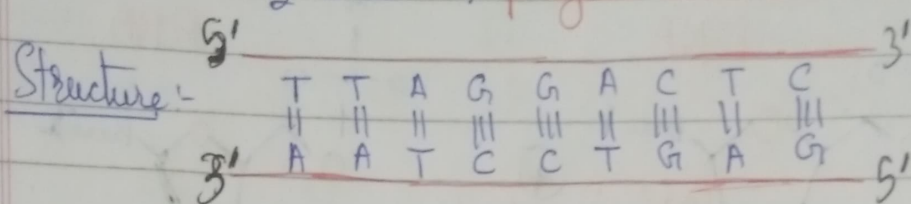


## \* DNA (deoxyribonucleic acid) :-

- It is a double helix structure
- Polymer of nucleotides consisting of Base pairs (2 polynucleotide chain)
- In DNA, Sugar & phosphate  $\rightarrow$  Backbone of DNA  
N<sub>2</sub> base  $\rightarrow$  projects inwards



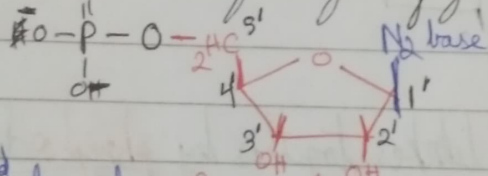
From this structure, we can observe the following :-

- The two strands are antiparallel and run in opposite directions

- 1<sup>st</sup> strand :- Runs from 5' to 3'

Here, 5' end :- has phosphate group attached to 5<sup>th</sup> carbon

3' end :- has free hydroxyl group attached to 3<sup>rd</sup> carbon



At 3' the chain continues and free phosphate attaches there

- 2<sup>nd</sup> strand :- Runs from 3' to 5'

Here, 3' end :- has free hydroxyl group

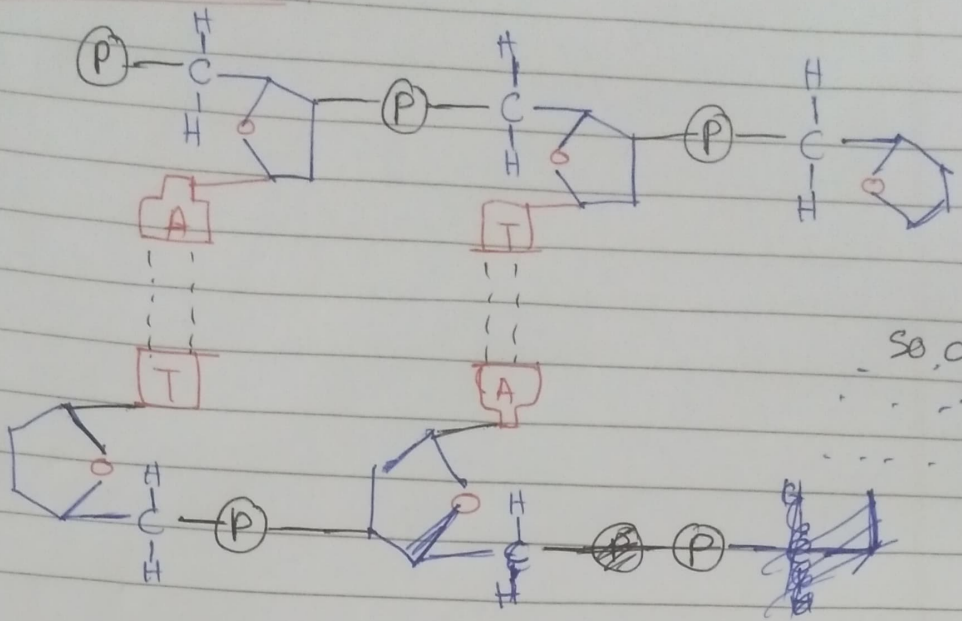
5' end :- has free phosphate group

## 2) Base pairing :-

The ~~two~~ strands in DNA are held together by hydrogen bonds between complementary bases.

Adenine (A) pairs with Thymine (T)  $\rightarrow$  2 H-bond  
Cytosine (C) pairs with Guanine (G)  $\rightarrow$  3 H-bond

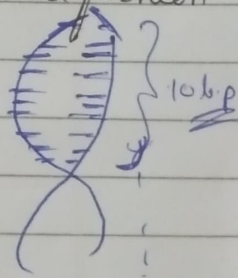
## Chemical structure :-



## Stability :-

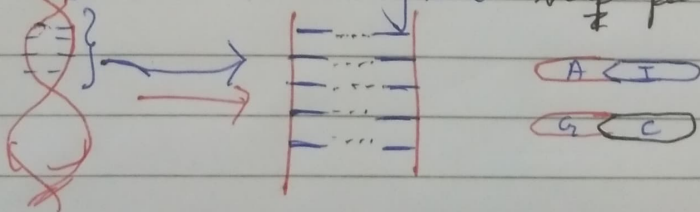
- $A = T$   $\rightarrow$  2 Hydrogen bonds  
 $G \equiv C$   $\rightarrow$  3 Hydrogen bonds  
 Hydrogen bonds bet<sup>n</sup> complementary bases provide stability to helical structure
- The DNA strands are twisted in right handed fashion

Each turn of DNA has 10 base pairs



- Plane of 1 base pair stacks over each other

DNA is deconstructed to study the base pairing



Each strand :- 1<sup>st</sup>

