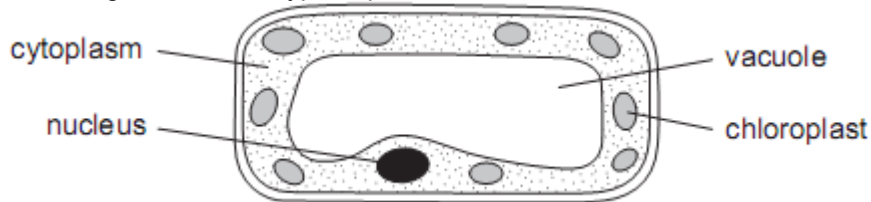


PPQ Unit 3 – diffusion, osmosis and active transport

1 The diagram shows a type of plant cell.



In which tissue is this cell found?

- A leaf epidermis
- B palisade mesophyll
- C root epidermis
- D xylem

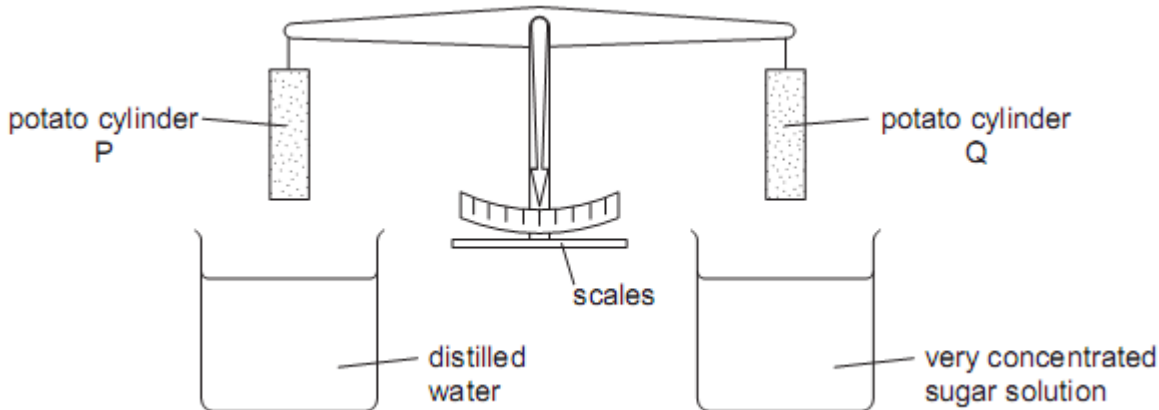
2 Which structure is found only in plant cells?

- A cell membrane
- B chloroplast
- C cytoplasm
- D nucleus

3 The table shows features that may be found in cells. Which is true for a liver cell?

	large central vacuole	chloroplasts	cellulose cell wall	
A	✓	✓	✓	key ✓ = found x = not found
B	✓	✓	x	
C	x	x	✓	
D	x	x	x	

4 A student investigated osmosis in potatoes. He set up the apparatus shown.



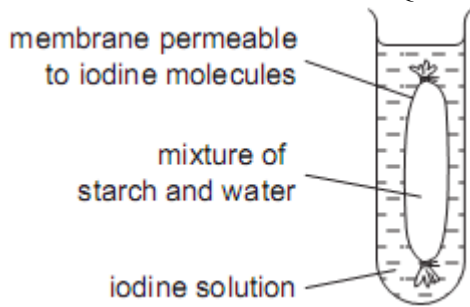
At the beginning the potato cylinders were exactly balanced. He immersed the cylinders into the liquids for 4 hours, after which the cylinders were lifted out of the liquids. Cylinder P was now heavier than cylinder Q.

Which statement explains what happened?

- A Water moved into both cylinders.
- B Water moved out of both cylinders.
- C Water moved into the cylinder in the distilled water and out of the cylinder in the sugar solution.
- D Water moved out of the cylinder in the distilled water and into the cylinder in the sugar solution.

