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Successful Drug Discovery - János Fischer 2018-04-16
With its focus on drugs so recently introduced that they have yet to be found in any other textbooks or general references, the information and insight found here makes this a genuinely unique handbook and reference. Following the successful approach of the previous volumes in the series, inventors and primary developers of successful drugs from both industry and academia tell the story of the drug's discovery and describe the sometimes twisted route from the first drug candidate molecule to the final marketed drug. The 11 case studies selected describe recent drugs ranging across many therapeutic fields and provide a representative cross-section of present-day drug developments. Backed by plenty of data and chemical information, the insight and experience of today's top drug creators makes this one of the most useful training manuals that a junior medicinal chemist may hope to find. The International Union of Pure and Applied Chemistry has endorsed and sponsored this project because of its high educational merit.
Managing the Drug Discovery Process - Walter Moos 2016-11-08
Managing the Drug Discovery Process: How to Make It More Efficient and Cost-Effective thoroughly examines the current state of pharmaceutical research and development by providing chemistry-based perspectives on biomedical research, drug hunting and innovation. The book also considers the interplay of stakeholders, consumers, and the drug firm with attendant factors, including those that are technical, legal, economic, demographic, political, social, ecological, and infrastructural. Since drug research can be a high-risk, high-payoff industry, it is important to researchers to effectively and strategically manage the drug discovery process. This book takes a closer look at increasing pre-approval costs for new drugs and examines not only why these increases occur, but also how they can be overcome to ensure a robust pharmacoeconomic future. Written in an engaging manner and including memorable insights, this book is aimed at redirecting the drug discovery process to make it more efficient and cost-effective in order to achieve the goal of saving countless more lives through science. A valuable and compelling resource, this is a must-read for all students and researchers in academia and the pharmaceutical industry. Considers drug discovery in multiple R&D venues, including big pharma, large biotech, start-up ventures, academia, and nonprofit research institutes Analyzes the organization of pharmaceutical R&D, taking into account human resources considerations like recruitment and configuration, management of discovery and development processes, and the coordination of internal research within, and beyond, the organization, including outsourced work Presents a consistent, well-connected, and logical dialogue that readers will find both comprehensive and approachable
Drug Discovery in Cancer Epigenetics - Gerda Egger 2015-11-19
Drug Discovery in Cancer Epigenetics is a practical resource for scientists involved in the discovery, testing, and development of epigenetic cancer drugs. Epigenetic modifications can have significant implications for translational science as biomarkers for diagnosis, prognosis or therapy prediction. Most importantly, epigenetic modifications are reversible and epigenetic players are found mutated in different cancers; therefore, they provide attractive therapeutic targets. There has been great interest in developing and testing epigenetic drugs, which inhibit DNA methyltransferases, histone modifying enzymes or chromatin reader proteins. The first few drugs are already FDA approved and have made their way into clinical settings. This book provides a comprehensive summary of the epigenetic drugs currently available and aims to increase awareness in this area to foster more rapid translation of epigenetic drugs into the clinic. Highlights the potential of epigenetic alterations in cancer for drug development Covers the tools and methods for epigenetic drug discovery, preclinical and clinical testing, and clinical implications of epigenetic therapy Provides important information regarding putative epigenetic targets, epigenetic technologies, networks and consortia for epigenetic drug discovery and routes for translation
Breakthrough Business Models - Institute of Medicine 2009-02-17
The process for developing new drug and biologic products is extraordinarily expensive and time-consuming. Although large pharmaceutical companies may be able to afford the cost of development because they can expect a large return on investment, organizations developing drugs to treat rare and neglected diseases are unable to rely on such returns. On June 23, 2008, the Institute of Medicine's Forum on Drug Discovery, Development, and Translation held a public workshop, "Breakthrough Business Models: Drug Development for Rare and Neglected Diseases and Individualized Therapies," which sought to explore new and innovative strategies for developing drugs for rare and neglected diseases.
Biochips as Pathways to Drug Discovery - Gary Hardiman 2006-10-19
In the fiercely competitive pharmaceutical marketplace, your organization cannot afford to spend excess dollars developing drugs that will fail to get FDA approval or have profoundly poor characteristics. Biochips as Pathways to Drug Discovery takes a comprehensive look at how the industry faces these challenges, using new technologies such as biochips to reduce the cost of drug discovery and improve drug safety. The book explores the tools and skills required at each step of the discovery process when using biochips to determine biological outcomes. The authors provide an in-depth review of the clinical and pharmacogenomic relevance of biochips, ChIP-chip assays, and high-throughput approaches. They discuss how biochips are used to develop biomarkers in the drug discovery process, primarily for gene expression profiling and Single Nucleotide Polymorphism (SNP) analysis. The book includes coverage of experimental theory, quality control, clinical laboratory sampling considerations, database concepts, industrial laboratory design, and the analysis of the resultant large data sets. It discusses the application of biochips to the study of malaria, toxicogenomics, and SNPs, as well as intellectual property and market overviews. The book concludes with a comprehensive overview of how these chips are employed from early target discovery through preclinical toxicology and on through to pharmacogenomic and proof of concept studies in humans. Written in an easily accessible style, the breadth of coverage introduces the subject to those new to the field, while the depth of coverage forms a foundation for future work. The book gives you the knowledge required to leverage the technology into bona fide discoveries. Daniel E. Levy, editor of the Drug Discovery Series, is the founder of DEL BioPharma, a consulting service for drug discovery programs. He also maintains a blog that explores organic chemistry.
A Comprehensive Guide to Toxicology in Nonclinical Drug Development - Ali S. Faqi 2016-11-03
A Comprehensive Guide to Toxicology in Nonclinical Drug Development, Second Edition, is a valuable reference designed to provide a complete understanding of all aspects of nonclinical toxicology in the development of small molecules and biologics. This updated edition has been reorganized and expanded to include important topics such as stem cells in nonclinical toxicology, inhalation and dermal toxicology, pitfalls in drug development, biomarkers in toxicology, and more. Thoroughly updated to reflect the latest scientific advances and with increased coverage of international regulatory guidelines, this second edition is an essential and practical resource for all toxicologists involved in nonclinical testing in industry,

