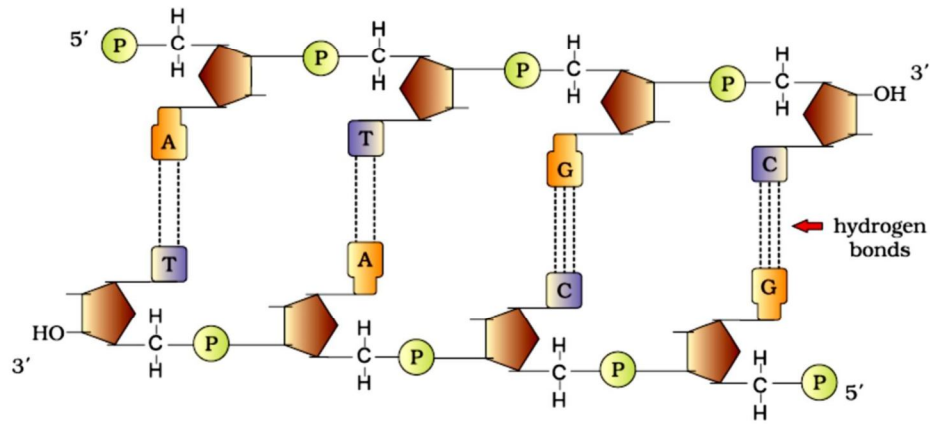
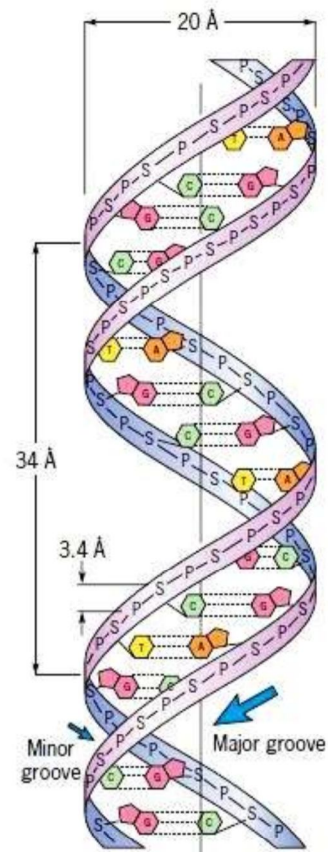


THE DNA Structure- L-2

The salient features of DNA Double helix are as follows:



- 1) It is made of two polynucleotide chains, where the backbone is constituted by sugar-phosphate, and the bases project inside.
- 2) The two chains run in anti-parallel direction. It means, if one chain runs in 5'→ 3', the other runs in 3'→ 5'.
- 3) Bases in two strands are bonded through hydrogen bonds (H-bonds) forming base pairs (bp). Adenine forms two hydrogen bonds with Thymine and vice-versa. Guanine is bonded with Cytosine with three H-bonds.
- 4) a purine always comes opposite to a pyrimidine, i.e. A=T; G≡C
- 5) The two chains are coiled in a right-handed fashion
- 6) Pitch of the helix is 3.4 nm
- 7) there are roughly 10 bp in each turn



- 8) Distance between a bp in a helix is approximately equal to 0.34 nm
- 9) Plane of one base pair stacks over the other in double helix. This confers additional stability of the helical structure.

The base pairing gives a very unique property to the polynucleotide chains. They are said to be **complementary** to each other, and therefore if the sequence of bases in one strand is known then the sequence in other strand can be predicted. It gives a mechanism for the replication of DNA. If each strand from a DNA (parental DNA) acts as a template for synthesis of a new strand, the two double stranded DNA (daughter DNA) thus, produced would be identical to the parental DNA molecule. Hence, the genetic implications of the structure of DNA became very clear.