# Drug Metabolism Pharmacokinetics In Drug Discovery A

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

Drug metabolism, pharmacokinetics and toxicokinetics as determinants of drug attrition and the safety of xenobiotics are critically important. This book presents a comprehensive treatise on the current issues and challenges facing drug metabolism and pharmacokinetics. Readers will find a thorough exploration of their predictive role in impacting drug discovery and development and in improving the success rate and safety assessment of pharmaceuticals and industrial or occupational chemicals. Chapters not only focus on the current state of art, with distinct examples, but on future needs and approaches likely to improve our prediction of potential human risk. Discussions of critical properties that are determinants of a compound’s metabolic and pharmacokinetic fate follow introductory chapters. The Drug Discovery process increasingly incorporates pharmacokinetics and drug metabolism screening and focus has shifted towards in silico, computational and systems biology approaches. Core chapters reflect this and the recent interest and need to assess the role of transporters, along with drug metabolizing enzymes, as potential determinants of pharmacokinetic behaviour, toxicity and drug-drug interactions. Lastly, chapters cover the issues and factors involved in translating pharmacokinetics from in silico to in vivo and from animal models to man, and postulate future directions and opportunities. Leading experts from academia, industry and regulatory bodies across the globe contribute their knowledge to this book, which scientists involved in many aspects of the drug discovery process, as well as regulators and postgraduate students, will find a useful resource.

The sequencing of the human genome and subsequent elucidation of the molecular pathways that are important in the pathology of disease have provided unprecedented opportunities for the development of new therapeutics. Nucleic acid-based drugs have emerged in recent years to yield extremely promising candidates for drug therapy to a wide range of diseases. Advances in Nucleic Acid Therapeutics is a comprehensive review of the latest advances in the field, covering the background of the development of nucleic acids for therapeutic purposes to the array of drug development approaches currently being pursued using antisense, RNAi, aptamer, immune modulatory and other synthetic oligonucleotides. Nucleic acid therapeutics is a field that has been continually innovating to meet the challenges of drug discovery and development; bringing contributions together from leaders at the forefront of progress, this book depicts the many approaches currently being pursued in both academia and industry. A go-to volume for medicinal chemists, Advances in Nucleic Acid Therapeutics provides a broad overview of techniques of contemporary interest in drug discovery.

Holland-Frei Cancer Medicine, Ninth Edition, offers a balanced view of the most current knowledge of cancer science and clinical oncology practice. This all-new edition is the consummate reference source for medical oncologists, radiation oncologists, internists, surgical oncologists, and others who treat cancer patients. A translational perspective throughout, integrating cancer biology with cancer management providing an in depth understanding of the disease An emphasis on multidisciplinary, research-driven patient care to improve outcomes and optimal use of all appropriate therapies Cutting-edge coverage of personalized cancer care, including molecular diagnostics and therapeutics Concise, readable, clinically relevant text with algorithms, guidelines and insight into the use of both conventional and novel drugs Includes free access to the Wiley Digital Edition providing search across the book, the full reference list with web links, illustrations and photographs, and post-publication updates

"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"--

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.

In order to avoid late-stage drug failure due to factors such as undesirable metabolic instability, toxic metabolites, drug-drug interactions, and polymorphic metabolism, an enormous amount of effort has been expended by both the pharmaceutical industry and academia towards developing more powerful techniques and screening assays to identify the metabolic profiles and enzymes involved in drug metabolism. This book presents some in-depth reviews of selected topics in drug metabolism. Among the key topics covered are: the interplay between drug transport and metabolism in oral bioavailability; the influence of genetic and epigenetic factors on drug metabolism; impact of disease on transport and metabolism; and the use of novel microdosing techniques and novel LC/MS and genomic technologies to predict the metabolic parameters and profiles of potential new drug candidates.

