Biology Cornell Notes: "Macromolecules" DATE:

STUDY QUESTIONS:

What are the 6 elements living things are made of? (DOK1)

Why is carbon such a unique element? (DOK2)

Compare and contrast polymers and monomers. (DOK3)

NOTES:

Organic Chemistry

- All living things are mostly composed of 6 elements: _____
- Compounds are broken down into 2 general categories:
  - _____ Compounds: Do not contain carbon
  - _____compounds
    - Contain significant amounts of carbon.
    - Often found with common "functional groups"

Carbon

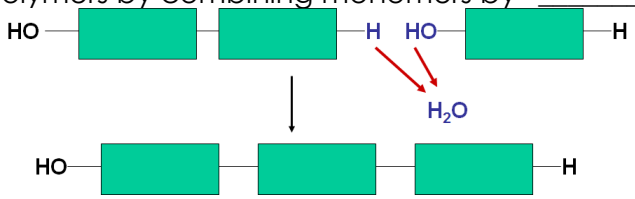
- Carbon has _____ in outer shell.
- Carbon can form _____ bonds with as many as 4 other atoms (elements).
- Usually with _____
- Example: CH_4(methane)

Macromolecules

- _____ organic molecules.
- Also called POLYMERS (poly- means "_____")
  - Made up of smaller "building blocks" called _____ (mono- means "_____")
- 4 types:
  1. _____
  2. _____
  3. _____
  4. _____

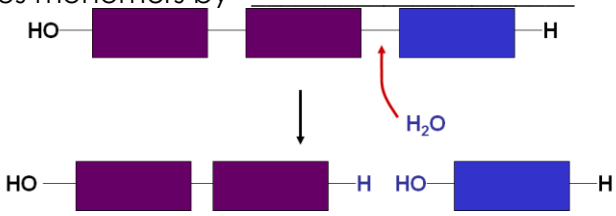
Macromolecules are formed from _____

- Also called "condensation reaction"
- Forms polymers by combining monomers by "_____".



Macromolecules are broken down by _____

- Separates monomers by "_____"



Carbohydrates

Carbohydrates are made from _____ like: glucose and fructose.

- Carbohydrates _____.
- Examples:
  - A. monosaccharide
  - B. disaccharide
  - C. polysaccharide

Biology Cornell Notes: "Macromolecules" DATE:

STUDY QUESTIONS:

_____
_____
_____
_____

_____
_____
_____
_____

_____
_____
_____
_____

_____
_____
_____
_____

_____
_____
_____
_____

_____
_____
_____
_____

_____
_____
_____
_____

1. Monosaccharide: ____ sugar unit
   Examples: _____
2. Disaccharide: ____ sugar unit
   Examples: _____
3. Polysaccharide: _____ sugar units
   Examples: _____

Lipids

- Not _____ in water (do not dissolve).
- Functions:
  - Store the most energy
  - Make up cell membranes
  - Act as chemical messengers (hormones)
  - Protect and insulate
- Examples: _____
- _____: composed of 1 glycerol and 3 fatty acids.
- There are two kinds of fatty acids you may see these on food labels:
  1. _____ fatty acids: no double bonds (bad)
  2. _____ fatty acids: double bonds (good)

Proteins

- Functions of proteins:
  1. Storage: albumin (egg white)
  2. Transport: hemoglobin
  3. Regulatory: hormones
  4. Movement: muscles
  5. Structural: membranes, hair, nails
  6. Enzymes: cellular reactions
- Four levels of protein structure:

1. Primary Structure: _____
2. Secondary Structure:_____
3. Tertiary Structure:_____
4. Quaternary Structure: _____

Nucleic Acids

- Carry the _____ to make proteins.
- Two types:
  1. Deoxyribonucleic acid (_____- double helix)
  2. Ribonucleic acid (_____-single strand)
- Nucleic acids are composed of long chains of _____linked by dehydration synthesis.
- Nucleotides include: phosphate group, pentose sugar (5-carbon) nitrogenous bases: adenine (A), thymine (T) DNA only, uracil (U) RNA only, cytosine (C), guanine (G)

SUMMARY: