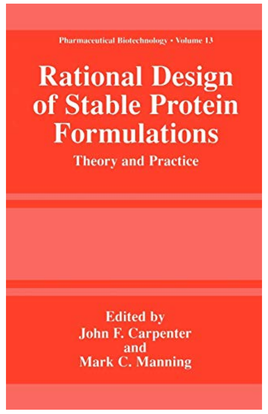

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Rational Design of Stable Protein Formulations-John F. Carpenter 2012-12-06 Recombinant proteins and polypeptides continue to be the most important class of biotechnology-derived agents in today's pharmaceutical industry. Over the past few years, our fundamental understanding of how proteins degrade and how stabilizing agents work has made it possible to approach formulation of protein pharmaceuticals from a much more rational point of view. This book describes the current level of understanding of protein instability and the strategies for stabilizing proteins under a variety of stressful conditions.

Computational Protein Design-Ilan Samish 2016-12-03 The aim this volume is to present the methods, challenges, software, and applications of this widespread and yet still evolving and maturing field. Computational Protein Design, the first book with this title, guides readers through computational protein design approaches, software and tailored solutions to specific case-study targets. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and cutting-edge, Computational Protein Design aims to ensure successful results in the further study of this vital field.

Stability and Characterization of Protein and Peptide Drugs-Y. John Wang 1993-05-31 This is the first volume to make available specific case histories of therapeutic proteins and peptides that have been marketed or are currently under clinical testing. The editors have selected a wide range of molecules derived from monoclonal antibodies, recombinant DNA, and natural and chemical sources to provide formulation scientists with practical examples of the deveopment of pharmaceutical products.

Journal of Nanoscience and Nanotechnology- 2005

Formulation, Characterization, and Stability of Protein Drugs-Rodney Pearlman 1996-10-31 Leading scientists offer detailed profiles of ten protein drugs currently in development. The case histories of these important new compounds are described from the perspective of their formulation, characterization, and stability. This ready reference also features recent data and an abundance of previously unpublished information. The in-depth coverage includes a highly useful compendium of degradation sites occurring in over 70 proteins. An invaluable aid in the rapid identification of potential `hot spots' in proteins, this accessible compilation allows for inspection of the protein's primary structure and preparation of a hydroflex plot.

Structural Characterization of Amyloid-like Protein Segments Adn the Rational Design of Peptide Inhibitors of Fibrillation-Stuart Aaron Sievers 2008

Stability of Protein Pharmaceuticals-Tim J. Ahern 1992-11-30 Part B explores protein degradation occuring in vivo during protein synthesis in cells, examines the isolation and purification of proteins, details protein use in organisms, and reviews techniques to enhance protein stability.

Molecular Modeling and Prediction of Bioactivity-Klaus Gundertofte 2012-12-06 Much of chemistry, molecular biology, and drug design, are centered around the relationships between chemical structure and measured properties of compounds and polymers, such as viscosity, acidity, solubility, toxicity, enzyme binding, and membrane penetration. For any set of compounds, these relationships are by necessity complicated, particularly when the properties are of biological nature. To investigate and utilize such complicated relationships, henceforth abbreviated SAR for structure-activity relationships, and QSAR for quantitative SAR, we need a description of the variation in chemical structure of relevant compounds and biological targets, good measures of the biological properties, and, of course, an ability to synthesize compounds of interest. In addition, we need reasonable ways to construct and express the relationships, i. e. , mathematical or other models, as well as ways to select the compounds to be investigated so that the resulting QSAR indeed is informative and useful for the stated purposes. In the present context, these purposes typically are the conceptual understanding of the SAR, and the ability to propose new compounds with improved property profiles. Here we discuss the two latter parts of the SARlQSAR problem, i. e. , reasonable ways to model the relationships, and how to select compounds to make the models as "good" as possible. The second is often called the problem of statistical experimental design, which in the present context we call statistical molecular design, SMD. 1.

