DNA Replication 1

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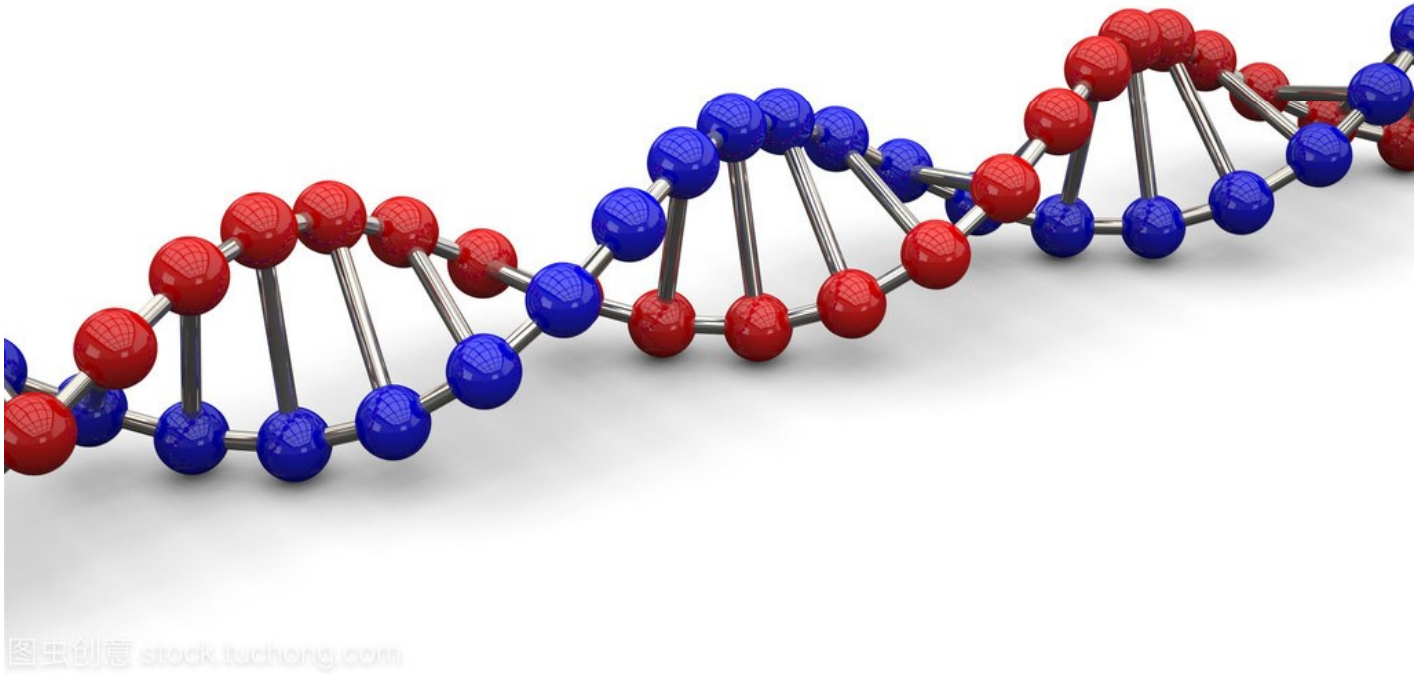
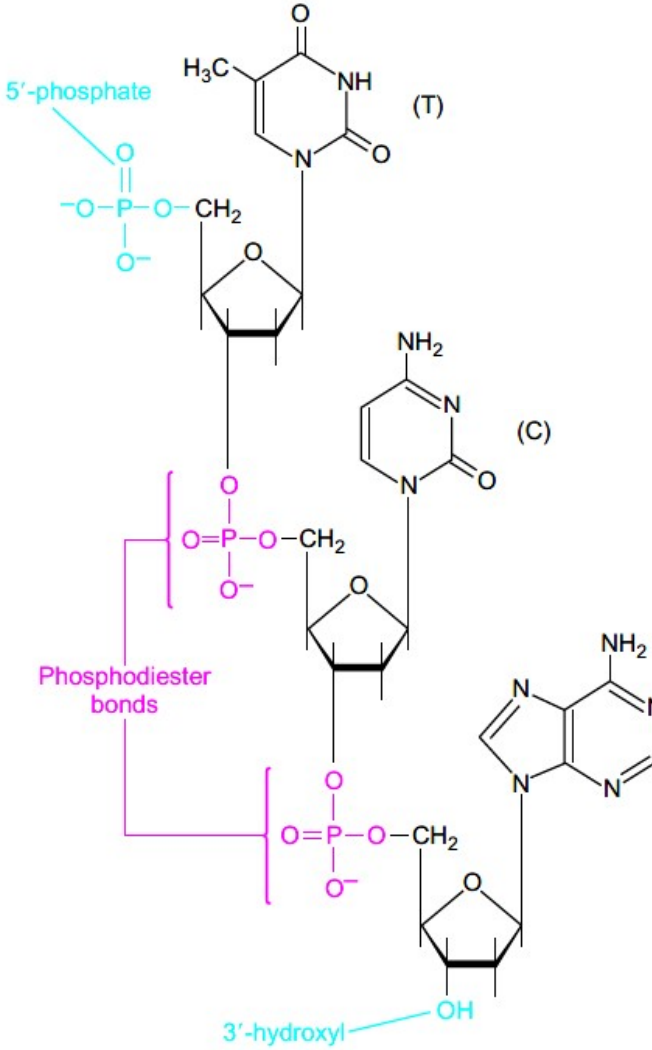
Understanding the molecular world !



