

Macromolecules Read up

Name:

Key

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You will be reading about macromolecules, the important large molecules that we use in our body that are linked together.

What does it mean to be carbon-based?

- carbon as the essential component of biological molecules

What chemical element makes up organic chemistry?

CARBON

What element is primarily responsible for linking macromolecules together?

- Hydrogen

Polymers are repeating units of smaller compounds called monomers. What are monomers?

small organic molecules

Provide an analogy of how polymers are linked by monomers

- beads on a chain?

What are four main categories of macromolecules?

- carbohydrates  
- Lipids  
- proteins  
- nucleic acids

Carbohydrates:

What chemical elements make up carbohydrates?

C, H, O

What are monomers of carbohydrates called?

monosaccharide

Provide an example of a monomer of a carbohydrate

glucose

When chains of glucose are linked together, what is the structure called?

polysaccharide

Lipids:

What are 3 examples that lipids form?

fats, oils, waxes

What is the basic structure (components) of a lipid?

fatty acids, glycerol

What is the primary function of lipids?

long-term energy storage

What is the difference between saturated and unsaturated fat?

Saturated - single bonds all full of H  
unsaturated - at least one double bond

What are two categories of lipids?

- phospholipids
- sterols
- fats (saturated/unsaturated)

Proteins:

What are proteins?

What is the monomer that is used to form proteins?

amino acid

What is the basic amino acid structure?

C, H, amino group -  $\text{NH}_2$   
carboxyl group -  $\text{COOH}$   
variable group - R

How many different amino acids are there?

20

What type of covalent bond joins different amino acids together?

peptide bonds

When numerous amino acids are linked together, what 3D structures are formed?

primary

↓  
3D = secondary (helix, pleat or fold)

↓  
tertiary - globular or fibrous

quaternary - multiple proteins

What are functions of proteins?

Structure - muscles, skin, hair  
transport substances  
communicate signals  
speed up chemical reactions  
control cell growth

Nucleic acids:

What is the main function of nucleic acids?

contain (store & transmit genetic information)

What is the basic structure (components) of a nucleotide?

nucleotides

What two types make up living organisms?

RNA  
DNA

What is the structure called when a nucleotide has 3 phosphate groups?

ATP