Osmosis is defined as: the passage of water from a region where it has a higher water potential to a region where it has a lower water potential through a selectively permeable membrane.

Cell-surface membranes and other plasma membranes are selectively permeable = they are permeable to water molecules and a few other small molecules but not larger

A solute is any substance that is dissolved in a solutif twater). The solute a d solvent together form a solution. Nater potential is many substance in units of press of the potential is the total of the potential is the solution.

Osmosis

The highest value of water potential (pure water) is 0. so all other values are negative. The more negative the value = the lower the water potential.

Animal cells, such as red blood cells, contain a variety of solutes dissolved in their watery cytoplasm. If a red blood cell is placed in pure water, it will absorb water by osmosis because it has a lower water potential.

Cell surface membranes are very thin and although they are flexible they cannot stretch a great extent. The membrane will therefore break, bursting the cell and releasing its contents.

To prevent this, animal cells normally live in a liquid which has the same water potential as the cells. (blood plasma in this case).

- 1. the solution on the left has a low concentration of solute molecules while the solution on the right has a high concentration of solute molecules.
- Both the solute and water molecules are in random motion due to 2. their kinetic energy.
- The selectively permeable plasma membrane, however, only allows 3. water molecules across it and not solute molecules.
- The water molecules diffuse from the left hand side, which has the 4. higher water potential, to the right hand side which has a lower water potential = down a water potential gradient.
- At the point where the water potentials on either side of the mem-5. brane are equal, a dynamic equilibrium is established and there is no net movement of water.