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KEY=SITU - HEIDI RICHARD

IN SITU HYBRIDIZATION IN ELECTRON MICROSCOPY

CRC Press In situ hybridization is a technique that allows for the visualization of specific DNA and RNA sequences in individual cells, and is an especially important method for studying nucleic acids in heterogeneous cell populations. in situ Hybridization in Electron Microscopy reviews the three main methods developed for the ultrastructural visualization of genes: ° hybridization on ultrathin sections of tissue embedded in hydrophilic resin (post-embedding method) ° hybridization prior to embedding (pre-embedding) ° hybridization on ultrathin sections of frozen tissue (frozen tissue method). For each technique, the different stages are described in detail: the preparation of tissue, pretreatment, hybridization, and visualization of the hybridization products. The book combines theory and practice, starting with the basic principles, then breaking down the experimental process into successive steps illustrated by numerous diagrams, detailed protocols, and tables. This is all done in a format that uses parallel columns to convey useful comments next to the theory and practical details alongside each stage of the protocol. Additionally, the summary tables provide the criteria for choosing the probe type and technique, and a detailed index aids in the search for information. in situ Hybridization In Electron Microscopy is an essential companion for applying these methods at the electron microscopic level.

HYBRIDIZATION TECHNIQUES FOR ELECTRON MICROSCOPY

CRC Press Hybridization Techniques for Electron Microscopy examines the use of in situ hybridization techniques, including an overview of current perspectives and future developments. The book features in situ methods for fluorescence probes and confocal scanning microscopes. Three in situ hybridization methods for electron microscopes are analyzed: the non-embedded tissue method using ultrathin frozen sections, pre-embedded method, and post-embedded method using material embedded in hydrophilic resin. Positive and negative features are discussed, and clear instructions regarding implementation of techniques are provided. Particular aspects of the techniques are examined in detail, such as preparation of tissue, pretreatment, hybridization procedures, revelation (autoradiography and immunocytology) and checking procedures, in addition to the illustration, interpretation, and discussion of methods and results. The main applications described include virus detection, chromosomal gene mapping, detection of ribosomic nucleic acid, and detection of messenger RNA in animals and plants. Hybridization Techniques for Electron Microscopy is an excellent reference for cytologists, cell biologists, histochemists, cytochemists, molecular endocrinologists, and neuroendocrinologists.

VISUALIZATION OF RECEPTORS

CRC Press A multiplicity of methods for visualization are described in Visualization of Receptors. This book of techniques covers immunocytology, radioautography, in situ hybridization, plasmon resonance, RT in vitro PCR, and X-ray crystal structure analysis. Lecturers, researchers, practitioners, technicians, and students will find all the principles and protocols they require and the means of implementing them. Topics discussed include localization of ligands (in vitro or in vivo), visualization of immunoreactivities of ligand and receptor proteins, detection and quantification of mRNA expression, amplification of signals, and determination of 3-D structure. Details of protocols with illustrations of results and commentaries are provided throughout the book.

VISUALIZATION OF NUCLEIC ACIDS

CRC Press This book presents a review of the principle approaches for visualizing DNA and RNA. Using scanning tunneling and atomic force microscopes, the three-dimensional image of the surface of nucleic acids can be seen at atomic-scale resolutions. Spreading methods provide useful details on structural features of isolated molecules, but the major constituent of living matter is water, and the cryomicroscope makes it possible to look at DNA in its aqueous environment. Genes can be detected simultaneously in situ in chromosomes using fluorescent probes, and also at the electron microscopic level. In cells, nucleic acids are localized and quantified by dyes; electron microscopy is used with cytochemical, immunocytological, nuclease, and in situ hybridization methods. The main potential applications for pathological studies are shown with particular aspects such as viral nucleic acids and in situ PCR.

BIOIMAGING: CURRENT CONCEPTS IN LIGHT & ELECTRON MICROSCOPY

Jones & Bartlett Publishers The development of microscopy revolutionized the world of cell and molecular biology as we once knew it and will continue to play an important role in future discoveries. Bioimaging: Current Concepts in Light and Electron Microscopy is the optimal text for any undergraduate or graduate bioimaging course, and will serve as an important reference tool for the research scientist. This unique text covers, in great depth, both light and electron microscopy, as well as other structure and imaging techniques like x-ray crystallography and atomic force microscopy. Written in a user-friendly style and covering a broad range of

topics, Bioimaging describes the state-of-the-art technologies that have powered the field to the forefront of cellular and molecular biological research. Important Notice: The digital edition of this book is missing some of the images or content found in the physical edition.

