Microscopy and Histology for Molecular Biologists: A User’s Guide

Edited by JA Kiernan and I Mason
University of Western Ontario, Canada and University of London, UK

Microscopy and Histology for Molecular Biologists: A User’s Guide informs research workers how to prepare cells and tissues for examination by traditional and modern types of light microscopy, and how to obtain and analyse images.

The authors provide reasoned accounts of mechanisms and procedures, with selected references to original sources, review articles and textbooks. In addition, detailed technical instructions are provided for many important and frequently used methods. The theoretical background is also presented in sufficient detail to allow intelligent modification of these techniques to suit particular investigations and to solve unexpected problems. Chapters begin with an explanation of the method (or group of methods), including how it works and, why to use it and when. This is followed by detailed technical instructions, including troubleshooting advice.

Essential Reading

The chapters are written by experts in their fields (histochemistry, histotechnology or microscopy) for readers who are (or aspire to be) experts in biological or biochemical research.

The book is also aimed at research workers in other fields who need to prepare materials for various types of microscopic examination and to interpret the results intelligently.

Contents

- Methods of light photomicroscopy
- Digital and confocal photomicrography
- Three-dimensional microscopy
- Photomicrography
- Fluorescent staining of living cells
- Freezing and fixation
- Tissue processing and sectioning
- Staining and counterstaining to show structural features
- Immunohistochemical methods
- Staining skeletons of whole animals
- Metabolic mapping by enzyme histochemistry
- Detection of cell division and cell death
- In situ hybridization to RNA in tissue sections
- In situ hybridization and sectioning of whole embryos and tissues

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June 2002 400 pages Hardback I 85578 141 7 £110.00
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Neuronal Signal Transduction and Alzheimer's Disease

Edited by C. O'Neill, University College, Cork, Ireland and B. Anderton, Institute of Psychiatry, London, UK

The latest in the Biochemical Society Symposium series brings together key researchers from diverse biochemical areas to focus upon signal transduction dysfunction in Alzheimer's disease.

The field of Alzheimer's disease research has developed significantly over the last decade.

The main proteins involved in the pathology of the disease have been identified using a combination of molecular genetics and biochemical pathology. Scientists are close to defining and integrating the neuronal signal-transduction events associated with these proteins, and to determining how this causes neuronal degeneration in Alzheimer's disease.

Unravelling and identifying the primary and central signal transduction events that lead to Alzheimer's disease provides many future challenges for scientific research. This book aims to summarize the current status of research in this area and will hopefully stimulate further investigation in this vital research field.

Although specifically focused upon Alzheimer's, this book has many parallels in other neurodegenerative disorders and will be of interest to those studying neuronal cell development and function in health and disease.

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Essays in Biochemistry Volume 38: Proteases in Biology and Medicine

Edited by N.M. Hooper, University of Leeds, UK
1 85578 147 6 – Paperback – September 2002 – 200 pages – £19.00

Proteases in Biology and Medicine aims to provide a wide-ranging overview of the many and varied roles of proteases in biological systems, to highlight some of the more recent developments in this area and to provide an insight into future research in the field of proteases.

For many researchers, proteases are often considered to be unwanted biological pests. Many do their utmost to inactivate proteases in order to prevent the breakdown of their particular protein of interest. For others proteases are tools that selectively degrade a protein prior to its further analysis. However, more and more researchers are recognizing that proteases are often key players in a wide range of biological processes, such as cell cycle regulation, cell growth and differentiation, antigen processing and angiogenesis. In addition, it is becoming apparent that the aberrant functioning of certain proteases may underlie several disease states, including Alzheimer's disease, cancer metastasis and inflammation.

An understanding of the role played by proteases in these processes may provide the opportunity for therapeutic intervention. Indeed, inhibitors of certain proteases have already proved to be effective therapeutic agents in hypertension and heart failure, and against some forms of cancer and certain viruses.

