Effects of Tonicity on RBC's

- Hypertonic solution
    - Has a higher concentration of non-permeating solutes
    - Crenate (shrivels)
    - 50M NaCL Solution
        - H2O
            - 5M NaCl - RBC
    - Red in a hypertonic
        - The RBC while shrivel
- Hypotonic solution
    - RBC swells
    - Has a lower concentration of non-permeating solutes than intracellular fluid (ICF)
        - lyse (burst)
    - 5M NaCL
        - 50 NaCl of RBC
            - H2O
- Isotonic solution (Normal saline)
    - Nothing happens
- Processes of Membrane Transport
    - 3 processes that employ a transport protein or carrier
        - 1 Facilitated diffusion (passive)
            - Carreir-Deidated Transport
            - Help get through but no ATP
            - Movement – High to low
            - Facilitated diffusion: transport of solute through a membrane down its concentration gradient
            - Does not consume ATP
            - Mol;ecue attaches to some site on the carrier
                - Carrier has to change it's shape to accommodate
            - Roling down a hill
        - 2 Primary active transport
            - Transport of solute through a membrane against its concentration gradient
                - ATP energy consumed to change carrier
                    - Rolling up a hill
                - Examples of uses:
                    - **Sodium-potassium pump**
                        - Pumping potassium inside the cell and the sodium outside the cell.
        - 3 Secondary active transport
            - Sodium-glucose transporter
            - Molecule takes advantage of the movement of another molecule at the expense of ATP
            - Secondary benefit of the Primary active
                - Sodium being pumped out of the cell,

        - The glucose piggy backs a ride on the sodium being pumped into the cell of the cell
    - Reducing the amount of sodium
        - Allows sodium back in
        - Glucose will come in through the secondary
        - Glucose will come in with the sodium that replaces the sodium pumped out
    - Only happens if there's a sodium pump
- Characteristics of Carriers
    - Specificity
        - Transport proteins specific for a certain **ligand (molecule)**
    - Saturation
        - Transport maximum (T)m
        - Can't carry more than it can carry
        - Can carry under its limit, but not over
- Carrier –Mediated transport
    - Uniport Tranasporter
        - Transfer only one type of molecule
        - Only one of those molecules at a time
    - Symport
        - Can carry two or more molecule at one time in one direction
        - In or out, not at the same time.
        -
    - Antiport transporter (countertransport)
        - Two or more molecule
        - In opposite directions
        - Sodium Port
- Vesicular transport – all of them require ATP
    - Processes that move large particles, fluid droplets, or numerous molecules at once through the membrane in vesicles
    - Endocytosis- vesicular processes that bring material into the cell
        - 1. Phagocytosis – "cell eating"
            - Eating up cells that have died
            - Solid
            - Plasma membrane will souround it.
                -
        - 2. Pinocytosis – "cell drinking"
            - Taking in a lipid
            - Or liquid that's on the outside of the cell that the cell wants on the inside
            - Taking in droplets of ECF
        - 3. Receptor-mediated endocytosis- particles bind to specific receptors on plasma membrane
            - Clathirn coated vesicles
                - Specialized

- Endocytosis
  - Receptors sitting on the membrane.
  - Membrane will vaginated
  - Create pit
  - Pinch off from membrane
  - Eaten by the cells

- Exocytosis
  - Secreting material
    - Vessicle will fuse with the plasma membrane
    - Opens up
    - Dumps out into the extracellular space

Transport Without Carriers	Movement of material without the aid of carrier proteins
Filtration	Movement of water and solutes through a selectively permeable membrane as a result of hydrostatic pressure
Simple diffusion	Diffusion of particles through water or air or through a living or artificial membrane, down their concentration gradient, without the aid of membrane carriers
Osmosis	Net flow of water through a selectively permeable membrane, driven by either a difference in solute concentration or a mechanical force
Carrier-Mediated Transport	Movement of material through a cell membrane with the aid of carrier proteins
Facilitated diffusion	Transport of particles through a selectively permeable membrane, down their concentration gradient, by a carrier that does not directly consume ATP
Active transport	Transport of particles through a selectively permeable membrane, up their concentration gradient, with the aid of a carrier that consumes ATP
Primary active transport	Direct transport of solute particles by an ATP-using membrane pump
Secondary active transport	Transport of solute particles by a carrier that does not in itself use ATP but depends on concentration gradients produced by primary active