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Structures, Functions and Roles as Antiviral Drug Targets Academic Press

Concepts of Biology is designed for the single-semester introduction to biology course for non-science majors, which for many students is their only college-level science course. As such, this course represents an important opportunity for students to develop the necessary knowledge, tools, and skills to make informed decisions as they continue with their lives. Rather than being mired down with facts and vocabulary, the typical non-science major student needs information presented in a way that is easy to read and understand. Even more importantly, the content should be meaningful. Students do much better when they understand why biology is relevant to their everyday lives. For these reasons, Concepts of Biology is grounded on an evolutionary basis and includes exciting features that highlight careers in the biological sciences and everyday applications of the concepts at hand. We also strive to show the interconnectedness of topics within this extremely broad discipline. In order to meet the needs of today's instructors and students, we maintain the overall organization and coverage found in most syllabi for this course. A strength of Concepts of Biology is that instructors can customize the book, adapting it to the approach that works best in their classroom. Concepts of Biology also includes an innovative art program that incorporates critical thinking and clicker questions to help students understand--and apply--key concepts.

[RNA Methodologies](#) John Wiley & Sons

RNA-based Regulation in Human Health and Disease offers an in-depth exploration of RNA mediated genome regulation at different hierarchies. Beginning with multitude of canonical and non-canonical RNA populations, especially noncoding RNA in human physiology and evolution, further sections examine the various classes of RNAs (from small to large noncoding and extracellular RNAs), functional categories of RNA regulation (RNA-binding proteins, alternative splicing, RNA editing, antisense transcripts and RNA G-quadruplexes), dynamic aspects of RNA regulation modulating physiological homeostasis (aging), role of RNA beyond humans, tools and technologies for RNA research (wet lab and computational) and future prospects for RNA-based diagnostics and therapeutics. One of the core strengths of the book includes spectrum of disease-specific chapters from experts in the field highlighting RNA-based regulation in metabolic & neurodegenerative disorders, cancer, inflammatory disease, viral and bacterial infections. We hope the book helps researchers, students and clinicians appreciate the role of RNA-based regulation in genome regulation, aiding the development of useful biomarkers for prognosis, diagnosis, and novel RNA-based therapeutics. Comprehensive information of non-canonical RNA-based genome regulation modulating human health and disease Defines RNA classes with special emphasis on unexplored world of noncoding RNA at different hierarchies Disease specific role of RNA - causal, prognostic, diagnostic and therapeutic Features contributions from leading experts in the field

Our Genes, Our Choices Academic Press

This unique and practical resource provides the most complete and concise summary of underlying principles and approaches to studying nucleic acid structure, including discussion of x-ray crystallography, NMR, molecular modelling, and databases. Its focus is on a survey of structures especially

important for biomedical research and pharmacological applications. To aid novices, *Principles of Nucleic Acid Structure* includes an introduction to technical lingo used to describe nucleic acid structure and conformations (roll, slide, twist, buckle, etc.). This completely updated edition features expanded coverage of the latest advances relevant to recognition of DNA and RNA by small molecules and proteins. In particular, the reader will find extensive new discussions on: RNA folding, ribosome structure and antibiotic interactions, DNA quadruplexes, DNA and RNA protein complexes, and short interfering RNA (siRNA). This handy guide ends with a complete list of resources, including relevant online databases and software. Completely updated with expanded discussion of topics such as RNA folding, ribosome structure and antibiotic interactions, DNA quadruplexes, DNA and RNA protein complexes, and short interfering RNA (siRNA) Includes a complete list of resources, including relevant online databases and software Defines technical lingo for novices

