This case focuses on the problem of antibiotic resistance and examines the challenges faced by pharmaceutical companies involved in new antibiotics discovery and development. It features a publicly held research and development (R&D) pharmaceutical company based in the United States that has been a leader in developing antibiotics for decades, but in recent years began shifting its focus to more profitable drugs. As it considers its business strategy for the next 5-10 years, the company must weigh the costs and benefits of continuing to invest
in new antibiotics. What are the main challenges that it must overcome to ensure return on its antibiotics' investments? What are some emerging opportunities and key stakeholders to partner with? What policy and other actions are needed to prevent the global health and economic crisis that the World Health Organization has warned is approaching? What did the industry and policy makers learn from the COVID-19 pandemic that can be used to address another global health and economic crisis? The case introduces students to the problem of antibiotic resistance, its main causes, and related health and economic impacts. It challenges students to identify business and societal strategies for overcoming the current barriers and implementing successful business models for addressing the antibiotic resistance crisis.

The book engages with a broad range of new case studies, providing a detailed examination of options for the resolution of access-to-medicine issues at global, national and local levels. In addition, the book reflects the significant progress in international and national patent law and in international policy-making in this area.

Global Issues in Pharmaceutical Marketing presents a balanced, research-based perspective combined with a practical outlook on the current issues faced by the ethical, biotech, and generic segments of the pharmaceutical industry. It integrates an analytical approach with a global view to examine such issues as market access, digital marketing, emerging markets, branding, and more. The book covers not only the North American and Western European markets, but focuses on non-Western markets, such as Latin America and Asia. Each chapter is written as an individual essay about a given issue, and where relevant, original cases are provided to illustrate how these issues are currently managed by the global industry. This book offers a thoughtful and thorough description of the industry's current situation and integrates the latest scholarly and industry research from different disciplines in one place for convenient reference. It may be used in the following ways: To stimulate class discussions and inspire new streams of research for academics and graduate students; To introduce the industry to those interested in a career, to orient new industry hires, or to provide experienced practitioners with current research that will enhance their knowledge; To provide an understanding of the industry for those in the healthcare sector, such as physicians, pharmacists, as well as medical and pharmacy students; and To present recent and relevant research for those in government, public or private payers, and public policy environments to facilitate their decision making. This book will prove to be a useful resource and an important source of information for academics and their students, professionals, and policymakers around the world.

Inhaled Pharmaceutical Product Development Perspectives: Challenges and Opportunities describes methods
and procedures for consideration when developing inhaled pharmaceuticals, while commenting on product
development strategies and their suitability to support regulatory submission. It bridges the gap between the
aspirations of scientists invested in new technology development and the requirements that must be met for any
new product. The book brings together emerging analytical and inhalation technologies, providing perspectives
that illuminate formulation and device design, development, regulatory compliance, and practice. Focusing on
underlying scientific and technical principles known to be acceptable from the current regulatory perspective,
this monograph will remain useful as a high-level guide to inhaled product development for the foreseeable
future. Discusses development strategies and best practices in the context of regulatory requirements Written by
a broadly qualified expert drawing on the knowledge and critical opinions of key individuals in the field Includes
a foreword by Charles G. Thiel

This book offers a comprehensive study of biological molecules acquired from marine organisms, which have
been exploited for drug discovery with the aim to treat human diseases. Biomolecules have potential impacts on
a diverse range of fields, including medical and pharmaceutical science, industrial science, biotechnology, basic
research, molecular science, environmental science and climate change, etc. To understand and effectively apply
medicinally important biomolecules, multidisciplinary approaches are called for. The ocean remains a rich
biological resource, and the vast untapped potential of novel molecules from marine bio-resources has caught
the interest of more and more researchers. These novel biological compounds have never been found in
terrestrial or other ecosystems, but only in this rich niche. Advances in sampling techniques and technologies,
along with increased funding for research and nature conservation, have now encouraged scientists to look
deeper in the waters. Aquaculture supports both tremendous seafood production and the bulk production of
marine-derived drugs. Furthermore, molecular methods are now being extensively employed to explore the
untapped marine microbial diversity. With the help of molecular and biotech tools, the ability of marine
organisms to produce new biosynthetic drugs can be greatly enhanced. This book provides an extensive
compilation of the latest information on marine resources and their undisputedly vital role in the treatment of
diverse ailments.

