

Dna The Basis Of Molecular Inheritance

In this landmark work, the author team led by Dr. Sean Carroll presents the general principles of the genetic basis of morphological change through a synthesis of evolutionary biology with genetics and embryology. In this extensively revised second edition, the authors delve into the latest discoveries, incorporating new coverage of comparative genomics, molecular evolution of regulatory proteins and elements, and microevolution of animal development. An accessible text, focusing on the most well-known genes, developmental processes and taxa. Builds logically from developmental genetics and regulatory mechanisms to evolution at different genetic morphological levels. Adds major insights from recent genome studies, new evo-devo biology research findings, and a new chapter on models of variation and divergence among closely related species. Provides in-depth focus on key concepts through well-developed case studies. Features clear, 4-color illustrations and photographs, chapter summaries, references and a glossary. Presents the research of Dr. Carroll, a pioneer in the field and the past president of the Society for Developmental Biology.

The classic personal account of Watson and Crick's groundbreaking discovery of the structure of DNA, now with an introduction by Sylvia Nasar, author of *A Beautiful Mind*. By identifying the structure of DNA, the molecule of life, Francis Crick and James Watson revolutionized biochemistry and won themselves a Nobel Prize. At the time, Watson was only twenty-four, a young scientist hungry to make his mark. His uncompromisingly honest account of the heady days of their thrilling sprint against other world-class researchers to solve one of science's greatest mysteries gives a dazzlingly clear picture of a world of brilliant scientists with great gifts, very human ambitions, and bitter rivalries. With humility unspoiled by false modesty, Watson relates his and Crick's desperate efforts to beat Linus Pauling to the Holy Grail of life sciences, the identification of the basic building block of life. Never has a scientist been so truthful in capturing in words the flavor of his work.

An introduction to the molecular basis of health and disease for the new generation of students.

The Molecular Basis of Heredity

The Molecular Basis of Heredity : November 4-6, 1985, the Shamrock Hilton Hotel, Houston, Texas

The Molecular Basis for the Non-random Manifestation of DNA Phosphotriester Adducts

The Secret of Life

From Synthesis to Nucleic Acid Complexes

A Personal Account of the Discovery of the Structure of DNA

Using a new, integrative approach, *Molecular Basis of Aging* describes the aging phenomenon within mammalian organisms from the perspective of changes in information storage and coordination between hierarchical orders of structure. This unique approach provides reader with a thorough insight into the evolution of molecular, cellular, tissue, and organ systems and processes in mammals. This informative volume contains up-to-date reviews of:

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.

Basic Genetics is a concise introductory textbook that focuses not only on understanding and explaining the main points of genetics, but also upon covering the required essential traditional subjects in the field. The main goal of this textbook is to help first year students who are taking their first course in human genetics to understand the different topics within genetics. It is of particular interest for those who are preparing themselves to study medicine or other medical sciences. This textbook presents only the essential required information. Some of the different subjects included in the eight chapters are: cell cycle and cellular division, Mendelian principles of heredity, the molecular basis of genetic material, gene expression and gene expression control, genetic variations and genetic engineering, as well as human genetics. In addition, *Basic Genetics* contains multiple choice questions covering each topic and their answers. These questions are absolutely essential for students' self-assessment. These different topics of basic genetics have also been illustrated by simple diagrams in full color.

Molecular Biology of DNA Methylation

Cell And Molecular Biology

Encyclopedia of Molecular Biology and Molecular Medicine, Mass Spectrometry High Speed DNA Fragment Sizing to Plasma Lipoproteins

The Molecular Basis of Evolution

Concepts of Biology

The Molecular and Hormonal Basis of Plant-Growth Regulation deals with the molecular and hormonal basis of plant-growth regulation. Topics covered range from molecular biology in plants to the structural units of DNA, DNA replication and RNA transcription, and the process of translation and protein synthesis. The use of RNA for transmission of genetic information is also discussed. This book is comprised of 16 chapters and begins with an overview of the foundations that form the basis of modern biology, followed by an analysis of DNA and its structural units. The role of enzymes in DNA replication is then examined, together with RNA transcription and protein synthesis. The next section focuses on modern aspects of hormone action and introduces the reader to the growth-regulatory hormones existing in most higher plants; the role of ribosomes in the polymerization of transfer RNA-borne amino acids; the structure and biophysical properties of the mitochondrion and the chloroplast as genetic units; and the use of antibiotics in the inhibition of synthesis of nucleic acids and proteins. This monograph will be a valuable resource for biologists, plant physiologists, teachers, and students who seek to widen their general knowledge about plant growth.

