Anticancer Drug Development Guide Preclinical Screening Clinical Trials And Approval Cancer Drug Discovery And Development

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Springer
There exists a profound conflict at the heart of oncology drug development. The efficiency of the drug development process is falling, leading to higher costs per approved drug, at the same time personalised medicine is limiting the target market of each new medicine. Even as the global economic burden of cancer increases, the current paradigm in drug development is unsustainable. In this book, we discuss the development of techniques in machine learning for improving the efficiency of oncology drug development and delivering cost-effective precision treatment. We consider how to structure data for drug repurposing and target identification, how to improve clinical trials and how patients may view artificial intelligence.
Pharmaceutical Perspectives of Cancer Therapeutics Frontiers Media SA
Animal Models in Cancer Drug Discovery brings forward the most cutting-edge developments in tumor model systems for translational cancer research. The reader can find under this one volume virtually all types of existing and emerging tumor models in use by the research community. This book provides a deeper insight on how these newer models could de-risk modern drug discovery. Areas covered include up to date information on latest organoid derived models and newer genetic models. Additionally, the book discusses humanized animal tumor models for cancer immunotherapy and how they leverage personalized therapies. The chapter on larger animal, canine models and their use in and their use in pre-investigational new drug (pre-IND) development makes the volume unique. Unlike before, the incorporation of several simplified protocols, breeding methodologies, handling and assessment procedures to study drug intervention makes this book a must read. Animal Models in Cancer Drug Discovery is a valuable resource for basic and translational cancer researchers, drug discovery researchers, contract research organizations, and knowledge seekers at all levels in the biomedical field. Encompasses discussions on innovative animal models, xenograft, genetic models, primary models, organoid systems, humanized and other models in modern biology paradigms that are enhancing research in the field of drug discover Covers the use of these models in personalized medicine, immunotherapy, toxicology, pre-IND assessments and related drug development arenas Presents protocols, procedures, and a comprehensive glossary to help new readers understand technical terms and specialized nomenclature
Hypothesis, Molecular Aspects and Therapeutic Applications Springer Science & Business Media
This comprehensive review of existing and potential anticancer drugs and therapies by leading researchers from academia, government laboratories, and pharmaceutical companies offers essential insight into what has been accomplished and where the experimental therapy of cancer is going. The authoritative contributors illuminate the current status of the major molecules of cancer treatment, ranging from the nitrogen mustards through platinum complexes to interferons, cytokines, growth factors and their inhibitors, and on to immunotoxins, antisense oligonucleotides, and gene therapy. A companion volume by the same editor (Anticancer Drug Development Guide: Preclinical and Clinical Screening and Approval) details the processes by which new anticancer drugs are approved. 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.
A Practical Guide to Drug Development in Academia Springer Science & Business Media
A critical review our current understanding of camptothecins, their shortcomings, and of the possibilities for improving their clinical performance. The authors discuss new camptothecin analog development, drug delivery issues for optimizing their anticancer activity, and their potential use in a variety of different cancers. Additional chapters describe what is known about the biochemistry, the pharmacology, and the chemistry of the camptothecins, including the mechanism of topoisomerase and how camptothecins poison this enzyme, the use of animal models in defining the anticancer potential of camptothecins, and the question of camptothecin resistance.
The Drug Development Paradigm in Oncology John Wiley & Sons
The successes that have been achieved in treating childhood cancers stand as beacons against the less dramatic improvements for adults with cancer. Progress began to accelerate in the 1960s and 1970s, as treatment regimens were built up, primarily by building combinations of chemotherapeutic drugs. However the near absence of research in pediatric cancer drug discovery threatens to halt the progress in childhood cancer treatment achieved during the past four decades. Making Better Drugs for Children with Cancer identifies the major issues to be addressed in developing new agents for childhood cancers, the gaps in research and development, and the steps that have been suggested to move the process forward. This report also makes a new proposal to capitalize on today's science to bring new treatments to children's cancers.