A comprehensive guide to the current research, major challenges, and future prospects of controlled drug
delivery systems Controlled drug delivery has the potential to significantly improve therapeutic outcomes,
increase clinical benefits, and enhance the safety of drugs in a wide range of diseases and health conditions.
Fundamentals of Drug Delivery provides comprehensive and up-to-date coverage of the essential principles and
processes of modern controlled drug delivery systems. Featuring contributions by respected researchers,
clinicians, and pharmaceutical industry professionals, this edited volume reviews the latest research in the field
and addresses the many issues central to the development of effective, controlled drug delivery. Divided in three parts, the book begins by introducing the concept of drug delivery and discussing both challenges and opportunities within the rapidly evolving field. The second section presents an in-depth critique of the common administration routes for controlled drug delivery, including delivery through skin, the lungs, and via ocular, nasal, and otic routes. The concluding section summarizes the current state of the field and examines specific issues in drug delivery and advanced delivery technologies, such as the use of nanotechnology in dermal drug delivery and advanced drug delivery systems for biologics. This authoritative resource: Covers each main stage of the drug development process, including selecting pharmaceutical candidates and evaluating their physicochemical characteristics Describes the role and application of mathematical modelling and the influence of drug transporters in pharmacokinetics and drug disposition Details the physiology and barriers to drug delivery for each administration route Presents a historical perspective and a look into the possible future of advanced drug delivery systems Explores nanotechnology and cell-mediated drug delivery, including applications for targeted delivery and toxicological and safety issues Includes comprehensive references and links to the primary literature Edited by a team of of internationally-recognized experts, Fundamentals of Drug Delivery is essential reading for researchers, industrial scientists, and advanced students in all areas of drug delivery including pharmaceutics, pharmaceutical sciences, biomedical engineering, polymer and materials science, and chemical and biochemical engineering.

This book explores the future of doctoral research and what it means to be involved in all stages of the process, providing international insights into what’s changing, why it’s changing and how to work best with these changes. It looks at the key issues that have been thrown into sharp relief by crises such as world pandemics. Drawing on work from outstanding authors, this book shows the ways in which the doctoral process has altered the supervisor/supervisee model and the challenges that now need to be managed, and demonstrates the importance of aligning all the stakeholders, systems and processes to ensure a successful future for doctoral education. Bringing together a range of perspectives, innovative practices and rigorous research, this book tackles topics such as: how doctoral research changes in keeping with the global expansion and transformation of doctoral education programmes the significant influence funding bodies - be they charities, governments, businesses or non-governmental agencies - can have on doctoral research the extent to which doctoral research penetrates daily life and vice versa how to encourage and embed an ethical approach to research, as well as university responses to external challenges. Uniquely international and bringing together the many stakeholders in the research business, this book is essential reading for all doctoral supervisors, candidates and anyone involved in designing or organising research programmes for early career researchers and doctoral students.
This Case Study defines the global pharmaceutical industry and its “boundaries”, analyses the profitability/attractiveness of the global pharmaceutical industry by using M.E.Porter's Five-Forces-Model and answers the questions what overall industry trends can be identified and how the profitability/attractiveness of the industry will change in the future. Furthermore it explains and evaluates Pfizer’s new strategy and examines what Pfizer did in the recent years to maintain their profitability.

Achieving operational excellence is a challenge for the pharmaceutical industry, with many companies setting successful examples time and again. This book presents such leading practices for managing operational excellence throughout the pharmaceutical industry. Based on the St.Gallen OPEX Model the authors describe the current status of OPEX and the future challenges that have to be dealt with. The ample theoretical background is complemented hand-in-hand by case studies contributed by authors from leading pharmaceutical companies.

This book compares national and centralised procedure practices and key performance metrics, including current approval times, review practices and pharmacovigilance standards, in the seven Gulf States. Opportunities for an improved regulatory system are identified, which, if fully implemented, could have a significant impact on patients’ access to new medicines. The Persian Gulf represents the next growth market for the global biopharmaceutical industry but to date there has been limited information about the regulatory review processes employed in these countries. A thorough examination of the strategies currently being implemented by the Gulf States is considered critical to the future regulatory environment in this region. Pharmaceutical Regulatory Environment: Challenges & Opportunities in the Gulf Region is a must read for those interested in pharmaceutical regulation in the Gulf region.

