Drug Metabolism Pharmacokinetics In Drug Discovery A

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Pharmacokinetics - Peter G. Welling 1997
Pharmacokinetics is the study of the absorption, distribution, metabolism, and excretion of drugs in humans. This book, written by an internationally known researcher, teaches the basic principles, including drug transport, parenteral and enteral routes of drug administration, and factors affecting drug absorption, distribution, and metabolism. Extensively revised, this edition presents the mathematics of pharmacokinetics with various single- and multi-compartment models including detailed descriptions of metabolite and nonlinear pharmacokinetics. It also describes renal and hepatic drug clearance, and the influence of kidney and liver impairment on these functions. Taking a tutorial approach throughout, the author provides both a clear introduction to pharmacokinetics and a critical look at how this science affects drug discovery and development.
Pharmacokinetics and Metabolism in Drug Design - Dennis A. Smith 2006-08-21
In this new edition of a bestseller, all the contents have been updated and new material has been added, especially in the areas of toxicity testing and high throughput analysis. The authors, all of them employed at Pfizer in the discovery and development of new active substances, discuss the significant parameters and processes important for the absorption, distribution and retention of drug compounds in the body, plus the potential problems created by their transformation into toxic byproducts. They cover everything from the fundamental principles right up to the impact of pharmacokinetic parameters on the discovery of new drugs. While aimed at all those dealing professionally with the development and application of pharmaceutical substances, the readily comprehensible style makes this book equally suitable for students of pharmacy and related subjects.
Pharmacology for Chemists - Raymond Hill 2017-10-25
Assuming little previous knowledge of biology, this book aids graduate chemists to close the gap in their knowledge of pharmacology and make the link between medicinal chemistry and the way in which drugs act on the body. The availability of receptor structures has revolutionized drug discovery and development necessitating an up-to-date source of information for chemists entering this new pharmacological world. Chapters, written by experts with an appreciation of most graduate chemists' knowledge, explain the history of pharmacology, the relationship between receptor structure and function and receptor pharmacology relevant to drug design. Importantly, as drugs are normally discovered in test rather than therapeutic systems, this text describes how pharmacology provides methods to characterize drug activity through scales that allow prediction of drug effect in all systems. Moreover, it outlines the relationship between drug distribution in the body and the action of drugs in particular organ systems relevant to disease. Readers will also find information on pharmacokinetics and drug metabolism, safety pharmacology and toxicology, clinical and regulatory pharmacology and the use of imaging techniques. Carefully edited for relevance to the modern chemist, this unique textbook will be an essential resource for chemists planning to work in drug discovery, or postgraduate students and practicing chemists interested in expanding their pharmacology knowledge
Predictive ADMET - Jianling Wang 2014-02-28
This book helps readers integrate in silico, invitro, and in vivo ADMET (absorption,distribution, metabolism, elimination and toxicity) and PK(pharmacokinetics) data with routine testing applications so thatpharmaceutical scientists can diagnose ADMET problems and presentappropriate recommendations to move drug discovery programsforward. The book introduces the current clinical practice for drugdiscovery and development along with the impact on early riskassessment; consolidates the tools and models to intelligentlyintegrate existing in silico, invitro and in vivo ADMET data; anddemonstrates successful cases and lessons learned from real drugdiscovery and development. In short, it is a book aimed to providea practical road map for drug discovery and development scientiststo generate efficacious and safe drugs for unmet medical needs.
Using Mass Spectrometry for Drug Metabolism Studies, Second Edition - Walter A. Korfmacher 2009-11-03
The first edition of this now classic work helped to establish mass spectrometry as the premier tool for drug metabolism studies. Completely rewritten from start to finish, Using Mass Spectrometry for Drug Metabolism Studies, Second Edition brings medicinal chemists and mass spectrometry professionals up to speed with the rapid advances in the field, the emergence of cutting-edge approaches, and ways to meet steadily increasing vendor demands. Written by international scientists who are experts in their respective disciplines, this state-of-the-art reference effectively encapsulates current mass spectrometry best practices. The stand-alone chapters cover various topics – from metabolite identification to fast chromatography with UPLC – and in a style that is understandable to experts and field newcomers alike. The second edition of this bestseller includes coverage of new instrumentation and software as well as a wealth of updated information on the latest findings surrounding biomarkers and metabolomics and new chapters on both UPLC and DESI/DART. With more than 180 illustrations and an eight-page color insert, this valuable reference explores multiple modern mass spectrometry techniques and strategies. It includes an excellent overview of the entire drug discovery process plus the latest developments on how mass spectrometry is used to support this endeavor.
Handbook of Drug Metabolism - Thomas F. Woolf 1999
Bringing together nearly forty collaborators from academic and industrial laboratories, this reference furnishes an overview of the subject from a historical, kinetic, and chemical context. A source of expertise for a rapidly changing and expanding field, the book provides a framework for drug metabolism in drug discovery and development. Containing tables, drawings, photographs, and equations, it highlights the importance of pharmacokinetics and cytochrome P450, explains clearance, volume of distribution, sequential metabolism, and nonlinear kinetics, summarizes concepts of Phase 1 and 2 metabolites, evaluates tertiary amine metabolism and reactive metabolite chemistry, and more.
ADME and Translational Pharmacokinetics / Pharmacodynamics of Therapeutic Proteins - Honghui Zhou 2015-11-23
With an emphasis on the fundamental and practical aspects of ADME for therapeutic proteins, this book helps readers strategize, plan and implement translational research for biologic drugs.