academic, and regulatory settings. Provides unique content that is not always covered together in one comprehensive resource, including chapters on stem cells, abuse liability, biomarkers, inhalation toxicology, biostatistics, and more Updated with the latest international guidelines for nonclinical toxicology in both small and large molecules Incorporates practical examples in order to illustrate day-to-day activities and the expectations associated with working in nonclinical toxicology

Structure-based Drug Discovery - Harren Jhoti 2007-05-24

This book describes some of the most exciting developments for the discovery of new drugs, such as Fragment-based methods. It contains the latest developments in technologies that can be used to obtain the 3-D structures. This book includes experimental approaches using X-ray crystallography and NMR for Fragment-based screening as well as other biophysical methods for studying protein/ligand interactions.

Modern CNS Drug Discovery - Rudy Schreiber 2021-06-17

This textbook provides a comprehensive overview of the currently used concepts, approaches and technologies in the discovery and development of new treatments for the full spectrum of disorders of the central nervous system. It guides the reader through all essential steps, from finding an innovative idea, to the registration of a new drug. Divided into four sections, the book starts by presenting a broad perspective on current approaches in central nervous system (CNS) drug discovery. The second section addresses the generation of ideas for the identification of targets and novel treatment strategies; covers core functions in early discovery, and provides an example of a novel treatment paradigm: brain stimulation. The third section highlights strategies and technologies in translational CNS drug discovery. In an effort to bridge the gap between discovery and clinical development, it also covers brain imaging, EEG and cognitive testing approaches. The fourth section extensively discusses the clinical phase of drug development, covering the basics of early clinical testing for psychopharmacological drugs. The book's final chapter addresses the registration for newly developed drugs. Written by experts from academia and industry, the book covers important basics and best practices, as well as recent developments in drug discovery. Offering in-depth insights into the world of drug development, it represents essential reading for early researchers who want to prepare for a career in drug discovery in academia or industry.

Drug Discovery and Development - Ramarao Poduri 2021-02-15

This book describes the processes that are involved in the development of new drugs. The authors discuss the history, role of natural products and concept of receptor interactions with regard to the initial stages of drug discovery. In a single, highly readable volume, it outlines the basics of pharmacological screening, drug target identification, and genetics involved in early drug discovery. The final chapters introduce readers to stem therapeutics, pharmacokinetics, pharmacovigilance, and toxicological testing. Given its scope, the book will enable research scholars, professionals and young scientists to understand the key fundamentals of drug discovery, including stereochemistry, pharmacokinetics, clinical trials, statistics and toxicology.

Introduction to Biological and Small Molecule Drug Research and Development - C. Robin Ganellin 2013-05-07

Introduction to Biological and Small Molecule Drug Research and Development provides, for the first time, an introduction to the science behind successful pharmaceutical research and development programs. The book explains basic principles, then compares and contrasts approaches to both biopharmaceuticals (proteins) and small molecule drugs, presenting an overview of the business and management issues of these approaches. The latter part of the book provides carefully selected real-life case studies illustrating how the theory presented in the first part of the book is actually put into practice. Studies include Herceptin/T-DM1, erythropoietin (Epogen/Eprex/NeoRecormon), anti-HIV protease inhibitor Darunavir, and more. Introduction to Biological and Small Molecule Drug Research and Development is intended for late-stage undergraduates or postgraduates studying chemistry (at the biology interface), biochemistry, medicine, pharmacy, medicine, or allied subjects. The book is also useful in a wide variety of science degree courses, in post-graduate taught material (Masters and PhD), and as basic background reading for scientists in the pharmaceutical industry. For the first time, the fundamental scientific principles of biopharmaceuticals and small molecule chemotherapeutics are discussed side-by-side at a basic level Edited by three senior scientists with over 100 years of experience in drug research who have compiled the best scientific comparison of small molecule and biopharmaceuticals approaches to new drugs Illustrated with key examples of important drugs that exemplify the basic principles of pharmaceutical drug research and development

Basic Principles of Drug Discovery and Development - Benjamin E. Blass 2021-03-30

