

Cell Structure

Answer Key

Vocabulary: cell wall, centriole, chloroplast, cytoplasm, endoplasmic reticulum, Golgi apparatus, lysosome, mitochondria, nuclear envelope, nucleolus, nucleus, organelle, plasma membrane, plastid, ribosome, vacuole, vesicle

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)

[Note: The purpose of these questions is to activate prior knowledge and get students thinking. Students are not expected to know the answers to the Prior Knowledge Questions.]

1. What are some of the structures inside a cell that help it to live and perform its role in an organism?

Answers will vary. [Students may be aware of the nucleus and plasma membrane.]

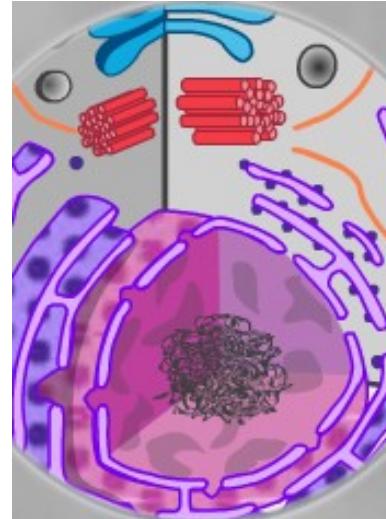
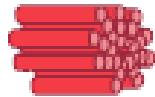
2. How do you think plant cells differ from animal cells? (Hint: What can plants do that animals cannot?)

Answers will vary. [Students may note that plants can produce energy from sunlight, so they must need some kind of structure for doing this.]

Gizmo Warm-up

The *Cell Structure* Gizmo™ allows you to look at typical animal and plant cells under a microscope. To start, click **Sample** to take a sample of an animal cell. Use the **Zoom** slider to see the cell at a magnification of 1000x (1000 times larger than normal).

1. Use the up/down and left/right sliders to manipulate the cell. Find the red arrow pointing to the **centrioles**. Make a sketch of the centrioles in the space below.



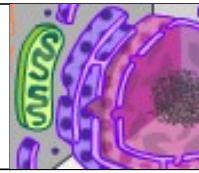
2. Read the description of the centrioles. What is their function?

The centrioles help to organize the movement of chromosomes during cell division.

Activity A:
Animal cells

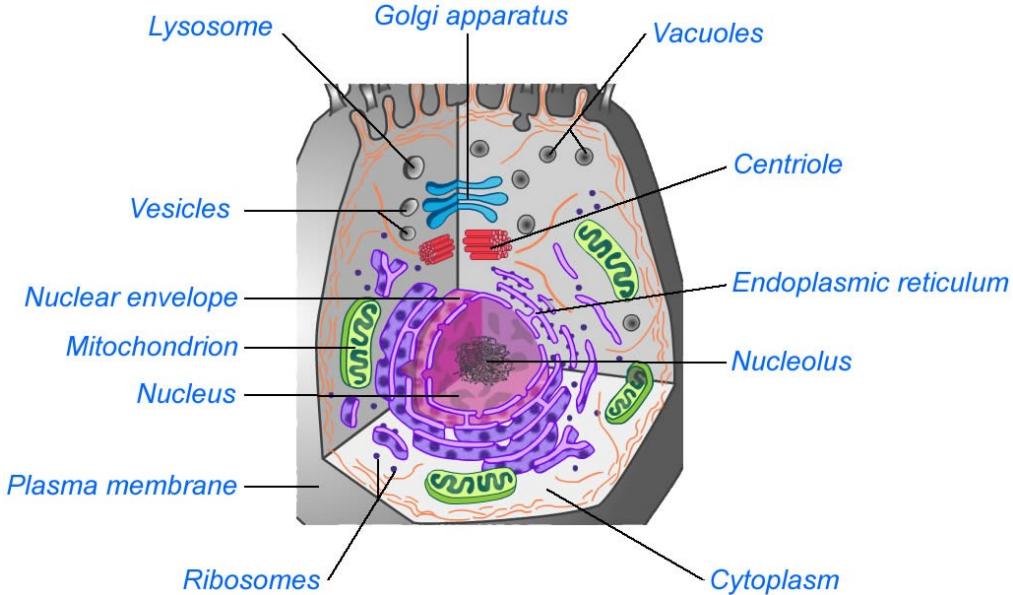
Get the Gizmo ready:

- Check that an **Animal cell** is mounted on the microscope.
- Set the **Zoom** to 500x.



