

Koolman J, Röhm K-H, with contributions by Wirth J. Color Atlas of Biochemistry. Stuttgart-New York: Thieme; 2005. 467 pages; ISBN 1-58890-247-1 (TNY); price: US\$37.95

Field of medicine: Biochemistry

Format: Pocket-size paperback book.

Audience: This atlas aims to graphically present the fundamentals of human and mammalian biochemistry, with plentiful, clear, and effective color illustrations and detailed figure legends of biochemical processes. It is intended for biochemists, biologists, and anyone who wishes to refresh their knowledge or be introduced to the basics of biochemistry. The content of this atlas is especially suitable for students at all levels, with emphasis on subjects relevant to students of biology and human medicine.

Purpose: The book provides an overview in words and pictures of the basic knowledge of modern human and mammalian biochemistry and covers new approaches and aspects, presented through 215 color plates by J. Wirth on 467 pages. The purpose of this atlas is to present scientific facts in a visually effective and efficient way, offering an insight in major concepts of composition, structure, and metabolism of biologically important molecules, understandable even for readers encountering biochemistry for the first time.

Content: The atlas is divided into 9 chapters: *Basics*, *Biomolecules*, *Metabolism*, *Organelles*, *Molecular genetics*, *Tissues and organs*, *Nutrition*, *Hormones*, and *Growth and Development*. The chapters are further subdivided into short paragraphs,

where all the major aspects of the chapter topic are described and discussed in detail. The book starts with a few *Basics* in biochemistry, where all principles and concepts of chemistry are explained, starting with the periodic table of the elements, chemical bonds, and general rules governing molecular structures, including isomerism and chemical reactions. Furthermore, several essential concepts of physical chemistry necessary for understanding the following chapters are covered, such as energetics, reaction kinetics, or molecular interactions. The next chapter covers the important *Biomolecules* (carbohydrates, lipids, amino acids, peptides and proteins, nucleotides, and nucleic acids) and is followed by the *Metabolism*, which describes basic metabolic pathways and mechanisms of metabolic regulation. Cellular *Organelles* are discussed in the second half of the book, following the basic concepts of molecular biology, including the processes that are of central importance in *Molecular genetics* – genome and its replication, transcription and translation, some basic principles of DNA cloning and genetic engineering, as well as their importance in medicine. The chapter *Tissues and Organs* focuses on biochemistry of the most important organs and organ systems like the digestive system, blood, liver, kidneys, muscles, connective and supportive tissues, and the brain. The next chapter deals with nutrition and the components included. Biochem-

istry of substances like proteins, carbohydrates, fats, minerals, and vitamins is discussed, with some very useful data on nutrition requirements. The last two chapters discuss the structure and function of *Hormones*, and *Growth and Development*, describing some of the most important aspects of major cellular processes, like the cell cycle, apoptosis, oncogenesis, and cancerogenesis. At the end of the book, several metabolic charts are presented, which is useful for better understanding of basic metabolic pathways described in previous sections.

Highlights: Despite its pocket-size, the atlas contains all essential information on human and mammalian biochemistry. Nevertheless, the authors emphasize that the atlas is not intended as a substitute for a comprehensive textbook of biochemistry and that its main purpose is to “serve as an overview and to provide visual information quickly and efficiently.” Therefore, some may prefer a more comprehensive presentation offered by a number of excellent textbooks available on the market, but this informative, accurate, and easy-to-survey atlas may be very helpful if you are running between two lectures, two experiments, or two patients. Each right side of the book is illustrated, giving you the schematic figures of biochemical processes described on its left side. This makes learning both easy and exciting.

Since by definition an atlas must focus on graphical presentation, it is very important that

each of 215 color plates (computer graphics and simulated 3D representation of biomolecules, as well as realistic representation of molecular models and biochemical pathways), although given in relatively small-size figures, is easy to understand and is clear, informative, and of high quality. For illustrating macromolecules, authors used structural information based on data obtained by x-ray crystallography and stored in the Protein Data Bank. The models of small molecules are based on conformation calculated by computer-based molecular modeling. All these complex requirements are successfully achieved without overloading the color plates with unnecessary details. As one of the students put it: “It’s perfect when you just want to get down to the critical information, instead of having to dig for it in a bloated textbook.”

Related reading: A number of other pocket-size color atlases are available from Thieme Flexi-book series: Color Atlas of Physiology by A. Despopoulos, Color Atlas of Cytology, Histology and Microscopic Anatomy by W. Kuhnel, Color Atlas of Biochemistry by J. Koolman, Color Atlas of Neuroscience: Neuroanatomy and Neurophysiology by B. Greenstein, Color Atlas of Genetics by E. Passarge, Color Atlas of Pathophysiology by S. Silbernagl., and Color Atlas of Pharmacology by H. Lutz.

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