Basic Principles of Drug Discovery and Development presents the multifaceted process of identifying a new drug in the modern era, which requires a multidisciplinary team approach with input from medicinal chemists, biologists, pharmacologists, drug metabolism experts, toxicologists, clinicians, and a host of experts from numerous additional fields. Enabling technologies such as high throughput screening, structure-based drug design, molecular modeling, pharmaceutical profiling, and translational medicine are critical to the successful development of marketable therapeutics. Given the wide range of disciplines and techniques that are required for cutting edge drug discovery and development, a scientist must master their own fields as well as have a fundamental understanding of their collaborator's fields. This book bridges the knowledge gaps that invariably lead to communication issues in a new scientist's early career, providing a fundamental understanding of the various techniques and disciplines required for the multifaceted endeavor of drug research and development. It provides students, new industrial scientists, and academics with a basic understanding of the drug discovery and development process. The fully updated text provides an excellent overview of the process and includes chapters on important drug targets by class, in vitro screening methods, medicinal chemistry strategies in drug design, principles of in vivo pharmacokinetics and pharmacodynamics, animal models of disease states, clinical trial basics, and selected business aspects of the drug discovery process. Provides a clear explanation of how the pharmaceutical industry works, as well as the complete drug discovery and development process, from obtaining a lead, to testing the bioactivity, to producing the drug, and protecting the intellectual property Includes a new chapter on the discovery and development of biologics (antibodies proteins, antibody/receptor complexes, antibody drug conjugates), a growing and important area of the pharmaceutical industry landscape Features a new section on formulations, including a discussion of IV formulations suitable for human clinical trials, as well as the application of nanotechnology and the use of transdermal patch technology for drug delivery Updated chapter with new case studies includes additional modern examples of drug discovery through high through-put screening, fragment-based drug design, and computational chemistry

Drugs - Rick Ng 2015-06-22

The third edition of this best-selling book continues to offer a user-friendly, step-by-step introduction to all the key processes involved in bringing a drug to the market, including the performance of pre-clinical studies, the conduct of human clinical trials, regulatory controls, and even the manufacturing processes for pharmaceutical products. Concise and easy to read, Drugs: From Discovery to Approval, Third Edition quickly introduces basic concepts, then moves on to discuss target selection and the drug discovery process for both small and large molecular drugs. The third edition incorporates the latest developments and updates in the pharmaceutical community, provides more comprehensive coverage of topics, and includes more materials and case studies suited to college and university use. Biotechnology is a dynamic field with changes across R&D, clinical trials, manufacturing and regulatory processes, and the third edition of the text provides timely updates for those in this rapidly growing field.

New Drugs - Lawrence Tim Friedhoff 2009

Drug development, the processes by which a chemical compound becomes a "drug" and is approved for sale by the FDA and European and Asian regulators, is not for the faint-of-heart or the shortsighted. Designing and monitoring studies, obtaining and analyzing scientific data, and reconciling clinical results against the ethical constraints and regulatory guidelines of government agencies, requires a complex interaction of in-house specialists and academic and commercial consultants worldwide. Scientific, technical, and tactical considerations play out in an environment where a balance must be struck between the often-competing interests of the corporation, its investors, government regulators, and the safety and well being of intended patients. All the while, dwindling patent protections impose an ever-contracting timeframe for success.Written to be accessible to a wide audience, NEW DRUGS provides a thorough, succinct, and practical understanding of these drug-development processes. If you're involved in the

pharmaceutical industry, NEW DRUGS will provide scientific and management tools to increase the likelihood of regulatory approval at each phase of your compound's development. If you're a patient or consumer, NEW DRUGS will enable you to intelligently discuss medications with your health-care provider and empower you to make informed decisions at the pharmacy. If your portfolio, rather than your health, makes you an interested observer of the fortunes of this critical sector of the US economy, NEW DRUGS will help you to decode press releases and annual reports, so that you can recognize and invest in well-run companies with promising products.

Nuclear Imaging in Drug Discovery, Development, and Approval - BURNS 2012-03-26

It is the purpose and business of the pharmaceutical industry to dis cover, develop, and make available drugs for the care of the sick. The purpose of universities and national laboratories is to provide people and scientific knowledge that can help in the process. This book presents the combined efforts of scientists from the drug in dustry, academic laboratories and national laboratories to describe advances in radiotracer technology in studies on experimental ani mals and living human beings. The authors believe that the technol ogy is now ready for widespread application in the pharmaceutical industry. The goal of this book is to help bring this about. The field of Nuclear Medicine is based on the concept that, if treatment of disease is chemical, the patient's diagnosis should be chemical. Anatomy and histopathology have been the principle ba sis for making a diagnosis. Histopathologic data suffer from being descriptive, subjective, not quantifiable, and based on the study of dead tissue. The era of histopathology as the dominant concept in medical practice is coming to an end. Histopathologic findings are often heterogeneous and a single biopsy will at times not reveal the true nature of the disease, such as the grading of malignancy. Far greater accuracy of staging of disease and in the planning of treat ment is possible through chemistry, as well as by making possible a more suitable selection of a histological biopsy site.

Modern Methods of Clinical Investigation - Institute of Medicine 1990-02-01

The very rapid pace of advances in biomedical research promises us a wide range of new drugs, medical devices, and clinical procedures. The extent to which these discoveries will benefit the public, however, depends in large part on the methods we choose for developing and testing them. Modern Methods of Clinical Investigation focuses on strategies for clinical evaluation and their role in uncovering the actual benefits and risks of medical innovation. Essays explore differences in our current systems for evaluating drugs, medical devices, and clinical procedures; health insurance databases as a tool for assessing treatment outcomes; the role of the medical profession, the Food and Drug Administration, and industry in stimulating the use of evaluative methods; and more. This book will be of special interest to policymakers, regulators, executives in the medical industry, clinical researchers, and physicians.

