SI sheet Chap 5:Organic Molecules (except nucleic acids)

Four types of organic molecules:

1. Carbohydrates
2. Lipids
3. Proteins
4. Nucleic acids

How do you form a polymer?

Get two monomers, take out water via dehydration reaction.

**Carbohydrates:**

What is the molecular formula for a carbohydrate?

CH2O

What is an aldose? What is a ketose?

Aldose=aldehyde sugar; ketose= ketone sugar

How do you form a carbohydrate polymer? What is the bond called?

Dehydration reaction, remove water, glycosidic bond (1🡪4)

Can glucose form a ring? Yes

What is the difference between alpha linkage and beta linkage in glucose monomers to form polymers? Give examples of two sugar polymers (1 for each form)

Depends on how react with hydroxyl. IN alpha, 1🡪4 linkage points down, in beta points up. Starch=alpha; cellulose=beta

What makes chitin special? Made with nitrogen

Name some functions of a carbohydrate:

Energy, cell signaling, storage, provides support in plants,

**Lipids:**

Do lipids include polymers? What is the defining characteristic for this class?

No, hydrophobic

How do you form a triglyceride? Draw

3 fatty acid chains, 1 glycerol

What is the difference between a saturated and unsaturated fatty acid?

Saturated=single bonds, unsaturated=presence on double bond

What type of lipid forms plasma membranes? What makes it special?

Phospholipids, polar heads, nonpolar tails, kinks in chain make it more fluid

What are some characteristics of a steroid? What do they make up?

4 rings, sex hormones

**Proteins:**

What is the monomer for a protein? How do you bond them together?

Amino acids, peptide bonds

Name some functions of proteins

Accelerate chemical rxns, support, storage of aa’s, transport of substances, coordination of an organism’s activity, response of cell to chemical stimuli, movement, protection against disease

Ho w can you tell if an amino acid is hydrophobic or hydrophilic?

Depends on R-group. If charged, hydrophilic. If not, hydrophobic.

Describe the structure of proteins:

1. Primary: sequence of aa
2. Secondary: hydrogen bonding forms helices (alpha) or beta pleated sheets.
3. Tertiary: interactions between the aas themselves., final protein structure
4. Quarternary: tertiary structures come together.

Change in protein structure causes what? How does one denature a protein?

Unfunctional, high heat, acidic conditions