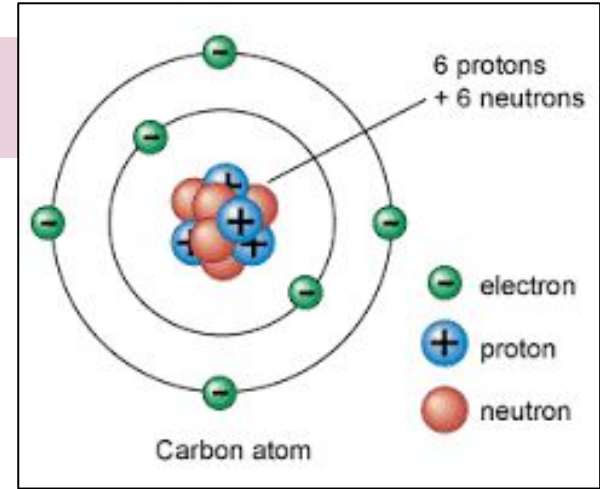
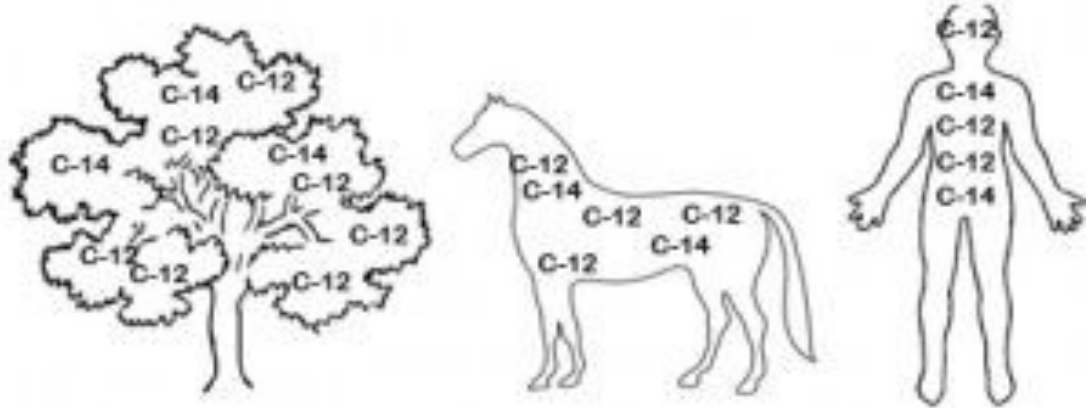


2.3 Carbon Compounds

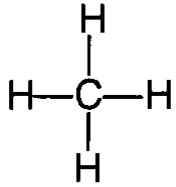
All living things contain carbon in some form.



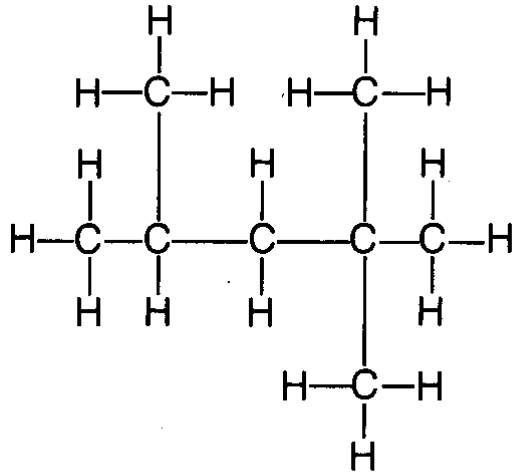
Carbon is the primary component of organic macromolecules



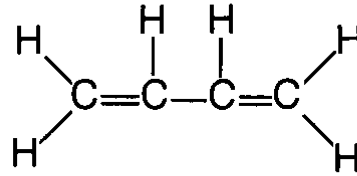
- Carbon atoms have 4 valence electrons
- Carbon atoms can bond to other carbon atoms forming chains