This six volume Encyclopedia is the most comprehensive, detailed treatment of molecular biology and molecular medicine available today! The Encyclopedia provides a single-source library of molecular genetics and the molecular basis of life, with a focus on molecular medicine. Genetic screening, gene therapy, structural biology, and the technology and findings of the Human Genome Project are discussed in detail. The articles that comprise the set are designed as self-contained treatments. Each of the nearly 300 articles begins with an outline and a key word section which

includes definitions. These features assist the scientist or student who is unfamiliar with a specific subject area. A glossary of basic terms completes each volume and defines the most commonly used terms in molecular biology. Together with the introductory illustrations found in each volume, these definitions enable readers to understand articles without referring to a dictionary, textbook, or other reference.

In 1992 the National Research Council issued DNA Technology in Forensic Science, a book that documented the state of the art in this emerging field. Recently, this volume was brought to worldwide attention in the murder trial of celebrity O. J. Simpson. The Evaluation of Forensic DNA Evidence reports on developments in population genetics and statistics since the original volume was published. The committee comments on statements in the original book that proved controversial or that have been misapplied in the courts. This volume offers recommendations for handling DNA samples, performing calculations, and other aspects of using DNA as a forensic tool — modifying some recommendations presented in the 1992 volume. The update addresses two major areas: Determination of DNA profiles. The committee considers how laboratory errors (particularly false matches) can arise, how errors might be reduced, and how to take into account the fact that the error rate can never be reduced to zero. Interpretation of a finding that the DNA profile of a suspect or victim matches the evidence DNA. The committee addresses controversies in population genetics, exploring the problems that arise from the mixture of groups and subgroups in the American population and how this substructure can be accounted for in calculating frequencies. This volume examines statistical issues in interpreting frequencies as probabilities, including adjustments when a suspect is found through a database search. The committee includes a detailed discussion of what its recommendations would mean in the courtroom, with numerous case citations. By resolving several remaining issues in the evaluation of this increasingly important area of forensic evidence, this technical update will be important to forensic scientists and population geneticists — and helpful to attorneys, judges, and others who need to understand DNA and the law. Anyone working in laboratories and in the courts or anyone studying this issue should own this book.

Basic Genetics

The Molecular Basis of Mutations, DNA Repair

Molecular Basis of Specificity in Nucleic Acid-Drug Interactions

Molecular Genetics and the Evolution of Animal Design

A Primer Covering Molecular Composition of Genetic Material, Gene Expression and Genetic Engineering, and Mutations and Human Genetic Disorders, 2nd Edition

Proceedings of the Twenty-Third Jerusalem Symposium on Quantum Chemistry and Biochemistry Held in Jerusalem, Israel, May 14 – 17, 1990

The new edition of this popular book emphasizes the decisions that need to be made to select one procedure over another.

The development of molecules that selectively bind to nucleic acids has provided many details about DNA and RNA recognition. The range of such substances, such as metal complexes, peptides, oligonucleotides and a wide array of synthetic organic compounds, is as manifold as the functions of nucleic acids. Nucleic acid recognition sequences are often found in the major or minor groove of a double strand, while other typical interactions include intercalation between base pairs or the formation of triple or quadruple helices. One example of a binding mode that has recently been proposed is end stacking on such complex structures as the telomere tetraplex. In this comprehensive book, internationally recognized experts describe in detail the important aspects of nucleic acid binding, and in so doing present impressive approaches to drug design. Since typical substances may be created naturally or synthetically, emphasis is placed on natural products, chemical synthesis, the use of combinatorial libraries, and structural characterization. The whole is rounded off by contributions on molecular modeling, as well as investigations into the way in which any given drug interacts with its nucleic acid recognition site.

A fourteen-year-old girl, shy and snobbish, struggles with mixed feelings about the brash "lower class" girl in the opposite hospital bed.

