

TYPES OF DNA → There are four classes of DNA.

1. B - DNA

2. C - DNA

3. D - DNA

4. Z - DNA of which only B and Z-DNA are important.

STRUCTURE OF B-DNA → It is the DNA which was discovered by Watson and Crick (1953) for which they were honoured with noble prize in 1961.

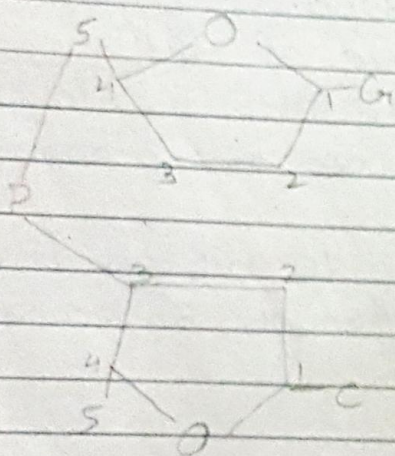
It has the following structural details.

1. DNA is a polymer. The monomers are called as nucleotides.
2. The nucleotide consist of a pentose sugar a phosphate and one of the four nitrogen bases.
3. The DNA molecule has two strands.
4. The strands of DNA are helically coiled around a central axis.
5. The two strands are linked together by hydrogen bonding standing between the nitrogen base.
6. Nitrogen base pairing is very specific in which A pairs with T and G pairs with C.
7. Hence the strands are complimentary to each other.
8. The strands are seperated from each other by a distance of 20 \AA .
9. One helix measwes 34 \AA in length.
10. The distance between two nitrogen base pair is 3.4 \AA .
11. One helix contants 10 nitrogen base pairs.
12. DNA replicates through semi-conservative mode of replication.

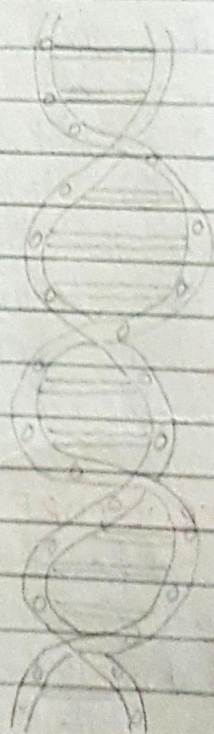
STRUCTURE OF Z-DNA → It was discovered independantly by Rodley and co-workers 1979 from Newzealand and Gupta and Sashishekharan (1979) from India. It has the following special features that make

it different from B-DNA, discovered by Watson and Crick in 1953

1. It also has two strands which are helically coiled but the coiling is right handed.
2. The two strands ^{are} separated from each other by a distance of 18Å.
3. This Z-DNA has more G-C pairs than the B-DNA.
4. In this DNA one helix measures 45° .
5. There are 12 nitrogen base pairs in one helix instead of 10 base pairs of B-DNA.
6. The angle of Tilt is 45° .
7. The monomer of Z-DNA is a dinucleotide. It is mononucleotide in case of B-DNA.



A dinucleotide unit of Z-DNA



Two helices showing the handed sense found in Z-DNA