From Light Absorption to Cellular Responses and Skin Cancer Academic Press

This volume is a timely and comprehensive description of the many facets of DNA and RNA modification-editing processes and to some extent repair mechanisms. Each chapter offers fundamental principles as well as up to date information on recent advances in the field (up to end 2008). They ended by a short 'conclusion and future prospect' section and an exhaustive list of 35 to up to 257 references (in average 87). Contributors are geneticists, structural enzymologists and molecular biologists working at the forefront of this exciting, fast-moving and diverse field of researches. This book will be a major interest to PhD students and University teachers alike. It will also serve as an invaluable reference tool for new researchers in the field, as well as for specialists of RNA modification enzymes generally not well informed about what is going on in similar processes acting on DNA and vice-versa for specialists of the DNA modification-editing and repair processes usually not much acquainted with what is going on in the RNA maturation field. The book is subdivided into 41 chapters (740 pages). The common links between them are mainly the enzymatic aspects of the different modification-editing and repair machineries: structural, mechanistic, functional and evolutionary aspects. It starts with two general and historical overview of the discovery of modified nucleosides in DNA and RNA and corresponding modification-editing enzymes. Then follows eleven chapters on DNA modification and editing (mechanistic and functional aspects). Two additional chapters cover problems related to DNA/RNA repair and base editing by C-to-U deaminases, followed by three chapters on RNA editing by C-to-U and A-to-I type of deamination. Discussions about interplay between DNA and RNA modifications and the emergence of DNA are covered in two independent chapters, followed by twenty chapters on different but complementary aspects of RNA modification enzymes and their cellular implications. The last chapter concerns the description of the present state-of-the art for incorporating modified nucleosides by in vitro chemical synthesis. At the end of the book, six appendices give useful details on modified nucleosides, modification-editing enzymes and nucleosides analogs. This information is usually difficult to obtain from current scientific literature.

Cancer Genomics Royal Society of Chemistry

Lung cancer remains the leading cause of cancer-related death worldwide. Although surgical resections of these tumors are considered as one of the most effective treatments, most lung cancer patients present at an advanced stage of the disease at the time of diagnosis and are not candidates for surgical resection. Overall, the prognosis of lung cancer is very poor and the 5-year survival rate is only about 16 %, which has not significantly changed in the past several decades. Therefore, seeking new directions of treatment for this most deadly disease becomes crucial. Recent development in the understanding of the molecular pathogenesis of lung cancer has led to new strategies of treatment. Development of lung cancers is thought to be driven by gene mutations in most, if not all, cases. Detailed analysis at the molecular level to identify these gene mutations or alterations in lung cancer provides the insight for understanding the disease and is fundamental for establishment of personalized targeted therapy. Personalized targeted therapy based on particular gene mutations has shown to be effective and is believed to be one of the new directions of the treatment in dealing with this disease. In modern oncology, there is an increasing need to facilitate the development and implementation of biomarkers based on known gene mutations/alterations in clinical practice and identification of new gene mutations/alterations through high-throughput DNA sequencing technology to enter a new era of personalized targeted therapy for lung cancer patients.

Microbial Physiology Academic Press

Molecular Biology, Second Edition, examines the basic concepts of molecular biology while incorporating primary literature from today's leading researchers. This updated edition includes Focuses on Relevant Research sections that integrate primary literature from Cell Press and focus on helping the student learn how to read and understand research to prepare them for the scientific world. The new Academic Cell Study Guide features all the articles in the text with concurrent case studies to help students build foundations in the content while allowing them to make the appropriate connections to the text. Animations provided deal with topics such as protein purification, transcription, splicing reactions, cell division and DNA replication and SDS-PAGE. The text also includes updated chapters on Genomics and Systems Biology, Proteomics, Bacterial Genetics and Molecular Evolution and RNA. An updated ancillary package includes flashcards, online self quizzing, references with links to outside content and PowerPoint slides with images. This text is designed for undergraduate students taking a course in Molecular Biology and upper-level students studying Cell Biology, Microbiology, Genetics, Biology, Pharmacology, Biotechnology, Biochemistry, and Agriculture. NEW: "Focus On Relevant Research" sections integrate primary literature from Cell Press and focus on helping the student learn how to read and understand research to prepare them for the scientific world. NEW: Academic Cell Study Guide features all articles from the text with concurrent case studies to help students build foundations in the content while allowing them to make the appropriate connections to the text. NEW: Animations provided include topics in protein purification, transcription, splicing reactions, cell division and DNA replication and SDS-PAGE Updated chapters on Genomics and Systems Biology, Proteomics, Bacterial Genetics and Molecular Evolution and RNA Updated ancillary package includes flashcards, online self quizzing, references with links to outside content and PowerPoint slides with images. Fully revised art program

