

Book Reviews

Principles of Medical Pharmacology, Sixth Edition. Harold Kalant and Walter H. E. Roschlau, Eds. Oxford University Press, Inc., 198 Madison Avenue, New York, NY 10016, 1998. xviii, 957 pp., illustrations. \$59.95.

This book represents an effort to provide a user-friendly, readable textbook for Medical Pharmacology. This is the sixth edition of a textbook that was originally derived from extensive lecture notes provided by the faculty in the Department of Pharmacology at the University of Toronto. The textbook continues to be heavily influenced in this manner with a large number of individuals contributing to the textbook and nearly all of them associated with the University of Toronto. This latest version of the textbook also offers the initial effort for publication by Oxford University Press which the editors indicate has been a constructive and positive collaboration. This close proximity of editors and authors affords many advantages. Among the most unique advantages is the commitment on the part of the authors to contribute the royalties from the sale of the textbook for use by the Department of Pharmacology to assist with educational and scholarly activities of the department with special emphasis on the needs of the graduate students. Such devotion toward the educational development of future teachers of pharmacology is truly commendable.

As in the past, the stated goal for the textbook is to provide a working text describing basic pharmacological principles and not necessarily focused on therapeutic management of disease. Based upon the cost of the book and the presentation of the material it appears that the publishers and editors have targeted a market in which the textbook can serve as the primary required text for medical, dental and pharmacy students. In order to accomplish this goal, the new version of the textbook has been altered in a number of significant ways. The illustrations have been modified from the previous version by the limitation of the number of colors (most likely an effort to reduce publication costs and, ultimately, the purchase price). While not as attractive as the illustrations in the fifth edition, the illustrations do embellish the material appropriately. In addition, new chapters have been added which provide an overview of signal transduction pathways and the cardiovascular system. The chapter on signal transduction is especially valuable since this is an area of biomedical science and pharmacology which is experiencing such a rapid increase in information and knowledge. The information provided in this chapter adequately summarizes the current concepts regarding the role of second messengers in the development of response and the signaling pathways which are activated by various hormones and transmitters. This is an area of increasing complexity which is developed and presented in a concise and understandable manner. The overview of the cardiovascular and central nervous systems are also useful in providing the detail necessary to understand the action of drugs which produce effects through those systems. Another area of expansion which provides a very positive aspect to the textbook is the inclusion of case histories which extend the material presented into the therapeutic realm. The presentation of the case at the outset of the chapter can be a useful method of

elevating interest and enthusiasm in the material. All of these changes have added to the utility of the textbook.

The book is generally well organized along an organ-based approach. The similarity in organization between this textbook and others directed toward the same market population as well as more exhaustive treatises of pharmacology enables readers to easily move between texts for comparative purposes. This ease of comparison can be useful when readers attempt to find additional explanatory material. There are some areas in which the textbook was somewhat disappointing, however. Foremost among the disappointments was the lack of current references in the additional reading material suggested at the end of each chapter. With the marked advances in therapy and the development of so many new cellular and molecular targets for drugs, one would hope that the authors could find more recent reviews and additional reading material. While it is important to remember the work of early investigators that formed the foundation of many pharmacological concepts, it is equally important to provide readers with current sources of information related to the topic that may provide a greater and more in depth insight into how the concept has developed. Another area of disappointment is the elimination of the chapter on the therapeutic management of hypertension. This disease is one of the most prevalent diseases in the world. In addition, the therapeutic management involves the potential use of a wide variety of distinct agents. Even though the goal was not to provide a textbook of therapeutic management but rather of pharmacological concepts, the inclusion of a chapter devoted to the treatment of hypertension would seem to be logical and clearly worthwhile since it is possible to clearly delineate the fact that many diseases can be managed through lifestyle modification.