5 An experiment is set up as shown.

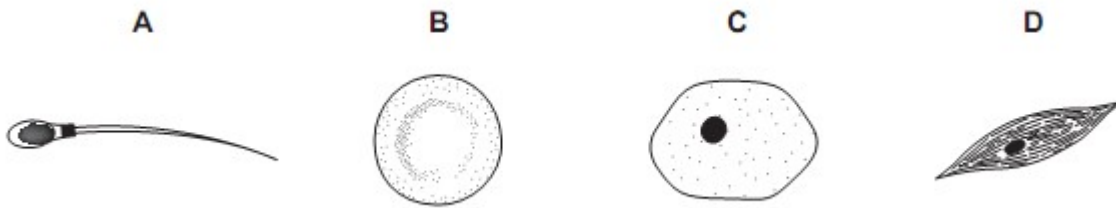
PPQ Unit 3 – diffusion, osmosis and active transport



What is the colour of the starch and water mixture after 30 minutes?

- A blue-black
- B orange
- C white
- D yellow-brown

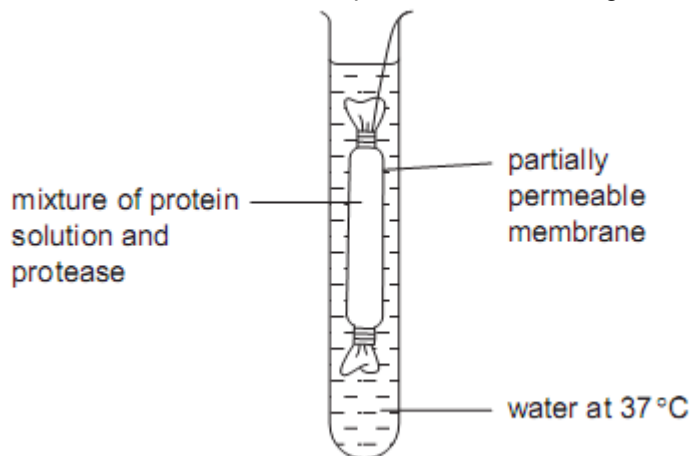
6 Which diagram shows a cell from the liver?



7 Which two features are found in both a root hair cell and a red blood cell?

- A cell membrane and cytoplasm
- B cell membrane and vacuole
- C nucleus and chloroplast
- D nucleus and cytoplasm

8 An experiment on diffusion was set up as shown in the diagram.



What was found in the water after 15 minutes?

- A amino acids
- B fatty acids
- C glucose
- D glycerol

9 Which structure contains genes?

- A the cell membrane of an animal cell
- B the cytoplasm of an animal cell
- C the nucleus of a plant cell
- D the vacuole of a plant cell

10 The diagram shows some cells from the lining of the trachea (windpipe) in the respiratory tract.

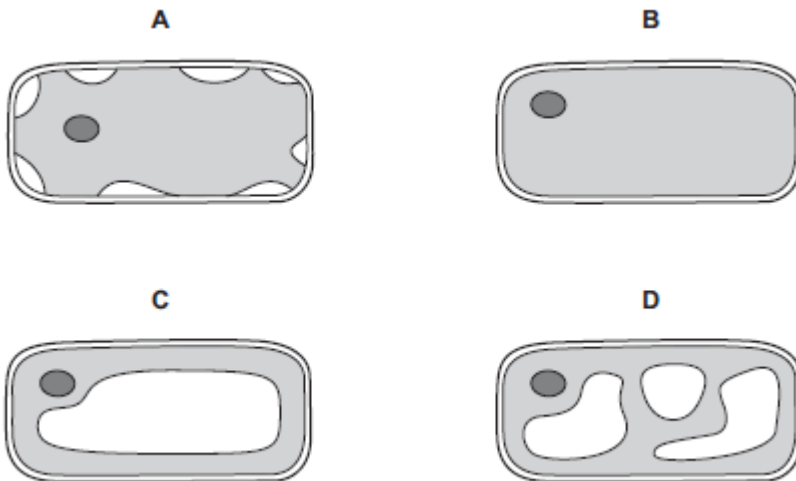
PPQ Unit 3 – diffusion, osmosis and active transport



