

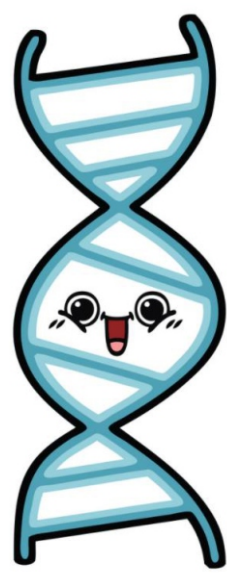
MIND MAP

DNA Replication



COMPONENTS OF DNA REPLICATION

DNA TEMPLATE



HELICASE

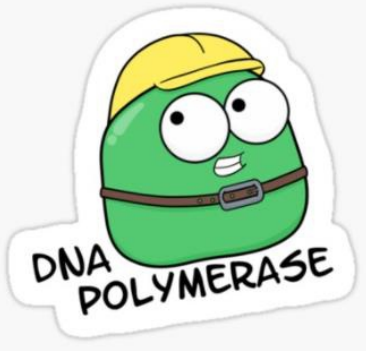


ENZYMES

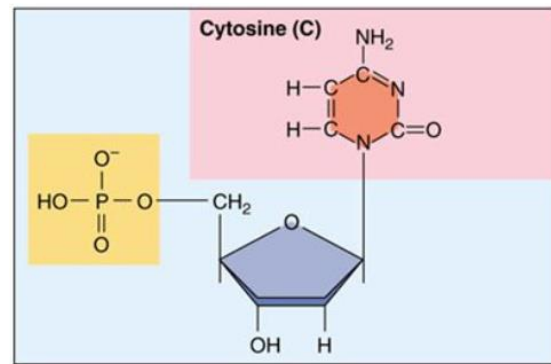
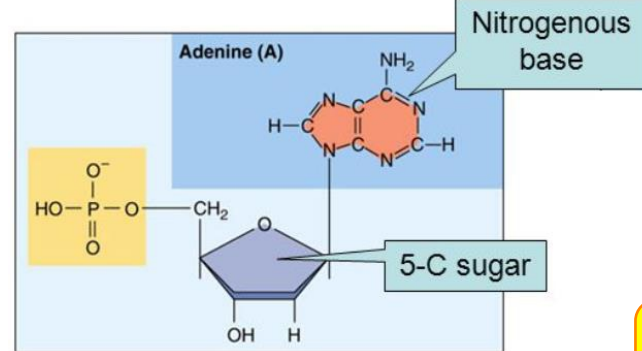
LIGASE



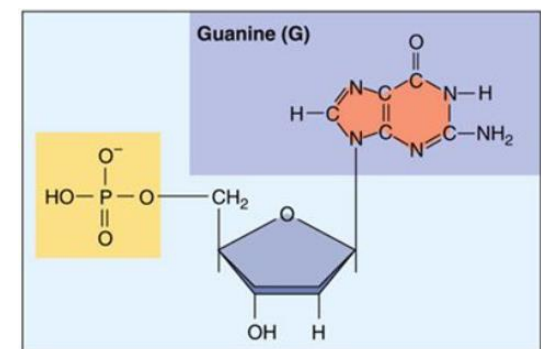
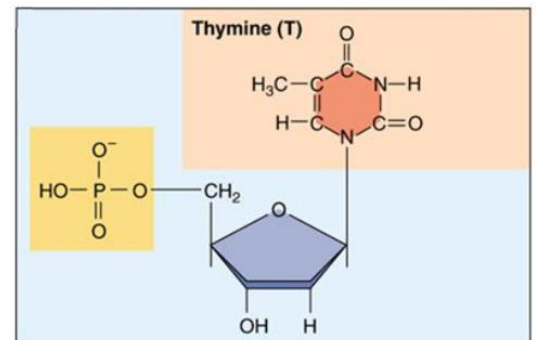
DNA POLYMERASE