The Molecular Basis of DNA-binding Specificity of the Yeast Homeodomain Proteins A1 and [alpha]2

Molecular Biology of the Cell

The Double Helix

Molecular Biology

Molecular Basis of Aging

Genetic Chemistry

Fifty years ago, James D. Watson, then just twentyfour, helped launch the greatest ongoing scientific quest of our time. Now, with unique authority and sweeping vision, he gives us the first full account of the genetic revolution—from Mendel's garden to the double helix to the sequencing of the human genome and beyond. Watson's lively, panoramic narrative begins with the fanciful speculations of the ancients as to why "like begets like" before skipping ahead to 1866, when an Austrian monk named Gregor Mendel first deduced the basic laws of inheritance. But genetics as we recognize it today—with its capacity, both thrilling and sobering, to manipulate the very essence of living things—came into being only with the rise of molecular investigations culminating in the breakthrough discovery of the structure of DNA, for which Watson shared a Nobel prize in 1962. In the DNA molecule's graceful curves was the key to a whole new science. Having shown that the secret of life is chemical, modern genetics has set mankind off on a journey unimaginable just a few decades ago. Watson provides the general reader with clear explanations of molecular processes and emerging technologies. He shows us how DNA continues to alter our understanding of human origins, and of our identities as groups and as individuals. And with the insight of one who has remained close to every advance in research since the double helix, he reveals how genetics has unleashed a wealth of possibilities to alter the human condition—from genetically modified foods to genetically modified babies—and transformed itself from a domain of pure research into one of big business as well. It is a sometimes topsy-turvy world full of great minds and great egos, driven by ambitions to improve the human condition as well as to improve investment portfolios, a world vividly captured in these pages. Facing a future of choices and social and ethical implications of which we dare not remain uninformed, we could have no better guide than James Watson, who leads us with the same bravura storytelling that made *The Double Helix* one of the most successful books on science ever published. Infused with a scientist's awe at nature's marvels and a humanist's profound sympathies, DNA is destined to become the classic telling of the defining scientific saga of our age.

Advanced Methods in Molecular Biology and Biotechnology: A Practical Lab Manual is a concise reference on common protocols and techniques for advanced molecular biology and biotechnology experimentation. Each chapter focuses on a different method, providing an overview before delving deeper into the procedure in a step-by-step approach. Techniques covered include genomic DNA extraction using cetyl trimethylammonium bromide (CTAB) and chloroform extraction, chromatographic techniques, ELISA, hybridization, gel electrophoresis, dot blot analysis and methods for studying polymerase chain reactions. Laboratory protocols and standard operating procedures for key equipment are also discussed, providing an instructive overview for lab work. This practical

guide focuses on the latest advances and innovations in methods for molecular biology and biotechnology investigation, helping researchers and practitioners enhance and advance their own methodologies and take their work to the next level. Explores a wide range of advanced methods that can be applied by researchers in molecular biology and biotechnology Features clear, step-by-step instruction for applying the techniques covered Offers an introduction to laboratory protocols and recommendations for best practice when conducting experimental work, including standard operating procedures for key equipment

Everyone has heard of the story of DNA as the story of Watson and Crick and Rosalind Franklin, but knowing the structure of DNA was only a part of a greater struggle to understand life's secrets. Life's Greatest Secret is the story of the discovery and cracking of the genetic code, the thing that ultimately enables a spiraling molecule to give rise to the life that exists all around us. This great scientific breakthrough has had far-reaching consequences for how we understand ourselves and our place in the natural world, and for how we might take control of our (and life's) future. Life's Greatest Secret mixes remarkable insights, theoretical dead-ends, and ingenious experiments with the swift pace of a thriller. From New York to Paris, Cambridge, Massachusetts, to Cambridge, England, and London to Moscow, the greatest discovery of twentieth-century biology was truly a global feat. Biologist and historian of science Matthew Cobb gives the full and rich account of the cooperation and competition between the eccentric characters—mathematicians, physicists, information theorists, and biologists—who contributed to this revolutionary new science. And, while every new discovery was a leap forward for science, Cobb shows how every new answer inevitably led to new questions that were at least as difficult to answer: just ask anyone who had hoped that the successful completion of the Human Genome Project was going to truly yield the book of life, or that a better understanding of epigenetics or “junk DNA” was going to be the final piece of the puzzle. But the setbacks and unexpected discoveries are what make the science exciting, and it is Matthew Cobb's telling that makes them worth reading. This is a riveting story of humans exploring what it is that makes us human and how the world works, and it is essential reading for anyone who'd like to explore those questions for themselves.