In the domain of public policy on pharmaceuticals, protecting public health requires a dual strategy: robust regulation on the one hand and stimulation of competitiveness and innovation on the other. Regulation must be robust to ensure that only medicines meeting exact standards of safety, quality and efficacy are authorised for human and animal use. At the same time, competitiveness and innovation must be stimulated. Without innovation in pharmaceuticals, the incurable diseases of today will remain incurable. Competitiveness drives innovation and innovation saves lives. Increased competitiveness of the pharmaceutical sector will not only better protect public health, but will also create high quality jobs and create growth. In this context the implementation of the G10 recommendations, particularly regarding the pricing and reimbursement of medicines by Member States, remains a considerable challenge. In order to make potentially life-saving pharmaceuticals available as soon as possible to patients and to enable industry to quickly recoup its
investments and to reinvest into future R&D, still existing delays in some Member States between marketing authorization and the selling of the medicine have to be minimized. The proposed paediatric regulation, currently under discussion in Council and Parliament, is another example where a better protection of (childrens) health goes together with a stimulation of competitiveness and innovation in the European pharmaceutical industry. This publication focuses on the recent review of the EU pharmaceutical legislation. The revised legislation is a key part of the above-mentioned dual strategy.

Pharmaceuticals in the Environment: current knowle

Before now, biological systems could only be expressed in terms of linear relationships, however, as knowledge grows and new techniques of analysis on biological systems is made available, we are realizing the non-linearity of these systems. The concepts and techniques of nonlinear analysis allow for more realistic and accurate models in science. The Future of Pharmaceuticals: A Nonlinear Analysis provides an opportunity to understand the non-linearity of biological systems and its application in various areas of science, primarily pharmaceutical sciences. This book will benefit professionals in pharmaceutical industries, academia, and policy who are interested in an entirely new approach to how we will treat disease in the future. Key Features: Addresses a new approach of nonlinear analysis. Applies a theory of projection to chalk out the future, instead of basing on linear evolution. Provides an opportunity to better understand the non-linearity in biological systems and its applications in various areas of science, primarily pharmaceutical sciences. Helps change the thought process for those looking for answers to their questions which they do not find in the linear relationship approach. Encourages a broader perspective for the creative process of drug development.

As the debate on health care delivery systems in the U.S. continues, the pharmaceutical industry and pharmaceutical care delivery system may well be faced with making significant changes if new drug regulations are enacted. Because there is little discussion on the effects of managed competition on the pharmaceutical care delivery system and the education of pharmacists, those involved in providing pharmaceutical care must arm themselves with the background information and ideas explored in Managed Competition and Pharmaceutical Care. The contributors to this vital sourcebook address these key questions: What are the major components of a managed competition system? What challenges will industry and the pharmaceutical care delivery system face? How should the industry re-engineer--using systems management as opposed to components management--to meet the needs of an evolving health care system? What actions should pharmaceutical companies take to survive difficult days in the future? Why and how should pharmacists move from dispensing drugs to providing total pharmaceutical care? What do employers want for their prescription benefit dollars? How have past and
present initiatives to control drug pricing affected the pharmaceutical marketplace? Why is regulating prices not a satisfactory solution to containing health care costs? What criteria are used to determine whether to include a drug in a managed care formulary? How can community pharmacists compete in the marketplace, regardless of which health care system emerges? What is the future likely to bring and how can pharmacists prepare for that future? Managed Competition and Pharmaceutical Care assists those involved in the pharmaceutical care delivery system to prepare for and embrace new, or at least, drastically changed health care delivery in the coming years.

Breakthroughs in biotechnology are redefining the very concept of life, transforming society and presenting unprecedented opportunities and challenges: will human genome sequencing help to treat genetic diseases and indefinitely prolong life? Can nature's workshops inspire superior biomaterials that transform industries? Will genetically modified super crops feed a hungry world? With biotechnology set to be the driving force of the twenty-first century, mastery of the life sciences will be the key to wealth generation and economic ascendancy. Can the Arab world regain its past supremacy in these fields? Can it benefit from the biotech revolution while avoiding its perils? These essays examine the complex ethical, legal and social issues raised by the biotech revolution that need to be resolved by governments and decision makers.

