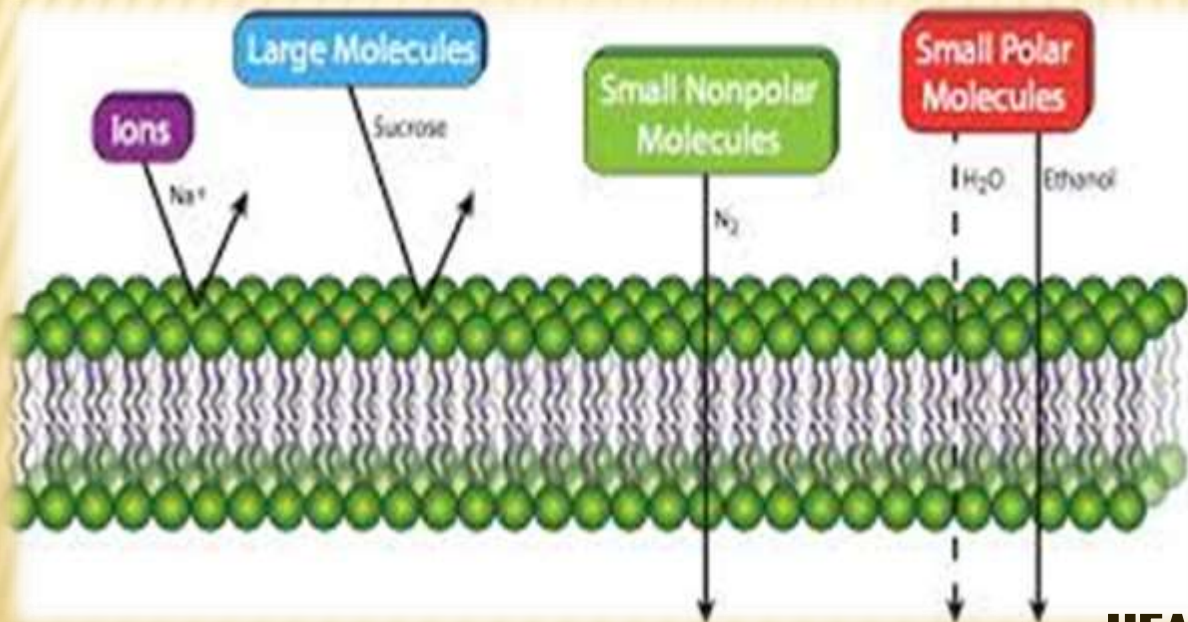


# NUTAN MAHAVIDYALYA SAILU, DIST. PARBHANI

## UNIT-I PLANT WATER RELATIONS

Different bio-physico-chemical phenomenon: -

### Permeability



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# PERMEABILITY

## Defination-

The ability of a substance to pass through a membrane is also called as permeability A membrane may be freely permeable for one substance, moderately permeable for the second one and may be completely impermeable for the third one.

