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Nota di contenuto	Allostery and Quaternary Structure -- Analysis of Damaged DNA -- Artificial Chromosomes -- Artificial Endonucleases for Genome Editing -- Bacterial DNA Replicases -- Bacteriophage and Viral Cloning Vectors -- Base Intercalation -- Bioactivation of Carcinogens -- Bioinorganic Chemistry -- Blue/White Selection -- Characteristics of Enzymes and Cloning Vectors Used to Create Recombinant DNA -- Chemical Biology of DNA Replication -- Chemical Denaturation -- Chemical Reaction Kinetics: Mathematical Underpinnings -- Chromatin Remodeling during Homologous Recombination Repair in Saccharomyces Cerevisiae -- Cis-Regulation of Eukaryotic Transcription -- Classic Approaches to sequence determination -- Classical and Alternative End Joining -- Cloning Vector Compatibility -- Computational methods in epigenetic research -- Conjugative Transfer Systems and Classifying Plasmid Genomes -- Conservative Site-specific Recombination -- Control of Initiation in E.coli -- Co-Transcriptional mRNA Processing in Eukaryotes -- Crosslinking -- Cycling of the Lagging Strand Replicase

During Okazaki Fragment Synthesis -- Depurination -- Differential Equations and Chemical Master Equation Models for Gene Regulatory Networks -- Direct Enzymatic Reversal of DNA Damage -- Division of Labor -- DNA Damage as a Therapeutic Strategy -- DNA Damage by Endogenous Chemicals -- DNA Methylation and Cancer -- DNA Polymerase III Structure -- DNA Repair -- DNA Repair Polymerases -- DNA Replication -- DNA Topology and Topoisomerases -- DnaA, DnaB, DnaC -- DnaX Complex Composition and Assembly Within Cells -- Double-strand Break Repair -- Effects of adducts on Tm -- Equilibria and Bifurcations in the Molecular Biosciences -- Eukaryotic DNA Replicases -- Evolution of Gene Regulatory Networks -- Evolution of Plant Genomes -- Exocyclic Adducts -- Experimental Assessment of Secondary Structure by Circular Dichroism -- Exploring Nuclear Lamin–Chromatin Interactions and Their Signalling Cascades -- Expression Assessment -- Fatty Acid Metabolism -- Forces Maintaining the Stability of Tertiary Structure -- Frequency of DNA Damage -- Gene Regulation -- Genes and Genomes: Structure -- Genomic Imprinting -- Genomic Imprinting in Mammals: Memories of Generations Past -- Genomic Sequence and Structural Diversity in Plants -- Genomic Signature Analysis to Predict Plasmid Host Range -- Golgi Apparatus -- Gyrase and Topoisomerase IV as Targets for Antibacterial Drugs -- HDAC Inhibitors Entinostat and Suberoylanilide Hydroxamic Acid (SAHA): The Ray of Hope for Cancer Therapy -- Helicase and Primase Interactions with Replisome Components and Accessory Factors -- Helicase Mechanism of Action -- Hereditary Breast and Ovarian Cancer and Poly(ADP-ribose) Polymerase Inhibition -- Homologous Recombination in Lesion Bypass -- Hydrolytic, Deamination, and Rearrangement Reactions of DNA Adducts -- Immunology and the Immune Response -- In Silico Approaches Towards Safe Targetting of Class I Histone Deacetylases -- Inflammation and Host Response to Infection -- Innate and Regulatory B cells -- Innate Immunity -- Ion Channels and Transporters -- Kinetics of DNA Damage -- Large, Theta-replicating Plasmids -- Long-Term Genetic Silencing at Centromere and Telomeres -- Mammalian Sugar Transporters -- Many Bacteria Use a Special Mutagenic Pol III in Place of Pol V -- Mass Spectrometry Approaches -- Mathematical Modelling of Plasmid Dynamics -- Mathematical Models in the Sciences -- Mathematics of Fitting Scientific Data -- Mechanism of Initiation Complex Formation -- Mechanism of PCNA loading by RFC -- Mechanisms of DNA Recombination -- Meiotic Recombination -- Metamobilomics – The Plasmid Metagenome of Natural Environments -- Methods for Plant Genome Annotation -- Mismatch Repair -- Mitochondrial Genomes -- Mitochondrial Genomes in Alveolates -- Mitochondrial Genomes in Amoebozoa -- Mitochondrial Genomes in Fungi -- Mitochondrial Genomes in Invertebrate Animals -- Mitochondrial Genomes in Land Plants -- Mitochondrial Genomes in Unicellular Relatives of Animals -- Mitochondrial Genomes in Vertebrate Animals -- Mitochondrial Genomes of Chromists (Stramenopiles, Haptophytes and Cryptophytes) -- Mitochondrial Genomes of Excavata -- Mitochondrial Genomes of Green, Red and Glaucophyte Algae -- Mobile DNA: Mechanisms, Utility, and Consequences -- Modelling Plasmid Regulatory Systems -- Modes of Base Pairing -- mRNA localization and localized translation -- Naming and Annotation of plasmids -- Natural Products that Damage DNA -- NMR Approaches to Determine Protein Structure -- NMR Basis For Biomolecular Structure (Theory) -- Nucleotide Excision Repair -- Obtaining Crystals -- Oxidative Damage -- Pattern Recognition Receptors: Evolution, Redundancy, and Cross Talk -- PCNA Structure and Interactions with Partner Proteins -- Peptide Pheromones and their

