

DNA replication related enzymes

In Prokaryotes

Helicase: Uses ATP hydrolysis as a driving force to break hydrogen bonds between nitrogenous base pairs

DnaG (Primase): Adds RNA primer

RNase H: degrades RNA primer

DNA polymerase I: exonuclease activity + removes RNA primer

DNA polymerase II: repair

DNA polymerase III: main enzyme that adds nucleotide in 5' -> 3' direction

Topoisomerase: relieves stress (supercoiling) created by unwinding

Ligase: ligates okazaki fragments in 3' -> 5' direction

In Eukaryotes

Helicase

Gyrase

Ligase

Topoisomerase

DNA polymerase Alpha: starts replication at the primer + proof reading

DNA polymerase Beta: recombines chromosomes during proof reading

DNA polymerase Delta: synthesizes lagging strand + 3' -> 5' exonuclease activity - associated with protein

PCNA

DNA polymerase Epsilon: synthesizes leading strand + 3' -> 5' exonuclease

DNA polymerase Gamma: replicates mitochondrial DNA

Transcription related enzymes

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