Making Better Drugs for Children with Cancer Humana Press
The past decades have seen major developments in the understanding of the cellular and molecular biology of cancer. Significant progress has been achieved regarding long-term survival for the patients of many cancers with the use of tamoxifen for treatment of breast cancer, treatment of chronic myeloid leukaemia with imatinib, and the success of biological drugs. The transition from cytotoxic chemotherapy to targeted cancer drug discovery and development has resulted in an increasing selection of tools available to oncologists. In this Special Issue of Pharmaceuticals, we highlight the opportunities and challenges in the discovery and design of innovative cancer therapies, novel small-molecule cancer drugs and antibody–drug conjugates, with articles covering a variety of anticancer therapies and potential relevant disease states and applications. Significant efforts are being made to develop and improve cancer treatments and to translate basic research findings into clinical use, resulting in improvements in survival rates and quality of life for cancer patients. We demonstrate the possibilities and scope for future research in these areas and also highlight the challenges faced by scientists in the area of anticancer drug development leading to improved targeted treatments and better survival rates for cancer patients.
Biosimilars of Monoclonal Antibodies Bentham Science Publishers
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
Cancer Cell Chemoresistance And Chemosensitization Springer Science & Business Media
Drug Repurposing in Cancer Therapy: Approaches and Applications provides comprehensive and updated information from experts in basic science research and clinical practice on how existing drugs can be repurposed for cancer treatment. The book summarizes successful stories that may assist researchers in the field to better design their studies for new repurposing projects. Sections discuss specific topics such as in silico prediction and high throughput screening of repurposed drugs, drug repurposing for overcoming chemoresistance and eradicating cancer stem cells, and clinical investigation on combination of repurposed drug and anticancer therapy. Cancer researchers, oncologists, pharmacologists and several members of biomedical field who are interested in learning more about the use of existing drugs for different purposes in cancer therapy will find this to be a valuable resource. Presents a systematic and up-to-date collection of the research underpinning the various drug repurposing approaches for a quick, but in-depth understanding on current trends in drug repurposing research Brings better understanding of the drug repurposing process in a holistic way, combining both basic and clinical sciences Encompasses a collection of successful stories of drug repurposing for cancer therapy in different cancer types
Tumor Organoids Springer Science & Business Media
Cancer cell biology research in general, and anti-cancer drug development specifically, still relies on standard cell culture techniques that place the cells in an unnatural environment. As a consequence, growing tumor cells in plastic dishes places a selective pressure that substantially alters their original molecular and phenotypic properties.The emerging field of regenerative medicine has developed bioengineered tissue platforms that can better mimic the structure and cellular heterogeneity of in vivo tissue, and are suitable for tumor bioengineering research. Microengineering technologies have resulted in advanced methods for creating and culturing 3-D human tissue. By encapsulating the respective cell type or combining several cell types to form tissues, these model organs can be viable for longer periods of time and are cultured to develop functional properties similar to native tissues. This approach recapitulates the dynamic role of cell–cell, cell–ECM, and mechanical interactions inside the tumor. Further incorporation of cells representative of the tumor stroma, such as endothelial cells (EC) and tumor fibroblasts, can mimic the in vivo tumor microenvironment. Collectively, bioengineered tumors create an important resource for the in vitro study of tumor growth in 3D including tumor biomechanics and the effects of anti-cancer drugs on 3D tumor tissue. These technologies have the potential to overcome current limitations to genetic and histological tumor classification and development of personalized therapies.
Toxicokinetics World Scientific
When her younger sister disappears into a land of dragons and other strange creatures, eleven-year-old Sadie travels through a portal to rescue her with the aid of Mrs. Fitz Edna, a most unusual babysitter.
