

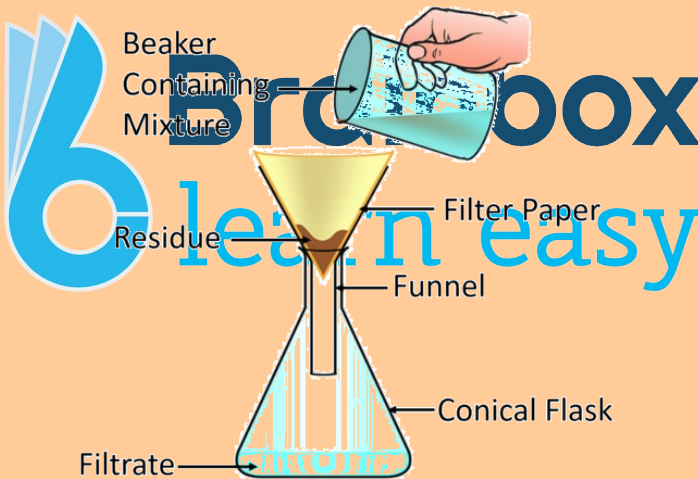
Chapter 04

Transportation Through Plasma Membrane

Osmosis and Functions of plasma membrane:

Requirements:

- Two beakers, Funnel, Filter paper, Retort stand, Sugar, Iodine and Wheat/Rice flour, a 500ml plastic bottle, and cotton cloth for this experiment.



- Arrange the filtering apparatus as shown in the figure.
- Prepare wheat or rice powder solution in a beaker by adding one teaspoon of powder in 100ml of water.
- Add a drop of tincture iodine to the solution.
- Pour the solution into the funnel.
- Rice powder did not pass through the filter paper and only water passed through it.

Cells also act in the same way and it allows a few selected substances to pass through the plasma membrane.

- Cells selectively uptake solids like glucose, vitamins, minerals, protein, fat, liquids like water, and gases like oxygen.

While it selectively secretes or remove carbon dioxide.

Osmosis:

Osmosis is the movement of solvent molecules through a semi-permeable membrane from a less solute concentrated to more solute concentration, in the direction that tends to equalize the solute concentrations on the two sides.

- Osmosis does not take place in dead cells.

Nature of the Plasma membrane of a cell:

- It allows water to pass through it.
- It only allows certain materials dissolved in water to pass through.
- It will not allow certain materials to pass through it.
- Plasma membrane is the outermost, extremely delicate, elastic and membranous covering of the cell.
- It separates its contents from the external environment and the protoplasm.
 - Protoplasm of a cell consists of two parts,

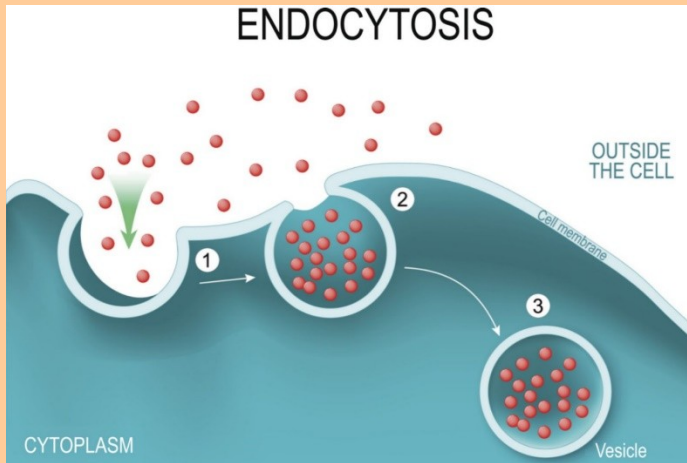
cytoplasm and nucleus.

- Plasma membrane is selectively permeable because it allows entry of certain substances, exit of some substances while preventing passage to remaining substances.
- Plasma membrane is a living flexible membrane. Ease of passage of materials to pass through a membrane is called permeability.

