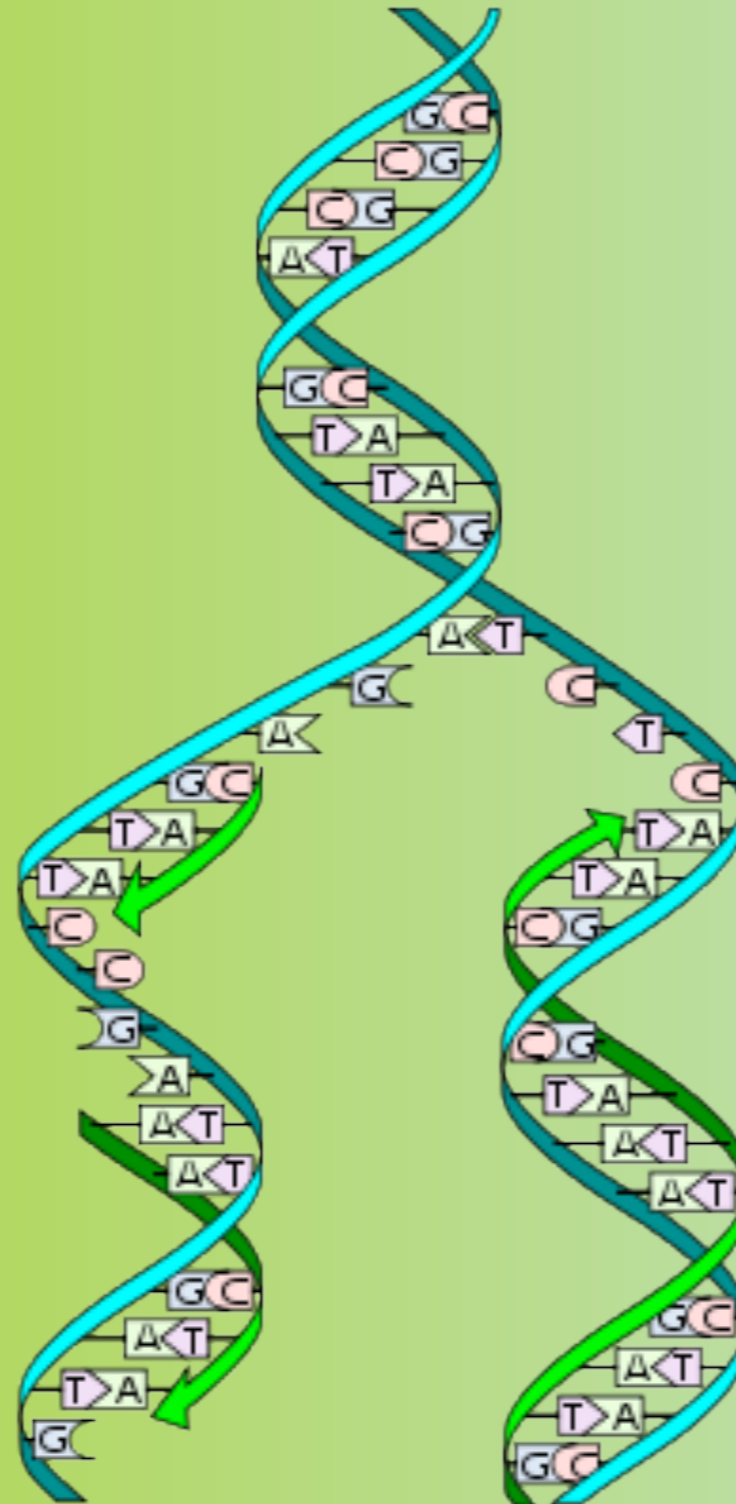
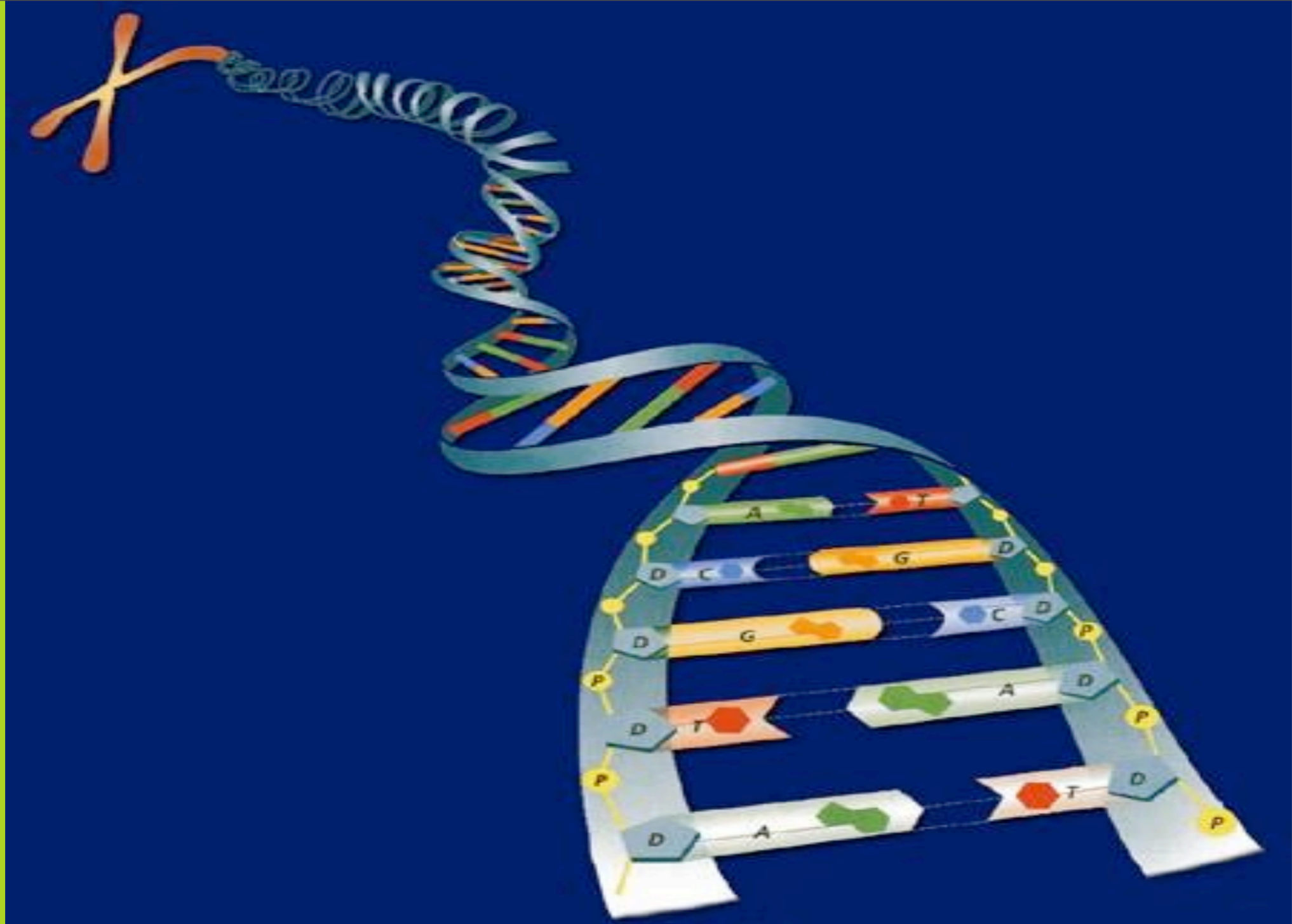