In summary, this is a useful and readable textbook of pharmacology that has many positive attributes. The changes that have been introduced into the textbook appear to improve the overall impact and the inclusion of case studies will have additional benefit for teaching in case-based curricula. The material is presented in an appropriate manner and it would appear that this new edition of the textbook could accomplish the stated goals of the editors to provide a working textbook of pharmacological concepts for professional students that is not exhaustive and considered as a reference textbook.

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Electronically Controlled Drug Delivery. Bret Berner and Steven M. Dinh, Eds. CRC Press LLC, 2000 Corporate Blvd. N.W., Boca Raton, FL 33431, 1998. x + 241 pp., illustrations. \$129.95.

Technical advancement in recent years in the development of microelectronics, micromachinery and medical device design, along with a recognition of the potential roles of chro-

nobiology in therapy and the critical needs of noninvasive systemic delivery of biopharmaceuticals, has stimulated the development of a number of electronically-assisted drug delivery technologies. The book has been written with an objective of providing an overview of advances in drug delivery technologies developed for optimization of a therapy, using an electronic device to regulate the mode and rate of drug delivery.

The timing of administration has been demonstrated to be critical to the efficacy and/or the safety of certain drugs, particularly true in cancer chemotherapy. As elaborated in Chapter 2 of the book, the devastating adverse effects of anti-cancer drugs may be substantially mitigated by delivering them in late evening. Continuous transdermal delivery of nitroglycerin has reportedly led to development of tolerance in the anginal patients and its antianginal efficacy could be recovered by incorporating a washout period at night between day-time medications. A general pharmacokinetic-pharmacodynamic model has been derived, in Chapter 5, for temporal delivery. A temporally modulated drug input could maximize the efficacy of a therapy by adjusting the phase shifts between the drug input and the circadian rhythm.

Overcoming barrier properties of stratum corneum for facilitating the transdermal delivery of drugs with low skin permeability has motivated the development of several skin permeation-enhancing technologies, such as iontophoresis (Chapter 7), electroporation (Chapter 10) and phonophoresis (Chapter 11). Understanding of the electrical properties (Chapter 3) and tolerability (Chapter 4) of the skin could be important to optimization and application of these technologies. The miniaturized electronics and microelectronic devices, reviewed in Chapter 6, represent potential state-of-the-art modality of electronically-controlled drug delivery systems.

Infusion pumps have reached commercial reality at the home-use level (Chapter 9). They have been used routinely in the glycemic control of diabetic patients and the delivery of baclofen to achieve around-the-clock control over spasticity. These pumps, however, are still bulky and have been accepted only by a limited number of highly motivated patients. Development of more user-friendly devices, applying the recent advances in microelectronics and micromachinery, could facilitate the commercialization of electronically controlled drug delivery devices.

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Antigen Delivery Systems. Immunological and Technology Issues. Bruno Gander, Hans P. Merkle, and Giampietro Corradin, Eds. Harwood Academic Publishers, Amsteldijk 166, 1st Floor, 1079 LH Amsterdam, The Netherlands, 1997. viii, 258 pp., illustrations. \$125.00.

This book, which is part of the book series "Drug Targeting and Delivery," aims to overview the latest developments in the design of antigen delivery systems. This is presently a major research activity that brings together knowledge acquired in the field of basic immunology and engineering of delivery systems. Some of the systems presented in the book, such as

liposomes and biodegradable nanoparticles and microspheres, have been previously applied to the delivery of various drugs. The design of other systems, such as immunomodulators and virosomes, emerged from the necessity of improving immunological responses to existing and newly developed antigens.

An important characteristic of this book is that it provides critical information that will considerably help specialists in vaccines and delivery systems find insights for the selection of appropriate delivery vehicles for specific antigens. It should be pointed out, however, that most of its content refers to recently published work. Therefore, it should not be regarded as a guideline of antigen delivery systems, but as a book where one could learn about the potential of various delivery systems presently available and difficulties associated with their production, control and stability as well as to their safety, efficacy, and potency.

