

9.2 Copying DNA

KEY CONCEPT

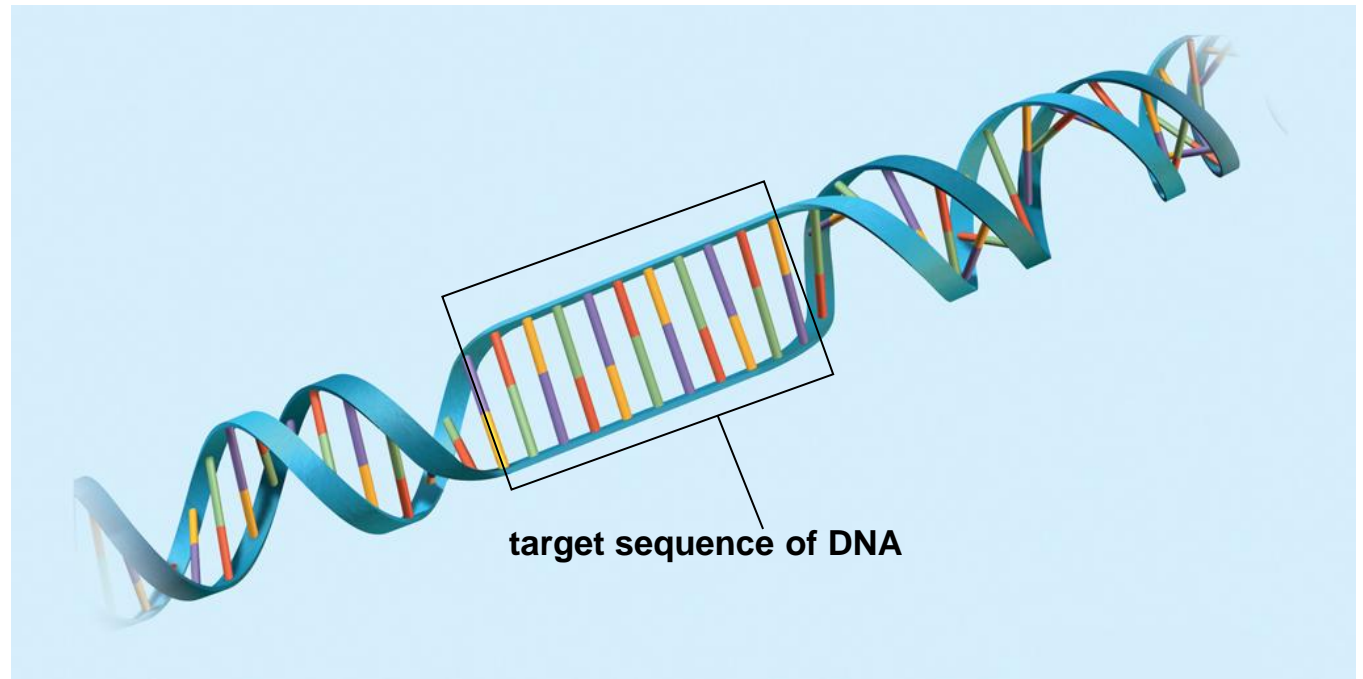
The polymerase chain reaction rapidly copies segments of DNA.



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▶ PCR uses polymerases to copy DNA segments.

- PCR makes many copies of a specific DNA sequence in a few hours.