Anticancer Drug Development Guide - Beverly A. Teicher 2013-06-25

Experienced cancer researchers from pharmaceutical companies, government laboratories, and academia comprehensively review and describe the arduous process of cancer drug discovery and approval. They focus on using preclinical in vivo and in vitro methods to identify molecules of interest, detailing the targets and criteria for success in each type of testing and defining the value of the information obtained from the various tests. They also define each stage of clinical testing, explain the criteria for success, and outline the requirements for FDA approval. A companion volume by the same editor (Cancer Therapeutics: Experimental and Clinical Agents) reviews existing anticancer drugs and potential anticancer therapies. These two volumes in the Cancer Drug Discovery and Development series reveal how and why molecules become anticancer drugs and thus offer a blueprint for the present and the future of the field.

Drug Discovery Targeting Drug-Resistant Bacteria - Prashant Kesharwani 2020-05-15

Drug Discovery Targeting Drug-Resistant Bacteria explores the status and possible future of developments in fighting drug-resistant bacteria. The book covers the majority of microbial diseases and the drugs targeting them. In addition, it discusses the potential targeting strategies and innovative approaches to address drug resistance. It brings together academic and industrial experts working on discovering and developing drugs targeting drug-resistant (DR) bacterial pathogens. New drugs active against drug-resistant pathogens are discussed, along with new strategies being used to discover molecules acting via new modes of action. In addition, alternative therapies such as peptides and phages are included. Pharmaceutical scientists, microbiologists, medical professionals, pathologists, researchers in the field of drug discovery, infectious diseases and microbial drug discovery both in academia and in industrial settings will find this book helpful. Written by scientists with extensive industrial experience in drug discovery Provides a balanced view of the field, including its challenges and future directions Includes a special chapter on the identification and development of drugs against pathogens which exhibit the potential to be used as weapons of war

Bioinformatics and Computational Biology in Drug Discovery and Development - William T. Loging 2016-03-17

A comprehensive overview of the use of computational biology approaches in the drug discovery and development process.

Drugs - Rick Ng 2005-03-11

Statistics show that out of five thousand compounds with initial promise, five will go into human clinical trials, and only one will become an approved drug. This tiny fraction illustrates the huge complexities involved in bringing a drug to market, a process that brings together scientific research, medical ethics, business, and various regulatory agencies. Drugs-From Discovery to Approval presents a clear, step-by-step overview of the entire process. Using simple language, this comprehensive guide introduces basic concepts, then moves on to discuss disease target selection and the discovery processes for both small and large molecule drugs. Subsequent chapters explain preclinical studies, clinical trials, regulatory issues, good manufacturing practices (GMPs), and perspectives on the future. Coverage also includes: * A helpful listing of current FDA and European guidelines * A special section on regulatory authorities and processes in Japan and China * Rich illustrations throughout, including more than ninety figures and tables * Useful appendices on the history of drug discovery and development * Representative examples of drug mechanisms in action Written for professionals in the pharmaceutical industry, and readily accessible for students of pharmacy or medicine and others interested in drug discovery, Drugs-From Discovery to Approval represents a practical and approachable reference on this important process.

Drug Discovery Handbook - Shayne Cox Gad 2005-06-24

The Drug Discovery Handbook gives professionals a tool to facilitate drug discovery by bringing together, for the first time in one resource, a compendium of methods and techniques that need to be considered when developing new drugs. This comprehensive, practical guide presents an explanation of the latest techniques and methods in drug discovery, including: Genomics, proteomics, high-throughput screening, and systems biology Summaries of how these techniques and methods are used to discover new central nervous system agents, antiviral agents, respiratory drugs, oncology drugs, and more Specific approaches to drug discovery, including problems that are encountered, solutions to these problems, and limitations of various methods and techniques The thorough coverage and practical, scientifically valid problem-solving approach of Drug Discovery Handbook will serve as an invaluable aid in the complex task of developing new drugs.

International Regulatory Harmonization Amid Globalization of Drug Development - Institute of Medicine 2013-11-24

The past several decades have been a time of rapid globalization in the development, manufacture, marketing, and distribution of medical products and technologies. Increasingly, research on the safety and effectiveness of new drugs is being conducted in countries with little experience in regulation of medical product development. Demand has been increasing for globally harmonized, science-based standards for the development and evaluation of the safety, quality, and efficacy of medical products. Consistency of such standards could improve the efficiency and clarity of the drug development and evaluation process and, ultimately, promote and enhance product quality and the public health. To explore the need and prospects for greater international regulatory harmonization for drug development, the IOM Forum on Drug Discovery, Development, and Translation hosted a workshop on February 13-14, 2013. Discussions at the workshop helped identify principles, potential approaches, and strategies to advance the development or evolution of more harmonized regulatory standards. This document summarizes the workshop.

