Book Reviews

Current Directions in Radiopharmaceutical Research and Development.. Edited by Stephen J. Mather. Kluwer Academic Publishers, Boston, MA. 1996. xvi + 237 pp. 16.5 × 24.5 cm. ISBN 0-7923-4254-2. $136.00.

The area of radiopharmaceuticals is quickly expanding and profoundly impacting medicine. It has progressed from the simple use of perfusion tracers for biodistribution studies to the strategy of targeting specific receptors of diseased tissue for diagnostic purposes. Such rapidly growing areas demand frequent updates, and as a current review of newer methods in radiopharmaceutical development, this present volume is timely. The text is a collection of manuscripts emerging from a recent Liverpool, U.K., course entitled "The First Easter School in Radiopharmaceutics", whose goal in a one week time frame was to showcase the latest and most relevant topics to investigators in radiopharmaceuticals. The volume opens with a Foreword on the future of this discipline, and then 14 chapters by noted experts follow. Selected chapter titles are Bifunctional chelators for Tc-99m, Imaging the functions of the cell nucleus, Steroid hormone receptors as targets for diagnostic imaging, Radioligand binding assays: theory and practice and Microautoradiography. As noted in the Preface, since not all lecturers at the meeting provided manuscripts, there are some areas lacking coverage; in particular, peptides. Each chapter contains useful references to the original literature. The text does contain a key word index and listing of other related monographs in this series. This timely volume will be a valuable addition to the library of anyone involved with the development of radiopharmaceuticals.

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JM970454F

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Circular Dichroism and Linear Dichroism. Alison Rodger and Bengt Nordén. Oxford University Press, Oxford, U.K. 1997. x + 150 pp. 19.5 × 25 cm. ISBN 0-19-855897-X. $60.00.

The intent of the authors is to provide an introduction to the techniques of circular dichroism (CD) and linear dichroism (LD). To this end there are seven chapters of increasing complexity plus appendices related to these topics. The first chapter provides an introduction to CD and LD, and this is followed by chapters on the CD and LD of biomolecules. Chapter 4 focuses on the linear dichroism of small molecules, Chapter 5 is devoted to an analysis of allowed electric dipole transitions in CD, and Chapter 6 discusses magnetic circular dichroism (MCD). Chapter 7 and the appendices deal with the theory and basic equations which describe CD.

The book would be particularly useful in teaching graduate students about CD and LD and is a useful reference for undergraduates or professionals who do not use the techniques on a regular basis. Throughout the book there is an emphasis on explaining the subjects in simple and easy to understand terms. In several chapters there is useful practical discussion about instrumentation and the effective use of the methods to solve problems in structure elucidation, biology, and spectroscopy.

As an introductory and teaching text, the book has definite utility. In this context it may have been useful to include some problems and their solutions in the appendices. The book would be a useful addition to most chemistry department libraries.

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JM9705622

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Glycopeptides and Related Compounds. Synthesis, Analysis, and Applications. Edited by D. G. Large and C. D. Warren. Marcel Dekker, Inc., New York. 1997. xii + 767 pp. 18.5 × 26 cm. ISBN-0-8247-9531-8. $195.00.

The 15 chapters cover glycopeptides, oligosaccharides, glycosylphosphatidylinositol anchors, dolichol intermediates, and substrates and inhibitors of glycosyltransferases and glycosidases. In Chapter 1 is a discussion of the history of glycopeptide synthesis, a brief review of the problems it still presents to chemists today, and some mention of therapeutic applications. Chapters 2−7, 9, and 10 all deal with different aspects of synthesis in very great detail. Chapters 8, and 11−14 describe various aspects of analysis and structure determination of glycopeptides. Some of these methods have application to glycoproteins as well. Chapter 15 is devoted to the potential and far distant application of glycopeptides to cancer chemotherapy. Throughout the book, many references as recent as 1994 are cited.

