

## Book Reviews

**Host-Guest Molecular Interactions: From Chemistry to Biology.** Ciba Foundation Symposium 158. Edited by Derek J. Chadwick and Kate Widdows. John Wiley & Sons, New York. 1991. ix + 278 pp. 15.5 × 23.5 cm. ISBN 0-471-92958-1. \$69.50.

Host-guest interactions yield molecular assemblies containing two or more species. It has long been recognized that such "supramolecular" association is of importance in biological processes. Organic chemists became interested in the field of host-guest chemistry after the discovery of crown ethers in 1967. A great deal of synthetic effort and imagination have followed. Exciting applications of host-guest molecular interactions are now emerging, for example in the development of molecular sensors, of new chromogenic reagents, and of reagents for selective metal ion capture or for the capture of molecules such as urea. In addition it is anticipated that improved understanding of the interactions in relatively simple complexes of synthetic host molecules will lead to a better understanding of the much more complicated biological systems in which the host molecules are either proteins or nucleic acids.

In this book the contributions from experts in the chemical and biological sciences range over intermolecular interactions in both synthetic and biological systems. Topics covered include biomimetic chemistry, the design of synthetic host molecules which mimic biological processes such as ion transport across membranes and catalysis, and the concepts of preorganization and template-directed synthesis. Molecular recognition processes involved in binding of antibiotics to peptides and to DNA and in binding of sequence-specific gene inhibitors to DNA are discussed. The potential applications of oligonucleotides with modified phosphate diester linkages as probes of DNA-protein interactions and for anti-HIV treatment are described. Interactions between proteins and other molecules and the computational modeling of interactions are continued.

This latest Ciba Foundation Symposium book is at the forefront of biological chemistry and provides valuable information that will be stimulating to all biological scientists and especially medicinal chemists.

Staff

**The Beta-Adrenergic Receptors.** Edited by John P. Perkins. Humana Press, Clifton, NJ. 1991. ix + 405 pp. 16 × 24 cm. ISBN 0-89603-173-X. \$89.50.

Until 1974 the  $\beta$ -adrenergic receptors were recognized only indirectly as entities responding to drugs in a selective manner to mediate a variety of physiologically important responses. In this seventh volume in "The Receptors" series the pioneer scientists R. J. Lefkowitz and his colleagues describe results which have led to the production of polynucleotide probes and eventually to cloning of the receptor gene and determination of the complete primary sequence of the receptor protein. The original researchers review the investigations leading to this major development and discuss the methods involved. They analyze our current perception of the relation of receptor function to its structure, the current status of ligand-induced desensitization of  $\beta$ -adrenergic receptor function, and the role of receptor phosphorylation and the newly discovered  $\beta$ -adrenergic receptor kinase. Next, the methods and theories of membrane protein solubilization, purification, and reconstitution in a functional state, in phospholipid vesicles, are described. This is followed by a description of the development of antibodies to  $\beta$ -adrenergic receptors, autoradiographic studies, and reviews of the present understanding of the regulation of  $\beta$ -adrenergic receptor function and/or expression by other hormones and transmitters and the involvement of altered receptor function or expression in disease states.

The results of  $\beta$ -adrenergic research are astounding. Unfortunately, the development of rational approaches to drug design based on an ultimate understanding of the three-dimensional structure of  $\beta$ -adrenergic receptors is still not feasible. Eventually complete structure determination, which depends upon crystallization and single-crystal X-ray analysis, will be needed to enable rational design of drug-ligands. Medicinal chemists will certainly admire the research described in this book, but applications to drug design are still remote.

Staff

**Graduate and Post-doctoral Training Programs in Clinical Chemistry.** 1991 Edition. Prepared and distributed by the American Association for Clinical Chemistry Career Education Committee. Washington, DC. 1991. vi + 72 pp. 21.5 × 28 cm. Paperback. No charge.

This booklet lists ComACC-accredited programs in the United States and Canada. It includes program descriptions, faculty and research interests, annual salaries, and application procedures.

For a free copy, write AACC Education Department, 2029 K St. NW, 7th floor, Washington, DC 20006, Attn: Training Directory.

Staff

**Advances in Neuroscience. Volume 1. Volume Transmission in the Brain. Novel Mechanisms for Neural Transmission.** Edited by Kjell Fuxe and Luigi F. Agnati. Raven Press, New York. 1991. xxii + 602 pp. 18 × 26 cm. ISBN 0-88167-699-3. \$130.00.

This volume is based on The Wenner-Gren International Symposium on Volume Transmission in the Brain held in Stockholm, September 28-30, 1989.

Since the conflicting opinions of neuroscientists supporting either the "reticular theory" or the "neuron theory" almost a century ago, the view of a possible diffuse mode of communication in the central nervous system has been suggested. In the 1950s and 1960s supportive evidence for interneural transmission was obtained and the synapse was established as "the site" of communication between central nerve cells. Somewhat later, in the 1960s and 1970s, histochemical evidence indicated that monoamines could be released outside the synaptic specialization, and in the 1980s functional receptors outside pre- and postsynaptic structures were demonstrated. The accumulated data suggest neurons can communicate both synaptically and in a widespread but still organized (volume transmission) mode. In this book available evidence and new ideas relative to volume transmission, summarized in 46 articles by leading scientists in the field, are divided into 10 major sections. The book is beautifully printed and contains excellent author and subject indexes.

Specialists in CNS research in all fields will benefit from this volume; however, it will probably not be of general interest to medicinal chemists.

Staff

**Principles of Pharmacology. A Tropical Approach.** By D. T. Okpako. Cambridge University Press, Cambridge, U.K. 1991. xvi + 574 pp. 16 × 23.5 cm. ISBN 0-521-34095-0. \$150.00.

Unlike conventional pharmacology textbooks, this book focuses on factors which can affect the action of drugs in people living

in the tropics. Thus, sociocultural and environmental factors that affect the way those living in these regions use medicaments, as well as genetic and dietary factors which make this population respond differently from those in other parts of the world, is given an emphasis that is not found in traditional texts in pharmacology. In addition, the basic principles underlying the action of drugs used in the treatment of diseases which are common in the tropics are accentuated. Several chapters are devoted to the principle of selective toxicity as it applies to drugs in actual use for treatment of "tropical diseases" and as a basis for development of new antibacterial, anticancer, antiparasitic, and antisickling agents.

This textbook is intended to give the pharmacology curriculum for medical, pharmacy, dentistry, and science students in tropical countries a better orientation. Students in these regions will probably derive valuable insights. Likely, the book will be of less interest to "Western" readers.

Staff

**Cyclopropane Derived Reactive Intermediates.** By G. Boche and H. M. Walborsky. John Wiley & Sons, New York. 1990. x + 256 pp. 15 × 23.5 cm. ISBN 0471-92748-1. \$118.00.

This is an additional volume in the new series entitled "Updates from the Chemistry of Functional Groups". It presents the chapter on Cyclopropyl Radicals, Anion Radicals and Anions from the volume *The Chemistry of the Cyclopropyl Group* edited by Z. Rappoport (John Wiley & Sons, 1987) together with corrections and an appendix updating the material until about the end of 1989. In addition, three completely new chapters on reactive intermediates derived from cyclopropane, namely on cations, carbenoids, and cation radicals, have been added. A comprehensive reference list follows each chapter and excellent author and subject indexes are included.

This book will be of interest to synthetic and theoretical organic chemists. Only medicinal chemists actively concerned with cyclopropane chemistry will require a personal copy.

Staff