**On this basis following types of membranes have been recognized:**

**1- Freely permeable membrane**

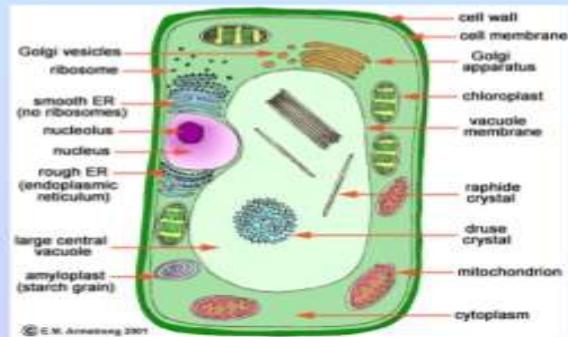
**2- Impermeable membrane**

**3- Semi-permeable membrane**

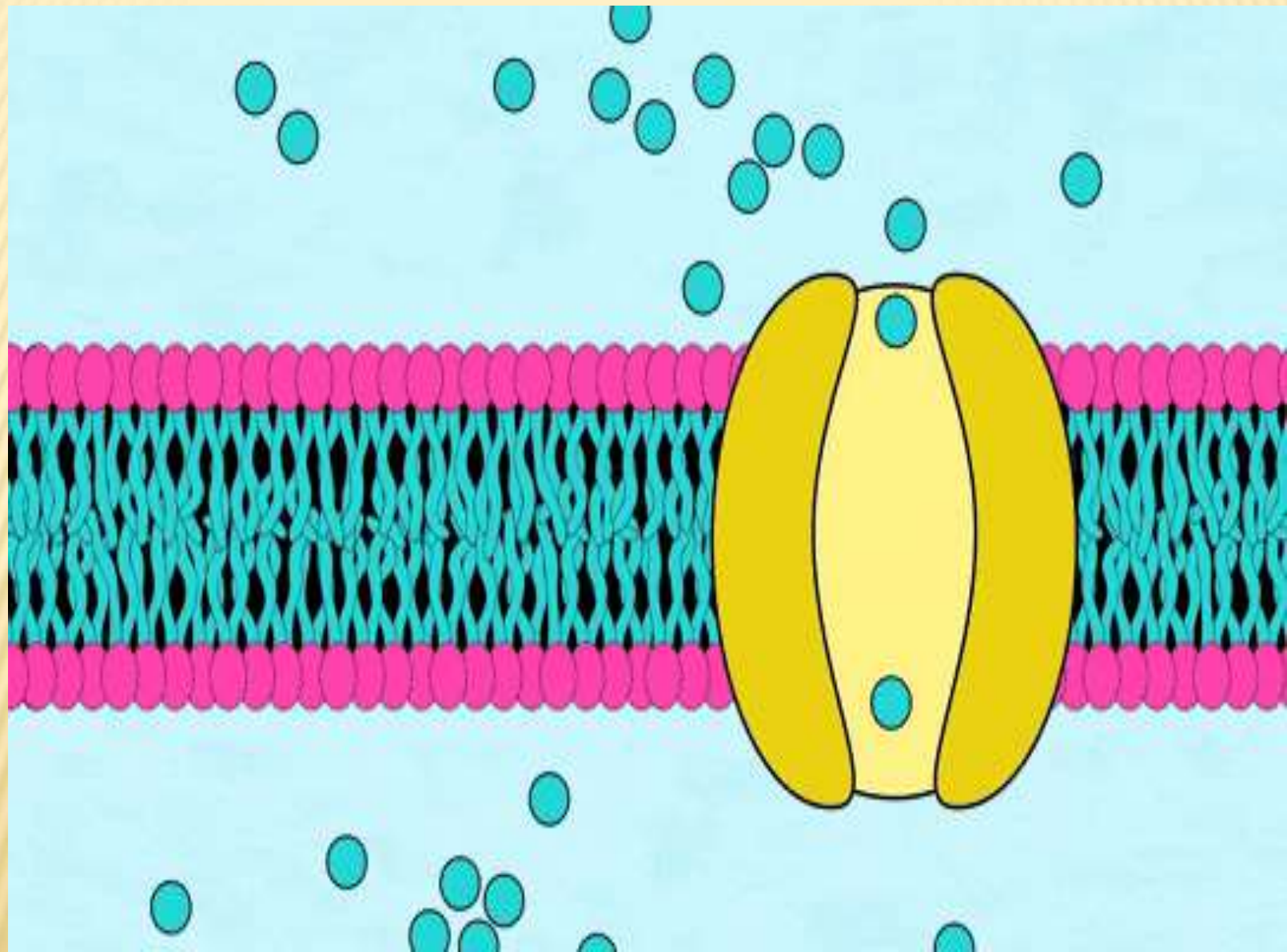
# 1-Freely permeable membrane:

This type of membrane allows free movement (passage) of various substance, such as water, other solvents, various ions and dissolved solutes, e x – Cell wall.