Protein Receptors: Cellular Signaling in Gram-positive Bacteria -- Phagocytosis -- Plant Genome Sequencing Methods -- Plant Genomes: From Sequence to Function Across Evolutionary Time -- Plant Transposable Elements: Beyond Insertions and Interruptions -- Plasmid Cloning Vectors -- Plasmid Genomes, Introduction to -- Plasmid Incompatibility -- Plasmids as Secondary Chromosomes -- Polyglutamine Folding Diseases -- Polymerase Chain Reaction -- Practical Screening for DNA Damage -- Predictions from Sequence -- Primary Structure -- Prokaryotic Gene Regulation by Sigma Factors and RNA Polymerase -- Prokaryotic Gene Regulation by Small RNAs -- Protein Domain Structure Evolution -- Rad51 and Dmc1 Recombinases -- Reactive Oxygen Species -- Recombination: Mechanisms, Pathways, and Applications -- Recombineering -- Regulation of cytoplasmic mRNA -- Regulation of DSB Repair by Cell-cycle Signaling and the DNA Damage Response -- Regulation of Genetic Element Mobility -- Relevance of DNA Damage to Cancer -- Repeating Sequences in Proteins: Their Identification and Structural/Functional Implications -- Replication Origin of E. coli and the Mechanism of Initiation -- Replicative DNA Helicases and Primases -- Resolution of Inflammation -- Restriction Endonucleases -- RNA Interference -- RNA Quality Control -- RNA-induced chromatin remodeling -- Role of Chromatin Remodeling and DNA Modification in Transcriptional Regulation -- Roles of Post-translational Modifications in DNA Double Strand Break Repair -- Rolling-circle Replicating Plasmids -- Secondary Structure -- Selection with Antibiotics -- Selectivity of Chemicals for DNA Damage -- Sequence Selectivity of DNA Damage -- Signal Recognition in Lower Organisms: Light-Induced Control of Cell Movement in the Ciliates Blepharisma and Stentor -- SIKE: Discovery, Structure, and Function -- Single Strand Annealing -- Site-specific Mutagenesis -- Some Key Enzymes Used in Cloning -- Spectroscopy of Damaged DNA -- Synthesis of Modified Oligonucleotides -- Synthetic Plasmid Biology -- TANK-Binding Kinase 1 (TBK1): Structure, Function, and Regulation -- Target-primed Mobilization Mechanisms -- Target-site Selection -- Tertiary Structure Domains, Folds and Motifs -- The Complement System -- Theoretical Aspects of Secondary Structure -- Toll-Like Receptor 3: Structure and Function -- Toll-Like Receptors: Evolution and Structure -- Toll-Like Receptors: Pathogen Recognition and Signaling -- Topoisomerases and Cancer -- Transcription Factor Classes -- Transduction of Environmental Signals by Prokaryotic Two Component Regulatory Systems -- Transposable elements and plasmid genomes -- Transposons -- Types of DNA damage -- Types of Electrophiles -- Ultraviolet Light Damage -- uORFs: an unusual cis element that regulates translation -- Using Sequence Information to Assess Evolutionary Relationships -- Using Sequence Information to Identify Motifs -- V(D)J Recombination -- Why Do Proteins Have Quaternary Structure: Non-allosteric Proteins.

Sommario/riassunto

Molecular Life Sciences: An Encyclopedic Reference will focus on understanding biological phenomena at the level of molecules and their interactions that govern life processes. The work will include articles on genes and genomes, protein structure and function, systems biology using genomics and proteomics as the focus, molecular aspects of cell structure and function, unifying concepts and theories from biology, chemistry, mathematics and physics that are essential for understanding the molecular life sciences (including teaching perspectives and assessment tools), and basic aspects of the various experimental approaches that are used in the Molecular Life Sciences.