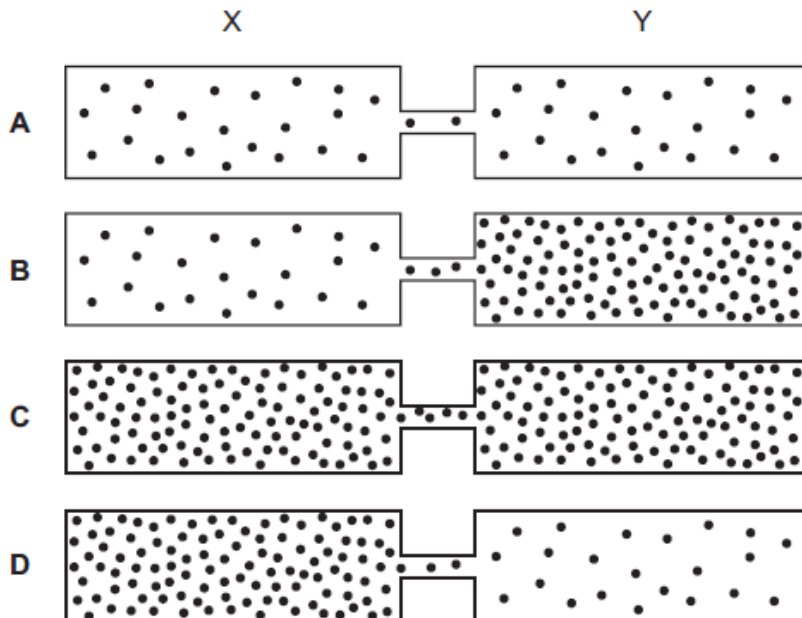
What is the function of the structures labelled X?

- A absorbing oxygen
- B killing micro-organisms
- C moving mucus
- D trapping bacteria

11 Which diagram shows the appearance of a plant cell several minutes after it has been placed in a concentrated solution of sugar?

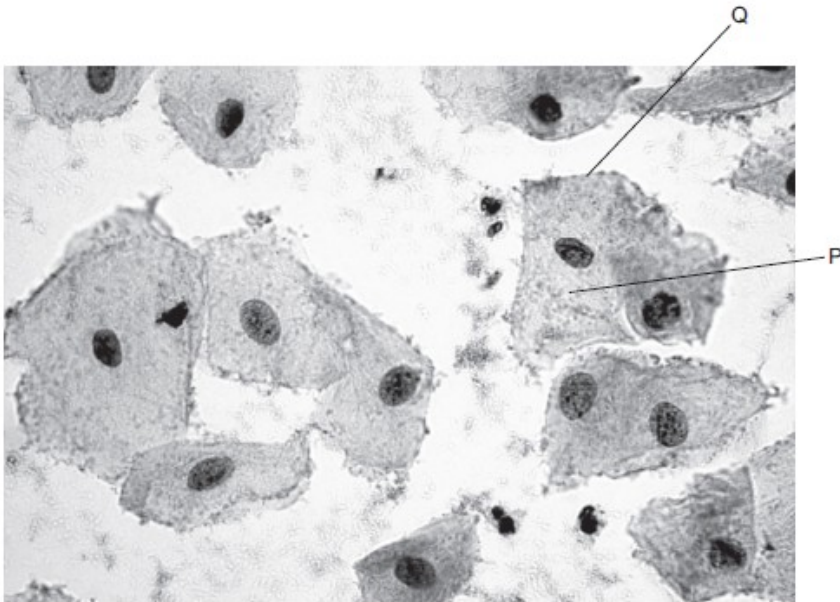


12 The dots represent molecules of a gas in four tubes at the beginning of an experiment. In which tube will more molecules move from X to Y than in the opposite direction?



