Cheatography

Biology : The process of Replication Cheat Sheet

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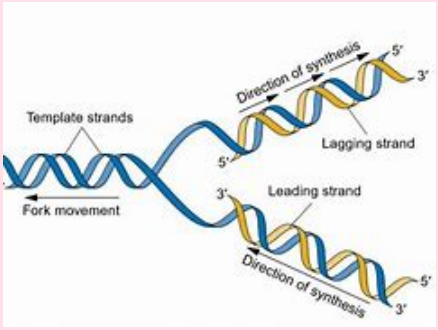
REPLICATION

DNA replication is the process by which DNA makes a copy of itself during cell division.

Replication



Basic Process of DNA Replication

1. Activation of Deoxyribonucleotides

2. Unwinding of DNA

3.Recognition of Initiation Point

4.Formation of RNA primers

5.Base Pairing

6.Conversion of Deoxyribonucleotide triphosphate to monophosphate

7.Formation of new DNA chains on RNA primers

8.Editing and Proof reading and DNA Repair

Enzymes used

Topoisomerase- SS DNA bread= Release tension

Helicase- Separation of two strands

Primase- RNA Primer synthesis

SSBP- Stops two strands from forming bonds.

DNA Polymerase- Forms nucleotides or adds nucleotides to new strands.

DNA ligase- Seals the DNA

Activation of Deoxxyribonucleotide

Phosphorylation

AMP,GMP,TMP,CMP that are monophosphates of adenine, guanine, cytosine, and thymine are activated by Phosphorylation into triphosphate by uniting with ATP.

Recognition of initiation point

Specific initiator proteins recognise the initiation point of DNA.

Base Pairing

Purines (A and G) pairs with Pyrimidines (C and T) by hydrogen bond.

A forms double bond with T and G forms triple bond with C.

Formation of new DNA chains on RNA primers

This energy is utilised in joining the adjacent nucleotides to form polynucleotides chains.

Process is catalysed by DNA Polymerase, Mn++ and Mg++ ions.

Formation of RNA Primers

DNA directed RNA polymerase synthesises a short priming strand of RNA called Primer.

Enzyme Primase brings all polymerisation of RNA Primer.

Unwinding of DNA

Helicase binds to ORI (Origin of Replication)

Topoisomerase helps in making nick in DNA molecule at the origin. It can also reseal.

To stablise single strand of DNA- Single stranded binding proteins(SSBP) gets attached

Conversion of triphosphates to monophosphates

Enzyme Pyrophosphatase hydrolyses the pyrophosphate into inorganic phosphate and energy.

Editing and Proof reading and DNA Repair

If any wrong base gets incorporated during DNA Replication, it is removed by DNA Polymerase.

DNA Ligase joins newly synthesised DNA.

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