Rational Design of Protein-based Catalysts-Hao Kuang 2001

Bioinorganic Chemistry -- Inorganic Elements in the Chemistry of Life-Wolfgang Kaim 2013-08-01 The field of Bioinorganic Chemistry has grown significantly inrecent years; now one of the major sub-disciplines of InorganicChemistry, it has also pervaded other areas of the life sciencesdue to its highly interdisciplinary nature. Bioinorganic Chemistry: Inorganic Elements in the Chemistryof Life, Second Edition provides a detailed introduction to therole of inorganic elements in biology, taking a systematicelement-by-element approach to the topic. The second edition ofthis classic text has been fully revised and updated to include newstructure information, emerging developments in the field, and anincreased focus on medical applications of inorganic compounds. Newtopics have been added including materials aspects of bioinorganicchemistry, elemental cycles, bioorganometallic chemistry, medicalimaging and therapeutic advances. Topics covered include: Metals at the center of photosynthesis Uptake, transport, and storage of essential elements Catalysis through hemoproteins Biological functions of molybdenum, tungsten, vanadium andchromium Function and transport of alkaline and alkaline earth metalcations Biomineralization Biological functions of the non-metallic inorganicelements Bioinorganic chemistry of toxic metals Biochemical behavior of radionuclides and medical imaging usinginorganic compounds Chemotherapy involving non-essential elements This full color text provides a concise and comprehensive review ofbioinorganic chemistry for advanced students of chemistry,biochemistry, biology, medicine and environmental science.

Computational and Bioinformatic Approaches to Understanding Protein Structure and Function-Ryan M. Bannen 2008

Structure, Self-organization and Stability of Proteins-Rainer Jaenicke 2001

Protein Engineering Techniques-Krishna Mohan Poluri 2016-11-12 This brief provides a broad overview of protein-engineering research, offering a glimpse of the most common experimental methods. It also presents various computational programs with applications that are widely used in directed evolution, computational and de novo protein design. Further, it sheds light on the advantages and pitfalls of existing methodologies and future perspectives of protein engineering techniques.

Proceedings of the National Academy of Sciences of the United States of America-National Academy of Sciences (U.S.) 2007

Physical Methods to Characterize Pharmaceutical Proteins-James N. Herron 2013-11-21 Proteins are still gaining importance in the pharmaceutical world, where they are used to improve our arsenal of therapeutic drugs and vaccines and as diagnostic tools. Proteins are different from "traditional" low-molecular-weight drugs. As a group, they exhibit a number of biopharmaceutical and formulation problems. These problems have drawn considerable interest from both industrial and aca demic environments, forcing pharmaceutical scientists to explore a domain previ ously examined only by peptide and protein chemists. Biopharmaceutical aspects of proteins, e.g., low oral bioavailability, have been extensively investigated. Although all possible conventional routes of ad ministration have been examined for proteins, no real, generally applicable alter native to parenteral administration in order to achieve systemic effects has yet been discovered. Several of these biopharmaceutical options have been discussed in Volume 4 of this series, Biological Barriers to Protein Delivery. Proteins are composed of many amino acids, several of which are notorious for their chemical instability. Rational design of formulations that optimize the native structure and/or bioactivity of a protein is therefore of great importance when long shelf life is required, as it is for pharmaceutical products. This issue has also been examined in two prior volumes of this series: Volume 2: Stability of Protein Pharmaceuticals (Part A) and Volume 5: Stability and Characterization of Protein and Peptide Drugs.

Protein Engineering-Uwe T. Bornscheuer 2017-10-30 This volume details basic and advanced protocols for both stages of protein engineering: the library design phase and the identification of improved variants by screening and selection. Chapters focus on enzyme engineering using rational and semi-rational approaches. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and cutting-edge, Protein Engineering: Methods and Protocols aims to aid scientists in the planning and performance of their experiments. The chapter 'Functional Analysis of Membrane Proteins Produced by Cell-Free Translation' is open access under a CC BY 4.0 license via link.springer.com.

Handbook of Pharmaceutical Biotechnology-Shayne C. Gad 2007-06-11 Describes the use of biotechnology to develop pharmaceuticals. This book gives the professional a basic tool to facilitate the development of biotech medicines by bringing together a general overview of biotechnology used in the drug development process, along with a compendium of regulations and validation methods.

Protein Formulation and Delivery, Second Edition-Eugene J. McNally 2007-10-26 This title is intended to assist pharmaceutical scientists in the development of stable protein formulations during the early stages of the product development process, providing a comprehensive review of mechanisms and causes of protein instability in formulation development, coverage of accelerated stability testing methods and relevant analytical methods, and an overview of the drug substance manufacturing process. Preformulation and the development of traditional solutions and lyophilized formulations frequently used for intravenous delivery and non-traditional formulations are also addressed. Because many developments in the field have emerged since the publication of the First Edition, this Second Edition addresses important new patient-friendly developments in the field, such as formulation for implantable devices, needle-free formulation and delivery approaches, and oral delivery of proteins.