This is a very special book. It is a far cry from a review volume that gives a rather general picture of the state of some discipline or topic. Many of the chapters read like journal articles. In particular, the eight synthesis chapters show the reader how these extraordinarily complex organic compounds are really synthesized with the latest methodology up to the date of the chapter and with the chapters written by expert practitioners. There is enough chemical information in this volume, both synthetic and analytic, for a researcher to decide (1) whether this is a field that is fascinating enough for him to plunge into and (2) whether the chemistry is so terribly difficult that his ability is not up to the challenge.

A current medicinal chemistry field with great future practical importance is the complement system, a group of glycoproteins with broad physiological activity. The methodology of glycopeptides leads, with perhaps an

order of magnitude greater difficulty, to glycoproteins. Advance in the latter area will surely come from the experts who can master the chemistry of glycopeptides.

Every school with a graduate program in organic chemistry should have this book in its library (and perhaps only libraries can afford it). Availability of the book might attract both staff and graduate students to consider the enormously difficult field of glycopeptides for future research endeavors.

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JM970563U

S0022-2623(97)00563-3

Handbook of Phase I/II Clinical Drug Trials. Edited by John O'Grady and Peter H. Joubert. CRC Press, Boca Raton, FL. 1997. xii + 562 pp. 18.5 × 26 cm. ISBN 0-8493-9230-6. $149.95.

This is the second edition of a book first entitled *Early Phase Drug Evaluation in Man*. The new title reflects the objective of the current edition to provide increased practical guidance for cost-effective early drug development in humans. A considerable amount of new material is presented in the rewritten or extensively revised chapters repeated from the first edition, and several new chapters, e.g., ones on Alzheimer's and Parkinson's diseases, have been added. The book is divided into 13 parts, each consisting of 1−7 chapters. Part I considers Preliminaries to Testing in Humans, Part II relates to Organization and Decision Making, Part III deals with Ethical and Legal Considerations, and Part IV describes Measuring Drug Activity in Humans. The remaining Parts V−XIII are concerned with the clinical evaluation of drug effects on the cardiovascular, respiratory, central nervous, gastrointestinal, and genito-urinary systems, as well as the assessment of drugs in treating skin disorders and the early clinical study of chemotherapeutic and antiinflammatory agents. The chapters are written by an international array of recognized experts from both industry and academia.

The clarity of presentation and the thoroughness of each chapter make this edition one which should benefit all researchers concerned with phase I and II clinical trials. Each chapter includes a comprehensive list of up-to-date references, and a complete list of authors is provided. The editors have achieved their goal of providing practical guidance and direction for decision-making based on sound science and high ethical standards. Hopefully, the expertise provided in this comprehensive book will facilitate early phases of drug testing in humans.

Staff

JM970564M

S0022-2623(97)00564-5

Methods in Molecular Biology. Volume 78. Antibacterial Peptide Protocols. Edited by William S. Shafer. The Humana Press, Totowa, NJ. 1997. x + 259 pp. 15.5 × 23.5 cm. ISBN 0-89603-408-9. $74.50.

In this volume, all the major biochemical, molecular, bacteriological, and physiological techniques available to assess antimicrobial peptides are reviewed. Following a historical introduction to the Origins and Development of Peptide Antibiotic Research: From Extracts to Abstracts to Contracts, the book is divided into three parts: I, Isolation and Characterization of Antibacterial Peptides; II, Molecular Biology of Antibacterial Peptides; and III, Assay Systems for Studying Antibacterial Peptides. In the first part, procedures involving the biological fraction of antimicrobial peptide-containing extracts from vertebrate and invertebrate sources and the physicochemical analysis of purified peptides are described in seven chapters. In the second part, consisting of three chapters, recent advances in the molecular characterization of genes encoding microbial peptides, as well as procedures for using expression systems, are described. The third section (six chapters) deals with the bioassays and microbial genetic techniques for studying antibacterial actions. The chapters are uniformly well written with clearly presented practical experimental descriptions.