Question: **Organelles** are specialized structures that perform various functions in the cell. What are the functions of the organelles in an animal cell?

1. Label: Locate each organelle in the animal cell. Label the organelles in the diagram below.



2. Match: Read about each organelle. Then match each organelle to its function/description.

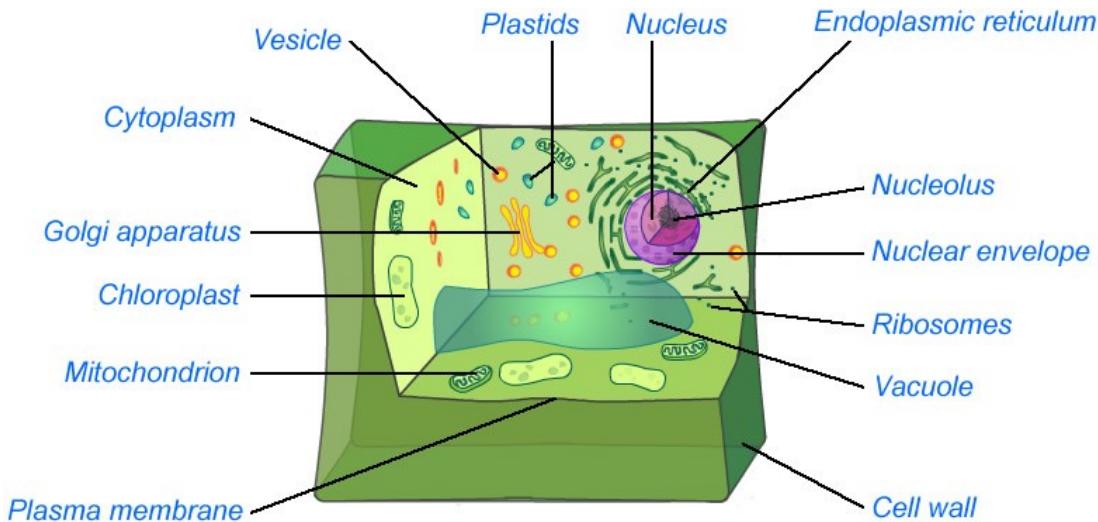
- H** **Cytoplasm**
- E** **Lysosome**
- F** **Mitochondria**
- A** **Centriole**
- G** **Endoplasmic reticulum**
- M** **Vacuole**
- D** **Plasma membrane**
- J** **Nucleus**
- L** **Ribosome**
- C** **Nuclear envelope**
- B** **Golgi apparatus**
- K** **Vesicle**
- I** **Nucleolus**

- A. Structure that organizes motion of chromosomes.
- B. Stack of membranes that packages chemicals.
- C. Membrane that protects the nucleus.
- D. Membrane that surrounds and protects the cell.
- E. Sac filled with digestive chemicals.
- F. Structures that converts nutrients to energy.
- G. Passageways where chemicals are made.
- H. Jelly-like substance within the plasma membrane.
- I. Structure that manufactures ribosomes.
- J. Structure that contains DNA and directs the cell.
- K. Package created by the Golgi apparatus.
- L. Small structure that synthesizes proteins.
- M. Sac that stores water, nutrients, or waste products.

Activity B: Plant cells	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> • Select View plant cell, and click Sample. • Set the Zoom to 500x. 	
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Question: What functions do the organelles in a plant cell perform?

1. Label: Locate each organelle in the plant cell. Label the organelles in the diagram below.



2. Compare: What structures are present in an animal cell, but not in a plant cell?

Centrioles and lysosomes are present in animal cells but not in plant cells.

What structures are present in a plant cell, but not in an animal cell?

The cell wall, chloroplasts, and plastids are present in plant cells but not in animal cells.

3. Fill in: Name the organelle or organelles that perform each of the following functions.

- Chloroplasts* convert sunlight to chemical energy.
- The *cell wall* and the *vacuole* help to support the plant cell and help it to maintain its shape.
- Plastids* store food or pigments.
- The *mitochondrion* converts food into energy. It is found in both plant cells and animal cells.