Therapeutic Proteins and Peptides- 2018-04-18 Therapeutic Proteins and Peptides, Volume 112 in an ongoing series promotes further research in the discovery of new therapeutic targets that can be affected by therapeutic proteins and peptides to cure or manage symptoms of human diseases, with this release focusing on the Rational Design of Stable Liquid Formulations of Biopharmaceuticals, Formulation strategies for peptides, proteins and antibodies using nanotechnology, the Solution structural dynamics of therapeutic peptides and their adsorption on plasmonic nanoparticles, Enzymatic approaches of protein-polymer conjugation, Chimeric small antibody fragments as a strategy to deliver therapeutic payloads, Smart cell-penetrating peptide-based techniques for cytoplasmic delivery of therapeutic macromolecules, and more. Describes advances in the discovery and application of therapeutic proteins/peptides which allow better targeting to the site of treatment and cause fewer adverse effects when compared to chemical compounds used for disease treatment Targeted to a very wide audience of specialists, researchers and students Written by well-renown authorities in their field Includes a number of high quality illustrations, figures and tables

Chemical Reactivity and Physical Stability of Lyophilized Solids-Koustuv Chatterjee 2004

Protein Engineering and Design-Sheldon J. Park 2009-09-25 Experimental protein engineering and computational protein design are broad but complementary strategies for developing proteins with altered or novel structural properties and biological functions. By describing cutting-edge advances in both of these fields, Protein Engineering and Design aims to cultivate a synergistic approach to protein science

Protein Design-Raphael Guerois 2006 Recent major advances in our understanding of modulating protein functions has led to the development of new methods and algorithms to predict and decipher how amino acid sequences shape three-dimensional structures. Protein Design: Methods and Applications presents the most up-to-date protein design and engineering strategies so that readers can undertake their own projects with a maximum chance of success. The authors present integrated computational approaches that require various degrees of computational complexity, and the major accomplishments that have been achieved in the design and structural characterization of helical peptides and proteins. Other topics of discussion include: design of structural elementary motifs, entire proteins, and interfaces of protein complexes, and of amyloidogenic polypeptides and amyloid inhibitors. Authoritative and cutting-edge, Protein Design: Methods and Applications will be of major interest to protein scientists, biochemists, and all experimentalists selecting the strategy most adaptable for their design problem.

A General Strategy for Site-specific Incorporation of Unnatural Amino Acids Into Proteins-Spencer Jay Anthony-Cahill 1990

Book Review Index-Gale Group 2003-08 'Book Review Index' provides quick access to reviews of books, periodicals, books on tape and electronic media representing a wide range of popular, academic and professional interests. More than 600 publications are indexed, including journals and national general interest publications and newspapers. 'Book Review Index' is available in a three-issue subscription covering the current year or as an annual cumulation covering the past year.

Systematic Development and Evaluation of High Throughput Protein Production Pipeline Process Improvements-Paul G. Blommel 2007

Pharmaceutical Lyophilization-Chitra Telang 2004

Genetic Engineering of Xylose Isomerase Thermozymes for Enhanced Activity, Stability, and Utility-Dinlaka Sriprapundh 2002