IN SITU HYBRIDIZATION IN ELECTRON MICROSCOPY

CRC Press In situ hybridization is a technique that allows for the visualization of specific DNA and RNA sequences in individual cells, and is an especially important method for studying nucleic acids in heterogeneous cell populations. in situ Hybridization in Electron Microscopy reviews the three main methods developed for the ultrastructural visualization

TRIPLE-HELICAL NUCLEIC ACIDS

Springer Science & Business Media The ability of DNA to exist in configurations other than its classical double-stranded form has been known for many years. There has been a spectacular recent surge of interest in these forms, notably in the three-stranded or triple-helical form. Triplex-like nucleic acids are now known to exist in vivo, and may well participate in significant biological processes. Interest in triple-helical nucleic acids has been greatly stimulated by their potential exploitation to control gene expression, serve as tools in genome mapping strategies, etc. The authors have written an encyclopedic introduction to nucleic acid triplexes based on many years of familiarity with the topic. The book includes information on chemistry, conformation, physical properties, applications, and hypotheses about the biological role of triplexes. It pays particular attention to the different methods for investigating these molecules, a feature which will be welcomed by those new to the field.

HISTOCHEMICAL AND CYTOCHEMICAL METHODS OF VISUALIZATION

CRC Press Histochemistry and cytochemistry are important fields for studying the inner workings of cells and tissues of the body. While visualization techniques have been in use for many years, new methods of detection developed recently help researchers and practitioners better understand cell activity. Histochemical and Cytochemical Methods of Visualizatio

ELECTRON MICROSCOPY OF PLANT CELLS

Academic Press Electron Microscopy of Plant Cells serves as manual or reference of major modern techniques used to prepare plant material for transmission and scanning electron microscopy. There have been other books that generally discuss electron microscope methodology. This book focuses on problem areas encountered through the presence of tough cell walls and large central vacuole. It details preparative techniques for botanical specimens. Each of the nine chapters of this book covers the basic principles, useful applications, and reliable procedures used on the method of electron microscopy. Other topics discussed in each chapter include the general preparation and straining of thin sections, quantitative morphological analysis, and enzyme cytochemistry. This book also explains the immunogold labelling, rapid-freezing methods, and ambient- and low-temperature scanning electron microscopy among others. This book will be invaluable to general scientists, biologists, botanists, and students specializing in plant anatomy.

MORPHOLOGY METHODS

CELL AND MOLECULAR BIOLOGY TECHNIQUES

Springer Science & Business Media The past several decades have witnessed an impressive array of conceptual and techno logical advances in the biomedical sciences. Much of the progress in this area has developed directly as a result of new morphology-based methods that have permitted the assessment of chemical, enzymatic, immunological, and molecular parameters at the cellular and tissue levels. Additional novel approaches including laser capture microdissection have also emerged for the acquisition of homogeneous cell popula tions for molecular analyses. These methodologies have literally reshaped the approaches to fundamental biological questions and have also had a major impact in the area of diagnostic pathology. Much of the groundwork for the development of morphological methods was estab th lished in the early part of the 19 century by Francois-Vincent Raspail, generally acknowledged as the founder of the science of histochemistry. The earliest work in the field was primarily in the hands of botanists and many of the approaches to the under standing of the chemical composition of cells and tissues involved techniques such as microincineration, which destroyed structural integrity. The development of aniline th dyes in the early 20 century served as a major impetus to studies of the structural rather than chemical composition of tissue. Later in the century, however, the focus returned to the identification of chemical constituents in the context of intact cell and tissue structure.

IMMUNOCYTOCHEMISTRY

THEORY AND PRACTICE

CRC Press A complete and balanced overview of all aspects of immunocytochemistry is presented providing a clear understanding of their impact on experiment. All available techniques and many diagnostic and research applications are included, as well as practical step-by-step instructions for carrying out recommended methods. Intended for the novice as well as the experienced researchers.

