

Biochemistry

Review - Test date: 9/22/16

Name: _____

Period: _____

VOCABULARY-

be familiar with these terms!

Biomolecule
Macromolecule
Polymer
Monomer
Denature
Active site
Activation energy
Substrate
Carbohydrate
Lipids
Proteins
Nucleic acid
Nucleotides
Monosaccharide
Amino acids
Fatty acids
Glycerol
Homeostasis
DNA
R-Group
Insulation
Catalyst
Hydrolysis
Dehydration synthesis
ATP
Metabolism
Enzyme
Disaccharide

Monomers and Polymers

- Monomers are the smaller unit that makes up the polymer
- Polymers are large structures that are known as biomolecules.
- Multiple Monomers make up one Polymer.

Monomer



Person

Polymer



Population

Monomer



House

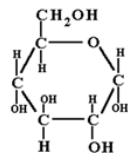
Polymer



Neighborhood

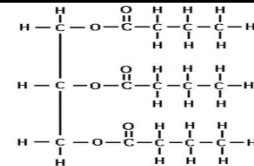
The 4 biggies: Macromolecules

- Biomolecules are found in all living things and are needed in order to live.
- These 4 macromolecules are the key ingredients that make up cells (which are the basic building blocks of life)
- Each molecule has a specific function and structure.
- They all contain C, H, O (Carbon, Hydrogen and Oxygen). Some have more elements



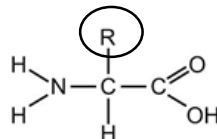
Carbohydrate

- **Function:** Short term energy (quick energy)
- **Polymer:** Carbohydrate, Polysaccharide
- **Monomer:** Monosaccharide
- **Elements:** C, H, O
- **Example:** Bread, Pasta
- **Info:** They only have carbon rings. "YOU GIVE YOUR SUGAR A RING"



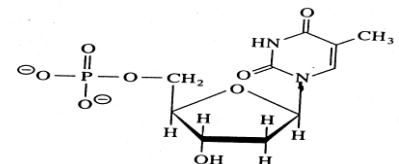
Lipids

- **Function:** Long term energy storage, insulation
- **Monomer:** Fatty acids and a glycerol
- **Polymer:** Lipid
- **Elements:** C, H, O
- **Example:** Fat, oils, waxes (like ear wax)
- **Info:** This makes up fat and blubber. Great for insulation. This molecule has long chains of carbons. Also protects organs.



Protein

- **Function:** Muscle and enzyme formation, building block, transports substances (oxygen in blood)
- **Polymer:** Protein, Polypeptide
- **Monomer:** Amino Acids – the order matters!
- **Elements:** C, H, O, N + R-Group (amino acid)
- **Example:** Meat, hair, fur, nails, enzymes
- **Info:** Has an R-Group attached which is the amino acids.

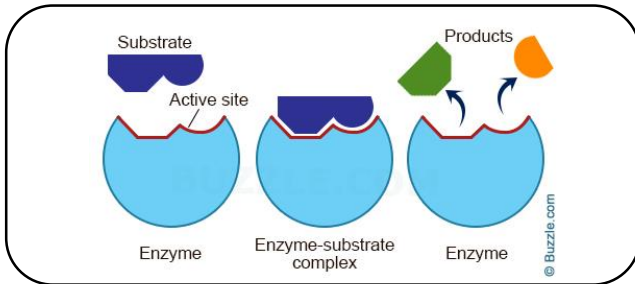


Nucleic Acid

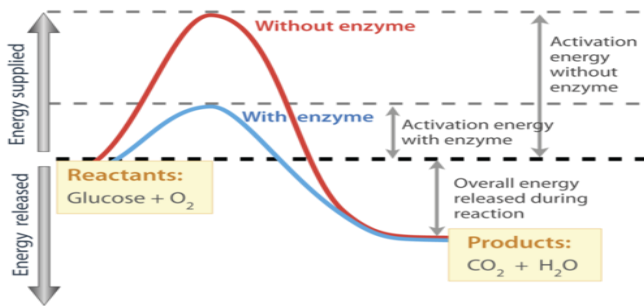
- **Function:** stores genetic information
- **Monomer:** Nucleotides – the order matters!
- **Polymer:** Nucleic Acid, DNA, RNA
- **Elements:** C, H, O, N, P
- **Example:** DNA, RNA
- **Info:** DNA is in every living thing. It is your code of life.

Enzymes

- Enzymes belong to the **PROTEIN** biomolecule family.
- **Enzymes** are **catalyst** which help **speed up chemical reactions by lowering the activation energy** (The amount of energy needed to perform a chemical reaction)
- Enzymes are specific to the **substrate**.
- The specific **substrate** binds to the **active site** causing the reaction to occur resulting in products.
- Enzymes can either break down or build molecules.
- They have the ending **-ASE** to their name.
- Enzymes can **denature** (lose their function forever) by being exposed to extreme temperatures and being outside their optimum pH range.