Methane



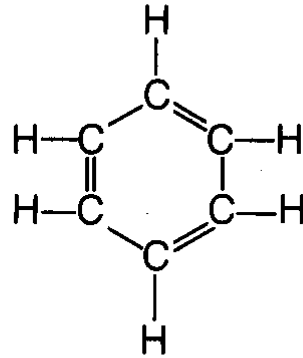
Iso-Octane



Butadiene



Acetylene



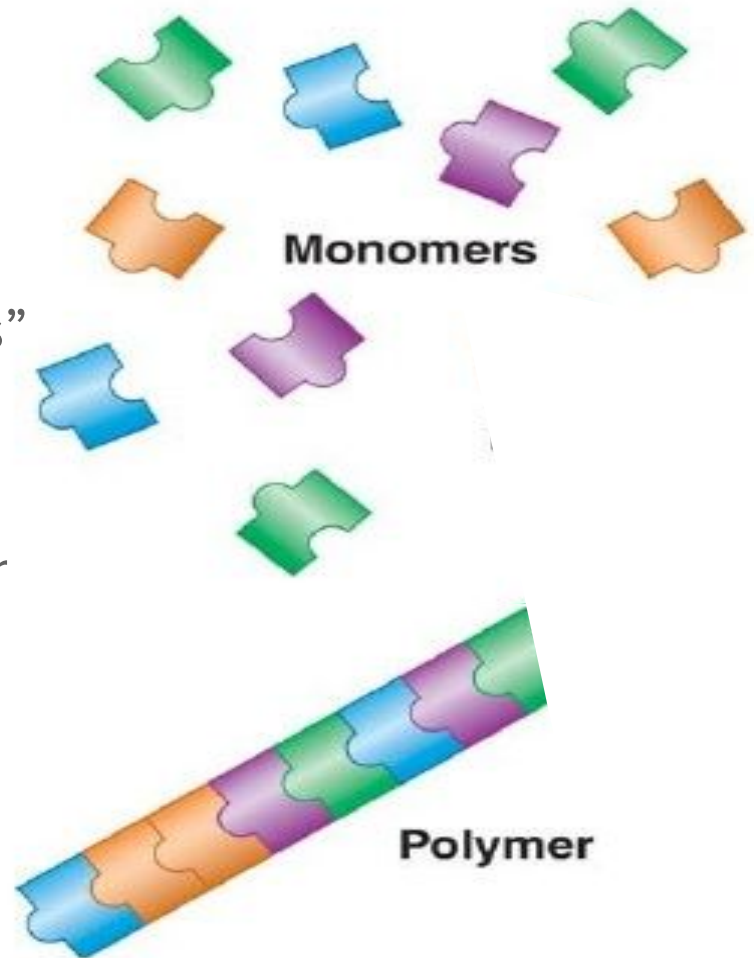
Benzene

Macromolecules: giant molecules
(macro= giant)

monomers : single units “building blocks”
(mono= one, mer= unit)

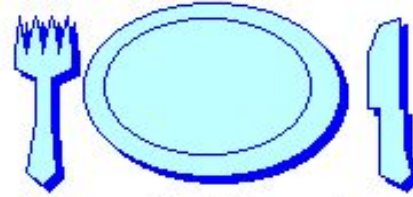
polymers : many monomers put together
(poly=many)

Polymerization: the process by
which macromolecules are formed

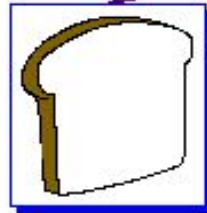


Organic compounds found in living things are organized into four groups:

1. Carbohydrates
2. Lipids
3. Proteins
4. Nucleic acids



The 4 Charts:



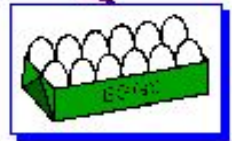
Carbohydrates



Proteins



Lipids

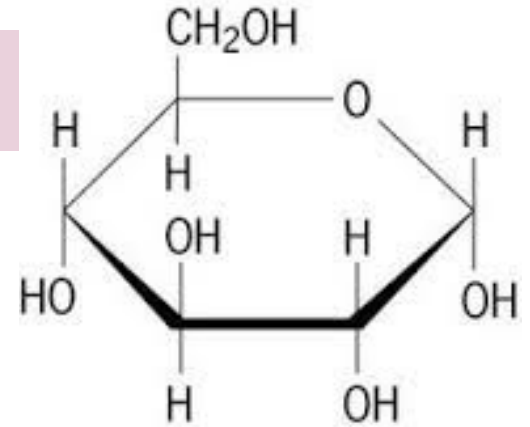


*Nucleic
Acids*

Carbohydrates

Carbohydrates: compounds made of carbon, hydrogen, and oxygen atoms

- Main source of energy for many living things
- sugars are **simple** carbohydrates
- Starches and fibers are **complex** carbohydrates





**Molasses
(Glucose)**



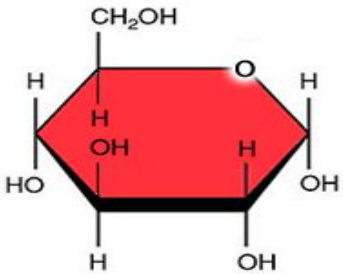
**Cherries
(Fructose)**



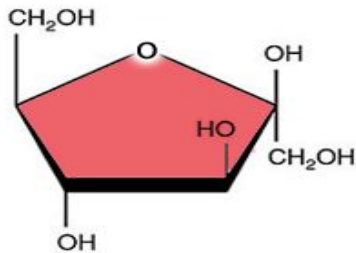
**Yogurt
(Galactose)**

Monosaccharides:
Single carbohydrate
molecules

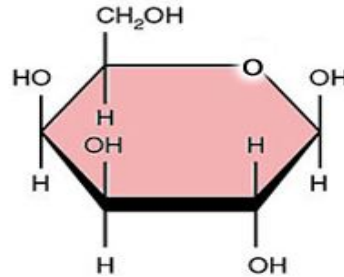
Monosaccharides



Glucose



Fructose



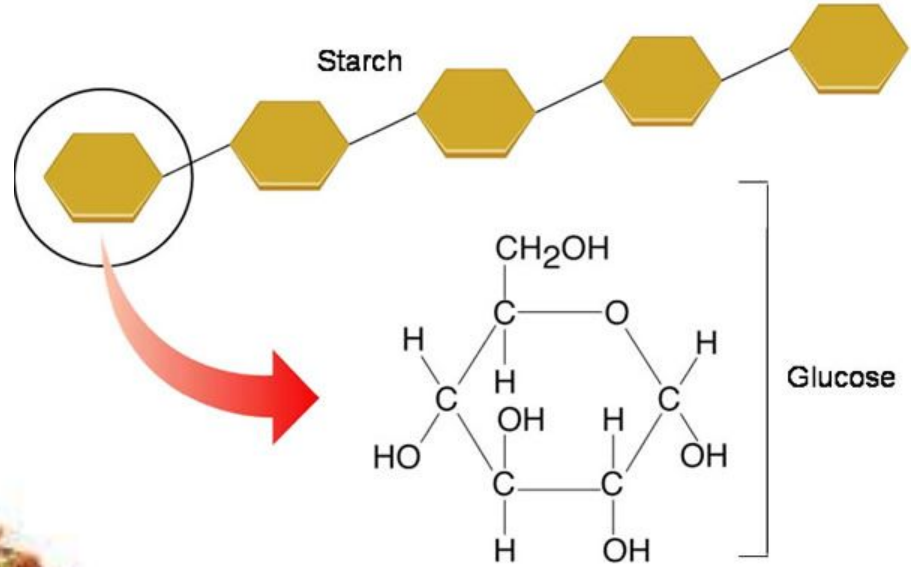
Galactose



wiseGEEK

Polysaccharides:

