

Cell Biology Review

Concepts:

Microscopy and Cell Theory

- What is a cell?
- Three components to cell theory.
- Major players: Schleiden, Schwann, Virchow
- Types of microscopes: Compound, transmission, electron, scanning electron.
- Magnification vs resolution.
- How to calculate Magnification.
- How to calculate Field of View.

Cell Organelles

- Function of : Nucleus, Nucleolous, Cell Membrane, Cytoplasm, Mitochondria, Golgi Apparatus, Endoplasmic Reticulum, Ribosome, Vacuoles
- Differences between plant and animals cells.
- Labeling a cell.

Cell Membrane

- Function of the cell membrane.
- Fluid mosaic model.
- Four parts of a cell membrane and their functions.
- Difference between an integral and peripheral membrane protein.
- What does hydrophilic and hydrophobic mean?

Macromolecules

- Define macromolecule.
- The four essential macronutrients.
- Carbohydrates : What are they used for? How much energy is in one gram of carbs? Monomer for carbs? Difference between monosaccharides, disaccharides, and polysaccharides.
- Lipids: What are they used for? How much energy is in one gram of lipids? Monomer for lipids? Difference between saturated and unsaturated fats. Types of lipids (phospholipids, waxes, steroids)
- Proteins: What are they used for? How much energy is in one gram of protein? Monomer for proteins? Types of proteins (enzymes, antibodies)

- Nucleic Acids: What are they used for? Monomer for nucleic acids? Difference between RNA and DNA.

Enzymes

- Define catalyst, enzyme, substrate, active site.
- How do enzymes work?
- Describe the lock and key model and how it applies to enzymes.
- Two factors that affect enzyme activity.
- Competitive vs non-competitive enzyme inhibitors.

Passive and Active Transport

- Compare active and passive transport.
- Three types of passive transport.
- Define hypertonic, hypotonic, and isotonic.
- Two types of bulk transport.
- Difference between pinocytosis and phagocytosis.

Cellular Respiration

- What does ATP stand for?
- What is the overall formula for cellular respiration?
- Two types of cellular respiration.
- Two stages in aerobic respiration and how they work. What goes into each stage and what comes out of each stage? Which one is more efficient? Where does each step take place?
- Two types of anaerobic respiration. What goes into each type and what comes out? Are they efficient?

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