

**BOOK REVIEW**  
***Biochemistry,***  
**by Donald Voet and Judith G. Voet**

*2nd ed., Wiley, New York; 1995; \$76.95/cloth;  
1264 pp.; ISBN: 0-471-58651-X*

"My own scientific career was a descent from higher to low dimension, led by a desire to understand life. I went from animals to cell, from cell to bacteria, from bacteria to molecules, from molecules to electrons. The story had its irony, for molecules and electrons have no life at all. On my way life ran out between my fingers."

—Albert Szent-Georgy, *The Living State* (Academic Press, 1972)

The second edition of *Biochemistry* is one of the first successful attempts to put life back in a textbook of biochemistry. Every page of this thick book, and first of all its first and last sections, imparts the idea that we should not forget about life. From this point of view, the last chapter, "Molecular Physiology," is really looking into the next century of life science. The molecular machinery of several key and well-characterized physiological processes, like blood clotting, immunity, motility, and biochemical communication, is considered. The biochemical communication reflects today's advances of both disciplines—biochemistry and physiology.

*Biochemistry* by Donald Voet and Judith G. Voet follows the logic of current biology that brings biochemistry to the docking with physiology or vice versa. As a result, the molecular physiology—the study of the molecular basis of biological functions—has been created.

One of the brilliant examples of today's molecular physiology is complex signaling systems. The 1994 Nobel Prize to Alfred Gillman and Martin Rodbell for the discovery of G-proteins only stressed the stormy development of this discipline. The section of the book that clearly describes and perfectly illustrates in color pictures the molecular machinery of inter- and intracellular communications via hormones, second messengers, and neurotransmitters can be considered an excellent mini-textbook of modern molecular physiology.

Unfortunately, this section does not contain one of the very well developed fields of molecular physiology—sensory reception, and first of all the molecular machinery of visual reception and molecular biology of color vision. Along with all other communication processes described in this

section, the molecular physiology of vision is one of the processes that have been described in the last two decades in every detail. Certainly you can find information about the rhodopsin molecule as a light-sensitive membrane protein as well as one of the G-protein (transducin) binding proteins. However, vision as a separate part of the biochemical communication paragraph as an example of the sensory communication machinery could be useful.

This book has an outstanding feature combining the biochemical data and recent results of structural biology—especially in excellent color images of the three-dimensional structure of biological molecules determined with X-ray analysis and by means of computer graphics. It is a pleasure to stress again that this is the first biochemistry textbook with such extended presentation of structural data from the protein database (PDB).

The part of the book that describes the three-dimensional structures of proteins and the other part, which contains a complete and outstanding introduction in modern molecular genetics, are really very good. Most of the recent data and methods are presented, including principles of genetic transformation, data on DNA structure (z-form of DNA), results on supercoiling of DNA, molecular cloning, and description of the polymerase chain reaction (novel and effective method of amplifying of specific DNA segment). The only change I would suggest is that the paragraph about genetic therapy be extended.

The book states that “exons often encode discrete structural elements” (p. 1144); this statement is incorrect in the common case. As of yet, no significant correspondence has been found between exons and units of protein structure and, possibly, the exon theory of genes is untenable (Stoltzfus et al., *Science*, 265, pp. 202–206, 1994).

In general, the second edition of *Biochemistry* is not only a remarkable event in the biochemistry textbook market; it is also a fundamental summarizing of advances in modern biochemistry that does not lose the life itself.

**Michail A. Ostrovsky, PhD**

*National Institute of Standards and Technology, Gaithersburg, MD and Institute of Chemical Physics of the Russian Academy of Science, Moscow*