Proceedings of a Workshop Anticancer Drug Development GuidePreclinical Screening, Clinical Trials, and Approval
The pharmaceutical industry is on the verge of an exciting and challenging century. Advances in pharmaceutical sciences have dramatically changed the processes of discovery and development of new therapeutic drugs and, in turn, resulted in an extraordinary increase in the potential prophylactic and therapeutic interventions. In this atmosphere, an
Phase I Oncology Drug Development Royal Society of Chemistry
Traditional preclinical mouse models of cancer have been very useful for studying the biology of cancer, however they often lack key characteristics of human cancers. As a result, many novel drug candidates fail in human clinical trials despite evidence of drug efficacy in those preclinical models. Thus, researchers are seeking new approaches to augment preclinical knowledge before undertaking clinical trials for human patients. Recently, there has been renewed interest in comparative oncology - the study of naturally developing cancers in animals as models for human disease - as one way to improve cancer drug development and reduce attrition of investigational agents. Tumors that spontaneously develop in pet dogs and other companion animals as a result of normal aging share many characteristics with human cancers, such as histological appearance, tumor genetics, biological behavior, molecular targets, and therapeutic response. In June 2015 the Institute of Medicine hosted a workshop to examine the rationale and potential for integrating clinical trials for pet patients with naturally occurring cancers into translational cancer research and development. Participants discussed the research needs, strategies, and resources to support greater integration of clinical trials for pets with cancer into translational research pathways, and challenges and potential solutions for facilitating that integration. This report summarizes the presentations and discussions from the workshop.
Anticancer Drugs Wiley-Liss
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.
The Role of Clinical Studies for Pets with Naturally Occurring Tumors in Translational Cancer Research CRC Press
"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."
New Approaches to Natural Anticancer Drugs Humana
Here in a single source is a complete spectrum of ideas on the development of new anticancer drugs. Containing concise reviews of multidisciplinary fields of research, this book offers a wealth of ideas on current and future molecular targets for drug design, including signal transduction, the cell division cycle, and programmed cell death. Detailed descriptions of sources for new drugs and methods for testing and clinical trial design are also provided. One work that can be consulted for all aspects of anticancer drug development Concise reviews of research fields, combined with practical scientific detail, written by internationally respected experts A wealth of ideas on current and future molecular targets for drug design, including signal transduction, the cell division cycle, and programmed cell death Detailed descriptions of the sources of new anticancer drugs, including combinatorial chemistry, phage display, and natural products Discussion of how new drugs can be tested in preclinical systems, including the latest technology of robotic assay systems, cell culture, and experimental animal techniques Hundreds of references that allow the reader to access relevant scientific and medical literature Clear illustrations, some in color, that provide both understanding of the field and material for teaching
Anticancer Drug Development Guide Academic Press
A comprehensive review of contemporary antisense oligonucleotides drugs and therapeutic principles, methods, applications, and research Oligonucleotide-based drugs, in particular antisense oligonucleotides, are part of a growing number of pharmaceutical and biotech programs progressing to treat a wide range of indications including cancer, cardiovascular, neurodegenerative, neuromuscular, and respiratory diseases, as well as other severe and rare diseases. Reviewing fundamentals and offering guidelines for drug discovery and development, this book is a practical guide covering all key aspects of this increasingly popular area of pharmacology and biotech and pharma research, from the basic science behind antisense oligonucleotides chemistry, toxicology, manufacturing, to safety assessments, the design of therapeutic protocols, to clinical experience. Antisense oligonucleotides are single strands of DNA or RNA that are complementary to a chosen sequence. While the idea of antisense oligonucleotides to target single genes dates back to the 1970's, most advances have taken place in recent years. The increasing number of antisense oligonucleotide programs in clinical development is a testament to the progress and understanding of pharmacologic, pharmacokinetic, and toxicologic properties as well as improvement in the delivery of oligonucleotides. This valuable book reviews the fundamentals of oligonucleotides, with a focus on antisense oligonucleotide drugs, and reports on the latest research underway worldwide. • Helps readers understand antisense molecules and their targets, biochemistry, and toxicity mechanisms, roles in disease, and applications for safety and therapeutics • Examines the principles, practices, and tools for scientists in both pre-clinical and clinical settings and how to apply them to antisense oligonucleotides • Provides guidelines for scientists in drug design and discovery to help improve efficiency, assessment, and the success of drug candidates • Includes interdisciplinary perspectives, from academia, industry, regulatory and from the fields of pharmacology, toxicology, biology, and medicinal chemistry Oligonucleotide-Based Drugs and Therapeutics belongs on the reference shelves of chemists, pharmaceutical scientists, chemical biologists, toxicologists and other scientists working in the pharmaceutical and biotechnology industries. It will also be a valuable resource for regulatory specialists and safety assessment professionals and an important reference for academic researchers and post-graduates interested in therapeutics, antisense therapy, and oligonucleotides.
