



jove

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CELLULAR BIOLOGY



CELLULAR BIOLOGY



7

Topics



1000+

Lessons



180

Scientist-In-Action
Videos



Core Learning Objectives

To study the essential components and functions of the cell.

Explore the intricacies of cell signaling, cytoskeleton, and cellular organization.

Investigate various aspects of membrane transport and protein sorting.

Review common laboratory and visualization techniques in cell biology.

Understand the underlying mechanisms of cellular energy processes and central dogma.

Delve into the mechanisms of cell generation, proliferation, repair, and stem cell biology.

List of Chapters

- 1.1 Cells, Genomes, And Evolution
- 1.2 Biochemistry Of The Cell
- 1.3 Energy And Catalysis
- 1.4 Introduction To Metabolism
- 1.5 Protein Structure
- 1.6 Protein Function
- 1.7 Structure And Organization Of DNA
- 1.8 Dna Replication And Repair
- 1.9 Transcription: DNA to RNA
- 1.10 Translation: RNA To Protein
- 1.11 Control Of Gene Expression
- 1.12 Membrane Structure And Components
- 3.13 Membrane Transport And Active Transporters
- 1.14 Channels And The Electrical Properties Of Membranes
- 1.15 Transmembrane Transport In Endoplasmic Reticulum And Peroxisomes
- 1.16 Intracellular Compartments And Protein Sorting
- 1.17 Intracellular Membrane Traffic
- 1.18 Endocytosis And Exocytosis
- 1.19 Mitochondria And Energy Production
- 1.20 Chloroplasts And Photosynthesis
- 1.21 Principles Of Cell Signaling
- 1.22 Signaling Networks Of G Protein-Coupled Receptors
- 1.23 Signaling Networks Of Kinase Receptors
- 1.24 Alternative Signaling Routes In Gene Expression
- 1.25 The Cytoskeleton I: Actin And Microfilaments
- 1.26 The Cytoskeleton Ii: Microtubules And Intermediate Filaments
- 1.27 Extracellular Matrix In Animals
- 1.28 Cell-Matrix Interactions
- 1.29 Cell-Cell Interactions
- 1.30 Cell Polarization And Migration
- 1.31 Plant Cell Structure And Organization
- 1.32 Analyzing Cells And Proteins
- 1.33 Visualizing Cells, Tissues, And Molecules
- 1.34 Cell Proliferation
- 1.35 Cell Division
- 1.36 Meiosis
- 1.37 Cell Death

- 1.38 Cancer
- 1.39 Stem Cell Biology And Renewal In Epithelial Tissue
- 1.40 A Hierarchical Stem-Cell System: Blood Cell Formation
- 1.41 Fibroblast Transformation And Muscle Stem Cells
- 1.42 Regeneration And Repair
- 1.43 Embryonic And Induced Pluripotent Stem Cells

02

JoVE Core: Molecular Biology.

List of Chapters

- 2.1 DNA, Cells, And Evolution
- 2.2 Biochemistry Of The Cell
- 2.3 Protein Structure
- 2.4 Protein Function
- 2.5 DNA and Chromosome Structure
- 2.6 DNA Replication
- 2.7 DNA Repair And Recombination
- 2.8 Transcription: DNA to RNA
- 2.9 Transcription: RNA To Protein
- 2.10 Gene Expression
- 2.11 Additional Roles Of RNA
- 2.12 Mendelian Genetics
- 2.13 Genomes And Evolution
- 2.14 Cell Signaling Pathways
- 2.15 Studying DNA And RNA
- 2.16 Analyzing Gene Expression And Function
- 2.17 Cell Proliferation
- 2.18 Cell Division
- 2.19 Meiosis
- 2.20 Cancer

03

Lab Manual: Biology.

