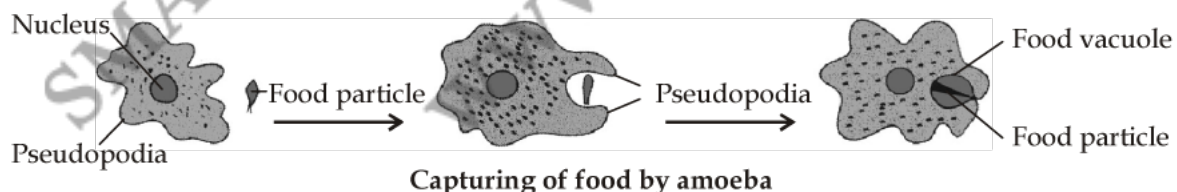


- Q1.** Who discovered cells, and how?
- Q2.** Can you name the two organelles we have studied that contain their own genetic material?
- Q3.** If the organisation of a cell is destroyed due to some physical or chemical influence, what will happen?
- Q4.** Where are proteins synthesised inside the cell?
- Q5.** Where do the lipids and proteins constituting the cell membrane get synthesised?
- Q6.** What is osmosis?
- Q7.** Why is the cell called the structural and functional unit of life?
- Q8.** Why is the plasma membrane called a selectively permeable membrane?
- Q9.** Why are lysosomes known as suicide bags?
- Q10.** What would happen if the plasma membrane ruptures or breaks down?
- Q11.** What would happen to the life of a cell if there was no golgi apparatus?
- Q12.** How does an *Amoeba* obtain its food?
- Q13.** How do substances like CO<sub>2</sub> and water move in and out of the cell? Discuss.
- Q14.** Fill in the gaps in the following table illustrating differences between prokaryotic and eukaryotic cell.

Prokaryotic cell	Eukaryotic cell
1. Size: generally small (1-10 $\mu\text{m}$ ) $1 \mu\text{m} = 10^{-6} \text{ m}$ .	1. Size: generally large (5-100 $\mu\text{m}$ ).
2. Nuclear region: _____ and known as _____.	2. Nuclear region: well defined and surrounded by a nuclear membrane.
3. Chromosome: single.	3. More than one chromosome.
4. Membrane-bound cell organelles are _____.	4. Membrane-bound cell organelles are _____.

- Q15.** Make a comparison and write down ways in which plant cells are different from animal cells.
- Q16.** How is a prokaryotic cell different from a eukaryotic cell?
- Q17.** Carry out the following osmosis experiment:  
Take four peeled potato halves and scoops each one out to make potato cups. One of these potato cups should be made from a boiled potato. Put each potato cup in a trough containing water. Now,
- (a) Keep cup A empty.    (b) Put one teaspoon sugar in cup B.  
(c) Put one teaspoon salt in cup C.                              (d) Put one teaspoon sugar in the boiled potato cup D.
- Keep these for two hours. Then observe the four potato cups and answer the following:
- (i) Explain why water gathers in the hollowed portion of B and C.  
(ii) Why is potato A necessary for this experiment?  
(iii) Explain why water does not gather in the hollowed out portions of A and D?

