

13/9 → DNA =

- more complex organism has more DNA.
- e.g. amount in bacterial cell is 0.6 pgm.
- higher animal has 6 picograms per cell.

→ if viral proteins are injected to a subject, it will not cause infection. If only viral DNA is injected it will cause infection.

→ polymer of deoxyribose nucleotides. (chloroplasts in plant)

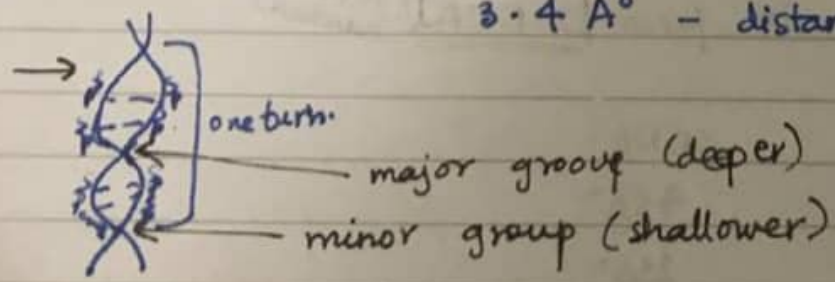
in nucleus in mitochondria (from mother)

→ One turn (of DNA):

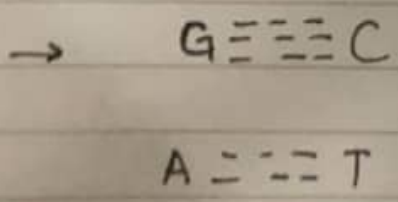
- 34 Å, 3.4 nm - length
- 20 Å - diameter
- 10 - number of base
- 3.4 Å - distance bw each base

Watson-Crick Model

(new study said lengths 15.36 Å and 10.4 bases per turn.)

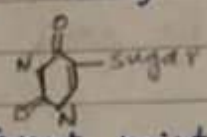


- two antiparallel strands
- double helical structure
- sugar + phosphate in strands
- bases bw strands (GC, AT)



- CAAT-purine - purine - too big to fit into turns
- CAAT-pyrimidine - pyrimidine - too small, so too far away for H bonding.
- CAAT- AC, GT - bc too weak hydrogen bonding occurs.

→ **Rare bases** present in addition to these bases. Mostly seen in tRNA.



- Pseudouridine: when the sugar is attached to a different point.

e.g. methylcysteine, methylhydroxy cysteine, 6-Methyl adenine

- 1) They maintain the base pairing to maintain specific structures
- 2) Prevent base pairing with mRNA.
- 3) Prevent the action of restriction endonucleases on DNA.

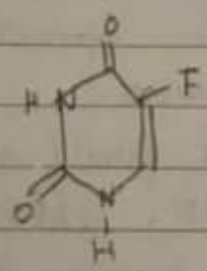


(present in bacteria, bacterial own DNA protected bc it is methylated).

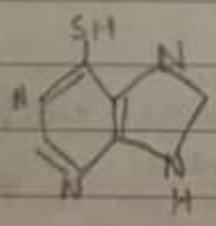
→ **Synthetic Bases:**

Used for research, cancer treatment and as drugs.

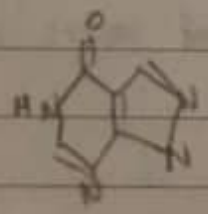
e.g. fluorouracil:



• mercaptopurine:



• Allopurinol:



(anti-gout drug).

→ resists the production of uric acid bc it has structural resemblance to inosine (soluble so secreted). And enzyme acts on it instead.

(Normally, xanthine oxidase acts on inosine to change it into xanthine → uric acid).

→ Melting =
When DNA is heated to 90° , the strands will uncoil.

→ T_m =
The temp at which half of the DNA is uncoiled.

→ Annealing =
At slow cooling, the strands will form coils once again.

- Two strands - primary structure
- coil forms - secondary structure
- Two coils combine - tertiary structure

⇒ Types of DNA =

• Normal DNA is said to be BDNA (right handed)

↳ dehydrated by salt to form ADNA (right handed)

↳ methylation of BDNA to form ZDNA (left handed)*

ADNA	BDNA	ZDNA
25 \AA°	36 \AA°	45 \AA°
24 \AA°	20 \AA°	18 \AA°
11	10.4	12
2.4	3.4	3.8
right handed	right handed	left handed.