## Cell Wall

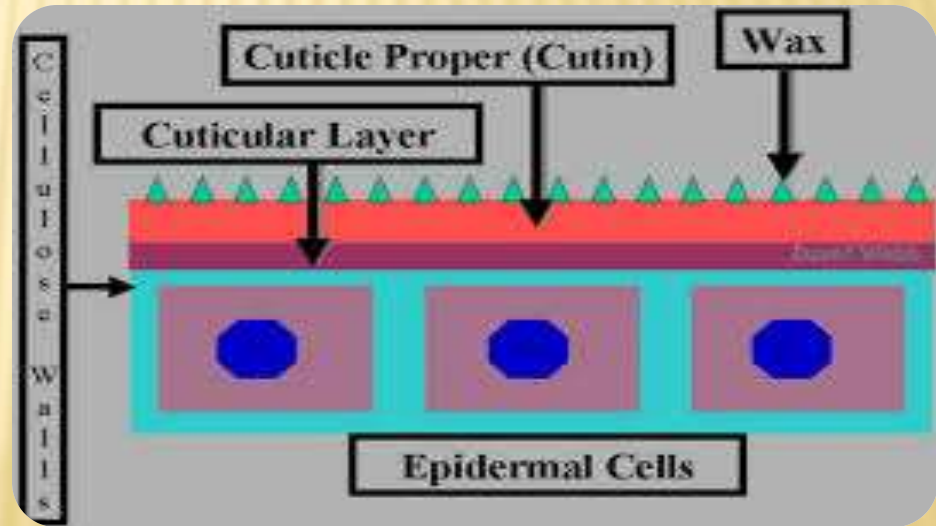


- Surrounds the cell surface membrane
- Cell wall is made of **cellulose**
- Protects the cell from injury
- Gives the plant cell a **fixed shape**
- Cell wall is **fully** permeable



## 2- Impermeable membrane:

This type of membrane does not allow any kind of movement through it., e.g., – cultivated cell wall.



### 3- Semi-permeable membrane:

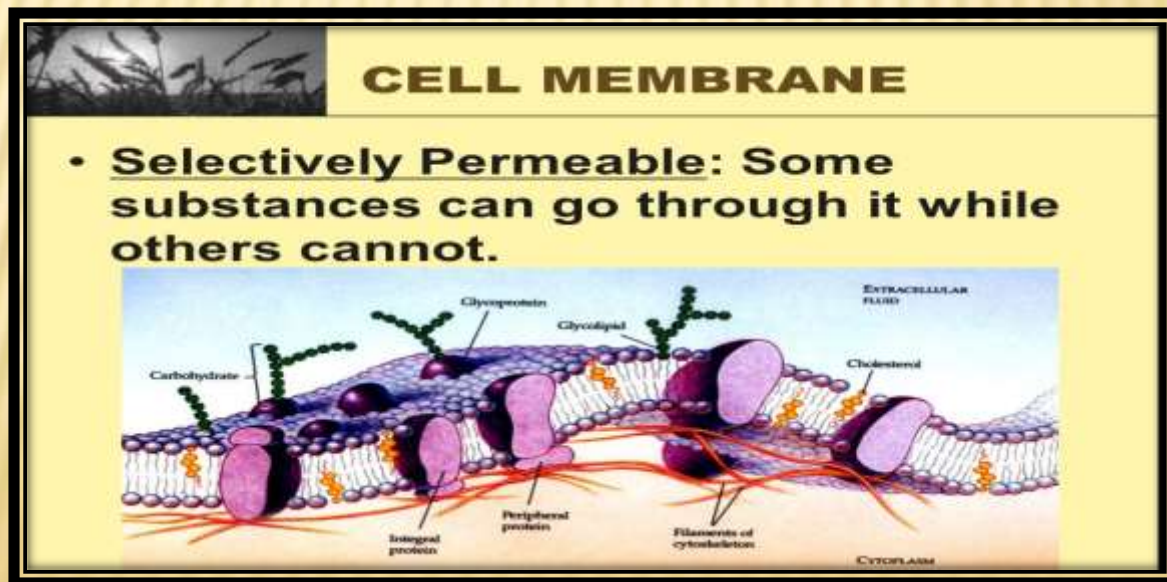
A membrane that is selectively permeable, i.e. being permeable to only certain molecules and not to all molecules.

