Name _____ Date _____ Class _____

Study Guide

CHAPTER 7
Section 1: Cell Discovery and Theory

In your textbook, read about the history of the cell theory and microscope technology.

Respond to each statement.

1. **Name** the invention that helped scientists discover the cell.

_____

2. **Tell** why Hooke called the structures he saw in the cork *cellulae* ("small rooms").

_____

_____

3. **Name** the type of microscope that uses a series of magnifying lenses.

_____

Write the term or phrase that best completes each statement. Use these choices:

cell theory **cells** **daughter cells** **genetic material** **organisms**

The **(4)** _____ includes the following three principles:

1. All living organisms are composed of one or more **(5)** _____.
2. Cells are the basic unit of structure and organization of all living **(6)** _____.
3. Cells arise only from previously existing cells, with cells passing copies of their **(7)** _____ on to their **(8)** _____.

In your textbook, read about basic cell types.

Complete the table by checking the correct column(s) for each description.

Description	Prokaryotes	Eukaryotes
9. Organisms that break down molecules to generate energy		
10. Organisms that have cells lacking internal membrane-bound organelles		
11. Organisms whose cells do not have nuclei		
12. Organisms that are either unicellular or multicellular		
13. Organisms that are generally unicellular		
14. Organisms that have cells containing organelles		
15. Organisms that have plasma membranes		

Name _____ **Date** _____

Section 1 Cell Discovery and Theory (continued)

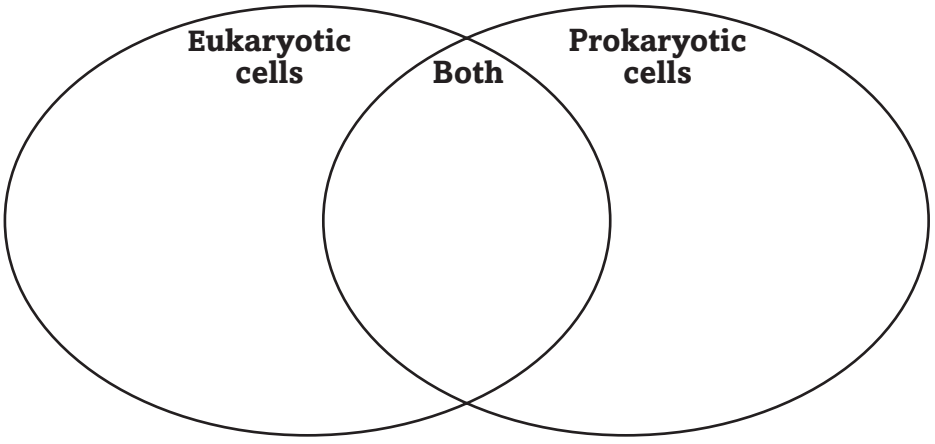
Main Idea _____ **Details** _____

Basic Cell Types

I found this information on page _____.

Compare and contrast ***eukaryotic and prokaryotic cells by putting the phrases in the Venn diagram.***

- bacteria
- contain organelles
- have a nucleus
- have membrane-bound organelles
- multicellular organisms
- unicellular organisms
- do not have membrane-bound organelles



Relate ***the basic cell types by filling in the missing terms***

The _____ cell is larger and more complex than the _____ cell. Eukaryotic cells contain a structure called the _____ which is a distinct central organelle that contains the cell's _____ material. _____ are specialized structures that carry out specific cell functions. The cell, nucleus, and all of the organelles are surrounded by a _____. Prokaryotes do not have _____. Their cell functions occur _____ the cell or on the plasma membrane.

SUMMARIZE **Analyze how more sophisticated microscopes have allowed scientists to advance their knowledge of cells.**

_____

_____

_____

Name _____ Date _____ Class _____

Study Guide

CHAPTER 7
Section 2: The Plasma Membrane

In your textbook, read about the function of the plasma membrane.

Complete the table by checking the correct column(s) for each description.

Description	Selective Permeability	Homeostasis	Plasma Membrane
1. The process of maintaining balance inside a cell			
2. A boundary between a cell and its environment			
3. The feature of the plasma membrane that keeps some substances out			
4. Separates prokaryotic and eukaryotic cells from the watery environment in which they exist			
5. The quality of a plasma membrane that allows oxygen and glucose to move in			
6. Maintained by the plasma membrane			

In your textbook, read about the structure of the plasma membrane.

Label the diagram of the plasma membrane. Use these choices:

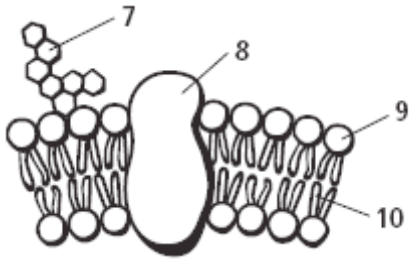
carbohydrate chain **nonpolar tails** **polar head** **transport protein**

7. _____

8. _____

9. _____

10. _____



Match the definition or description in Column A with the term in Column B.

Column A	Column B
_____ **11.** make up most of the molecules in the plasma membrane	**A.** transport proteins
_____ **12.** a molecule that has a glycerol backbone, two fatty acid chains, and a phosphate-containing compound	**B.** lipids
_____ **13.** move substances through the plasma membrane	**C.** phospholipid
_____ **14.** two layers of phospholipids arranged tail-to-tail	**D.** fluid mosaic model
_____ **15.** the phospholipid "sea" in which embedded substances float	**E.** phospholipid bilayer

Name _____ **Date** _____

Section 2 The Plasma Membrane (continued)

Main Idea	Details

Function of the Plasma Membrane

I found this information on page _____.

