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DNA Replication is Bidirectional and Semiconservative; DNA Polymerase Functions as a Dimer; Model of DNA Replication; Initiation of DNA Replication; Termination of DNA Replication and Chromosome Partitioning; RNA Synthesis: Transcription; RNA Synthesis; RNA Turnover; RNA Processing; Protein Synthesis: Translation; Transfer RNA; Charging of tRNA; Ribosome Structure and Synthesis; Initiation of Polypeptide Synthesis; Elongation; Peptide Bond Formation; Translocation; Termination; Posttranslational Processing
When Nonsense Makes SenseCoupled Transcription and Translation; Protein Folding and Chaperones; Folding Stages; Protein Folding and Chaperone Mechanisms Outside the Cytoplasm; Quality Control; Protein Trafficking; Insertion of Integral Membrane Proteins and Export of Periplasmic Proteins; Secretion of Proteins Across the Outer Membrane; Protein Degradation; Degradation of Abnormal Proteins; Energy-Dependent Proteases; Antibiotics that affect Nucleic Acid and Protein Synthesis; Agents Affecting DNA Metabolism; Agents Affecting Transcription; Agents Affecting Translation; Nucleoids
DNA ReplicationTranscription and Translation; Protein Folding, Trafficking, and Degradation; Antibiotics; 3 BACTERIAL GENETICS: DNA EXCHANGE, RECOMBINATION, MUTAGENESIS, AND REPAIR; Transfer of Genetic Information in Prokaryotes; Plasmids; Partitioning; Incompatibility; Nonconjugative, Mobilizable Plasmids; Resistance Plasmids; Plasmids in Other Bacterial Genera; Plasmid Replication; Addiction Modules: Plasmid Maintenance by Host Killing: The ccd Genes; Conjugation; F Factor; cis/trans complementation Test; Conjugation and Pheromones in Enterococci
Conjugation, Cell-Cell Signaling, and Bacterial-Induced TumorsTransformation; Gram-Positive Transformation; Gram-Negative Transformation; Transfection and Forced Competence; Transduction; Recombination; General Recombination; Genetics of Recombination; Restriction and Modification; Insertion Sequences and Transposable Elements; Transposon Tn10; Transposon Tn3; Conjugative Transposition; Evolutionary Consideration; Integrons; Mutagenesis; Spontaneous Mutations; The Nature of Mutational Events; Suppressor Mutations; DNA Repair Systems; Photoreactivation; Nucleotide Excision Repair
Transcription-Coupled Repair

Sommario/riassunto

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.