Large molecules formed from monosaccharides



Starchy Foods



Bread



Cereals



Pasta



Rice



Potatoes



Beans



Chestnuts

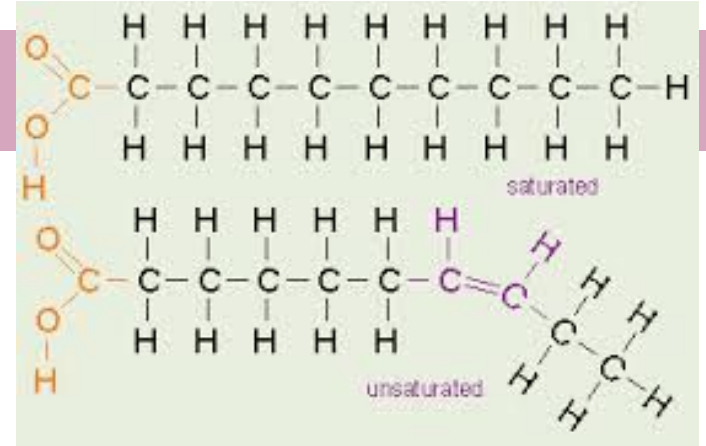


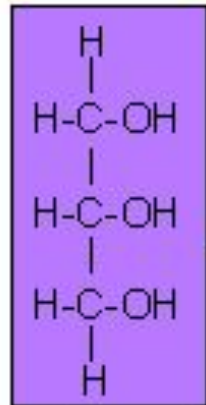
Cellulose

Lipids

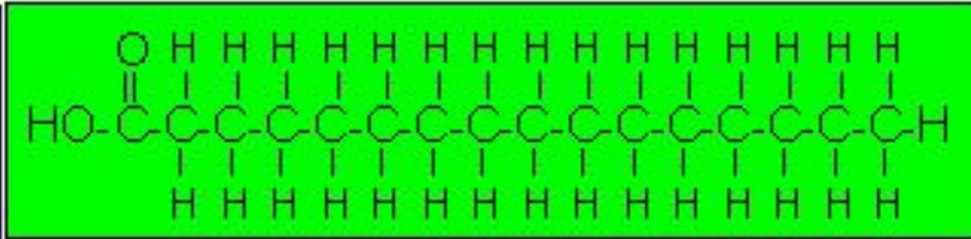
Lipids: made mostly of carbon and hydrogen atoms.

- fats, oils, and waxes
- can be used to store energy.
- important parts of biological membranes
- made up of fatty acids and glycerol



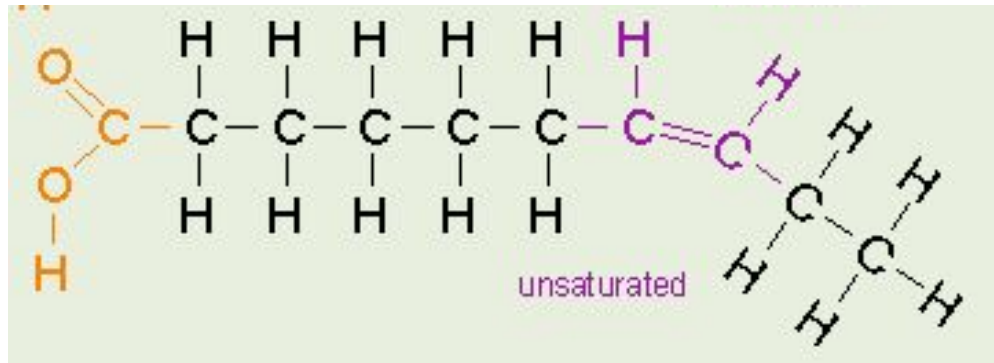


(Glycerol)



(Fatty acid)

- Single bonded= saturated fat
- double bond= unsaturated fat (with hydrogens!)
- More than 1 double bond= polyunsaturated fat

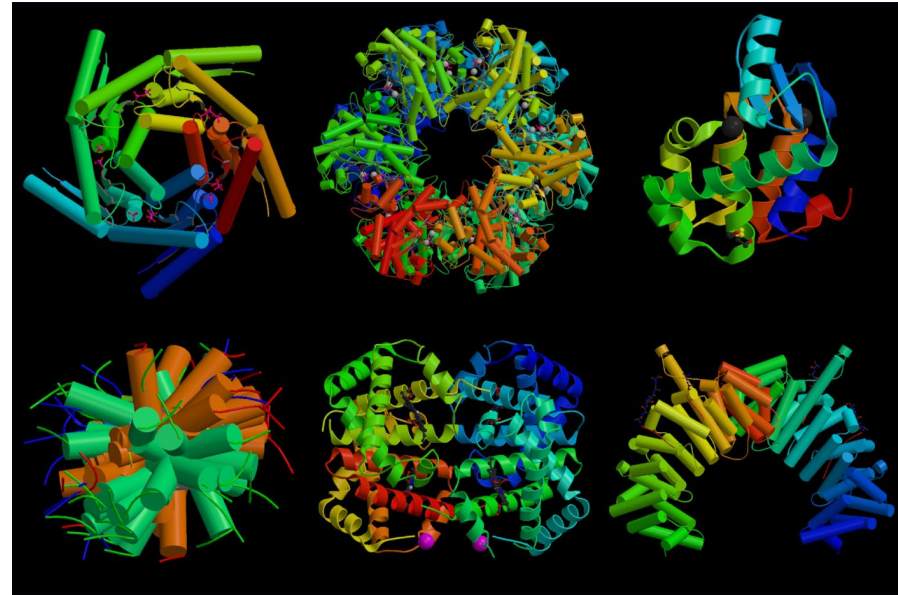
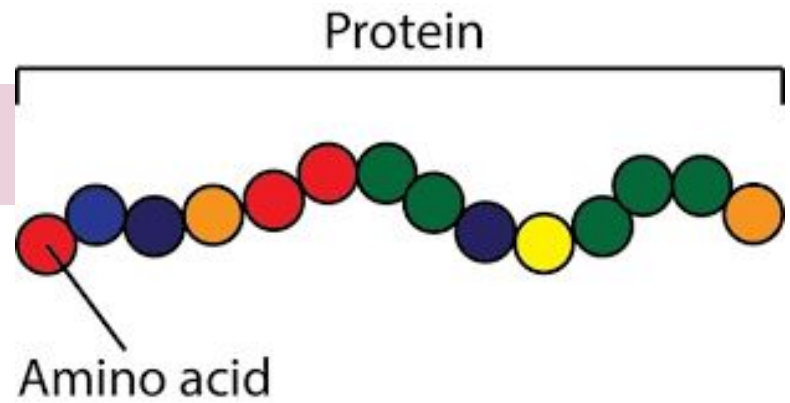


