which to examine diversity and adaptation. However in many cases the treatment is more extensive than appears necessary and, while this may be aimed at the zoologist reader, it is presented much less clearly and pictorially than one can find in many excellent modern texts. Moreover, while the author goes on to present up-to-date views on biochemical mechanisms in a balanced way (at least in those cases where this reviewer is competent to judge), space limitations dictate that the treatment is mostly somewhat terse and the reader would need more than a basic knowledge of biochemistry to appreciate it fully.

While, at first, molecular diversity was seen as a methodological impediment to biochemical studies, the increasing appreciation of the existence of homologous domains and of proteins belonging to superfamilies makes it easier to comprehend variations on a theme. The author's belief is that the comparative approach at the molecular level will increasingly provide a valuable tool for examining both biological adaptation to environmental conditions as well as the basis of phylogenic diversification. In this book he has provided a valuable reference text to the basic literature across the spectrum of research on the comparative biochemistry of animals. While it may not provide the complete answer to anyone searching to apply the principle promulgated by the great Danish physiologist August Krogh that for solving every biological problem there exists an ideal animal model, there is much fascinating information packed into the pages of this book to inform and stimulate the biochemical browser.

J. Mowbray

Cell Biology: A Laboratory Handbook, Volumes 1, 2, 3; Edited by Julio E. Celis, Academic Press; San Diego, New York, Boston, London, Sydney, Tokyo, Toronto, 1994; 1714 pp. $ 120.00 (pb). ISBN 0-12-164714-5 (set).

To try or not to try? This must have been a haunting question for the editor before committing himself to work on a 'recipe-book' of modern biology. Cell biology is no doubt one of the most dynamic areas of contemporary biomedical sciences. The recent stunning discoveries made by the quickly expanding crowd of cell biologists have been made possible, at least to some extent, by a plethora of newly modified or entirely novel techniques and approaches. Unlike their luckier colleagues working in molecular biology, whose methods 'bible' by Maniatis and Sambrook was first published more than a decade ago and later updated, the cell biologists have been waiting for their laboratory manual until now. The *Cell Biology: A Laboratory Handbook* represents a highly desirable, brave attempt to fill this major gap in the scientific literature. The enormous diversity of the biological methods covered by this comprehensive manual made its preparation an extremely demanding task. Fortunately for the reader, the book was edited by a highly respected cell biologist and at the same time a very experienced organizer of numerous international laboratory courses, who was supported by a team of dedicated coworkers.

The three volumes of the manual are organised in 15 parts subdivided into sections, which together contain almost 200 chapters contributed by leading experts in their fields, covering a broad range of model organisms and cell types, and including protocols for techniques from diverse branches of cell biology.

Volume 1 begins with tissue culture and associated techniques, starting with general procedures related to tissue culture media, testing cell cultures for various contaminants, and detailed practical advice on cultures of specific cell types derived from various tissues. The first volume then continues with timely descriptions on cell separation techniques, model systems applicable in analysis of cell differentiation, cellular immortalization, progression through the cell cycle, cellular senescence and cell death. While the book primarily focuses on animal cells, it also contains useful chapters devoted to cultures of cells from organisms as diverse as Drosophila, nematodes, protozoa, fungi, plants, and viruses, i.e. a selection of organisms which are proving extremely useful in contemporary research and/or biotechnology industry. The last part of Volume one describes biochemical methods of isolation and purification of cellular organelles, nuclear structures, and contains optimized protocols for isolation of DNA and total RNA.

Volume 2 provides solid, informative descriptions of presently used microscopy techniques, including light microscopy, fluorescence, video-enhanced and confocal microscopy, and a number of electron microscopy procedures. This book also deals with several micro-dissection methods, and basic techniques of histochemical staining, followed by several chapters describing production, purification, labeling, characterization, and application of antibodies. The second Volume ends by a series of protocols used in cytogenetics and topological analysis of gene expression by various modifications of in situ hybridization.

The third and last volume integrates modern methods of gene and protein transfer into living cells, covering approaches such as microinjection, electroporation, lipofection, etc. A separate section is devoted to genetic manipulation at the level of the whole organisms, including production of transgenic animals, embryo cloning, and gene targeting. The widely used Baculovirus and Vaccinia virus expression systems are also included, followed by detailed presentation of a wide range of protein analysis techniques. The latter include protocols on protein determination, preparation of tagged proteins, gel electrophoresis and staining, various overlay techniques, protein microsequencing, and amino acid analysis.

A large number of illustrative diagrams, photographs, colour plates, and an index with surprisingly few omissions (considering the vast range of topics covered by the manual) contribute to the overall impressive design and general usefulness of this book. Another helpful feature of the manual are the three appendices, devoted to tissue culture media, most frequently used cell lines, and safety recommendations for working with radioactivity, respectively. Perhaps inevitably, due to time required to put together a book covering such enormous area of biology, and due to fast progress in the field, some of the chapters would benefit from updating or extending to the most recent modifications of several techniques, a task for the future edition already under consideration by both the editor and the publisher. The spectrum of methods, their clear and uniform style, sense for important practical detail, and thoughtful editing make this manual a unique laboratory handbook which should be of great help for the large and still rapidly growing flock of scientists using techniques of cell and molecular biology.

In summary, *'Cell Biology: A Laboratory Handbook'* is the type of essential manual that is easily accessible to potential users among students, as well as scientists from both research laboratories and biotechnology companies. This book, if updated and expanded in the future to reflect the trends in the field, may well become the practical 'bible' of modern cell biology.

Jiri Bartek

Biochemistry of Cell Membranes; Edited by S. Papa and J.M. Tager, Birkhäuser Verlag, Basel, Boston, Berlin, 1995; x + 365 pp. $ 149.00 (hb). ISBN 3-7643-5056-3.

This collection of 24 short reviews does not, as its rather heterogeneous content might suggest, derive from a symposium, but is part of a series entitled 'Molecular and Cell Biology Updates', and contains invited contributions on selected topics, deemed by the editors and their advisory panel to represent areas in which recent progress has been particularly rapid. The coverage indicates a fairly relaxed interpretation of the title, as some of the topics have only a tenuous connection with membranes – in the last resort, any and every biochemical topic is membrane-related in some way – but this imparts a welcome breadth to the book. The collection is definitely aimed at a post-doctoral