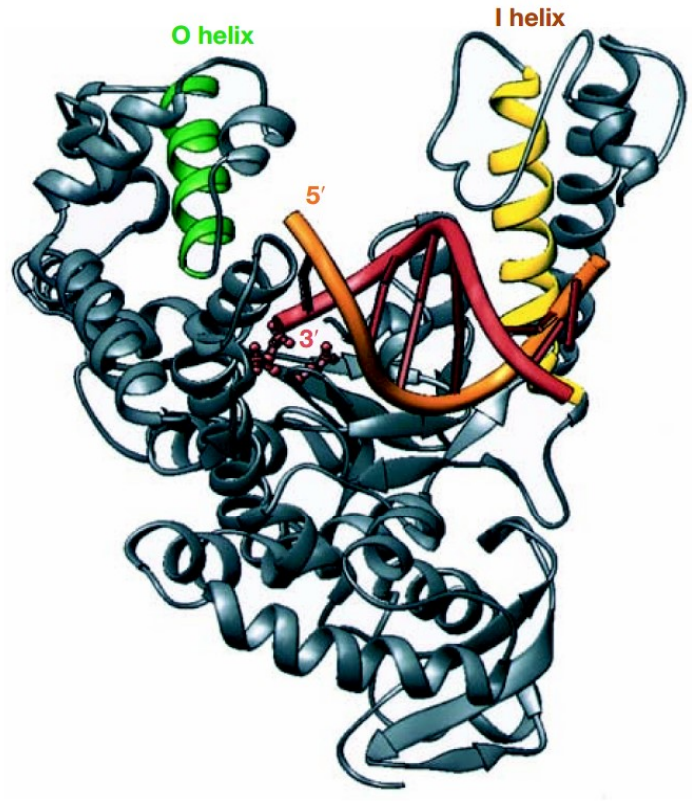


- "Being born selfish, like any other creature, human is nothing more than a genetic survival tool."

- ″ Genes are our driving force: selfish and interested only in our own survival and reproduction.″