CUMULATED INDEX MEDICUS

ADVANCED TECHNIQUES IN BIOLOGICAL ELECTRON MICROSCOPY II

SPECIFIC ULTRASTRUCTURAL PROBES

Springer Science & Business Media The use of the term "advanced" in the title of this book is somewhat ar bitrary and very much relative with respect to time. Many techniques which were considered at the "cutting edge" of ultrastructural methodology just a few

years ago are now rou tin ely used in numerous laboratories. One could cite freeze-fracture, cryothin sectioning, or indeed most of the field of scan ning electron microscopy as concrete examples. Thus the use of the term "ad vanced techniques" must be interpreted with regard to the present state of the art, and is useful only in informing the potential reader that this volume is not a primer to be used as an initial introduction into basic biological elec tron microscopy. Many excellent volumes have filled that niche in the past few years, and it is not intended that this modest book be a complete com pendium of the field. Furthermore, any limited selection of papers on advanc ed techniques necessarily reflects the preferences and arbitrary whims of the editor, thereby excluding many equally important procedures which the knowledgeable reader will readily identify. The first volume of this series appeared approximately five years ago and illustrated techniques which were thought to represent advanced and yet ba sically morphological methods for gaining increased ultrastructural informa tion from biological specimens. The present volume, on the other hand, stresses techniques which provide specific physicochemical data on the speci mens in addition to the structural information.

IMMUNO-GOLD ELECTRON MICROSCOPY IN VIRUS DIAGNOSIS AND RESEARCH

CRC Press This book presents a wide variety of immuno-gold techniques for use in virus diagnosis and research. Protocols are presented for state-of-the-art techniques, including in situ hybridization, freeze substitution, and the utilization of ultra-small probes and replicas for use by virologists and electron microscopists identifying and studying viruses, their components, and replication in cells. The procedures are described by eminent scientists and are pertinent to both experienced researchers and newcomers to this field who are interested in the localization of low antigenic mass structures.

HISTOLOGY, ULTRASTRUCTURE AND MOLECULAR CYTOLOGY OF PLANT-MICROORGANISM INTERACTIONS

Springer Science & Business Media Plants interact with a large number of microoganisms which have a major impact on their growth either by establishing mutually beneficial symbiotic relationships or by developing as pathogens at the expense of the plant with deleterious effects. These microorganisms differ greatly not only in their nature (viruses, phytoplasmas, bacteria, fungi, nematodes, ...) but also in the way they contact, penetrate and invade their host. Histology and cytology have brought an essential contribution to our knowledge of these phenomena. They have told us for instance, how specialized structures of the pathogen are often involved in the adhesion and penetration into the plant, how the interface between both organisms is finely arranged at the cellular level, or what structural alterations affect the infected tissues. They have thus set the stage for the investigations of the underlying molecular mechanisms could be undertaken. Such investigations have been remarkably successful in the recent years, expanding considerably our understanding of plant-microorganism interactions in terms of biochemical changes, rapid modifications of enzymatic activities, coordinated gene activation, signal reception and transduction. Biochemistry, molecular biology and cellular physiology have taken precedence in the phytopathologist's set of methods.

ELECTRON MICROSCOPY

METHODS AND PROTOCOLS[

Springer Science & Business Media In Electron Microscopy Methods and Protocols, well-practiced experts describe in detail the key electron microscopy techniques used for examining cells, tissue, biological macromolecules, molecular structure, and their interactions. With emphasis on cryotechniques for quantitative biological X-ray microanalysis, the book also includes those methods that use antibodies to locate proteins within cells and that prepare and analyze nucleic acids, proteins, and protein-nucleic acid complexes. Numerous immunogold labeling techniques for precise ultrastructural localization, distribution, and quantitation of macromolecules in cryo-fixed or chemically-fixed cells are described in sufficient detail to provide practical insight into their advantages and limitations. Electron Microscopy Methods and Protocols offers both newcomers and established researchers wanting to expand their repertoire of cutting-edge electron microscopy techniques-each optimized for reproducibility and robust results-today's gold-standard laboratory manual.

