

Experiment no. 10: Study of models on DNA and RNA structure

Aim: To study the different types of genetic material and their models

Nucleic Acid

Friedrich Miescher discovered nucleic acid (DNA) in 1869, and he first isolated it from collection of dead white blood cell, and called as nuclein. The term "nucleic acid" was given by Richard Altman. Nucleic acid was found to be associated with various proteins called nucleoprotein. There are 2 types of nucleic acid.

1. Deoxyribose Nucleic Acid(DNA)
2. Ribose Nucleic Acid(RNA)

Structure of nucleic acid:

- ❖ Nucleotides are the building block of DNA and RNA
- ❖ Polymers of nucleotides
- ❖ Each nucleic acid contains 4 different nucleotides
- ❖ A nucleotides consists of Sugar, Nitrogenous base and Phosphate group

Pentose sugar:

- ❖ Pentose sugar is the basis of nomenclature of nucleic acid (RNA or DNA)
- ❖ Each carbon atom of ring designated by a number with prime sign
- ❖ Deoxyribose sugar differ from ribose sugar in lacking an oxygen atom at 2' Carbon.

Nitrogenous bases:

- ❖ Mainly total five different types of nitrogenous bases found in nucleic acid viz. Adenine (A), guanine (G), cytosine (C), thymine (T) and Uracil (U).
- ❖ DNA and RNA can be differed in respect of nitrogenous bases as RNA contains Uracil in place of Thymine found in DNA.

Nucleotide (sugar + phosphate + nitrogen containing base):