A second characteristic of this book, which adds considerably to its value, is that it summarizes the results of the efforts invested by the World Health Organization (WHO) Global program for Vaccines and Immunization and the Children's Vaccine Initiative. The initiative was designed to promote international collaborations between scientists interested in controlled drug delivery and vaccinologists with the final goal of developing new forms of antigen presentation. It has stimulated a very challenging area of research that is certainly paving a new way for vaccine design and formulation.

The first chapter emphasizes the necessity of new antigen delivery systems from the viewpoint of the WHO. This is followed by several chapters describing the mechanisms of antigen presentation and the importance of adjuvants. A substantial part of the book is devoted to antigen delivery systems designed to-date either for systemic or mucosal immunization. Particular attention is dedicated to the production, characterization and in vivo efficacy of biodegradable polymeric microspheres. The book also deals with important problems that remain to be solved, such as stability of encapsulated antigen and the question on the relationship between in vitro release and in vivo immune response.

In summary, the book "Antigen Delivery Systems" is an important source of knowledge and inspiration. It is also proof of the multidisciplinary character of this new field of research and of the power of health related organizations to promote international research collaborations for optimizing efforts towards improvement of human health.

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Physicochemical Principles of Pharmacy. A. T. Florence and D. Attwood. Macmillan Press Ltd., Houndmills, Basingstoke, Hampshire RG21 6XS, 1998. ix, 564 pp., illustrations. Paper. £27.50.

Pharmaceutical Biotechnology. An Introduction for Pharmacists and Pharmaceutical Scientists. Daan J. A. Crommelin and Robert D. Sindelar, Eds. Harwood Academic Publishers, Amsteldijk 166, 1st Floor, 1079 LH Amsterdam, The Netherlands, 1997. xxviii, 369 pp., illustrations. Paper. \$45.00.

The above two books, *Physicochemical Principles of Pharmacy (PPP)* and *Pharmaceutical Biotechnology (PB)*, highlight

the evolution of the teaching and research materials in pharmaceuticals. PPP is focused on traditional physical chemistry-based pharmaceuticals, while PB deals with biotechnology-produced pharmaceuticals. Rapid advances in pharmaceutical biotechnology and its impacts on new drugs and drug delivery systems have made it virtually impossible to avoid pharmaceutical biotechnology in teaching as well as in research. The two books were prepared to be used as textbooks, but they can also serve as excellent reference books for most scientists working in the pharmaceuticals field regardless of their background.

The book, PPP, contains information ranging from ideal gases to controlled delivery systems of protein drugs. The book starts with properties of the solid state, such as crystallization, polymorphism, crystal hydrates, and wetting of powders. The chapter on "Physicochemical Properties of Drugs in Solution" describes introductory thermodynamics necessary to understand various processes occurring in pharmaceutical sciences. The thermodynamic principles were explained using practical examples for easy understanding. Students should have a much easier time understanding, for example, water activity when it is explained in relation to inhibition of bacterial growth. The book goes on to cover chemical kinetics, drug solubility, surfactants, and dispersed systems. Each subject is explained with an example. The chapter on "Polymers and Macromolecules" covers recent development in polymer chemistry, such as dendrimers and heterogels (which are block copolymers of hydrophilic and hydrophobic segments), and temperature-sensitive hydrogels. The latter part of the book deals with routes of drug administration, peptides and protein drugs, and various dosage forms. Overall, this book contains the most recent information highly useful for pharmaceutical scientists. The only drawback of this book is that it does not have a problem set at the end of each chapter, as most other textbooks have. This drawback, however, is negligible if one considers the vast amount of new information in the book. This book, written by two authorities in pharmaceuticals, may well serve as a first line of reference source for all pharmaceutical scientists.