Cytology, Genetics and Molecular Biology

The Molecular Basis of Base Substitution Mutations During DNA Replication

The Molecular Basis of the DNA Repair Defect in Xeroderma Pigmentosum E

From DNA to Diversity

11th FAO

Human Molecular Biology

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.

This user-friendly reference provides a basic understanding of the molecular biology underlying pulmonary diseases. Presents the background information necessary to understand the impact that molecular biology has on pulmonary medicine. Chapters begin with a list of basic concepts and a summary of the state-of-the-art information for each disease, starting with a clinical-molecular point of view and concluding with an annotated bibliography. Features excellent color illustrations and a thorough appendix! Each chapter illustrates molecular biologic methods or concepts by showing how this method has provided new information about a pulmonary disease. Each chapter begins with a list of basic concepts to be discussed and ends with a selection of annotated references. The first chapter, Basics, covers the basic concepts of what DNA is, how it is organized to govern the making of proteins, and their application to pulmonary medicine. The chapter on Tuberculosis explains how the polymerase chain reaction relates to the diagnosis of the disease. Plus, discussions of virulence and drug resistance illustrate the clinical relevance of cloning DNA and screening libraries. Amyotrophias Lateral Sclerosis includes coverage of the structure of chromosomes, how to find a gene by linkage analysis, site-directed mutagenesis, and programmed cell death or apoptosis. Cystic Fibrosis discusses deduction of protein structure from gene sequence, posttranscriptional processing of RNA, and posttranslational processing of proteins. Cystic Fibrosis also illustrates the clinical relevance of genetic screening, commercial production of recombinant proteins, and gene therapy. Lung Cancer and the Cell Cycle explores DNA replication and its

regulation, oncogenes and anti-oncogenes, and DNA mutations. The appendix contains a glossary of terms with simple definitions.

There is growing enthusiasm in the scientific community about the prospect of mapping and sequencing the human genome, a monumental project that will have far-reaching consequences for medicine, biology, technology, and other fields. But how will such an effort be organized and funded? How will we develop the new technologies that are needed? What new legal, social, and ethical questions will be raised? Mapping and Sequencing the Human Genome is a blueprint for this proposed project. The authors offer a highly readable explanation of the technical aspects of genetic mapping and sequencing, and they recommend specific interim and long-range research goals, organizational strategies, and funding levels. They also outline some of the legal and social questions that might arise and urge their early consideration by policymakers.

Introduction to Molecular Biology

Advanced Methods in Molecular Biology and Biotechnology

The Lung

The Molecular Basis of Life

The Evaluation of Forensic DNA Evidence

Landmark Experiments in Molecular Biology

Cell And Molecular Biology, Second Edition Gives An Extensive Coverage Of The Fundamentals Of Molecular Biology; The Problems It Addresses And The Methods It Uses. Molecular Biology Is Presented As An Information Science, Describing Molecular Steps That Nature Uses To Replicate And Repair Dna; Regulate Expression Of Genes; Process And Translate The Coded Information In Mrna; Modify And Target Proteins In The Cell; Integrate And Regulate Metabolism. Written In A Lucid Style, The Book Will Serve As An Ideal Text For Undergraduate Students, As Well As Scientific Workers Of Other Disciplines Who Need A Comprehensive Overview Of The Subject. Features Of The Second Edition
Incorporates Many New Topics And Updates
Gives Independent Chapters On Dna Replication, Dna Repair, Transcription And Translation To Accommodate Recent Advances
A New Chapter On Post-Translational Modification And Protein Targeting
A Chapter On Tools And Techniques Employed In Molecular Biology
An Introductory Chapter On Bioinformatics Included To Emphasise That Molecular Processes Can Be Addressed Computationally
Extensive Glossary.

