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## BLANKENSHIP SHANNON

### From Structure and Dynamics to Function

BoD – Books on Demand  
 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.  
*Molecular Cloning* Academic Press  
 Fundamentals of Molecular Structural Biology reviews the mathematical and physical foundations of molecular structural biology. Based on these fundamental concepts, it then describes molecular structure and explains basic genetic mechanisms. Given the increasingly interdisciplinary nature of research, early career researchers and those shifting into an adjacent field often require a "fundamentals" book to get them up-to-speed on the foundations of a particular field. This book fills that niche. Provides a current and easily digestible resource on molecular structural biology, discussing both foundations and the latest

advances Addresses critical issues surrounding macromolecular structures, such as structure-based drug discovery, single-particle analysis, computational molecular biology/molecular dynamic simulation, cell signaling and immune response, macromolecular assemblies, and systems biology Presents discussions that ultimately lead the reader toward a more detailed understanding of the basis and origin of disease

*DNA Damage, DNA Repair and Disease*  
John Wiley & Sons

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

*Microbiology* Royal Society of Chemistry  
The DNA of all organisms is constantly being damaged by endogenous and exogenous sources. Oxygen metabolism generates reactive species that can damage DNA, proteins and other organic compounds in living cells. Exogenous sources include ionizing and ultraviolet radiations, carcinogenic compounds and environmental toxins among others. The discovery of multiple DNA lesions and DNA repair mechanisms showed the involvement of DNA damage and DNA repair in the pathogenesis of many human diseases, most notably cancer. These books provide a comprehensive overview of the interdisciplinary area of DNA damage and DNA repair, and their relevance to disease pathology. Edited by recognised leaders in the field, this two-volume set is an appealing resource to a variety of readers including chemists, chemical biologists, geneticists, cancer researchers and drug discovery scientists.  
*Viral Polymerases* Cambridge University 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.  
*Principles of Nucleic Acid Structure*  
Academic Press

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

*Anatomy of Gene Regulation* 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  
*Harnessing the Power of Viruses* Academic Press

*Molecular Biology*, Third Edition, provides a thoroughly revised, invaluable resource for college and university students in the life sciences, medicine and related fields. This esteemed text continues to meet the needs of students and professors by offering new chapters on RNA, genome defense, and epigenetics, along with expanded coverage of RNAi, CRISPR, and more ensuring topical content for a new class of students. This volume effectively introduces basic concepts that are followed by more specific applications as the text evolves. Moreover, as part of the Academic Cell line of textbooks, this book contains research passages that shine a spotlight on current experimental work reported in Cell Press articles. These articles form the basis of case studies found in the associated online study guide that is designed to tie current topics to the scientific community. Contains new chapters on non-coding RNA, genome defense, epigenetics and epigenomics Features new and expanded coverage of RNAi, CRISPR, genome editing, giant viruses and proteomics Includes an Academic Cell Study Guide that ties all articles from the text with concurrent case studies Provides an updated, ancillary package with flashcards, online self-quizzing, references with links to outside content, and PowerPoint slides with images

*Lewin's Genes XI* 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 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. 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

#### RNA-Based Regulation in Human Health and Disease Avery

Promotes ease of understanding with a unique problem-solving method and new clinical application scenarios! With a focus on chemistry and physics content that is directly relevant to the practice of anesthesia, this text delivers—in an engaging, conversational style—the breadth of scientific information required for the combined chemistry and physics course for nurse anesthesia students. Now in its third edition, the text is updated and reorganized to facilitate a greater ease and depth of understanding. It includes additional clinical application scenarios, detailed, step-by-step solutions to problems, and a Solutions Manual demonstrating a unique method for solving chemistry and physics problems and explaining how to use a calculator. The addition of a third author—a practicing nurse anesthetist—provides additional clinical relevance to the scientific information. Also included is a comprehensive listing of need-to-know equations. The third edition retains the many outstanding learning features from earlier editions, including a special focus on gases, the use of illustrations to demonstrate how scientific concepts relate directly to their clinical application in anesthesia, and end-of-chapter summaries and review questions to facilitate self-assessment. Ten on-line videos enhance teaching and learning, and abundant

clinical application scenarios help reinforce scientific principles and relate them to day-to-day anesthesia procedures. This clear, easy-to-read text will help even the most chemistry- and physics-phobic students to master the foundations of these sciences and competently apply them in a variety of clinical situations. New to the Third Edition: The addition of a third co-author—a practicing nurse anesthetist—provides additional clinical relevance Revised and updated to foster ease of understanding Detailed, step-by-step solutions to end-of-chapter problems Solutions Manual providing guidance on general problem-solving, calculator use, and a unique step-by-step problem-solving method Additional clinical application scenarios Comprehensive list of all key equations with explanation of symbols New instructor materials include PowerPoint slides. Updated information on the gas laws Key Features: Written in an engaging, conversational style for ease of understanding Focuses solely on chemistry and physics principles relevant to nurse anesthetists Provides end-of-chapter summaries and review questions Includes abundant illustrations highlighting application of theory to practice

#### A Laboratory Manual Academic Press

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.

