

THE PLANT CELL

26 FEBRUARY 2014

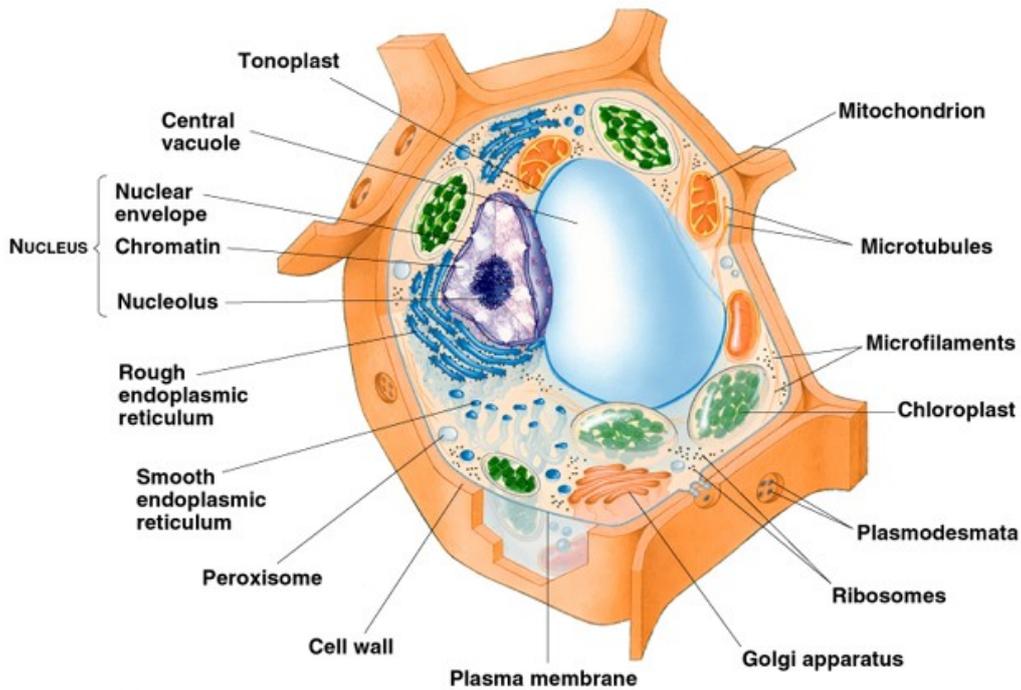
Lesson Description

In this lesson we:

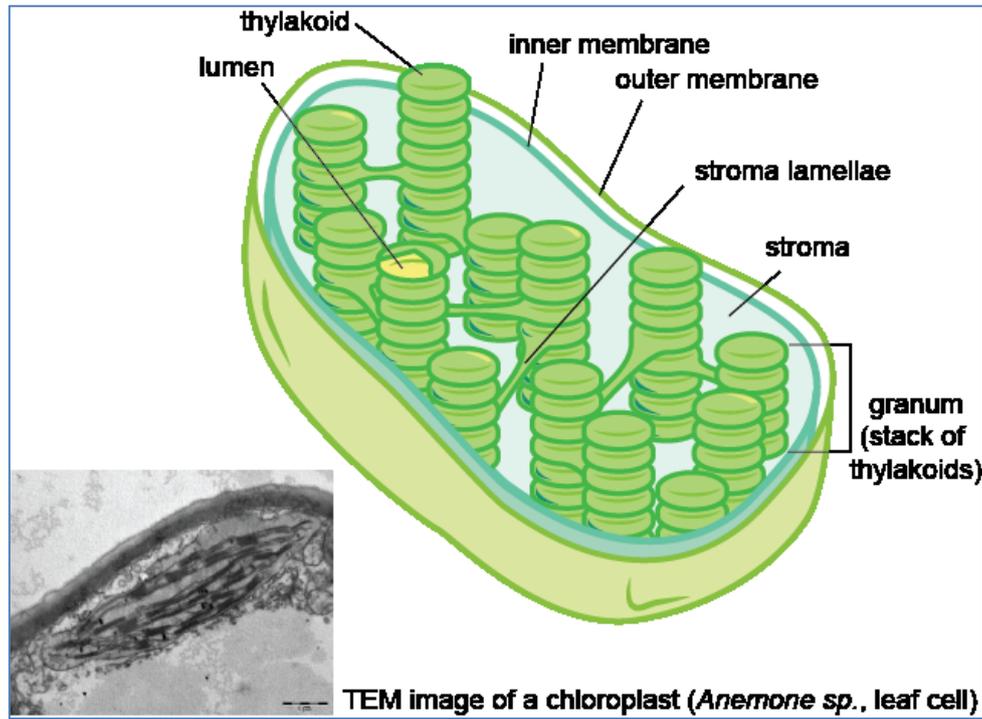
- Examine the structure of a plant cell
- Examine a plant cell under the microscope.

