

## Book Reviews

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**Tutorials for the Biomedical Sciences. Animations, Simulations, and Calculations using *Mathematica*.** Edited by Charles Pidgeon. VCH Publishers Inc., New York. 1996. xxvii + 300 pp. 21.5 × 28 cm. ISBN 1-56081-928-6. \$79.95.

**Advanced Tutorials for the Biomedical Sciences. Animations, Simulations, and Calculations using *Mathematica*.** Edited by Charles Pidgeon. VCH Publishers Inc., New York. 1996. xxvii + 275 pp. 21.5 × 28 cm. ISBN 1-56081-950-2. \$79.95.

The intent of this pair of tutorials is to transfer the process of learning from lectures provided by professors to students teaching themselves using modern computer technology. The tutorials do not require computer programming. The computer interface is interactive and reinforces the answers by looking at the problem from several perspectives. The chapters are, therefore, interactive computer tutorials which permit the authors to change parameters within the code in order to better illustrate difficult concepts. Although the student is not expected to program in *Mathematica*, the proficient student will inevitably learn to do so. This is a desirable outcome from the editors point of view. The book is intended primarily for Macintosh users with at least 8 Mbytes of memory; however, 16 Mbytes is preferred. The tutorials may also be used on PC machines, but conversion into a PC format is necessary. Unfortunately, the chapters will lose much of the formatting that makes the book easy to follow. The editor intends to produce a PC edition of the tutorials, and PC users may wish to opt for this format. Except for a few front pages, both books were prepared entirely using *Mathematica* version 2.2. All code is executed and shown in hard copy, and the animations and color figures can be displayed on any computer without *Mathematica*. In summary, this is a book that is intended for students to use in conjunction with *Mathematica* on a Macintosh computer. The *Mathematica* codes may be copied into a new *Mathematica* window to work the problems, or the codes may be used directly in the text. The books could be used to either learn new principles using *Mathematica*, make extensive repetitive calculations, or learn how to program using *Mathematica*.

There is a summary of codes section in the preface, and the first chapter is an introduction to *Mathematica*. Eleven chapters follow in the first book and include an introduction to statistics, pH, buffer calculations, oxidation and reduction reactions, three linked chapters introducing HIV proteins, assays, and chain polymerase reactions, two chapters on enzyme kinetics and inhibition, and one on protein aggregation kinetics. The advanced tutorial also introduces *Mathematica* and includes 14 other chapters: one chapter on drug membrane permeability, nine on different aspects of chromatography (Gaussian distributions, peak shape determination and analysis using Taxol, internal standards, band movement through columns, resolution of compounds, column efficiency, chromatography surfaces,

and the van Deemeter equation), one on Fourier analysis, and three on NMR (an introduction, nuclear precession in magnetic fields, and  $T_1$  measurements).

The concept of presenting a computer tutorial is well founded and a preferred way to learn complex material. The examples chosen in the two texts are ordered in the linked basic chapters, while the choice of overall content and examples chosen diverse from pH to HIV. This should make the learning experience more palatable; however, moving from the basic Nernst equation in Chapter 6 to HIV in Chapter 7 in the first book seems disconcerted as does the Fourier and NMR chapters following the chromatography chapters in the advanced tutorial. **It should be noted that one cannot use these texts without first purchasing *Mathematica*.** Since this reviewer does not have the *Mathematica* software, the tutorials could not be tested. The academic rate for a copy of *Mathematica* purchased through our campus book store is \$109.95 plus tax.

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**Goodman & Gilman's The Pharmacological Basis of Therapeutics.** Edited by Joel G. Hardman, Lee E. Limbird, Perry B. Molinoff, and Raymond W. Ruddon. McGraw-Hill, New York. 1996. xxi + 1905 pp. 21 × 26 cm. ISBN 0-07-026266-7. \$89.00.

First published in 1940, *The Pharmacological Basis of Therapeutics* has long been the standard reference in the field. This, the ninth edition, is the first not edited by Dr. Goodman or a Dr. Gilman, although the names of the original editors have been incorporated into the title. By the seventh edition, Dr. Alfred Goodman Gilman, Nobel laureate and namesake of the original editors, had taken over responsibility for the volume. For this latest edition, while he is listed as a consulting editor, Drs. Joel G. Hardman and Lee E. Limbird of Vanderbilt University have assumed the role of editors-in-chief. They are ably assisted by Drs. Perry B. Molinoff, formerly of the University of Pennsylvania, now of Bristol-Myers Squibb, and Dr. Raymond W. Ruddon of the University of Nebraska. Moreover, the ninth edition is the first published by McGraw-Hill.

Even a cursory review of the text reveals significant differences from earlier editions. Included is a more liberal use of illustrations, tables, and figures to highlight and clarify mechanisms of action and to compare and contrast the characteristics of individual agents within a drug class. While 61 authors contributed to the eighth edition, 90 are listed in the current volume, 54 of whom are new. Nearly one-quarter of the authors are on the faculty at either Vanderbilt University or the

University of Pennsylvania Schools of Medicine. In addition, each chapter was vetted by a physician and a pharmacist.

