



[eBooks] Principles And Applications Of Molecular Diagnostics

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Principles and Applications of Molecular Diagnostics

Principles and Applications of Molecular Diagnostics-Nader Rifai 2018-06-13 Principles and Applications of Molecular Diagnostics serves as a comprehensive guide for clinical laboratory professionals applying molecular technology to clinical diagnosis. The first half of the book covers principles and analytical concepts in molecular diagnostics such as genomes and variants, nucleic acids isolation and amplification methods, and measurement techniques, circulating tumor cells, and plasma DNA, the second half presents clinical applications of molecular diagnostics in genetic disease, infectious disease, hematopoietic malignancies, solid tumors, prenatal diagnosis, pharmacogenetics, and identity testing. A thorough yet succinct guide to using molecular testing technology, Principles and Applications of Molecular Diagnostics is an essential resource for laboratory professionals, biologists, chemists, pharmaceutical and biotech researchers, and manufacturers of molecular diagnostics kits and instruments. Explains the principles and tools of molecular biology Describes standard and state-of-the-art molecular techniques for obtaining qualitative and quantitative results Provides a detailed description of current molecular applications used to solve diagnostics tasks

Principles and Applications of Molecular Diagnostics

BioMEMS, MicroTAS among others. The miniaturization of versatile molecular sensors opens up a new design paradigm and a range of novel biotechnologies, which is illustrated through case studies of groundbreaking applications in the life sciences and elsewhere. As well as the techniques and devices themselves, the authors also cover the critical issues of implantability, biocompatibility and the regulatory framework. The book is aimed at a broad audience of engineering professionals, life scientists and students working in the multidisciplinary area of biomedical engineering. It explains essential principles of electrical, chemical, optical and mechanical engineering as well as biomedical science, intended for readers with a variety of scientific backgrounds. In addition, it will be valuable for medical professionals and researchers. An online tutorial developed by the authors provides learning reinforcement for students and professionals alike. Reviews of state-of-the-art molecular sensors and nanotechnologies Explains principles of sensors and fundamental theories with homework problems at the end of each chapter to facilitate learning Demystifies the vertical integration from nanomaterials to devices design Covers practical applications the recent progress in state-of-the-art sensor technologies Includes case studies of important commercial products Covers the critical issues of implantability, biocompatibility and the regulatory framework

Bionanotechnology-Anil Kumar Anal 2018-02-02 This book deals with a subject of high interest and importance in all sectors, including biomedical, food, agriculture, energy, and environment. Biological systems are essential in nanotechnology, and many new applications are being developed by mimicking the natural systems. Approaching these topics from an engineering perspective, the book offers insight on the details of nanoscale fabrication processes as well as cell biology. The basics of biology and chemistry, with a focus on how to engineer the behavior of molecules at the nanoscale, are also explored and analyzed. The aim of the text is to provide the reader with broader knowledge of biological methods for signal transduction and molecular recognitions systems and how they can be replicated in bio-sensing applications. The reader will learn the basic structures and interactions of biomacromolecules for developing biocompatible and eco-friendly devices.

Applied Molecular Genetics-Roger L. Miesfeld 1999-04-13 This text explains the key biochemical and cell biological principles behind some of today's most commonly used applications of molecular genetics, using clear terms and well-illustrated flow schemes. The book is divided into several sections and moves from basic to advanced topics while providing a concise overview of fundamental concepts in modern biotechnology. Each chapter concludes with a Laboratory Practicum describing a hypothetical research objective and the sequence of steps that are most often used to investigate biological questions using molecular genetic methods. In addition, the book provides informative summaries of the latest advances in molecular genetics, using attractive illustrations and a comprehensive reference list. This text also introduces the use of Internet resources through the World Wide Web as a powerful new tool in molecular genetic research. Seven appendices are included in the book, providing a convenient information resource for properties of nucleic acids, protein and restriction enzymes, a description of common E. coli genetic markers and gel electrophoresis parameters, as well as a list of useful Internet address sites.

Principles and Applications of ESR Spectroscopy-Anders Lund 2011-01-04 Principles and Applications of ESR Spectroscopy fills the gap between the detailed monographs in ESR spectroscopy and the general

structure and AIE AIE-active polymers Enhanced emission by restriction of molecular rotation Crystallization-induced emission enhancement Theoretical understanding of AIE phenomena This book is essential reading for scientists and engineers whoare designing optoelectronic materials and biomedical sensors, andwill also be of interest to academic researchers in materialsscience and physical and synthetic organic chemistry, as well asphysicists and biological chemists.

