



Science Objective

- The student knows that similar cells form different kinds of structures.

2 Teach (continued)

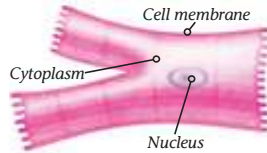
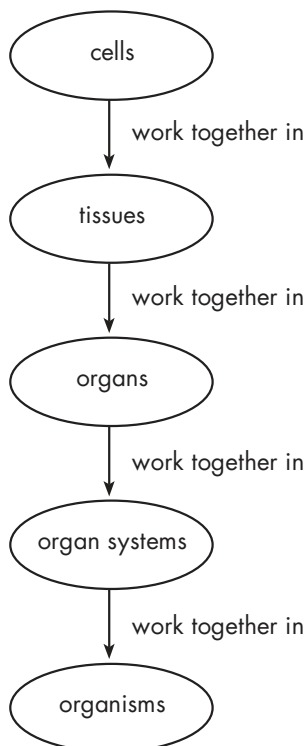
Quick SUMMARY

- All plant and animal cells have a cell membrane, cytoplasm, and a nucleus.
- Cells are organized into tissues, organs, and organ systems.
- A living thing in its entirety is called an organism.

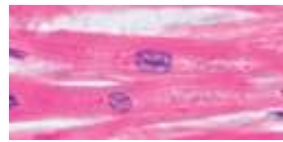
Have students read pages 8–9.

Have students refer to the diagrams of the plant and animal cells to compare and contrast the cell parts. Suggest that they make a T-chart to compare the two types of cells.

Students may draw a linear array or concept map to show the relationship among cells, tissues, organs, and organ systems.



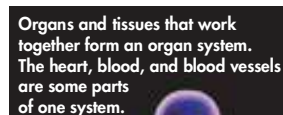
The size and shape of a cell are related to the cell's job.



A group of one type of cell is a tissue. Each kind of tissue does a certain job.



A group of tissues that work together is an organ. The heart is one of many organs in an animal.



Organs and tissues that work together form an organ system. The heart, blood, and blood vessels are some parts of one system.

The Parts of a Cell

Beetles, eagles, and elephants look nothing alike. But the cells that make up these animals have many similar parts. All cells have a nucleus and a cell membrane. All cells have a gel-like liquid called cytoplasm. The different parts of a cell have special jobs.

Each part of a cell helps it carry out its life processes. The **nucleus** is the control center for the cell. The instructions for the cell's activities are stored in the nucleus. The cell membrane is the cell's outer border. It separates the cell from its environment. It also controls what substances move into or out of the cell. The **cytoplasm** contains the things that the cell needs to carry out its life processes.

Cells Working Together

If cells are the building blocks of life, what can they build? In a many-celled plant or animal, cells are organized to work together. Different types of cells do different kinds of work. Groups of the same type of cell form a tissue. Groups of tissues that work together form an organ. Groups of organs that work together form systems.

An organism is the highest level of cell organization. It is a complete living thing that is made from all parts in all of the systems working together.

Viruses

A virus is a very tiny particle that has characteristics of both nonliving and living things. Viruses are not made of cells. Viruses do not make or use food. A virus can reproduce only by using plant, animal, or other cells to make more viruses. Many scientists do not think a virus is a true living thing.



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ELL Leveled Support

Cell Parts

Beginning Provide drawings of an animal cell and a plant cell with lines leading to the various cell parts shown in the diagram. Have students label the diagram and then say each vocabulary word aloud. Help them with spelling and clear pronunciation if necessary.

Intermediate Have students develop a question card for each cell part. Students put a question about a cell part on one side of the card, such as "What thin layer separates the cell from the environment?" Students write the answer on the other side of the card. (Cell membrane) Pairs of students take turns asking questions of one another using their cards.

Advanced Ask students to choose a cell part and write a "What Am I?" riddle about it. Have students trade riddles to solve.