List of Videos

- 3.1 Scientific Method - Concept
- 3.2 Scientific Method - Prep
- 3.3 Scientific Method - Procedure
- 3.4 Cell Division - Concept
- 3.5 Cell Division - Prep
- 3.6 Cell Division - Procedure
- 3.7 Bacterial Transformation - Concept
- 3.8 Bacterial Transformation - Prep
- 3.9 Bacterial Transformation - Procedure

3.10	DNA Isolation And Restriction Enzyme Analysis - Concept
3.11	DNA Isolation And Restriction Enzyme Analysis - Prep
3.12	DNA Isolation And Restriction Enzyme Analysis - Procedure
3.13	Energy Dynamics - Concept
3.14	Energy Dynamics - Prep
3.15	Energy Dynamics - Procedure
3.16	Transpiration - Concept
3.17	Transpiration - Prep
3.18	Transpiration - Procedure
3.19	Animal Behavior - Concept
3.20	Animal Behavior - Prep
3.21	Animal Behavior - Procedure
3.22	Enzyme Activity - Concept
3.23	Enzyme Activity - Prep
3.24	Enzyme Activity - Procedure
5.25	Cell Structure - Concept
3.26	Cell Structure - Prep
3.27	Cell Structure - Procedure
3.28	Macromolecules - Concept
3.29	Macromolecules - Prep
3.30	Macromolecules - Procedure
3.31	Natural Selection - Concept
3.32	Natural Selection - Prep
3.33	Natural Selection - Procedure
3.34	Artificial Selection - Concept
3.35	Artificial Selection - Prep
3.36	Artificial Selection - Procedure
3.37	Extinction - Concept
3.38	Extinction - Prep
3.39	Extinction - Procedure
3.40	Measuring Biodiversity - Concept
3.41	Measuring Biodiversity - Prep
3.42	Measuring Biodiversity - Procedure
3.43	Plant Diversity - Concept
3.44	Plant Diversity - Prep
3.45	Plant Diversity - Procedure
3.46	Animal Diversity - Concept
3.47	Animal Diversity - Prep
3.48	Animal Diversity - Procedure

- 3.49 Microbial And Fungal Diversity - Concept
- 3.50 Microbial And Fungal Diversity - Prep
- 3.51 Microbial And Fungal Diversity - Procedure
- 3.52 Species Distribution And Biogeography - Concept
- 3.53 Species Distribution And Biogeography - Prep
- 3.54 Species Distribution And Biogeography - Procedure
- 3.55 Population Growth - Concept
- 3.56 Population Growth - Prep
- 3.57 Population Growth - Procedure
- 3.58 Community Diversity - Concept
- 3.59 Community Diversity - Prep
- 3.60 Community Diversity - Procedure
- 3.61 Climate Change - Concept
- 3.62 Climate Change - Prep
- 3.63 Climate Change - Procedure
- 3.64 Group Behavior - Concept
- 3.65 Group Behavior - Prep
- 3.66 Group Behavior - Procedure
- 3.67 Genetics Of Organisms - Concept
- 3.68 Genetics Of Organisms - Prep
- 3.69 Genetics Of Organisms - Procedure
- 3.70 Optimal Foraging - Concept
- 3.71 Optimal Foraging - Prep
- 3.72 Optimal Foraging - Procedure
- 3.73 Sexual Selection And Mate Choice - Concept
- 3.74 Sexual Selection And Mate Choice - Prep
- 3.75 Sexual Selection And Mate Choice - Procedure
- 3.76 Eusociality And Division Of Labor - Concept
- 3.77 Eusociality And Division Of Labor - Prep
- 3.78 Eusociality And Division Of Labor - Procedure
- 3.79 Hardy-Weinberg And Genetic Drift - Concept
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- 3.81 Hardy-Weinberg And Genetic Drift - Procedure
- 3.82 Evolutionary Relationships - Concept
- 3.83 Evolutionary Relationships - Prep
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- 3.87 Diffusion And Osmosis - Procedure
- 3.88 Photosynthesis - Concept
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- 3.91 Cellular Respiration - Concept
- 3.92 Cellular Respiration - Prep
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- 3.94 Physiology Of The Circulatory System - Concept
- 3.95 Physiology Of The Circulatory System - Prep
- 3.96 Physiology Of The Circulatory System - Procedure

04 Advanced Biology.

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- 4.1 Cell Biology

05 Basic Biology.

List of Topics

- 5.1 Basic Methods In Cellular And Molecular Biology
- 5.2 General Laboratory Techniques
- 5.3 Lab Safety

06 Chemistry.

List of Topics

- 6.1 Biochemistry

07 Engineering

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- 7.1 Bioengineering

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