Contents

- Proteases: a primer, N.M. Hooper
- Caspases and apoptosis, G.S. Salvesen
- Matrix metalloproteinases in cancer, Y. Itoh and H. Nagase
- Proteolytic processing of the amyloid β-protein precursor of Alzheimer's disease, J. Nunan and D.J. Small
- The ubiquitin-proteasome pathway of intracellular proteolysis, F.J. Doherty, S. Dawson and R.J. Meyer
- Methionine aminopeptidases and angiogenesis, R.A. Bradshaw and E.Yi
- Precursor convertases in the secretory pathway, cytosol and extracellular milieu, N.G. Seidah and A. Prat
- Proteases in blood clotting, P.N. Walsh and S.S. Ahmed
- Anatomy and pathology of HIV-1 peptidase, B.M. Dunn
- Inhibition of peptidases in the control of blood pressure, E. Kubota, R.G. Dean, L.C. Balding and L.M. Burrell
- Shedding of membrane proteins by ADAM family proteases, M.L. Moss and M.H. Lambert
- Regulated intramembrane proteolysis: from the ER to the nucleus, R.B. Rawson
- Protease-activated receptors: the role of cell-surface proteolysis in signalling, G.S. Cottrell, A.-M. Coelho and N.W. Bunnett
- Mining proteases in the genome databases, D. Coates

Essential reading

Aimed at final year undergraduates, early postgraduates and lecturers, this series of short, punchy and well-illustrated articles written by experts in the field is the first book of its kind to deal with so many aspects of proteases at this level.

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ISSN: 0071-1365
Prostasomes

Wenner-Gren International Series Volume 81

Editors: G Ronquist, University of Uppsala, Sweden and BO Nilsson, Biomedical Center, Uppsala, Sweden

1 85578 151 4 • Hardback • June 2002 • 170 pages • £75


Prostasomes are prostate-derived, submicron secretory granules that are present in seminal fluid. Recent research has led to an increased understanding of their biological function. They participate in the normal fertilization process, promote forward sperm motility, have immunosuppressive and antibacterial effects, and can inhibit the complement pathway. The complex protein composition and high cholesterol/phospholipid ratio of the prostasome membrane gives rise to this pluripotent nature.

Describing new knowledge about a relatively unknown granular constituent of semen, Prostasomes contains contributions from many of the leading researchers in this field and focuses on the various functional and biochemical properties of these structures.

Presenting a cross-section of the research that is now in progress in many laboratories, this volume should stimulate further work in this active research field and provide new ideas for future studies.

Essential reading
Essential reading for postgraduates, researchers, lecturers and clinicians.

Contents

• Prostasomes, G. Ronquist, L. Carlsson, A. Larsson and B.O. Nilsson
• Visualizing prostasomes: ultrastructure of the secretory machinery in prostate epithelium from benign prostate hyperplasia and prostate adenocarcinoma, G. Sahlen, L. Egevad, A. Ahlander, B.J. Norlen, Gunnar Ranquist and B.O. Nilsson
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Glycogenomics:
The Impact of Genomics and Informatics in Glycobiology

Editors: K. Drickamer, Oxford, UK
A. Dell, Imperial College London, UK

1 85578 154 9 • October 2002 • 170 pages • £65.00

Glycogenomics: The Impact of Genomics and Informatics in Glycobiology highlights the special challenges of connecting genomic information with the biochemical processes of glycobiology.

Sugars that decorate the surfaces of proteins and cells represent a unique form of information that is used in communication both within and between cells. The science of glycobiology examines the roles of these glycans in protein trafficking, cell–cell adhesion, organization of the extracellular matrix, signalling and other processes. Because sugars are not encoded directly in genomes, the enzymes that assemble complex oligosaccharides, and the lectins that recognize them, provides essential links between genomes and glycobiology. The availability of complete genome sequences provides an opportunity to take a global view of the field.

Glycogenomics: The Impact of Genomics and Informatics in Glycobiology
Focuses on what can be learned about the biological functions of glycans from the genomic analysis of lectins and biosynthetic enzymes
Explores special tactics that are needed to develop an overview of the glycans that are present in an organism
Highlights both the advantages and limitations of working with simpler model organisms
Illustrates not only what can be learned, but also provides speculation on how the field of glycobiology will develop in the future

This book will be of interest to those working in the field of glycobiology and the related disciplines of intracellular trafficking and cell adhesion, as well as to those involved in bioinformatics and functional genomics.

Also available to pay per view at http://www.portlandpress.com/bssymp

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