



## Nucleotides and DNA Structure



### Nucleotide Components

- Nitrogenous base (A, T, G, C)
- 5-carbon sugar (deoxyribose)
- Phosphate group
- Connected by glycosidic bond



### Bases

- Purines: Adenine (A), Guanine (G)
- Pyrimidines: Thymine (T), Cytosine (C)
- Watson-Crick base pairing
- A=T (2 H-bonds), G≡C (3 H-bonds)



### DNA Double Helix

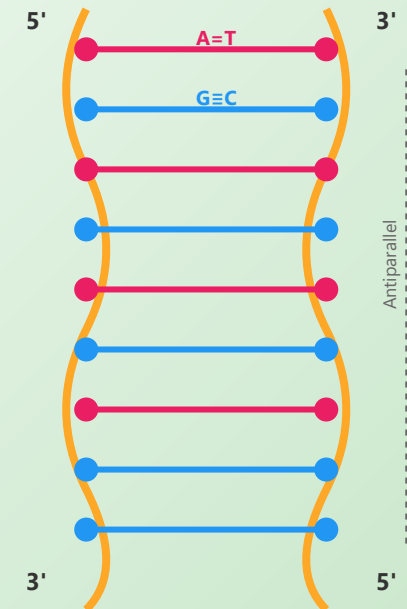
- Antiparallel strands
- Sugar-phosphate backbone
- Major and minor grooves
- Right-handed B-form (most common)



### Structural Parameters

- Diameter: ~2 nm
- Rise per base pair: 0.34 nm
- 10.5 base pairs per turn
- Pitch: 3.57 nm

### DNA Double Helix



A=T (2 H-bonds)

G≡C (3 H-bonds)