Summary

The Structure of a Plant Cell



The Structure of a Chloroplast



The structural differences between a plant cell and an animal cell

Feature	Animal	Plant
Cell Wall	Not present as animal cells only have a plasma membrane	Cell wall present along with an inner plasma membrane
Chloroplast	Not present	Present in plant cells that photosynthesis
Carbohydrate storage	Glycogen	Starch
Vacuole	Not usually present. Small temporary vacuoles sometimes found.	Large fluid-filled vacuoles often present. Surrounded by a membrane called the tonoplast. This control substances moving from the cytoplasm to the vacuole and visa-versa.
Shape	Able to change shape. Usually rounded	Fixed shape. Usually rather irregular.



Test Yourself

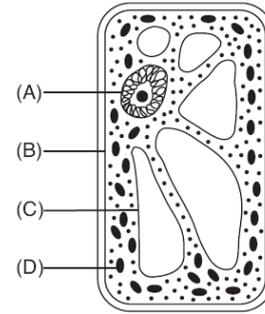
Question 1

This structure is responsible for manufacturing, warehousing, and shipping certain cellular products.

- A lysosome
- B nucleus
- C Golgi complex
- D endoplasmic reticulum

Question 2

In the cell shown on the right, which lettered structure is responsible for the excretion of most cellular wastes?



Question 3

What is the main function of a vacuole in a cell?

- A storage
- B coordination
- C synthesis of molecules
- D release of energy

Question 4

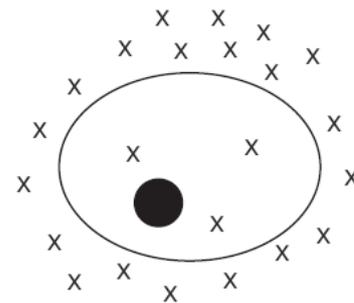
The cells of plants and bacteria will NOT explode in a hypotonic environment because:

- A Only blood cells explode
- B Plant and bacteria have a cell wall that protects them from taking on too much water
- C Only prokaryotic cells explode
- D Plants and bacteria are more evolutionarily ancient and that makes them stronger

Question 5

The diagram on the right shows molecules represented by X both outside and inside of a cell.

A process that would result in the movement of these molecules out of the cell requires the use of



- A DNA
- B antigens
- C ATP
- D antibodies

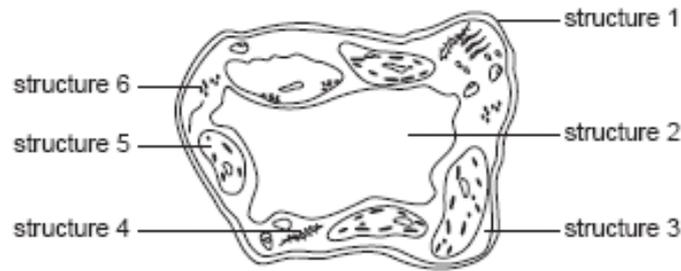
Question 6

The colour of a ripe peach is determined by the contents of the ...

- A chloroplasts.
- B leucoplasts.
- C chromoplasts
- D all plastids.

Question 7

The diagram below shows a plant cell which has six structures.



Which of the following correctly identifies the structures that would **NOT** be found in an animal cell?

- A structure 1, structure 5
- B structure 2, structure 3
- C structure 1, structure 4
- D structure 6, structure 5

Question 8

Which two structures are present in plant cells but absent from animal cells?