DNA Replication



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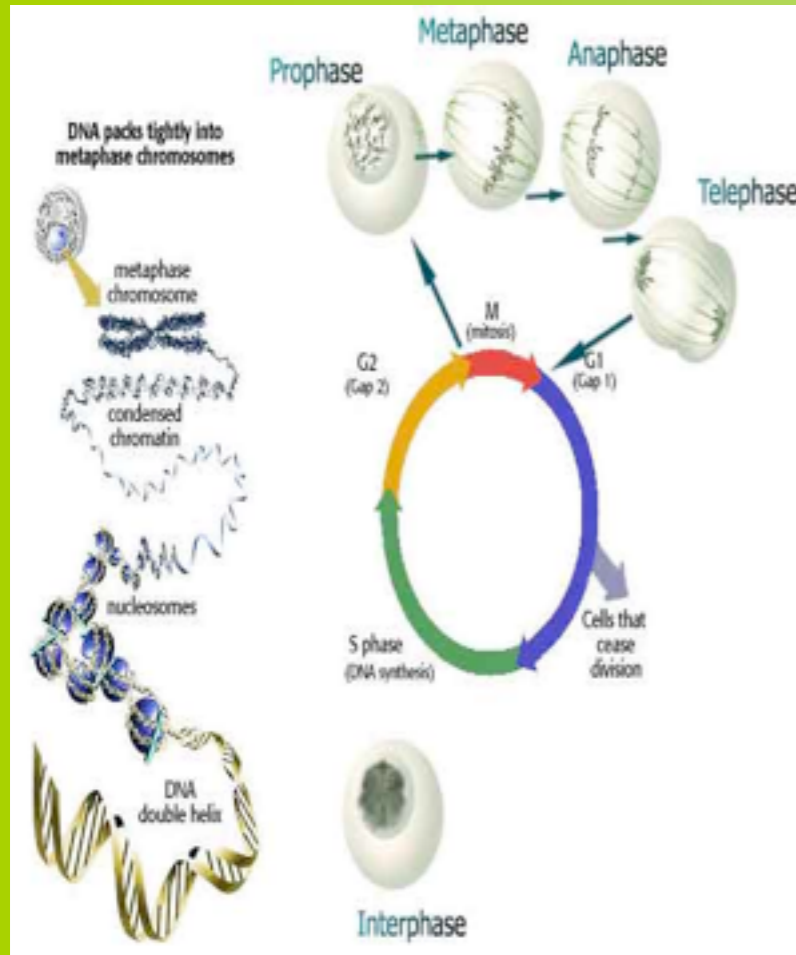
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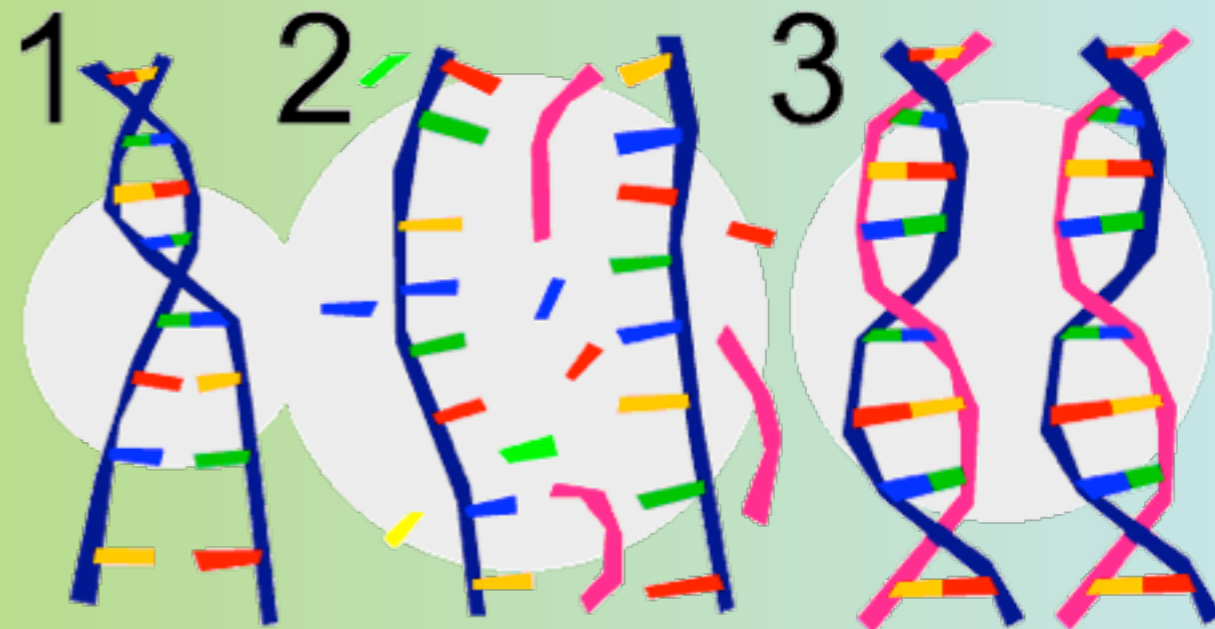
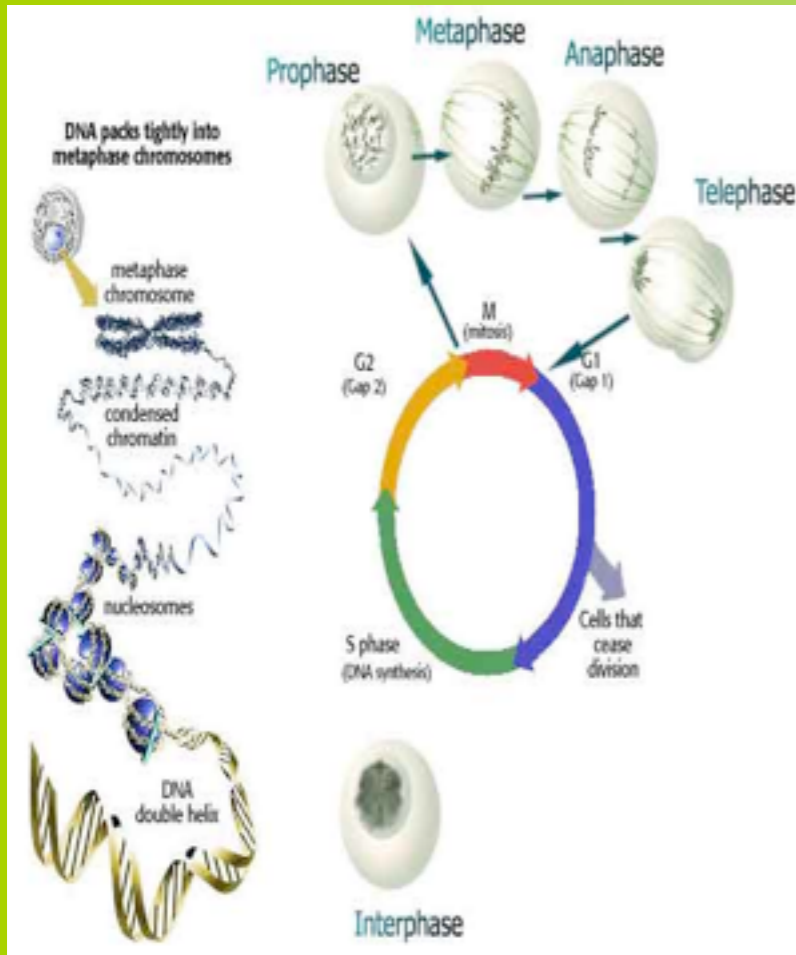


