

DNA nucleotides

DNA Function

Base sequence that forms the genetic code for producing specific proteins.

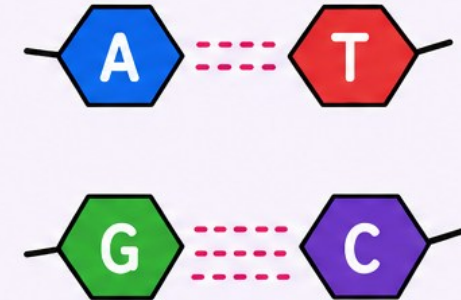
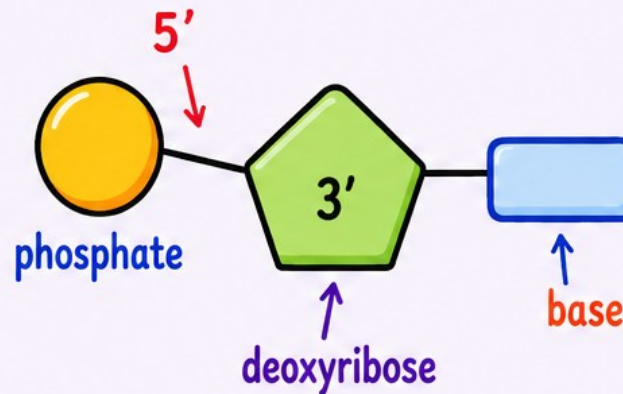
Nucleotides

Smallest unit of DNA made up of 3 parts.

1. Phosphate – carbon 5
2. Deoxyribose – carbon 3
3. Base

Adenine pairs with Thymine.

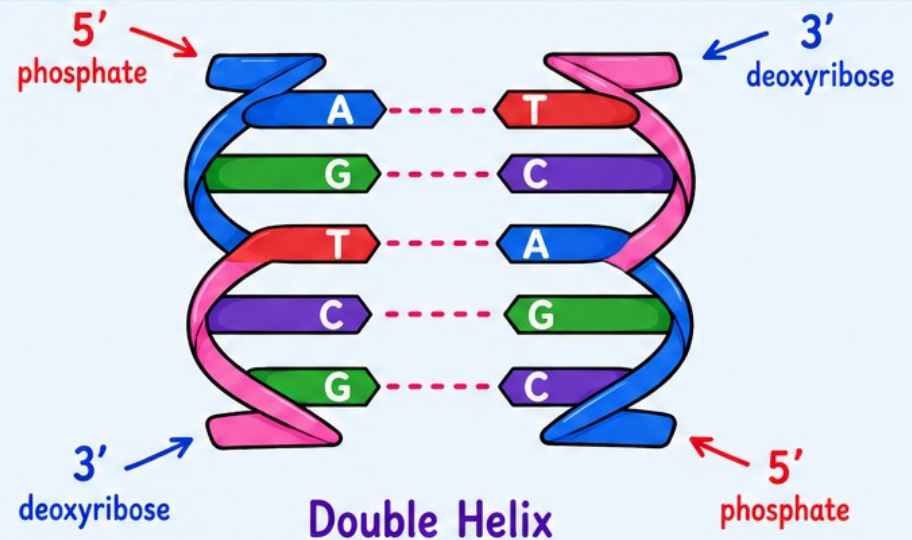
Guanine pairs with Cytosine.



DNA structure & bonds

2 strands of nucleotides that coil up to form a 3D structure called a double helix.

- 1st strand runs from 5' phosphate to 3' deoxyribose.
- 2nd strand runs from 3' deoxyribose to 5' phosphate.
- Weak hydrogen bonds between complementary bases hold the two strands together.
- Strong backbone bonds between deoxyribose and phosphate.



Stages of DNA replication

1 Stage 1 — DNA unwinds and separates into two template strands, breaking hydrogen bonds between the bases.

2 Stage 2 — Primers bind to the **5' end** of the new strand, allowing DNA polymerase to add DNA nucleotides.

3 Stage 3 — DNA polymerase adds **free** complementary DNA nucleotides to the **3' end** of the new DNA strand.

4 Stage 4 — DNA polymerase only adds nucleotides from **5' to 3'** on the new strand and DNA is antiparallel.

- 1** The leading strand is replicated continuously.
- 2** The lagging strand is replicated in fragments.

5 Stage 5 — Fragments in the lagging strand are joined by the enzyme ligase.