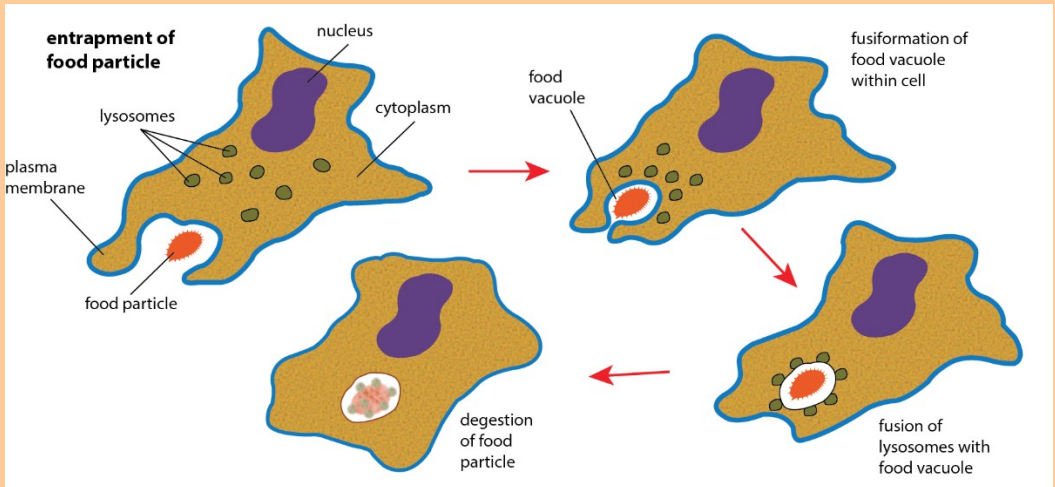
Functions of plasma membrane:

- It provides a definite shape to semi fluid contents of the cell.
- It functions as a mechanical barrier that protects the internal contents of the cell.
- The membrane determines what substances are to be allowed entry or exit from the cell due to its selectively permeable nature.

The flexibility of the membrane enables the cell to engulf food and other substances (foreign particles) from its external environment and this process is called endocytosis.

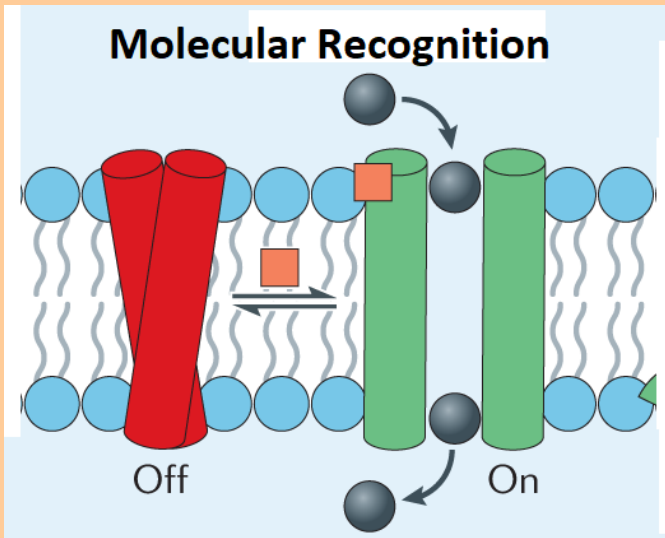


For Amoeba acquires its food by endocytosis.

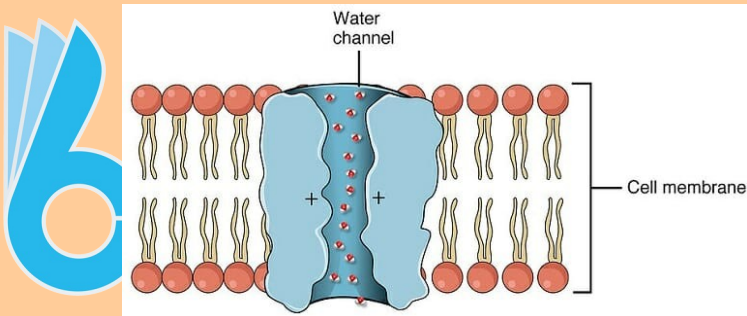


It has substances over its surface, which function as recognition centres and points of attachment.

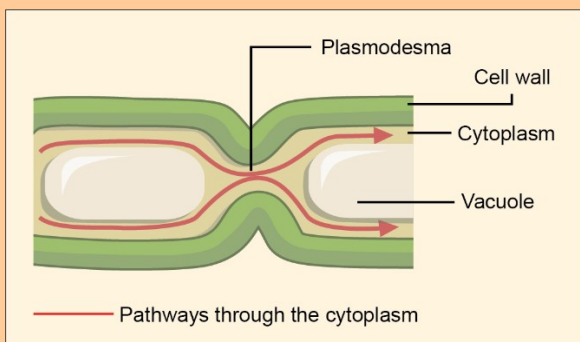
They help in tissue formation, distinction of foreign substances and defense against microbe. Helps for flow of information amongst different cells of the same organism.



It helps in osmosis due to presence of tiny water channels in the plasma membrane.



Plasma membranes of adjacent cells become continuous to form plasmodesmata and cell junctions in order to maintain cell continuity.



Plasma membrane gets modified to perform different functions.

E.g. Absorption in microvilli.

Plasma membrane can also undergo specialisation.

