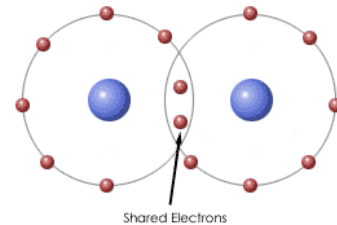


Chemical structure

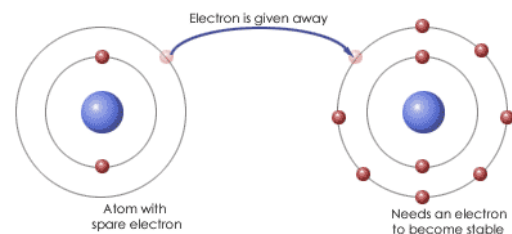
the spatial arrangement of atoms in a molecule and the chemical bonds that hold the atoms together

Covalent bond



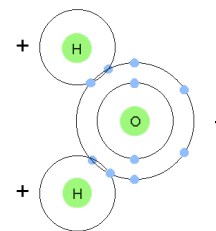
bond formed by the sharing of valence electrons between atoms

Ionic bond



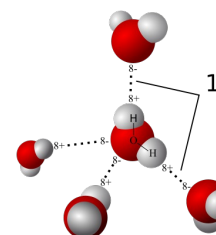
bond formed when one or more electrons are transferred from one atom to another

Polar molecule



a molecule in which the charges are unevenly distributed creating a positive charge on one side and a negative charge on the other; for example a water molecule

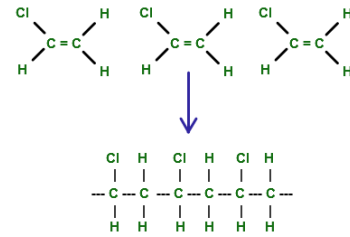
Hydrogen bond



the attraction between a hydrogen atom with a partial positive charge and another atom with a partial negative charge

Molecule	smallest unit of most compounds
Compound	substance formed by the chemical combination of two or more elements in definite proportions
Biomolecule	any molecule that is produced by a living organism; examples are carbohydrates, proteins, lipids, and nucleic acids
Monomer	small unit that can join together with other small units to form a polymer
Polymer	large compound formed from combinations of many monomers

Polymerization

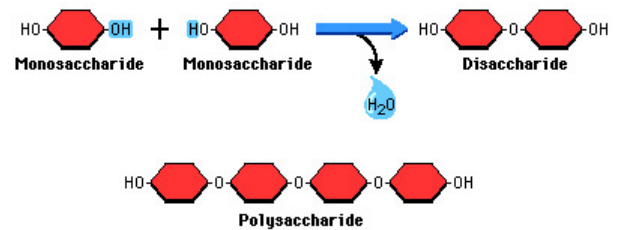


a process of bonding monomers together in a chemical reaction to form polymers (typically through dehydration synthesis)

Synthesis

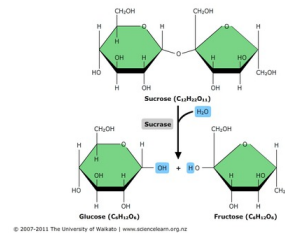
a combination of two or more things in order to make something new

Dehydration synthesis



a chemical reaction that bonds molecules together by losing a water molecule; monomers are linked together to become polymers

Hydrolysis

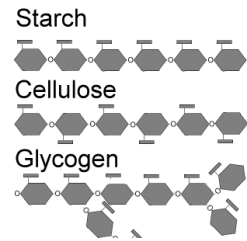


a chemical reaction that breaks molecules apart by adding a water molecule; polymers are broken down into monomers

Carbohydrate

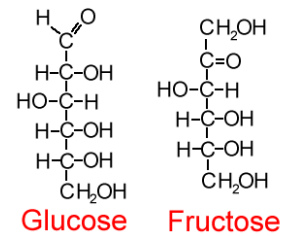
biomolecule made up of carbon, hydrogen, and oxygen atoms

Carbohydrate



utilized as a primary energy source for living things;
used for structure in plant cell walls - cellulose

Monosaccharide



single sugar molecule; monomer of a
carbohydrate; for example glucose

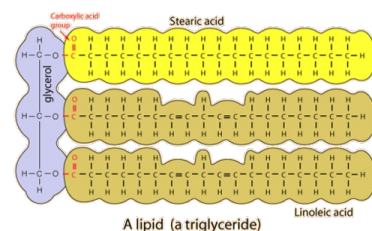
Disaccharide

two monosaccharides
chemically bonded together

Polysaccharide

polymer formed from
chemically bonding together
many monosaccharides; for
example starch

Lipid



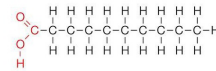
macromolecule made mainly from carbon and
hydrogen atoms (very very few oxygen atoms)

