Book Reviews

Oxford Dictionary of Biochemistry and Molecular Biology. Edited by A. D. Smith, S. P. Datta, G. H. Smith, P. N. Campbell, R. Bentley, and H. A. McKenzie. Oxford University Press, Oxford. 1997. xi + pp. 20.5 x 26 cm. ISBN 0-19-854768-4. $60.00.

As the title states, this book is a dictionary and thus does not have a table of contents, chapters, or an index. There is a preliminary "Guide to the Dictionary" which is informative and useful. The body of the dictionary is quite complete and includes terminology of inorganic and organic chemistry, not just biochemistry. The definitions and information seem up to date. The definitions are clear and usually brief. The words listed are in bold print with an indentation on the second line so it is easy to find the words that are listed. Many biologically active molecules include structures with the definition which are clearly drawn and potentially very useful. The basic dictionary is followed by a series of appendices: Appendix A, The Greek alphabet and Greek characters used as symbols; Appendix B, Nomenclature rules and recommendations; Appendix C, Organizations that are helpful to biochemists and molecular biologists; Appendix D, The Internet; Appendix E, Exploring the language of bioinformatics; Appendix F, Restriction enzymes and methylases; Appendix G, Sequence-rule priorities of some common ligands in molecular entities; and Appendix H, Species names. These provide a convenient source of information that one may not be able to find elsewhere as easily.

Altogether this dictionary is quite a useful book and can be recommended for one's office or laboratory as a reference book. It should certainly be obtained by libraries. The cost seems reasonable for this information resource.

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Affinity Separations. A Practical Approach. Edited by Paul Matejtschuk. Oxford University Press, New York. 1997. xix + 253 pp. 15.5 x 23.5 cm. ISBN 0-19-963550-1. $55.00.

This book provides a broadly based examination of the many methods currently utilized for affinity-based separations. While basic principles of the various methodologies are presented, the major emphasis of the book is on providing representative examples of the design and use of affinity separations with enough appropriate additional discussion to enable the reader to adapt these examples to new applications. The book is organized into eight chapters, the first of which covers the many options available for the design and construction of affinity matrixes, including the choice of support matrix, procedures for activation of the matrix, and methods for the design and orientation of ligand attachment in order to achieve optimum separations. Chapter 2 addresses quantitative affinity chromatography including the increasingly important use of biosensor technology to characterize binding interactions of macromolecules. The next three chapters provide representative examples and experimental protocols for the affinity separation of proteins (Chapter 3), nucleic acids (Chapter 4), and oligosaccharides and glycoproteins (Chapter 5). Chapter 6 focuses on the design and application of immunoaffinity separations, the use of bacterial Fc receptors such as protein A and protein G, and methods for use of other immunoglobulin-binding ligands. The coordinated design of affinity separations and protein engineering is covered in Chapter 7, and this primarily includes the use of metal-affinity chromatography of recombinant proteins containing histidine tags and the utilization of glutathione-affinity chromatography of glutathione *S*-transferase fusion proteins. The final chapter provides strategies and methods for affinity separations of cells.

Both the Index and the detailed Table of Contents provide ready access to the specific affinity separation methods. The citations at the end of the chapters indicate that the literature is in most cases surveyed through 1994 or 1995, although there is an occasional citation to work published in 1996. While the editor suggests that it is not intended as a textbook, this book would certainly provide a valuable additional source for courses on bioseparations. However, its most welcome reception will come from laboratory scientists at all levels who utilize affinity separation techniques for biological molecules and need a concise accessible reference work with many examples and clear protocols.

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The Impact of Stereochemistry on Drug Development and Use. Edited by Hassan Y. Aboul-Enein and Irving W. Wainer. John Wiley & Sons, New York. 1997. xxvii + 695 pp. 16 x 24 cm. ISBN 0471596442. $99.00.

The understanding and appreciation of the role that stereochemistry plays in pharmacology stems from the work of Pasteur who reported in 1858 that the *dextro* form of ammonium tartrate was more rapidly destroyed by the mold *Penicillium glaucum* than the *levo* isomer. It was not until 1908 that Abderhalde and Müller reported the differential effects of (−)- and (+)-epinephrine on blood pressure. As a result of the observations in the 1930s by Cushing, Easson, and Stedman, stere-

ochemistry became an integral part of the study of medicinal chemistry. However, stereochemistry essentially remained an academic curiosity, and chiral drugs continues, by and large, to be developed as racemates due to the fact that the pharmaceutical industry and the regulatory agencies lacked adequate analytical techniques to measure optical purity. This situation has dramatically changed over the past 20 years with the development of methods capable of rapid separation and accurate measurement of enantiomeric composition. The connection between the advancement of enantioselective separations and the discovery, development, and marketing of chiral drugs has resulted in an explosive maturation of this field of research.

In 23 chapters (written by 44 experts) this book discusses analytical, pharmacological, and regulatory topics dealing with the theory and practice of stereochemistry in the pharmaceutical industry today.

The initial chapters describe the pharmacological consequences of stereochemistry discussing such topics as protein binding, biotransformation, receptor binding, active transport into and out of cells, intracellular sequestration, DNA binding, etc.

Three chapters are devoted to the stereochemical aspects of drug metabolism and will give the reader an excellent overview of this important area. Three additional chapters address particular aspects of chirality and drug activity.

The next group of chapters in this book addresses the preparation of chirally pure compounds and the determination of stereochemical composition. The last section of this book presents the current status of the regulatory−pharmaceutical industry debate concerning guidelines for the development and approval of stereoisomeric drugs. This section offers more of an international perspective as well as a historical view of the issues surrounding regulatory guidelines than specific details required by regulatory agencies in the United States.

This book is uniformly well-written and well-illustrated with structural formulae and references to the literature which are appropriate and current. An index is also included. *The Impact of Stereochemistry on Drug Development and Use* is an important source of information which will be of utmost interest to medicinal and analytical chemists and pharmacologists. Drug metabolism and pharmacokinetic scientists and drug regulatory scientists will also find this a useful and informative reference source.

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