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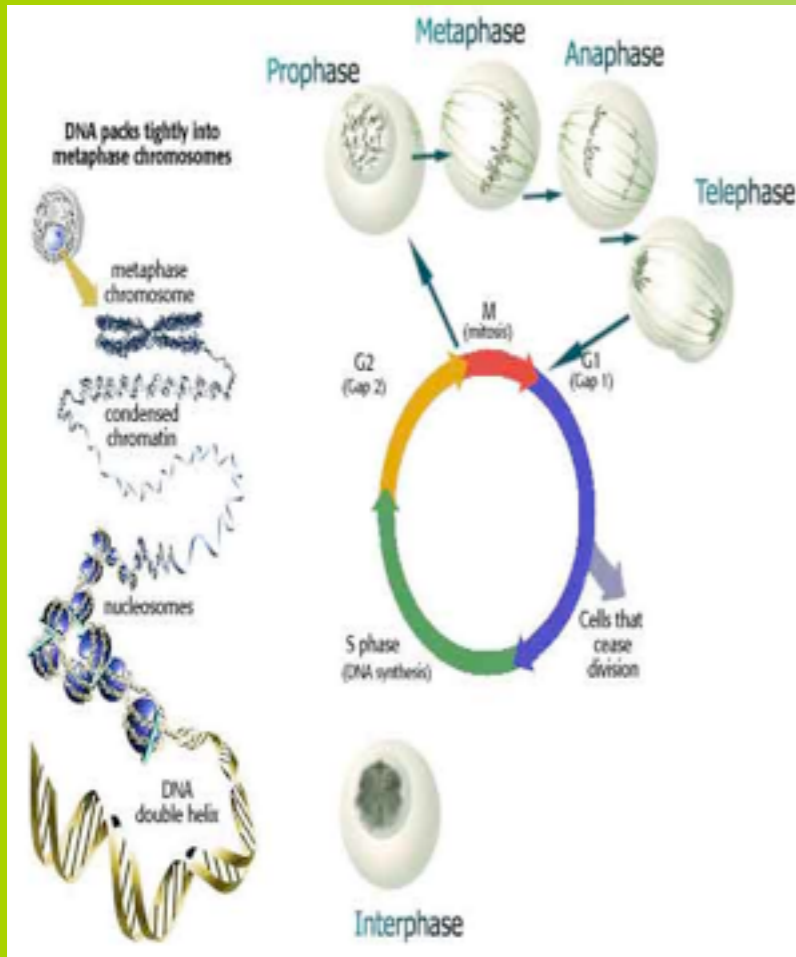


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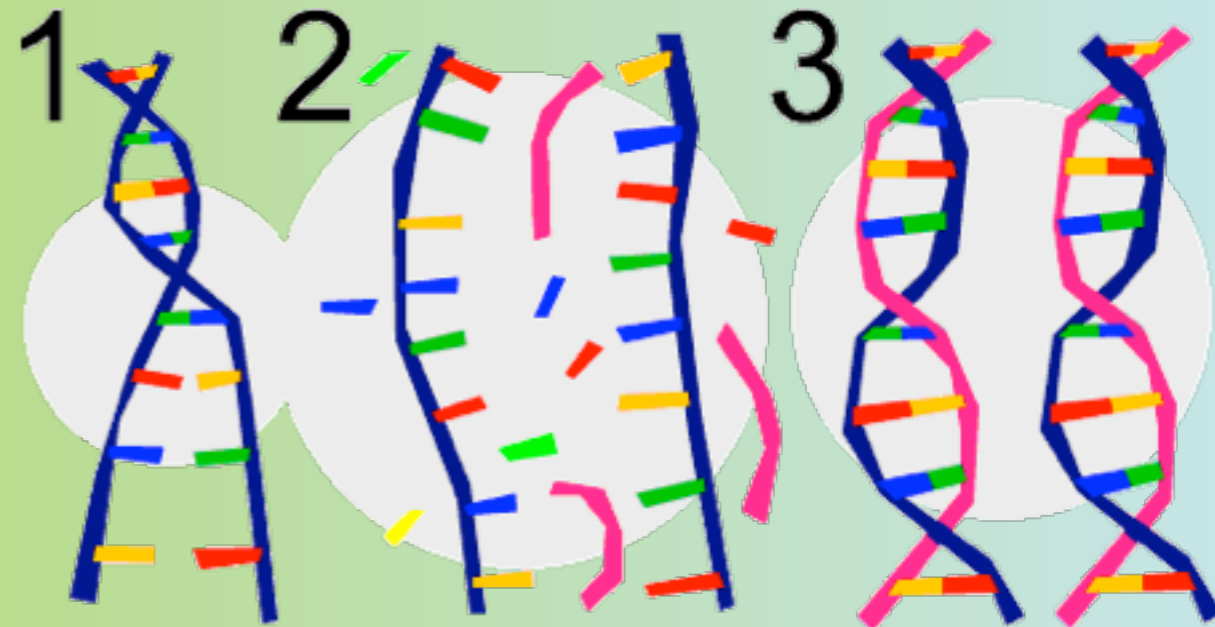
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- Each strand of the original DNA serves as a template for the new strand