Diagnostic Molecular Microbiology-David H. Persing 1993 Diagnostic Molecular Microbiology is the first major text to provide complete coverage of both the principles and applications of molecular diagnostic methods as they pertain to infectious diseases. Written and edited by leading international experts, this text provides both the theoretical and practical framework for understanding the powerful uses of nucleic acid amplification technologies and for applying these techniques to the rapid detection and characterisation of microbial pathogens (bacterial, viral, fungal, parasitic) in the clinical laboratory. The nine chapters in part 1: Principles summarise the basic theory underlying the emerging discipline of molecular diagnostics. The sixty-six protocols in part 2: Applications, offer proven applications of molecular diagnostic techniques for the diagnosis of infectious diseases. Written in the tradition of ASM's other classic manuals, this book provides a valuable reference and teaching tool for any clinical microbiology laboratory.

Molecular Diversity and Combinatorial Chemistry-Michael C. Pirrung 2004-10-31 Written for advanced undergraduate and graduate students, this textbook makes the main concepts of combinatorial chemistry accessible to the non-specialist.

Medical Biotechnology-Bernard R. Glick 2020-08-06 The future is now—this groundbreaking textbook illustrates how biotechnology has radically changed the way we think about health care Biotechnology is delivering not only new products to diagnose, prevent, and treat human disease but entirely new approaches to a wide range of difficult biomedical challenges. Because of advances in biotechnology, hundreds of new therapeutic agents, diagnostic tests, and vaccines have been developed and are available in the marketplace. In this jargon-free, easy-to-read textbook, the authors demystify the discipline of medical biotechnology and present a roadmap that provides a fundamental understanding of the wide-ranging approaches pursued by scientists to diagnose, prevent, and treat medical conditions. Medical Biotechnology is written to educate premed and medical students, dental students, pharmacists, optometrists, nurses, nutritionists, genetic counselors, hospital administrators, and individuals who are stakeholders in the understanding and advancement of biotechnology and its impact on the practice of modern medicine. Hardcover, 700 pages, full-color illustrations throughout, glossary, index.

Principles and Techniques of Biochemistry and Molecular Biology-Keith Wilson 2010-03-04 This best-selling undergraduate textbook provides an introduction to key experimental techniques from across the biosciences. It uniquely integrates the theories and practices that drive the fields of biology and medicine, comprehensively covering both the methods students will encounter in lab classes and those that underpin recent advances and discoveries. Its problem-solving approach continues with worked examples that set a challenge and then show students how the challenge is met. New to this edition are case studies, for example, that illustrate the relevance of the principles and techniques to the diagnosis and treatment of individual patients. Coverage is expanded to include a section on stem cells, chapters on immunochemical techniques and spectroscopy techniques, and additional chapters on drug discovery and development, and clinical biochemistry. Experimental design and the statistical analysis of data are emphasised throughout to ensure students are equipped to successfully plan their own experiments and examine the results obtained.

Principles and Applications of Stereochemistry-Michael North 2017-10-19 A thorough understanding of stereochemistry is essential for the comprehension of almost all aspects of modern organic chemistry. It is also of great significance in many biochemical and medicinal disciplines, since the stereoisomers of a compound can have dramatically different biological properties. This text explains how the different properties of stereoisomers of a compound arise, and what processes can be used to prepare and analyze stereoisomerically pure compounds. It also presents prominent coverage of the stereochemistry of inorganic and organometallic compounds, which is likely to increase in importance, as these compounds are used as symmetric catalysts in asymmetric synthesis. Modern stereochemical terminology is used throughout, although reference is also made to older terms which are still widely used. A set of problems at the end of each chapter aims to further the reader's understanding of how the content can be applied. The book is designed mainly as a textbook for undergraduate students and as a reference source for more advanced levels, but is also intended for academic and professional organic chemists.

Diagnostic Molecular Biology-Chang-Hui Shen 2019-04-02 Diagnostic Molecular Biology describes the fundamentals of molecular biology in a clear, concise manner to aid in the comprehension of this complex subject. Each technique described in this book is explained within its conceptual framework to enhance understanding. The targeted approach covers the principles of molecular biology including the basic knowledge of nucleic acids, proteins, and genomes as well as

the basic techniques and instrumentations that are often used in the field of molecular biology with detailed procedures and explanations. This book also covers the applications of the principles and techniques currently employed in the clinical laboratory. • Provides an understanding of which techniques are used in diagnosis at the molecular level • Explains the basic principles of molecular biology and their application in the clinical diagnosis of diseases • Places protocols in context with practical applications

