

Ord, M.G., Stocken, L.A. (ed.): **Foundations of Modern Biochemistry. Vol. 2. Quantum Leaps in Biochemistry.** - JAI Press, Greenwich - London 1996. ISBN 0-7623-0077-9. 257 pp., USD 97.50.

In contrast to Vol. 1 of this series, whole text of which was written by the two Editors, eight chapters of Vol. 2 were prepared by nine authors (seven from Great Britain, two from the U.S.A.). They review major progress in biochemistry mainly from 1950s to 1970s.

Chapter 1 is a brief introduction. The following three chapters are on DNA: Chapter 2 is on coding properties of DNA—verification of DNA structure, discovery of the code (first suggestion as early—or as late?—as 1954 by Gamow), formation of the central dogma (by Crick in 1958), RNA as mediator, nucleic acid hybridisation, repetitive DNA, polymerases and related systems, restriction enzymes, *etc.*)—are reviewed here. Chapter 3 is on manipulating DNA (the chapter subtitle is: From cloning to knockouts). Here the revolution of genetic manipulations is dealt with ("making genes"!), including cloning, recombinations, building of DNA and genomic libraries, making synthetic DNA, analysing and mapping the systems, functional analysis of DNA, *etc.*

Chapter 4 is on extranuclear DNA, *i.e.*, DNA of mitochondria and plastids. The search tending to explain non-Mendelian inheritance by studying organelle genomes (also in connection with organelle phylogeny), characterising organelle DNA in various organisms, searching for organisation and expression of plastid DNA, relocation of organelle genes to the nucleus, regulatory interactions between nucleus and organelle, organelle inheritance, vegetative segregation, recombination, and homoplasmy, DNA as a molecular clock, localisation of extranuclear DNA, *etc.* This chapter is very instructive for researchers of photosynthesis.

Chapter 5 reviews advances in protein synthesis, and structure and functions of ribosomes. In this chapter, history of studying this element of cell biology starts already in the late 1930s. Chapter 6 is on the development, current status, and future prospects of structural biology (*i.e.*, study of the structures of biological macromolecules at atomic level resolution). The techniques of X-ray diffraction, electron microscopy, and nuclear magnetic resonance are described here together with the main discoveries. Next chapter deals with chemistry of saccharides and glycoproteins, effects of glycosylation on enzyme activities, glycosylation in disease and its inhibition, *etc.* Chapter 8 describes cell cycles in synchronous cultures, continuous or periodic DNA syntheses, importance of enzyme synthesis, models controlling mitosis and DNA synthesis, relations of mitosis and cytokinesis, existence and function of oscillations in cell cycles, *etc.*

Appendix 1 is a chronological list of main discoveries in this field between 1869 and 1995. Appendix 2 shows the DNA code. Author and subject indexes are supplemented. Pp. 99-107 present 34 photographs of scientists responsible for progress in biochemistry.

Contrary to Vol. 1, reviews in this volume are supplemented with fairly long lists of references not only to reviews and books, but mainly to original research papers. Similarly to Vol. 1, students and researchers in all fields of experimental biology should read this book: without knowing the past history, progress in science is always unnecessarily slow.

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