• Details cutting-edge ADME (absorption, distribution, metabolism and excretion) and PKPD (pharmacokinetic / pharmacodynamics) modeling for biologic drugs • Combines theoretical with practical aspects of ADME in biologic drug discovery and development and compares innovator biologics with biosimilar biologics and small molecules with biologics, giving a lessons-learned perspective • Includes case studies about leveraging ADME to improve biologics drug development for monoclonal antibodies, fusion proteins, pegylated proteins, ADCs, bispecifics, and vaccines • Presents regulatory expectations and industry perspectives for developing biologic drugs in USA, EU, and Japan • Provides mechanistic insight into biodistribution and target-driven pharmacokinetics in important sites of action such as tumors and the brain

ADME-Enabling Technologies in Drug Design and Development - Donglu Zhang 2012-04-13

A comprehensive guide to cutting-edge tools in ADME research The last decade has seen tremendous progress in the developmentof analytical techniques such as mass spectrometry and molecularbiology tools, resulting in important advances in drug discovery,particularly in the area of absorption, distribution, metabolism,and excretion (ADME). ADME-Enabling Technologies in Drug Design and Developmentfocuses on the current state of the art in the field, presenting acomprehensive review of the latest tools for generating ADME datain drug discovery. It examines the broadest possible range ofavailable technologies, giving readers the information they need tochoose the right tool for a given application, a key requisite forobtaining favorable results in a timely fashion for regulatoryfilings. With over thirty contributed chapters by an internationalteam of experts, the book provides: A thorough examination of current tools, covering bothelectronic/mechanical technologies and biologically based ones Coverage of applications for each technology, including keyparameters, optimal conditions for intended results, protocols, andcase studies Detailed discussion of emerging tools and techniques, from stemcells and genetically modified animal models to imagingtechnologies Numerous figures and diagrams throughout the text Scientists and researchers in drug metabolism, pharmacology,medicinal chemistry, pharmaceutics, toxicology, and bioanalyticalscience will find ADME-Enabling Technologies in Drug Design andDevelopment an invaluable guide to the entire drug developmentprocess, from discovery to regulatory issues.

Drug Metabolism and Pharmacokinetics Quick Guide - Siamak Cyrus Khojasteh 2011-04-07

Drug Metabolism and Pharmacokinetics Quick Guide covers a number of aspects of drug assessment at drug discovery and development stages, topics such as pharmacokinetics, absorption, metabolism, enzyme kinetics, drug transporters, drug interactions, drug-like properties, assays and in silico calculations. It covers key concepts, with useful tables on physiological parameters (eg. blood flow to organs in x-species, expression and localization of enzymes and transporters), chemical structure, nomenclature, and moieties leading to bioactivation (with examples). Overall it includes a number of key topics useful at the drug discovery stage, which would serve as a quick reference with several examples from the literature to illustrate the concept.

Pharmacokinetics and Metabolism in Drug Design - Dennis A. Smith 2012-05-14

In this new edition of a bestseller, all the contents have been brought upto-date by addressing current standards and best practices in the assessment and prediction of ADMET properties. Although the previous chapter layout has been retained, substantial revisions have been made, with new topics such as pro-drugs, active metabolites and transporters covered in detail in a manner useful to the Drug Discovery scientist. The authors discuss the parameters and processes important for the absorption, distribution and retention of drug compounds in the body, plus the potential problems created by their transformation into toxic byproducts. While aimed at all those dealing professionally with the development and application of pharmaceutical substances, the readily comprehensible style makes this book equally suitable for students of pharmacy and related subjects. Uniquely comprehensive, the book relates physicochemistry and chemical structure to pharmacokinetic properties and ultimately drug efficacy and safety.

