

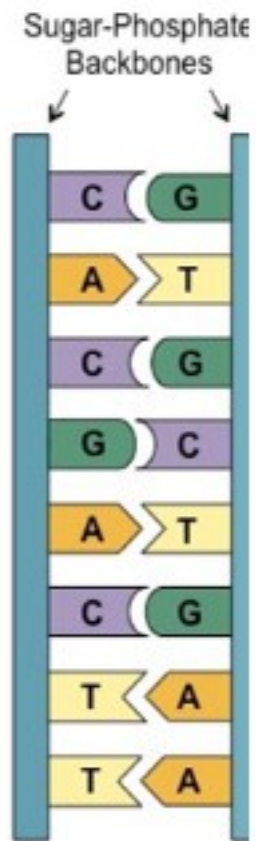
Difference between DNA and RNA are:

DNA	RNA
It is double stranded nucleic acid.	It is single stranded nucleic acid.
It contains deoxyribise sugar.	It contains ribose sugar.
It contains Thymine (T) as a nitrogenous base.	It contains Uracil (U) instead of Thymine.
It is the genetic and hereditary material of the cells.	It is involved in synthesis of proteins.
It is present in the nucleus of the cells.	It is present in both nucleus and cytoplasm.

## Double Helical Structure of DNA:

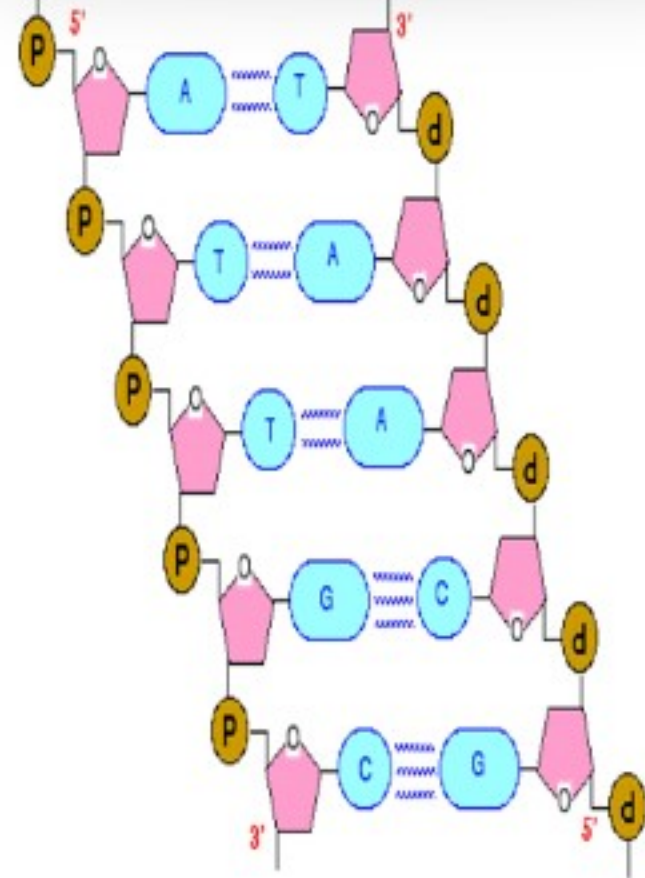
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- width (or diameter) of double helix =  $20 \text{ \AA} = 2 \text{ nm}$
- each turn (or pitch) of helix =  $34 \text{ \AA} = 3.4 \text{ nm}$   
(contains 10 pairs of nucleotides)
- dist. b/w each pair =  $3.4 \text{ \AA} = 0.34 \text{ nm}$



DNA Ladder

- The two strands are antiparallel i.e., one strand runs in the 5' to 3' direction while the other in 3' to 5' direction.
- The two polynucleotide chains are not identical but complementary to each other due to base pairing.
- Each strand of DNA has a hydrophilic deoxyribose phosphate backbone on the outside (periphery). The two strands are held together by hydrogen bonds formed by complementary base pairs. The A-T pair has 2 hydrogen bonds while the C-G pair has 3 hydrogen bonds. **The G-C is stronger by about 50% than A-T.**
- The hydrogen bonds are formed between a purine and pyrimidine only. The only base arrangement possible in DNA structure is A-T, T-A, G-C, C-G.
- The genetic information resides on one of the two strands known as template strand or sense strand. The opposite strand is antisense strand.



## Chargaff's Rule:

$$(\%A + \%T) + (\%G + \%C) = 100$$