

STUDY GUIDE 3.2: CELL ORGANELLES

KEY CONCEPT

Eukaryotic cells share many similarities.

VOCABULARY

cytoskeleton	Golgi apparatus	lysosome
nucleus	vesicle	centriole
endoplasmic reticulum	mitochondrion	cell wall
ribosome	vacuole	chloroplast

MAIN IDEA: Cells have an internal structure.

1. Which of the following is not a function of the cell membrane?
 - a. It supports and shapes the cell.
 - b. It assists in cell division.
 - c. It positions organelles.
 - d. It provides energy to the cell.

MAIN IDEA: Several organelles are involved in making and processing proteins.

Write the letter of the correct answer on the line provided.

2. nucleus _____ a. link amino acids together to form proteins
3. endoplasmic reticulum _____ b. carry certain molecules from place to place in a cell
4. ribosomes _____ c. processes, sorts, and delivers proteins
5. Golgi apparatus _____ d. stores most of the genetic information of a cell
6. vesicles _____ e. helps in the production of proteins and lipids

Study Guide 3.2 *continued*

MAIN IDEA: Other organelles have various functions.

Write the letter of the correct answer on the line provided..

- | | |
|------------------------|--|
| 7. mitochondrion _____ | a. stores materials needed by the cell; may help provide support to plant cells |
| 8. vacuole _____ | b. contains enzymes that break down damaged and worn-out cell parts; defends a cell from invaders |
| 9. lysosome _____ | c. supplies energy to the cell by converting molecules from food into usable energy |
| 10. centriole _____ | d. organizes microtubules to form cilia and flagella for cell motion or the movement of fluids past a cell |

MAIN IDEA: Plant cells have cell walls and chloroplasts.

Circle the word or phrase that best completes the statement.

11. The cell walls in a plant are strong and *rigid / flexible* and adhere to each other, which helps to support the entire plant.
12. A cell wall and a cell membrane are different. All cells are surrounded by a *cell wall / cell membrane* that is *rigid / flexible* and interacts with the environment. Only certain cells have a *cell wall / cell membrane*, which is *rigid / flexible* and provides shape and support to cells.
13. Chloroplasts enable plants to convert *soil nutrients / solar energy* into energy-rich molecules that cells can use.

Vocabulary Check

14. The endoplasmic reticulum is a maze of folded membranes where _____ and _____ are produced.
15. The mitochondrion converts food into _____ that is usable by a cell.

REINFORCEMENT 3.2: CELL ORGANELLES

KEY CONCEPT Eukaryotic cells share many similarities.

Plants, animals, and some single-celled organisms are eukaryotes. Eukaryotic cells have an organized internal structure and organelles that are surrounded by membranes. Organelles look different from each other and have different functions. Several have a specific job in making and processing proteins so that a cell can live, function, and reproduce. Plant and animal cells have a lot of the same parts, but a few of their parts are different. The list below tells you what each cell part does.

Part	Job and Description
nucleus	double membrane layer that stores and protects DNA; includes the nucleolus, a dense region where ribosomes are assembled.
endoplasmic reticulum (ER)	network of thin folded membranes that help produce proteins and lipids; two kinds of ER: smooth and rough
ribosomes	tiny round organelles that link amino acids together to form proteins; may be in the cytoplasm or on the ER, which makes it look rough
Golgi apparatus	stacked layers of membranes that sort, package, and deliver proteins
vesicles	little sacs that carry different molecules where they're needed; made and broken down as needed by the cell
mitochondria	bean-shaped organelles that release energy from sugars for the cell
centrioles	found in animal cells; organize microtubules to form cilia and flagella
vacuoles	sacs that store materials for the cell; the materials might be water, food molecules, ions, and enzymes
cell walls	strong layer that protects, supports, and gives shape to plant cells; not found in animal cells
chloroplasts	change energy from the sun into chemical energy for the plant; not found in animal cells
cytoplasm	jellylike substance that fills a cell
cell membrane	double-layer of phospholipids that forms a boundary between a cell and its surrounding environment
lysosomes	membrane-bound organelles that contain enzymes

1. What are two characteristics of eukaryotic cells?

2. What is the function of mitochondria?

3. What two organelles are found in plant cells but not in animal cells?

SECTION QUIZ 3.2: CELL ORGANELLES

Choose the letter of the best answer.

- _____ 1. Which of the following is a network of proteins that supports and gives shape to a cell?
- a. vesicles
 - b. vacuole
 - c. cytoskeleton
 - d. cytoplasm
- _____ 2. What is the main function of the Golgi apparatus?
- a. communicate with other cells
 - b. convert solar energy to chemical energy
 - c. process and deliver proteins
 - d. copy genetic material
- _____ 3. Which of the following organelles can be found in the cytoplasm and on the surface of the endoplasmic reticulum?
- a. mitochondria
 - b. centrosomes
 - c. ribosomes
 - d. centrioles
- _____ 4. Which organelle contains enzymes that break down damaged cell parts?
- a. centriole
 - b. lysosomes
 - c. vacuole
 - d. mitochondria
- _____ 5. What are the main differences between plant and animal cells?
- a. Animal cells are eukaryotes and plant cells are not.
 - b. Plant cells are eukaryotes and animal cells are not.
 - c. Animal cells have cell walls and chloroplasts; plant cells do not.
 - d. Plant cells have cell walls and chloroplasts; animal cells do not.