PATHOLOGY OF THE DEVELOPING MOUSE

A SYSTEMATIC APPROACH

CRC Press Pathology of the Developing Mouse provides, in so far as feasible, one complete reference on the design, analysis, and interpretation of abnormal findings that may be detected in developing mice before and shortly after birth. In particular, this book is designed specifically to be not only a "how to do" manual for developmental pathology experimentation in mice but, more importantly, a "how to interpret" resource for pathologists and other biomedical scientists faced for the first or hundredth time with defining the significance of distorted features in some fantastic murine developmental monstrosity. The topics covered in this volume include a full range of subjects encountered when building and wielding a developmental pathology tool kit: baseline anatomic and physiologic traits of developing mice principles of good experimental design and statistical analysis for mouse developmental pathology studies procedures for anatomic pathology examinations, to evaluate structural changes at the macroscopic (gross), microscopic (cells and tissues), and ultrastructural (subcellular) levels, suing conventional autopsy-based or novel non-invasive imaging techniques; methods for clinical pathology testing, to assess the biochemical and cellular composition of tissues and fluids; options and protocols for in situ molecular pathology analysis, to undertake site-specific explorations of the various mechanisms responsible for producing adverse findings (i.e., "lesions") during development; and well-referenced and illustrated guides to the interpretation of anatomic pathology and clinical pathology changes in the animal (embryos, fetuses, neonates, and juveniles) and its support system (placenta).

BIOANALYTICAL CHEMISTRY

John Wiley & Sons A timely, accessible survey of the multidisciplinary field of bioanalytical chemistry Provides an all in one approach

for both beginners and experts, from a broad range of backgrounds, covering introductions, theory, advanced concepts and diverse applications for each method Each chapter progresses from basic concepts to applications involving real samples Includes three new chapters on Biomimetic Materials, Lab-on-Chip, and Analytical Methods Contains end-of-chapter problems and an appendix with selected answers

MOLECULAR MORPHOLOGY IN HUMAN TISSUES

TECHNIQUES AND APPLICATIONS

CRC Press Molecular Morphology in Human Tissues: Techniques and Applications presents the most advanced molecular morphological techniques to date. This integrated approach to molecular morphology provides powerful analytical and diagnostic tools at the genome level, making the diagnosis and management of cancer, viral infections, and other diseases more pre

THEORY AND PRACTICE OF HISTOLOGICAL TECHNIQUES

Elsevier Health Sciences This leading reference work on histological techniques is an essential and invaluable resource no matter what part you play in histological preparations and applications, whether you're a student or a highly experienced laboratory professional.

NEW MESSENGER RNA RESEARCH COMMUNICATIONS

Nova Publishers mRNA (messenger RNA) is the mediating template between DNA and proteins. The information from a particular gene is transferred from a strand of DNA by the construction of a complementary strand of RNA through a process known as transcription. Next three nucleotide segments of RNA, called tRNA (transfer RNA), which are attached to specific amino acids, match up with the template strand of mRNA to order the amino acids correctly. These amino acids are then bonded together to form a protein. This process, called translation occurs in the ribosome, which is composed of proteins and the third kind of RNA, rRNA (ribosomal RNA). This book presents research from around the world in this dynamic field.

RECENT ADVANCES IN THE DIAGNOSIS AND MANAGEMENT OF PLANT DISEASES

Springer This book is a compilation of the most challenging and significant chapters on the diagnosis and management of important bacterial, fungal, viral, viroid, phytoplasma, non parasitic diseases and various physiological disorders, in various crops. The chapters have been contributed by eminent plant pathologists, having wide experience of teaching and research on various crops with different types of diseases, which cause great economic losses. The book would be very useful for students, teachers and researchers of plant pathology. This book highlights recent advances made in the development of new types of resistance in host plants and alternative strategies for managing plant diseases to improve food quality and reduce the negative public health impact associated with plant diseases. Having entered into 21st century advancements in the Diagnosis of Plant Pathogens and Plant Disease Management need to be closely examined and adequately applied, so that newer challenges facing plant pathology could be adequately addressed in attaining food security for the growing population. Substantial advancements have been made in terms of expanding knowledge base of the biology of plant-microbial interactions, disease management strategies and application and practice of Plant Pathology. Application of molecular biology in Plant Pathology has greatly improved our ability to detect plant pathogens and in increasing our understanding, their ecology and epidemiology. Similarly, new technologies and resources have been evolved for the development of sustainable crop protection systems by different control strategies against various pests and pathogens that are important components of the integrated pest management programme. Natural products and chemical compounds discovered as a result of basic research and molecular mechanisms of pathogenesis have led to the development of “biorational” pesticides. Biological control has been found to be the most significant approach to plant health management during the twentieth century and promises using modern biotechnology, to be even more significant in the twenty-first century.

