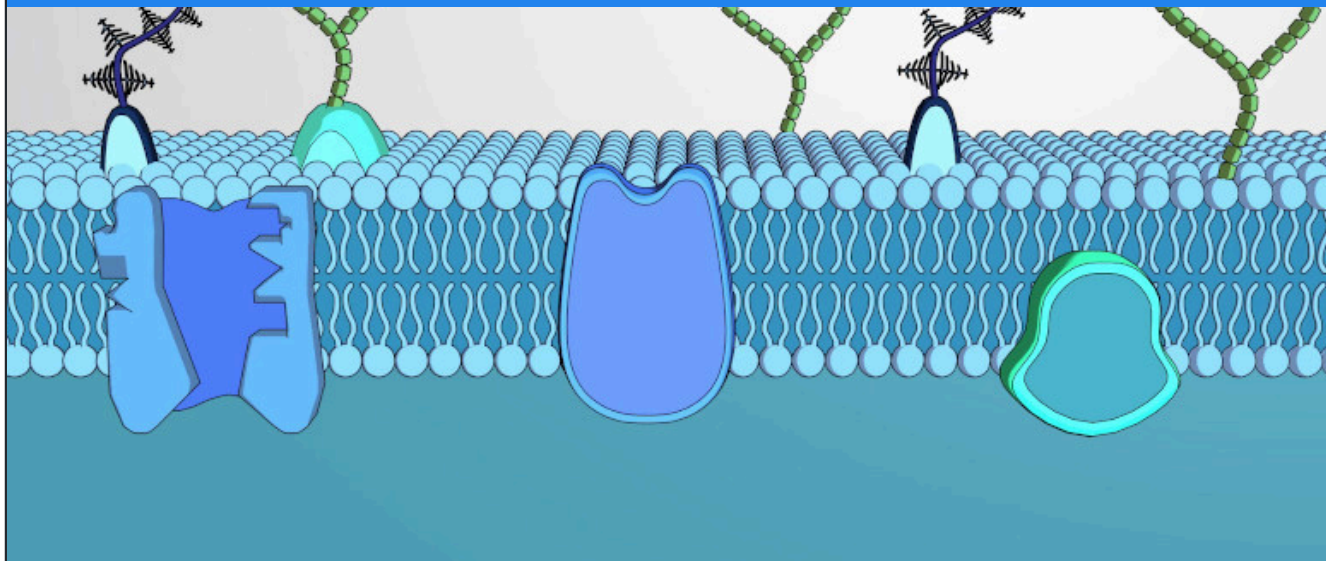




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MICROBIOLOGY



8

Topics



220+

Lessons



Core Learning Objectives

Understand the structure and function of cells and biological systems.

Examine drug actions, pharmacokinetics, & therapeutic applications.

Explore genetic principles, DNA processes, and biotechnology tools.

Develop lab skills in molecular biology, behavior, and biodiversity.

Analyze cellular signaling, metabolism, and energy transformation.

Investigate microbial systems and biomedical applications in health.

List of Chapters

- 2.1 Scientific Inquiry
- 2.2 Chemistry Of Life
- 2.3 Macromolecules
- 2.4 Cell Structure And Function
- 2.6 Cell Signaling
- 2.7 Metabolism
- 2.8 Cellular Respiration
- 2.9 Photosynthesis
- 2.10 Cell Cycle And Division
- 2.11 Meiosis
- 2.12 Classical And Modern Genetics
- 2.13 DNA Structure And Function
- 2.14 Gene Expression
- 2.15 Biotechnology
- 2.16 Viruses
- 2.17 Nutrition And Digestion
- 2.18 Nervous System
- 2.19 Sensory Systems
- 2.20 Musculoskeletal System
- 2.21 Endocrine System
- 2.22 Circulatory And Pulmonary Systems
- 2.23 Osmoregulation And Excretion
- 2.24 Immune System
- 2.25 Reproduction And Development
- 2.26 Behavior
- 2.27 Ecosystems
- 2.28 Population And Community Ecology
- 2.29 Biodiversity And Conservation
- 2.30 Speciation And Diversity
- 2.31 Natural Selection
- 2.32 Population Genetics
- 2.33 Evolutionary History
- 2.34 Plant Structure, Growth, And Nutrition
- 2.35 Plant Reproduction
- 2.36 Plant Responses To The Environment

