

Chapter 1: Cell Structure and Function Study Guide

Answer or define the following as completely as possible.

- 1. Anton van Leeuwenhoek:**
The 1st scientist to see "animalcules", or tiny living things that moved.
- 2. cell wall:**
A structure found only in plant cells. Gives a plant cell support.
- 3. cytoplasm:**
The region between the cell membrane and the nucleus.
- 4. mitochondria:**
An organelle that converts energy in food molecules into energy the cell can use.
- 5. Matthias Schleiden:**
Stated or discovered that all plants are made of cells.
- 6. ribosomes:**
Grainlike organelles on which proteins are made.
- 7. organic compounds:**
Compounds that always contain Carbon.
- 8. Robert Hooke:**
The first scientist to use the term cell. Saw plant cells.
- 9. resolution:**
The ability to clearly distinguish the individual parts of an object.
- 10. magnification:**
The ability to make a small object look larger than it really is.
- 11. vacuoles:**
An organelle used as a storage facility. 1 large vacuole in a plant cell. 0 or several small ones in an animal cell.
- 12. atoms:**
The smallest units of an element.

13. **cells:**
The basic units of structure and function in living things.
14. **chloroplasts:**
Found mainly in plant cells. Contains chlorophyll and is the site where sunlight is changed into useable energy.
15. **proteins:**
Made up of amino acids. Contains C, H, O, N.
16. **osmosis:**
The diffusion of water molecules through a selectively permeable membrane.
17. **diffusion:**
The movement of molecules from an area of greater concentration to an area of lesser concentration.
18. **carbohydrates:**
Organic compounds that include sugars and starches.
19. **nucleic acids:**
DNA and RNA
20. **Why is it important for the cell membrane to be selectively permeable?**

If the membrane is selectively permeable, it can control the materials that enter and exit the cell. The cell membrane is usually not permeable to large molecules and salts.
21. **How can you distinguish a plant cell from an animal cell? List 3 ways.**

 1. plant cells have a cell wall
 2. have 1 large vacuole
 3. plant cells have chloroplasts
22. **What is the cell theory? List the parts of the cell theory.**

Describes the relationship between cells and living things
 1. all living things are made of cells
 2. cells are the basic units of structure and function of all living things
 3. all cells come from other cells.

23. Explain the importance of the cell membrane to the survival of the cell.

The cell could not survive without the cell membrane to control the substances that enter or exit the cell. Harmful substances exit the cell.

24. Describe what would happen to the cells of a freshwater organism if it were placed in saltwater. Explain your answer.

If freshwater organisms were placed in salt water, its cells would shrink as they lost water to the environment. Osmosis is the movement of water from an area of greater concentration to an area of lesser concentration. Freshwater moves out of the cell to the saltwater.

25. Draw two diagrams, one that illustrates passive transport and one that illustrates active transport. Label the diagrams to make it clear how the two types of transport differ.

Passive Transport: materials pass through the cell membrane without requiring the cell's energy.

Active Transport: requires the cell's energy. Transport proteins move materials across the cell's membrane.

26. Assume your teacher has asked you to explain to a fifth grade class why cells are so small. What would you say? What drawings or diagrams might you use to make the ideas easier to understand?

The larger the cell, the longer it would take for materials to be carried by the cytoplasm from the cell membrane to the center of the cell or for waste products to be carried from the center of the cell to the cell membrane.