Proteins

Proteins: contain nitrogen as well as carbon, hydrogen, and oxygen.

Carry out many different functions:

- Help build muscle & bones
- Regulate reactions
- Transport substances



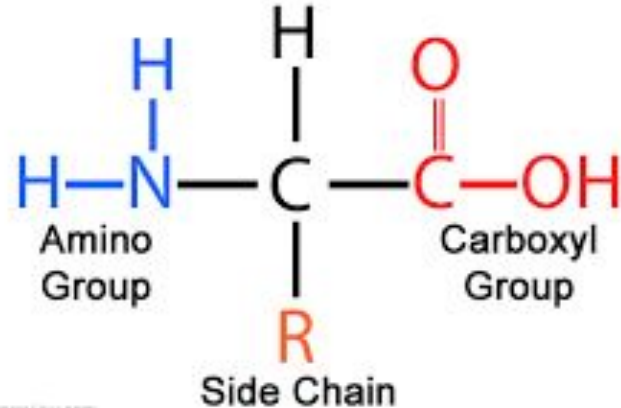


More than 20 different amino acids are found in nature.

amino acids: monomers of protein, contain:

- Amino group
- Carboxyl group
- R group (varies)

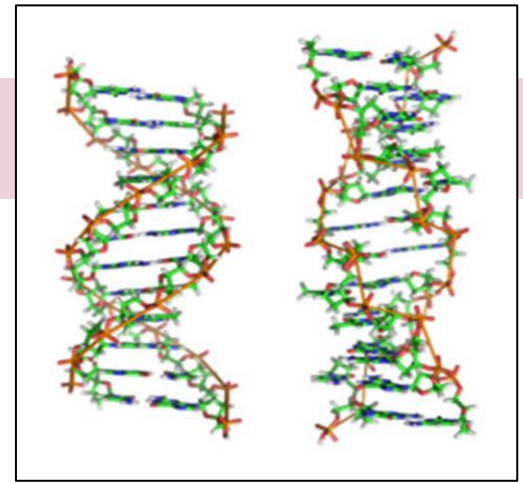
Amino Acid Structure



Nucleic Acids

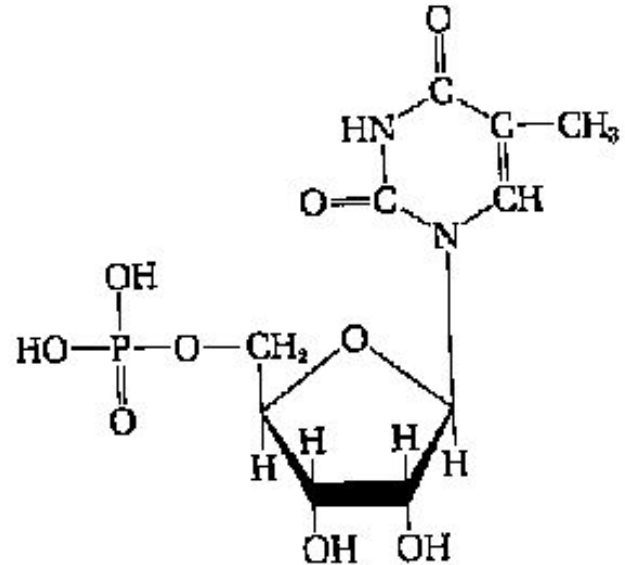
Nucleic acids: contain hydrogen, oxygen, nitrogen, carbon, and phosphorus.

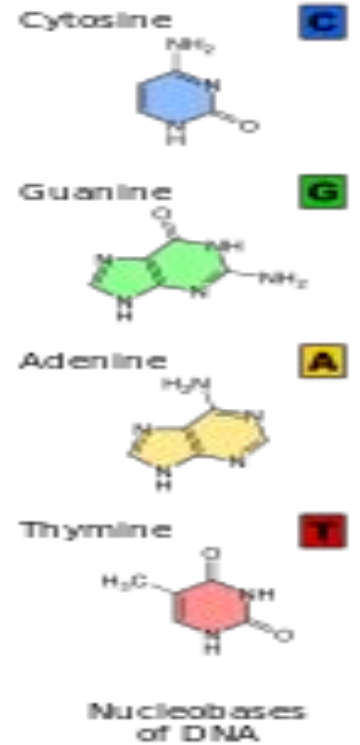
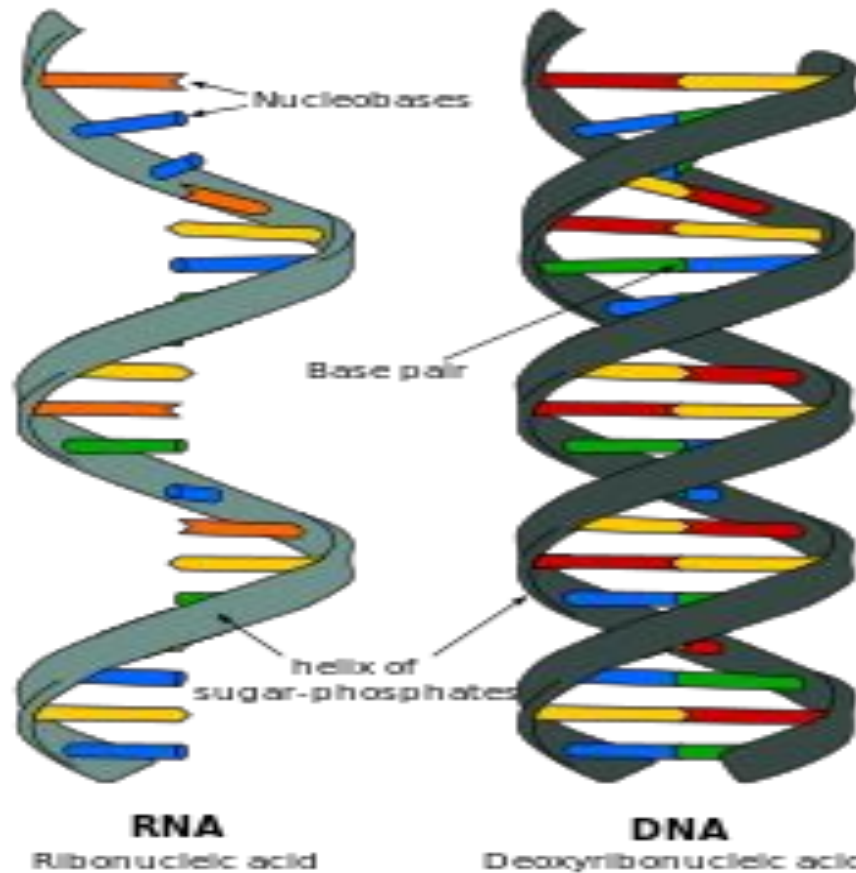
- store and transmit genetic information



Nucleotides: monomer of nucleic acids

- 5-carbon sugar
- a phosphate group
- a nitrogenous base.





Ribonucleic acid (RNA): contains the sugar ribose

Deoxyribonucleic acid (DNA): contains the sugar deoxyribose