ELECTRON MICROSCOPY IN VIRAL DIAGNOSIS

CRC Press This text on electron microscopy in viral diagnosis is an invaluable reference investigators interested in the detection of viruses or viral subcomponents in liquid preparations or in thin sectioned cells. It contains an extensive collection of negative stain, thin section, and immunolabelled electron micrographs useful for reference viral diagnosis. The salient features of the replication of many virus families are presented in schematic form and all viruses now known to cause disease in humans, including the recently recognized human retroviruses, are described in separate chapter.

GOLD AND SILVER STAINING

TECHNIQUES IN MOLECULAR MORPHOLOGY

CRC Press Immunogold silver staining is one of the most sensitive techniques available for visualizing the location of antibodies and nucleotide probes that have been bounded to specific antigens or to nucleotide sequences. As gold and silver staining continues to advance research in molecular morphology, this book presents the information you need to know about the various staining methods, their useful applications, and the advantages and drawbacks of each process. Gold and Silver Staining: Techniques in Molecular Morphology provides a timely description of approaches, methods, protocols, and applications. The contributors cover the latest developments and a wide range of applications from highly sensitive detection of antigens to single copy detection of DNA and RNA. Some of the authors are "living legends" in the field and bring their expertise and experience to this fine collaboration. Written in one consistent style, each chapter includes a concise, but comprehensive introduction, step-by-step protocols with technical hints, and a discussion of results and critical steps. What differentiates this book from all others like it, is the status of the editors, who have worked on this technique from its inception and have produced innumerable publications on the topic. The other distinguishing feature is that all of the contributors are amongst the absolute foremost leaders from the United States and Europe. Gold and Silver Staining:

Techniques in Molecular Morphology presents a complete overview and detailed descriptions of this technique that allows the visualization of molecules that have never been localized before and with hitherto unknown sensitivity. Not only does this book provide an excellent review of this field, but it also serves as a lab manual for those who want to carry out this technique in their laboratory and clinical work. Armed with this information, advances in this powerful field of research will ensue.

IN SITU HYBRIDIZATION HISTOCHEMISTRY

CRC Press The goal of this fascinating new book is to review the diversity of methods available to apply in situ hybridization histochemistry (ISHH) to a variety of experimental questions. This work includes topics such as synthesis and use of nick-translated DNA probes for ISHH, synthesis and use of oligomeric DNA probes for ISHH, and synthesis and use of RNA probes for ISHH. These interesting chapters describe the preparation of different radiolabeled probes for ISHH. They also discuss their respective advantages and limitations, and describe current results based on the use of these various probes. Sections of the text highlight low and high resolution autoradiography for ISHH, the use of biotin-labeled probes for ISHH, as well as the use of ISHH in combination with established anatomical techniques. In Situ Hybridization Histochemistry answers all of your questions regarding the quantification of ISHH. It also provides a practical description of typical protocols, both from molecular biology and histology. Investigators will understand and value this useful, powerful tool-whatever their backgrounds might be.

BIOMEDICAL TECHNOLOGY RESOURCES

A RESEARCH RESOURCES DIRECTORY

DIANE Publishing Promotes access to a network of biomedical technology resource centers throughout the nation. These centers make state-of-the-art technologies & methods available to thousands of biomedical investigators each year. The directory is organized into scientific areas: biomedical computing, biochemical materials, biomedical engineering, non-invasive imaging & spectroscopy, & cellular & molecular structure & function. Each entry includes the principal investigator & control person, the research being conducted, & capabilities of the resource that are available to outside investigators.

NONRADIOACTIVE ANALYSIS OF BIOMOLECULES

Springer Science & Business Media New techniques and updated protocols for the detection and analysis of biomolecules - proteins, glycoproteins and nucleic acids. The second edition of this successful laboratory manual describes in detail the highly sensitive systems which are widely used in molecular biological and biomedical laboratories, such as colorimetric, luminescence, fluorescence measuring using antibody/antigen binding or hybridisation as well as PCR amplification. The clearly structured step-by-step protocols with practical hints and a troubleshooting guide are complemented by chapters on the theoretical background and the application of the techniques, enabling scientists to plan, design and conduct the appropriate procedures.

