
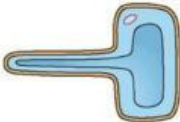
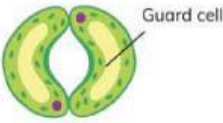
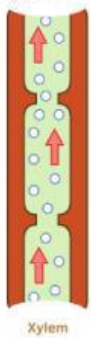



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Specialized Plant Cells

SPECIALIZED PLANT CELL	STRUCTURE	FUNCTION
Mesophyll cells 	<ul style="list-style-type: none">• Look like typical plant cells containing all the parts that a typical plant cell has.• Contain many chloroplasts.	Primarily responsible for making food for the plant by the process photosynthesis since they contain so many chloroplasts.
Epidermal cell	<ul style="list-style-type: none">• Look like typical plant cells but do not have any chloroplasts so that light can penetrate them and get to the mesophyll cell layers beneath.	Make up the outer layer of all plant parts (leaves, stems, and roots) where it is important for protection.
Root hair cell 	<ul style="list-style-type: none">• Epidermal cells located at the plant roots.• The root hair is an extension of the cell allowing it to absorb more water than a regular epidermal cell would.	Absorbs water and minerals from the soil for the plant's use.
Guard cell 	<ul style="list-style-type: none">• Are special epidermal cells because they contain chloroplasts and are shaped like beans.• They occur in pairs turned towards one another so that a space or pore called a stoma (plural stomata) forms between them.• Are mainly located on the surfaces of leaves.	Control the size of the stomata by adjusting their shape. This allows more or less gases to pass into and out of the leaf when necessary.
Xylem 	<ul style="list-style-type: none">• Dead cells with thick cell walls and nothing else.• Long, extremely narrow, hollow tubes formed from columns of elongated cells stacked on one another.• The end walls of each individual cell have disappeared so that they appear like very long tubes.	Transport water from the soil and roots through the stem and to the leaves.

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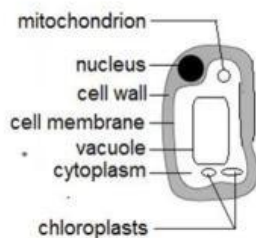
<p>Phloem</p> 	<ul style="list-style-type: none"> • Living cells formed from extremely long, narrow tubes formed from columns of elongated cells. • The end walls have not completely disappeared although they still come together to form long tubes. • Phloem consists of two cells: the long ones called sieve tubes and smaller ones attached to them called companion cells. • Sieve tubes only have cytoplasm inside them, but companion cells contain the nucleus, cytoplasm, mitochondria that enable phloem, tissue to be living. 	<p>Transport food (products of photosynthesis) around the entire plant from leaves to growing parts as well as storage organs like fruits.</p>
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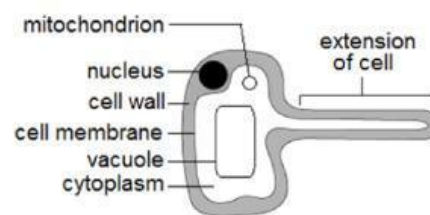
Student's Work

Below are diagrams showing each of the plant cells mentioned in the table above. Let's see how observant you are. Use the structural descriptions in the table to identify each cell. Write the name of the cell on the appropriate line. [2 marks each]

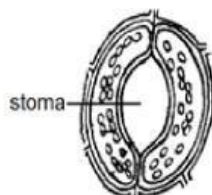
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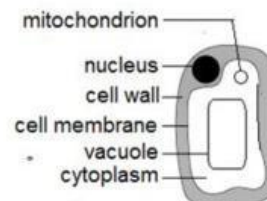
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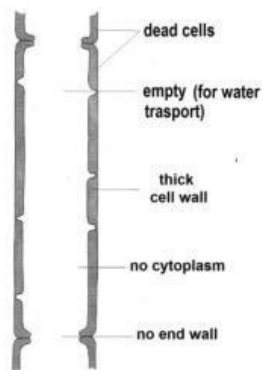


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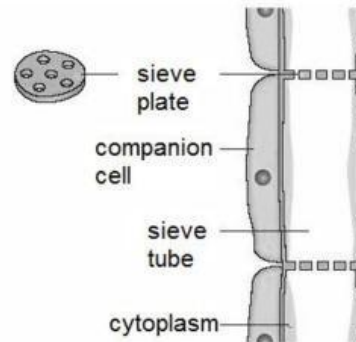


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Student's Work

Mark the correct response to each question below.

1. Which part of the cell controls what enters and leaves the cell?

- a) Nucleus
- b) Cytoplasm
- c) Cell membrane
- d) Cell wall

2. What is the job of the nucleus in a cell?

- a) To make food
- b) To control the cell's activities
- c) To protect the cell
- d) To store water

3. Where does respiration mainly happen in a cell?

- a) Nucleus
- b) Ribosome
- c) Mitochondria
- d) Cytoplasm

4. What is the jelly-like fluid inside a cell called?

- a) Nucleus
- b) Cytoplasm
- c) Membrane
- d) Ribosome

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5. Which structure is found in plant cells but not in animal cells?

- a) Cytoplasm
- b) Nucleus
- c) Cell wall
- d) Mitochondria

6. What gives plant cells their shape and support?

- a) Cell wall
- b) Cell membrane
- c) Cytoplasm
- d) Ribosome

7. Which part of the plant cell contains green pigment for photosynthesis?

- a) Mitochondria
- b) Chloroplast
- c) Nucleus
- d) Cell wall

8. What is the function of vacuoles in plant cells?

- a) To store water and minerals
- b) To make energy
- c) To control movement
- d) To protect the nucleus

9. Animal cells do NOT have:

- a) Nucleus
- b) Cell wall
- c) Cytoplasm
- d) Mitochondria

10. Plant and animal cells both have:

- a) Cell wall
- b) Nucleus
- c) Chloroplasts
- d) Vacuole

11. Which type of cell can make its own food?

- a) Animal cell
- b) Bacterial cell
- c) Fungal cell
- d) Plant cell

12. What do both plant and animal cells use mitochondria for?

- a) Making food
- b) Reproducing
- c) Making energy
- d) Protecting the cell

13. Which feature is only found in plant cells?

- a) Cell membrane
- b) Chloroplasts
- c) Mitochondria
- d) Nucleus

14. A student looked at a plant cell and an animal cell under a microscope. What would she see in **both**?

- a) Chloroplast
- b) Cell wall
- c) Nucleus
- d) Vacuole (large)

15. Which of these is **not** a difference between plant and animal cells?

- a) Only plant cells have a cell wall
- b) Only animal cells have a nucleus
- c) Only plant cells have chloroplasts
- d) Plant cells have large vacuoles

16. Which of the following is found in all living cells?

- a) Chloroplasts
- b) Cell wall
- c) Cytoplasm
- d) Vacuole

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17. What is the main job of a red blood cell?

- a) Fight disease
- b) Carry oxygen
- c) Break down food
- d) Send signals

18. Why is a sperm cell able to swim?

- a) It has a nucleus
- b) It has a tail
- c) It has chloroplasts
- d) It has a thick wall

19. Nerve cells are long so they can:

- a) Catch light
- b) Carry signals over distances
- c) Store food
- d) Help the body move

18. Which specialized cell helps defend the body against germs?

- a) Nerve cell
- b) Red blood cell
- c) White blood cell
- d) Muscle cell

19. Muscle cells can contract and relax to help us:

- a) Think
- b) Grow
- c) Move
- d) Breathe

20. Which of the following has **no** nucleus?

- a) Plant cell
- b) Animal cell
- c) Fungal cell
- d) Bacterial cell