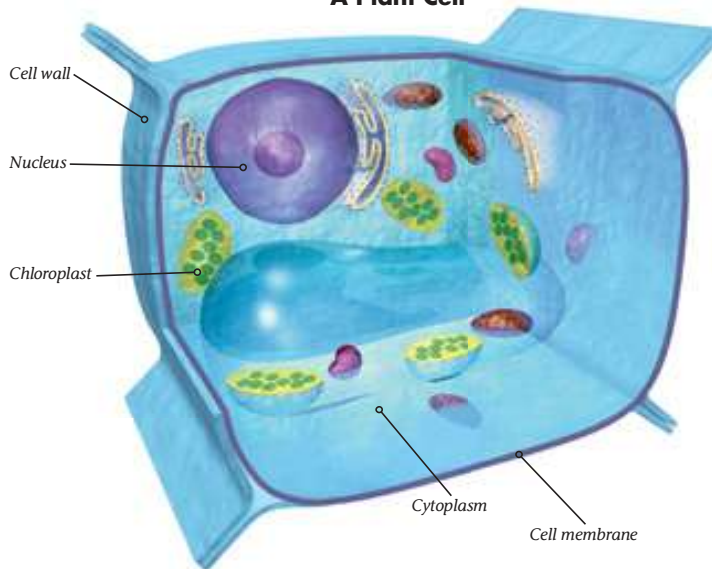
For scaffolded instruction about cells as living things, use **Every Student Learns Teacher's Guide**, p. 2.

Like animal cells, plant cells have a cell membrane, cytoplasm, and a nucleus. But plant cells also have parts that animal cells do not have.

Plants make their own food. They need special parts to do this. **Chloroplasts** are the special parts in plant cells that trap the Sun's energy. The plant needs this energy to make food. Animal cells do not have chloroplasts.

The cell wall is another part of a plant cell that animal cells do not have. The cell wall is outside the cell membrane. It helps support and protect the cell.

A Plant Cell



Lesson Checkpoint

1. Describe the difference between a cell, a tissue, and an organ.
2. Can a single-celled organism contain tissues? Explain.
3. **Compare and Contrast** Make a graphic organizer to compare and contrast animal and plant cells.

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Guide Comprehension

Ask students the following scaffolded questions to assess understanding.

Scaffolded Questions

1. **Define** *What is a tissue?* A tissue is a group of similar cells that work together to perform a special function.
2. **Infer** *What characteristic of a virus leads some scientists to argue that a virus is a living thing?* A virus can reproduce, but it must use other plant or animal cells to do so.
3. **Develop Strategy** *Suppose you discovered a new organism. How would you determine if the organism is a plant or an animal?* Look at the cells under a microscope. Compare parts of cells in the organism to features found in plant and animal cells.

Extend Vocabulary

The term **chloroplast** comes from the Greek *chloro-* meaning "green" and *-plast* meaning "able to be molded." Challenge students to find the origins for the word **cytoplasm** to discuss in class. (Greek *kytos* meaning "cell") *Cytoplasm* is the moldable material of a cell that is found outside the **nucleus**. You may want to make the connection with the word *plastic*.

3 Assess

Lesson Checkpoint

1. A cell is the smallest unit of a living thing. A tissue is a group of similar cells working together. An organ is a group of tissues working together.
2. No; a tissue is a group of cells.
3. **Compare and Contrast** Answers will vary. Organizers should indicate that plant and animal cells both have a nucleus, a cell membrane, and cytoplasm. Animal cells do not have chloroplasts or a cell wall like plant cells do.

Science Background

Special Roles of Cells

- Certain cell parts are common among all kinds of cells. For example, all cells have a thin cell membrane that separates the inside of the cell from the environment. However, one cell may look different from another kind of cell due to the specialized role each cell plays in the organism.
- For example, the role of the red blood cell is to carry oxygen and other molecules to body cells and then carry carbon dioxide and other wastes away from body cells. The flattened disk shape of a red blood cell provides a large surface area for efficient exchange of molecules across the cell membrane.