INTERNATIONAL REVIEW OF CYTOLOGY

Academic Press International Review of Cytology presents current advances and comprehensive reviews in cell biology-both plant and animal. Articles address structure and control of gene expression, nucleocytoplasmic interactions, control of cell development and differentiation, and cell transformation and growth. Authored by some of the foremost scientists in the field, each volume provides up-to-date information and directions for future research.

CONGENITAL HEART DISEASES: THE BROKEN HEART

CLINICAL FEATURES, HUMAN GENETICS AND MOLECULAR PATHWAYS

Springer This book provides comprehensive insights into congenital heart disease from embryonic development through to clinical features, including human genetics and our current knowledge of the underlying molecular pathways. It is divided into three parts: an introduction to the development of the heart and its vessels, an overview of the molecular pathways affecting the development of various cardiovascular structures, and a main section focusing on the different types of structural and nonstructural congenital heart diseases, including their clinical features, underlying genetic alterations and related animal models and pathways. Taken together these chapters, which were written by and for clinicians and researchers, provide an integrated and cutting-edge resource for all those who want to learn more about both the clinical aspects and the genetic and molecular basis of congenital heart disease.

INTRODUCTION TO BIOPHYSICAL METHODS FOR PROTEIN AND NUCLEIC ACID RESEARCH

Academic Press The first of its kind, Introduction to Biophysical Methods for Protein and Nucleic Acid Research serves as a text for the experienced researcher and student requiring an introduction to the field. Each chapter presents a description of the physical basis of the method, the type of information that may be obtained with the method, how data should be analyzed and interpreted and, where appropriate, practical tips about procedures and equipment. Key Features * Modern Use of Mass Spectroscopy * NMR Spectroscopy * Molecular Modeling and Graphics * Macintosh and DOS/Windows 3.x disks

CURRENT CANCER RESEARCH 1986

Springer Science & Business Media

MODERN METHODS IN ANALYTICAL MORPHOLOGY

Springer Science & Business Media While advances in modem medicine largely parallel our understanding of morphology, discoveries in morphology are propelled by developments of new tools and means to visualize and measure tissue elements. The invention of dissecting, light, fluorescence and electron microscopes together with advances in labeling and staining techniques are among the stepping stones of morphological progress. Today, we are in an exciting new era when classical morphology is being combined with developments from other disciplines. The combination of morphology and immunology resulted in immunocytochemistry; morphology and molecular biology led to in situ hybridization and in situ PCR. Adding computer science to morphology gave birth to image analysis. Combining laser technology and the microsope evolved into confocal microscope. For more than a decade, modem morphology has continued to develop by merging with other disciplines at a rate that is still gathering momentum, providing exciting and dynamic new frontiers for other biological fields. "Modem Methods in Analytical Morphology," based largely on the "First International Workshop on Modem Methods in Analytical Histochemistry, "is an updated review of the current trends in the field. It covers an extensive array of new technical developments in major disciplines of modem morphology. The authors are not only leaders in their fields but also have extensive "hands on" experience with "bench work. " Their chapters are written in a comprehensive manner including discussion of both theoretical considerations and practical applications to give the readers a broad view of the topics covered.

ADVANCES IN HUMAN GENETICS

Springer Science & Business Media From reviews of previous volumes in the series: 'Extremely valuable...thoroughly recommended.'-Annals of Human Genetics 'The most lucid and stimulating discussions of the topic to be found anywhere.'-American Scientist

MOLECULAR DIVERSITY OF ENVIRONMENTAL PROKARYOTES

CRC Press This book correlates the vast genetic diversity associated with environmental samples and still underexploited potential for the development of biotechnology products. The book points out the potential of different types of environmental samples. It presents the main characteristics of microbial diversity, the main approaches used for molecular characterization of the diversity, and practical examples of application of the exploration of the microbial diversity. It presents a not-yet-explored structure for discussing the main topics related to molecular biology of environmental prokaryotes and their biotechnological applications.