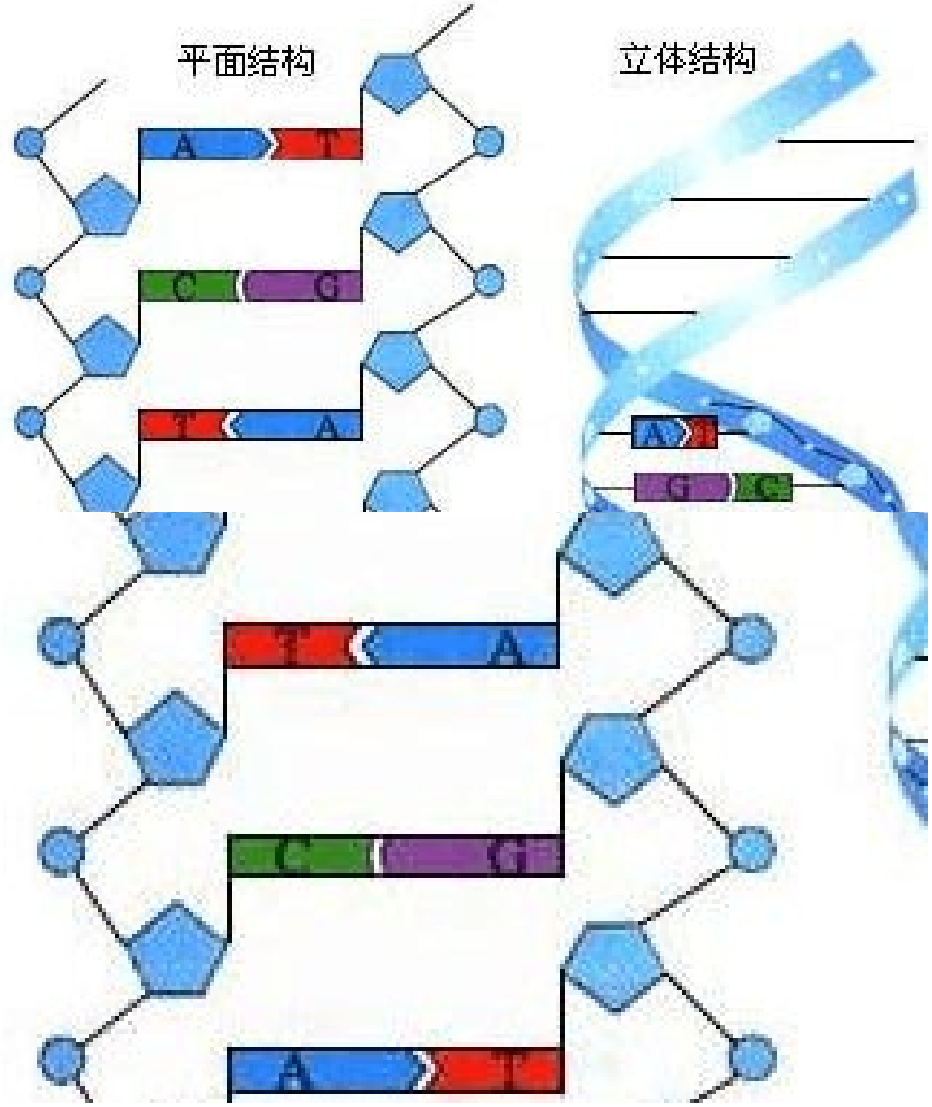
DNA Replication

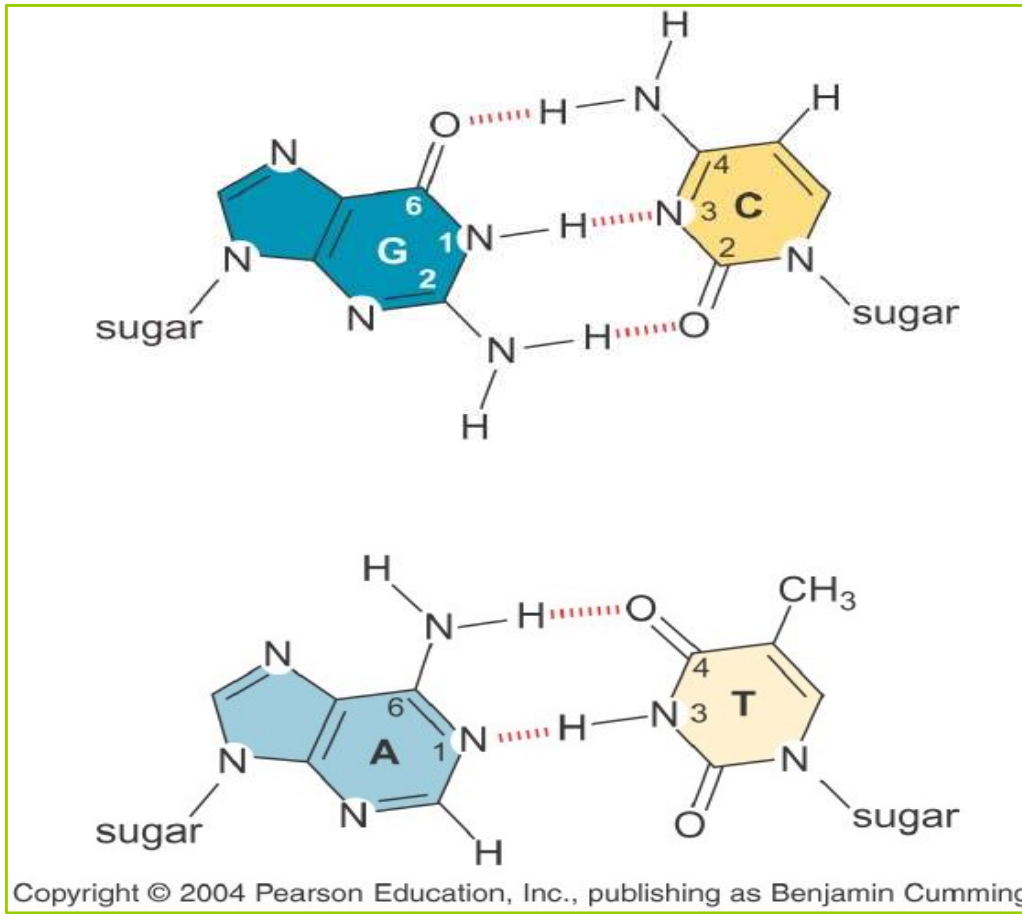
NA replication is the process by which cell makes an identical copy of its NA.