This Case Study defines the global pharmaceutical industry and its „boundaries“, analyses the profitability/attractiveness of the global pharmaceutical industry by using M.E.Porters‘ Five-Forces-Model and answers the questions what overall industry trends can be identified and how the profitability/attractiveness of the industry will change in the future. Furthermore, it explains and evaluates Pfizer’s new strategy and examines what Pfizer did in the recent years to maintain their profitability.

As pharmaceutical companies strive to develop safer medicines at a lower cost, they must keep pace with the rapid growth of technology and research methodologies. Defying the misconception of process chemistry as mere scale-up work, Process Chemistry in the Pharmaceutical Industry, Vol. 2: Challenges in an Ever Changing Climate explores novel applications of synthetic, physical, and analytical chemistry in drug discovery and development. It offers an accurate depiction of the most up-to-date process research and development methods applied to synthesis, clinical trials, and commercializing drug candidates. The second installment in this progressive series, this volumereviews the latest breakthroughs to advance process chemistry, including asymmetric synthesis, crystallization, morphology, enzymatic intervention, green chemistry, macromolecules (monoclonal antibodies, biological molecules, polymers), enantioselectivity, organometallic chemistry, process
analytical tools, chemical engineering controls, regulatory compliance, and outsourcing/globalization. It explores new approaches to synthetic processes, examines the latest safety methods and experiment design, and suggests realistic solutions to problems encountered in manufacturing and process development. Significant topics include atom economy, ease of synthesis, instrumentation, automization, quality control, cost considerations, green practices, and future trends. Jointly edited by the founder/president of Delphian Pharmaceuticals and the director of Chemical R&D at Pfizer, this book brings together contributions by reputed scientists, technologists, engineers, and professors from leading academic institutions, such as the Imperial College, UK, the University of Tokyo, ETH, Switzerland, the International University at Bermen, Germany, and the University of Connecticut, USA, and from principal pharmaceutical companies that include Merck, Bristol Myers Squibb, Pfizer, Novartis, Eli Lilly, Astrazeneca and DSM.

By any standard, the pharmaceutical industry's history has been a successful one. In addition to its profits and shareholder dividends, it has been seen by investors as relatively low risk and, largely, counter-cyclical to stock market trends. However, that important contribution appears to be petering out, with significant global implications for employees, shareholders, governments and patients. This is not just caused by the economic crisis. Long before this, several distinct but related streams of evidence emerged that now point to the stalling of the pharmaceutical industry. The Future of Pharma examines the causes of the industry's potential decline and offers a convincing and rigorous analysis of the options open to it. What emerges is a landscape defined, on the one hand, by the changing marketplace of mass-market consumers, institutional healthcare systems and wealthy individuals; and on the other by the alternate sources of commercial value - innovative therapies; super-efficient processes, supply chains and operations; and closer customer relations and increasingly tailored health services. The challenges to the pharmaceutical industry now and in the medium and long-term are very significant. Brian Smith's highly readable research findings are a wake-up call and a first step forward for anyone concerned with the future of the industry; whether executive, customer, policymaker or investor.

A comprehensive source of information about modern drying technologies that uniquely focus on the processing of pharmaceuticals and biologicals. Drying technologies are an indispensable production step in the pharmaceutical industry and the knowledge of drying technologies and applications is absolutely essential for current drug product development. This book focuses on the application of various drying technologies to the processing of pharmaceuticals and biologicals. It offers a complete overview of innovative as well as standard drying technologies, and addresses the issues of why drying is required and what the critical considerations are for implementing this process operation during drug product development. Drying Technologies for Biotechnology and Pharmaceutical Applications discusses the state-of-the-art of established drying technologies
like freeze- and spray-drying and highlights limitations that need to be overcome to achieve the future state of pharmaceutical manufacturing. The book also describes promising next generation drying technologies, which are currently used in fields outside of pharmaceuticals, and how they can be implemented and adapted for future use in the pharmaceutical industry. In addition, it deals with the generation of synergistic effects (e.g. by applying process analytical technology) and provides an outlook toward future developments.