A Practical Guide to Drug Development in Academia - Daria Mochly-Rosen 2014-07-08

"A lot of hard-won knowledge is laid out here in a brief but informative way. Every topic is well referenced, with citations from both the primary literature and relevant resources from the internet." Review from

Nature Chemical Biology Written by the founders of the SPARK program at Stanford University, this book is a practical guide designed for professors, students and clinicians at academic research institutions who are interested in learning more about the drug development process and how to help their discoveries become the novel drugs of the future. Often many potentially transformative basic science discoveries are not pursued because they are deemed ‘too early’ to attract industry interest. There are simple, relatively cost-effective things that academic researchers can do to advance their findings to the point that they can be tested in the clinic or attract more industry interest. Each chapter broadly discusses an important topic in drug development, from preclinical work in assay design through clinical trial design, regulatory issues and marketing assessments. After the practical overview provided here, the reader is encouraged to consult more detailed texts on specific topics of interest. "I would actually welcome it if this book’s intended audience were broadened even more. Younger scientists starting out in the drug industry would benefit from reading it and getting some early exposure to parts of the process that they’ll eventually have to understand. Journalists covering the industry (especially the small startup companies) will find this book a good reality check for many an over-hopeful press release. Even advanced investors who might want to know what really happens in the labs will find information here that might otherwise be difficult to track down in such a concentrated form."

Rare Diseases and Orphan Products - Institute of Medicine 2011-04-03

Rare diseases collectively affect millions of Americans of all ages, but developing drugs and medical devices to prevent, diagnose, and treat these conditions is challenging. The Institute of Medicine (IOM) recommends implementing an integrated national strategy to promote rare diseases research and product development.

Understanding Health Outcomes and Pharmacoeconomics - George E. MacKinnon III 2011-09-22

Understanding Health Outcomes and Pharmacoeconomics presents an overview of the tools used to assess patient-related health status including associated health outcomes and the analyses that are used to determine cost-effectiveness in evaluating pharmacotherapeutic interventions to improve health. Including data and examples from several different countries, this comprehensive text will help students understand the basis for decisions made at the local and governmental level that impact the use of pharmaceuticals and provide a strong foundation for understanding the principles used in cost-effective decision making. With commentaries, cases studies, and highlighting international differences, this text concludes with a discussion of the need for a universal system for documenting medication use. Understanding Health Outcomes and Pharmacoeconomics provides definitions of comparative effectiveness research (CER) and comparisons of pharmacoeconomic models (including cost-effectivess, cost-benefit, and cost utility analyses). This inclusive text provides describes how CER is linked to various pharmacoeconomic models by providing examples from clinical trials with comparative pharmacotherapy and cost parameters. From the Introduction: "The need for interprofessional education was made apparent in the 2003 Health Professions Education: A Bridge to Quality report. All healthcare professionals must be educated to deliver patient-centered care as members of an interprofessional team, emphasizing evidence-based practice, quality improvement approaches, and informatics. An enhanced understanding of pharmacoeconomic principles is a step in the right direction for healthcare practitioners as we do our best to ensure optimal medication therapy outcomes for patients and society at-large." -- George E. MacKinnon III, PhD, RPh, FASHP

Drug Discovery and Development - E-Book - Raymond G Hill 2012-07-20

The modern pharmacopeia has enormous power to alleviate disease, and owes its existence almost entirely to the work of the pharmaceutical industry. This book provides an introduction to the way the industry goes about the discovery and development of new drugs. The first part gives a brief historical account from its origins in the mediaeval apothecaries’ trade, and discusses the changing understanding of what we mean by disease, and what therapy aims to achieve, as well as summarising case histories of the discovery and development of some important drugs. The second part focuses on the science and technology involved in the discovery process: the stages by which a promising new chemical entity is identified, from the starting point of a medical need and an idea for addressing it. A chapter on biopharmaceuticals, whose discovery and development tend to follow routes somewhat different from synthetic compounds, is included here, as well as accounts of patent issues that arise in the discovery phase, and a chapter on research management in this environment. The third section of the book deals with drug development: the work that has to be undertaken to turn the drug candidate that emerges from the discovery process into a product on the market. The definitive introduction to how a pharmaceutical company goes about its business of discovering and developing drugs. The second edition has a new editor: Professor Raymond Hill ● non-executive director of Addex Pharmaceuticals, Covagen and of Orexo AB ● Visiting Industrial Professor of Pharmacology in the University of Bristol ● Visiting Professor in the School of Medical and Health Sciences at the University of Surrey ● Visiting Professor in Physiology and Pharmacology at the University of Strathclyde ● President and Chair of the Council of the British Pharmacological Society ● member of the Nuffield Council on Bioethics and the Advisory Council on Misuse of Drugs. New to this edition: Completely rewritten chapter on The Role of Medicinal Chemistry in the Drug Discovery Process. New topic - DMPK Optimization Strategy in drug discovery. New chapter on Scaffolds: Small globular proteins as antibody substitutes. Totally updated chapters on Intellectual Property and Marketing 50 new illustrations in full colour Features Accessible, general guide to pharmaceutical research and development. Examines the interfaces between cost and social benefit, quality control and mass production, regulatory bodies, patent management, and all interdisciplinary intersections essential to effective drug development. Written by a strong team of scientists with long experience in the pharmaceutical industry. Solid overview of all the steps from lab bench to market in an easy-to-understand way which will be accessible to non-specialists. From customer reviews of the previous edition: ‘... it will have everything you need to know on this module. Deeply referenced and, thus, deeply reliable. Highly Commended in the medicine category of the BMA 2006 medical book competition Winner of the Royal Society of Medicine Library Prize for Medical Book of the Year

