ADVANCED BIOLOGY: A TOUR OF THE CELL

(USE CHAPTER 6 AS A RESOURCE)

YOU ARE RESPONSIBLE FOR READING ABOUT THE DIFFERENT TYPES OF MICROSCOPES

EUKARYOTIC CELLS HAVE INTERNAL MEMBRANES THAT COMPARTMENTALIZE THEIR FUNCTIONS

1. Comparing Prokaryotic and Eukaryotic Cells



1. Commonalities
2. Differences
3. A Panoramic View of the Eukaryotic Cell

THE EUKARYOTIC CELL’S GENETIC INSTRUCTIONS ARE HOUSED IN THE NUCLEUS AND CARRIED OUT BY THE RIBOSOMES

1. The Nucleus: Information Central
2. Nuclear Envelope
3. Nuclear lamina
4. Chromosomes
5. Chromatin
6. Nucleolus
7. Ribosomes: Protein Factories

THE ENDOMEMBRANE SYSTEM REGULATES PROTEIN TRAFFIC AND PERFORMS METABOLIC FUNCTIONS

Endomembrane System

Vesicles

1. The Endoplasmic Reticulum: Biosynthetic Factory
2. Functions of Smooth ER

1. Functions of Rough ER
2. The Golgi Apparatus: Shipping and Receiving Center
3. Lysosomes: Digestive Compartments
4. Vacuoles: Diverse Maintenance Compartments
5. Food Vacuoles
6. Contractile Vacuoles
7. Central Vacuoles

MITOCHONDRIA AND CHLOROPLASTS CHANGE ENERGY FROM ONE FORM TO ANOTHER

Mitochondria

Chloroplasts

1. Evolutionary Origins of Mitochondria and Chloroplasts
2. Endosymbiotic theory
3. Evidence for the Endosymbiotic theory
4. Mitochondria: Chemical Energy Conversions



1. Outer membrane
2. Inner Membrane
3. Mitochondrial Matrix
4. Chloroplasts: Capture of Light Energy



1. Outer and Inner Membrane
2. Thylakoids
3. Stroma
4. Plastids
5. Peroxisomes: Oxidation

THE CYTOSKELETON IS A NETWORK OF FIBERS THAT ORGANIZES STRUCTURES AND ACTIVITIES IN THE CELL

1. Roles of the Cytoskeleton: Support and Motility
2. Components of the Cytoskeleton



1. Microtubules
2. Centrosomes and centrioles
3. Cilia and Flagella
4. Microfilaments (Actin Filaments)
5. Intermediate Filaments

EXTRACELLULAR COMPONENTS AND CONNECTIONS BETWEEN CELLS HELP COORDINATE CELLULAR ACTIVITIES

1. Cell Wall of Plants



1. Primary Cell Wall
2. Middle Lamella
3. Secondary Cell Wall
4. The Extracellular Matrix (ECM) of Animal Cells



1. ECM
2. Collagen
3. Proteoglycans
4. Fibronectin
5. Integrins
6. Cell Junctions
7. Plasmodesmata in Plant Cells
8. Animal Cells



1. Tight Junctions
2. Desmosomes
3. Gap Junctions