Drug Metabolism in Drug Design and Development - Donglu Zhang 2007-11-16

The essentials of drug metabolism vital to developing new therapeutic entities Information on the metabolism and disposition of candidate drugs is a critical part of all aspects of the drug discovery and development process. Drug metabolism, as practiced in the pharmaceutical industry today, is a complex, multidisciplinary field that requires knowledge of sophisticated analytical technologies and expertise in mechanistic and kinetic enzymology, organic reaction mechanism, pharmacokinetic analysis, animal physiology, basic chemical toxicology, preclinical pharmacology, and molecular biology. With chapters contributed by experts in their specific areas, this reference covers: * Basic concepts of drug metabolism * The role of drug metabolism in the pharmaceutical industry * Analytical techniques in drug metabolism * Common experimental approaches and protocols Drug Metabolism in Drug Design and Development emphasizes practical considerations such as the data needed, the experiments and analytical methods typically employed, and the interpretation and application of data. Chapters highlight facts, common protocols, detailed experimental designs, applications, and limitations of techniques. This is a comprehensive, hands-on reference for drug metabolism researchers as well as other professionals involved in pre-clinical drug discovery and development.

Drug Discovery - Jie Jack Li 2013-04-12

Sets forth the history, state of the science, and future directions of drug discovery Edited by Jie Jack Li and Nobel laureate E. J. Corey, two leading pioneers in drug discovery and medicinal chemistry, this book synthesizes great moments in history, the current state of the science, and future directions of drug discovery into one expertly written and organized work. Exploring all major therapeutic areas, the book introduces readers to all facets and phases of drug discovery, including target selection, biological testing, drug metabolism, and computer-assisted drug design. Drug Discovery features chapters written by an international team of pharmaceutical and medicinal chemists. Contributions are based on a thorough review of the current literature as well as the authors' firsthand laboratory experience in drug discovery. The book begins with the history of drug discovery, describing groundbreaking moments in the field. Next, it covers such topics as: Target identification and validation Drug metabolism and pharmacokinetics Central nervous system drugs In vitro and in vivo assays Cardiovascular drugs Cancer drugs Each chapter features a case study, helping readers understand how science is put into practice throughout all phases of drug discovery. References at the end of each chapter serve as a gateway to groundbreaking original research studies and reviews in the field. Drug Discovery is ideal for newcomers to medicinal chemistry and drug discovery, providing a comprehensive overview of the field. Veterans in the field will also benefit from the perspectives of leading international experts in all aspects of drug discovery.

Introduction to Drug Disposition and Pharmacokinetics - Stephen H. Curry 2017-01-30

The application of knowledge of drug disposition, and skills in pharmacokinetics, are crucial to the development of new drugs and to a better understanding of how to achieve maximum benefit from existing ones. The book takes the reader from basic concepts to a point where those who wish to will be able to perform pharmacokinetic calculations and be ready to read more advanced texts and research papers. The book will be of benefit to students of medicine, pharmacy, pharmacology, biomedical sciences and veterinary science, including those who have elected to study the topic in more detail, such as via electives and special study modules. It will be of benefit to those involved in drug discovery and development, pharmaceutical and medicinal chemists, as well as budding toxicologists and forensic scientists who require the appropriate knowledge to interpret their findings and as an introductory text for clinical pharmacologists. Early chapters describe the basic principles of the topic while the later ones illustrate the application of those principles to modern approaches to drug development and clinical use. Full colour illustrations facilitate the learning experience and supporting material for course leaders and students can be found on the Companion Web Site "Another book on PK? Yes and there should be and it should be DD & PK. It is good, unique, and does fill a currently unmet need for

those working in the xenobiotic arena. DD & PK is just like the perfect mystery novel—the one “you just can’t put down.” However, unlike a mystery novel which requires only one reading to find the answer, the reader of DD & PK will learn more than an answer to a single question. The reader will find many solutions to a wide variety of mysterious problems associated with the time course and actions of xenobiotics." —International Journal of Toxicology, John A. Budny, PhD, President, PharmaCal, Ltd, 2018 "This book has many innovations that make a welcome addition to the bookshelves of a wide range of pharmaceutical scientists. The effective use of figures and tables to summarize and clarify a wide range of issues is to be commended, as are the learning objectives at the start of the chapter coupled with the summary at the end providing a succinct way in understanding the objectives of the chapter and together with links to a website provides accessibility for all from the neophyte pharmacokineticist to the consultant physician. A book all in the Pharma industry should be aware of." —Int. J. of Pharmacokinetics, Howard M. Hill, ResolvPharma, 2018 "Overall, Introduction to Drug Disposition and Pharmacokinetics offers its readership an in-depth view of classic pharmacokinetic concepts. This book would be an excellent choice for a pharmacokinetics elective or as an adjunctive text for an introductory course. This book reviews a wide array of clinically relevant topics and encourages the reader to apply the knowledge gained to all medi-cations. A robust and varied amount of online material is provided to enhance understanding and encourage discussion. It is likely that all readers, novice or experienced pharmacists, would find value in this textbook." — Currents in Pharmacy Teaching and Learning, Milena McLaughlin, Midwestern University Chicago College of Pharmacy, 2018 "In summary, this is an excellent textbook for students new to the field of pharmaceutics and medical, pharmacy, and veterinary students, particularly those who envision a career in drug development research in either academia or industry." —Veterinary Pathology Review, John K. Amory, University of Washington, 2018