This type of membrane allows only solvent particles to pass through it. It does not allow the movement of solute particles, e.g., egg membrane, animal bladder, parchment membrane. These can be prepared artificially also.



# Selectively permeable membrane or differentially permeable membrane:

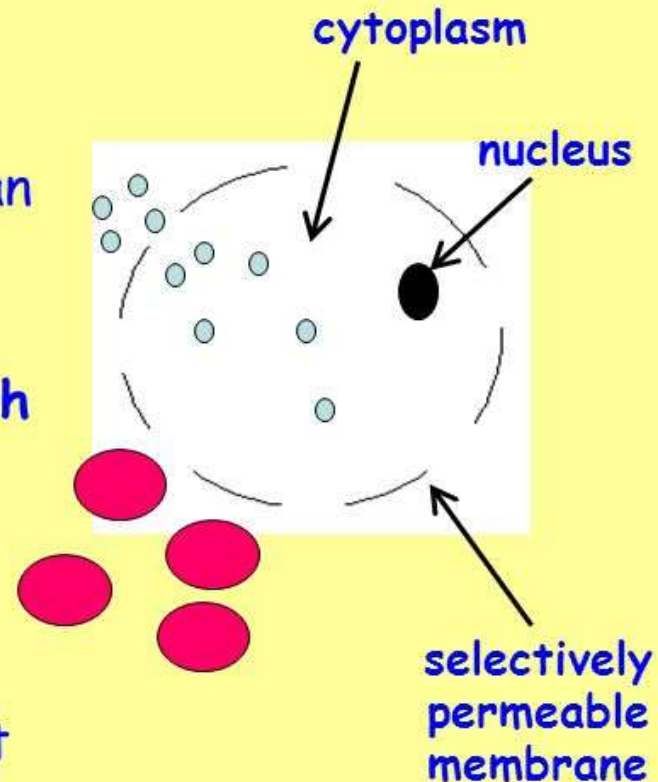
These membranes allow only some selected molecules (of solute and solvent) to pass through it. Most of the biological membranes, such as cell membrane, tonoplast (vacuolar membrane) and the membrane surrounding the sub-cellular organelles are selectively permeable. These membranes give a differential treatment to different kinds of molecules. Some molecules move very rapidly, some move very slowly, while rest other do not move at all. A nonliving selectively permeable membrane is cellophane.