The Future of Drug Discovery - Tamas Bartfai 2013-05-18

The Future of Drug Discovery: Who decides which diseases to treat? provides a timely and detailed look at the efforts of the pharmaceutical industry and how they relate, or should relate, to societal needs. The authors posit that as a result of increasing risk aversion and accelerated savings in research and development, the industry is not developing drugs for increasingly prevalent diseases, such as Alzheimer’s disease, untreatable pain, antibiotics and more. This book carefully exposes the gap between the medicines and therapies we need and the current business path. By analyzing the situation and discussing prospects for the next decade, the The Future of Drug Discovery is a timely book for all those who care about the development needs for drugs for disease. Provides an in-depth, broad perspective on the crisis in drug industry Exposes the disconnect between what society needs and what the drug companies are working on Analyses and projects over 10 years into the future Explains what it means for scientists and society Determines what is needed to be done to make sure that the industry responds to society's needs, remains commercially attractive and answers the question as to who decides which diseases to treat

Drug Repurposing - Farid A. Badria 2020-12-02

Drug repurposing or drug repositioning is a new approach to presenting new indications for common commercial and clinically approved existing drugs. For example, chloroquine, an old antimalarial drug, showed promising results for treating COVID-19, interfering with MDR in several types of cancer, and chemosensitizing human leukemic cells.This book focuses on the hypothesis, risk/benefits, and economic impacts of drug repurposing on drug discovery in dermatology, infectious diseases, neurological disorders, cancer, and orphan diseases. It brings together up-to-date research to provide readers with an informative, illustrative, and easy-to-read book useful for students, clinicians, and the pharmaceutical industry.

Drug Discovery and Drug Development - Madhu Dikshit 2021-02-10

Over the years, India has attained a prominent global position in the manufacture of Generic Drugs. This success can be attributed to its synthetic organic chemistry and chemical engineering strengths, nurtured by the timely policies of the Government of India. However, breakthrough successes in New Drug Discovery have remained elusive, despite the brilliant and sustained efforts of many Indian researchers and Pharma establishments. The Indian National Science Academy thought it appropriate to document India’s New Drug Discovery Research (NDDR) journey to date. Gathering contributions from prominent researchers in the Indian Pharma Industry and Academia, this book highlights their efforts, achievements, and the status quo of Indian NDDR.

