

**SECTION 4-1 REVIEW**

# INTRODUCTION TO THE CELL

**VOCABULARY REVIEW** Define the following terms.

- 1. organelle \_\_\_\_\_  
\_\_\_\_\_
- 2. nucleus \_\_\_\_\_  
\_\_\_\_\_
- 3. eukaryote \_\_\_\_\_  
\_\_\_\_\_
- 4. prokaryote \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

- \_\_\_\_\_ 1. One early piece of evidence supporting the cell theory was the observation that
  - a. only plants are composed of cells.
  - b. only animals are composed of cells.
  - c. cells come from other cells.
  - d. animal cells come from plant cells.
  
- \_\_\_\_\_ 2. Cells are limited in size by the
  - a. rate at which substances needed by the cell can enter the cell through its surface.
  - b. rate at which the cell can manufacture genetic information.
  - c. amount of material the cell can collect to fill itself.
  - d. amount of cell membrane the cell can produce.
  
- \_\_\_\_\_ 3. The diameter of most plant and animal cells is about
  - a. 0.1 to 0.2  $\mu\text{m}$ .
  - b. 10 to 50  $\mu\text{m}$ .
  - c. 1 to 2 mm.
  - d. 10 to 50 mm.
  
- \_\_\_\_\_ 4. The characteristic of a nerve cell that relates directly to its function in receiving and transmitting nerve impulses is its
  - a. long extensions.
  - b. flat shape.
  - c. ability to change shape.
  - d. ability to engulf and destroy bacteria.
  
- \_\_\_\_\_ 5. One difference between eukaryotic and prokaryotic cells is that only
  - a. prokaryotic cells are surrounded by a cell membrane.
  - b. prokaryotic cells have a nucleus.
  - c. eukaryotic cells have genetic information.
  - d. eukaryotic cells have membrane-bound organelles.

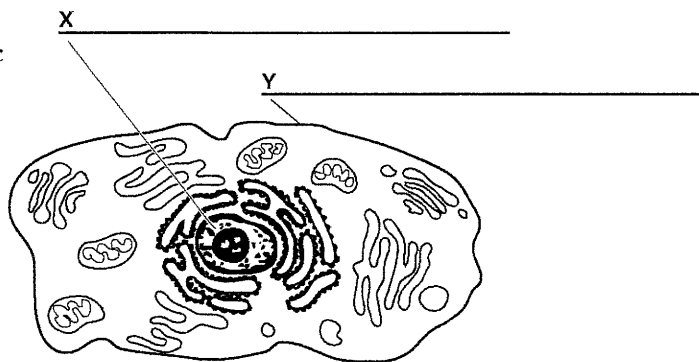
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**SHORT ANSWER** Answer the questions in the space provided.

1. State the three parts of the cell theory. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. How does the ability of a white blood cell to change its shape affect its function? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. How are the organelles of a single cell like the organs of a multicellular organism? \_\_\_\_\_  
\_\_\_\_\_
4. Name two features of eukaryotic cells that prokaryotic cells lack. \_\_\_\_\_  
\_\_\_\_\_

**STRUCTURES AND FUNCTIONS**

1. These figures represent a eukaryotic cell and a prokaryotic cell. In the spaces below the diagrams, indicate which type of cell each diagram represents.



a \_\_\_\_\_

b \_\_\_\_\_

2. List two features that formed the basis for your identification of these cells.  
\_\_\_\_\_  
\_\_\_\_\_
3. Identify the structures labeled X and Y. \_\_\_\_\_

**SECTION 4-2 REVIEW**

# PARTS OF THE EUKARYOTIC CELL

**VOCABULARY REVIEW** Distinguish between the terms in each of the following pairs of terms.

1. peripheral protein, integral protein \_\_\_\_\_  
\_\_\_\_\_
2. cytoplasm, cytosol \_\_\_\_\_  
\_\_\_\_\_
3. cilia, flagella \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