Development of Biopharmaceutical Drug-Device Products-Feroz Jameel 2020-03-13 The biotechnology/biopharmaceutical sector has tremendously grown which led to the invention of engineered antibodies such as Antibody Drug Conjugates (ADCs), Bispecific T-cell engager (BITES), Dual Variable Domain (DVD) antibodies, and fusion proteins that are currently being used as therapeutic agents for immunology, oncology and other disease conditions. Regulatory agencies have raised the bar for the development and manufacture of antibody-based products, expecting to see the use of Quality by Design (QbD) elements demonstrating an in-depth understanding of product and process based on sound science. Drug delivery systems have become an increasingly important part of the therapy and most biopharmaceuticals for self-administration are being marketed as combination products. A survey of the market indicates that there is a strong need for a new book that will provide “one stop shopping” for the latest information and knowledge of the scientific and engineering advances made over the last few years in the area of biopharmaceutical product development. The new book entitled Development of Biopharmaceutical Drug Device Products is a reference text for scientists and engineers in the biopharmaceutical industry, academia or regulatory agencies. With insightful chapters from experts in the field, this new book reviews first principles, covers recent technological advancements and provides case studies and regulatory strategies relating to the development and manufacture of antibody-based products. It covers topics such as the importance of early preformulation studies during drug discovery to influence molecular selection for development, formulation strategies for new modalities, and the analytical techniques used to characterize them. It also addresses important considerations for later stage development such as the development of robust formulations and processes, including process engineering and modeling of manufacturing unit operations, the design of analytical comparability studies, and characterization of primary containers (pre-filled syringes and vials).Finally, the latter half of the book reviews key considerations to ensure the development and approval of a patient-centered delivery system design. This involves the evolving regulatory framework with perspectives from both the US and EU industry experts, the role of international standards, design control/risk management, human factors and its importance in the product development and regulatory approval process, as well as review of the risk-based approach to bridging between devices used in clinical trials and the to-be-marketed device. Finally, case studies are provided throughout.The typical readership would have biology and/or engineering degrees and would include researchers, scientific leaders, industry specialists and technology developers working in the biopharmaceutical field.

Pharmaceutical Formulation Development of Peptides and Proteins, Second Edition-Lars Hovgaard 2012-11-14 The rapid advances in recombinant DNA technology and the increasing availability of peptides and proteins with therapeutic potential are a challenge for pharmaceutical scientists who have to formulate these compounds as drug products. Pharmaceutical Formulation Development of Peptides and Proteins, Second Edition discusses the development of therapeutic peptides and proteins, from the production of active compounds via basic pre-formulation and formulation to the registration of the final product. Providing integrated solutions, this book discusses: The synthesis of peptides and the biotechnological production of proteins through recombinant DNA technology The physicochemical characteristics and stability of peptides and proteins The formulation of proteins as suspensions, solutions, and (mostly freeze-dried) solids The opportunities and challenges of non-parenteral delivery of peptides and proteins Risk factors, specifically the development of an unwanted immune response A simulation approach to describe the fate of peptides and proteins upon administration to a biological system The documentation required to register a protein-based drug Scientists in the pharmaceutical industry and academia as well as postgraduate students in pharmaceutical science will find this a valuable resource.

Botulinum Neurotoxins-Andreas Rummel 2012-12-14 The extremely potent substance botulinum neurotoxin (BoNT) has attracted much interest in diverse fields. Originally identified as cause for the rare but deadly disease botulism, military and terrorist intended to misuse this sophisticated molecule as biological weapon. This caused its classification as select agent category A by the Centers for Diseases Control and Prevention and the listing in the Biological and Toxin Weapons Convention. Later, the civilian use of BoNT as long acting peripheral muscle relaxant has turned this molecule into an indispensable pharmaceutical world wide with annual revenues >$1.5 billion. Also basic scientists value the botulinum neurotoxin as molecular tool for dissecting mechanisms of exocytosis. This book will cover the most recent molecular details of botulinum neurotoxin, its mechanism of action as well as its detection and application.

The British National Bibliography-Arthur James Wells 2002

Concepts in Protein Engineering and Design-Paul Wrede 1994

Protein Engineering-Tomohisa Ogawa 2013-05-29 Given the centrality of protein to many biological process, this book makes a significant contribution to the fields of healthcare and nutrition. Its chapters consider topics such as protein-protein and protein-ligand docking, and the protein engineering of enzymes involved in bioplastic metabolism. One contribution gives an overview of the In Vitro Virus (IVV) analytic method, while another shows how cutting-edge techniques in protein engineering advance our knowledge in the field of palaeontology. The book also includes a review of classic and alternative strategies when using yeasts in research, with a focus on Pichia pastoris as a host. Finally, there are two contributions on chromatography: one on the method itself, and another on its use to identify HMGB1-binding components.

