in-depth (low throughput) analysis of drug properties. * Serves as an essential working handbook aimed at scientists and students in medicinal chemistry * Provides practical, step-by-step guidance on property fundamentals, effects, structure-property relationships, and structure modification strategies * Discusses improvements in pharmacokinetics from a practical chemist's standpoint

This is a well thought-out, highly practical text covering contemporary ‘in vitro’ techniques for drug absorption studies. Starting at the molecular level of investigation, it continues with cell monolayer models (both primary and cell lines) and culminates with in situ techniques as a final testing format. In addition, chapters on high-throughput assays, in vitro-in vivo correlation, bioinformatics and regulatory issues are covered, giving a comprehensive overview of available models and techniques. Moreover, an appendix consisting of a number of practical protocols is available online, updated as needed, and should prove very helpful to apply the techniques directly to the benchside.

Volumes 2 and 3 of the 3D QSAR in Drug Design series aim to review the progress being made in CoMFA and other 3D QSAR approaches since the publication of the highly successful first volume about four years ago. Volume 2 (Ligand-Protein Interactions and Molecular Similarity) divides into three sections dealing with Ligand-Protein Interactions, Quantum Chemical Models and Molecular Dynamics Simulations, and Pharmacophore Modelling and Molecular Similarity, respectively. Volume 3 (Recent Advances) is also divided into three sections, namely 3D QSAR Methodology: CoMFA and Related Approaches, Receptor Models and Other 3D QSAR Approaches, and 3D QSAR Applications. More than seventy distinguished scientists have contributed nearly forty reviews of their work and related research to these two volumes which are of outstanding quality and timeliness. These works present an up-to-date coverage of the latest developments in all fields of 3D QSAR.

Dosage Form Design Parameters, Volume I, examines the history and current state of the field within the pharmaceutical sciences, presenting key developments. Content includes drug development issues, the scale up of formulations, regulatory issues, intellectual property, solid state properties and polymorphism. Written by experts in the field, this volume in the Advances in Pharmaceutical Product Development and Research series deepens our understanding of dosage form design parameters. Chapters delve into a particular aspect of this fundamental field, covering principles, methodologies and the technologies employed by pharmaceutical scientists. In addition, the book contains a comprehensive examination suitable for researchers and advanced students working in pharmaceuticals, cosmetics, biotechnology and related industries. Examines the history and recent developments in drug dosage forms for pharmaceutical sciences Focuses on physicochemical aspects, prefomulation solid state properties and polymorphism Contains extensive references for further discovery and learning that are appropriate for advanced undergraduates, graduate students and those interested in drug dosage design

The prodrug approach is a promising and well established strategy for the development of new entities that possess superior efficacy, selectivity and reduced toxicity. Hence an optimized therapeutic outcome can be accomplished using this approach. Prodrug design is becoming more elaborate in the development of efficient and selective drug delivery systems. The targeted prodrug approach, in combination with gene delivery and controlled expression of enzymes and carrier proteins, is a promising strategy for precise and efficient drug delivery and enhancement of the therapeutic effect. This book describes in details all prodrug approaches and examples of prodrugs that succeeded to enter the market. There are two major prodrug design approaches that are considered as widely used among all other approaches: the targeted drug design approach by which prodrugs can be designed to target specific enzymes or carriers by considering enzyme-substrate specificity or carrier-substrate specificity in order to overcome various undesirable drug properties. Examples for such approach is the antibody-directed enzyme prodrug therapy (ADEPT), gene-directed enzyme prodrug therapy (GDEPT), virus-directed enzyme prodrug therapy (VDEPT) and GDEPT. In addition, this book describes in details a novel prodrug chemical approach which is based on intramolecular reactions that were utilized to understand how enzymes exert their high catalysis. The information gained from the experimental and theoretical calculations on these enzyme models was used to design efficient chemical moieties to be utilized as prodrug linkers with the potential to release the corresponding parent drugs in a slow or fast release manner. Several prodrugs for commonly used drugs suffer from low bioavailability or/and bitter sensation were designed using quantum mechanics methods (DFT and ab initio) and recently a large number among these prodrugs were synthesized. Examples of such prodrugs are presented in the different chapters of the book.

These volumes are designed to be the most complete guide to pharmacokinetics (PK) and its role in drug development. They fill a gap between the academic science and the practical application of that knowledge in drug development. Volume 1 discusses the role that PK plays in selected clinical study designs. Volume 2 details the key regulatory and development paradigms in which PK supplements decision-making during drug development.

Biochar is the carbon-rich product when biomass (such as wood, manure or crop residues) is heated in a closed container with little or no available air. It can be used to improve agriculture and the environment in several ways, and its stability in soil and superior nutrient-retention properties make it an ideal soil amendment to increase crop yields. In addition to this, biochar sequestration, in combination with sustainable biomass production, can be carbon-negative and therefore used to actively remove carbon dioxide from the atmosphere, with major implications for mitigation of climate change. Biochar production can also be combined with bioenergy production through the use of the gases that are given off in the pyrolysis process. This book is the first to synthesize the expanding research literature on this topic. The book's interdisciplinary approach, which covers engineering, environmental sciences, agricultural sciences, economics and policy, is a vital tool at this stage of biochar technology development. This comprehensive overview of current knowledge will be of interest to advanced students, researchers and professionals in a wide range of disciplines.