

F. Miescher (1868, chemist and physician of swiss) first obtained naked nuclei from the discarded bandages of pus cells, from there he isolated nuclin, later he showed that nuclin could be split into an acidic component which he called nucleic acid is generally and basic component of protein structure. The nucleic acid is generally associated with proteins to form nucleoprotein.

The nucleic acids are of two types -

1. DNA ,
2. RNA.

1. DNA (Deoxy Ribose nucleic acid) → DNA is suppose to present only in the nucleus associated with chromosomes but recent observation however have proved that DNA is not only associated with chromosomes but also they are found in mitochondria, chloroplast, Centrioles, Yolk and other cell organelles, while RNA is found in the cytoplasm. DNA is the genetic materials of most organism including viruses. DNA reacts with methyl green stain as the DNA is acidic in nature, hence they combine with basic protein. F

The DNA was composed of nucleotide chain has been established and the filamentous shape of the molecule

was known from electron microscope, but a satisfactory detailed structure for the molecule as a whole had been proposed until Watson and Crick (1953) suggested structure. Watson and Crick (1953) proposed model for the structure of DNA were credited with the award of noble prize in 1953.

CHEMICAL NATURE →

1. Out of different constituent of chromosomes DNA is the most important.
2. It is a hereditary material.
3. It carries genetic information from generation to generation.
4. Though most of the DNA is found in chromosome. A small amount of DNA is also present in mitochondria, chloroplast and certain part of cytoplasm.
5. Watson and Crick (1953) illustrated the structure of DNA molecule.
6. In 1962, Nirenberg, Khorana and others synthesized DNA.
7. DNA is the most complex and heaviest molecule of the cell. It has molecular weight of 10^8 to 10^{11} .
8. Chief molecules that enter into the composition of DNA are as follows —
 - Ⓐ Phosphate compound,
 - Ⓑ Deoxy ribose sugar,
 - Ⓒ Pyrimidine base molecule,

③ Purine base molecule.

9. The purine are represented by 2 types of molecules. i.e -

(i) Adenine (ii) Guanine.

10. The pyrimidine are represented by two types of molecules. i.e -

(i) Cytosine (ii) Thymine.

11. Purine are two ring compound.

12. Pyrimidine are 6 numbered ring compound.

13. In ^{Purine} one ring 6 atoms are found and in another ring 5 atom are found.

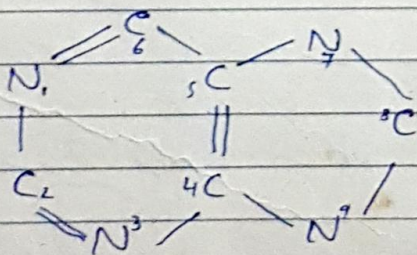
14. In each ring number of nitrogen is two.

15. All carbon and nitrogen atoms of both rings bears side chain.

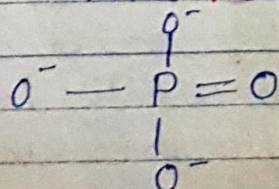
16. A phosphate compound is phosphoric acid, it has 3 acidic groups.

17. Deoxy ribose sugar is a 5 chain carbon compound.

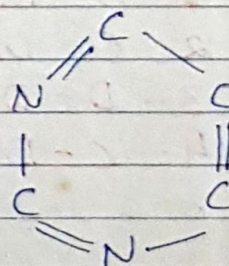
18. It has one atom of oxygen which is lesser than the ribose sugar, so it is deoxy - ribose sugar.