Reducing Drug Attrition - James R. Empfield 2014-11-27

Medicinal chemistry is both science and art. The science of medicinal chemistry offers mankind one of its best hopes for improving the quality of life. The art of medicinal chemistry continues to challenge its practitioners with the need for both intuition and experience to discover new drugs. Hence sharing the experience of drug research is uniquely beneficial to the field of medicinal chemistry. Drug research requires interdisciplinary team-work at the interface between chemistry, biology and medicine. Therefore, the topic-related series Topics in Medicinal Chemistry covers all relevant aspects of drug research, e.g. pathobiochemistry of diseases, identification and validation of (emerging) drug targets, structural biology, drugability of targets, drug design approaches, chemogenomics, synthetic chemistry including combinatorial methods, bioorganic chemistry, natural compounds, high-throughput screening, pharmacological in vitro and in vivo investigations, drug-receptor interactions on the molecular level, structure-activity relationships, drug absorption, distribution, metabolism, elimination, toxicology and pharmacogenomics. In general, special volumes are edited by well known guest editors.

Pharmacokinetics of Drugs - Peter G. Welling 2011-12-23

A compilation of researchers' experience in the areas of bioanalysis, pharmacokinetics, and drug metabolism, to present an up-to-date and comprehensive treatise on the application of these and related technologies in drug discovery, development, and clinical use. Contents cover descriptions of analytical methods, in vitro metabolism technology and membrane transport, reappraisal of classical pharmacokinetic problems, and the time course of drug action. The book concludes with a description of PET and imaging methods in pharmacokinetics and an appendix containing a critical appraisal of computer methods and pharmacokinetic software available for PCs.

Enzyme Inhibition in Drug Discovery and Development - Chuang Lu 2010-01-26

The science and applied approaches of enzyme inhibition in drug discovery and development Offering a unique approach that includes both the pharmacologic and pharmaco-kinetic aspects of enzyme inhibition, Enzyme Inhibition in Drug Discovery and Development examines the scientific concepts and experimental approaches related to enzyme inhibition as applied in drug discovery and drug development. With chapters written by over fifty leading experts in their fields, Enzyme Inhibition in Drug Discovery and Development fosters a cross-fertilization of pharmacology, drug metabolism, pharmacokinetics, and toxicology by understanding the "good" inhibitions—desirable pharmacological effects—and "bad" inhibitions—drug–drug interactions and toxicity. The book discusses: The drug discovery process, including drug discovery strategy, medicinal chemistry, analytical chemistry, drug metabolism, pharmacokinetics, and safety biomarker assessment The manipulations of drug metabolizing enzymes and transporters as well as the negative consequences, such as drug–drug interactions The inhibition of several major drug target pathways, such as the GPCR pathway, the NFkB pathway, and the ion channel pathway Through this focused, single-source reference on the fundamentals of drug discovery and development, researchers in drug metabolism and pharmacokinetics (DMPK) will learn and appreciate target biology in drug discovery; discovery biologists and medicinal chemists will also broaden their understanding of DMPK.

Applications of Pharmacokinetic Principles in Drug Development - Rajesh Krishna 2012-12-06

This volume is an important advancement in the application ofpharmacokinetic (PK) and pharmacodynamic (PO) principles to . drug development. The series of topics presented deal with the application of these tools to everyday decisions that a pharmaceutical scientist encounters. The ability to integrate these topics using PK and PO methods has optimized drug development pathways in the clinic. New technologies in the areas of in vitro assays that are more predictive of human absorption and metabolism and advancement in bioanalytical assays are leading the way to minimize drug failures in later, more expensive clinical development programs. of Pharmacokinetics and pharmacodynamics have become an important component understanding the drug action on the body and is becoming increasingly important in drug labeling due to it's potential for predicting drug behavior in populations that may be difficult to study in adequate numbers during drug development. The ability to correlate drug exposure to effect and model it during the drug development value chain provides valuable insight into optimizing the next steps to derive maximum information from each study. These principles and modeling techniques have resulted in an expanded and integrated view of PK and PO and have led to the expectations that we may be able to optimally design clinical trials and eventually lead us to identifying the optimal therapy for the patient, while minimizing cost and speeding up drug development. There is wide utility for the book both as a text and as a reference.

