

## REPLICATION OF DNA:

(9)

It is the DNA who shows the 1st reproduction.

i.e. Production of similar one by similar one.

x) DNA can make its own exact copy.

x) The nature is semi conservative. As the daughter helixes each have one parental and one new strand.

x) Formation of DNA from DNA is known as Replication.

- x) Replication requires
- DNA template
  - A primer (RNA)
  - Deoxyribonucleoside triphosphates (dATP; dGTP, dCTP & dTTP).
  - $Mg^{++}$
  - DNA Unwinding/Winding Protein
  - Superhelix relaxing protein.
  - A modified RNA polymerase to synthesise the RNA primer.
  - The products of dnaA, dnaB, dnaC-D, dnaE & dnaG genes
  - Polynucleotide ligase, a joining enzyme.

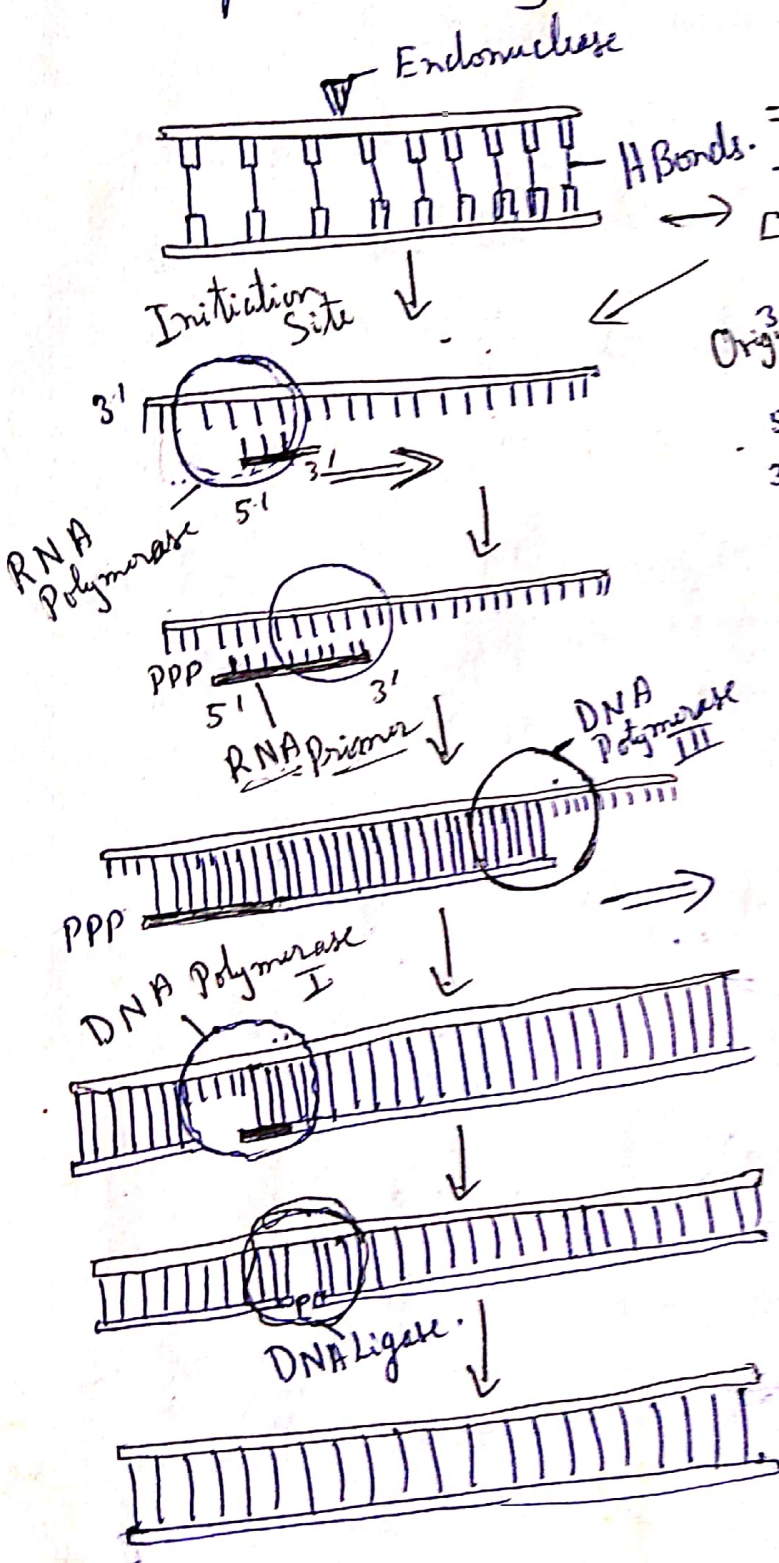


- x) Origin is the specific point in the DNA strand from where replication starts.
- x) Endonuclease an incision enzyme incise or nicked the DNA strand.
- x) DNA unwinding / winding / binding protein <sup>helps in</sup> unwinding of the DNA double helix.
- x) Superhelix relaxing protein relieved the strain imposed due to unwinding of double helix.
- x) DNA template close to the origin of replication synthesize RNA primer. ~~+~~ This proc RNA polymerase catalyse this process.
- x) Now Deoxyribonucleotides are added to the 3' end of the RNA primer synthesizing DNA fragment complementary to template, with the help of enzyme DNA polymerase III.
- x) DNA polymerase I degrades RNA primer and at the same time catalyse a short DNA synthesis, which take place of RNA primer.
- x) DNA ligase join this short DNA fragment to the main strand.
- x) One strand <sup>may</sup> grow continuously on one template and one in fragments (Okazaki fragments). But both in 5' → 3' direction. Thus one strand grows forward and other strand grows backward.



x) Okazaki fragments are joined by polynucleotide ligase enzyme to make a constant continuous strand.

x) Replication may be unidirectional or bidirectional.



Replication of DNA (General)