13 The photograph shows some human cells under the microscope.

PPQ Unit 3 – diffusion, osmosis and active transport



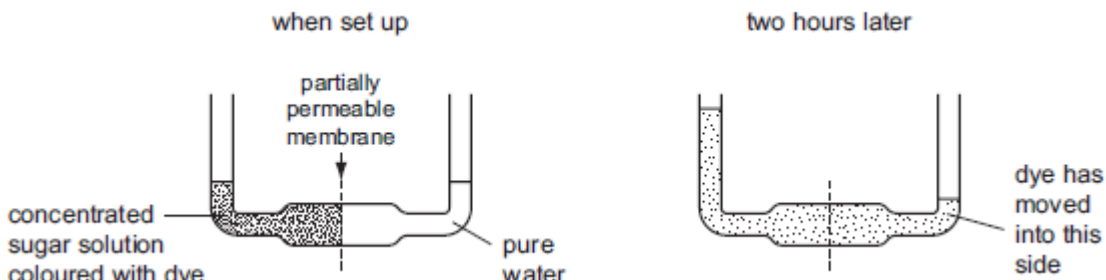
What are structures P and Q?

	P	Q
A	cytoplasm	cell membrane
B	cytoplasm	cell wall
C	nucleus	cell membrane
D	nucleus	cell wall

14 Which cell moves dust particles out of the body?

- A ciliated
- B muscle
- C red blood
- D xylem

15 The diagrams show an experiment when set up and the same experiment two hours later.



What explains the movement of water and dye?

	movement of water	movement of dye
A	diffusion	osmosis
B	osmosis	diffusion
C	osmosis	translocation
D	translocation	diffusion

16 Root hair cells are found on plant roots.

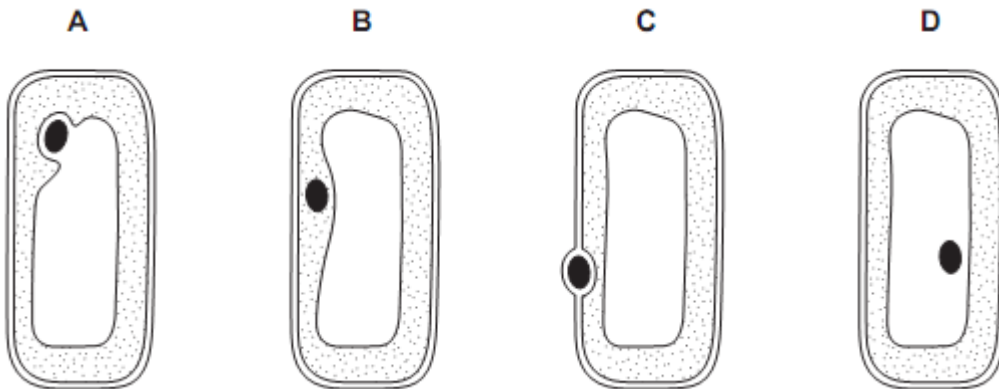
Which feature would be present in a root hair cell but not a sperm cell?

- A cell membrane
- B cell wall

PPQ Unit 3 – diffusion, osmosis and active transport

- C chloroplasts
- D cytoplasm

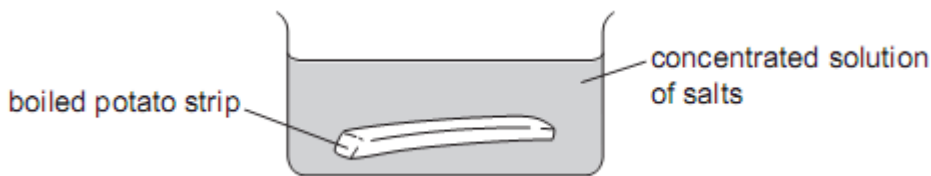
17 Which cell shows the position of the nucleus correctly?



18 What happens in osmosis?

- A movement of solute molecules against their concentration gradient
- B movement of solute molecules down their concentration gradient
- C movement of water molecules against their concentration gradient
- D movement of water molecules down their concentration gradient

19 Boiling potatoes destroys their cell membranes. A peeled, boiled potato strip is placed in a concentrated solution of salts.