Pharmacokinetics and Drug Metabolism in Canada: The Current Landscape - Neal M. Davies 2018-03-23

This book is a printed edition of the Special Issue "Pharmacokinetics and Drug Metabolism in Canada: The Current Landscape" that was published in Pharmaceutics

Pharmacokinetics in Drug Discovery and Development - Ronald D. Schoenwald 2002-03-06

Pharmacokinetics has evolved from its origin into a complex discipline with numerous subspecialties and applications in patient management, drug development, and regulatory issues. This expansion has made it difficult for any one individual to become a full-fledged expert in all areas. Fulfilling the need for a wide-ranging guide to the many existing subspecialties in this field, Pharmacokinetics in Drug Discovery and Development details the different areas in the field providing the ideal comprehensive, quick access text and reference. After an introduction of basic principles, the book is divided into sections that cover industrial and regulatory applications, clinical applications, and research applications. The following sections cover such topics as PK/PD approaches, clinical pharmacokinetic monitoring, population pharmacokinetics, linear systems approaches, and more. Fourteen authors, each an expert in his/her area of expertise, provide an extensive background into the subspeciality with emphasis on the section's theme. Covering the many sub-disciplines and providing pharmacokinetic concepts, terminology, and approaches, Pharmacokinetics in Drug Discovery and Development serves as a resource for professionals throughout this field.