This volume will interest researchers concerned with the development of new antimicrobial agents. The field of antibacterial peptides is one which, based on the large number of recent publications, may be expected to develop into a distinct discipline.

Staff

JM970565E

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List of MAK and BAT Values 1996. Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area Report No. 32. Deutsche Forschungsgemeinschaft. Authorized by H. Green. VCH Verlagsgesellschaft mbH, Weinheim, Germany. 1996. xxii + 180 pp. 17 × 24 cm. ISBN 3-527-27572-X. DM 64.00 (pbk).

This publication, which is updated annually, lists MAK values (maximale arbeitsplatz-konzentration: maximum workplace concentration) and BAT values (biologischer arbeitsstoff-toleranz-wert: biological tolerance value for occupational exposures) for all substances for which there are available sufficient data from the fields of toxicology, occupational medicine, or industrial hygiene. As a prelude to the listings, these values are defined and considered (e.g., analytical controls, limitation of exposure peaks, mixtures of substances, individual sensitivities, odors as warning signals, effects during pregnancy, germ cell mutagens, radioactive materials). The lists include the substance, its CAS number, formula, MAK or BAT value, peak limitation category, danger of cutaneous absorption, danger of sensitization, carcinogen category, pregnancy risk group, germ cell mutagen group, and vapor pressure values.

This book, which is published in English, consolidates information of vital importance to all laboratory workers; it should be available to all concerned with occupational health and safety.

Staff

JM9705667

S0022-2623(97)00566-9

Landmarks in Gene Regulation. Edited by D. S. Latchman. Portland Press Ltd., London. 1997. xii + 302 pp. 21 × 30 cm. ISBN 1-85578-109-3. $34.00 (pbk).

During the past 20 years, many regulatory proteins, or transcription factors, have been identified and their roles in regulating the expression of specific genes examined. The foundations for these discoveries and studies were built on a relatively small number of seminal papers. In the present volume, 27 of these key papers are republished in their entirity with accompanying editorial commentary describing their significance in the field of gene regulation.

The headings for the 14 sections in this review are (1) Different Tissues Have Different RNA Populations but Generally Similar DNA, (2) Regulation at Transcription, (3) Post-Transcriptional Regulation: Alternative RNA Splicing, (4) Post-Transcriptional Regulation: RNA Stability and Translatability, (5) Chromatin Structure, (6) Promoter Elements, (7) Long-Distance Regulatory Elements, (8) Purification and Cloning of Transcription Factors, (9) DNA Binding Domains of Transcription Factors, (10) Dimerization Domains in Transcription Factors, (11) Activation Domains in Transcription Factors, (12) Regulation of Transcription Factor Activity, (13) Functional Role of Transcription Factors, and (14) Conclusions and Future Perspectives. The book concludes with a list of important references and a subject index.

Landmarks in Gene Regulation provides a useful source of information for medicinal chemists and others in various life science fields. It enables both students and experienced researchers to observe and understand cardinal advances made in the area of eukaryote gene regulation.

Staff

JM9706022

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Controlled Drug Delivery. Challenges and Strategies. Edited by Kinam Park. American Chemical Society, Washington, D.C. 1997. xvii + 629 pp. 20 × 24 cm. ISBN 0-8412-3418-3. $149.95.

The controlled-release delivery of therapeutic agents has become increasingly important in recent years. In this book the current status of this technology and its future challenges are discussed in 29 chapters contributed by 65 experts and active researchers in the field.