- **Semiconservative Model:**

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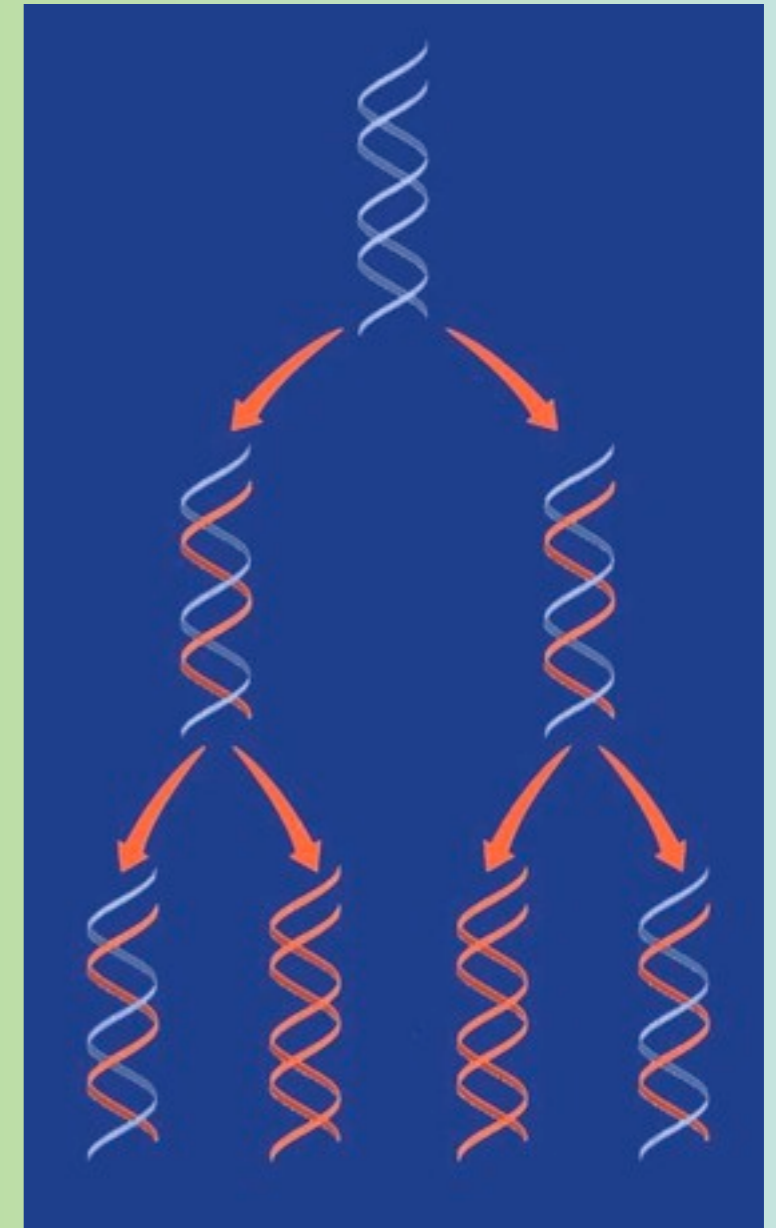
1. **Watson and Crick showed:** it saves one parent DNA and matches it with a new DNA strand.

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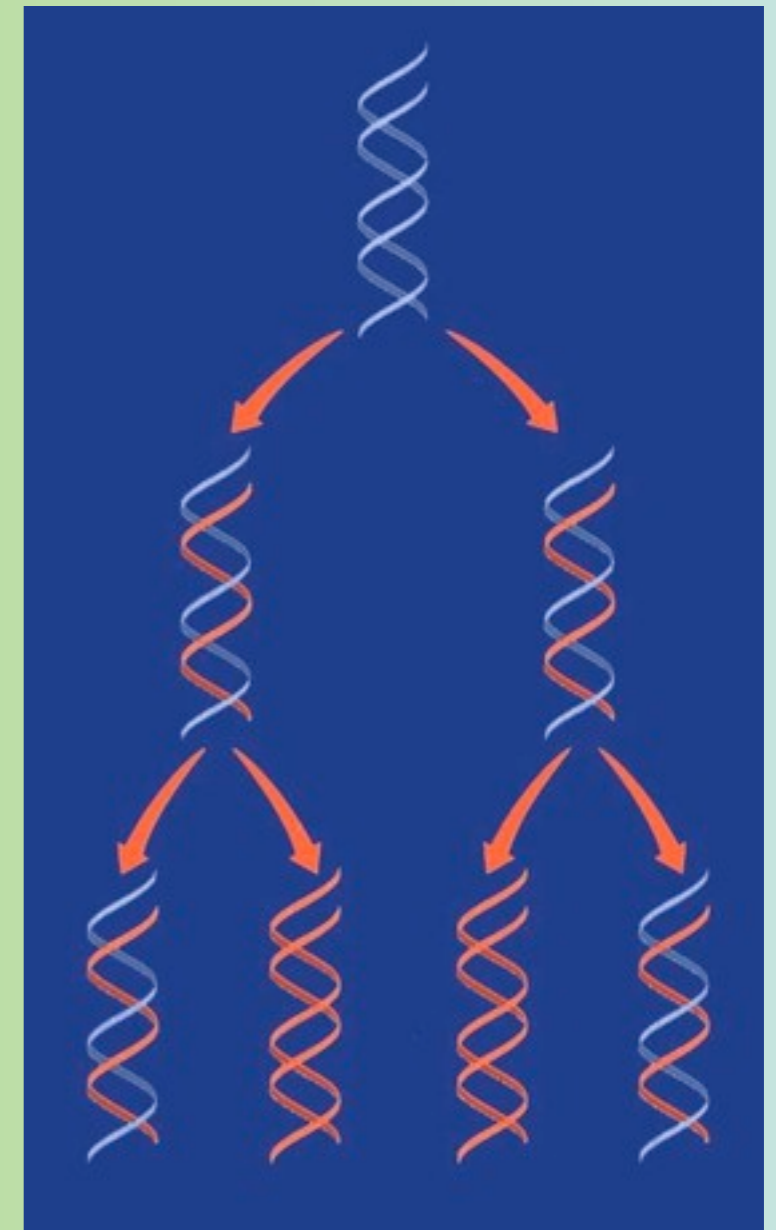
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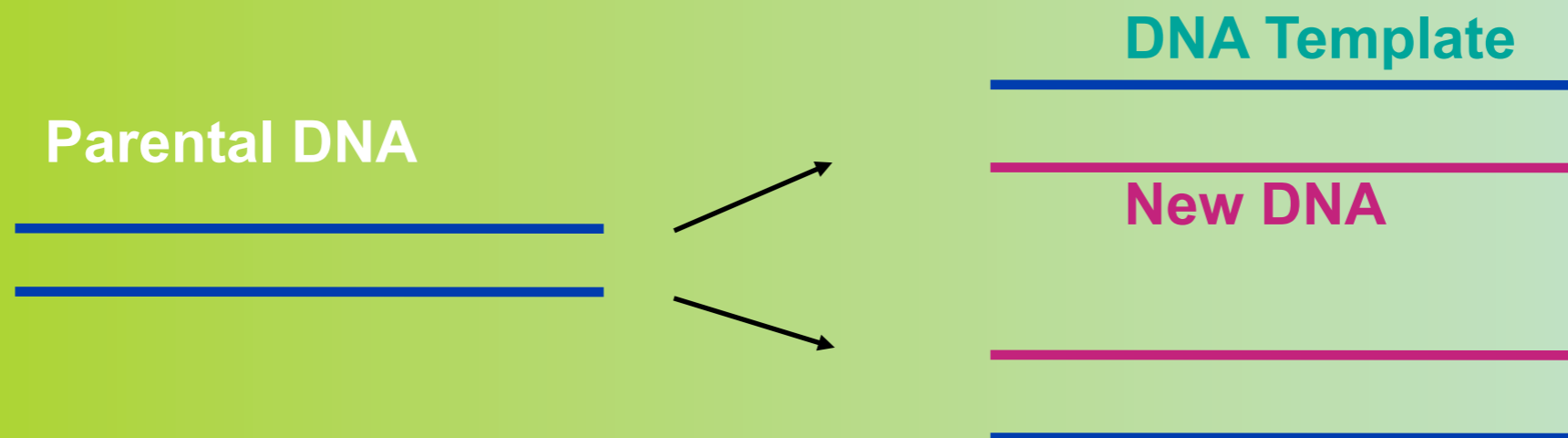
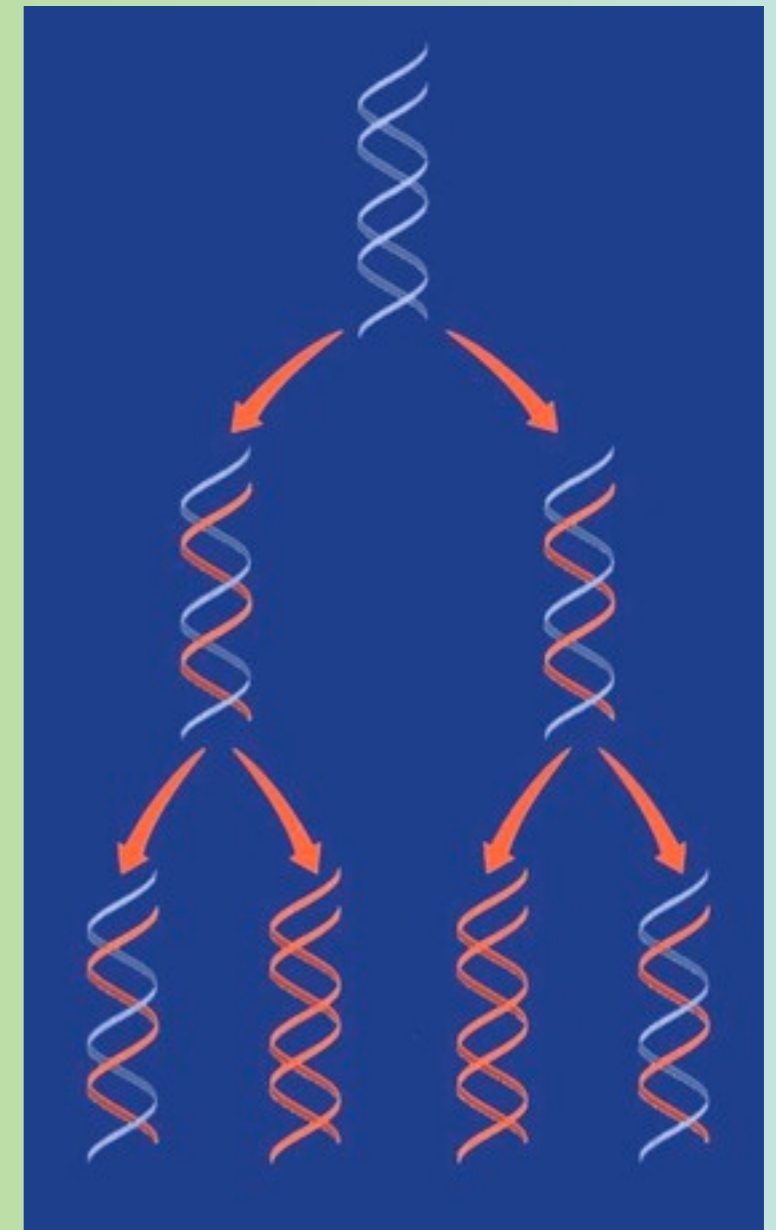
Parental DNA



