

ORGANIC MACROMOLECULES WORKSHEET

Name _____

Per _____ Date _____

Work through the following questions using “Macromolecules (Biomolecules)” web link found below.
<http://www2.nl.edu/jste/biochem.htm> Answer the questions on a separate sheet of paper.

Carbohydrates

1. Name the four important roles of carbohydrates.
2. What is the most common monosaccharide? Why is this monosaccharide so important to our daily functioning?
3. What is the name of the process resulting in disaccharide formation? What specifically happens in this reaction (the animation can/will help)? What other component is required to make this reaction occur?
4. What is the name of the reaction when you split a disaccharide? What products do you gain?
5. What are the names of the four polysaccharides and what is required for their formation? What are their respective roles for energy storage?

Lipids

1. How are lipids defined? In what type of solvent are they soluble or insoluble? What are their functions in the body?
2. What is the length range of a triglyceride? How are glycerol and fatty acids “connected” to make a triglyceride (Hint: watch the animation)?
3. Compare and contrast unsaturated fatty acids with saturated fatty acids.
4. How is a phospholipid formed? Why, when placed in water, do phospholipids form a micelle?

5. Draw and label a phospholipid bilayer. Label which regions are hydrophobic and hydrophilic.

Proteins

1. What functional groups make up an Amino Acid? Draw/label (e.g. amino group, acid, R group) an amino acid.

2. How are polypeptides formed (Hint: animation). How are many amino acids joined together?

3. What defines a protein?

4. List the important biological functions of proteins and provide an example of each.

5. List the four levels of protein folding. What defines the each folding level?

6. What is fundamental to protein structure and function?

Nucleic Acids

1. What makes up a nucleotide? What are the four component bases of DNA? How do the bases of RNA differ from DNA? The specific base pairings for each?

2. What is meant by “sugar-phosphate backbone”? How are nucleic acids formed?

3. How does the structure of DNA and RNA differ?

4. Finally, who unraveled the structure of DNA? When?