The first chapter presents a brief overview of the history of controlled-release drug delivery. Noninvasive intracellular delivery of high-molecular-weight therapeutic agents is considered in the next two chapters. The targeting aspect of drug delivery is described in Chapters 4−6. Self-regulated drug delivery is the subject of the following three chapters. Chapters 10−14 are devoted to extremely important topics that consider various aspects of the delivery of peptide and protein drugs. Chapters 15−18 are concerned with applications of tissue engineering, gene therapy, and microencapsulation in drug delivery. The following six chapters describe new polymeric biocompatible materials that can be used for the specialized delivery of therapeutic agents. Chapters 25−27 are devoted to various modeling studies of controlled drug delivery, controlled-release devices, and computer dynamics simulation of controlled release. The final two chapters deal with regulations and pharmacokinetic considerations of importance in the development of controlled-release dosage forms. Complete author and subject indexes are included.

The chapters are uniformly clearly written. The book presents an excellent introduction to the technology of controlled release of drug products. It should also achieve the objective of the editor to provide a reference book of future controlled drug delivery systems for both students and active researchers in the field.

Staff

JM970603U

S0022-2623(97)00603-1

High Throughput Screening. The Discovery of Bioactive Substances, 1997. Edited by John P. Devlin. Marcel Dekker, Inc., New York. 1997. xxiv + 673 pp. 18.5 × 26 cm. ISBN 0-8247-0067-8. $165.00.

This is a well-referenced, highly professional, comprehensive, and in-depth treatment of a relatively complex approach to the discovery of bioactive substances. One hundred fifteen authors, mainly scientists in the pharmaceutical industry, have constructed forty chapters divided into six sections which focus on high throughput screening (HTS). These sections are (I) Natural Products as a Discovery Resource; (II) Compound Sourcing: Chemically Generated Screening Libraries; (III) Assay Technologies and Detection Methods; (IV) Automation and Robotics; (V) Data Retrieval, Handling and Integration; and (VI) Laboratory Design and Management. The volume is intended to be used as an information base which facilitates the transition by the reader from the traditional to the HTS discovery process. A useful index is provided.

Even though most of the topics covered have been discussed in conferences and/or reviewed in the literature, this work provides forty well-integrated chapters covering HTS from a multitude of perspectives. Chemical and biological rationales, techniques, and methods, test substance sources, numerous spectrophotometric and other analytical procedures, robotic interfacing, library design, many assays and their development including reporter gene assay applications, microphysiometry, optical biosensors, neutrophin receptors, and Flash Plate technology as well as waste disposal, management, and service issues, to name a few, are discussed from a variety of perspectives. The work is concluded with a chapter on establishing an HTS program in a start-up biotechnology company. This is a recommended book for most private libraries of both academic and industrial pharmaceutical and agricul-

tural chemists and biologists and a must acquisition for applicable academic and industrial libraries.

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Cytochromes P450. Structure, Function, and Mechanism. By David F. Lewis. Taylor & Francis, London and Bristol, PA. 1996. xxi + 348 pp. 17.5 × 25 cm. ISBN 0-7484-0443-0. $150.00.

This is a new volume on the superfamily of cytochrome P450 enzymes. As pointed out in the Preface, there are more papers published on P450 than in any other area of science. Research in this field continues to expand at a rapid rate, and a new text on P450 appears almost every year. Dr. Lewis has chosen to focus on those aspects of cytochromes P450 that are relevant to an understanding of their structure, function, and mechanisms of action. The book is divided into six comprehensive chapters. Chapter 1 mainly emphasizes spectroscopic (UV−visible, polarized optical, vibrational, magnetic resonance, Mossbauer, and extended X-ray absorption fine structure) and other physicochemical (X-ray crystallography, determination of redox potentials, and molecular dynamics simulations) methods utilized for characterization of P450's and analysis of their mechanisms of action. Chapter 2 discusses P450 evolution against the background of the diversification of life forms and the rise in oxygen concentration in the atmosphere; the latest system for P450 nomenclature and classification is also presented. Chapter 3 describes the P450 catalytic cycle, with emphasis on experimental findings that support the identity of the various postulated intermediates. Chapter 4 provides a detailed overview of the metabolism of endogenous compounds and xenobiotics, focusing primarily on the mammalian CYP1, CYP2, and CYP3 families. Chapter 5 covers the induction, regulation, and inhibition of cytochromes P450, emphasizing both molecular mechanisms and chemical structures. Chapter 6 builds very heavily on Dr. Lewis' own research and presents an in-depth analysis of the use of molecular modeling to rationalize the substrate specificity of P450's. A prominent feature is the inclusion of numerous full color figures of active-site models.