Pharmacokinetics in Drug Development - Peter L. Bonate 2005-12-05
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.
A Handbook of Bioanalysis and Drug Metabolism - Gary Evans 2021-10-15
Recent years have seen a greater industrial emphasis in undergraduate and postgraduate courses in the pharmaceutical and chemical sciences. However, textbooks have been slow to adapt, leaving the field without a text/reference that is both instructional and practical in the industrial setting – until now. A Handbook of Bioanalysis and Drug Metabolismis a stimulating new text that examines the techniques, methodology, and theory of bioanalysis, pharmacokinetics, and metabolism from the perspective of scientists with extensive professional experience in drug discovery and development. These three areas of research help drug developers to optimize the active component within potential drugs thereby increasing their effectiveness, and to provide safety and efficacy information required by regulators when granting a drug license. Professionals with extensive experience in drug discovery and development as well as specialized knowledge of the individual topics contributed to each chapter to create a current and well-credentialed text. It covers topics such as high performance liquid chromatography, protein binding, pharmacokinetics and drug–drug interactions. The unique industrial perspective helps to reinforce theory and develop valuable analytical and interpreting skills. This text is an invaluable guide to students in courses such as pharmaceutical science, pharmacology, chemistry, physiology and toxicology, as well as professionals in the biotechnology industry.
Metabolism, Pharmacokinetics and Toxicity of Functional Groups - Dennis A Smith 2010-04-09
Until now, the area of drug metabolism and pharmacokinetics has been lacking in texts written for the Medicinal Chemist. This outstanding book, aimed at postgraduate medicinal chemists and those working in industry, fills this gap in the literature. Written by medicinal chemists and ADMET scientists with a combined experience of around 300 years, this aid to discovering drugs addresses the absorption, distribution, metabolism, excretion and toxicity (ADMET) issues associated with drugs. The book starts by describing drug targets and their structural motifs before moving on to explain ADMET for the medicinal chemist. It is the functional groups which most profoundly influence the drug molecules of which they form a part. They characterise the pharmacology, are essential to the activity, and alter the ADMET characteristics of each drug. Their effects follow a pattern, thus allowing medicinal chemists to predict and overcome potential challenges. For this reason, the Editors have taken the unique approach of dividing the remainder of the book into chapters which each focus on a different functional group. They describe drugs containing the functional group under consideration, explain why the group is there, and outline its physicochemical properties before going on to detail the ADMET issues. Where possible, prodrugs and bioisosteres, which may give alternative ADMET outcomes, are described. The chapters cross refer where similar matters are covered but individual chapters can be used in a stand alone manner. The book ends with a discussion of future targets and chemistry needs.
Pharmacokinetic Challenges in Drug Discovery - O. Pelkonen 2013-03-09
Despite increased spending on research and development, the number of new medicines marketed successfully continues to decline. The Pharmaceutical industry is therefore focussing on ways to reduce attrition by addressing frequent reasons for clinical drug failures very early in the drug discovery process. One of the biggest challenges is the pharmacokinetic (PK) optimisation of drug candidates tailored and predicted to have appropriate absorption, distribution, metabolism and excretion (ADME) characteristics in human. This book describes how traditional pbarmacokinetic approaches and methods are being re-invented' to meet specific needs dictated by the dynamics of the drug discovery process. The book gives an overview of state-of-the-art tools and their use in the decision-making process is discussed by a number of scientists from leading pharmaceutical companies.
Handbook of Drug Metabolism, Third Edition - Paul G. Pearson 2019-05-20
This book continues to be the definitive reference on drug metabolism with an emphasis on new scientific and regulatory developments. It has been updated based on developments that have occurred in the last 5 years, with new chapters on large molecules disposition, stereo-selectivity in drug metabolism, drug transporters and metabolic activation of drugs. Some chapters have been prepared by new authors who have emerged as subject area experts in the decade that has passed since publication of the first edition.
Drug Metabolism Handbook - Ala F. Nassar 2009-01-28
A valuable reference tool for professionals involved in the industry, Drug Metabolism in Pharmaceuticals covers new tools such as LC-MS and LC-MS-NMR along with experimental aspects of drug metabolism. This work fills a gap in the literature by covering the concepts and applications of pharmaceutical research, development, and assessment from the point of view of drug metabolism. By providing both a solid conceptual understanding of the drug metabolism system, and a well illustrated, detailed demonstration and explanation of cutting edge tools and techniques, this book serves as a valuable reference tool for bench scientists, medical students, and students of general health sciences.
Drug Transporters Volume 2 - Dr Glynis Nicholls 2016
Understanding and quantifying the effects of membrane transporters within the human body is essential for modulating drug safety and drug efficacy. The first volume comprehensively reviewed current knowledge and techniques in the transporter sciences and their relations to drug metabolism and pharmacokinetics. In this second volume on Drug Transporters, emphasis is placed on emerging sciences and technologies, highlighting potential areas for future advances within the drug transporter field. The topics covered in both volumes ensure that all relevant aspects of transporters are described across the drug development process, from in silico models and preclinical tools through to the potential impact of transporters in the clinic. Contributions are included from expert leaders in the field, at-the-bench industrial scientists, renowned academics and international regulators. Case studies and emerging developments are highlighted, together with the merits and limitations of the available methods and tools, and extensive references to reviews on specific in-depth topics are also included for those wishing to pursue their knowledge further. As such, this text serves as an essential handbook of information for postgraduate students, academics, industrial scientists and regulators who wish to understand the role of transporters in absorption, distribution, metabolism, and excretion processes. In addition, it is also a useful reference tool on the models and calculations necessary to predict their effect on human pharmacokinetics and pharmacodynamics.
Mass Spectrometry in Drug Metabolism and Pharmacokinetics - Ragu Ramanathan 2011-09-20
This timely reference discusses mass spectrometry in drug metabolism and pharmacokinetic studies. With contributions by professionals from the pharmaceutical industry, this book begins with a review of current mass spectrometry techniques and applications, followed by discussions of various methods for using MS in drug metabolism studies and pharmacokinetics. Highlighting the critical importance of ADME studies for understanding how a drug is absorbed, distributed, metabolized, and excreted by the body, the book s focuses on the use of LC/MS and MALDI-MS. This is a valuable reference for scientists in the pharmaceutical industry, medicine, academia, and even those working in homeland defense.
New Horizons in Predictive Drug Metabolism and Pharmacokinetics - Alan G. E. Wilson 2015-11-20
This book thoroughly explores the predictive role of drug metabolism and pharmacokinetics in drug discovery and in improving success rates and safety assessments of chemicals.

