

Peptide Analysis Protocols (Methods in Molecular Biology, Vol. 36); Edited by B.M. Dunn and M.W. Pennington; Humana Press; New Jersey 1994; 335 pages. \$64.50. ISBN 0-89603-274-4.

This volume of *Methods in Molecular Biology* contains nine chapters covering techniques for separating/characterizing peptides and additional contributions on specialty topics relating to peptide chemistry and applications. The first six chapters deal with separations; beginning at the macro-scale (gel columns), continuing to HPLC separations, and concluding with capillary electrophoresis. The chapters provide a good starting point for researchers trying to assess the utility of the method for their peptide application. The subsequent chapters deal with methods that are fairly routine at major facilities: NMR, direct sequencing, and mass spectrometry.

The intent of the initial chapters is to provide sufficient information to allow the reader to assess the importance and difficulties associated with the methodologies. This is a valuable collection of material focused on the application rather than the tools. It compliments the existing array of focused technical material available pertaining to a given method. However, the depth of some of the material and the references therein could have been more extensive to guide the reader to specific

sources of detailed information (ranging from texts and reviews to manufacturers literature).

The latter chapters provide a good compliment to the initial material pertaining to analysis methods. These include discussions of peptide conjugation, epitope prediction, epitope mapping, proteinase specificity measurements, recombinant peptides, de novo peptide design, aspartic proteinase synthesis and combinatorial synthesis. They provide sufficient background material where required (e.g. basic immunology) to enable the interested reader to grasp the subject content and understand the application focus.

Overall the goal of the text has been achieved: an overview of tools for peptide analysis is provided in conjunction with more recent application areas. The early tools emphasize the issues of employing the described methods for peptide analysis. It will serve well as a valuable starting point for scientists using peptide molecules in their work.

Michael Albin

Human Papillomaviruses and Cervical Cancer. Biology and Immunology; Edited by P.L. Stern and M.A. Stanley, Oxford University Press, 1994. xiii + 226 pages. £ 60.00. ISBN 0-19854-796-X.

The monograph covers both the basic information on the biology of Human Papillomviruses and the immunological aspects of the infection including vaccine development. The different chapters are very well written reviews of the state of the art. The first chapter introduces the reader to the pathology of HPV premalignant and malignant lesions and the following review gives an introduction to the molecular structure of the viral genome and to the function of known viral proteins. The following two chapters focus at the epidemiology of the HPV and cervical cancer and a very relevant introduction to the specificity and sensitivity of the different methods available for detection of HPV. The epidemiology is presented in a rather condensed way as the literature on this issue is very large. The chapter has a nice approach to the different kinds of studies, which gives the right perspective of the information obtained in epidemiological studies. The last two chapters of the biological part of the book give the state of the art in transformation of cells with HPV. The interaction of viral proteins with cell cycle controlling proteins is described. The present understanding of the natural history of the virus infection is

summarized in an interesting review on the dependence of HPV growth and differentiation of the keratinocytes.

The immunology of HPV infections is discussed both from the humoral- and the cell immunity point of view as both aspects are relevant for the development of vaccine strategies. The serology is presented with a discussion on viral target proteins available for the different tests. The cellular immunity covers the antigenpresentation problems, immunosurveillance and an interesting discussion of HLA antigens and their changes during development of malignancies. The vaccine strategy is very interesting and the final chapters review the natural vaccines as well as recombinant strategies used for development of prophylactic/therapeutic immunotherapy. In summary, the field of HPV biology and immunology is covered in a very relevant way in the monograph and the book will be of great use for both students at a graduate level with knowledge in biology and immunology and for scientists updating their knowledge on HPV.

Bodil Norrild

An Introduction to Membrane Transport and Bioelectricity. Foundations of General Physiology and Electrochemical Signaling. Second edition; Edited by H. Byrne and S.G. Schultz, Raven Press, New York, 1994. ix + 198 pp. \$ 44.00 (pb). \$ 79.50 (hb). ISBN 0 7817 0201 1 (pb).

This is the second edition of a book first published in 1988, intended, in the words of its authors 'to introduce medical and beginning graduate students to the principles of membrane transport and bioelectricity'. For the most part, the present book does so successfully. It is entertaining and easy to read, presenting often a historical perspective that adds an interesting dimension to the text. It has excellent illustrations, many of them modified from the original published figures. The authors emphasize the conceptual approach, making the book accessible even to students who lack a solid mathematical background.

The book opens with a brief introductory chapter on membrane composition and structure, too brief in my opinion since key aspects of membrane organization that incide directly on membrane function,

such as the role of cytoskeletal proteins, are not mentioned. The authors continue with a very good presentation and analysis of diffusion of non-electrolytes and ions, and of carrier-mediated transport; the new chapter added to the second edition describing diffusion of ions through biological channels is timely and easy to follow. Resting potentials and the generation and propagation of action potentials are presented next in an elegant and highly didactic fashion, although a brief description of gating currents would have been desirable. The authors have included an Appendix for those readers who want a more detailed discussion of the Hodgkin and Huxley analysis of the electrical properties of nerve membranes. The book ends with three chapters dealing with synaptic transmission and synaptic plasticity in the nervous system, that are a pleasure to read.