 internacional Cooperation, Convergence and Harmonization of Pharmaceutical Regulations: A Global Perspective provides the current status of the complex and broad phenomenon of cooperation, convergence and harmonization in the pharmaceutical sector (Part I), thoroughly evaluates its added value and its critical parameters and influencing factors (Part II) in order to recommend actions and measures to support the next steps for cooperation, convergence and harmonization (Part III). All of these recommendations in the book support the establishment of a better coordinated global pharmaceutical system which represents the best realistic alternative to fulfill the objective to establish a global coalition of regulators and to respond to an increased demand to further cooperation in the pharmaceutical sector. This proposed framework, which leverages all of the ongoing positive cooperation initiatives and uses as foundations all of the numerous harmonization projects developed over the years, presents advantages for all stakeholders and would definitively have significant added value to the promotion and protection of global public health. The status of all major worldwide harmonization and cooperation initiatives (at bilateral, regional, and global levels) The value of cooperation in the pharmaceutical sector and the driving factors behind harmonization The proposition of a structure for the global pharmaceutical system and timely recommendations for enhancing international cooperation, as well as further discussion and policy changes in this area

This is the first book to examine the future opportunities and challenges in the development of drugs which target kinases
The Future of Pharmaceutical Product Development and Research examines the latest developments in the pharmaceutical sciences, also highlighting key developments, research and future opportunities. Written by experts in the field, this volume in the Advances in Pharmaceutical Product Development and Research series deepens our understanding of the product development phase of drug discovery and drug development. Each chapter covers fundamental principles, advanced methodologies and technologies employed by pharmaceutical scientists, researchers and the pharmaceutical industry. The book focuses on excipients, radiopharmaceuticals, and how manufacturing should be conducted in an environment that follows Good Manufacturing Practice (GMP) guidelines. Researchers and students will find this book to be a comprehensive resource for those working in, and studying, pharmaceuticals, cosmetics, biotechnology, foods and related industries. Provides an overview of practical information for clinical trials Outlines how to ensure an environment that follows Good Manufacturing Practice (GMP) Examines recent developments and suggests future directions for drug production methods and techniques

Germination of the thought of “Enzymatic- and Transporter-Based Drug-Drug Interactions: Progress and Future Challenges” Proceedings came about as part of the annual meeting of The American Association of Pharmaceutical Scientists (AAPS) that was held in San Diego in November of 2007. The attendance of workshop by more than 250 pharmaceutical scientists reflected the increased interest in the area of drug-drug interactions (DDIs), the greater focus of PhRMA, academia, and regulatory agencies, and the rapid pace of growth in knowledge. One of the aims of the workshop was to address the progress made in quantitatively predicting enzyme- and transporter-based DDIs as well as highlighted areas where such predictions are poor or areas that remain challenging for the future. Because of the serious clinical implications, initiatives have arisen from the FDA (http://www.fda.gov/cber/gdlns/interactstud.htm) to highlight the importance of enzyme- and transporter-based DDIs. During the past ten to fifteen years, we have come to realize that transporters, in addition to enzymes, play a vital role in drug elimination. Such insight has been possible because of the continued growth in PK-ADME (pharmacokinetics-absorption-distribution-metabolism-excretion) knowledge, fueled by further advances in molecular biology, greater availability of human tissues, and the development of additional and sophisticated model systems and sensitive assay methods for studying drug metabolism and transport in vitro and in vivo. This has sparked an in-depth probing into mechanisms surrounding DDIs, resulting from ligand-induced changes in nuclear receptors, as well as alterations in transporter and enzyme expression and function. Despite such advances, the in vitro and in vivo study of drug interactions and the integration of various data sets remain challenging. Therefore, it has become apparent that a proceeding that serves to encapsulate current strategies, approaches, methods and applications is necessary. As Editors, we have assembled a number of opinion leaders and asked them to contribute chapters surrounding these issues. Many
of these are the original Workshop speakers whereas others had been selected specially to contribute on topics related to basic and applied information that had not been covered in other reference texts on DDI. The resulting tome, entitled Enzyme- and Transporter-Based Drug Interactions: Progress and Future Challenges, comprises of four sections. Twenty-eight chapters covering various topics and perspectives related to the subject of metabolic and transporter-based drug-drug interactions are presented.

Neurodegenerative diseases are the most frequent cause of dementia, representing a burden for public health systems (especially in middle and middle-high income countries). Although most research on this issue is concentrated in first-world centers, growing efforts in South America are affording important breakthroughs. This emerging agenda poses new challenges for the region but also new opportunities for the field. This book aims to integrate the community of experts across the globe and the region, and to establish new challenges and developments for future investigation. We present research focused on neurodegenerative research in South America. We introduce studies assessing the interplay among genetic, neural, and behavioral dimensions of these diseases, as well as articles on vulnerability factors, comparisons of findings from various countries, and works promoting multicenter and collaborative networking. More generally, our book covers a broad scope of human-research approaches (behavioral assessment, neuroimaging, electromagnetic techniques, brain connectivity, peripheral measures), animal methodologies (genetics, epigenetics, proteomics, metabolomics, other molecular biology tools), species (all human and non-human animals, sporadic, and genetic versions), and article types (original research, review, and opinion papers). Through this wide-ranging proposal, we hope to introduce a fresh approach to the challenges and opportunities of research on neurodegeneration in South America.