The text is divided into 17 sections consisting of 67 chapters. Although the titles are similar to those in previous editions, a new section has been added on ophthalmology, the renal and cardiovascular sections have been combined given the therapeutic overlap in these areas, and the section on water, salts, and ions has been deleted.

The chapter on renal transport of organic compounds has been eliminated, while new chapters have been added on gene therapy, serotonin receptor agonists and antagonists, migraine, central nervous system degenerative disorders, and ocular pharmacology. In addition, the discussion of drugs used for the treatment of psychiatric disorders is now divided into two chapters, one dealing with psychosis and anxiety and the other with depression and mania, reflecting the increasing number of selective agents for treating these conditions.

The appendices on prescription writing and pharmacokinetic data of individual drugs have been revised and, in the case of the latter, expanded considerably.

Another new feature is a Prospectus at the end of most chapters. Described in these three or four paragraphs is the direction of research in the area and new therapeutic targets. These overviews may be of particular interest to medicinal chemists.

Following certain chapters, in particular those dealing with chemotherapeutic agents, there are cross references to *Harrison's Principles of Internal Medicine*, also published by McGraw-Hill. This guidance should be of value to medical students and residents who commonly use both texts when seeking guidance on a matter of therapeutics.

Important features retained include the use of larger type for topics of particular relevance to therapeutics and a limited bibliography with emphasis on monographs and reviews.

The new editors have done an outstanding job in revising and updating this venerable text. As before, medicinal chemists will find this work indispensable as a source of fundamental and contemporary information on therapeutic agents. While the current trend in pharmacology texts is to minimize discussions of pharmacophores and structure-activity relationships, these topics remain a hallmark of *Goodman and Gilman's Pharmacological Basis of Therapeutics*. As in the past, this volume will be an important text and reference for graduate and medical students, residents, practicing physicians, and anyone conducting research in the biomedical sciences.

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**Textbook of Biochemistry With Clinical Correlations. Fourth Edition.** Edited by Thomas M. Devlin. Wiley-Liss, Inc., New York. 1997. xxvii + 1186 pp. 22.5 × 28.5 cm. ISBN 0-471-15451-2. \$84.95.

The *Fourth Edition of Devlin's Biochemistry* textbook has been completely rewritten by active educators expert in their field of presentation. The purposes of this edition, like those of its predecessors, remain to present the biochemistry of mammalian cells, to relate these events at the cellular level to the subsequent physiological processes in the whole animal, and to cite examples of human diseases deriving from aberrant biochemical processes. A unique feature of the book is a separate section in each chapter that presents clinical correlations that highlight the significance of the biochemistry of each topic to specific clinical problems.

The textbook, consisting of 28 chapters and an appendix, "Review of Organic Chemistry", is organized to facilitate its use in teaching biochemistry. Thus, following an introductory chapter on cell structure, the next four chapters (2-5), deal with the major structural components of cells, i.e. proteins, enzymes, and cell membranes. The next eight chapters (6-13) discuss various aspects of metabolism, e.g. oxidative, carbohydrate, lipid, amino acid, purine, and pyrimidine nucleotide metabolism, and metabolic interrelationships. Chapters 14-19 are concerned with information transfer and its control and describe the structure and synthesis of DNA, RNA, and protein. The next two chapters (20, 21), treat the biochemistry of polypeptide and steroid hormones. A chapter (22) on molecular cell biology follows, and the textbook concludes with six chapters (23-28) dealing with physiological chemistry, i.e. cytochrome P-450 enzymes and xenobiotic metabolism, iron and heme metabolism, gas transport and pH regulation, digestion and absorption, and human nutrition. The appendix provides an easily accessible reference for the nomenclature and structure of organic molecules encountered in biochemistry.

In addition to "Clinical Correlations", each chapter includes a "Question and Answers" and a "Bibliography" section. All illustrations are beautifully presented in four colors.

*Textbook of Biochemistry, Fourth Edition* is an excellent, up-to-date, and comprehensive treatment of biochemistry. The clearly described material in this text will be valuable to all—from student to advanced professionals—who wish to understand the contemporary concepts of human and mammalian biochemistry.

**Staff**

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**Dictionary of Plant Toxins.** Edited by Jeffrey B. Harborne and Herbert Baxter; Associate Editor Gerard P. Moss. John Wiley & Sons, Chichester. 1996. xv + 523 pp. 22 × 28.5 cm. ISBN 0-471-95107-2. \$195.00.

It is always difficult to compile a dictionary of plant toxins when so many of the tropical rain forest plants have been so little studied. In many cases, the pharmacology of the compounds isolated is almost nonexistent. Additionally, the toxicity of a natural product depends upon the dose taken. Such important factors and many others are discussed in a well thought out introduction by Prof. Harborne, accompanied by all of the appropriate references.