#### **Water in Biological and Chemical Processes** Academic Press

*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.

#### *Epigenetics and Systems Biology* Elsevier *Molecular Biology of the Cell* Fundamental Genetics Cambridge University Press

*Helicases from All Domains of Life* Elsevier 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.

#### *A Laboratory Guide for Isolation and Characterization* Academic Press

*Helicases from All Domains of Life* is the first book to compile information about helicases from many different organisms in a single volume. Research in the helicase field has been going on for a long time now, but the completion of so many genomes of these ubiquitous enzymes has made it difficult to keep up with new discoveries. As the huge number of

identified DNA and RNA helicases, along with the structural and functional differences among them, make it difficult for the interested scholar to grasp a comprehensive view of the field, this book helps fill in the gaps. Presents updates on the functions and features of helicases across the different kingdoms Begins with a chapter on the evolutionary history of helicases Contains specific chapters on selected helicases of great importance from a biological/applicative point-of-view [Our Genes, Our Choices](#) Elsevier

[Harnessing the Power of Viruses](#) explores the application of scientific knowledge about viruses and their lives to solve practical challenges and further advance molecular sciences, medicine and agriculture. The book contains virus-based tools and approaches in the fields of: i) DNA manipulations in vitro and in vivo; ii) Protein expression and characterization; and iii) Virus- Host interactions as a platform for therapy and biocontrol are discussed. It steers away from traditional views of viruses and technology, focusing instead on viral molecules and molecular processes that enable science to better understand life and offer means for addressing complex biological phenomena that positively influence everyday life. The book is written at an intermediate level and is accessible to novices who are willing to acquire a basic level of understanding of key principles in molecular biology, but is also ideal for advanced readers interested in expanding their biological knowledge to include

practical applications of molecular tools derived from viruses. Explores virus-based tools and approaches in DNA manipulation, protein expression and characterization and virus-host interactions Provides a dedicated focus on viral molecules and molecular processes that enable science to better understand life and address complex biological phenomena Includes an overview of modern technologies in biology that were developed using viral components/elements and knowledge about viral processes

[Theory and Practice](#) Academic Press

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

**Landmark Experiments in Molecular Biology** Elsevier

Landmark Experiments in Molecular Biology critically considers breakthrough experiments that have constituted major turning points in the birth and evolution of molecular biology. These experiments laid the foundations to molecular biology by uncovering the major players in the machinery of inheritance and biological information handling such as DNA, RNA, ribosomes, and proteins. Landmark Experiments in Molecular Biology combines an historical survey of the development of ideas, theories, and profiles of leading scientists with detailed scientific and technical analysis. Includes detailed analysis of classically designed and executed experiments Incorporates technical and scientific analysis along with

historical background for a robust understanding of molecular biology discoveries Provides critical analysis of the history of molecular biology to inform the future of scientific discovery Examines the machinery of inheritance and biological information handling

[The Mechanisms of DNA Replication](#)

Academic Press

[Viral Polymerases: Structures, Functions and Roles as Antiviral Drug Targets](#)

presents in-depth study information on the structure and functions of polymerases and their roles in the lifecycle of viruses, and as drug targets. Viral polymerases constitute a vital component in the lifecycle of many viruses, such as human immunodeficiency virus (HIV), hepatitis viruses, influenza virus, and several others. They are essentially required for the replication of viruses. Thus, the polymerases that can be found in viruses (called viral polymerases) represent favorable targets for the design and development of antiviral drugs. Provides comprehensive, state-of-the-art coverage on virus infections, the virus lifecycle, and mechanisms of polymerase inhibition Analyzes the structure-activity relationships of inhibitors of each viral polymerase Presents a consistent and comprehensive coverage of all aspects of viral polymerases, including structure, function and their role as antiviral drug targets

[Epigenetics in Cardiovascular Disease](#)

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