This volume is intended for students in the biological sciences, researchers in industry and academia involved with drug design and development, and scientists in governmental regulatory agencies concerned with the evaluation of the safety and efficacy of chemicals. Dr. Lewis makes a unique contribution in presenting a cohesive, single-authored volume that covers a broad variety of topics in a lucid and sophisticated fashion. The text contains numerous tables and figures and an up-to-date (albeit somewhat subjective) reference list that includes both recent reviews and primary journal articles. This volume should be of considerable value as a perspective and reference source for active workers in many different facets of the P450 field.

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Ligand−Receptor Energetics. A Guide for the Perplexed. By Irving M. Klotz. John Wiley & Sons, Inc., New York. 1997. xi + 170 pp. 15.5 × 23 cm. ISBN 0-471-17626-5. $44.95.

The initiation of almost all biological actions requires as a first step the interaction of a small molecule ligand with a biomacromolecule receptor to form a macromolecular complex. The objective of this book is to present the energetic and molecular principles that govern such interactions in order to provide a framework for interpreting experimental observations in a wide range of ligand−receptor interactions that pervade the basic life sciences.

Topics covered in considering the fundamental and theoretical concepts involved in ligand−receptor energetics include affinities, facts and fantasies from graphical analyses, numerical evaluation of stoichiometric binding constants, affinity profiles, thermodynamic perspectives, forces of interaction, and molecular scenarios.

While this book is necessarily highly mathematical, its theoretical and thermodynamic topics are clearly and concisely presented. As a result, it is a useful supplementary text for students of the basic life sciences. The fundamentals of critical life processes described in this book are of importance to medicinal chemists as well as to others concerned with biomedical research. The book is recommended for both students and researchers in all areas of the basic life sciences.

Staff

JM9706067

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Molecular Mechanics Across Chemistry. By Anthony K. Rappé and Carla J. Casewit. University Science Books, Susalito, CA. 1997. xii + 444 pp. 18.5 × 26 cm. ISBN 0-935702-77-6. $56.50.

The book contains a total of eight chapters with a nice perspective of molecular mechanics and a glossary of various terms in Chapter 1. The principles of molecular mechanics are illustrated in Chapter 2, with small organic molecules as examples. The authors clearly point out the pitfalls and short comings in the design of novel drug candidates in Chapters 3−5. They emphasize that "molecular modeling is a powerful tool...a great deal of human intervention and creativity is needed" to design therapeutically useful lead compounds. Much recent work done in the area of nucleic acid simulation (Ewald sum methods to treat long-ranged electrostatics) makes Chapter 5 obselete. Ap-

plications of molecular mechanics methods to study structure and properties of polymers and inorganic molecules are described in Chapter 7. The last chapter presents detailed strategies for developing new force fields.

Despite the authors' admission, the cited references lack being current and exhaustive. Overall this introductory book is easy to read. A paperback version would have made this book affordable for the intended audience.

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Cancer Therapeutics: Experimental and Clinical Agents. Edited by Beverly A. Teicher. Humana Press, Totowa, NJ. 1996. x + 451 pp. 18 × 26 cm. ISBN 0-89603-460-7. $125.00.

