# DNA Replication

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**DNA replication** produces two new daughter DNA strands that are identical to the original DNA. The resulting DNA strands are semi-conservative, as they contain one strand from the original DNA molecule and one newly synthesized strand. The process requires DNA helicase to unwind the DNA double helix. DNA single-stranded binding proteins (SSBPs) bind to single stranded regions of DNA and help stabilize the extended single stranded templates[1]. DNA gyrases catalyses negative supercoils and assist the unwinding process.

## Leading strand

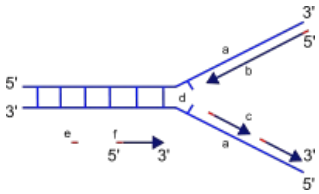
New DNA strands are intiated by RNA primers, the synthesis of which is catalyzed by enzymes called primases. In the 5'-3' direction a continuous strand of DNA is created, the leading strand.

## Lagging strand

Okazaki fragments are created leading to the formation of the lagging strand. Short segments are covalently bound together by polynucleotide ligase.

## Y-replication fork

DNA replication takes place at multiple points and forms replication forks which, are Y shaped structures. The progresses in both directions forming replication bubbles. The replication origins are approximately 50 to 300 kb (kilobases) apart[2]. After initiation, elongation of the DNA is carried out by DNA polymerase III. Polymerase I subsequently removes RNA primers.

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### References


1. GARDNER/ SIMMONS/ SNUSTAD,. *Principles of Genetics.* 8th Edition edition. 1991. ISBN ISBN 0-471-50487-4.
2. TURNPENNY AND ELLARD,. *Emery's elements of medical genetics.* 14th Edition edition. 2012. ISBN ISBN 978-0-7020-4043-6.


### Bibliography

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