What takes place?

	osmosis	solute diffusion
A	✓	✓
B	✓	x
C	x	✓
D	x	x

key:

✓ = takes place

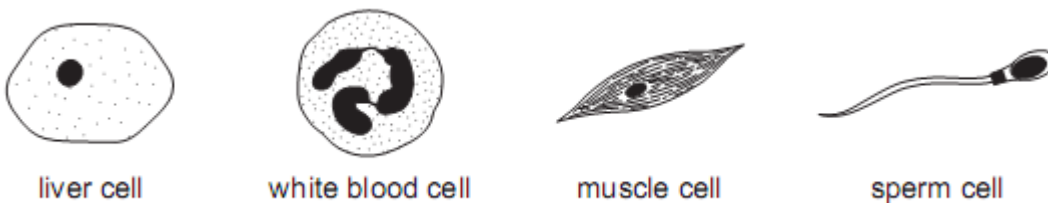
x = does not take place

20 A red blood cell is placed in a concentrated sugar solution.

What happens and why?

- A The cell bursts as sugar molecules diffuse into it.
- B The cell bursts because the concentrated sugar solution enters it.
- C The cell shrinks because sugar molecules leave it.
- D The cell shrinks because water leaves it.

21 The diagram shows four specialised cells.



liver cell

white blood cell

muscle cell

sperm cell

Which feature is not common to all of these cells?

PPQ Unit 3 – diffusion, osmosis and active transport

- A cell membrane
- B cytoplasm
- C diploid number of chromosomes
- D nucleus

22 (a) (i) Define osmosis.[3]

(ii) Osmosis is considered by many scientists to be a form of diffusion.

Suggest two ways in which diffusion is different from osmosis. [2]

(b) (i) Explain how root hair cells use osmosis to take up water.[2]

(ii) The land on which a cereal crop is growing is flooded by sea water.

Suggest the effect sea water could have on the cereal plants.[4]

[Total: 11]

23 Two uncooked hen's eggs of similar size were submerged in acid to dissolve the shell. The contents of the eggs are left intact, enclosed by the egg membrane.

One de-shelled egg has been placed in distilled water for 2 days. The other egg has been placed in salt solution for 2 days.

Fig. 1.1 shows the two eggs after two days.

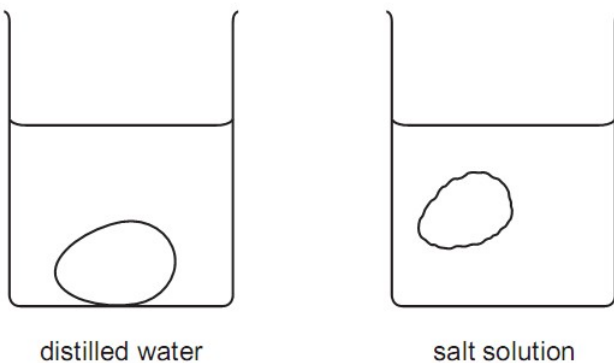


Fig. 1.1

(a) (i) Complete Table 1.1 to compare the two eggs.

Table 1.1

	egg in water	egg in salt solution
size of the egg		
position in the liquid		
external appearance of the egg		

[3]

(ii) Suggest an explanation for these differences.

..... [5]