- A nucleus and vacuoles
- B cell walls and chloroplasts
- C cytoplasm and cell walls
- D chloroplasts and vacuoles

Question 9

True or false. The rough endoplasmic reticulum has ribosomes that are attached to the cytoplasmic side of its membrane.

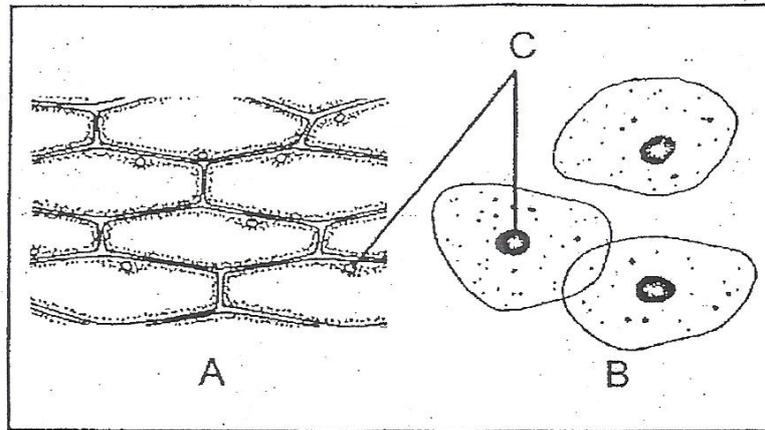
- A True
- B false



Improve your Skills

Question 1

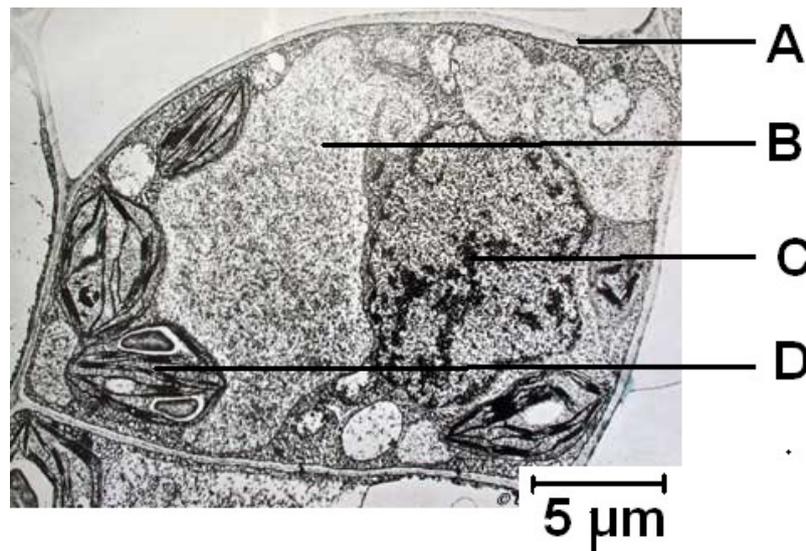
A grade 10 pupil submitted the following drawings of animal cells and plant cells that she viewed under the light microscope



- 1.1 Which of the following drawings (A or B) represents :
 - a.) plant cells
 - b.) animal
- 1.2 State two visible differences between cells A and B.
- 1.3 Mitochondria and chloroplasts were not visible under the microscope. Explain why this is so.
- 1.4 State one function of the part labelled C.
- 1.5 Name two components of cell membranes.
- 1.6 Name the process by which water molecules pass through the cell membrane.

Question 2

Study the micrograph below:



- 2.1 What type of microscope was used to obtain this picture? (1)
- 2.2 Provide 3 visible reasons why this is a plant cell. You need to mention the name of the part as well as the letter. (6)

notes for...

- 2.3 Name the substance that the part labeled A contains (1)
- 2.4 Calculate the actual size of the cell using the scale line.
Remember to use the widest diameter through the cell. (3)



Links

- Mr Parr cell song <https://www.youtube.com/watch?v=wRZthGizEUc>
- Crash course plant cells <https://www.youtube.com/watch?v=9UvlqAVCoqY>