From Synthesis to Nucleic Acid Complexes Elsevier

Clinical DNA Variant Interpretation: Theory and Practice, a new volume in the Translational and Applied Genomics series, covers foundational aspects, modes of analysis, technology, disease and disorder specific case studies, and clinical integration. This book provides a deep theoretical background, as well as applied case studies and methodology, enabling researchers, clinicians and healthcare providers to effectively classify DNA variants

associated with disease and patient phenotypes. Practical chapters discuss genomic variant interpretation, terminology and nomenclature, international consensus guidelines, population allele frequency, functional evidence transcripts for RNA, proteins, and enzymes, somatic mutations, somatic profiling, and much more. Compiles best practices, methods and sound evidence for DNA variant classification in one applied volume Features chapter contributions from international leaders in the field Includes practical examples of variant classification for common and rare disorders, and across clinical phenotypes

Landmark Experiments in Molecular Biology CRC Press

Epigenetics in Cardiovascular Disease, a new volume in the Translational Epigenetics series, offers a comprehensive overview of the epigenetics mechanisms governing cardiovascular disease development, as well as instructions in research methods and guidance in pursuing new studies. More than thirty international experts provide an (i) overview of the epigenetics mechanisms and their contribution to cardiovascular disease development, (ii) high-throughput methods for RNA profiling including single-cell RNA-seq, (iii) the role of nucleic acid methylation in cardiovascular disease development, (iv) epigenetic actors as biomarkers and drug targets, (v) and the potential of epigenetics to advance personalized medicine. Here, readers will discover strategies to combat research challenges, improve quality of their epigenetic research and reproducibility of their findings. Additionally, discussion of assay and drug development for personalized healthcare pave the way for a new era of understanding in cardiovascular disease. Offers a thorough overview of role of epigenetics mechanisms in cardiovascular disease Includes guidance to improve research plans, experimental protocols design, quality and reproducibility of results in new epigenetics research Explores biomarkers and drug targets of therapeutic potential to advance personalized healthcare Features chapter contributions from a wide range of international researchers in the field

Water in Biological and Chemical Processes Academic Press

Essays discuss recombinant DNA research, and the structure, mobility, and self-repairing mechanisms of DNA

A Personal Account of the Discovery of the Structure of DNA Elsevier

The Fourth Edition of *Microbial Physiology* retains the logical, easy-to-follow organization of the previous editions. An introduction to cell structure and synthesis of cell components is provided, followed by detailed discussions of genetics, metabolism, growth, and regulation for anyone wishing to understand the mechanisms underlying cell survival and growth. This comprehensive reference approaches the subject from a modern molecular genetic perspective, incorporating new insights gained from various genome projects.

Molecular Biology Royal Society of Chemistry

Fundamental Genetics is a concise, non-traditional textbook that explains major topics of modern genetics in 42 mini-chapters. It is designed as a textbook for an introductory general genetics course and is also a useful reference or refresher on basic genetics for professionals and students in health sciences and biological sciences. It is organized for ease of learning, beginning with molecular structures and progressing through molecular processes to population genetics and evolution. Students will find the short, focused chapters approachable and more easily digested than the long, more complex chapters of traditional genetics textbooks. Each chapter focuses on one topic, so that teachers and students can readily tailor the book to their needs by choosing a subset of chapters. The book is extensively illustrated throughout with clear and uncluttered diagrams that are simple enough to be reproduced by students. This unique textbook provides a compact alternative for introductory genetics courses.

A Laboratory Guide for Isolation and Characterization Springer Publishing Company

This laboratory guide represents a growing collection of tried, tested and optimized laboratory protocols for the isolation and characterization of eukaryotic RNA, with lesser emphasis on the characterization of prokaryotic transcripts. Collectively the chapters work together to embellish the RNA story, each presenting clear take-home lessons, liberally incorporating flow charts, tables and graphs to facilitate learning and assist in the planning and implementation phases of a project. *RNA Methodologies*, 3rd edition includes approximately 30% new material, including chapters on the more recent technologies of RNA interference including: RNAi; Microarrays; Bioinformatics. It also includes new sections on: new and improved RT-PCR techniques; innovative 5' and 3' RACE techniques; subtractive PCR methods; methods for improving cDNA synthesis. * Author is a well-recognized expert in the field of RNA experimentation and founded Exon-Intron, a well-known biotechnology educational workshop center * Includes classic and contemporary techniques * Incorporates flow charts, tables, and graphs to facilitate learning and assist in the planning phases of projects

Principles of Nucleic Acid Structure Cambridge University Press

Molecular Biology of the Cell Fundamental Genetics Cambridge University Press

Molecular Genetics Academic Press

DNA replication is a fundamental part of the life cycle of all organisms. Not surprisingly many aspects of this process display profound conservation across organisms in all domains of life. The chapters in this volume outline and review the current state of knowledge on several key aspects of the DNA replication process. This is a critical process in both normal growth and development and in relation to a broad variety of pathological conditions including cancer. The reader will be provided with new insights into the initiation, regulation, and progression of DNA replication as well as a collection of thought provoking questions and summaries to direct future investigations.