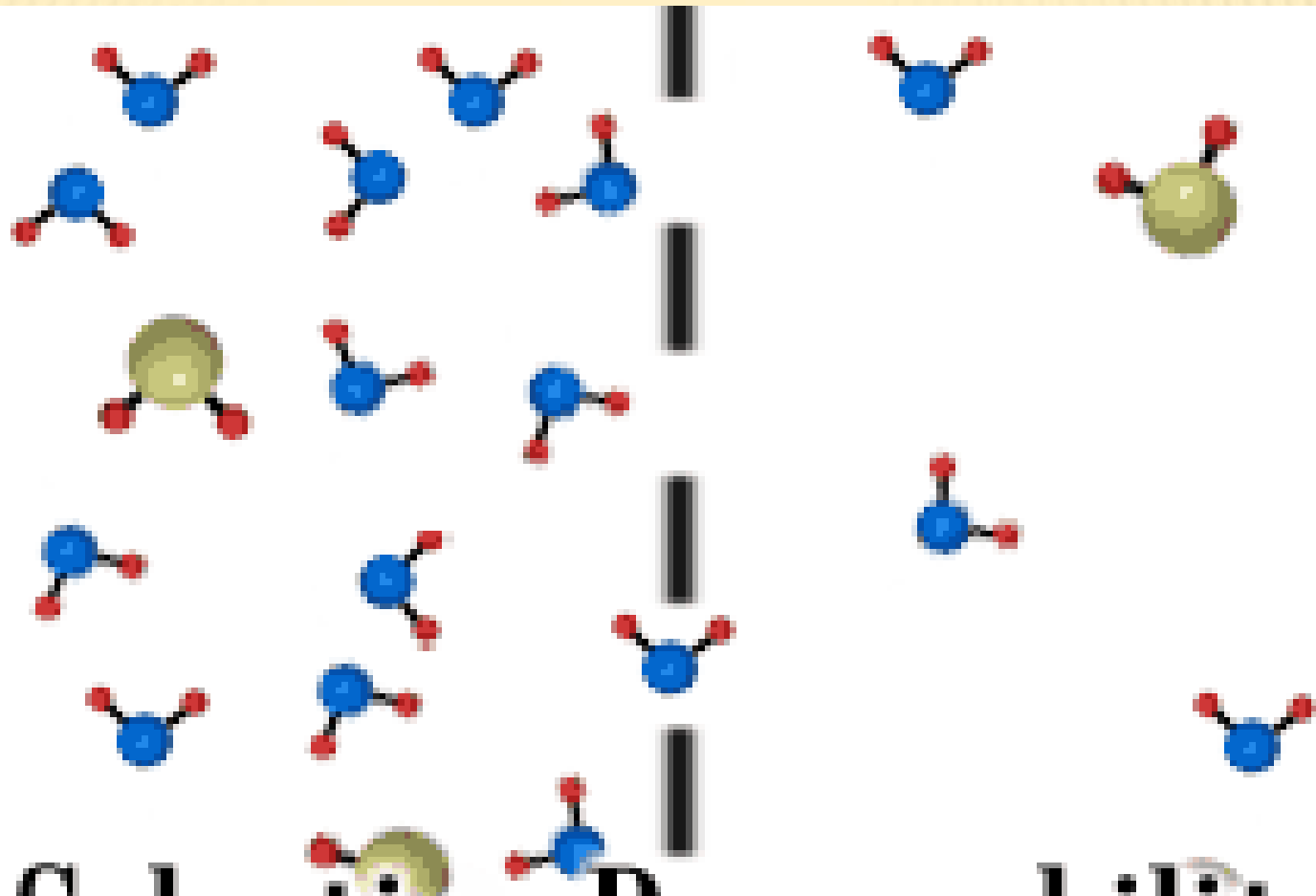


# Selectively Permeable Membranes

- Pores in the membrane are small, so only small molecules such as **glucose**, **water**, **oxygen** and **carbon dioxide** can get through.
- Large molecules such as **starch** cannot pass through.
- Selectively permeable membranes allow **certain molecules** to pass through but not others.





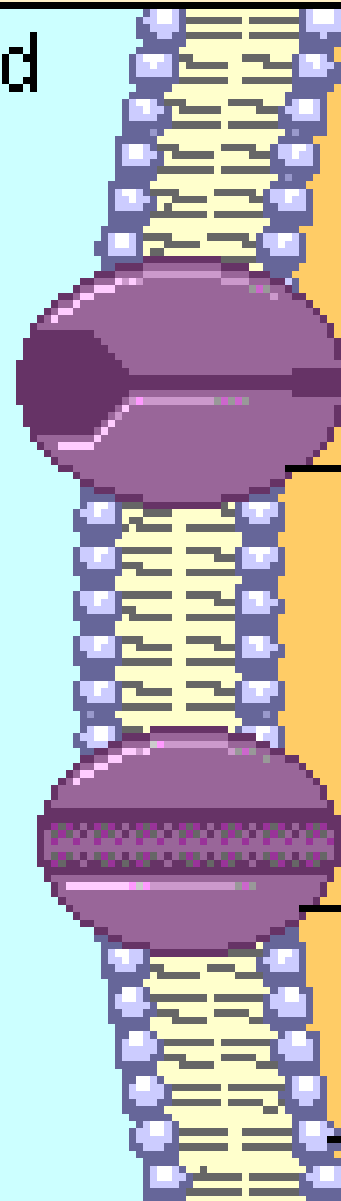


Selective Permeability



Extracellular fluid

Inside of cell



Membrane protein

Membrane protein

Bilayer membrane



THANKS