

new tools for biochemistry and protein chemistry. Finally, Chapter 3 (Folding Proteins) is a little out of place yet deals nicely with the technical aspects of monitoring protein folding as well as indirectly addressing the problems that arise in protein overexpression systems (Chapter 2).

In summary, *Protein Structure: A Practical Approach* and *Protein Function: A Practical Approach* are complementary texts which should be considered almost companion volumes. The authors are experts in their fields, and many have substantial international reputations as experimentalists. *Protein Structure: A Practical Approach* and *Protein Function: A Practical Approach* could be improved by a better organization within and between the two texts. Nonetheless, they are reference texts which should end up as well-thumbed volumes on any laboratory bookshelf.

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**Guanidino Compounds in Biology and Medicine:**

**2.** Edited by P. De Deyn, B. Mareseau, I. A. Quneshi, and A. Mori. John Libbey & Company Limited, London. 1997. 405 pp. 19.5 × 24.5 cm. ISBN 0-81696-543-4. £66.00.

This book contains selected papers from the Fourth International Symposium on Guanidino Compounds in Biology and Medicine held in Montreal, Canada, in September 1994. Like the previous volume in this series (reviewed in *Journal of Medicinal Chemistry* **1993**, 36, 2241), this work focuses on the biochemical rather than the pharmacological role of guanidine-containing compounds. Thus the book comprises eight sections each relating to specific aspects of metabolic processes involving guanidino compounds, especially arginine. The first section, which is likely to be of greatest interest to the readers of *Journal of Medicinal Chemistry*, contains several short papers on the arginine–nitric oxide pathway and its possible role in various clinical disorders. The work presented, and particularly the SAR data on neuronal nitric oxide synthase inhibitors, is a useful addition to the medicinal chemical literature. Other sections deal with hyperarginemia/arginase and the creatine–creatinine biosynthesis pathway and its physiological and clinical importance. There are also sections devoted to the metabolism of guanidino compounds and their involvement in renal failure, liver failure, and diabetes. An additional section includes discussion of electrophysiological and neurochemical studies, and the final section relates to guanidino compounds in microorganisms, plants, and invertebrates.

This book adds to the wealth of data supporting the importance of guanidino compounds in biological processes. In addition to its obvious interest to specialists in the areas covered, this book is well-worth perusal by medicinal chemists and others with an interest in the

chemistry and biology of guanidines. It is a useful addition to library shelves in academia or industry.

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**Antiviral Chemotherapy.** By Richard Challand and Robert J. Young. In **Biochemical and Medicinal Chemistry Series**. Series Editor John Mann. Spektrum Academic Publishers, Oxford, and University Science Books, Sausalito. 1997. viii + 128 pp. 19 × 24.5 cm. ISBN 1-901217-03-5. \$28.50 (pbk).

*Antiviral Chemotherapy* is the fourth offering in a series of text books tailored to provide advanced undergraduate students in the biological sciences with concise accounts of subjects where both chemistry and biology converge but which are inadequately covered in standard texts. After a general introduction to the structure of viruses and a brief description of viruses that infect humans, Chapters 3 and 4 provide the reader with a basic understanding of assay design and a summary of the major biochemical targets that have proven to be clinically useful sites for intervention in the replication cycle of many pathogenic viruses. Reflective of their preeminent role in the development of effective antiviral chemotherapeutics, Chapter 5 is devoted to a discussion of nucleoside analogues, providing a mechanistic understanding of the design and mode of action of this important class of drug. With this background, the reader is well-prepared for the remaining chapters which focus attention on drugs that are used to treat specific viral infections, beginning with the herpes virus family and following with individual discussions of HIV, hepatitis, and respiratory infections. The appendices include a useful list of the viruses known to be responsible for disease in humans and a compilation of the structures of all the marketed and late-stage antiviral therapeutics. The book concludes with a glossary of terms used in the text and a list of references to general textbooks as well as reviews and articles in both the primary and secondary literature that will be of interest to those who seek a more detailed and deeper discussion of the major topics covered.

Written by two medicinal chemists from the former Wellcome Research Laboratories at Beckenham in the United Kingdom, *Antiviral Chemotherapy* succeeds in its mission. The book provides an excellent and succinct introduction to the history of the discovery and development of antiviral chemotherapeutics and describes all of the current clinically useful agents. The information is organized in a logical fashion and presented in a readable and engaging manner, with the liberal use of figures and structures that illustrate and enhance the discussion. All of the major discoveries are dealt with, and the text briefly covers several emerging opportunities for drug discovery that remain of contemporary interest.