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.
Papers of the May, 1988 meeting. They provide an overview of recent research and current theory in the field. Topics include the molecular biology and multiplicity of cytochrome P-450; non-P-450 enzymes; drug design and delivery; stereochemical aspects; characteristics of drug metabolism in humans;
Human Drug Metabolism, An Introduction, Second Edition provides an accessible introduction to the subject and will be particularly invaluable to those who already have some understanding of the life sciences. Completely revised and updated throughout, the new edition focuses only on essential chemical detail and includes patient case histories to illustrate the clinical consequences of changes in drug metabolism and its impact on patient welfare. After underlining the relationship between efficacy, toxicity and drug concentration, the book then considers how metabolizing systems operate and how they impact upon drug concentration, both under drug pressure and during inhibition. Factors affecting drug metabolism, such as genetic polymorphisms, age and diet are discussed and how metabolism can lead to toxicity is explained. The book concludes with the role of drug metabolism in the commercial development of therapeutic agents as well as the pharmacology of some illicit drugs.
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.
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.
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.
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.
Although the scientific literature on drug metabolism is extensive, it suffers from the disadvantage that the material is diffuse and consists largely of specialist monographs dealing with particular aspects of the subject. In addi tion, although there are a few excellent texts on drug metabolism in print, these tend to be earlier publications and hence do not take into account the many recent advances in this area. Our motivations for writing this book therefore arose from the clear need for a recent and cohesive introductory text on this subject, specifically designed to cater for the needs of undergraduate and postgraduate students. Much of the subject matter in this text is derived from various courses on drug metabolism given at the University of Surrey and the University of Glasgow to basic science students in pharmacology, biochemistry, nutrition and nursing studies, to pre-clinical medical students and to under graduate and post-graduate students in toxicology. Therefore, it is our inten tion that this text will serve as a primer in drug metabolism to a variety of students in the life sciences taking courses in this subject. The term 'drug metabolism' in its broadest sense may be considered as the absorption, distribution, biotransformation and excretion of drugs. To cover all these facets of drug metabolism in a single text is a voluminous task and therefore we have focused primarily on the biotransformation aspects of the subject.
In this age of combinatorial chemistry and high-throughput technologies, bioactive compounds called hits are discovered by the thousands. However, the road that leads from hits to lead compounds and then to pharmacokinetically optimized clinical and drug candidates is very long indeed. As a result, the screening, design, and optimization of pharmacokinetic properties has become the bottleneck and a major challenge in drug research. To shorten the time-consuming develop-ment and high rate of attrition of active compounds ultimately doomed by hidden pharmacokinetic defects, drug researchers are coming to incorporate structure-permeation, structure-distribution, structure-metabolism, and structure-toxicity relations into drug-design strategies. To this end, powerful biological, physicochemical, and computational approaches are being developed whose objectives are to increase the clinical relevance of drug design, and to eliminate as soon as possible compounds with unfavorable physicochemical properties and pharmacokinetic profiles. Toxicological issues are also of utmost importance in this paradigm. There was, hence, an urgent need for a book covering this field in an authoritative, didactic, comprehensive, factual, and conceptual manner. In this work of unique breadth and depth, international authorities and practicing experts from academia and industry present the most modern biological, physicochemical, and computational strategies to optimize gastrointestinal absorption, protein binding and distribution, brain permeation, and metabolic profile. The biological strategies emphasized in the book include cell cultures and high-throughput screens. The physicochemical strategies focus on the determination and interpretation of solubility, lipophilicity, and related molecular properties as factors and predictors of pharmacokinetic bahavior. Particular attention is paid to the lipophilicity profiles of ionized compounds, to lipophilicity measurements in anisotropic media (liposomes/water, IAM columns), and to permeability across artificial membranes. Computational strategies comprise virtual screening, molecular modelling, lipophilicity, and H-bonding fields and their importance for structure-disposition relations. This book is both about theoretical and technological breakthroughs. Thus, molecular properties are contemplated from a dual perspective, namely a) their interpretation in biological and/or physicochemical terms, and b) their value in screening, lead optimization, and drug-candidate selection. In addition to its 33 chapters, the book includes a CD-ROM containing the invited lectures, oral communications and posters (in full version) presented at the Second LogP Symposium, 'Lipophilicity in Drug Disposition—Practical and Computational Approaches to Molecular Properties Related to Drug Permeation, Disposition and Metabolism', held at the University of Lausanne in March 2000.
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.
The topics chosen for this volume were selected because they are some of the current development or technological issues facing drug development project teams. They regard the practical considerations for assessment of selected special development populations. For example, they include characterization of drug disposition in pregnant subjects, for measuring arrhythmic potential, for analysis tumor growth modeling, and for disease progression modeling. Practical considerations for metabolite safety testing, transporter assessments, Phase 0 testing, and development and execution of drug interaction programs reflect current regulatory topics meant to address enhancement of both safety assessment and early decision-making during new candidate selection. Important technologies like whole body autoradiography, digital imaging and dried blood spot sample collection methods are introduced, as both have begun to take a more visible role in pharmacokinetic departments throughout the industry.
This is an authoritative, comprehensive book on the fate of drug molecules in the body, including implications for pharmacological and clinical effects. The text provides a unique, balanced approach, examining the specific physical and biological factors affecting the absorption, distribution, metabolism and excretion of drugs, together with mathematical assessment of the concentrations in plasma and body fluids. Understanding the equations requires little more than a basic knowledge of algebra, laws of indices and logarithms, and very simple calculus. A companion web site contains additional illustrations, further equations and numerous worked examples. Whilst this book has its roots in the highly acclaimed book of the same name, written by Stephen Curry nearly thirty years ago, it is essentially a new book having

been restructured and largely rewritten. This readable and informative book is an invaluable resource for professionals and students needing to develop a rational approach to the investigation and application of drugs.