Enzyme Action



Reaction types

- Enzymes goes through two types of reactions
- **Dehydration Synthesis**
 - Two molecules are combined to make a one new molecule.
 - Water is released.
 - Energy is stored.
- **Hydrolysis**
 - One molecule is split into two new molecules.
 - Water is added.
 - Energy is released (used).

Examples

- dehydration synthesis



- hydrolysis



Extra Information

- **Homeostasis** = internal balance.
 - Maintaining a healthy level of blood sugar (hunger), water and temperature.
- **Cell Organization:**
 - Cells -> tissues -> organs -> Organ systems -> Organism



B. A. T. Review

Name: _____ Period: _____

TEST is 9/22/16 (on a Thursday)

Biochemistry: Unit 2

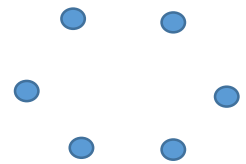
1. Fill in the chart below:

Name of Biomolecule	Monomer	Function	Example	Elements	Structure (Draw)

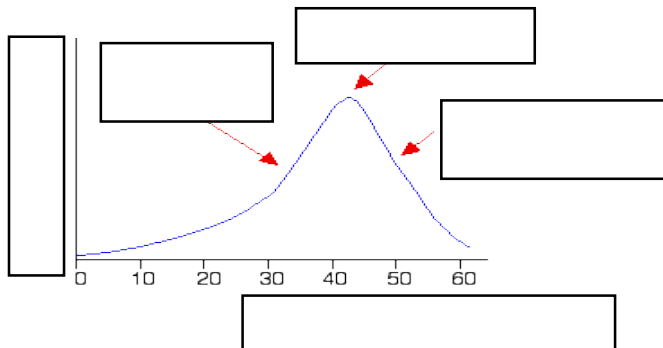
2. What macromolecules contain only C, H, O? _____
3. How would you tell the difference between a carbohydrate and a lipid? _____
4. Which macromolecule is most beneficial to a whale when in freezing temperatures? _____
5. Which macromolecule would you want to consume to prepare for a race tomorrow? _____
6. Which biomolecules have an R-Group? _____
7. In which biomolecules is the order of the monomers important? _____
8. Which biomolecule has C, H, O, N, P elements? _____
9. What has an E shape? _____

10. A. Connect the dots.

B. Which biomolecule does this shape belong to?



11. Label the **Rate vs. Temperature** graph using the choices on the right.



Optimum Temperature

Temperature

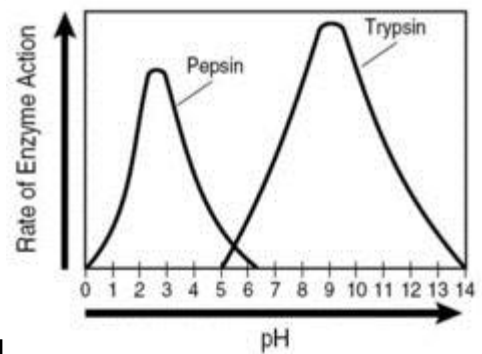
Rate falls rapidly after 40C

Rate

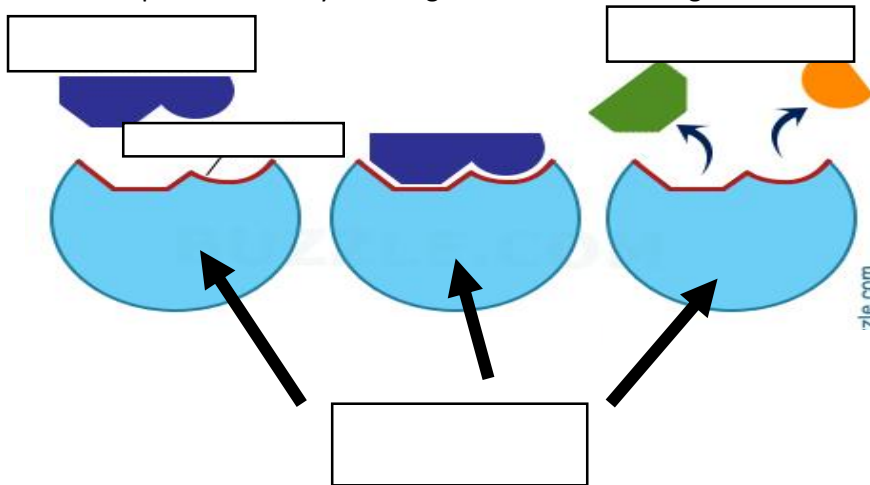
Rate increases

12. Answer the questions about the graph on the right.

- What is the optimum pH level for Pepsin? _____
- What is the optimum pH level for Trypsin? _____
- What is the reaction range for pepsin? _____
- What is the reaction range for trypsin? _____
- Will pepsin denature at a pH range of 7-13? _____
- Will trypsin denature at a pH range of 1-4? _____



13. Label the parts to an enzyme using the choices on the right.



Active Site

Products

Enzyme

Substrate

14. Fill in the type of reaction on its image below. (**Dehydration synthesis** or **Hydrolysis**)

	<input type="text"/>
	<input type="text"/>
	<input type="text"/>
	<input type="text"/>