- \_\_\_\_\_ 1. The cell membrane
 

<p>a. allows all substances to pass into and out of the cell.</p> <p>b. prevents all substances from passing into and out of the cell.</p>	<p>c. is composed mainly of a protein bilayer.</p> <p>d. is composed mainly of a lipid bilayer.</p>
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- \_\_\_\_\_ 2. Substances produced in a cell and exported outside of the cell would pass through the
 

<p>a. endoplasmic reticulum and Golgi apparatus.</p> <p>b. mitochondria and Golgi apparatus.</p>	<p>c. nucleus and lysosomes.</p> <p>d. vacuoles and lysosomes.</p>
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- \_\_\_\_\_ 3. Cells that have a high energy requirement generally have many
 

a. nuclei.	b. flagella.	c. mitochondria.	d. microfilaments.
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- \_\_\_\_\_ 4. Viruses, bacteria, and old organelles that a cell ingests are broken down in
 

<p>a. ribosomes.</p> <p>b. lysosomes.</p>	<p>c. the rough endoplasmic reticulum.</p> <p>d. the smooth endoplasmic reticulum.</p>
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- \_\_\_\_\_ 5. Organelles that are surrounded by two membranes and contain DNA are the
 

<p>a. nucleus, the endoplasmic reticulum, and lysosomes.</p> <p>b. nucleus, the endoplasmic reticulum, and chloroplasts.</p> <p>c. nucleus, chloroplasts, and mitochondria.</p>	<p>d. endoplasmic reticulum, mitochondria, and the Golgi apparatus.</p>
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**SHORT ANSWER** Answer the questions in the space provided.

1. What roles do membrane proteins play in making the cell membrane selectively permeable?

\_\_\_\_\_  
\_\_\_\_\_

2. What are ribosomes made of? \_\_\_\_\_

\_\_\_\_\_  
What cellular function are they involved in? \_\_\_\_\_

\_\_\_\_\_

3. What is the cytoskeleton, and what are two of its major components? \_\_\_\_\_

\_\_\_\_\_

4. Describe the structural organization shared by cilia and flagella. \_\_\_\_\_

\_\_\_\_\_

5. What are plant cell walls made of? \_\_\_\_\_

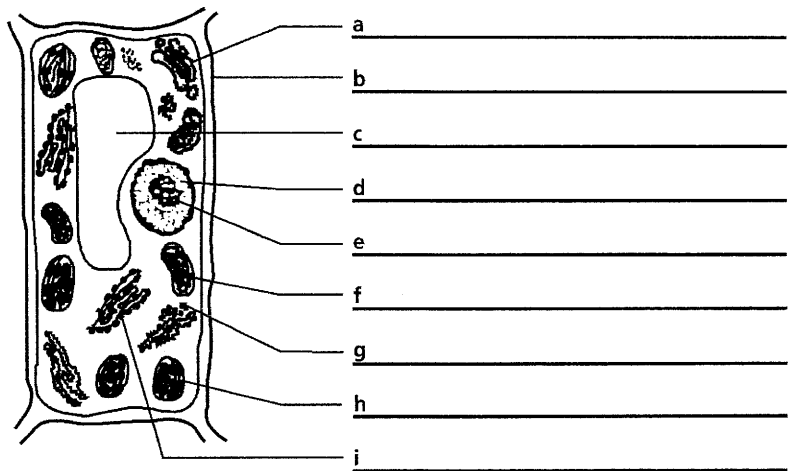
What is the function of cell walls? \_\_\_\_\_

6. **Critical Thinking** When lipid is added to a solution of a detergent in water, the detergent breaks up large globules of the lipid into much smaller globules. What effect do you think a detergent would have on the integrity of cells? Explain your answer. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**STRUCTURES AND FUNCTIONS** Label each part of the figure in the spaces provided.

This diagram represents a typical plant cell.



