1.Non covalent bond: a type of chemical bond, between macromolecules, that does not involve electron sharing, but rather variations of electromagnetic interactions
2.Peptide bond: in macromolecular synthesis, joins amino acid monomers (between double bond o and NH (carboxyl grp). Formation involves lose of a water.
3.Glycosidic bond: joins two monosacc monomers (sugars/ carbs). Lose of 1 water. Between carbon 1 and hydroxyl grp.
4.Phosphodiester bond: joins 2 nucleotide monomers (phosphate grp in 1 bonds covalently to sugar grp in another). Lose of 1 h2o
5.Ester bond: lipid synthesis joins two monomers
6. Ionic: metal and non-metal ion through electrostatic attraction. 1 atom steals electron. Become charged).
7. Polar covalent: unequal sharing of electrons
8. Hydrogen bond: when hydrogen atom covalently bonded to electro – atom interacts with an electro – atom of another molecule (weaker than covalent bond)
Unequal sharing of electrons occurs due to some having greater electronegativity

1. Ionic- When electro- diff between 2 atoms is so high that electrons are pulled from 1 atom to another.
2. Ion-Permanent Dipole: electrostatic attraction between ionic (charged) and permanent dipole (polar covalent)
3. Perm Dipole- Perm Dipole: bond between 2 polar covalent. Ex hydrogen bond
4. Perm dipole- Induced Dipole: polar covalent comes near non polar covalent and induces a dipole
5. Induced dipole- Induced dipole: electrons in bond are constantly moving, become unevenly distributed. Induced dipole created. 2 become attracted

Water is a polar molecule: hydrophobic are nonpolar, hydrophilic are polar
Amino acids are classified according to side chains. Order of AA determines folding into 3d structure.
Carbohydrates, sugars are 6 carbons. Differ in atom arrange. 2 sugars linked by covalent.

1. Monosac: unbranched with either ketone (C=O) or aldehyde (HC=O). To form ring, ketone or aldehyde covalently bonds with o of hydroxyl group on another carbon in same molecule.

Nucleotide is 5 C sugar. Bases are connected with hydrogen bond. Nucleotides bonded phosphodiester
Lipids are hydrophobic. Chemically diverse

1. Triacylglycerol: 3 fatty acids joined to glycerol
2. Glycerol: 3 carbon with OH groups attached to Carbon
3. Fatty acids: chain of carbons joined to (cooh) at one end. Unsaturated contains 1 or more double bonds. Saturated contain no double bonds. Saturated are straight unsaturated have a kink. UNCHARGED. However, motion leads to regions of slight + and -. Van der walls or IDID. Sometimes help stabilize.
    - Melting point depends on length and saturation level. As length increases IDID increase and melt pt increases
    - Kinks reduce tightness and lower melting pt
4. Steroids: hydrophobic. 4 fused rings.
5. Phospholipid: glycerol attached to 2 fatty acids and 3rd molecule containing a phosphate grp. Head is hydrophilic (polar). Tail hydrophobic (nonpolar)

PHOSPHOLIPIS CONT…

- Head group can make hydrogen bonds with water because it is polar. Amphipathic means regions of both philic and phobic.
- Structures and shapes are determined by bulkiness of head relative to tail.
    1. Micelle: filled bowl shaped. Lipids with bulky heads and single fatty acid tails.
    2. Bilayer: lipids with less bulky heads and 2 tails. Membranes self heal because of property of lipids to rearrange due to tendency of water to exclude non-polar molecules.
    3. Liposome: bowl with a hole in center. In water of neutral pH. Can incorporate nucleic acids and other molecules into their interiors.

BILAYER forms spontaneously as long as conc of free phospholipids is high enough and pH of solution is similar to cell. Makes sure that heads remain charged.