RECEPTOR LOCALIZATION

LABORATORY METHODS AND PROCEDURES

John Wiley & Sons The detection of neurotransmitter receptor locations and distribution densities within the central nervous system and peripheral tissues is receiving intense attention within the neuroscience research community. Neurotransmitter receptors, which receive the chemical signals sent from one neuron to another, are critical links in a highly complex information-processing chain. Pinpointing receptor sites and systems is crucial for understanding neurological function as well as dysfunction. It is also essential for understanding how receptors process information when impacted by such substances as heroin or nicotine, or when affected by neurodegenerative disease. Receptor Localization: Laboratory Methods and Procedures is the first user-friendly guide to the latest techniques and approaches being employed to examine the localization of neurotransmitter receptors in the central nervous system and peripheral tissues. It covers detection methods that are applicable to a wide variety of receptor systems, ranging from genes and ligands to in vito receptors in individuals; and to numerous receptor subtypes, such as nicotine, muscarine, tackykinins, dopamine, adenosine, and GABA. The standard laboratory "recipes" or "tricks" employed in these detection methods are fully discussed, as are the advantages and limitations of each procedure. With contributions from leading experts and extensively illustrated, this book: * Discusses receptor ligand binding methods using irreversible and reversible compounds * Presents antireceptor antisera technology using synthetic peptides and fusion proteins at both the cellular and subcellular resolution levels * Examines molecular assessments of receptors * Describes in situ hybridization, reverse transcriptase-PCR, and fluorescent in situ transcription * Covers new visualization paradigms * Includes physiological analysis of receptor function, cellular detection in the brain slice, and cultured neurons * Discusses the use of PET and SPECT to assess in vivo receptor distributions in animals and humans Receptor Localization: Laboratory Methods and Procedures is an invaluable guide for researchers in the related fields of neurology, biochemistry, and pharmacology. Its lucid descriptions of new detection methods, inclusion of experimental examples, and emphasis on how these experimental approaches are applicable to particular research areas will appeal to both the experienced researcher and novice investigator.

MOLECULAR HISTOCHEMICAL TECHNIQUES

Springer Science & Business Media Detailed protocols for analyzing DNA strand breaks, specific RNA/DNA expressions, and DNA binding proteins such as transcription factors at the individual cell level. It describes in situ nick translation and TUNEL in detail, along with radioactive and non-radioactive methods for in situ hybridization. Of special significance is the description of Southwestern histochemistry, which makes it possible to analyze the expression of transcription regulatory factors in individual cells. This volume provides an overview of the current status of molecular histochemistry along with practical how-to-do-it details. The methodology is set out in easy-to-follow language by leading scientists working in the field today. Both a rich source of the latest information and a practical lab manual.

TECHNIQUES IN IMMUNOCYTOCHEMISTRY

Academic Press Once again, the text is fully illustrated with high quality color and black-and-white photographs, and carefully organized so as to aid both the newcomer and the established researcher to extend his or her field of expertise. In situ hybridization

for the detection of cellular products Low temperature techniques and their applications Silver enhancement technology Immunocytochemistry of excitatory amino acids in the brain

DROSOPHILA MELANOGASTER: PRACTICAL USES IN CELL AND MOLECULAR BIOLOGY

Academic Press Drosophila melanogaster: Practical Uses in Cell and Molecular Biology is a compendium of mostly short technical chapters designed to provide state-of-the art methods to the broad community of cell biologists, and to put molecular and cell biological studies of flies into perspective. The book makes the baroque aspects of genetic nomenclature and procedure accessible to cell biologists. It also contains a wealth of technical information for beginning or advanced Drosophila workers. Chapters, written within a year of publication, make this topical volume a valuable laboratory guide today and an excellent general reference for the future. Key Features * Collection of ready-to-use, state-of-the art methods for modern cell biological and related research using Drosophila melanogaster * Accessible to both experienced Drosophila researchers and to others who wish to join in at the cutting edge of this system * Drosophila offers an easily managed life cycle, inexpensive lifestyle, extraordinarily manipulable molecular and classical genetics, now combined with powerful new cell biology techniques * Introduction and overview sections orient the user to the Drosophila literature and lore * Six full-color plates and over 100 figures and tables enhance the understanding of these cell biology techniques

ORBAN'S ORAL HISTOLOGY AND EMBRYOLOGY

Elsevier India