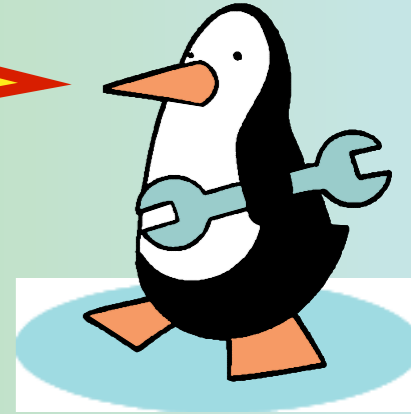
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I'd love to be
helicase & unzip
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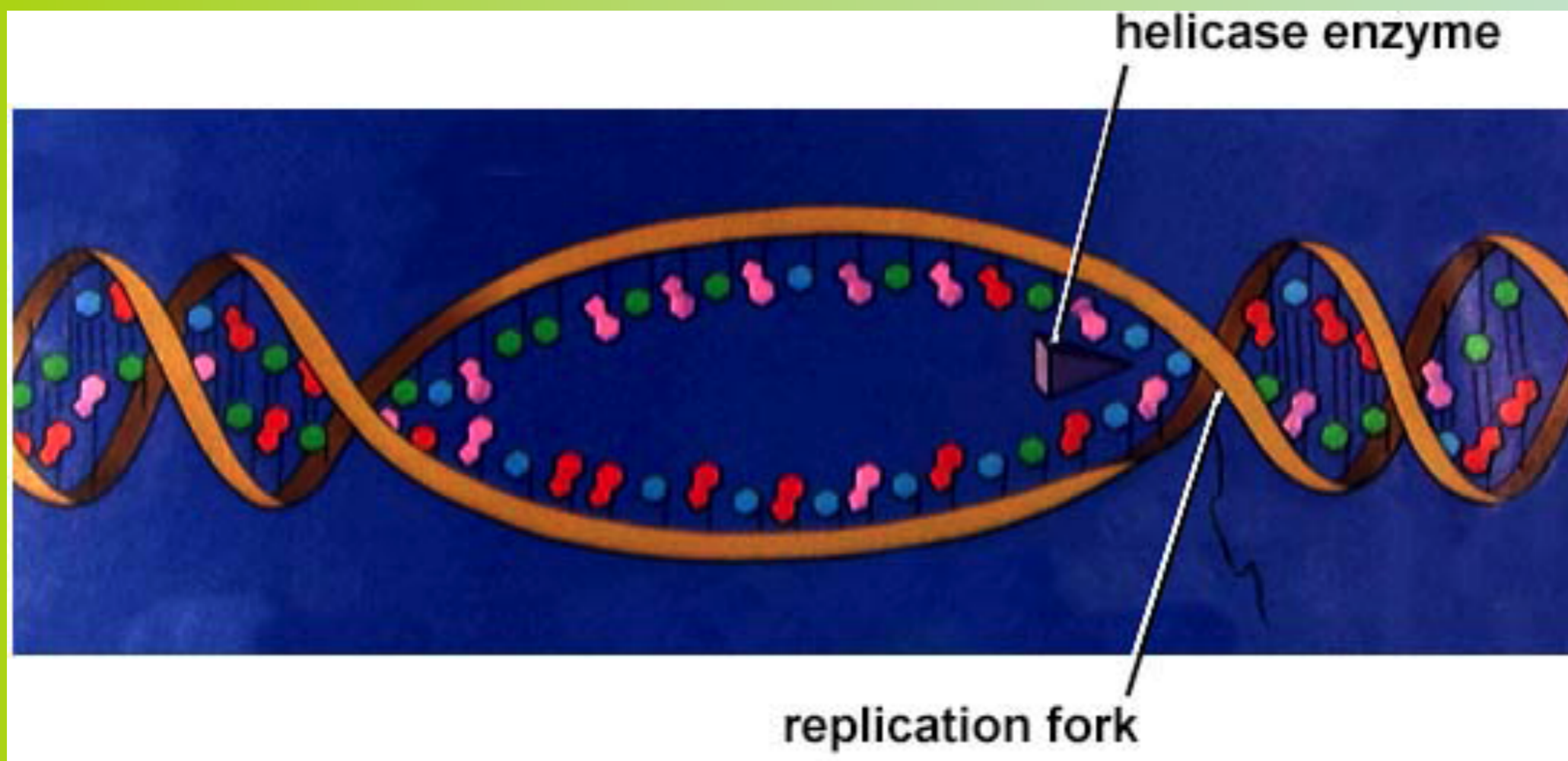


