Name_____Period_____Date_____

Macromolecules: Online Homework Assignment

http://www2.nl.edu/jste/biochem.htm This is a good summary of the macromolecules.

1. The chemistry of the biological molecules, _____chemistry, is carbon chemistry. What makes carbon so important?

I. **2.** Monosaccharides are _____ sugars. A disaccharide is formed when _____ monosaccharides are joined together by a reaction known as a _____**, or condensation, synthesis.** The splitting apart reaction is called _____**. Play the animation for each.** What is removed as a result of dehydration synthesis? _____

3. Polysaccharides (poly = _____, _____ = sugar) are made of many sugar molecules joined together by _____ synthesis reactions. When many repeating units are joined together to make a large molecule, the resulting molecule is called a _____**.**

4. Starch is the long term _____ storage form of glucose in _____. It is found in abundance in the _____ we eat, (_____, wheat, barley and rye) and in many vegetables, such as _____and corn.

   Glycogen is the _____ energy storage form of glucose. This polymer has the glucose molecules linked in the same way as they are in the plant starch. How is glycogen different from starch?
   Where is glycogen found?_____

5. Cellulose differs from starch and glycogen in _____ _____ Cellulose is a _____ _____ polymer of glucose which is found in the _____ _____ of plants. No _____ has an enzyme to break down cellulose, so it cannot be digested by them directly. We eliminate ingested cellulose as _____. _____, who eat wood, depend upon _____in their digestive tracts to break down the cellulose.

6. Chitin is made of glucose molecules linked in the same way they are linked in _____, making it equally _____. It differs from cellulose by having _____ groups (NH_2) attached to the glucose molecules. Chitin forms the _____n of all arthropods (e.g. _____, spiders, lobsters and crabs).

II. 7. Lipids are defined by their _____. They do not dissolve in polar solvents like _____. Lipids are _____-_____. _____, _____, _____ and the _____ are all lipids. What is their function?

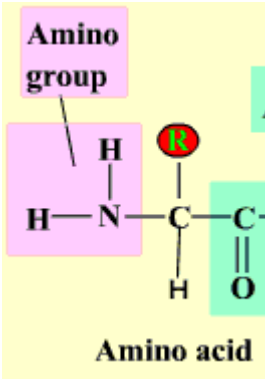
   One group, the _____ are the major structural elements of membranes.

8. Triglycerides (fats) are composed of a _____ backbone and _____ _____acids. **Watch the animation**. What process links the glycerol and fatty acids together?_____ What breaks them apart?_____

9. _____fatty acids contain all of the _____ they can hold. There are no carbon to carbon _____bonds in saturated fatty acids. Saturated fatty acids are typical of _____ fats and are believed to cause blockage of _____ which can lead to strokes and heart attacks.

10. _____fatty acids do not contain all of the _____ possible. One or more _____ to _____ double bonds will be present in the carbon chain. Note that each carbon involved in the double bonding has only one bond left for bonding to _____. Such molecules are not completely loaded with hydrogen so they are _____.

III.



11. Proteins are polymers of _____ _____. This means that proteins are repeating units of molecules which have an _____ (NH_2) group at one end _____ (carboxyl) group at the other end. Between these there is a _____ which has a variable group attached to it. The letter _____ stands for the var n be substituted here. Label the diagram to show the key features of an amino acid.
12. Proteins are formed by _____ (condensation) synthesis which links amino acids together. **Watch the animation.** In this reaction, _____ is removed and the_____ from the amino end of one amino acid is joined to the _____ from the other end of another amino acid. A _____ is ed when many amino acids are joined together by _____ bonds.
13. List the functions of proteins:

IV. 14. _____and _____, the two nucleic acids, are polymers of nucleotides. A nucleotide is made of a _____, a 5 carbon _____ and a _____ base. The sugar in DNA is _____ and the bases are adenine (A), cytosine (C), guanine (G), and thymine (T). In RNA the sugar is _____ and the bases are A, C, G, and _____(U) instead of T.
15. DNA is composed of _____ nucleotide chains connected to each other by _____ bonds. RNA is _____stranded.
16. Genes are _____ and _____ is important in handling the information in the DNA.

******5 Good Review Links: Go to these links and review the macromolecules**

1. **http://bcs.whfreeman.com/thelifewire/content/chp03/0302002.html Watch the animations for each macromolecule. Take the quiz.**

2. **http://www.phschool.com/science/biology_place/biocoach/bioprop/monomers.html Watch the dehydration synthesis and hydrolysis animations. The process of linking monomers to make polymers, called _____ removes what?_____**

What is the reverse process called?_____ What happens in this process?

4. **Biomolecules: The Carbohydrates** Wisconsin Online

5. **Biomolecules: The Lipids** Wisconsin Online

6. **Biomolecules: Proteins** Wisconsin Online