Pharmaceutical Biotechnology - Oliver Kayser 2012-05-21
This second edition of a very successful book is thoroughly updated with existing chapters completely rewritten while the content has more than doubled from 16 to 36 chapters. As with the first edition, the focus is on industrial pharmaceutical research, written by a team of industry experts from around the world, while quality and safety management, drug approval and regulation, patenting issues, and biotechnology fundamentals are also covered. In addition, this new edition now not only includes biotech drug development but also the use of biopharmaceuticals in diagnostics and vaccinations. With a foreword by Robert Langer, Kenneth J Germeshausen Professor of Chemical and Biomedical Engineering at MIT and member of the National Academy of Engineering and the National Academy of Sciences.
Searching for Magic Bullets - Lisa A Basara 1994-08-10
Searching for Magic Bullets reveals the quest of consumers, health professionals, and drug developers to find safer and faster methods of bringing new medications to the marketplace. Authors Basara and Montagne explore the current drug development and approval processes, their strengths and weaknesses, and the mechanisms by which patients and organizations evade these processes. Readers learn about the fundamentals of traditional and nontraditional drug discovery and development as they occur in the U.S., as well as the views of consumers, patients, and health professionals. Specific case studies of non-traditional drug development and acquisition strategies are highlighted, including AIDS medications, orphan drugs, and patient importation of medications. Basara and Montagne establish the differences in both knowledge and opinions of health consumers and health professionals regarding drug development, as well as how these differences often lead to frustration, dissatisfaction, and misappropriation of resources. The authors pinpoint the need for consumers and patients to know much more about the discovery and development of medicines, and for health professionals and students to understand patients’concerns, needs and beliefs, including their reasons for considering alternative methods of drug development and acquisition. Searching for Magic Bullets is a springboard from which consumers, health professionals, and students can discuss, debate, and resolve these issues and begin to develop more capable drug development and approval systems. This groundbreaking new book enlightens health professionals about patients’views regarding medication discovery and development and informs consumers and patients about the sometimes conflicting views of health professionals. It is divided into three sections: drug development and approval in the U.S., a case study of orphan drugs, and risky and sometimes illegal ways in which consumers evade the traditional drug development and approval systems. An Overview of the Chapters: A Review of the Drug Development Process of the Pharmaceutical Industry: Presents the steps that must be taken when researching and developing a new medication. The Food and Drug Administration and the Drug Approval Process: Describes the history and scope of the FDA, the steps involved in acquiring drug approval, and the various stages of clinical testing. Orphan Drug Legislation: A review of the Orphan Drug Act of 1983 and the changes that have recently been proposed by Congress. The impact of the Act is highlighted through a description of products that have been made available since the legislation was enacted. Issues of controversy are also highlighted. Non-traditional Methods of Drug Development: The role of patients and consumers in drug development and evaluation is discussed, with an emphasis on the perceived shortcomings of the formal system. Patient Influence on Drug Development and Regulation: The influence of patient advocacy groups and consumers is discussed in relation to the development and approval of orphan drugs, the fast-tracking of specific medications, and the use of unapproved and alternative therapies. Prescription Drug Importation: Clarifies the current drug importation regulations, as well as provides specific directions for patients wishing to receive such products or learn more about FDA importation laws. The final chapter summarizes safe and rational techniques that empower consumers in their search for beneficial drug therapies. Resources and strategies for obtaining and using information are provided as a reference for readers. A glossary of terms, acronyms, and a directory of supplemental information sources strengthens the reader's understanding of the information presented. Who Benefits From This Book? Consumers and patients can use Searching for Magic Bullets as an accurate source of information about significant but often confusing medical issues. The FDA and the way medications are developed are easily misunderstood, while alternative therapies and medication sources are often believed to be the only options. Patients will learn the viewpoints of the pharmaceutical industry, the government, and their health care professionals; the rationale for various steps in the drug development process; the risks and benefits of participation in clinical trials; how to obtain the highest quality care, make informed health decisions, and reduce health care costs; and finally, how to cope with a rare disease and/or limited access to approved medications. The result is an informed, influential, and active patient. For health professionals, this book reviews the steps of drug development and approval and provides explanations for drug development decisions; drug approval time lag; and patient frustrations, misinterpretations, and expectations. It is critical for health professionals to understand the needs of patients and to determine how they can work with patients to find acceptable solutions. The literature references and medical information sources are invaluable in this regard. Pharmaceutical industry executives, product managers, clinical researchers, and sales representatives will find a concise and timely examination of the ways in which medications are discovered, developed, marketed, and used by patients. Discussions of orphan drug development, biotechnology products, and patient issues may also provide new insights into these often misunderstood areas. Pharmacy, medical, nursing, and other students will find this book a consolidated reference source and guidebook for information about the primary issues surrounding drug development and the FDA approval process. Patients’knowledge of alternative medical therapies will only increase and health care curricula must include material that helps students understand patients’perceptions of the medication development and approval systems, as well as the importance of patients in health care decisionmaking. The disadvantages of current drug development and approval systems are described with the hope that future health professionals can amend these processes and ultimately enhance patient care.
Drug Discovery and Development, Third Edition - James J. O'Donnell 2019-12-13
Drug Discovery and Development, Third Edition presents up-to-date scientific information for maximizing the ability of a multidisciplinary research team to discover and bring new drugs to the marketplace. It explores many scientific advances in new drug discovery and development for areas such as screening technologies, biotechnology approaches, and evaluation of efficacy and safety of drug candidates through preclinical testing. This book also greatly expands the focus on the clinical pharmacology, regulatory, and business aspects of bringing new drugs to the market and offers coverage of essential topics for companies involved in drug development. Historical perspectives and predicted trends are also provided. Features: Highlights emerging scientific fields relevant to drug discovery such as the microbiome, nanotechnology, and cancer immunotherapy; and novel research tools such as CRISPR and DNA-encoded libraries Case study detailing the discovery of the anti-cancer drug, lorlatinib Venture capitalist commentary on trends and best practices in drug discovery and development Comprehensive review of regulations and their impact on drug development, highlighting special populations, orphan drugs, and pharmaceutical compounding Multidiscipline functioning of an Academic Research Enterprise, plus a chapter on Ethical Concerns in Research Contributions by 70+ experts from industry and academia specialists who developed and are practitioners of the science and business
Social Aspects of Drug Discovery, Development and Commercialization - Odilia Osakwe 2016-02-18
Social Aspects of Drug Discovery, Development and Commercialization provides an insightful analysis of the drug discovery and development landscape as it relates to society. This book examines the scientific, legal, philosophical, economic, political, ethical and cultural factors that contribute to drug development. The pharmaceutical industry is under scrutiny to develop safer and more effective drugs in a quicker and more affordable manner. Recent criticism and debates have emphasized varying opinions on the issues concerning the drug discovery and development process. This book provides thoughtful and valuable discussions and analysis of the social challenges and potential opportunities through all stages of the pharmaceutical process, from inception through marketing. With a unique focus on the social factors that increasingly play a role in how drug development is planned, structured, and executed throughout the drug product lifecycle, this is an essential resource for students, professors, and researchers who seek a better understanding of the interface between the pharmaceutical industry, health care systems, and society. Organized in a sequence of interrelated theories and principles that provide the foundation for increased understanding of the relevant social aspects Includes analysis of important new advances, key scientific and strategic issues, and overviews of recent progress in drug development Provides a global perspective with examples from developed areas, such as the US, Japan, Canada and Europe, as well as faster-growing and

emerging economies including Brazil, Russia, India, and China Serves as an essential resource for students, professors, and researchers who seek a better understanding of the interface between the pharmaceutical industry, health care systems, and society

Outlines and Highlights for Drugs - Cram101 Textbook Reviews 2011-07-01

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Triumph of the Heart - Jie Jack Li 2009-04-03

Over 25 million people in the U.S. alone have benefited from statins--such drugs as Lipitor, Zocor, Crestor, Pravachol, and other cholesterol-lowering medicines--in preventing stroke, heart attack, and other forms of coronary heart disease. But how did these remarkable, life-saving drugs come into being? In Triumph of the Heart, Dr. Jie Jack Li, a medicinal chemist and expert on drug discovery, tells for the first time the fascinating story of statins. Drawn from discussions with many scientists involved in the discovery and development of these drugs, the book illuminates the human side of science by revealing the role played by persistence, luck, and sudden insight that characterize major discoveries. For scientists in the drug industry, health care professionals, students of medicine, and all those intrigued by the basic human drive to explore and discover, Triumph of the Heart offers a compelling view of one of the most important drug discoveries of our time.