There are several errors, fundamental in nature, that will be readily apparent to those more familiar with the

subject matter and which detract from the overall value of the text. The authors' use and definition of the terms monocistronic and polycistronic are incorrect and confusing, and the description of an ELISA assay is not the experimental design more commonly employed. The structure of the nonpeptidic HIV protease inhibitor U-96988 is in error, and the influenza M<sub>2</sub> ion channel is not accurately or overtly represented in the depiction of the virus, surprising given the focus of subsequent discussion on amantadine and the historical importance of this agent. The contention that integration of the HIV genome into the host cell chromosome is not essential for viral replication is clearly incorrect and seems to have been carried over from the description of HBV. In addition, ribavirin is not, as stated, a natural product.

Despite these shortcomings, *Antiviral Chemotherapy* is a useful text that is modestly priced and should appeal not only to its target audience but also to those individuals embarking on a career in the pharmaceutical industry.

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**Introduction to Medicinal Chemistry: How Drugs Act and Why.** Alex Gringauz. Wiley-VCH, Inc., New York. 1997. xiii + 721 pp. 18.5 × 26 cm. ISBN 0-471-18545-0. \$89.95.

"This book is intended to be useful, indeed necessary, to students pursuing a career in the health sciences...the pharmacy student...will find this book invaluable. \* \* \* It is anticipated that this publication will also be used at the early graduate training level..." states Alex Gringauz in his preface to this volume, explaining that "(t)his book is not intended for the medicinal chemistry practitioner..." But in spite of this, the promotional material provided by the publisher on the back cover indicates "(i)t will be extremely useful...for research scientists entering the pharmaceutical industry."

The book consists of 15 chapters that discuss basic considerations and mechanisms of drug activity, drug metabolism, antineoplastics, analgesics, antimicrobials, cholinergic and adrenergic agonists and antagonists, cardiovascular drugs, CNS drugs, antiulcer drugs, local anesthetics, steroids, and new developments. These divisions result in some strange bedfellows: both thyromimetic drugs and insulin mimetics appear in the chapters devoted to cardiovascular drugs.

The exposition is at once subject to both the advantages and disadvantages of a single-author text. On the one hand, a single author can uniquely provide a unified treatment of an entire field. But on the other, it is extraordinarily difficult for a single author to be successful in the present case given that medicinal chemistry today is a broad, complex, and rapidly changing field. These difficulties become painfully apparent in

the case of the references to the chapters, which tend to be quite old—for example, no later than 1989 in the chapter on anticancer drugs—or even nonexistent—for example, in the case of the chapter on drug metabolism. It is not only the references but also the text itself that are out of date in places. For example, the crucially important topic of G-protein-coupled receptors is absent altogether in the discussion of receptors in the chapter on the mechanism of drug action.

Except for a huge number of structural formulas, the volume is almost devoid of illustrations, and the few that are presented, for example, in the chapters on cholinergics and CNS drugs, are amateurish line drawings. Most of the formulas have been (badly) drafted, rather than set in type. In my mind these are all serious defects in a book intended for students.

We live in a competitive world, and this book will have to compete against other texts, notably Foye's *Principles of Medicinal Chemistry* (4th edition, 1995), available at a similar price. Even though it is now 2 years old, Foye's is a far better book. It is written by a panel of experts, represents current knowledge, has large numbers of useful references, is beautifully illustrated, and is produced using clear, typeset formulas.

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**Annual Reports in Combinatorial Chemistry and Molecule Diversity, Volume 1.** Edited by Walter H. Moos, Michael R. Pavia, Andrew D. Ellington, and Brian K. Kay. ESCOM Publishers, Leiden, The Netherlands. 1997. xiii + 354 pp. 17 × 24.5 cm. ISBN 90-72199-23.5. \$97.00.

This volume is the first of a new annual review series that will follow progress in the exploding field of combinatorial chemistry. The book has chapters written by 33 different authors who are experts in the fields surveyed. Combinatorial chemistry and molecular diversity are emerging disciplines, and this volume does an excellent job of bringing the reader up to date. The book is divided into three major sections: Combinatorial Chemistry, Combinatorial Biology and Evolution, and Informatics and Related Topics. All together, there are 1464 references in 20 different chapters. There is a fairly extensive subject index, but its coverage is not uniform. The keyword indexes for the biological topics seem to be thorough, whereas the indexes for the chemical topics are less so. There are, for example, no index terms for biphenyl scaffolds, the Mitsunobu reaction, or the Suzuki reaction, even though these topics are detailed in several chapters. In addition, some index terms are odd, such as Microsoft Windows and fuzzy. Overall, however the volume is packed with good information.

Each major section is launched with excellent overviews, following which chapters continue with more focused topics. The first chapter in Section I, by Kiely (Houghten Pharmaceuticals), describes techniques for