Membrane Transport

1. There are two categories of transport:

   (a) The first is _____ transport which does not require _____ as it simply requires a _____ gradient.

   Specific types of this type of transport include:

   (i) _____ diffusion, which is the passage of _____, non-_____ molecules directly across the _____ bilayer. An example of a molecule that can pass this way is _____ gas.

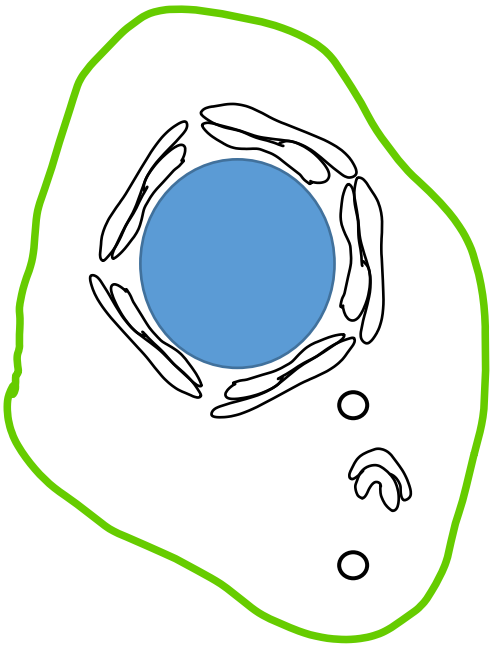
   (ii) _____ diffusion is the passage of _____, _____ molecules through a _____ protein. An example of a molecule that can pass this way is _____ which can pass through a _____-_____ _____.

   As the name implies, these open in response to changes in _____. Add a sketch of this type protein here:

   (iii) _____ is the movement of water molecules across a _____ permeable membrane. Water will move from an area of _____ solute concentration to an area of _____ solute concentration, to equalize concentrations. Hence, water follows _____, is an important notion to understand.

   (b) The second type is _____ transport which does require _____ as it moves molecules _____ the _____ gradient. This type of transport requires a _____ protein. Draw a schematic of the ____-_____ _____ protein:

2. The phospholipid bilayer is _____, so it can break and reform. That allows the formation of _____ which transport molecules such as proteins around inside cells.



3. Specifically, as can be seen in the diagram, a protein for export is first synthesized on the _____ bound to the rough _____ _____.

   They are transported in a _____ to the _____ _____ which _____ the protein. They bud off in a _____ again, which then fuses with the _____ membrane, secreting the protein. This process is called _____.

4. The _____ membrane can also fold around a molecule that is too large to enter a cell. This is called _____. It is commonly done by a type of white blood cell called a _____, therefore _____ is a type of _____.

5. Osmolarity can be estimated in a potato sample

   Independent Variable:

   To determine how the _____ of a solution impacts the mass of a potato sample.

   Dependent Variable:

   Controlled variables: (state 3 – method on following page can help)

Method:

Potatoes are pealed and cut into cylinders of equal volume and surface area. The initial mass of each sample is recorded and is then 1 placed in each solution of 0.0, 0.4, 0.8, 1.2, 1.6 %. They are left for 10 minutes, and then the final mass is recorded. The change in mass as a % is then calculated and a graph is produced.

Results:

Concentration (%)	Initial mass of sample (g)	Final mass of sample (g)	Change in mass (g)	Change in mass as a percentage (%)
0.00	3.40	3.65	+ 0.25	
0.40	3.35	3.45	+ 0.10	
0.80	3.45	3.49		
1.20	3.42	3.30		
1.60	3.38	3.00		

Analysis/Conclusions

In the _____ solution, water moved _____ the sample, causing the mass to _____. This was between concentrations of approx. _____ and _____ (%).

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In the _____ solution, the solute concentration on either side was _____, so there is no net movement of _____ molecules. This was at a concentration of approx. ____ (%).

This is important to understand when transporting _____ to be used in transplants. They must be kept in _____ solution to avoid _____ the tissue.