Biocatalysis at Extreme Temperatures-Michael W. W. Adams 1992 For chemists in pharmaceuticals, medicine, agriculture, and food, reviews what little is known about catalysis by enzymes at near the boiling point of water, the specific properties of the few isolated enzymes and proteins that can live and function at that extreme, and the potential applications. The 13 papers are from a symposium at the April 1991 meeting of the American Chemical Society in Atlanta. Annotation copyrighted by Book News, Inc., Portland, OR

Crystal Structures of a Disulfide-linked Cystathionine B-synthase Domain Dimer from the Hyperthermophile Pyrobaculum Aerophilum-Toni Marie Lee 2008

Iron Carriers and Iron Proteins-Thomas M. Loehr 1989

Formulation and Delivery of Proteins and Peptides- 1994

Proteomics and Protein-Protein Interactions-Gabriel Waksman 2005-12-21 The rapidly evolving field of protein science has now come to realize the ubiquity and importance of protein-protein interactions. It had been known for some time that proteins may interact with each other to form functional complexes, but it was thought to be the property of only a handful of key proteins. However, with the advent of high throughput proteomics to monitor protein-protein interactions at an organism level, we can now safely state that protein-protein interactions are the norm and not the exception. Thus, protein function must be understood in the larger context of the various binding complexes that each protein may form with interacting partners at a given time in the life cycle of a cell. Proteins are now seen as forming sophisticated interaction networks subject to remarkable regulation. The study of these interaction networks and regulatory mechanism, which I would like to term "systems proteomics," is one of the thriving fields of proteomics. The bird-eye view that systems proteomics offers should not however mask the fact that proteins are each characterized by a unique set of physical and chemical properties. In other words, no protein looks and behaves like another. This complicates enormously the design of high-throughput proteomics methods. Unlike genes, which, by and large, display similar physico-chemical behaviors and thus can be easily used in a high throughput mode, proteins are not easily amenable to the same treatment. It is thus important to remind researchers active in the proteomics field the fundamental basis of protein chemistry. This book attempts to bridge the two extreme ends of protein science: on one end, systems proteomics, which describes, at a system level, the intricate connection network that proteins form in a cell, and on the other end, protein chemistry and biophysics, which describe the molecular properties of individual proteins and the structural and thermodynamic basis of their interactions within the network. Bridging the two ends of the spectrum is bioinformatics and computational chemistry. Large data sets created by systems proteomics need to be mined for meaningful information, methods need to be designed and implemented to improve experimental designs, extract signal over noise, and reject artifacts, and predictive methods need to be worked out and put to the test. Computational chemistry faces similar challenges. The prediction of binding thermodynamics of protein-protein interaction is still in its infancy. Proteins are large objects, and simplifying assumptions and shortcuts still need to be applied to make simulations manageable, and this despite exponential progress in computer technology. Finally, the study of proteins impacts directly on human health. It is an obvious statement to say that, for decades, enzymes, receptors, and key regulator proteins have been targeted for drug discovery. However, a recent and exciting development is the exploitation of our knowledge of protein-protein interaction for the design of new pharmaceuticals. This presents particular challenges because protein-protein interfaces are generally shallow and interactions are weak. However, progress is clearly being made and the book seeks to provide examples of successes in this area.

Stability of Protein Pharmaceuticals-Tim J. Ahern 1992-11-30 This first of two volumes examines the chemical and physical mechanisms of degradation processes that occur during drug processing, storage, and delivery. The practical text will be particularly useful to molecular biologists, process engineers, and pharmaceutical scientists in the field of biotechnology.

Polymer-Protein Conjugates-Gianfranco Pasut 2019-10-30 Polymer–Protein Conjugates: From Pegylation and Beyond helps researchers by offering a unique reference and guide into this fascinating area. Sections cover the challenges surrounding the homogeneity of conjugates, their purity and polymer toxicity on long-term use, and how to deal with the risk of immunogenicity. These discussions help researchers design new projects by taking into account the latest innovations for safe and site selective polymer conjugation to proteins. PEG has been the gold standard and likely will play this role for many years, but alternatives are coming into the market, some of which have already been launched. After five decades of improvements, the ideas in this book are entering into a new era of innovation because of the advances in genetic engineering, biochemistry and a better understanding of the results from clinical use of PEG conjugates in humans. Provides an overview on the state-of-the-art of protein polymer conjugation Presents both the pros and cons of polymer-protein conjugates from the point-of-view of their clinical outcomes Outlines advantages and potential risks of present technology based on PEG Offers new alternatives for PEG and new approaches for on site-selective protein modification Identifies future direction of research in this field