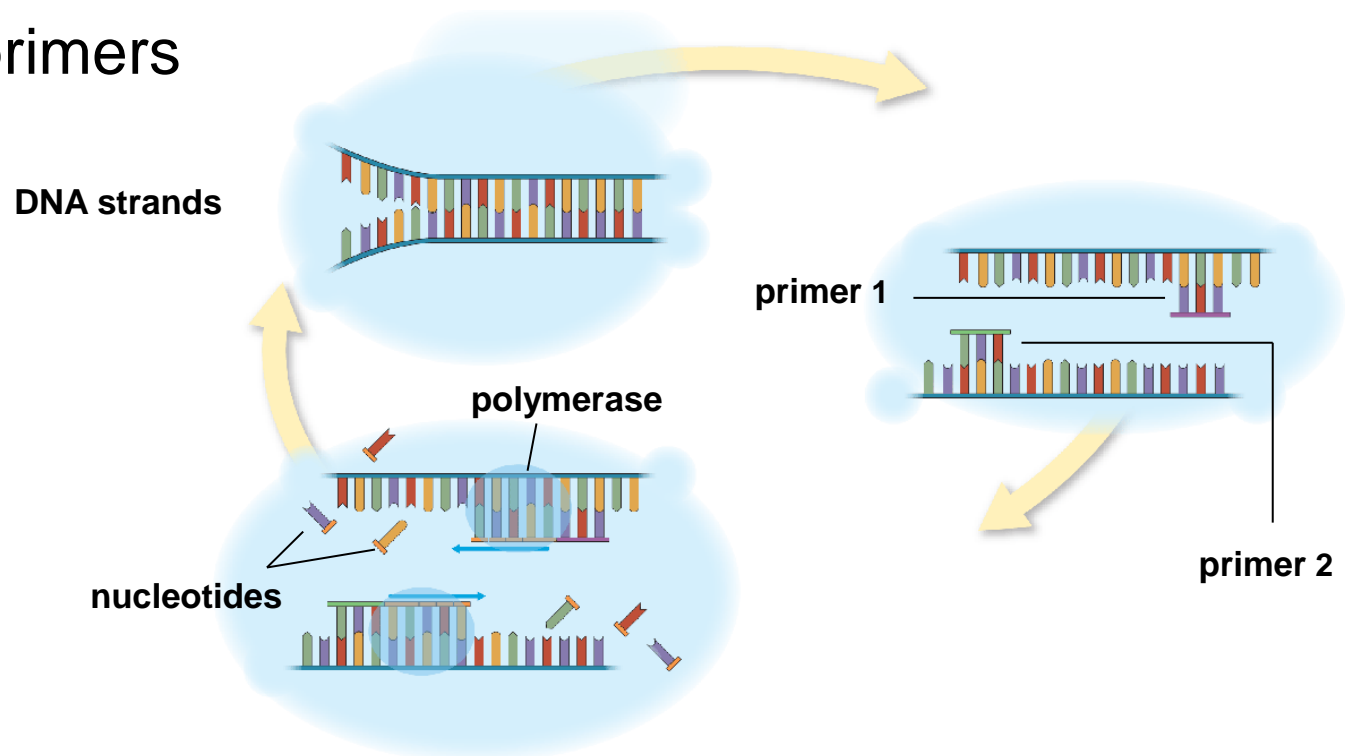


- PCR amplifies DNA samples.
- PCR is similar to DNA replication.

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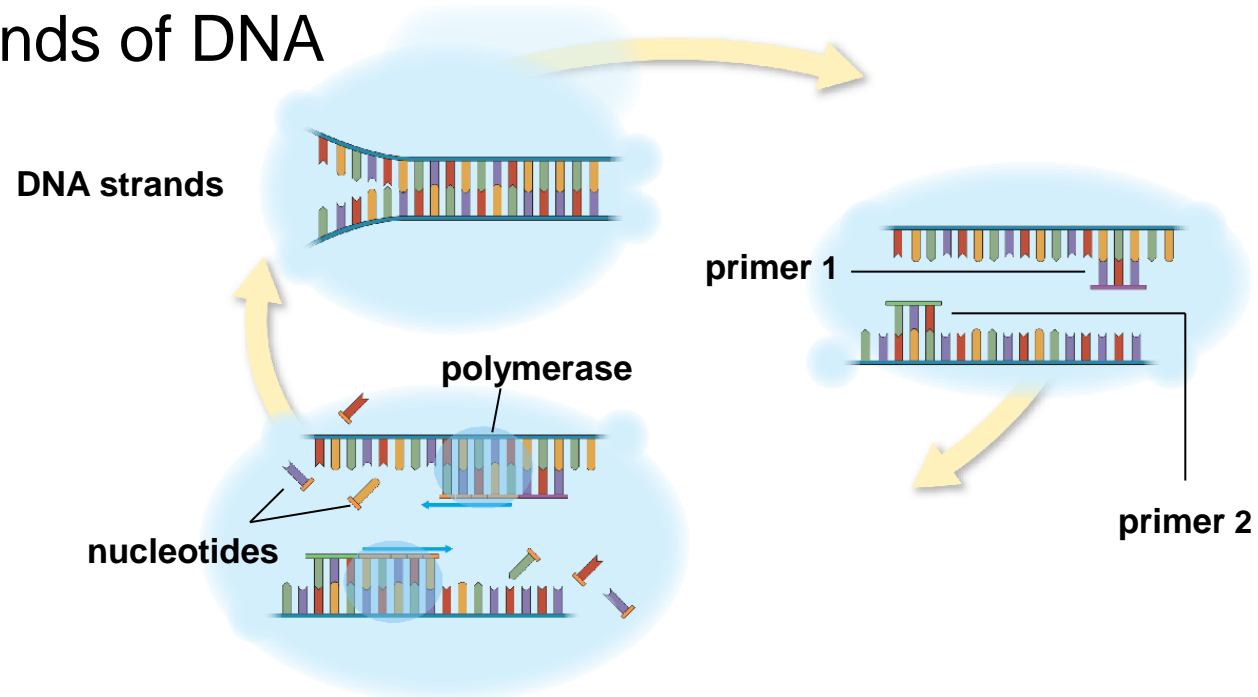
▶ PCR is a three-step process.

- PCR uses four materials.
 - DNA to be copied
 - DNA polymerase
 - A, T, C, and G nucleotides
 - two primers



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- The three steps of PCR occur in a cycle.
 - heat is used to separate double-stranded DNA molecules
 - primers bind to each DNA strand on opposite ends of the segment to be copied
 - DNA polymerase binds nucleotides together to form new strands of DNA



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- Each PCR cycle doubles the number of DNA molecules.

With each PCR cycle, the number of copies of the DNA segment doubles. After 30 cycles, more than 1 billion copies have been made.