- S1.** Robert Hooke discovered cell by observing a thin section of cork under self-designed microscope.
- S2.** Mitochondria and Chloroplast are the two organelles that contain their own genetic material.
- S3.** The damaged cell will not be able to perform functions like respiration, obtaining nutrition and cleaning of waste materials or forming new proteins.
- S4.** Ribosomes are the site of protein synthesis. They are either present in the cytoplasm freely or attached to RER.
- S5.** Proteins are synthesized over ribosomes of RER while lipids are synthesized over SER.
- S6.** Osmosis is the process of movement of water molecules from a region of low solute concentration to the region of high solute concentration via semipermeable membrane.
- S7.** Cell is called as the structural and functional unit of life because
- all the living organisms are made up of cells.
  - an organism is the functional outcome of sumtotal of all the activities performed by the cell.
- S8.** Plasma membrane allows or permits the entry and exit of some substances while preventing the passage to remaining substances. Hence, it is called a selectively permeable membrane.
- S9.** Lysosomes contain powerful digestive enzymes called acid hydrolases. These enzymes are released when the cell gets damaged. Because of their ability to digest cellular components by a phenomenon called autolysis lysosomes are referred as suicidal bags of the cell.
- S10.** If the plasma membrane ruptures or breaks down then there will be spilling of cytoplasm and cell organelles, bursting of lysosomes and digestion of cellular contents.
- S11.**
- If there was no golgi apparatus then the material synthesised in ER will not be packaged, stored and transported to various targets.
  - Lysosome formation will also not take place. Hence, intracellular digestion and cleansing of cell cannot be brought about.
  - Thirdly formation of new plasma membrane will not occur.
- S12.** Amoeba engulfs its food with the help of pseudopodia, which are projections of cell membrane. It encircles the food particle and ingests it by the process of phagocytosis. Once the food becomes a part of cell it is referred as phagosome or food vacuole. Intracellular digestion takes place. The digested food is absorbed by the surrounding cytoplasm and the undigested matter is thrown out of the cell by the process of exocytosis.



**S13.** Gases like CO<sub>2</sub> and O<sub>2</sub> move in and out of the cell by the process of diffusion from their region of high solute concentration to the low solute concentration due to concentration gradient *i.e.*, from a region having low solute concentration to a region of high solute concentration through semipermeable membrane.

This process is called as osmosis. If the cell is placed in hypertonic solution, water comes out of the cell and exosmosis takes place. But if the cell is placed in hypotonic solution, water moves inside the cell from external environment and endosmosis takes place.

<b>S14.</b>	<b>Prokaryotic cell</b>	<b>Eukaryotic cell</b>
	1. Size: generally small (1-10 mm) 1 mm = 10 <sup>-6</sup> m	1. Size: generally large (5-100 mm).
	2. Nuclear region: not well defined, and is not surrounded by nuclear membrane and known as nucleoid.	2. Nuclear region: well defined and surrounded by a nuclear membrane.
	3. Chromosome: single.	3. More than one chromosome.
	4. Membrane-bound cell organelles are absent.	4. Membrane-bound cell organelles are present.

**S15.** Difference between animal cell and plant cell.

	<b>Animal cell</b>	<b>Plant cell</b>
	1. Cell wall is absent.	1. Cell wall is present.
	2. Plastids are absent.	2. Plastids are present.
	3. Centrosome with one or two centrioles is present.	3. Centrosome and centrioles are absent.
	4. Vacuoles are smaller in size and more in number.	4. Vacuoles are large in size and less in number.
	5. Nucleus lies peripherally in the cytoplasm.	5. Nucleus usually lies in the centre.
	6. Animal cells are comparatively smaller in size.	6. Plant cells are larger in size.

**S16.** Difference between prokaryotic cell and eukaryotic cell.

	<b>Prokaryotic cell</b>	<b>Eukaryotic cell</b>
	1. Small in size (1-10 mm).	1. Size generally large (5-10 mm).
	2. Nuclear region not well defined and is not bounded by nuclear membrane. It is known as nucleoid.	2. Nuclear region well defined and bounded by nuclear membrane.
	3. Single chromosome is present.	3. More than one chromosome are present.
	4. Nucleus is absent.	4. Nucleus is present.
	5. Membrane-bound cell organelles are absent. <b>Example:</b> Bacteria, cyanobacteria, actinomycetes, mycoplasmas.	5. Membrane-bound cell organelles are present. <b>Example:</b> Plants, animals, fungi.

- S17.** (i) Sugar and salt increases osmotic concentration which results in passage of water osmotically from trough through the cells of potato into its cavity.
- (ii) Potato A functions as a control experiment which indicates that the cavity of potato does not induce movement of water.
- (iii) Water does not gather in the hollowed out portion of A because the solute concentration in the cells of the potato tuber is same as the solute concentration in the water kept in the trough.

Potato tuber D does not have living cells. Osmosis do not occur in dead cells. Therefore, despite the presence of sugar in the cavity of D, no water passes from trough through dead potato cells into the cavity of the tuber.