

The Organization of Cells

A. The Cell: The Basic Unit of Life

1. Cell Theory
2. Why are cells so small? SA/V ratios!
3. Cells show two organizational patterns: Prokaryotic and Eukaryotic

B. Microscopes: Revealing the Subcellular World

1. Development of the light microscope made the study of cells possible
2. Electron microscopy has expanded our view of cellular structures

C. Prokaryotic cells

1. All Prokaryotic cells share certain features
2. Some prokaryotic cells have specialized features

D. Eukaryotic cells

1. The compartmentalization of Eukaryotic cells is the key to function
2. Membranes are abundant and important in eukaryotic cells

E. Organelles That Process Information

1. The nucleus stores most of the cell's information
2. Ribosomes are the sites of protein synthesis

F. Organelles That Process Energy

1. Mitochondria are energy transformers
2. Plastids photosynthesize or store materials
3. Some organelles have an endosymbiotic origin

G. The Endomembrane System

1. The endoplasmic reticulum is a complex factory
2. The Golgi apparatus stores, modifies, and packages proteins
3. Lysosomes contain digestive enzymes

H. Other Organelles

1. Microbodies house specialized chemical reactions
2. Vacuoles are filled with water and soluble substances

I. The Cytoskeleton

1. Microfilaments function in support and movement
2. Intermediate filaments are tough supporting elements
3. Microtubules are long and hollow

J. Extracellular Structures

1. The plant cell wall consists largely of cellulose
2. Multicellular animals have an elaborate extracellular matrix

K. Cells versus Viruses

L. Isolating Organelles for Study