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- 2.1 Cells, Genomes, And Evolution
- 2.2 Biochemistry Of The Cell
- 2.3 Energy And Catalysis
- 2.4 Introduction To Metabolism
- 2.5 Protein Structure
- 2.6 Protein Function
- 2.7 Structure And Organization Of DNA
- 2.8 Dna Replication And Repair
- 2.9 Transcription: DNA to RNA
- 2.10 Translation: RNA To Protein
- 2.11 Control Of Gene Expression
- 2.12 Membrane Structure And Components
- 2.13 Membrane Transport And Active Transporters
- 2.14 Channels And The Electrical Properties Of Membranes
- 2.15 Transmembrane Transport In Endoplasmic Reticulum And Peroxisomes
- 2.16 Intracellular Compartments And Protein Sorting
- 2.17 Intracellular Membrane Traffic
- 2.18 Endocytosis And Exocytosis
- 2.19 Mitochondria And Energy Production
- 2.20 Chloroplasts And Photosynthesis
- 2.21 Principles Of Cell Signaling
- 2.22 Signaling Networks Of G Protein-Coupled Receptors
- 2.23 Signaling Networks Of Kinase Receptors
- 2.24 Alternative Signaling Routes In Gene Expression
- 2.25 The Cytoskeleton I: Actin And Microfilaments
- 2.26 The Cytoskeleton II: Microtubules And Intermediate Filaments
- 2.27 Extracellular Matrix In Animals
- 2.28 Cell-Matrix Interactions
- 2.29 Cell-Cell Interactions
- 2.30 Cell Polarization And Migration
- 2.31 Plant Cell Structure And Organization
- 2.32 Analyzing Cells And Proteins
- 2.33 Visualizing Cells, Tissues, And Molecules
- 2.34 Cell Proliferation
- 2.35 Cell Division
- 2.36 Meiosis
- 2.37 Cell Death

- 2.38 Cancer
- 2.39 Stem Cell Biology And Renewal In Epithelial Tissue
- 2.40 A Hierarchical Stem-Cell System: Blood Cell Formation
- 2.41 Fibroblast Transformation And Muscle Stem Cells
- 2.42 Regeneration And Repair
- 2.43 Embryonic And Induced Pluripotent Stem Cells

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JoVE Core: Pharmacology

List of Chapters

- 3.1 General Pharmacological Principles
- 3.2 Adverse Drug Effects and Chemical Toxicity
- 3.3 Pharmacokinetics
- 3.4 Pharmacodynamics
- 3.5 Drugs Acting on Autonomic Nervous System: Cholinergic
- 3.6 Agonists and Antagonists Agents
- 3.7 Drugs Acting on Autonomic Nervous System: Adrenergic
- 3.8 Agonists and Antagonists Agents
- 3.9 Skeletal Muscle Relaxants
- 3.10 Local Anesthetics
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- 3.12 Cardiovascular Drugs: Antiarrhythmic and Heart Failure Drugs
- 3.13 Cardiovascular Drugs: Anticoagulants and Antianginal Agents
- 3.14 Drugs Abuse and Addiction
- 3.15 Drugs for Pain Management: Opioid Analgesics and General Anesthetics
- 3.16 Pharmacotherapy of Psychosis and Mania
- 3.17 Pharmacotherapy of Depression and Anxiety Disorders
- 3.18 Anxiolytics, Sedatives and Hypnotics
- 3.19 Pharmacotherapy of the Epilepsies
- 3.20 Introduction to Respiratory System Drugs
- 3.22 Lower Respiratory Disorders
- 3.23 Other Respiratory Disorders
- 3.24 Drugs for Peptic Ulcer Disease
- 3.25 Drugs Affecting Gastrointestinal Motility
- 3.26 Drugs for Chronic Bowel Disorders
- 3.27 Drugs for Nausea and Vomiting
- 3.28 Insulin and Hypoglycemic Drugs

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- 4.3 Scientific Method - Procedure
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- 4.5 Cell Division - Prep
- 4.6 Cell Division - Procedure
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- 4.8 Bacterial Transformation - Prep
- 4.9 Bacterial Transformation - Procedure
- 4.10 DNA Isolation & Restriction Enzyme Analysis - Concept
- 4.11 DNA Isolation & Restriction Enzyme Analysis - Prep
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- 4.15 Energy Dynamics - Procedure
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Science Education: Basic Biology.

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- 6.6 Lab Safety

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Science Education: Cell Biology.

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- 7.1 Cell Biology
- 7.2 Developmental Biology
- 7.3 Genetics
- 7.4 Immunology
- 7.5 Microbiology
- 7.6 Neuroscience

07 Clinical Skills: Physical Examinations IV

Physical Experimentation IV: Inclusive and Developmental Clinical Exam Techniques

08 Engineering: Biomedical

Bioengineering: Foundations in Biomaterials, Bioprocessing, and Tissue Engineering

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