This book is a fruit of a collaborative work from several international scientists. It will be a useful resource for researchers, students, and clinicians. Each individual chapter could serve as a prescribed reading for postgraduate students and clinicians specializing in and practicing clinical pharmacology and toxicology, pharmacotherapy and pharmacotherapeutics, pharmacovigilance, and toxicovigilance, as well as those involved in clinical research, drug discovery, and development. Every chapter in this book discusses and provides illustrations on the theme discussed based on authors' understanding and experience while summarizing existing knowledge. In doing so, each chapter provides a new insight that would benefit a novice as well as a seasoned reader in understanding the pharmacokinetic mechanisms and risk factors involved in the occurrence of adverse effects of drugs.

The process of drug discovery and development is a complex multistage logistics project spanned over 10-15 years with an average budget exceeding 1 billion USD. Starting with target identification and synthesizing anywhere between 10k to 15k synthetic compounds to potentially obtain the final drug that reaches the market involves a complicated maze with multiple inter- and intra-operative fields. Topics described in this book emphasize the progresses in computational applications, pharmacokinetics advances, and molecular modeling developments. In addition the book also contains special topics describing target deorphaning in Mycobacterium tuberculosis, therapy treatment of some rare diseases, and developments in the pediatric drug discovery process.

Variability in Human Drug Response examines why individual patients differ significantly in their response to drug administration. This book is devoted mainly to pharmacokinetics and covers topics such as drug absorption, distribution, metabolism, and excretion. The sensitivity of tissues of the body to drugs and the importance of monitoring drug therapy are also discussed. This book is comprised of 10 chapters and begins with an introduction to variability in clinical response to administration of defined drugs, as well as the importance of closely matching dosage to the individual patient's requirement to achieve an optimal response to drug administration. The chapters that follow highlight the pharmacokinetic origin of most variability in the clinical response to drugs, along with the difficulties inherent in predicting the effect of drug administration in an individual patient. The role of genetic and environmental factors, disease, and the concomitant administration of other drugs in determining an individual's response to any therapeutic maneuver is also examined. The last chapter describes two methods of monitoring drug therapy: monitoring drug effects or monitoring the plasma levels of drugs. This monograph will be of interest to practicing clinicians and senior medical students.

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.

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

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/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.

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.

Written by medicinal chemists and ADMET scientists with a combined experience of over 300 years this aid to discovering drugs provides detailed coverage on absorption, distribution, metabolism, excretion and toxicology issues associated with new drugs.

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.

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.

Identification and Quantification of Drugs, Metabolites, Drug Metabolizing Enzymes, and Transporters, Second Edition, is completely updated to provide an overview of the last decade’s numerous advances in analytical technologies for detection and quantification of drugs, metabolites, and biomarkers. This new edition goes beyond LC-MS and features all-new chapters on how to evaluate drug absorption, distribution, metabolism, and excretion, potential for hepatic and renal toxicity, immunogenicity of biotherapeutics and translational tools for predicting human dosage, safety and efficacy of small molecules and biologics. This book will be an important handbook and desk reference for pharmacologists, toxicologists, clinical scientists, and students interested in the fields of pharmacology, biochemistry, and drug metabolism. Four sections in the book with 24 chapters give readers an overview of state-of-the-art techniques for identifying and quantifying drugs, metabolites and biomarkers, including a chapter on new approaches for quantification of enzymes and transporters in different tissues Focuses on the role of drug metabolism enzymes, transporters in disposition and drug-drug interactions, as well as strategies for evaluating drug metabolism and safety using advanced liver and kidney models. Discussions on immunogenicity risks of biologics and their evaluation methods have been included Includes several chapters on advanced translational sciences to predict human dosage, pharmacokinetics and efficacy for small molecules and biotherapeutics All chapters are written by experts with a wide range of practical experience from the industry and academia

Drug Metabolism and Pharmacokinetics Quick GuideSpringer

This volume on drug metabolism covers the contribution that transgenic animal research, UDP-glucuronosyltransferases, CNS penetration advances and anticancer drugs can make to the subject.

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.

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.

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.

The study of pharmacogenetics and pharmacogenomics focuses on how our genes and complex gene systems influence our response to drugs. Recent progress in clinical therapeutics has led to the discovery of new biomarkers that make it technically easier to identify groups of patients which are more or less likely to respond to individual therapies. The aim is to improve personalised medicine – not simply to prescribe the right medicine, but to deliver the right drug at the right dose at the right time. This textbook brings together leading experts to discuss the latest information on how human genetics impacts drug response phenotypes. It presents not only the basic principles of pharmacogenetics, but also clinically valuable examples that cover a broad range of specialties and therapeutic areas. This textbook is an invaluable introduction to pharmacogenetics and pharmacogenomics for health care professionals, medical students, pharmacy students, graduate students and researchers in the biosciences.