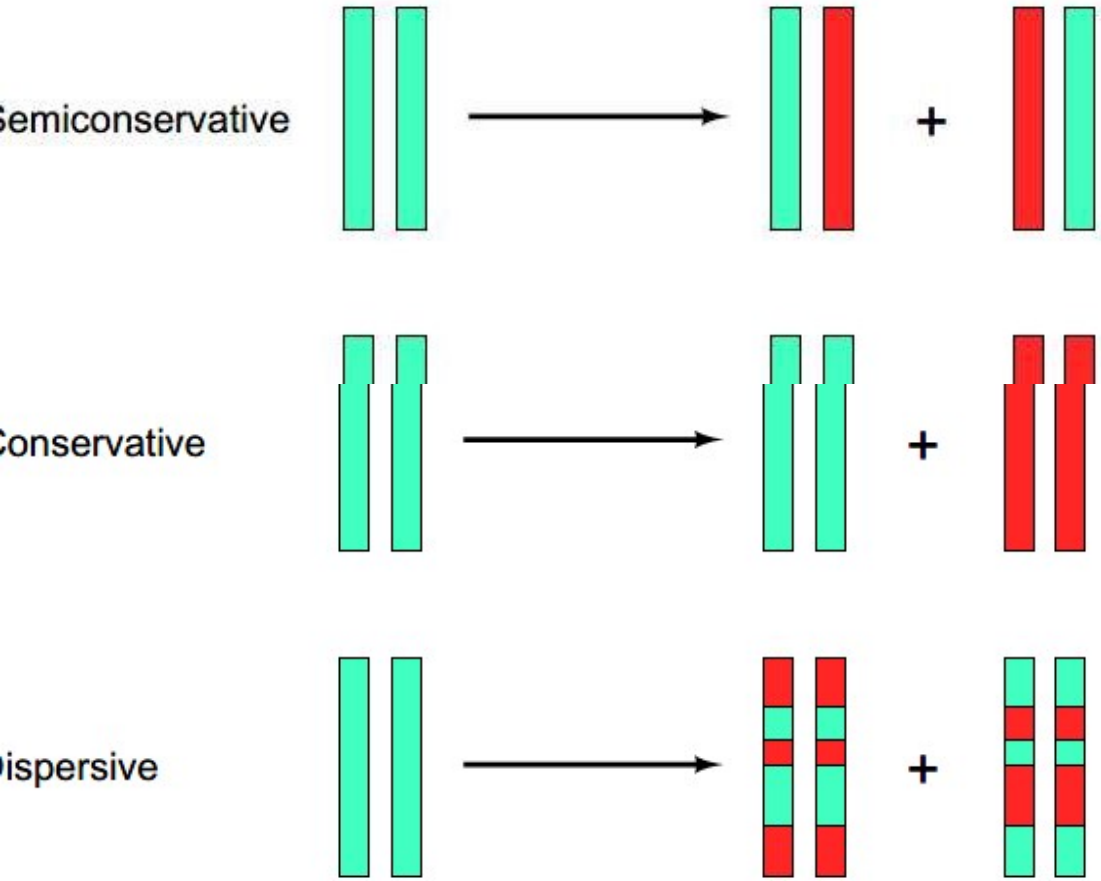
Cocrystal structure of *Taq* DNA polymerase
with a double-stranded model DNA template (orange).