Lipid

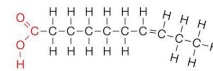
used to store energy and provide insulation; important parts of biological membranes such as the cell membrane; common categories of lipids are fats, oils, and waxes

Fatty acid

Saturated



Unsaturated



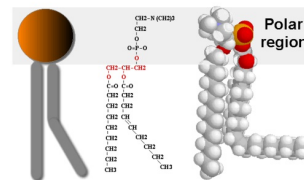
important component of a lipid molecule

Glycerol

the backbone of many lipid molecules

Phospholipid

Phospholipids

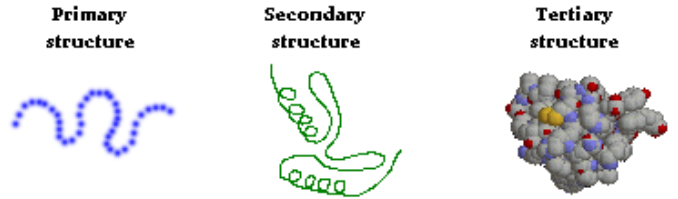


a class of lipids that are a major component of all cell membranes as they can form lipid bilayers

Protein

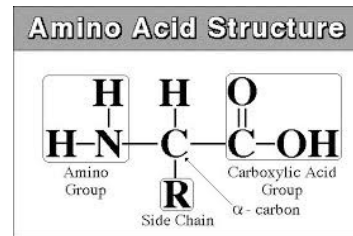
macromolecule that contains carbon, hydrogen, oxygen, and **NITROGEN**

Protein



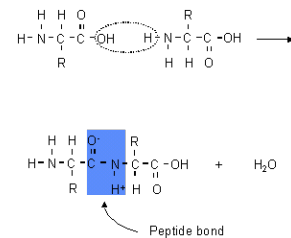
a source of nitrogen; control the rate of reactions and regulate cell processes; used to form bones, muscle, hair, skin, etc.; transport things in and out of cells; help fight disease; NOT a primary source of energy (common misconception)

Amino acid



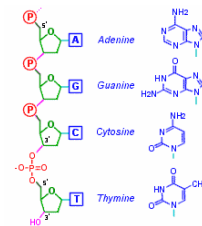
monomer of proteins
(polypeptides)

Peptide bond



covalent bond joining amino acids
in a protein (polypeptide)

Nucleic acid

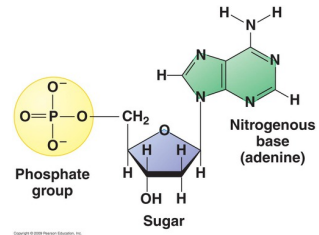


macromolecule containing carbon, hydrogen, oxygen, nitrogen, and PHOSPHORUS (P)

Nucleic acid

function to store and transmit
heredity, or genetic
information; ex.
deoxyribonucleic acid (DNA),
ribonucleic acid (RNA)

Nucleotide



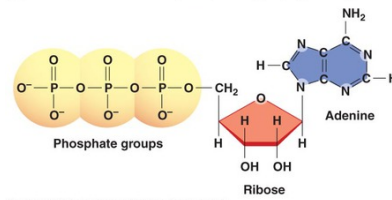
monomer of nucleic acids; 3 parts are:
1) Nitrogen base
2) Sugar compound
3) Phosphate group

Metabolism

set of chemical reactions through which an organism builds up or breaks down materials as it carries out its life processes

ATP (adenosine triphosphate)

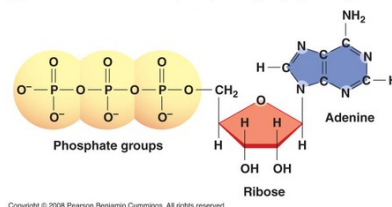
(a) ATP consists of three phosphate groups, ribose, and adenine.



energy currency for the cell; energy-consuming reactions of metabolism are made possible by the energy in this molecule

Phosphate bond

(a) ATP consists of three phosphate groups, ribose, and adenine.

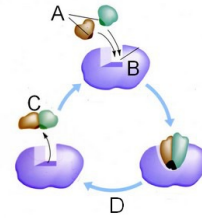


a high-energy chemical bond that is especially important between the 2nd and 3rd phosphate groups in an ATP molecule

Catalyst

substance that speeds up the rate of a chemical reaction

Enzyme



protein that acts as a biological catalyst; it speeds up chemical reactions by lowering the activation energy

Activation energy

energy needed to get a chemical reaction started

"-ase" (ex. amylase)

an enzyme

Substrate

reactant in a chemical reaction using an enzyme

Active site

the small portion of an enzyme where substrate molecules bind and undergo a chemical reaction

Enzyme-substrate complex

a substrate bound to the active
site of an enzyme