Fundamentals of Molecular Structural Biology John Wiley & Sons

Epigenetics and Systems Biology highlights the need for collaboration between experiments and theoretical modeling that is required for successful application of systems biology in epigenetics studies. This book breaks down the obstacles which exist between systems biology and epigenetics researchers due to information barriers and segmented research, giving real-life examples of successful combinations of systems biology and epigenetics experiments. Each section covers one type of modeling and one set of epigenetic questions on which said models have been successfully applied. In addition, the book highlights how modeling and systems biology relate to studies of RNA, DNA, and genome instability, mechanisms of DNA damage signaling and repair, and the effect of the environment on genome stability. Presents original research in a wider perspective to reveal potential for synergies between the two fields of study Provides the latest experiments in primary literature for the modeling audience Includes chapters written by experts in systems biology and epigenetics who have vast experience studying clinical applications

Microbiology Academic Press

A unified overview of the dynamical properties of water and its unique and diverse role in biological and chemical processes.

The Master Molecule Academic Press

Induction of DNA damage by sunlight is a major deleterious event in living organisms. Recent developments have dramatically improved our understanding of the photochemical processes involved at the sub-picosecond time scale and along with next generation sequencing and data processing has generated a need for a complete up-to-date coverage of the field. Written in an accessible and comprehensive manner, DNA Photodamage will appeal to all scientists working in the area whether specialists in the discipline or not and provides a complete coverage of the field, from ultrafast spectroscopy to biomedical research. Bridging the gap between photophysical and photochemical research on model systems, and in vivo and in vitro biological studies, this book aims to identify the most important research trends in the field and review their major findings.

Viral Polymerases John Wiley & Sons

Molecular Cloning has served as the foundation of technical expertise in labs worldwide for 30 years. No other manual has been so popular, or so influential. [...] The theoretical and historical underpinnings of techniques are prominent features of the presentation throughout, information that does much to help trouble-shoot experimental problems. For the fourth edition of this classic work, the content has been entirely recast to include nucleic-acid based methods selected as the most widely used and valuable in molecular and cellular biology laboratories. Core chapters from the third edition have been revised to feature current strategies and approaches to the preparation and cloning of nucleic acids, gene transfer, and expression analysis. They are augmented by 12 new chapters which show how DNA, RNA, and proteins should be prepared, evaluated, and manipulated, and how data generation and analysis can be handled. The new content includes methods for studying interactions between cellular components, such as microarrays, next-generation sequencing technologies, RNA interference, and epigenetic analysis using DNA methylation techniques and chromatin immunoprecipitation. To make sense of the wealth of data produced by these techniques, a bioinformatics chapter describes the use of analytical tools for comparing sequences of genes and proteins and identifying common expression patterns among sets of genes. Building on thirty years of

trust, reliability, and authority, the fourth edition of Molecular Cloning is the new gold standard--the one indispensable molecular biology laboratory manual and reference source. --Publisher description.

The Mechanisms of DNA Replication Elsevier

Molecular Genetics, Part II covers the significant developments in various areas of molecular genetics. This book is composed of 10 chapters that also consider the gene expression and regulation of some enzymes. The opening chapters deal with the mechanisms of nucleic acid replication and repair, as well as the structural aspects of the genetic apparatus of viruses and cells. The next chapters explore the patterns and mechanisms of genetic recombination, the in vitro and in vivo experiments to delineate the genetic code, and the initiation of peptide chains in Escherichia coli. These topics are followed by discussions of the mechanism of DNA-dependent RNA synthesis, the regulation of enzyme synthesis in microorganisms, and the regulation of viral replication. The final chapters consider the theoretical and practical aspects of the metabolic regulation in metazoan system and the procedures for the study of DNA-DNA and DNA-RNA interactions. This book will be of great value to molecular geneticists, biochemists, and researchers.

Diagnostic Molecular Biology Cambridge University Press

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