omplementary base pairing

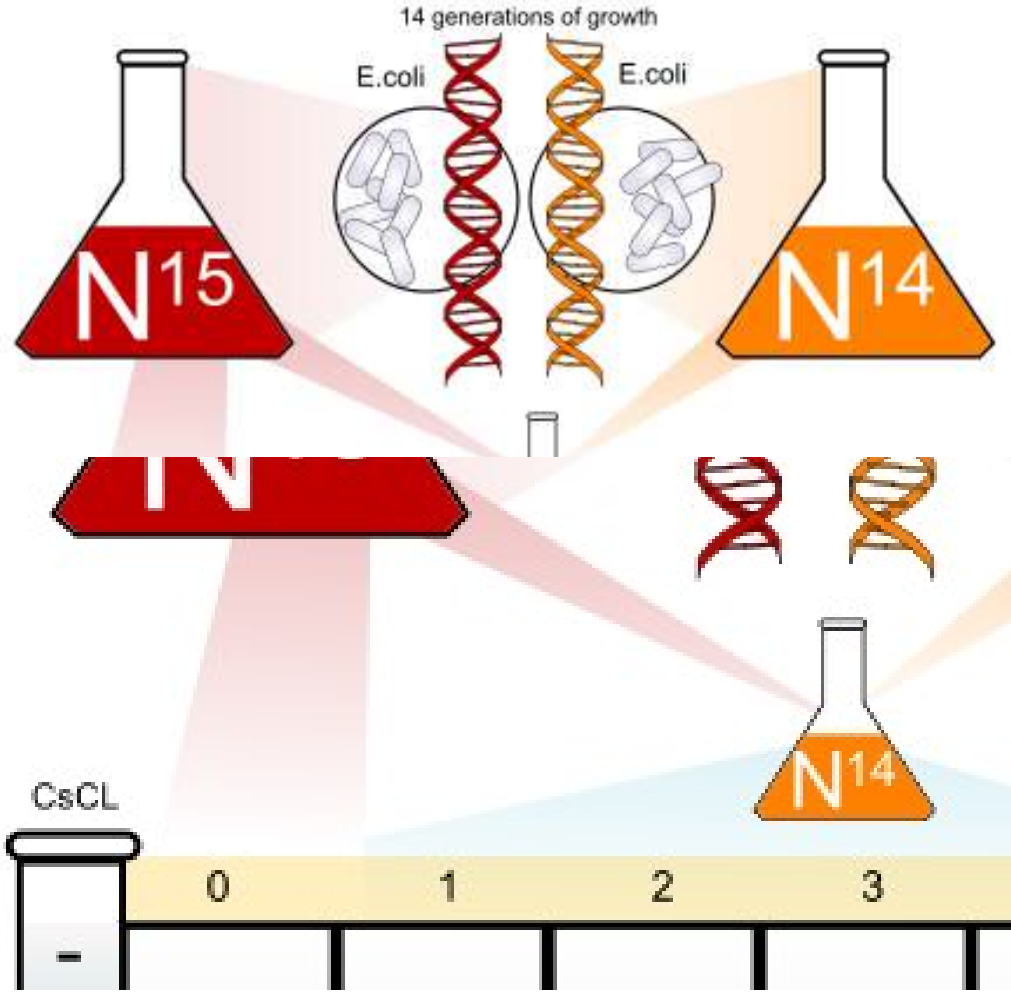




Patterns of DNA replication

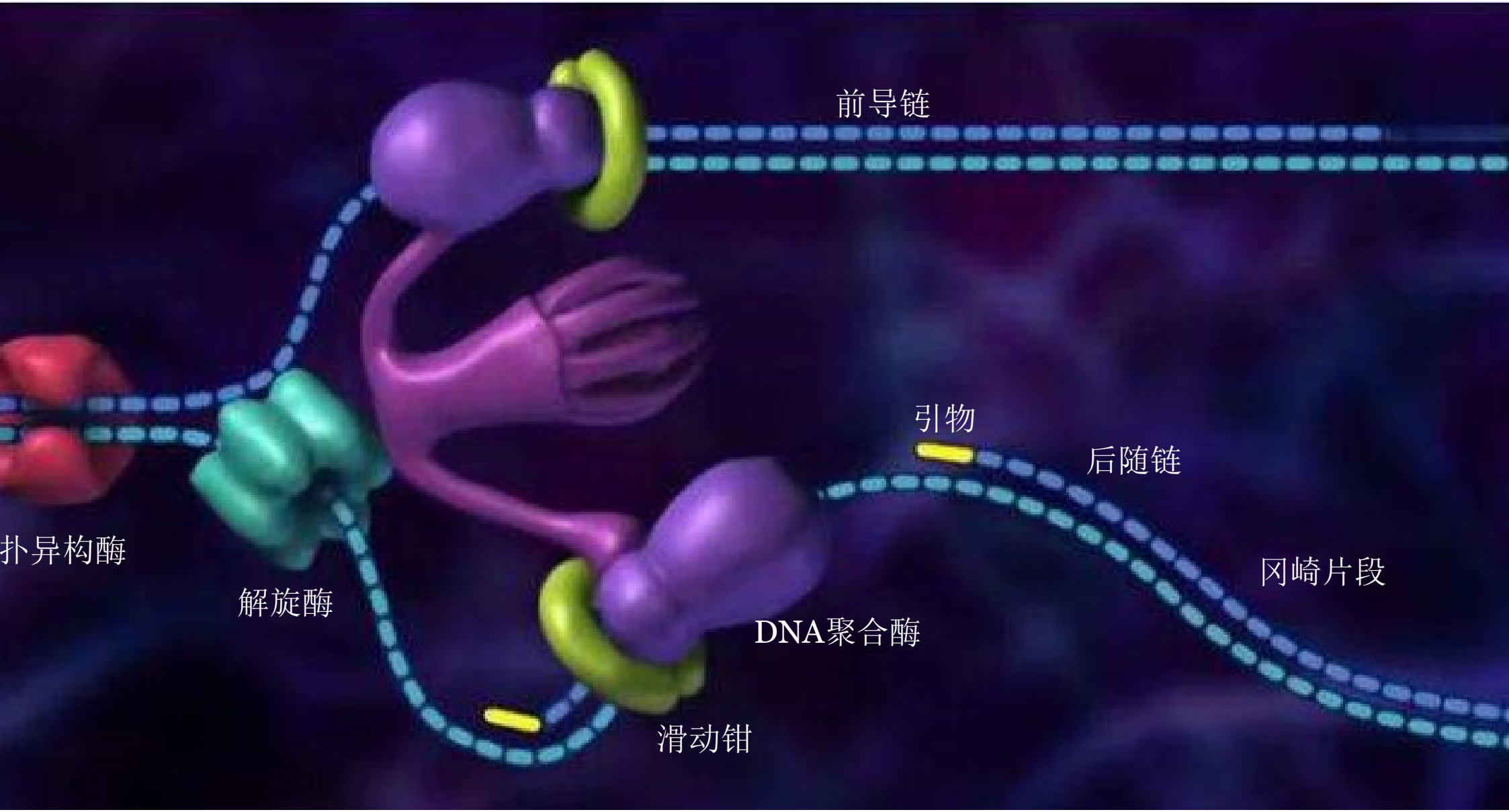


conjecture



design experiment

