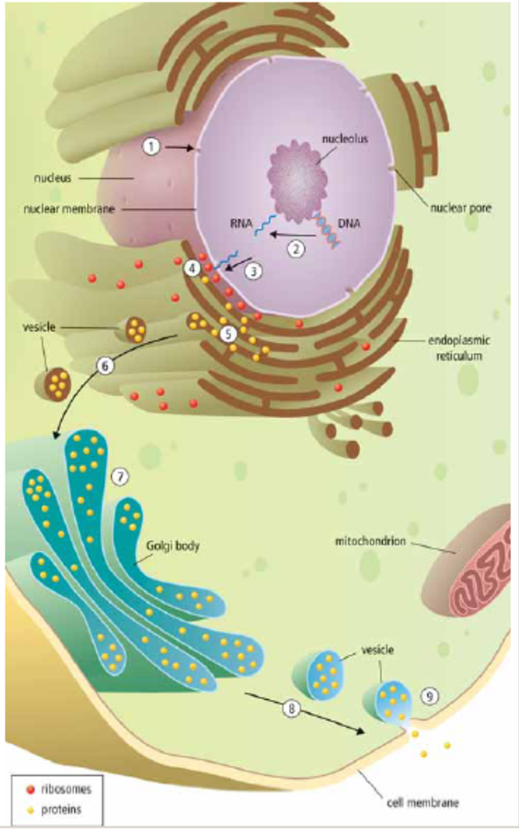
**Life Sciences 11: Cell Processes**

Date: Name:

By the end of the lesson you should be able to:

* Describe protein synthesis
* Compare and contrast the processes of mitosis and meiosis
* Compare and contrast diffusion and osmosis.

**Protein Synthesis**

1. The nucleus receives a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to make a specific protein
2. The DNA message for a specific protein is copied (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) into a small molecule called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

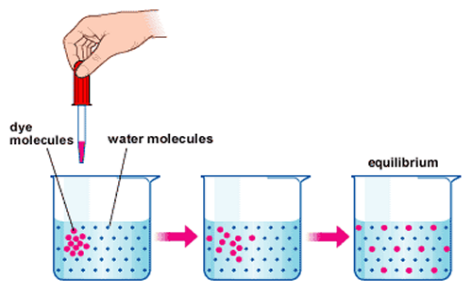
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. RNA leaves through a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The RNA message is delivered to the \_\_\_\_\_\_\_\_\_\_\_\_\_, where the protein is made (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
3. The manufactured protein enters the \_\_\_\_\_\_\_\_\_\_
4. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forms off the end of the ER and carries the vesicle to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Golgi \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the protein for transport
6. A vesicle forms off the end of Golgi and \_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

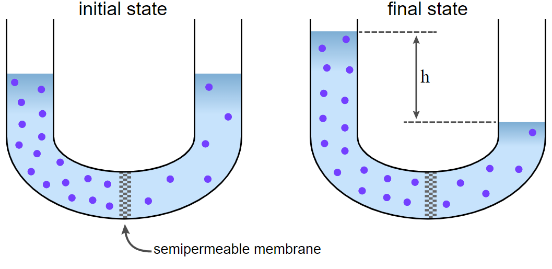
1. The vesicle attaches to cell membrane and is released out of the cell.

**Protein Synthesis Analogy – Apple Products**

**Diffusion and Osmosis**

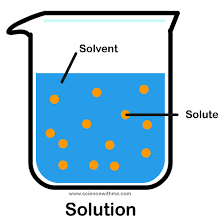
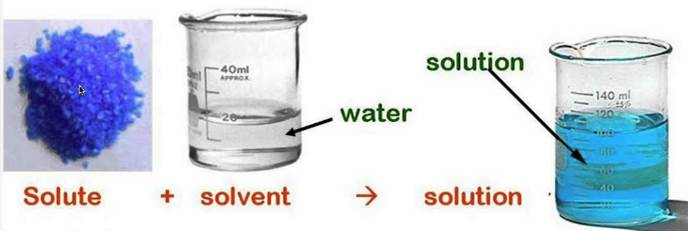
Diffusion

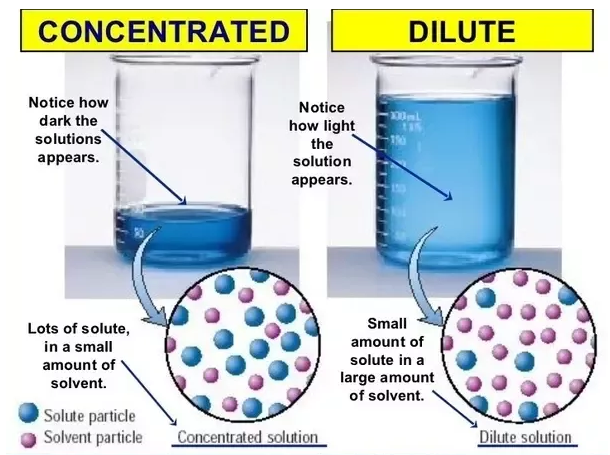
* Movement of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Osmosis

* Movement of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  from an area of high concentration to an area of low concentration