One of the central problems in the study of the mechanism of DNA-ligand interactions is the existence and nature of sequence specificity with respect to the base pairs of DNA. The presence of such a specificity could be of particular significance because it might possibly mean the involvement of specific genes in the effectiveness of the different drugs. The elucidation of the factors responsible for the specificity could then be important for the development of compounds susceptible to contribute to the control of gene expression and also to the development of rationally conceived, improved new generations of effective and specific chemotherapeutic agents. Important recent achievements, experimental and theoretical, in the analysis of such sequence specificities open prospects for possible rapid progress in this field. The 23rd Jerusalem symposium was devoted to the exploration of these recent achievements in relation to many types of ligand, with special emphasis on antitumor drugs. All major types of interaction, intercalation, groove binding, covalent linking, coordination, have been considered. So was also the effect of the interaction on the structure and properties of the nucleic acids and the relationship between the interaction and biological or pharmacological activities. We feel that this Volume presents a relatively complete up-to-date account of the state of the art in this important field of research.

Calculations for Molecular Biology and Biotechnology: A Guide to Mathematics in the Laboratory, Second Edition, provides an introduction to the myriad of laboratory calculations used in molecular biology and biotechnology. The book begins by discussing the use of scientific notation and metric prefixes, which require the use of exponents and an understanding of significant digits. It explains the mathematics involved in making solutions; the characteristics of cell growth; the multiplicity of infection; and the quantification of nucleic acids. It includes chapters that deal with the mathematics involved in the use of radioisotopes in nucleic acid research; the synthesis of oligonucleotides; the polymerase chain reaction (PCR) method; and the development of recombinant DNA technology. Protein quantification and the assessment of protein activity are also discussed, along with the centrifugation method and applications of PCR in forensics and paternity testing. Topics range from basic scientific notations to complex subjects like nucleic acid chemistry and recombinant DNA technology Each chapter includes a brief explanation of the concept and covers necessary definitions, theory and rationale

for each type of calculation Recent applications of the procedures and computations in clinical, academic, industrial and basic research laboratories are cited throughout the text New to this Edition: Updated and increased coverage of real time PCR and the mathematics used to measure gene expression More sample problems in every chapter for readers to practice concepts

The Race to Crack the Genetic Code

Calculations for Molecular Biology and Biotechnology

A Guide to Mathematics in the Laboratory

Discovering the Basis of Life

Basic Methods in Molecular Biology

The Molecular Basis for Camptothecin Resistance in DNA Topoisomerase I Mutants

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

Genetics is the study of how genes bring about characteristics, or traits, in living things and how those characteristics are inherited. Genes are portions of DNA molecules that determine characteristics of living things. Through the processes of meiosis and reproduction, genes are transmitted from one generation to the next. The physio-chemical basis of biological systems and the control of their development and interactions are being unraveled in spectacular advances in molecular biology. During the past few decades both basic and applied aspects of biotechnology have developed rapidly. Genetic engineering provides great promise for the improvement of crop plants. The successful application of biotechnological tools will require reliable, high levels of transgene expression and their stability over generations. DNA molecules form from chains of building blocks called nucleotides. Each nucleotide consists of a sugar molecule called deoxyribose that bonds to a phosphate molecule and to a nitrogen-containing compound, known as a base. DNA uses four bases in its structure: adenine (A), cytosine (C), guanine (G), and thymine (T). The order of the bases in a DNA molecule-the genetic code-determines the amino acid sequence of a protein. This book is useful to researchers, molecular biologists, biotechnologists, plant breeders and teachers engaged in advanced genetics and molecular biology. The development of powerful new techniques and refinements of techniques in molecular genetics in recent years, and the surge in interest in biotechnology based on genetic methods, have heralded a new golden age in molecular genetics, and stimulated in diverse disciplines much interest in the technologies themselves and their potential uses in basic and applied biomedical sciences. Although some excellent specialist laboratory manuals (especially the Cold Spring Harbor Laboratory manuals by I. H. Miller; R. W. Davies et al. ; and T. Maniatis et al.) on certain chapters of molecular genetics exist, no general text that covers a broad spectrum of the subject has thus far been published. The purpose of this manual is to present most, though of necessity not all of the important methods of molecular genetics, in a series of simple experiments, many of which can be readily accomplished by the microbiologist, biochemist or biotechnologist that has had only limited exposure to genetics. The remainder of the experiments require either greater familiarity with the subject, or guidance by someone with such experience. The book should, therefore, not only enable individuals to acquire new procedures for ongoing projects, but also serve as a basis for the teaching of molecular genetic techniques in formal predoctoral and postdoctoral laboratory courses.