efficient collaboration



semiconservative replication

- **semi-continuous replication**

Pri

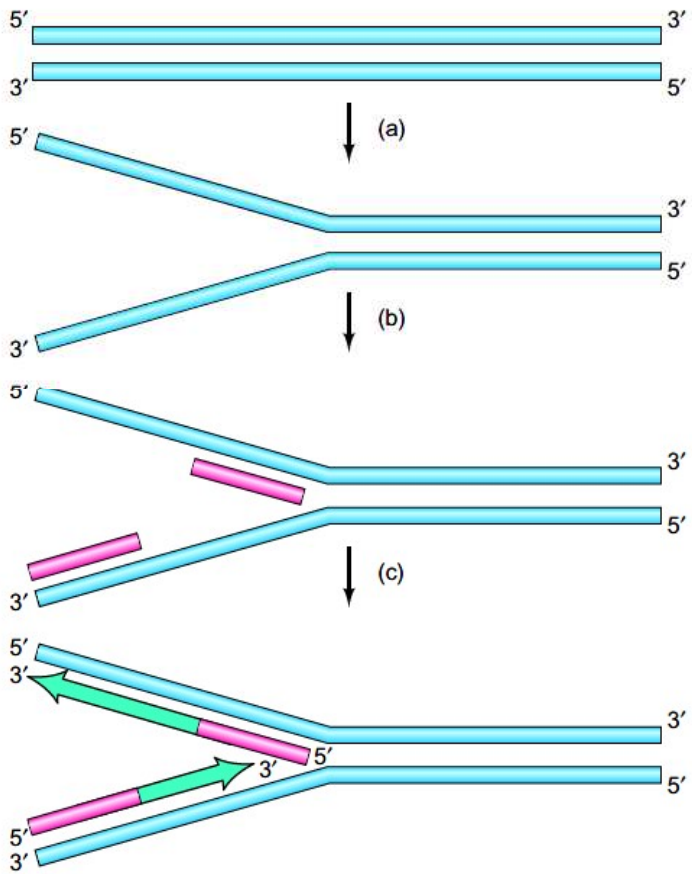
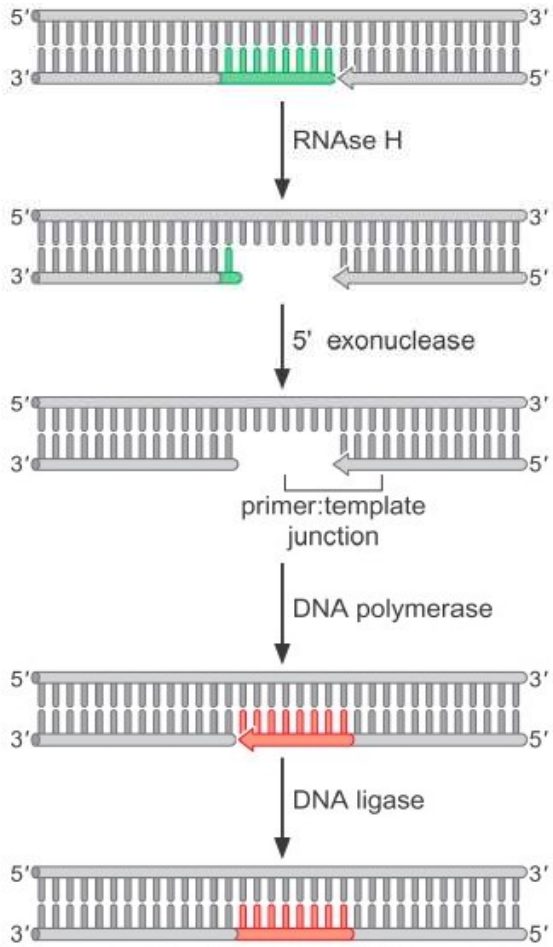