Mass Spectrometry in Drug Metabolism and Disposition - Mike S. Lee 2011-03-16
This book examines the background, industrial context, process, analytical methodology, and technology of metabolite identification. It emphasizes the applications of metabolite identification in drug research. While primarily a textbook, the book also functions as a comprehensive reference to those in the industry. The authors have worked closely together and combine complementary backgrounds to bring technical and cultural awareness to this very important endeavor while serving to address needs within academia and industry It also contains a variety of problem sets following specific sections in the text.
Handbook of Drug Metabolism - Thomas Woolf 2019-08-30
Bringing together nearly forty collaborators from academic and industrial laboratories, this reference furnishes an overview of the subject from a historical, kinetic, and chemical context. A source of expertise for a rapidly changing and expanding field, the book provides a framework for drug metabolism in drug discovery and development. Containing tables, drawings, photographs, and equations, it highlights the importance of pharmacokinetics and cytochrome P450, explains clearance, volume of distribution, sequential metabolism, and nonlinear kinetics, summarizes concepts of Phase 1 and 2 metabolites, evaluates tertiary amine metabolism and reactive metabolite chemistry, and more.
Drug Metabolism in Diseases - Wen Xie 2016-09-12
Drug Metabolism in Diseases is a comprehensive reference devoted to the current state of research on the impact of various disease states on drug metabolism. The book contains valuable insights into mechanistic effects and examples of how to accurately predict drug metabolism during these different pathophysiological states. Each chapter clearly presents the effects of changes in drug metabolism and drug transporters on pharmacokinetics and disposition. This is a unique and useful approach for all those involved in drug discovery and development, and for clinicians and researchers in drug metabolism, pharmacology, and clinical pharmacology. Written and edited by leaders in drug metabolism from academia and industry Covers important topics, such as pharmacogenomics, drug metabolism in transplant patients, xenobiotic receptors, drug metabolism in geriatric and pediatric populations, and more Highlights topics of importance in drug discovery and development, and for safe and effective drug use in the clinic
Evaluation of Drug Candidates for Preclinical Development - Chao Han 2010-01-19
Emphasizes the integration of major areas of drug discovery and their importance in candidate evaluation It is believed that selecting the "right" drug candidate for development is the key to success. In the last decade, pharmaceutical R&D departments have integrated pharmacokinetics and drug metabolism, pharmaceutics, and toxicology into early drug discovery to improve the assessment of potential drug compounds. Now, Evaluation of Drug Candidates for Preclinical Development provides a complete view and understanding of why absorption-distribution-metabolism-excretion-toxicology (ADMET) plays a pivotal role in drug discovery and development. Encompassing the three major interrelated areas in which optimization and evaluation of drug developability is most critical—pharmacokinetics and drug metabolism, pharmaceutics, and safety assessment—this unique resource encourages integrated thinking in drug discovery. The contributors to this volume: Cover drug transporters, cytochrome P-450 and drug-drug interactions, plasma protein binding, stability, drug formulation, preclinical safety assessment, toxicology, and toxicokinetics Address developability issues that challenge pharma companies, moving beyond isolated experimental results Reveal connections between the key scientific areas that are critical for successful drug discovery and development Inspire forward-thinking strategies and decision-making processes in preclinical evaluation to maximize the potential of drug candidates to progress through development efficiently and meet the increasing demands of the marketplace Evaluation of Drug Candidates for Preclinical Development serves as an introductory reference for those new to the pharmaceutical industry and drug discovery in particular. It is especially well suited for scientists and management teams in small- to mid-sized pharmaceutical companies, as well as academic researchers and graduate students concerned with the practical aspects related to the evaluation of drug developability.
Drug Metabolism, Pharmacokinetics and Bioanalysis - Hye Suk Lee 2019-06-12
Drug metabolism/pharmacokinetics and drug interaction studies have been extensively carried out in order to secure the druggability and safety of new chemical entities throughout the development of new drugs. Recently, drug metabolism and transport by phase II drug metabolizing enzymes and drug transporters, respectively, as well as phase I drug metabolizing enzymes, have been studied. A combination of biochemical advances in the function and regulation of drug metabolizing enzymes and automated analytical technologies are revolutionizing drug metabolism research. There are also potential drug–drug interactions with co-administered drugs due to inhibition and/or induction of drug metabolic enzymes and drug transporters. In addition, drug interaction studies have been actively performed to develop substrate cocktails that do not interfere with each other and a simultaneous analytical method of substrate drugs and their metabolites using a tandem mass spectrometer. This Special Issue has the aim of highlighting current progress in drug metabolism/pharmacokinetics, drug interactions, and bioanalysis.
Drug Discovery and Evaluation: Methods in Clinical Pharmacology - H.Gerhard Vogel 2010-12-15
Drug Discovery and Evaluation has become a more and more difficult, expensive and time-consuming process. The effect of a new compound has to be detected by in vitro and in vivo methods of pharmacology. The activity spectrum and the potency compared to existing drugs have to be determined. As these processes can be divided up stepwise we have designed a book series "Drug Discovery and Evaluation" in the form of a recommendation document. The methods to detect drug targets are described in the first volume of this series "Pharmacological Assays" comprising classical methods as well as new technologies. Before going to man, the most suitable compound has to be selected by pharmacokinetic studies and experiments in toxicology. These preclinical methods are described in the second volume „Safety and Pharmacokinetic Assays". Only then are first studies in human beings allowed. Special rules are established for Phase I studies. Clinical pharmacokinetics are performed in parallel with human studies on tolerability and therapeutic effects. Special studies according to various populations and different therapeutic indications are necessary. These items are covered in the third volume: „Methods in Clinical Pharmacology".
Pharmacokinetics in Drug Development - Peter L. Bonate 2005-12-05
These volumes are designed to be the most complete guide to pharmacokinetics (PK) and its role in drug development. The volumes 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.
Handbook of Essential Pharmacokinetics, Pharmacodynamics and Drug Metabolism for Industrial Scientists - Younggil Kwon 2013-04-26
In the pharmaceutical industry, the incorporation of the disciplines of pharma- kinetics, pharmacodynamics, and drug metabolism (PK/PD/DM) into various drug development processes has been recognized to be extremely important for approp- ate compound selection and optimization. During discovery phases, the identifi- tion of the critical PK/PD/DM issues of new compounds plays an essential role in understanding their pharmacological profiles and structure-activity relationships. Owing to recent progress in analytical chemistry, a large number of compounds can be screened for their PK/PD/DM properties within a relatively short period of time. During development phases as well, the toxicology and clinical study designs and trials of a compound should be based on a thorough understanding of its PK/PD/DM properties. During my time as an industrial scientist, I realized that a reference work designed for practical industrial applications of PK/PD/DM could be a very valuable tool for researchers not only in the pharmacokinetics and drug metabolism departments, but also for other discovery and development groups in pharmaceutical companies. This book is designed specifically for