Advances and Challenges in Pharmaceutical Technology: Materials, Process Development and Drug Delivery Strategies examines recent advancements in pharmaceutical technology. The book discusses common formulation strategies, including the use of tools for statistical formulation optimization, Quality by design (QbD), process analytical technology, and the uses of various pharmaceutical biomaterials, including natural polymers, synthetic polymers, modified natural polymers, bioceramics, and other bioinorganics. In addition, the book covers rapid advancements in the field by providing a thorough understanding of pharmaceutical processes, formulation developments, explorations, and exploitation of various pharmaceutical biomaterials to formulate pharmaceutical dosage forms. Provides extensive information and analysis on recent advancements in the field of pharmaceutical technology Includes contributions from global leaders and experts in academia, industry and regulatory agencies Uses high quality illustrations, flow charts and tables to explain concepts and text to readers, along with practical examples and research case studies
Inhaltsangabe:

Introduction: The global pharmaceutical industry has been a great success story in recent years. The pharmaceutical industry's innovative power has significantly contributed to the improvement of the quality of health care. Medical innovations have completely transformed the treatment paradigm, have dramatically increased individuals' chances of surviving certain diseases such as cancer and heart disease, and have reduced the likelihood and impact of diseases such as HIV/AIDS or arteriosclerosis. From a business perspective, the pharmaceutical industry has been the most profitable one during the last decade. With a median profit margin of 17 percent compared to 3.1 percent for all other industries on the Fortune 500 list, and representing 20 percent of all global research and development (R&D) investments as well as generating revenues of over USD 700 billion, the pharmaceutical industry has visibly shaped the global business world. However, the pharmaceutical industry is facing an increasingly volatile and uncertain environment. Evolving challenges such as an increase in regulatory state interference including the cost containment measures of health care reform, decreasing R&D productivity, and many blockbusters going off-patent are just some examples of the complexity and upheaval the industry is exposed to. Due to the increasing complexity and volatility, traditional planning tools are no longer suitable to adequately support conventional decision-making processes, since they insufficiently take uncertainty into account. This problem can be resolved by implementing scenario-based planning. This tool is applied to depict possible future scenarios, i.e., to identify a wide range of possible developments, which makes it a suitable tool in a volatile and complex environment. Hence, the objective of this thesis is to develop four plausible scenarios and secondly, to determine a core strategy, as well as strategic options for the pharmaceutical industry in Germany. First, an overview of the pharmaceutical industry in Germany is presented and major industry-related opportunities and challenges examined. Second, the theoretical foundation of scenario-based planning and its methodology is discussed. The HHL scenario-based approach to strategic planning is presented and briefly explained. Third, the approach is applied to the pharmaceutical industry in Germany, and four distinct scenarios developed. Finally, a core strategy and strategic [1]
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.

This book presents concise, comprehensive summaries of topics necessary to understand rheumatoid arthritis (RA) management, aligned with patient needs, as a reference suitable for practitioners and students of all levels. Special attention is paid to the innovative RhMAT (Rheumatoid Arthritis Medication Assessment Tool), in addition to descriptions of the pharmacological management of RA, pharmacoeconomic and pharmacovigilance considerations, the benefits of seamless care, and case presentations. Rheumatoid arthritis is one of the most common forms of inflammatory arthritis in the world, with a prevalence of 0.5 to 1%. While no cure has yet been established, modern biotechnology has enabled highly effective management, if treatment begins early. However, cost and side effects, such as immune suppression, continue to present barriers, and monitoring of patients is pivotal to safe and effective disease management. Both hospital and community pharmacists are involved in RA patient management, and have responsibilities to this patient population. Identifying pharmaceutical care issues and ensuring that the patients are managed in accordance to best evidence-based medicine are paramount. Best care is delivered when pharmacists effectively communicate with each other, the prescribers and the multidisciplinary team members involved in the care of the patient. This book aims to tackle the various aspects of the management of RA patients across all the settings.