This book takes on the task of reviewing, from a historical perspective, the development of cancer therapeutics from an opportunistic approach based on observations of existing molecules to a rationale-designed approach based on the development of targeted molecules. Part I of the review deals with those agents which are presently used in the clinic. The initial chapters present a detailed analysis as to how some of the earlier cytotoxic anticancer agents were discovered and developed. Much of this information is tedious and overdone, with lengthy overviews of specific topics such as supportive care, analytical methods for pharmacokinetic monitoring, hepatic elimination, increased cytoplasmic detoxification, and drug resistance profiles. These overviews are designed to give a better understanding of how second-generation analogs of these early cytotoxic agents were arrived upon and developed. The later chapters in Part I tend to be lighter overviews of a variety of anticancer agents, categorized primarily by mechanism of action. These sections serve as a good general overview to the reader. It should be noted that several major classes of anticancer agents, such as the antimetabolites (inhibitors of nucleoside biosynthesis) and non-taxoid microtubulin inhibitors, are not covered in this section of the book.

Part II of the book covers some of the newer research approaches being pursued for the development of targeted anticancer agents. These chapters serve as an excellent source of basic information for readers looking to expand their understanding of what is new in cancer research. Unfortunately, I felt that many of the chapters in this section were shallow in their analysis of the state of the art of current pharmaceutical developments. One must consider, however, the difficulty in creating a review that is current when covering rapidly developing new research targets. Particularly shallow was the chapter on angiogenesis (possibly the single most important new target for cancer therapy), which saw fit to only discuss the agent TNP-470 while not addressing any of the other exciting advances in the area. As with Part I, Part II seemed to be missing some of the more important new targets in cancer research such as kinase inhibitors and apoptosis-modulating agents.

Overall, *Cancer Therapeutics: Experimental and Clinical Agents* is a good basic overview of the field. It fails, however, to function as the type of book I would keep around as a reference source for pertinent information.

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Antidepressants. New Pharmacological Strategies. Edited by P. Skolnick. Humana Press, Totowa, NJ. 1997. x + 257 pp. 18.5 × 26 cm. ISBN-0-89603-469-0. $99.50.

Depression is a common, recurrent, disabling, and potentially fatal disorder, carrying substantial personal, familial, and societal costs. It is underdiagnosed and undertreated, but even when patients receive full therapeutic doses of antidepressants, their efficacy and speed of action leave a lot to be desired. Nevertheless, the introduction of the selective serotonin reuptake inhibitors (SSRIs) led by Prozac initiated an enormous growth in the antidepressant market, in both prescriptions and value. The burgeoning interest of the pharmaceutical industry in new antidepressants is clear, and the current book is a timely reminder of some of the pharmacological strategies that are being pursued to produce improved therapies.

Thirteen chapters authored by a distinguished group of international researchers in depression are prefaced by the briefest of introductions to the topic by the editor, Phil Skolnick. As befits his own research interests, three chapters are devoted to the potential role of NMDA receptors in depression and of functional NMDA antagonists as antidepressants, while a fourth chapter on sigma receptors, otherwise out of place in this volume, links their affinity for some antidepressants to a modulation of the glutamate−NMDA receptor complex. Three chapters cover serotonin-related topics, and a further three concentrate upon events beyond the receptor at the level of G-proteins, second messengers, and gene expression. Others focus on new animal models for detecting novel antidepressants, the future of research into reversible inhibitors of monoamine oxidase A (RIMAs), and the role of calcium channel antagonists in mood disorders. Noradrenaline is largely relegated to the sidelines except in the chapter on serotonin−noradrenaline reuptake inhibitors (SNRIs), and the book fails to include the two most recently introduced antidepressants, mirtazapine and reboxetine, which are based respectively upon strategies of α-2-adrenoceptor antagonism and selective noradrenaline reuptake inhibition. The identification of imidazoline-binding sites on MAO as a potential target for antidepressant action is also ignored.

The book is written to a high and consistent standard, and is generally well-referenced. Two contributions stand out: the first chapter by Francesc Artigas and his colleagues from Barcelona describing their pioneering pharmacological and clinical efforts to accelerate the onset of action of SSRIs and the last chapter by Steven Paul and his mainly Eli Lilly coauthors which connects the molecular strategies to novel antidepressant discovery. The book is essential reading for all academic and industrial neuroscientists with an interest in depression and antidepressants. It is well-produced, nicely illustrated, and looks good, even if a little expensive for such a slim volume.