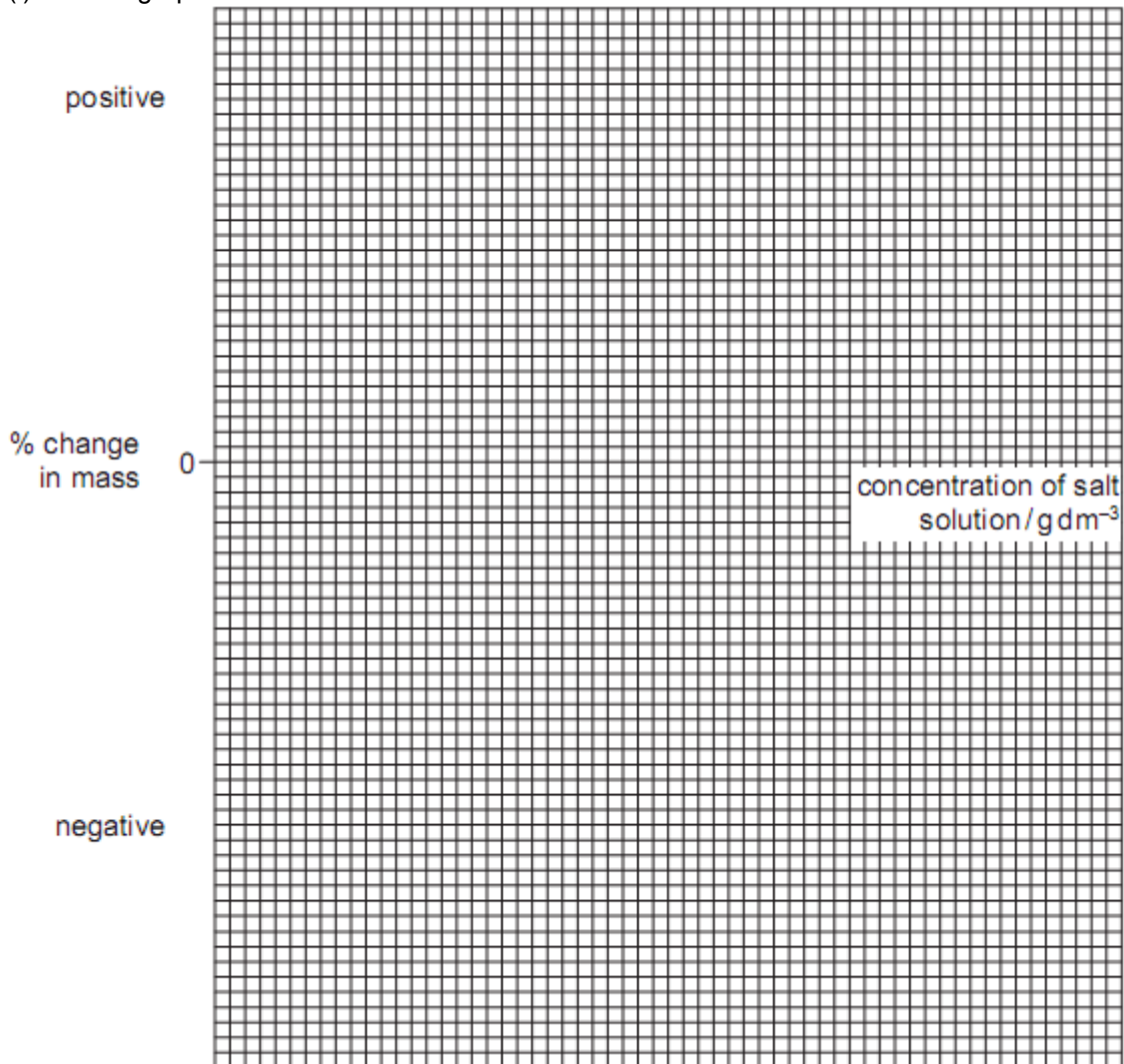
(b) A student carried out a similar experiment and varied the concentration of salt in different solutions.

Table 1.2 shows the percentage change in mass of the eggs after 2 days.

PPQ Unit 3 – diffusion, osmosis and active transport
Table 1.2

concentration of salt solution / gdm ⁻³	% change in mass
0.0	+7.3
10.0	+3.2
20.0	+0.8
30.0	-2.5
40.0	-6.4
50.0	-10.8

(i) Draw a graph of this data on the axes.



[3]

(ii) Determine the concentration of salt solution where there is no change in mass.

..... [1]

(iii) Explain why there is no change in mass at this concentration of salt solution.

..... [3]

(c) Describe a food test which might show whether there is more protein to be found in the 'white' or in the 'yolk' of the egg.

..... [4]

[Total: 19]