Acta Biochimica Polonica

Vol. 48 No. 1/2001

287–289

QUARTERLY

**Free Radicals and Inflammation, Winyard, P.G., Blake, D.R. and Christopher H.E. (eds) Birkhauser Verlag, Basel, Boston, Berlin, ISBN 3-7643-5851-3, 1999, 259 pp.**

*Free Radicals and Inflammation* is the 15 th title of *Progress in Inflammation Research* edited by prof. Michael J. Parnham. The book records contributions from leading research groups and acknowledged experts in the field of inflammation. The introduction is a review summarizing molecular aspects of acute and chronic inflammatory processes.

Although the title of the book implies exclusively emphasis on the basic role of only free radicals generation in pathology, 16 chapters cover an array of topics related to oxygen and nitrogen centered free radicals within the context of all stages of inflammation.

The book touches on fundamental aspects of pathophysiology and molecular biology of inflammatory cell signalling, recruitment of inflammatory cells, free radicals as molecular inflammatory mediators and their triggering role in redox regulation of inflammatory gene expression. Coverage of the role of reactive oxygen species in physiological and pathological aspects of inflammation is fairly complete and brings the novice into the area of molecular organization of NADPH oxidase and human xanthine oxidoreductase, which became recently a focus of intense research activity. Some of the chapters will be particularly valuable to the reviewer, namely those dealing with integration of the essential chemistry of both oxygen and nitrogen centered free radicals within biological context of inflammatory diseases such as rheumatoid arthritis. *Free Radicals and Inflammation* will provide graduated students, academic researchers and clinicians with valuable information concerning the therapeutic implications of nitric oxide and related nitrogen centered species involvements in acute and chronic inflammatory response.The book will also be of use to those studying inflammation and cell death but with prior focus on problems other that free radicals.

*Michał Woźniak*
*Department of General Chemistry*
*Medical University of Gdańsk,*
*Gdańsk*

**Immunofluorescence in Clinical Immunology. A Primer and Atlas, Wulf B. Storch.**

Immunofluorescence, an ingenious laboratory method of antigen detection in biological material has, along with virtually everything else, entered the 21st century. With the development of monoclonal antibodies, novel fluorochromes used for antibody labeling and confocal laser-scanning-microscopy, we can now easily diagnose myriads of human diseases. This technique is the most decisive in the diagnosis of autoimmune and infectious diseases, but it also finds its place in oncology and detection of metabolic disorders. Immunofluorescence is also an invaluable research tool that opens the way to the new discoveries in the fields of immunology and cell biology.

*Immunofluorescence in Clinical Immunology*, an English translation of Wulf Storch's primer offers an overview of the key components of this diagnostic technique, explains the theory of its operation as well as limitations of its use. In a little less than two hundred pages the author gives the readers a clue on what can, and, more importantly, what cannot be deduced from immunofluorescence data. The introductory chapters describe in simple words, but with suf-

ficient clarity, the basic foundations such as coupling reactions and purification procedures that enable to obtain almost home-made preparations of antibodies for immunofluorescence. These chapters are followed by detailed descriptions of immunofluorescence applications. The primer contains outstanding, high-quality color photographs. *Immunofluorescence in Clinical Immunology* is worth recommendation for all those readers who are using or are going to use immunofluorescence as a tool for research or for diagnostic purposes.

*Jakub Gołąb*
*Department of Immunology*
*Center of Biostructure Research*
*Medical University of Warsaw,*
*Warszawa*

**Early evolution. From the appearance of the first cell to the first modern organisms, by Martino Rizzotti, Birkhauser Verlag, 2000. 175 pp.**

What is early evolution? The answer one receives to this question depends on whom one asks. For some scholars it is the emergence of life from a prebiotic environment, for others it describes the molecular transition from an RNA to a DNA-protein world. For the author of the reviewed book, it is the appearance of the first cell, the subsequent formation of the prokaryotic cell and finally, the emergence of eukaryotes and multicellularity. In this era of genomics, most scholars discuss early evolution from a gene-centric position. Genes are considered both the major players and subjects of natural selection. Rizzotti seems to hold a more traditional view on evolution. For him, the organism and, particularly, the cell defines a major unit of evolutionary change. This focus on cells as opposed to molecules as entities of evolutionary change is reflected in his definition of cell division. He states "...reproduction consists of the formation of a replica by means of binary fission of a cell which has accumulated enough material to give rise to two cells..." In this context, overproduction and modularity rather than genetic content are seen as the basic properties of an evolving system. Although this view is not able to explain the causes of early evolution or the transition from a non-living to a living world, it is refreshing to be reminded that genes are not the only entities which are propagated by replication. Cellular membranes, organelles (mitochondria, plastids and peroxisomes), as well as centrioles are all too complicated to be formed *de novo*, and are all propagated by the replication of preexisting structures. In these times of "Jurassic Park" it is important to understand that DNA is not enough to create an organism.

The author also holds a traditional view of the role of natural selection in the creation of evolutionary novelties. He stresses that the complexity of the cell is achieved by a succession of small steps and always prefers evolutionary scenarios based on gradual evolution by natural selection and adaptation. He strongly opposes hypotheses which assume that highly complex biological systems suddenly appeared at the very beginning of evolutionary history. For him such ideas are reminiscent of the revisionist idea of a "golden age" in human history. In most cases, he holds a common sense assumption that formation of a new cellular structure requires a complicated, stepwise chain of events which only happen extremely rarely in evolution. Thus, he opposes the hypothesis assuming that multiple endosymbiotic events were required for the formation of almost all cellular structures. Instead, he considers endosymbiosis as being only one of many ways of gaining complexity.

Given the authors viewpoint, it is not surprising that there is vey little molecular detail in the book. There is not a single DNA sequence presented, and the so called "molecular comparisons" — the author prefers to call them — "gene sequence comparisons", are mentioned only briefly. On the other hand, the book contains many well done schematics of complicated cellular structures and phylogenetic trees representing their evolution, which help to guide readers through the dense forest of alternative hypotheses.

Rizzotti is very particular about terminology. In many cases he disagrees with the traditional nomenclature and either proposes his own terminology or strongly recommends the use of single terms whenever several alternative terms exist in the literature. My favorite example of this is the extended discussion on terminology related to the distinction between bacterial flagellum and eukaryotic cilium (p. 136–137). This kind of redefinition of commonly used terms would be very helpful in communicating results of scientific investigations, as well as in teaching. At some points however, Rizzotti seems to go too far. For example, he defines enzymes involved in nucleic acid replication, transcription and translation as "...proteins required for polynucleotide pro-