The fact that structural aspects are not addressed with the same lucidity as the physiological and physicochemical aspects of membrane transport and bioelectricity represents a limitation of the present edition. Only a scant description of the structure of ion channels, but not of ion pumps, is given, despite the striking advances made recently in this field using the tools of molecular biology. Nevertheless, these

drawbacks do not seriously detract from the overall high quality of the book.

In conclusion, I highly recommend this second edition as a valuable introductory textbook or as a reference book for non-specialists in the field.

Cecilia Hidalgo

Cell Adhesion. Fundamentals and Biotechnological Applications; Edited by M.A. Hjortso and J.W. Roos. Marcel Dekker, Inc. New York, 1994. xi + 273 pp. \$ 135.00. ISBN 0 8247 8945 8.

The adhesion of cells to each other and to their substratum is an important biological phenomenon that regulates their survival, proliferation, and metabolic activity. Cell adhesion is thus also a major consideration in numerous biotechnological processes, ranging from the production of pharmaceuticals in bioreactors to the sedimentation of bacteria during wastewater treatment. This book, volume 20 in the Bioprocess Technology Series, is intended for students and researchers in biochemical and biomedical engineering and strives to be a comprehensive reference for cell adhesion in a wide variety of biotechnology applications. The first few chapters of *Cell Adhesion* describe the kinetics of ligand–receptor interactions and mathematical models of cell adhesion phenomenon relevant to bioreactor design. Chapter 3 attempts to provide a broad overview of adhesion in

animal cell culture; however, a section on extracellular matrix proteins and their cell surface receptors is incomplete and out-of-date. Other chapters cover the immobilization of cultured plant cells, the application of cell aggregation and sedimentation in various biotechnological systems, the role of biofilm accumulation on solid substrata, and the preparation of inorganic and synthetic organic matrices for cell attachment. With only 288 pages (and at \$ 135) *Cell Adhesion* may be too brief to serve as a single-source reference for such a wide range of topics. Researchers in the field of cell adhesion may find it more useful to consult more detailed and up-to-date references on specific areas of cell adhesion.

Marian E. Durkin and Ulla M. Wewer

RNA Isolation and Analysis; Edited by P. Jones, J. Qiu and D. Rickwood, BIOS Scientific Publishers Ltd; Oxford. xi + 196 pp. \$ 35.00. ISBN 1 872748 37 6.

The importance of RNA in the origin of life and in numerous aspects of cellular gene expression, have turned RNA into a fashion molecule, investigated in an increasing number of laboratories. This book will provide a starting point for studying the RNA world. The first chapter provides a basic introduction to the structure, processing and function of RNA with an emphasis on eukaryotic mRNAs. The subsequent chapters describe a broad range of basic methodologies essential for handling of RNA in an experiment: isolation, quantitation, size and sequence characterization, and functional analysis. The final chapter gives a brief introduction to isolation of ribonucleoproteins (RNPs) such as ribosomes, polysomes, spliceosomes and heterogeneous nuclear RNPs (hnRNPs). Detailed and clearly written protocols are included for each method together with relevant background information, allowing the inexperienced scientist to evaluate critical parameters. Several alternative approaches are included, and advantages and

drawbacks for particular applications are discussed. The book may be used, not only as a protocol, but also as a textbook for understanding the behaviour of RNA within the cell as well as in the test tube. The authors cover most of the basic techniques performed in an RNA laboratory, but powerful methods, such as RNA footprinting, ligation of RNA transcripts by bridging DNA oligo, SELEX, NMR and X-ray crystallography, have not been included in the book. I also miss a more elaborate section on UV-cross linking of RNA to RNA and protein to RNA, in particular when using modified nucleotides to enhance the yield of cross links. The book is aimed toward students and researchers new in the RNA field, but more experienced researchers may also seek help from the book to update or optimize existing lab protocols.

Jørgen Kjems

Antimicrobial Peptides. Ciba Foundation Symposium 186. Edited by J. Marsh and J.A. Goode, Wiley & Sons, Chichester, 1994. viii + 283 pp. \$ 76.00. ISBN 0 471 95025 4.

The Symposium on Antimicrobial Peptides held in London in January 1994 was the first focused entirely on gene-encoded antimicrobial peptides, as aptly pointed out by the chairman Hans G. Boman in the opening remarks of this volume. The meeting brought together distinguished scientists whose investigations have led us to appreciate the rich variety of peptides utilized by animals and plants to kill microbes. When reading this volume, one will especially enjoy the contribution of these leading experts to the discussions that follow each paper, which include informal reports of unpublished experiments and colourful anecdotes. In fact, these lively discussions and the extra information they bring out are probably the most enjoyable part of the proceedings, having provided the participants with an opportunity to share their views in such areas as structure, function and biology of antimicrobial peptides.

Although the emphasis is on animal antimicrobial peptides, considered to be the primary defense agents of innate immunity, peptides produced by plants and microorganisms are also discussed. Larger animal antimicrobial proteins such as BPI and serprocidins are considered in separate chapters, as notable exceptions to what seems to be a 'peptide rule' for this effector mechanism of innate immunity. This volume thus provides a useful and up-to-date overview adequately covering the field.

The reader is introduced to the world of antimicrobial peptides through a brief historical account, tracing its roots to early investigations aimed at the identification of agents with a selective toxicity. Some of these studies led to the discovery of the microbial forerunners of the animal antimicrobial peptides. Among the microbial antibiotics, a distinction is made between those which are produced