

BIOCHEMISTRY WEBQUEST

Name :

BASIC CHEMISTRY

Link:

<http://faculty.clintoncc.suny.edu/faculty/Michael.Gregory/files/Bio%20101/Bio%20101%20Lectures/Biochemistry/biochemi.htm>

1. (a) Draw 2 separate carbon atoms both with four single bonds connected to hydrogen atoms (CH₄). (b) Next take away two hydrogens from each and draw the carbons connected together with a double bond. *2pts*

2. What is the difference between being ionized and being polar? *2pts*

3. Compare Macromolecules (polymers) to Monomers; complete the chart below *4pts*

Example of a Macromolecule	Corresponding Monomer
polysaccharide	
	glycerol, fatty acid
protein	
nucleic acid	

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2. Play the animation of fatty acids being attached to the glycerol backbone by dehydration synthesis. (a) What is the name of the functional group on the ends of fatty acids that lose their “-OH” in order to bond to the glycerol? (b) When making one triglyceride, how many molecules of water are formed? *2pts*

2. What is the (chemical/structural) difference between **saturated** and **unsaturated** fatty acids? *2pts*

3. **Phospholipids** are similar to triglycerides in structure with one important difference. Instead of glycerol being attached to three fatty acids (as in triglycerides), in phospholipids there are ____ fatty acids and one _____ group. *2pts*

Phospholipids and the Cell Membrane:

Link:

http://www.usmainscience.com/12bio/phospholipids_in_water.html

1. Play the animation of phospholipids being immersed in water. (a) Why do the fatty acid tails float in the water pointing up? (b) Why do the phosphate “heads” touch the water? *2pts*

2. What happens when a second layer of phospholipids are added? *2pts*

Link:

<http://www.susanahalpine.com/anim/Life/memb.htm>

1. Click through the animation of cell membrane structure. In addition to phospholipids, what are three other materials also found in the cell membrane? *3pts*

Steroids:

Link:

<http://www.wiley.com/legacy/college/boyer/0470003790/animations/cholesterol/cholesterol.htm>

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1. View the “overview” button on this link. Besides its role in the cause of heart disease, name **four vital roles** of cholesterol in the body. *4pts*

2. View the “Heart Disease” button on this page. Work through the links at the bottom. (a) List two reasons why bad cholesterol (LDL) can elevate in a person. (b) Why can't a person remove LDL from the blood when they are genetically predisposed? (c) How does exercise help? *4pts*

Saturated and unsaturated fats

Links:

<http://biology.clc.uc.edu/courses/bio104/lipids.htm>

1. Find the paragraph on **saturated and unsaturated fats** and briefly explain why unsaturated fats are forced to take on a liquid form. *2pts*

2. Read further and briefly explain what a **trans-fatty acid** is and why they are a concern to your health. *2pts*

PROTEINS

Link: <http://www2.nl.edu/jste/proteins.htm>

1. Proteins are polymers of linked monomers called _____ . *1pt*

2. Click on the “play” button to link the 2 amino acids in the diagram. (a) What kind of a bond is formed? (b) What kind of chemical reaction creates this bond? *2pts*

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3. List the seven functions of proteins listed. *7pts*

4. Proteins can be small or large. Larger proteins are folded into intricate shapes. (a) List their four levels of structure. (b) What level of folding determines the final shape of a protein? *5pts*

5. Proteins are held in their intricately folded shape by hydrogen bonds. These bonds can be disrupted when heated or treated with acids or salts. This is called “denaturation” and results in proteins losing their form. Go to this link

<http://www.sumanasinc.com/webcontent/anisamples/nonmajorsbiology/proteinstructure.html> and work your way through the animation. What food/protein is being denatured in this example? *1 pt*

NUCLEIC ACIDS

Link: <http://science.howstuffworks.com/life/cellular-microscopic/dna1.htm>

1. DNA (and RNA) are polymers made up of what monomers? *1 pt*

2. Name the three parts of a nucleotide. *3pts*

3. Where (in the cell) is DNA located? *1pt*

4. DNA guides the cell (along with RNA) in making new _____ that determine all of our biological traits. *1 pt*

4. What does “DNA” stand for (Google it if you have to)? *1pt*

5. What are the names of the four different DNA bases? *4pts*

6. DNA molecules are made of two connected strands of nucleotides that are twisted together like a spiral staircase, called a _____ . *1 pt*