1.3 – Key Concepts

* Diffusion – This is the tendency of particles to spread out from an area of higher concentration into an area of lower concentration equilibrium is established.
* Osmosis – This is just a special case of diffusion involving the movement of particles (in most cases water) across a selectively permeable membrane (ex. cell membrane).
  + The concentration of water in the cell must stay fairly constant, and therefore water diffuses into and out of cells continuously. This movement of water into and out of cells is vital to the cell’s survival.
* Reverse osmosis – making the water move in the opposite direction by using high pressure on the low concentration side.
* Permeable – Lets all particles through easily.
  + Cotton jacket – in wet weather you will be wet and cold because the air and water will pass through.
* Impermeable – Does not let any particles through.
  + Plastic jacket – Although rain cannot pass through it, you will get hot and sweaty. The air heated by your body cannot escape through the plastic. The moisture in the heated air will condense on the inside of the jacket and conduct heat away from your body.
* Selective Permeability – Lets some particles through while stops other particles from going through.
  + The best jacket – keeps the rain out but lets some water vapor pas through.
  + Cell membrane’s extremely tiny openings let in some substances (such as water and oxygen) but keep most substances out.
  + Cell walls and membranes you see in figures 1.19a and 1.19 b are both selectively permeable. Water, oxygen, carbon dioxide, carbohydrates, and waste created within the cell are allowed to pass through the cells. Large molecules, which may harm the cell, are blocked by the membrane or cell wall.
  + Without selective permeability the cell would be sealed off. It would be unable to access the supply of materials the organelles need to carry out cell activities, and the cell would be unable to get rid of the wastes generated by its activities.
  + Instead, every cell in your body (and in every other organism) is bringing water, food, and gases in and removing wastes at every moment of the day.
* Cellular transport – It is this movement of substances into and out of cells.
  + There are several different types of different processes but the to common ones are *diffusion* and *osmosis*.