The book, PB, is basically about protein drugs. More specifically, it deals with how protein drugs are made by recombinant DNA technology, how recombinant proteins are analyzed and formulated, and how they are metabolized in the body. The book also includes a chapter in gene therapy. Nine chapters in the latter part of the book deal with chemical description, pharmacology, pharmaceutical concerns, and clinical and practical aspects of recently registered recombinant proteins. The protein drugs include hematopoietic growth factor, interleukins, insulin, growth hormones, vaccines, Abciximab, plasminogen activator, deoxyribonuclease, and follicle-stimulating hormone. These chapters are indispensable for those whose research deals with protein drugs and their delivery. The last two chapters on "Dispensing Biotechnology Products" and "Biotechnology Products in the Pipeline" provides information on what protein drugs we are dealing with now and what we can expect in the near future. A strength of this book is that each chapter is loaded with self-assessment questions and answers. The book has been successful in explaining why molecular biotechnology is so important to pharmaceutical sciences. The book has color pictures (albeit with a limited number of colors) which are very eye pleasing and helpful in following the text. It must be added here that the book, while written by many different authors, has the same format for each chapter, and the credit must go to the editors for such a fantastic job.

The two books, PPP and PB, collectively present a complete set of textbooks for students in the pharmaceuticals field. They provide the most recent information on physical pharmacy and pharmaceutical technology. I salute the authors of the book, PPP, and the editors of the book, PB, for their excellence in science.

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Books Received

Analysis

A Global View of LCIMS. How to Solve Your Most Challenging Analytical Problems. Ross Willoughby, Ed Sheehan, and Sam Mitrovich. Global View Publishing, PO Box 111384, Pittsburgh, PA 15238-9998, 1998. xxiv, 554 pp., illustrations. Paper. \$49.95.

Free Radical and Antioxidant Protocols. Donald Armstrong, Ed. Humana Press, 999 Riverview Drive, Suite 208, Totowa, NJ 07512, 1998. xvii, 455 pp., illustrations. \$89.50.

Drug and Drug Delivery

Vaccines from Concept to Clinic. A guide to the development and clinical testing of vaccines for human use. Lawrence C. Paoletti and Pamela M. McInnes, Eds. CRC Press LLC, 2000 Corporate Blvd. N.W., Boca Raton, FL 33431, 1999. xi, 209 pp., illustrations. \$95.00.

This book provides detailed information on how a vaccine research can be moved from a laboratory through preclinical evaluation, into the clinic for safety immunogenicity and efficacy, and ultimately to commercialization as a licensed product.

Therapeutic Protein and Peptide Formulation and Delivery. Zahra Shahrokh, Victoria Sluzky, Jeffrey L. Cleland, Steven J. Shire and Theodore W. Randolph, Eds. American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1997. ix, 228 pp., illustrations. \$89.95.

Therapeutic Applications of Ribozymes. Kevin J. Scanlon, Ed. Humana Press, 999 Riverview Drive, Suite 208, Totowa, NJ 07512, 1998. xiv, 462 pp., illustrations. \$79.50.

This book contains information on the use of ribozymes for selective inhibition of the RNA expression. The book discusses in vitro biochemical aspects of ribozymes, utilization of ribozymes for viral, cancer, and other mammalian RNA targets, and additional useful applications of ribozymes.

A Practical Guide to Contemporary Pharmacy Practice. Judith E. Thompson. Williams & Wilkins, 351 West Camden Street, Baltimore, MD 21201-2436, 1998. x, 559 pp., illustrations. Paper. \$32.95.

This book was written for practicing pharmacists, but much of the contents will be highly useful to those scientists working with pharmaceutical problems without pharmacy background. Sections such as "Pharmaceutical Necessities" and "Dosage Forms and Their Preparation" provide practical information which can be used in any laboratories dealing

with drug delivery systems. Chapters in those sections include preservatives, antioxidants, buffers, surfactants, emulsifying agents, viscosity-inducing agents, powders, capsules, and solutions, to name several. Each chapter of the book has numerous step-by-step examples and calculation problems. The chapter on drug stability and compatibility provides another source of useful information for pharmaceutical scientists.

