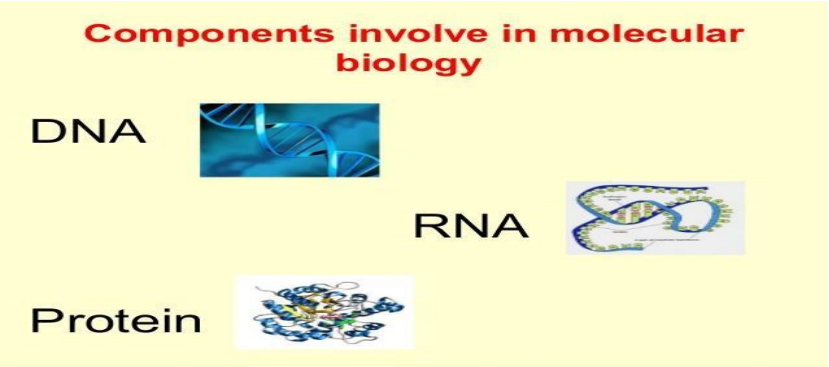
Molecular biology : is the study of biology at a molecular level.

- Molecular biology; the study of gene structure and functions at the molecular level to understand the molecular basis of hereditary, genetic variation, and the expression patterns of genes (genes: the DNA segment that carries the genetic information).
- This field overlaps with other areas of biology and chemistry, particularly genetic and biochemistry. molecular biology chiefly concerns itself with understanding the interaction between the various system of a cell, including the interaction between DNA, RNA and protein biosynthesis as well as learning how theses interaction are regulate.

All Life depends on 3 critical molecules

- DNAs (Deoxyribonucleic acid)
  - Hold information on how cell works.
- RNAs (Ribonucleic acid)
  - Act to transfer short pieces of information to different parts of cell.
  - Provide templates to synthesize into protein.
- Proteins
  - Form enzymes that send signals to other cells and regulate gene Activity.
  - Form body's major components.



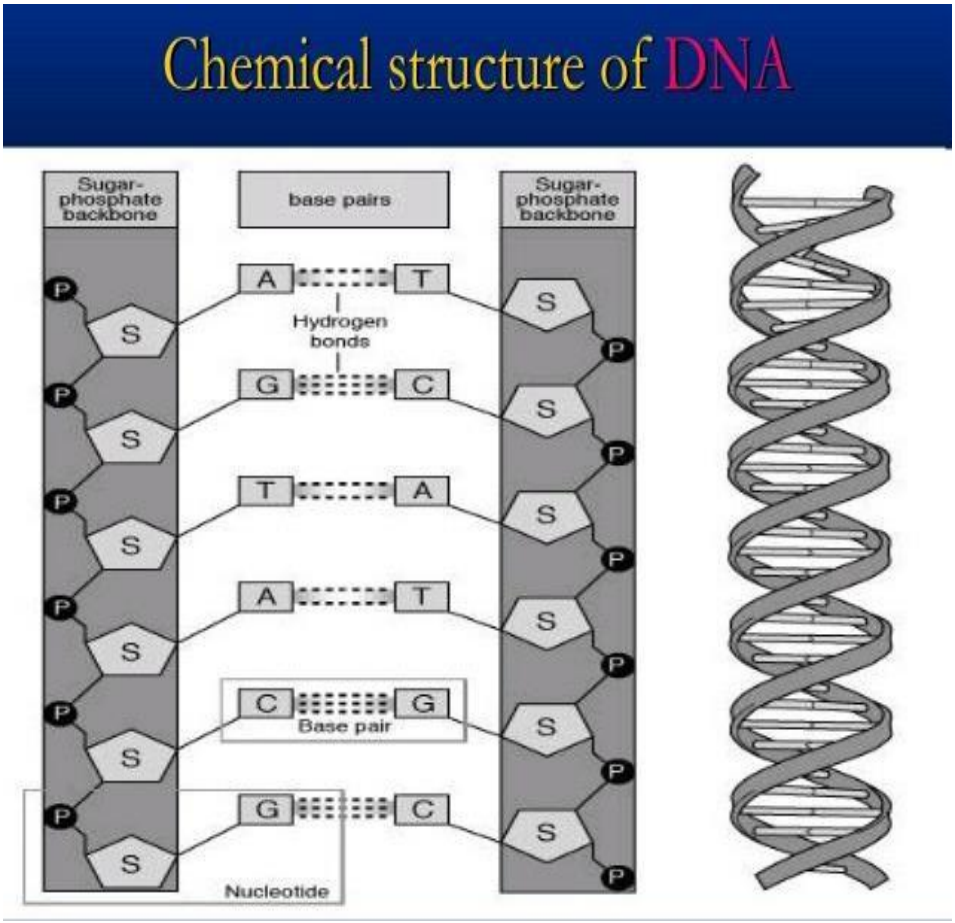
Deoxyribonucleic acid (DNA)

DNA is a nucleic acid that contain the genetic instruction used in the development and functioning of all known living organism and some viruses

DNA structure : DNA has a double helix structure which is composed of– phosphate group, sugar and a base (A,C,G,T),The nucleotide however, remains as the fundamental unit (monomer) of the nucleic acid polymer. By convention, we read DNA strings in direction of transcription: from 5’ end to 3’ end

5’ ATTTAGGCC 3’

3’ TAAATCCGG 5’



Ribonucleic acid (RNA)

RNA is similar to DNA chemically. It is usually only a single strand and T(Thyamine) is replaced by U(Uracil).

Proteins

Proteins are polypeptides (strings of amino acid residues 20 different amino acids)

- Proteins do all essential work for the cell
- build cellular structures
- digest nutrients
- execute metabolic functions