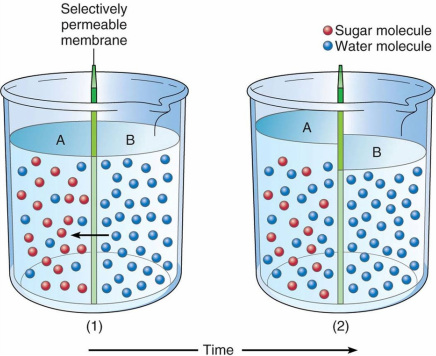
Useful Terms

* Solution: mixture of one or more substances evenly distributed in another substance
* Solute: substance dissolved in a solution
* Solvent: substance in which the solute is dissolved



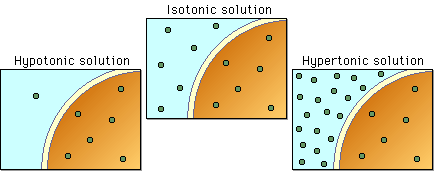
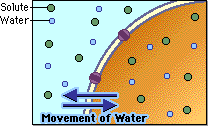
* Concentration: the amount of solute dissolved in the solution

Selectively Permeable Membrane

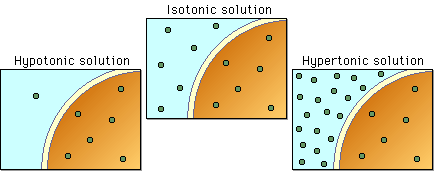
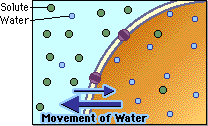
* Cell membranes are selectively permeable – they select what is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Water is able to cross membranes while many solutes, such as sugar or salt, do not cross freely
* This leads to osmosis, the diffusion of water

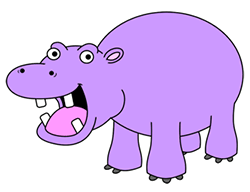
*Osmosis Details*

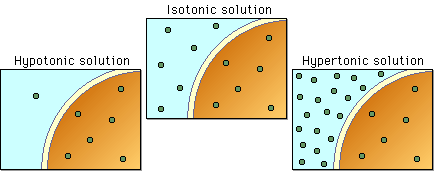
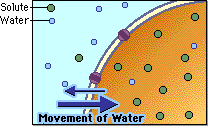
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ solution: equal concentration of solute in the solution compared to the cell**
  + The concentration of water is equal on both sides of the cell membrane
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of water into or out of the cell

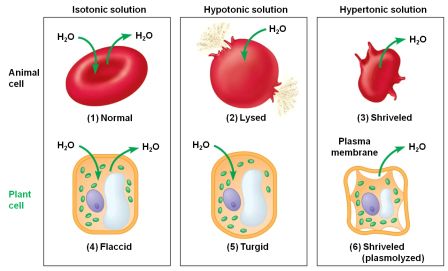
 

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ solution: higher concentration of solute in the solution compared to the cell**
  + The concentration of water inside the cell is greater than outside (solution) of the cell
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell; the cell shrinks

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ solution: lower concentration of solute in the solution compared to the cell**
  + the concentration of water outside (solution) the cell is greater than inside the cell
  + so \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; the cell swells (if too much it can burst! 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!)



**Cell Reproduction**

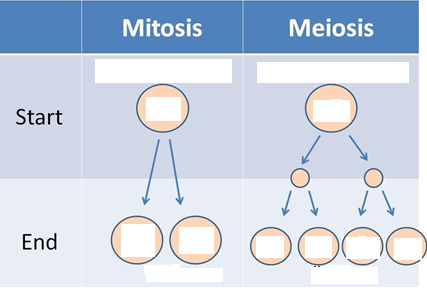
MITOSIS MEIOSIS

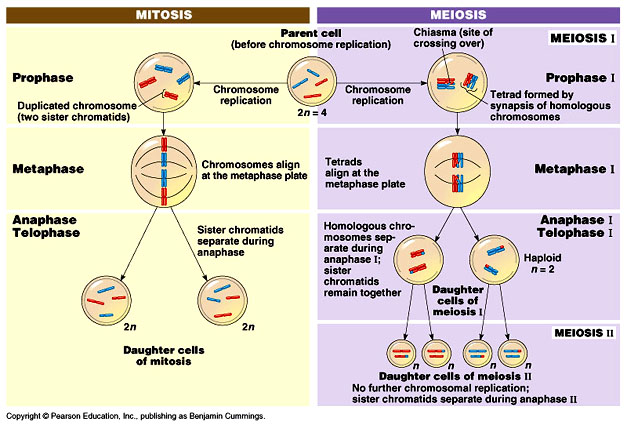
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**Mitosis**

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – one from each parent) will divide to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells.

**Meiosis**

* A 2N diploid cell (contains two copies of each chromosome – one from each parent) will divide to form \_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells (half as many of the original number of chromosomes)

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Can you …

… describe protein synthesis?

… compare and contrast diffusion and osmosis?

… compare and contrast the processes of mitosis and meiosis?