Unwind DNA

Helicase enzyme

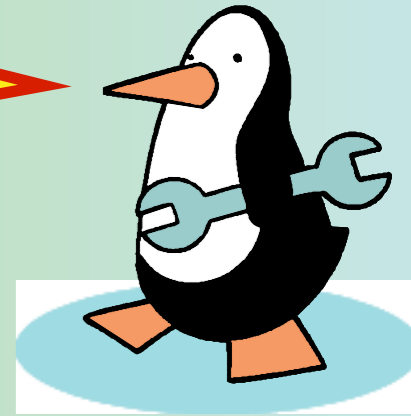
unwinds part of DNA helix

A Replication Fork forms where the strands of
DNA split apart.



Replication: 1st step

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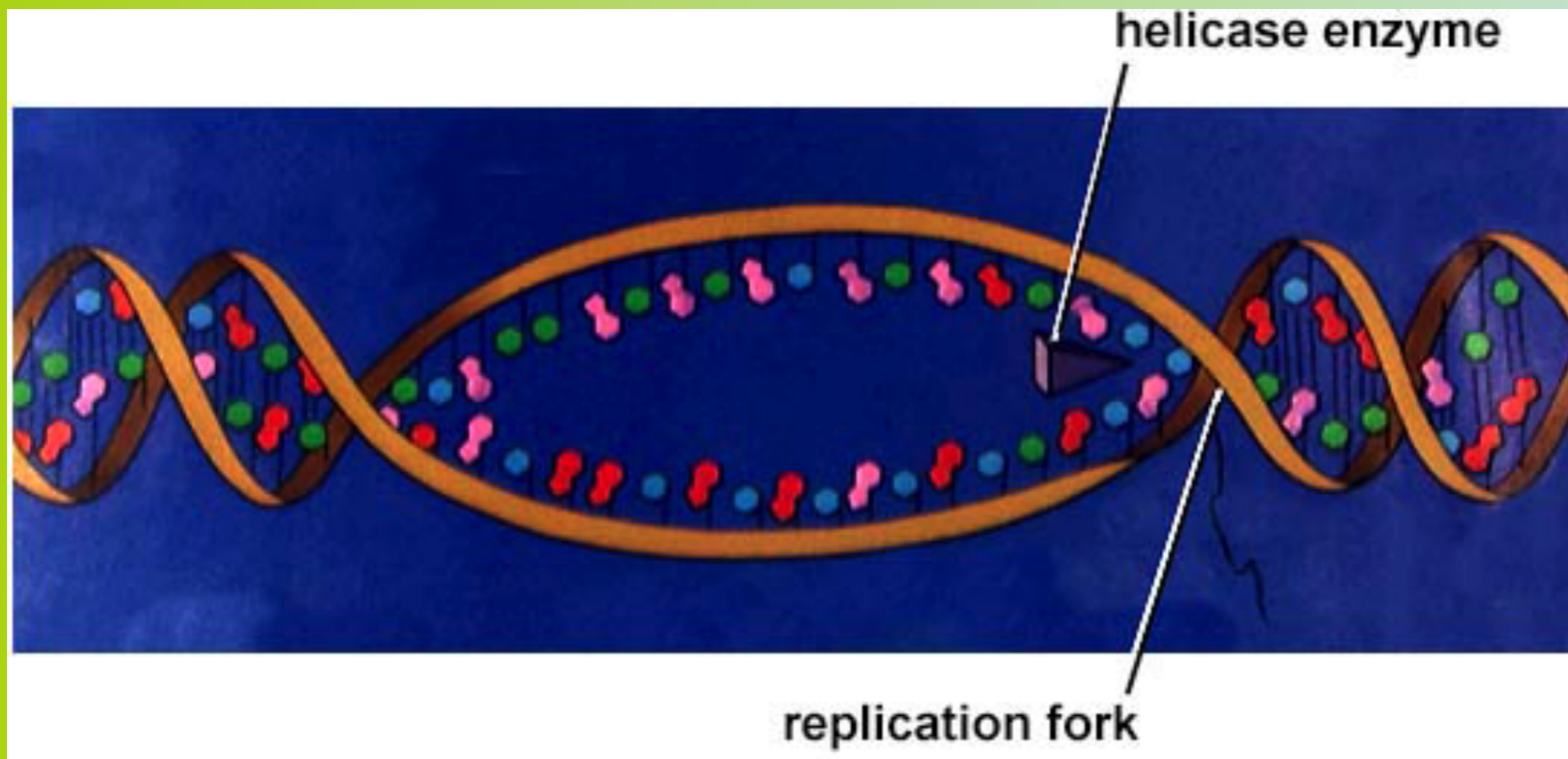


