

## Unit Topic: Cells

Essential Question: How do the components within a cell work together to maintain homeostasis from an organismal level all the way down to a cellular level?

### Concept 1 Cell Theory

1. List the 3 principles of cell theory.
2. Describe the structures that distinguish animal cells from plant cells.
3. Describe the structures that distinguish prokaryotic cells from eukaryotic cells.
4. Describe the functions of the following organelles: plasma membrane, nucleus, rough and smooth ER, Golgi apparatus, vacuole, centrioles, cilia, flagella, mitochondrion, chloroplast, and cell wall.
5. Describe the roles of proteins and carbohydrates in the structure and function of the phospholipid bilayer.
6. Defend the claim that ribosomes are the most essential organelle in the cell. In your reasoning, include evidence of at least 3 organelles that support the ribosome in accomplishing its function for the cell.
7. Compare and contrast the structure and function of a plant cell, an animal cell, and a prokaryotic cell.
8. Predict the consequences of the failure or absence of an organelle inside a eukaryotic cell.

Vocabulary:  
Cell theory  
Prokaryotic cell  
Eukaryotic cell  
Organelle

### Concept 2 Homeostasis

1. Differentiate between dynamic and static equilibrium.
2. Describe the processes of osmosis, diffusion, and facilitated diffusion.
3. Differentiate between passive and active transport.
4. Describe the roles of the following organelles in homeostasis: nucleus, mitochondrion, Golgi apparatus, vacuole, and lysosome.
5. Differentiate between hypotonic, isotonic, and hypertonic solutions. You may use a picture to help you describe.
6. Classify a cell as prokaryotic or eukaryotic based on its structure.
7. Describe the structure and function of a cell wall.
8. Classify a cell as prokaryotic or eukaryotic based on its structure.
9. Describe the structure and function of a cell wall.
10. Classify solutions as hypotonic, isotonic, or hypertonic.

Vocabulary:  
Homeostasis  
Solute  
Solvent  
Concentration

### Concept 3 Cell Cycle and Cancer

1. Summarize the order of events from egg formation to embryo.
2. Explain the difference between specialized cells and stem cells.
3. List the levels of organization from cell to organism that result from differentiation.
4. List the two main purposes for cell division.
5. Summarize the order of events from egg formation to embryo.
6. Explain the difference between specialized cells and stem cells.
7. List the levels of organization from cell to organism that result from differentiation.
8. Summarize how cells know when they need to divide. Include examples of the difference between internal and external regulation.
9. Explain the key roles of checkpoints and apoptosis in the regulation of the cell cycle.
10. Define tumor and differentiate between the two types.
11. List several potential causes of cancer.

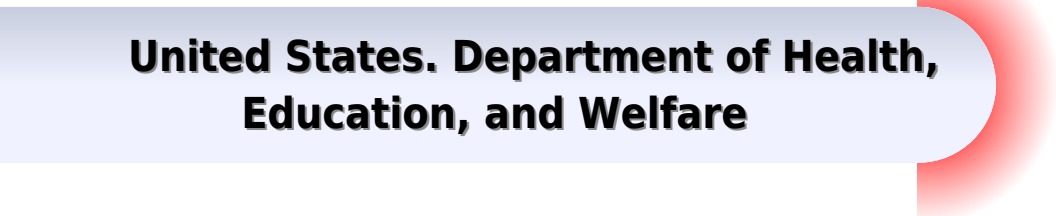
Vocabulary:  
Cell cycle  
Chromosome

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# High School Study Guide

**United States. Department of Health,  
Education, and Welfare**



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