Case Studies in Modern Drug Discovery and Development - Xianhai Huang 2012-04-19

Learn why some drug discovery and development efforts succeed . . . and others fail Written by international experts in drug discovery and development, this book sets forth carefully researched and analyzed case studies of both successful and failed drug discovery and development efforts, enabling medicinal chemists and pharmaceutical scientists to learn from actual examples. Each case study focuses on a particular drug and therapeutic target, guiding readers through the drug discovery and development process, including drug design rationale, structure-activity relationships, pharmacology, drug metabolism, biology, and clinical studies. Case Studies in Modern Drug Discovery and Development begins with an introductory chapter that puts into perspective the underlying issues facing the pharmaceutical industry and provides insight into future research opportunities. Next, there are fourteen detailed case studies, examining: All phases of drug discovery and development from initial idea to commercialization Some of today's most important and life-saving medications Drugs designed for different therapeutic areas such as cardiovascular disease, infection, inflammation, cancer, metabolic syndrome, and allergies Examples of prodrugs and inhaled drugs Reasons why certain drugs failed to advance to market despite major research investments Each chapter ends with a list of references leading to the primary literature. There are also plenty of tables and illustrations to help readers fully understand key concepts, processes, and technologies. Improving the success rate of the drug discovery and development process is paramount to the pharmaceutical industry. With this book as their guide, readers can learn from both successful and unsuccessful efforts in order to apply tested and proven science and technologies that increase the probability of success for new drug discovery and development projects.

Drug Discovery - Hany El-Shemy 2013-01-23

Natural products are a constant source of potentially active compounds for the treatment of various disorders. The Middle East and tropical regions are believed to have the richest supplies of natural products in the world. Plant derived secondary metabolites have been used by humans to treat acute infections, health disorders and chronic illness for tens of thousands of years. Only during the last 100 years have natural products been largely replaced by synthetic drugs. Estimates of 200 000 natural products in plant species have been revised upward as mass spectrometry techniques have developed. For developing countries the identification and use of endogenous medicinal plants as cures against cancers has become attractive. Books on drug discovery will play vital role in the new era of disease treatment using natural products.

Biomolecular Simulations in Structure-Based Drug Discovery - Francesco L. Gervasio 2019-04-29

A guide to applying the power of modern simulation tools to better drug design Biomolecular Simulations in Structure-based Drug Discovery offers an up-to-date and comprehensive review of modern simulation tools and their applications in real-life drug discovery, for better and quicker results in structure-based drug design. The authors describe common tools used in the biomolecular simulation of drugs and their targets and offer an analysis of the accuracy of the predictions. They also show how to integrate modeling with other experimental data. Filled with numerous case studies from different therapeutic fields, the book helps professionals to quickly adopt these new methods for their current projects. Experts from the pharmaceutical industry and academic institutions present real-life examples for important target classes such as GPCRs, ion channels and amyloids as well as for common challenges in structure-based drug discovery. Biomolecular Simulations in Structure-based Drug Discovery is an important resource that: -Contains a review of the current generation of biomolecular simulation tools that have the robustness and speed that allows them to be used as routine tools by non-specialists -Includes information on the novel methods and strategies for the modeling of drug-target interactions within the framework of real-life drug discovery and development -Offers numerous illustrative case studies from a wide-range of therapeutic fields -Presents an application-oriented reference that is ideal for those working in the various fields Written for medicinal chemists, professionals in the pharmaceutical industry, and pharmaceutical chemists, Biomolecular Simulations in Structure-based Drug Discovery is a comprehensive resource to modern simulation tools that complement and have the potential to complement or replace laboratory assays for better results in drug design.

Studyguide for Drugs - Cram101 Textbook Reviews 2013-05

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Improving and Accelerating Therapeutic Development for Nervous System Disorders - Institute of Medicine 2014-02-06

Improving and Accelerating Therapeutic Development for Nervous System Disorders is the summary of a workshop convened by the IOM Forum on Neuroscience and Nervous System Disorders to examine opportunities to accelerate early phases of drug development for nervous system drug discovery. Workshop participants discussed challenges in neuroscience research for enabling faster entry of potential treatments into first-in-human trials, explored how new and emerging tools and technologies may improve the efficiency of research, and considered mechanisms to facilitate a more effective and efficient development pipeline. There are several challenges to the current drug development pipeline for nervous system disorders. The fundamental etiology and pathophysiology of many nervous system disorders are unknown and the brain is inaccessible to study, making it difficult to develop accurate models. Patient heterogeneity is high, disease pathology can occur years to decades before becoming clinically apparent, and diagnostic and treatment biomarkers are lacking. In addition, the lack of validated targets, limitations related to the predictive validity of animal models - the extent to which the model predicts clinical efficacy - and regulatory barriers can also impede translation and drug development for nervous system disorders. Improving and Accelerating Therapeutic Development for Nervous System Disorders identifies avenues for moving directly from cellular models to human trials, minimizing the need for animal models to test efficacy, and discusses the potential benefits and risks of such an approach. This report is a timely discussion of opportunities to improve early drug development with a focus toward preclinical trials.

Phenotypic Drug Discovery - Angelique Augustin 2020-12-10

Phenotypic drug discovery has been highlighted in the past decade as an important strategy in the discovery of novel medical entities. This book aims to equip researchers with a thought-provoking guide to the application and development of contemporary phenotypic drug discovery for clinical success.