This publication, Our Fragile World: Challenges and Opportunities for Sustainable Development, presents perspectives of several important subjects that are covered in greater detail and depth in the Encyclopedia of Life Support Systems (EOLSS). The contributions to the two volumes provide an integrated presentation of knowledge and worldviews related to the state of: Earth's natural resources, social resources, institutional resources, and economic and financial resources. They present the vision and thinking of over 200 authors in support of efforts to solve the complex problems connected with sustainable development, and to secure perennial life support on "The Blue Planet". These contributions are holistic, informative, forward looking, and will be of interest to a broad readership. This volume presents contributions with focus on the Natural and Social Dimensions of sustainable Development in to two sections: NATURAL SYSTEMS AND RESOURCES
Brazil has occupied a central role in the access to medicines movement, especially with respect to drugs used to treat those with the human immunodeficiency virus (HIV) that causes the acquired immune deficiency syndrome (AIDS). How and why Brazil succeeded in overcoming powerful political and economic interests, both at home and abroad, to roll-out and sustain treatment represents an intellectual puzzle. In this book, Matthew Flynn traces the numerous challenges Brazil faced in its efforts to provide essential medicines to all of its citizens. Using dependency theory, state theory, and moral underpinnings of markets, Flynn delves deeper into the salient factors contributing to Brazil’s successes and weaknesses, including control over technology, creation of political alliances, and instrumental use of normative frameworks and effectively explains the ability of countries to fulfill the prescription drug needs of its population versus the interests and operations of the global pharmaceutical industry. Pharmaceutical Autonomy and Public Health in Latin America is one of the only books to provide an in-depth account of the challenges that a developing country, like Brazil, faces to fulfill public health objectives amidst increasing global economic integration and new international trade agreements. Scholars interested in public health issues, HIV/AIDS, and human rights, but also to social scientists interested in Latin America and international political economy will find this an original and thought provoking read.

A guide to the development and manufacturing of pharmaceutical products written for professionals in the industry, revised second edition The revised and updated second edition of Chemical Engineering in the Pharmaceutical Industry is a practical book that highlights chemistry and chemical engineering. The book’s regulatory quality strategies target the development and manufacturing of pharmaceutically active ingredients of pharmaceutical products. The expanded second edition contains revised content with many new case studies and additional example calculations that are of interest to chemical engineers. The 2nd Edition is divided into two separate books: 1) Active Pharmaceutical Ingredients (API’s) and 2) Drug Product Design, Development and Modeling. The active pharmaceutical ingredients book puts the focus on the chemistry, chemical engineering, and unit operations specific to development and manufacturing of the active ingredients of the pharmaceutical product. The drug substance operations section includes information on chemical reactions, mixing, distillations, extractions, crystallizations, filtration, drying, and wet and dry milling. In addition, the book includes many applications of process modeling and modern software tools that are geared toward batch-scale and continuous drug substance pharmaceutical operations. This updated second edition: • Contains 30 new chapters or revised chapters specific to API, covering topics including: manufacturing quality by design, computational approaches, continuous manufacturing, crystallization and final form, process safety • Expanded
topics of scale-up, continuous processing, applications of thermodynamics and thermodynamic modeling, filtration and drying • Presents updated and expanded example calculations • Includes contributions from noted experts in the field Written for pharmaceutical engineers, chemical engineers, undergraduate and graduate students, and professionals in the field of pharmaceutical sciences and manufacturing, the second edition of Chemical Engineering in the Pharmaceutical Industry focuses on the development and chemical engineering as well as operations specific to the design, formulation, and manufacture of drug substance and products.

Petroleum hydrocarbons are both a product of, and rich substrate for, microorganisms from across allDomains of life. Rooted deeply in the history of microbiology, hydrocarbons have been studied as sources of carbon and energy for microorganisms for over a century. As global demand for petroleum and its refined products continues to rise, so do challenges associated with environmental pollution, oil well souring, infrastructure corrosion, oil recovery, transport, refining, and upgrading of heavy crude oils and bitumens. Advances in genomics, synthetic biology and metabolic engineering has invigorated interest in petroleum microbial biotechnology as interest grows in technologies for in situ methane production, biodesulfurization and biodenitrogenation, bio-upgrading of heavy crudes, microbial enhanced oil recovery, corrosion control, and biocatalysts for generating value-added products. Given the complexity of the global petroleum industry and the harsh conditions in which it operates, a deeper understanding of the ecophysiology of aerobic and anaerobic microbial communities that have associations with petroleum hydrocarbons is needed if robust technologies are to be deployed successfully. This research topic highlights recent advances in microbial enhanced oil recovery, methanogenic hydrocarbon metabolism and carbon dioxide sequestration, bioremediation, microbiologically influenced corrosion, biodesulfurization, and the application of metagenomics to better understand microbial communities associated with petroleum hydrocarbons.