Molecular Beam Epitaxy-Hajime Asahi 2019-04-22 Covers both the fundamentals and the state-of-the-art technology used for MBE Written by expert researchers working on the frontlines of the field, this book covers fundamentals of Molecular Beam Epitaxy (MBE) technology and science, as well as state-of-the-art MBE technology for electronic and optoelectronic device applications. MBE applications to magnetic semiconductor materials are also included for future magnetic and spintronic device applications. Molecular Beam Epitaxy: Materials and Applications for Electronics and Optoelectronics is presented in five parts: Fundamentals of MBE; MBE technology for electronic devices application; MBE for optoelectronic devices; Magnetic semiconductors and spintronics devices; and Challenge of MBE to new materials and new researches. The book offers chapters covering the history of MBE; principles of MBE and fundamental mechanism of MBE growth; migration enhanced epitaxy and its application; quantum dot formation and selective area growth by MBE; MBE of III-nitride semiconductors for electronic devices; MBE for Tunnel-FETs; applications of III-V semiconductor quantum dots in optoelectronic devices; MBE of III-V and III-nitride heterostructures for optoelectronic devices with emission wavelengths from THz to ultraviolet; MBE of III-V semiconductors for mid-infrared photodetectors and solar cells; dilute magnetic semiconductor materials and ferromagnet/semiconductor heterostructures and their application to spintronic devices; applications of bismuth-containing III-V semiconductors in devices; MBE growth and device applications of Ga2O3; Heterovalent semiconductor structures and their device applications; and more. Includes chapters on the fundamentals of MBE Covers new challenging researches in MBE and new technologies Edited by two pioneers in the field of MBE with contributions from well-known MBE authors including three AI Cho MBE Award winners Part of the Materials for Electronic and Optoelectronic Applications series Molecular Beam Epitaxy: Materials and Applications for Electronics and Optoelectronics will appeal to graduate students, researchers in academia and industry, and others interested in the area of epitaxial growth.

Inorganic Chemical Biology-Gilles Gasser 2014-04-14 Understanding, identifying and influencing the biologicalsystems are the primary objectives of chemical biology. From this perspective, metal complexes havealways been of great assistance to chemical biologists, for example, in structural identificationand purification of essential biomolecules, for visualizing cellular organelles or to inhibitspecific enzymes. This inorganic side of chemical biology, which continues to receive considerableattention, is referred to as inorganic chemical biology. Inorganic Chemical Biology: Principles, Techniques andApplications provides a comprehensive overview of the current and emerging role of metal complexes inchemical biology. Throughout all of the chapters there is a strong emphasis on fundamentalthoretical chemistry and experiments that have been carried out in living cells or organisms. Outlooksfor the future applications of metal complexes in chemical biology are also discussed. Topics covered include: • Metal complexes as tools for structural biology • IMAC, AAS, XRF and MS as detection techniques for metals inchemical biology • Cell and organism imaging and probing DNA using metal andmetal carbonyl complexes • Detection of metal ions, anions and small molecules usingmetal complexes • Photo-release of metal ions in living cells • Metal complexes as enzyme inhibitors and catalysts inliving cells Written by a team of international experts, Inorganic ChemicalBiology: Principles, Techniques and Applications is a must-have for bioinorganic,bioorganometallic and medicinal chemists as well as chemical biologists working in both academia and industry.

Molecular Electronics-Michael C. Petty 2008-03-11 This consistent and comprehensive text is unique in providing an informed insight into molecular electronics by contrasting the prospects for molecular scale electronics with the continuing development of the inorganic semiconductor industry. Providing a wealth of information on the subject from background material to possible applications, Molecular Electronics contains all the need to know information in one easily accessible place. Speculation about future developments has also been included to give the whole picture of this increasingly popular and important topic.

Molecular Magnets-Juan Bartolomé 2013-10-17 This book provides an overview of the physical phenomena discovered in magnetic molecular materials over the last 20 years. It is written by leading scientists having made the most important contributions to this active area of research. The main topics of this book are the principles of quantum tunneling and quantum coherence of single-molecule magnets (SMMs), phenomena which go beyond the physics of individual molecules, such as the collective behavior of arrays of SMMs, the physics of one-dimensional single-chain magnets and magnetism of SMMs grafted on substrates. The potential applications of these physical phenomena to classical and quantum information, communication technologies, and the emerging fields of molecular spintronics and magnetic refrigeration are stressed. The book is written for graduate students, researchers and non-experts in this field of research.