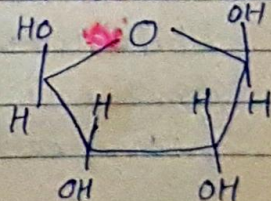
PURINE BASE



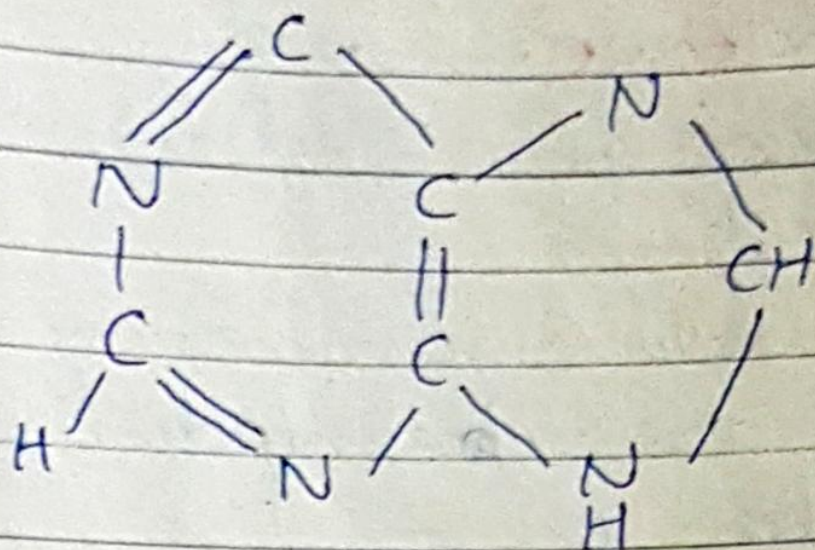
PHOSPHATE BONDS



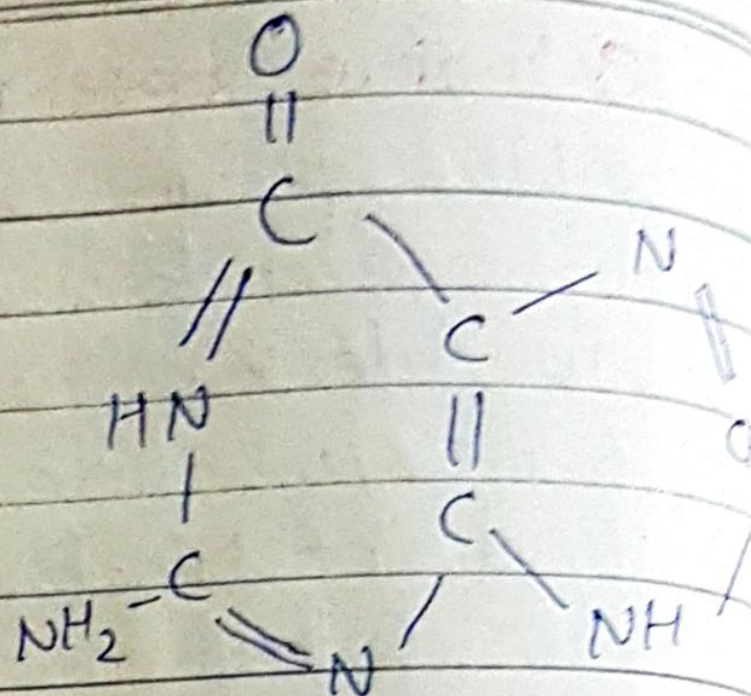
PYRIMIDINE BASE



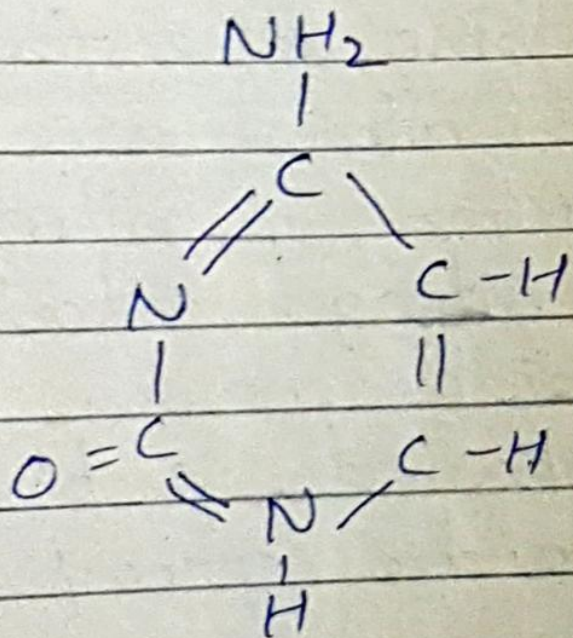
DEOXY RIBOSE SUGAR



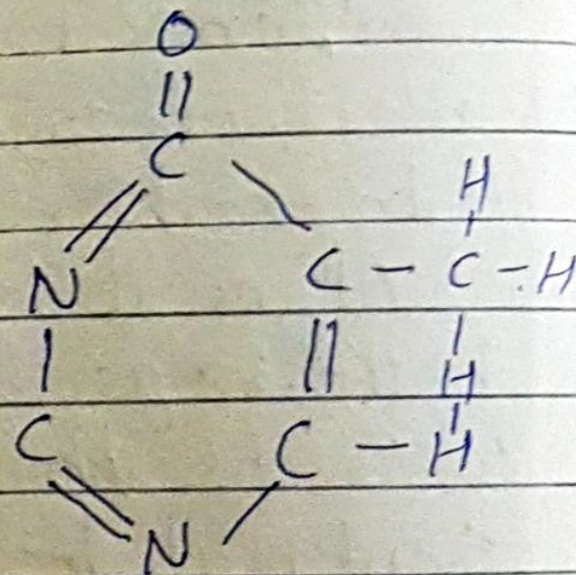
ADENINE



GUANINE



CYTOSINE



THYMINE