Analyze *what would happen if the cell membrane were not selectively permeable. Support your response.*

_____

_____

_____

Identify *five ways that the membrane can deal with materials.*

membrane deals with materials by

_____

_____

_____

_____

_____

Structure of the Plasma Membrane

I found this information on page _____.

Model *a phospholipid, and label its parts. Describe how the phospholipid functions to make up the fluid membrane.*

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name _____ Date _____ Class _____

Study Guide

CHAPTER 7
Section 3: Structures and Organelles

In your textbook, read about structures and organelles.

Label the diagram of a typical animal cell. Use these choices:

cytoplasm **endoplasmic reticulum** **Golgi apparatus** **microtubules**
mitochondrion **nucleolus** **nucleus**

1. _____

2. _____

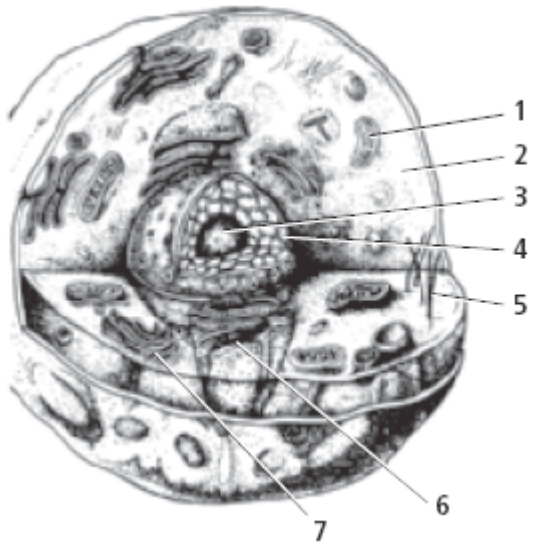
3. _____

4. _____

5. _____

6. _____

7. _____



If the statement is true, write true. *If the statement is false, replace the italicized word or phrase to make it true.*

8. Microtubules are long, hollow protein cylinders that form *a rigid skeleton for the cell.*

_____

9. The *Golgi apparatus* contains most of the cell's DNA.

_____

10. The nucleolus is the structure that produces *sugars.*

_____

11. The *endoplasmic reticulum* is a stack of membranes that packages proteins into sacs called vesicles.

_____

12. The *cytoplasm* is the semifluid internal environment of the cell.

_____

Name _____ Date _____

Section 3 Structures and Organelles (continued)

Main Idea | **Details**

Cytoplasm and Cytoskeleton

I found this information on page _____.

Compare *the cytoplasm and cytoskeleton by defining each in the boxes.*

Cytoplasm	Cytoskeleton

Cell Structures

I found this information on page _____.

Identify *the part of the cell that corresponds to each function described.*

	directs cell processes; contains the cell's DNA; stores information for cell growth, function, and reproduction
	double membrane that surrounds the nucleus
	helps manufacture proteins
	produces ribosomes inside the nucleus
	site of ribosome attachment; can be smooth or rough
	modifies, sorts, and packages proteins for transport outside the cell
	membrane-bound storage area within the cell
	vesicle that contains substances that digest excess or worn-out organelles
	structure near the nucleus that functions during cell division
	converts fuel particles (sugars) into useable energy
	captures light energy and converts it to chemical energy through photosynthesis
	gives support to plant cells
	projections that allow the cell to move or to move substances along the surface of the cell

Name _____ Date _____ Class _____

Study Guide

CHAPTER 7
Section 4: Cellular Transport

In your textbook, read about cellular transport.

Match the definition in Column A with the term in Column B.

	Column A	Column B
_____	**1.** moves small molecules across the plasma membrane using transport proteins	**A.** osmosis
_____	**2.** involves water moving across the plasma membrane to the side with the greater solute concentration	**B.** exocytosis
_____	**3.** occurs when substances move against the concentration gradient; requires energy and the aid of carrier proteins	**C.** facilitated diffusion
_____	**4.** occurs when the plasma membrane surrounds a large substance inside the cell and moves it outside the cell	**D.** dynamic equilibrium
_____	**5.** the condition that results when diffusion continues until the concentrations are the same in all areas	**E.** active transport
_____	**6.** occurs when the plasma membrane surrounds a large substance outside the cell and moves it inside the cell	**F.** endocytosis

In your textbook, read about osmosis.

Complete the table by checking the correct column(s) for each description.

Description	Isotonic Solution	Hypotonic Solution	Hypertonic Solution
7. A solution that has the same osmotic concentration as a cell's cytoplasm			
8. A solution that causes a cell to shrivel			
9. A solution that causes a cell to swell			
10. A solution that neither shrinks nor swells a cell			
11. A solution in which there is more water outside the cell than inside the cell			
12. A solution that causes water to move out of a cell			

Name _____ Date _____

Cellular Structure and Function

Section 4 Cellular Transport

Main Idea **Details**

Skim *Section 4 of the chapter. Write two questions that come to mind from reading the headings and the illustration captions.*

1. _____

2. _____

Review Vocabulary

homeostasis

Use your book or dictionary to define homeostasis.

_____

_____

New Vocabulary

Write the correct vocabulary term in the left column for each definition below.

_____ net movement of particles from an area where there are many particles of the substance to an area where there are fewer

_____ condition in which there is continuous movement but no overall change in concentration

_____ form of transport that uses transport proteins to move other ions and small molecules across the plasma membrane

_____ diffusion of water across a selectively permeable membrane

_____ solution in which the inside of the cell and the solution it is in have the same concentration of water and solutes

_____ solution that has a lower concentration of solutes than in the cell

_____ solution that has a higher concentration of solutes than in the cell

_____ using energy to move substances from a region of lower concentration to a region of higher concentration

_____ process by which the plasma membrane surrounds a substance outside the cell and moves it inside the cell

_____ process by which the plasma membrane surrounds a substance inside the cell and moves it outside the cell