industrial scientists, laboratory assistants, and managers who are involved in PK/PD/DM-related areas. It consists of thirteen chapters, each of which deals with a particular PK/PD/DM issue and its industrial applications. Chapters 3 and 12 in particular address recent topics on higher throughput in vivo exposure screening and the prediction of pharmacokinetics in humans, respectively. Chapter 8 covers essential information on drug metabolism for industrial scientists.

Metabolite Safety in Drug Development - Suzanne L. Iverson 2016-08-01

A reference on drug metabolism and metabolite safety in the development phase, this book reviews the analytical techniques and experimental designs critical for metabolite studies. It features case studies of lessons learned and real world examples, along with regulatory perspectives from the US FDA and EMA. • Reviews the analytical techniques and experimental designs critical for metabolite studies • Covers methods including chirality, species differences, mass spectrometry, radiolabels, and in vitro / in vivo correlation • Discusses target pharmacology, in vitro systems aligned to toxicity tests, and drug-drug interactions • Includes perspectives from authors with firsthand involvement in industry and the study of drug metabolites, including viewpoints that have influenced regulatory guidelines

Drug Metabolism Handbook - Ala F. Nassar 2009-02-12

A valuable reference tool for professionals involved in the industry, Drug Metabolism in Pharmaceuticals covers new tools such as LC-MS and LC-MS-NMR along with experimental aspects of drug metabolism. This work fills a gap in the literature by covering the concepts and applications of pharmaceutical research, development, and assessment from the point of view of drug metabolism. By providing both a solid conceptual understanding of the drug metabolism system, and a well illustrated, detailed demonstration and explanation of cutting edge tools and techniques, this book serves as a valuable reference tool for bench scientists, medical students, and students of general health sciences.

Modern Drug Synthesis - Jie Jack Li 2013-03-27

Following Contemporary Drug Synthesis and The Art of Drug Synthesis (Wiley, 2004 and 2007), two well-received works, is this new book that demystifies the process of modern drug discovery for practitioners and students. An enhanced introduction covers areas such as background, pharmacology, SAR, PK/PD, efficacy, and safety. Focusing on the advantages of process synthesis versus the discovery synthetic route, Modern Drug Synthesis features authoritative coverage by distinguished editors and authors (some chapter authors are the actual inventor of the drug) of twenty different drug molecules.

The Art of Drug Synthesis - Douglas S. Johnson 2013-02-26

The Art of Drug Synthesis illustrates how chemistry, biology, pharmacokinetics, and a host of other disciplines come together to produce successful medicines. The authors have compiled a collection of 21 representative categories of drugs, from which they have selected as examples many of the best-selling drugs on the market today. An introduction to each drug is provided, as well as background to the biology, pharmacology, pharmacokinetics, and drug metabolism, followed by a detailed account of the drug synthesis. Edited by prominent scientists working in drug discovery for Pfizer Meets the needs of a growing community of researchers in pharmaceutical R&D Provides a useful guide for practicing pharmaceutical scientists as well as a text for medicinal chemistry students An excellent follow-up to the very successful first book by these editors, Contemporary Drug Synthesis, but with all new therapeutic categories and drugs discussed.