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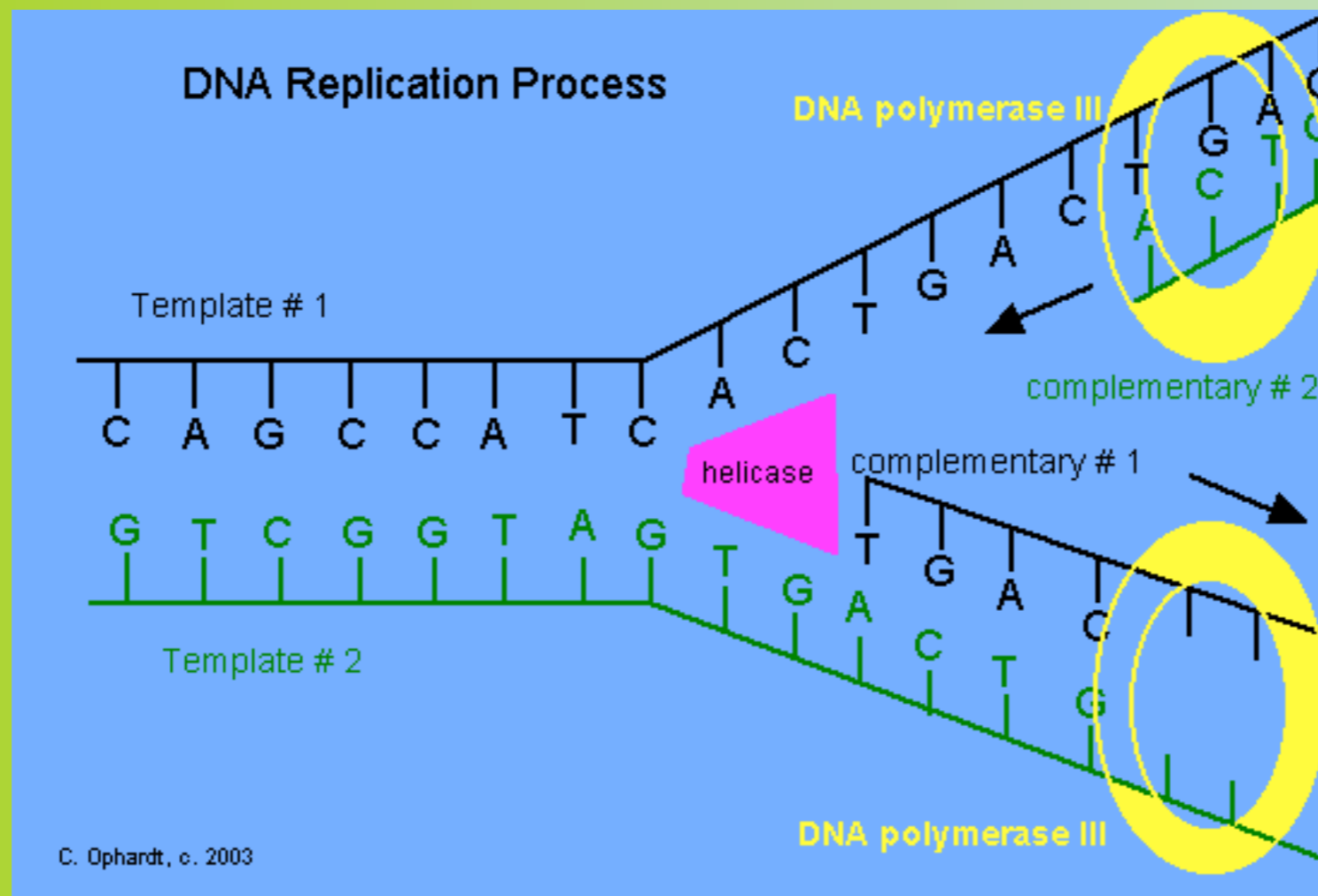
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Build daughter DNA strand