Figure 20.7 Priming in DNA synthesis. (a) The two parental strands (blue) separate. **(b)** Short RNA primers (pink) are made. **(c)** DNA polymerase uses the primers as starting points to synthesize progeny DNA strands (green arrows).

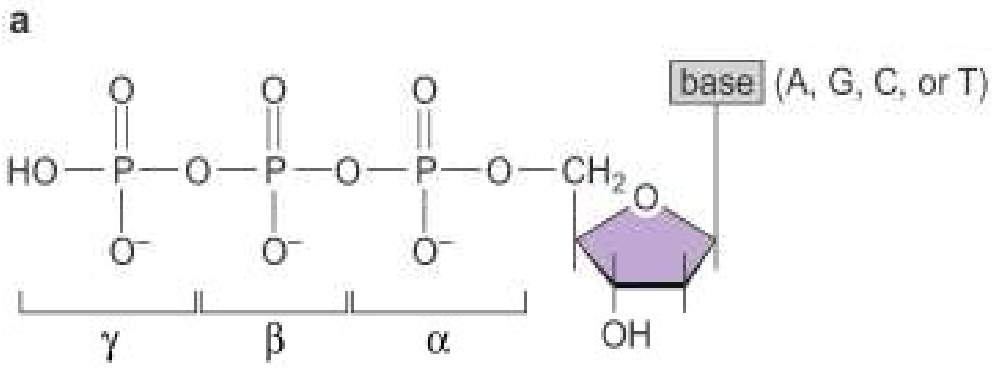
- DNA primase: an RNA polymerase that synthesizes RNA from scratch.
- Primer enzymes are recruited by DNA unspinning enzymes to polymerize in the 5'-3' orientation along the template on the DNA's posterior random strand.