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JM970610I

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NMR Spectroscopy and Its Application to Biomedical Research. Edited by Susanta K. Sarkar. Elsevier Science, Amsterdam, The Netherlands. 1996. xviii + 387 pp. 15.5 × 23 cm. ISBN 0-444-89410-1. $250.00.

The text presents an excellent introduction to the application of modern multidimensional NMR methods for the determination of the solution structure of biomolecules. The list of contributors reads like a Who's Who of biomedical NMR spectroscopists. The text is divided into eight well-written and detailed chapters. The first chapter, entitled Two-Dimensional NMR Spectroscopy: A Graphical "Top-Down" Description by W. M. Wesler, is an excellent introduction to the theory of two-dimensional NMR. Topics covered include coherence flow networks, phase cycling, and pulse field gradients, as well as a detailed discussion of the most commonly used homonuclear and heteronuclear NMR experiments. This chapter should be required reading for all graduate and postdoctoral students using two-dimensional NMR methods. The second chapter, written by Mueller and Kumar, presents an excellent discussion on resonance assignment of biomolecules using multidimensional NMR methods. A particularly useful discussion is presented in this chapter entitled Toolbox of Pulse Sequence Design. In this section, the rules needed for the reader to begin to analyze complex pulse sequences are given. This chapter should be required reading for all graduate and postdoctoral students involved in the application of NMR to biomedical research. The third chapter, written by Stockman, presents a very interesting and useful discussion on methods employed for the preparation of ^{2}H-, ^{13}C-, and ^{15}N-enriched proteins. In Chapter 4, Weber presents an excellent and detailed discussion on how NMR data is used to determine the three-dimensional solution structure of a protein. Topics discussed in this chapter include determining resonance assignments, generating experimental constraints, stereospecific proton assignments, structure calculation strategies, and analysis of the calculated structures. This chapter should also be required reading for all graduate and postdoctoral students in the field. Nicholson, Kay, and Torchia (Chapter 5) present a detailed discussion of the study of protein dynamics in solution. This chapter begins with a discussion of the theory of protein dynamics and concludes with a discussion of several experimental applications.

In Chapter 6, Wemmer changes the topic of discussion from proteins to nucleic acids. In this chapter, the application of NMR methods for the determination of nucleic acid structure and dynamics in solution is discussed. Topics discussed include resonance assignments in nucleic acids, parameters for structure determination, developing models, and analysis of dynamics of nucleic acids. Lerner (Chapter 7) discusses the application of NMR methods for the determination of carbohydrate structure and dynamics. Topics discussed include 1D and 2D homonuclear and heteronuclear experiments, as well as the determination of conformation and analysis of glycoconjugates and oligosaccharides. Both of these chapters should be required reading for students in each area.

The final chapter by Simmons, Sarkar, and Jelinski presents a discussion of the application of solid-state NMR to biomedical research. In this well-written chapter, the fundamental concepts of solid-state NMR are presented to provide the reader with the basic knowledge needed to understand the material presented later in the chapter. A very interesting discussion of the application of solid-state NMR methods for the investigation of bone, lipids and membranes, membrane proteins, DNA, and ligand−protein complexes is given.

Overall, this is an excellent text, which provides the reader with a detailed and interesting discussion of the application of modern NMR methods to biomedical research. The text should be included in the library of any scientist involved in NMR research. The text is also an excellent reference source useful in teaching an advanced graduate course in the application of multidimensional NMR methods to the determination of the structure of biomolecules.