DNA polymerase III

adds new complementary bases

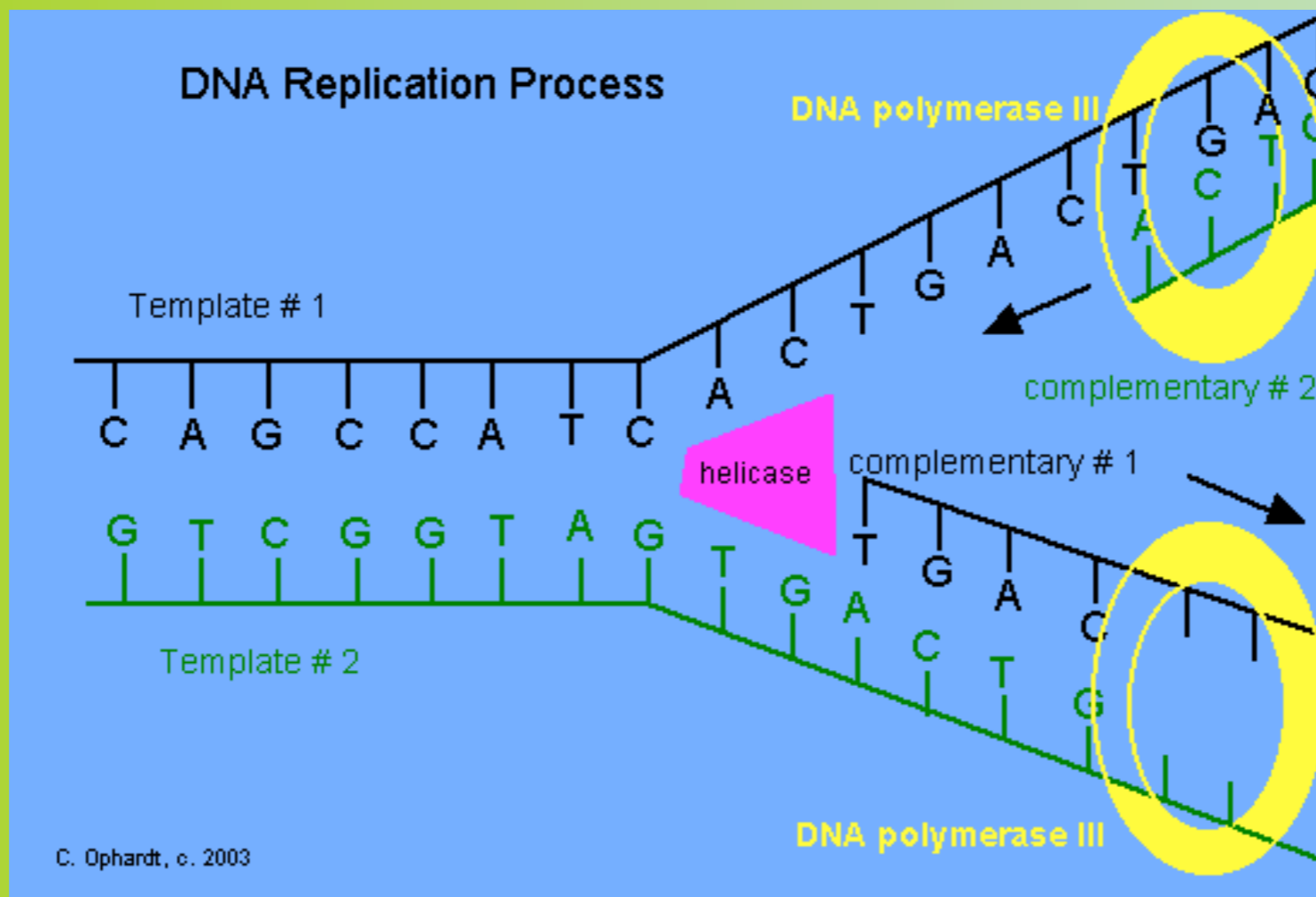


Replication: 2nd step

Build daughter DNA strand

DNA polymerase III

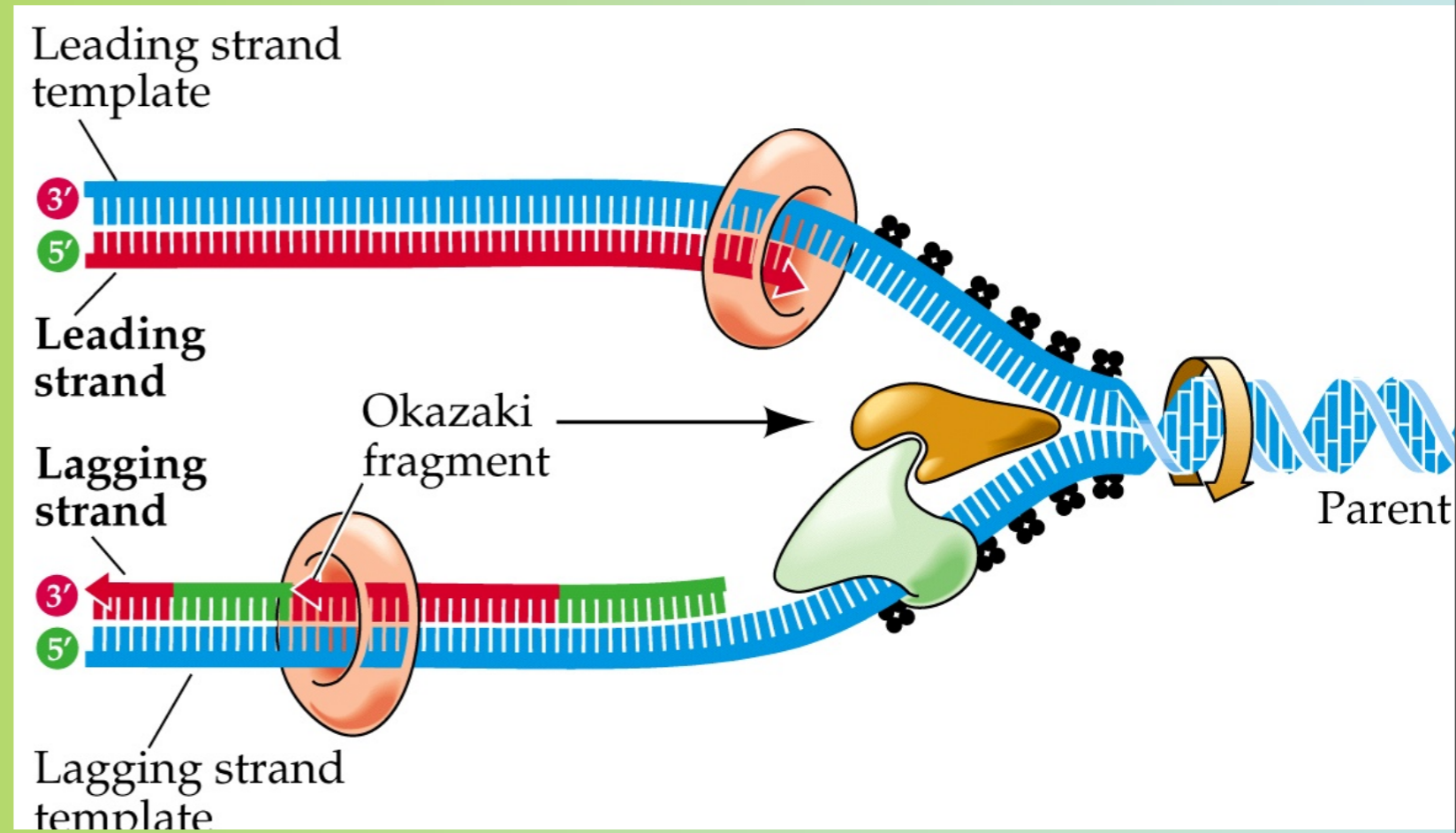
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Limits of DNA polymerase III can only build onto 3' end of an existing DNA strand

Leading strand
continuous synthesis

Lagging strand
Okazaki fragments
joined by ligase
“spot welder” enzyme



Leading & Lagging Strands

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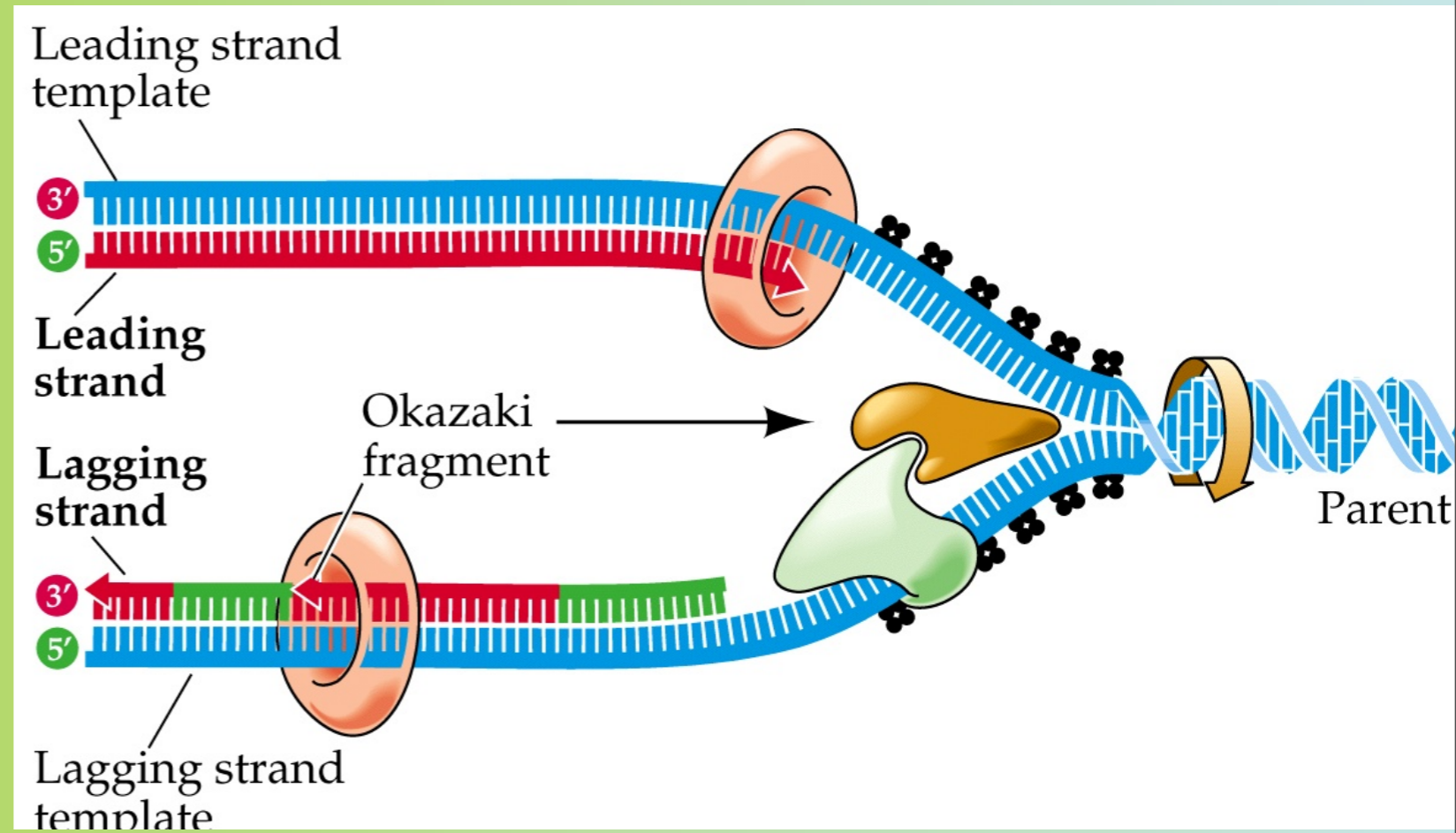
Leading strand

continuous synthesis

Lagging strand

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Replication: 3rd step

Error Correction

Polymerase double checks the new DNA sequence and corrects any errors if present.

Mutations

occur if there is an incorrect sequence of bases.