In Vitro Bioassay Techniques for Anticancer Drug Discovery and Development John Wiley & Sons
A practical guide to the design, conduction, analysis and reporting of clinical trials with anticancer drugs.
RNA Delivery Function for Anticancer Therapeutics Lippincott Raven
Frontiers in Clinical Drug Research - Anti-Cancer Agents is a book series intended for pharmaceutical scientists, postgraduate students and researchers seeking updated and critical information for developing clinical trials and devising research plans in anti-cancer research. Reviews in each volume are written by experts in medical oncology and clinical trials research and compile the latest information available on special topics of interest to oncology and pharmaceutical chemistry researchers. The seventh volume of the book features reviews on these topics: · Essential oils and monoterpenes as potential anti-cancer agents · Drug delivery systems and emerging immunotherapeutic strategies for the treatment of glioblastoma · CTDNA in solid tumors · Cholesterol treatments (including Pitavastatin) and their potential in cancer treatment
Drug Repurposing Academic Press
This book presents an overview of the current status of translating the RNAi cancer therapeutics in the clinic, a brief description of the biological barriers in drug delivery, and the roles of imaging in aspects of administration route, systemic circulation, and cellular barriers for the clinical translation of RNAi cancer therapeutics, and with partial content for discussing the safety concerns. It then focuses on imaging-guided delivery of RNAi therapeutics in preclinical development, including the basic principles of different imaging modalities, and their advantages and limitations for biological imaging. With growing number of RNAi therapeutics entering the clinic, various imaging methods will play an important role in facilitating the translation of RNAi cancer therapeutics from bench to bedside. RNAi technique has become a powerful tool for basic research to selectively knock down gene expression in vitro and in vivo. Our scientific and industrial communities have started to develop RNAi therapeutics as the next class of drugs for treating a variety of genetic disorders, such as cancer and other diseases that are particularly hard to address with current treatment strategies. Key Features Provides insight into the current advances and hurdles of RNAi therapeutics. Accelerates RNAi, miRNAs, and siRNA drug development for cancer therapy from bench to bedside. Addresses various modifications and novel delivery strategies for miRNAs, piRNAs and siRNA delivery in anticancer therapeutics. Explores the need for the interaction of hematologists,cell biologists, immunologists, and material scientists in the development of novel cancer therapies. Describes the current status of clinical trials related to miRNA and siRNA-based cancer therapy Presents remaining issues that need to be overcome to establish successful therapies.
Approaches and Applications Academic Press
Pharmaceutical Perspectives of Cancer Therapeutics covers a wide variety of therapeutic approaches including gene therapy, immunological therapy; cancer vaccines; strategy for solid tumors as well as for hematological cancers; methods to suppress tumor angiogenesis and metastasis; development and utilization of relevant animal models; introduction of new concepts such as cancer stem cells and new technologies, such as DNA and tissue microarrays; and RNA interference. In addition, clinical application, the development of DNA diagnosis biomarkers and cancer prevention, as well as the utilization of imaging in cancer therapy are also discussed. The use of synthetic carriers, such as lipids, polymers, and peptides for delivery and targeting of small molecules, proteins, and nucleic acids to cancer cells in vivo are discussed. Pharmaceutical Perspectives of Cancer Therapeutics also includes cancer therapy modality in surgery, chemotherapy, and radiotherapy, as well as in combination or multi-modality, giving our book a more focused view of cancer therapy.

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