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JM970611A

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Comprehensive Heterocyclic Chemistry II. Edited by A. R. Katritzky, C. W. Rees, and E. F. V. Scriven. Pergamon Press, Elsevier Science, Ltd., Tarrytown, NY. 1996. 12 Volumes: Vol. 1A, xxvii + 505 pp; Vol. 1B, 860 pp; Vol. 2, xiii + 1102 pp; Vol. 3, xiii + 932 pp; Vol. 4, xxiii + 1006 pp; Vol. 5, xxiii + 794 pp; Vol. 6, xxiii + 1307 pp; Vol. 7, xxiii + 1044 pp; Vol. 8, xv + 1326 pp; Vol. 9, xvii + 1146 pp; Vol. 10, xix + 729 pp; Vol. 11, xi + 596 pp. 19.5 × 28 cm. ISBN 0-08-042724-3; 0-08-042725-1; 0-08-042726-X; 0-08-042727-8; 0-08-042728-6; 0-08-042729-4; 0-08-042730-8; 0-08-042731-6; 0-08-042732-4; 0-08-042965-3; 0-08-042987-4. $6345.00 (set).

This titanic multivolume compendium surveys the literature of heterocyclic chemistry from 1982 to 1995, being an extension/addition to Part I, which was published early in 1984. In the present series, Volume 10

contains the author index and a ring index and Volume 11 is the subject index. There are different editors for each of the narrative volumes; Volume 1 is bound in two parts, A and B, whose pages are numbered sequentially through both volumes.

Discussions of the multitude of heterocyclic rings are quite broad and extensive, including theoretical, structural, and electronic considerations; spectral properties; synthesis; chemical properties and reactions; and (where applicable) indications of economic and/or pharmacological−biological significance. The discussions are thoroughly and carefully referenced, and the editors' system of abbreviated recording of journal citations is utilized. This system is easily mastered by the reader.

This is an extremely useful source of information for almost any aspect of heterocyclic chemistry. Overall, the writing has been well done, and structures have been carefully drawn. However, Volume 10, p 629, shows structures for C_4Hf and C_4Mg which lack the diene double bonds, and this error reappears on the following page. In Volume 2, p 483, the equations dealing with tautomeric equilibria improperly show double-headed arrows (indicative of resonance phenomena rather than tautomerism). Minor errors of this sort are probably inevitable in an effort of this magnitude, and they do not detract from the merit of the work.

The editors note in their Introduction that Part I contains a discussion of heterocyclic nomenclature. This reviewer would have wished to see a nomenclature section in the present work, providing an update as well as a restatement of heterocyclic nomenclature for the convenience of readers who may not have access to Part I.

Overall, this set of books is successful and impressive. It will be extremely useful to anyone pursuing research in heterocyclic chemistry, and it belongs in every chemistry library. It will be consulted frequently and extensively.

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Books of Interest

Static Headspace-Gas Chromatography. Theory and Practice. By Bruno Kolb and Leslie S. Ettre. John Wiley & Sons, Inc., New York. 1997. xx + 298 pp. 16 × 24 cm. ISBN 0-471-19238-4. $79.95.

Analytical Method Development and Validation. By Michael E. Swartz and Ira S. Krull. Marcel Dekker, Inc., New York. 1997. 92 pp. 14.5 × 21 cm. ISBN 0-8247-0115-1. $35.00. (pbk).

Therapeutic Modulation of Cytokines. Edited by Brian Henderson and Mark W. Bodner. CRC Press, Inc., Boca Raton, FL. 1996. 343 pp. 16 × 24 cm. ISBN 0-8493-8381-1. $129.95.

Pharmaceutical Biotechnology. Volume 10. Protein Delivery. Physical Systems. Edited by Lynda M. Sanders and R. Wayne Hendren. Plenum Publishing Corporation, New York. 1997. xx + 433 pp. 16 × 23.5 cm. ISBN 0-306-45359-2. $95.00.

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Techniques in Glycobiology. Edited by R. Reid Townsend and Arland T. Hotchkiss, Jr. Marcel Dekker, Inc., New York. 1997. xx + 637 pp. 16 × 23.5 cm. ISBN 0-8247-9822-8. $65.00.

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