Herbal Bioactive-Based Drug Delivery Systems: Challenges and Opportunities provides a wide-ranging, in-depth resource for herbal bioactives, including detailed discussion of standardization and regulations. The book first explores specific drug delivery systems such as gastrointestinal, ocular, pulmonary, transdermal, and vaginal and rectal. It then discusses novel applications for nano, cosmetics, nutraceuticals, wound healing and cancer treatment. Finally, there is a section focusing on standardization and regulation which includes an enhancement of properties. This book is an essential resource for pharmacologists, pharmaceutical scientists, material scientists, botanists, and all those interested in natural products and drug delivery systems developments. Explores standardization, regulation and enhancement issues in herbal bioactives Discusses novel developments, herbal cosmetics and toxicity/interaction issues Provides a comprehensive reference on all aspects of herbal bioactives
Social and Administrative Aspects of Pharmacy in Low- and Middle-Income Countries: Present Challenges and Future Solutions examines the particularities of low- and middle-income countries and offers solutions based on their needs, culture and available resources. Drawing from the firsthand experience of researchers and practitioners working in these countries, this book addresses the socio-behavioral aspects of pharmacy and health, pharmacoeconomics, pharmaceutical policy, supply management and marketing, pharmacoepidemiology and public health pharmacy specific to low- and middle-income countries. While some practices may be applied appropriately in disparate places, too often pharmacy practice in low- and middle-income countries is directly copied from successes in developed countries, despite the unique needs and challenges low- and middle-income countries face. Examines key issues and challenges of pharmacy practice and the pharmaceutical sector specific to low- and middle-income countries Compares pharmacy practice in developed and developing countries to highlight the unique challenges and opportunities of each Provides a blueprint for the future of pharmacy in low- and middle-income countries, including patient-centered care, evidence-based care and promoting the role of the pharmacist for primary health care in these settings

A guide to the important chemical engineering concepts for the development of new drugs, revised second edition The revised and updated second edition of Chemical Engineering in the Pharmaceutical Industry offers a guide to the experimental and computational methods related to drug product design and development. The second edition has been greatly expanded and covers a range of topics related to formulation design and process development of drug products. The authors review basic analytics for quantitation of drug product quality attributes, such as potency, purity, content uniformity, and dissolution, that are addressed with consideration of the applied statistics, process analytical technology, and process control. The 2nd Edition is divided into two separate books: 1) Active Pharmaceutical Ingredients (API’s) and 2) Drug Product Design, Development and Modeling. The contributors explore technology transfer and scale-up of batch processes that are exemplified experimentally and computationally. Written for engineers working in the field, the book examines in-silico process modeling tools that streamline experimental screening approaches. In addition, the authors discuss the emerging field of continuous drug product manufacturing. This revised second edition: Contains 21 new or revised chapters, including chapters on quality by design, computational approaches for drug product modeling, process design with PAT and process control, engineering challenges and solutions Covers chemistry and engineering activities related to dosage form design, and process development, and scale-up Offers analytical methods and applied statistics that highlight drug product quality attributes as design features Presents updated and new example calculations and associated solutions Includes contributions from leading experts in the field Written for pharmaceutical engineers, chemical engineers, undergraduate and graduation students, and professionals in the field of pharmaceutical sciences and manufacturing, Chemical Engineering in the
Pharmaceutical Industry, Second Edition contains information designed to be of use from the engineer's perspective and spans information from solid to semi-solid to lyophilized drug products.

This publication is intended to serve researchers and teachers as well as development practitioners. It was prepared based on requests from CIFOR's national partners in Ethiopia and the region to compile existing information and help address the lack of documents available for teaching graduate and undergraduate students about the management of forests in dryland areas in general, and the production and marketing of gums and resins in particular.

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