DNA

Working with DNA and RNA

Advanced Molecular Genetics

Mapping and Sequencing the Human Genome

An Introduction to Molecular Biology

Encyclopedia of Molecular Biology and Molecular Medicine, Denaturation of DNA to Growth Factors

Molecular Basis of Aging is a collection of papers that discuss the molecular aspects of aging in the light of molecular biology, biochemical gerontology, and genetics. Each chapter of the book contains a different study about the topic, which includes the effects of aging on DNA synthesis; the amplification of extrachromosomal circular copies and mitochondrial DNA during aging; and the altered actions of hormones and neurotransmitters

during aging. The book also encompasses the loss of responsiveness to growth factors in cell senescence; the integration of cellular-molecular and neuroendocrine concepts of aging; changes and inactivation of enzymes during aging; and the relationship of aging with free radicals. The text is recommended for molecular biologists, biochemists, and gerontologists who wish to study further the effects of aging on the body on a molecular level. *Molecular Biology of the Cell* *The Molecular Basis of Life* *An Introduction to Molecular Biology* *The Evaluation of Forensic DNA Evidence* *National Academies Press*

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

Molecular Basis of Disease

Small Molecule DNA and RNA Binders

The Molecular and Hormonal Basis of Plant-Growth Regulation

Life's Greatest Secret

Fundamentals of Molecular Structural Biology

An Introduction to the Molecular Basis of Health and Disease

During the past few decades we have witnessed an era of remarkable growth in the field of molecular biology. In 1950 very little was known of the chemical constitution of biological systems, the manner in which information was transmitted from one organism to another, or the extent to which the chemical basis of life is unified. The picture today is dramatically different. We have an almost bewildering variety of information detailing many different aspects of life at the molecular level. These great advances have brought with them some breath-taking insights into the molecular mechanisms used by nature for replicating, distributing and modifying biological information. We have learned a great deal about the chemical and physical nature of the macromolecular nucleic acids and proteins, and the manner in which carbohydrates, lipids and smaller molecules work together to provide the molecular setting of living systems. It might be said that these few decades have replaced a near vacuum of information with a very large surplus. It is in the context of this flood of information that this series of monographs on molecular biology has been organized. The idea is to bring together in one place, between the covers of one book, a concise assessment of the state of the subject in a well-defined field.

Oksana Ableitner offers a practical, clearly structured and easy to understand introduction to complicated definitions and structures in chemistry and molecular biology for work in the molecular biology laboratory. The author is guided by her experience in working with students and uses many illustrations to visualize abstract knowledge. An understanding of this matter is an essential basis for successful work with DNA and RNA in order to ensure high quality results. For responsible activities in application - such as genetic research or the determination of various pathogens - it is essential to be confident in dealing with the basics of these sensitive, fast and specific analytical methods. This Springer essential is a translation of the original German 2nd edition essentials, *Einführung in die Molekularbiologie* by Oksana Ableitner, published by Springer Fachmedien Wiesbaden GmbH, part of Springer Nature in 2018. The translation was done with the help of artificial intelligence (machine translation by the service DeepL.com). A subsequent human revision was done primarily in terms of content, so that the book will read stylistically differently from a conventional translation. Springer Nature works continuously to further the development of tools for the production of books and on the related technologies to support the authors. The content Basic concepts of molecular biology Molecular biological methods such as PCR, real-time PCR, gel electrophoresis, sequencing, MLST, microarray technology and PFGE Chemical calculation in the laboratory The target groups Students of biology, chemistry and medicine Medical and chemical-technical assistants, biomedical analysts The Author After studying chemistry and biology, Oksana Ableitner first worked as a teacher in a Ukrainian school. After further training as a chemical engineer in Graz, she has worked for many years in the Core Unit Molecular Biology at a laboratory in Graz and is responsible for the implementation and optimisation of various molecular biological processes. This book is a translation of an original German edition. The translation was done with the help of artificial intelligence (machine translation by the service DeepL.com). A subsequent human revision was done primarily in terms of content, so that the book will read stylistically differently from a conventional translation.

A Practical Lab Manual