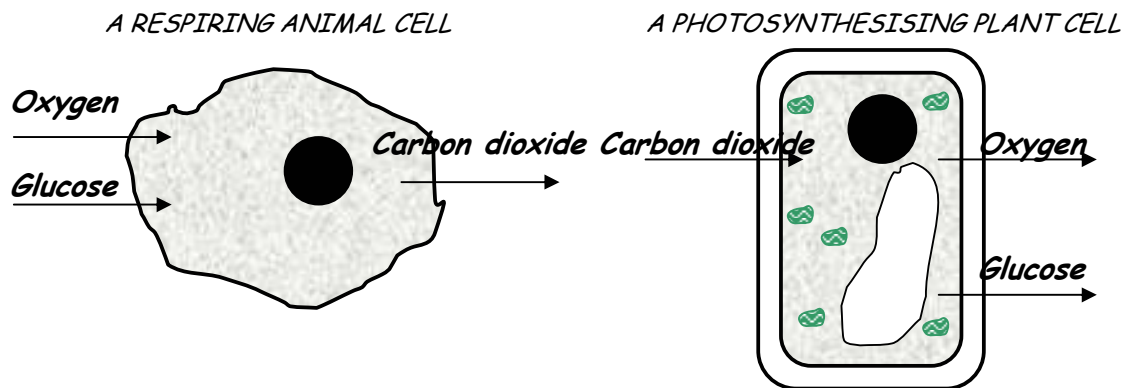


Intermediate 2 Biology
Chapter 2 - Diffusion and Osmosis Revision Notes

Diffusion

Diffusion is the movement of molecules from an area of high concentration to an area of low concentration.

Molecules which move by diffusion have to be small and soluble, for example glucose, oxygen, carbon dioxide and amino acids. Large, insoluble molecules such as starch are unable to move by diffusion.

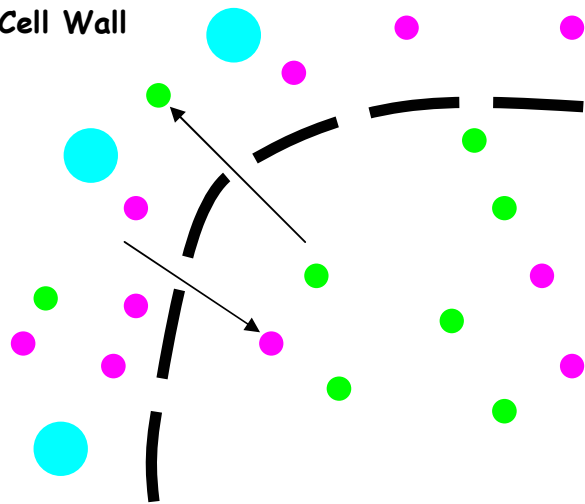




**Diffusion is important -
IT ALLOWS CELLS TO GAIN RAW MATERIALS FOR CHEMICAL REACTIONS
AND REMOVES WASTE PRODUCTS.**

Structure of the Cell Membrane and Cell Wall

The cell membrane contains many pores. The membrane is described as semi-permeable (or selectively permeable). This is because the cell membranes will only allow certain molecules (small & soluble) to pass through it.

The cell wall is described as freely permeable as it allows all molecules to pass through it.



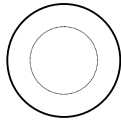
 Small molecules (e.g. oxygen and glucose) diffuse through pores.
 Large molecules (e.g. starch) unable to diffuse as they cannot fit through pores.

Osmosis

Osmosis is a special case of diffusion involving the movement of water from an area of high concentration to an area of low concentration.

You must be able to describe the effect of placing animal and plant cells in solutions of different water concentrations.

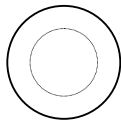
Red Blood Cells (Animal)



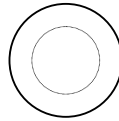
Placed in a hypotonic sol'n



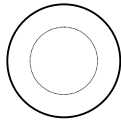
water enters by osmosis causing the cell to swell and burst.



Placed in an isotonic sol'n



as there is no difference in the water concentration inside and outside the cell no change occurs.



Placed in a hypertonic sol'n

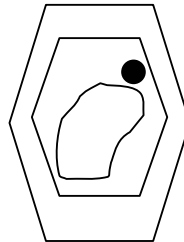


water leaves by osmosis causing the cell to shrivel.

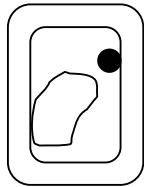
Plant cells



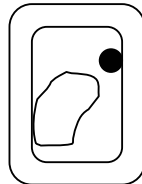
Placed in a hypotonic sol'n



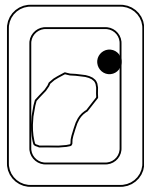
water enters by osmosis causing the cell to swell. The CELL WALL prevents bursting. This cell is described as TURGID.



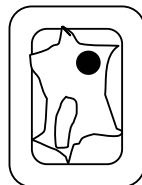
Placed in an isotonic sol'n



as there is no difference in the water concentration inside and outside the cell no change occurs.



Placed in a hypertonic sol'n



water leaves by osmosis. This causes the vacuole to shrink and the cell membrane to shrink away from the cell wall. This cell is described as PLASMOLYSED.