Removal and repair of RNA primer

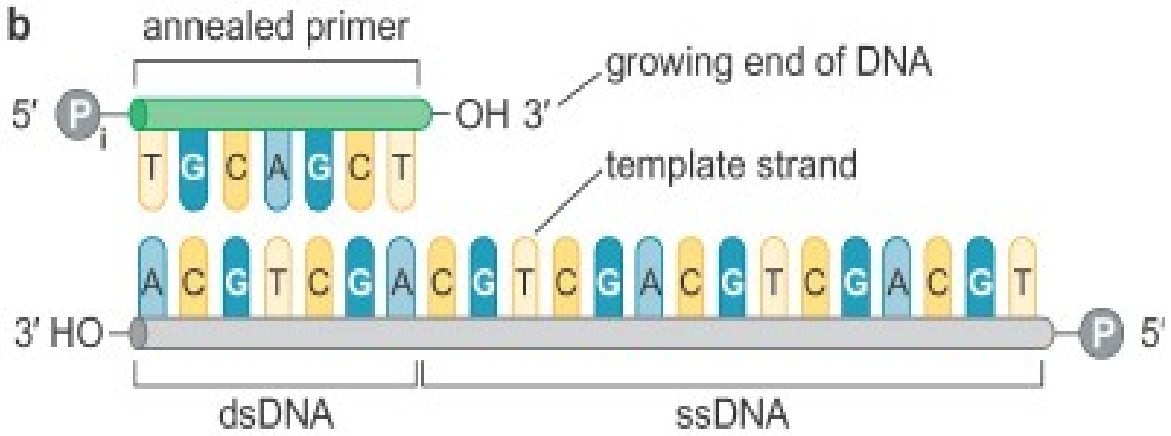
- Primer removal: RNase H and 5' exonuclease
- Gap repair: DNA polymerase I
- Nick's Fix: DNA ligase



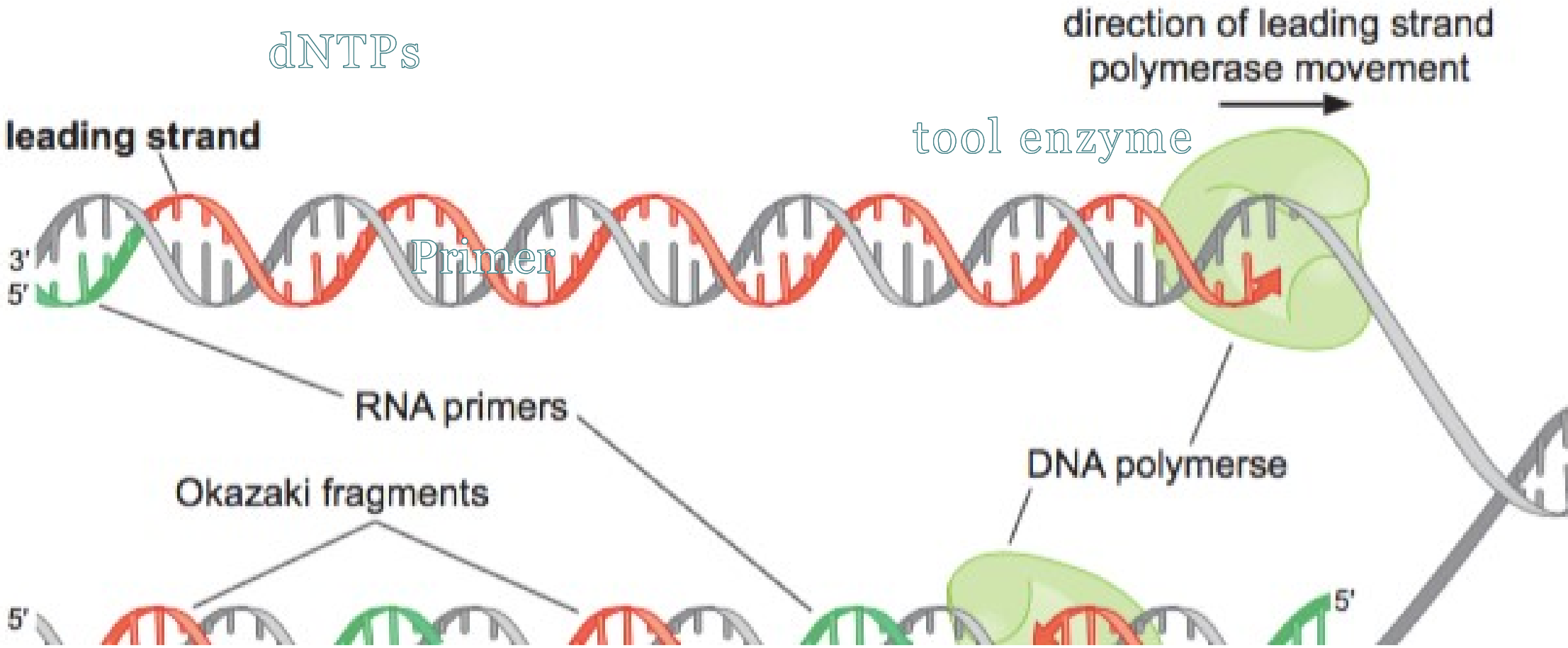
Chemical mechanisms of DNA replication



- **Primer: a single-stranded nucleotide molecule identified with a specific sequence.**



DNA Replication



THANK YOU