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**SECTION 4-3 REVIEW**

# MULTICELLULAR ORGANIZATION

**VOCABULARY REVIEW** Define the following terms and provide one example for each.

1. animal tissue \_\_\_\_\_  
\_\_\_\_\_
2. animal organ \_\_\_\_\_  
\_\_\_\_\_
3. animal organ system \_\_\_\_\_  
\_\_\_\_\_
4. colonial organism \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

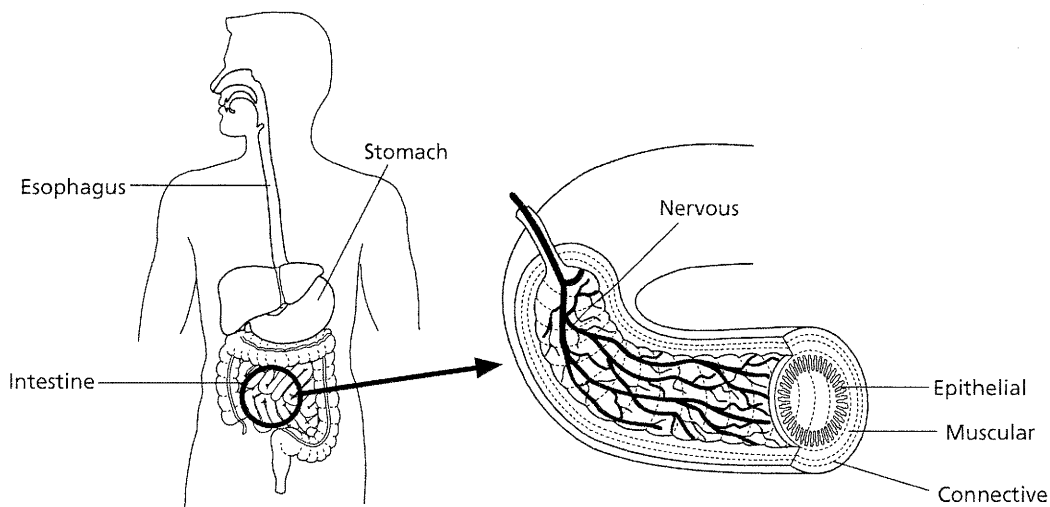
- \_\_\_\_\_ 1. Cells that form the surface coverings of animal bodies constitute  
 a. connective tissue.    b. epithelial tissue.    c. muscle tissue.    d. nervous tissue.
- \_\_\_\_\_ 2. Cells that transport water throughout a plant constitute  
 a. dermal tissue.    b. ground tissue.    c. vascular tissue.    d. organ tissue.
- \_\_\_\_\_ 3. Fossil evidence suggests that the earliest cells on Earth were  
 a. simple prokaryotes.    c. colonial eukaryotes.  
 b. simple eukaryotes.    d. multicellular prokaryotes.
- \_\_\_\_\_ 4. The process in which cells become restricted to carrying out one or a few functions is called cell  
 a. reproduction.    b. competition.    c. specialization.    d. transmission.
- \_\_\_\_\_ 5. The cells in the green alga *Volvox* are  
 a. not functionally specialized.    c. arranged in tissues and organs.  
 b. genetically identical.    d. arranged in tissues but not organs.
- \_\_\_\_\_ 6. Colonial organisms probably evolved into  
 a. only animals.    c. only fungi.  
 b. only plants.    d. animals, plants, and fungi.

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**SHORT ANSWER** Answer the questions in the space provided.

1. What kind of animal tissue functions in the support and linking of other tissues? \_\_\_\_\_  
\_\_\_\_\_
2. What kind of animal tissue functions in transmitting messages rapidly through the body?  
\_\_\_\_\_
3. What is thought to have been the order of evolution of organisms on Earth, from the earliest cells to the most-complex organisms existing today? \_\_\_\_\_  
\_\_\_\_\_
4. **Critical Thinking** A lichen is a close association between millions of fungal and algal cells that are specialized to perform different functions. Would you consider a lichen to be a colonial organism? Explain why or why not. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**STRUCTURES AND FUNCTIONS** Use the figure to answer the following questions.



1. The stomach is an example of the level of organization called \_\_\_\_\_.
2. The esophagus, stomach, and intestine together are part of a level of organization called \_\_\_\_\_.
3. The structures shown in the inset (right) show the level of organization called \_\_\_\_\_.

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