Pharmacology and Toxicity

The Benefit/Risk Ratio. A Handbook for the Rational Use of Potentially Hazardous Drugs. Hans C. Korting and Monika Schäfer-Korting, Eds. CRC Press LLC, 2000 Corporate Blvd. N.W., Boca Raton, FL 33431, 1999. xv, 382 pp., illustrations. \$125.00.

This book was prepared to provide clinicians, pharmacists, and basic scientists with data allowing optimization of drug treatment and methodology to evaluate, predict, and improve the benefit/risk ratio. The benefit/risk ratio of purchasing this book is very high.

Vandium in the Environment. Part One. Chemistry and Biochemistry. Jerome O. Nriagu, Ed. John Wiley & Sons, Inc., 605 Third Ave., New York, NY 10158-0012, 1998. xiv, 410 pp., illustrations. \$165.00 for two part set.

Vandium in the Environment. Part Two. Health Effects. Jerome O. Nriagu, Ed. John Wiley & Sons, Inc., 605 Third Ave., New York, NY 10158-0012, 1998. xvi, 403 pp., illustrations. \$165.00 for two part set.

Synchronism of Common Over-The-Counter Herbs & Western Medicines. A Pocket Companion for Clinicians and Consumers. First Edition. Augustine S. Aruna. Pharm. D., FASCP. Global Publishing Network, P. O. Box 850439, New Orleans, LA 70185-0439, 1998. 97 pp. Paper. \$15.95.

Dermal Absorption and Toxicity Assessment. Michael S. Roberts and Kenneth A. Walters, Eds. Marcel Dekker, Inc., 270 Madison Ave., New York, NY 10016-0602, 1998. xii, 785 pp., illustrations. \$225.00.

Polymers and Biomaterials

Biomedical Science and Technology. Recent Developments in the Pharmaceutical and Medical Sciences. A. Atilla Hincal and H. Süheyla Kas, Eds. Plenum Publishing Corporation, 233 Spring St., New York, NY 10013-8000, 1998. xii, 241 pp., illustrations. \$85.00.

Poly(ethylene glycol) Chemistry and Biological Applications. J. Milton Harris and Samuel Zalipsky, Eds. American Chemi-

cal Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1997. xii, 489 pp., illustrations. \$134.95.

Enzymes in Polymer Synthesis. Richard A. Gross, David L. Kaplan, and Graham Swift, Eds. American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1998. viii, 216 pp., illustrations. \$99.95.

Nanostructured Materials. Clusters, Composites, and Thin Films. Vladimir M. Shalaev and Martin Moskovits, Eds. American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1997. ix, 268 pp., illustrations. \$99.95.

Photopolymerization Fundamentals and Applications. Alec B. Scranton, Christopher N. Bowman, and Robert W. Peiffer, Eds. American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1997. x, 242 pp., illustrations. \$99.95.

Synthesis and Characterization of Advanced Materials. Michael A. Serio, Dieter M. Gruen, and Ripudaman Malhotra, Eds. American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1998. xii, 271 pp., illustrations. \$110.95.

Molecular Modeling of Nucleic Acids. Neocles B. Leontis and John SantaLucia, Jr., Eds. American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1998. x, 435 pp., illustrations. \$129.95.

Controlled Radical Polymerization. Krzysztof Matyjaszewski, Ed. American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1998. xii, 482 pp., illustrations. \$130.95.

A Practical Guide to Combinatorial Chemistry. Anthony W. Czarnik and Sheila H. DeWitt, Eds. American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1997. xiv, 450 pp., illustrations. \$89.95.

Others

The ACS Style Guide. A Manual for Authors and Editors. Janet S. Dodd, Ed. American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, 1997. xii, 460 pp., illustrations. Paper. \$26.95.

Drugs. Should We Legalize, Decriminalize, or Deregulate? Jeffrey A. Schaler, Ph.D., Ed. Prometheus Books, 59 John Glenn Drive, Amherst, NY 14228-2197, 1998. iiiii, 357 pp., Paper. \$16.95.

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