PRIMASE



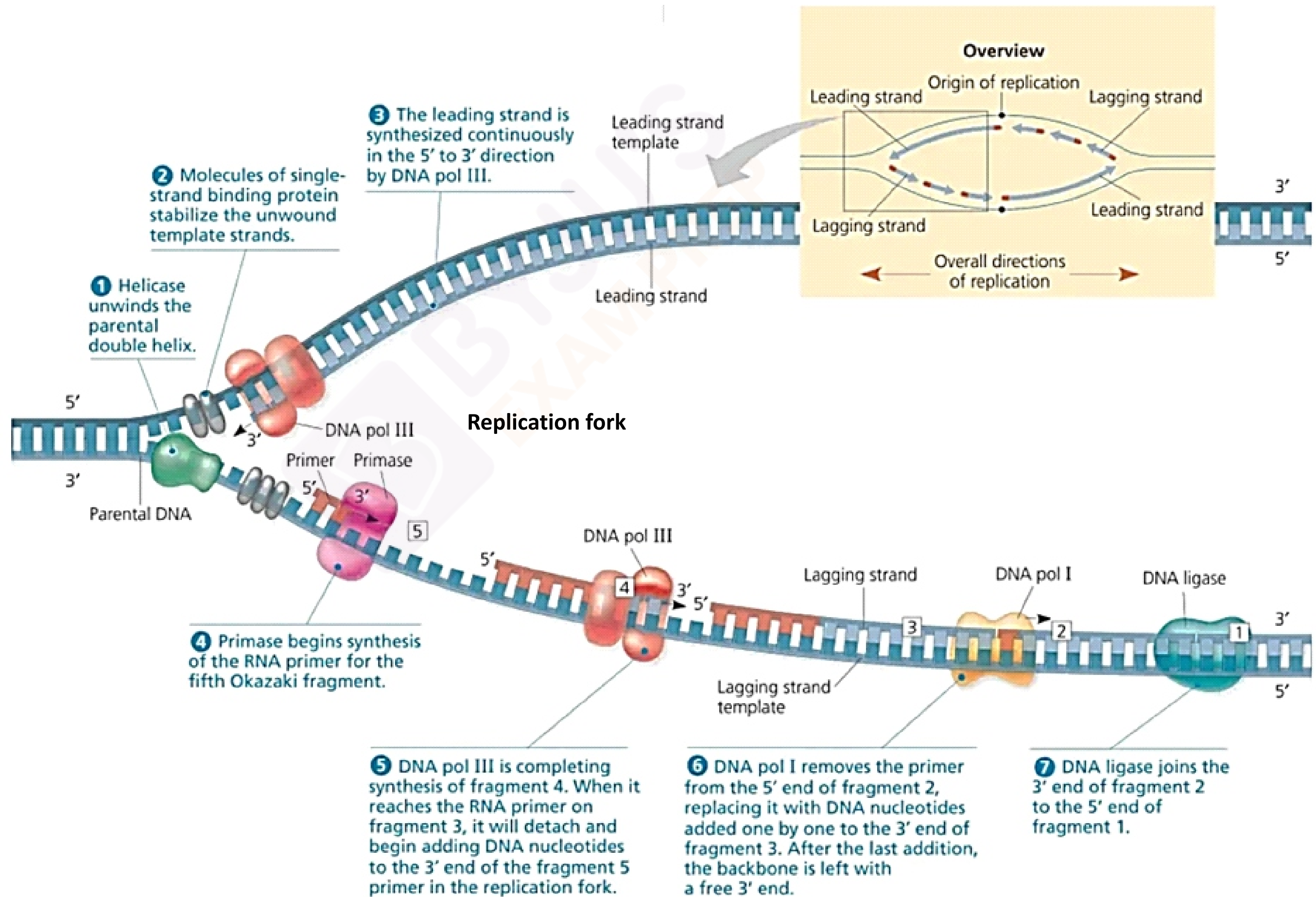
NUCLEOTIDES



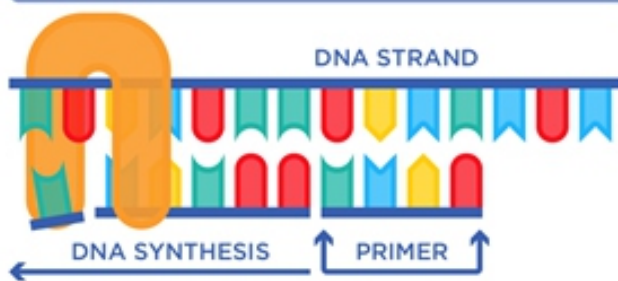
ENZYMES/PROTEINS	FUNCTION
HELICASE	Unwinds the DNA prior to replication initiation and result in formation of replication fork
PRIMASE	Synthesizes RNA primers needed for DNA replication initiation
DNA POLYMERASE I	Removes RNA primers and replaces with newly synthesized DNA (Exonuclease Activity)
DNA POLYMERASE II	Repairing role
DNA POLYMERASE III	Main DNA polymerizing enzyme adding nucleotides in 5'-3' direction
LIGASE	Seal the gaps and joins the ends of DNA with each other
SLIDING CLAMP (β-CLAMP)	Hold the main DNA polymerizing enzyme in place during replication
TOPOISOMERASE	Relieves the stress in DNA by unwinding, nicking, and resealing the DNA
SINGLE-STRANDED BINDING PROTEIN (SSB)	Binds to ssDNA to avoid DNA rewinding back

PROKARYOTIC DNA POLYMERASES	FUNCTIONS	EUKARYOTIC DNA POLYMERASES	FUNCTIONS
DNA POLYMERASE I	Removal of RNA primers, proofreading and repair	DNA POLYMERASE α	Synthesis of RNA primers for leading and lagging strand
DNA POLYMERASE II	Repair enzyme	DNA POLYMERASE β	DNA repair
DNA POLYMERASE III	Main DNA polymerizing enzyme	DNA POLYMERASE γ	Replication in mitochondria
		DNA POLYMERASE δ	Main DNA polymerizing enzyme
		DNA POLYMERASE ε	DNA repair along with its role in DNA replication

DNA REPLICATION



1 When DNA gets copied, a 'primer' gets the process started.



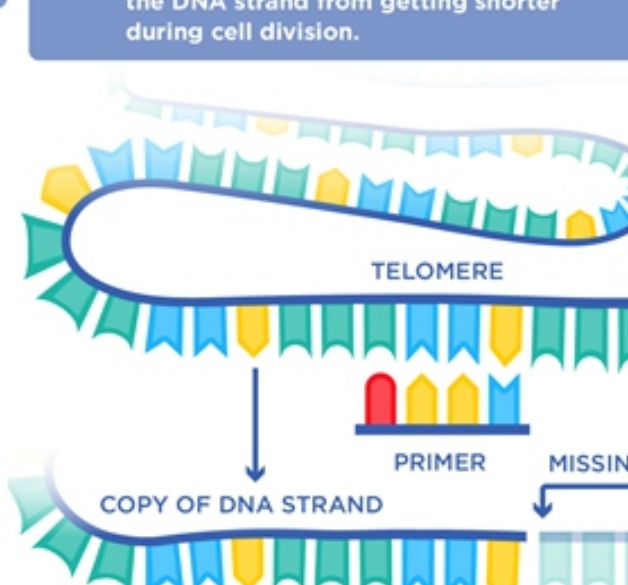
2 Since the primer does not attach to the very end of the DNA strand, the copy is missing a section of DNA.



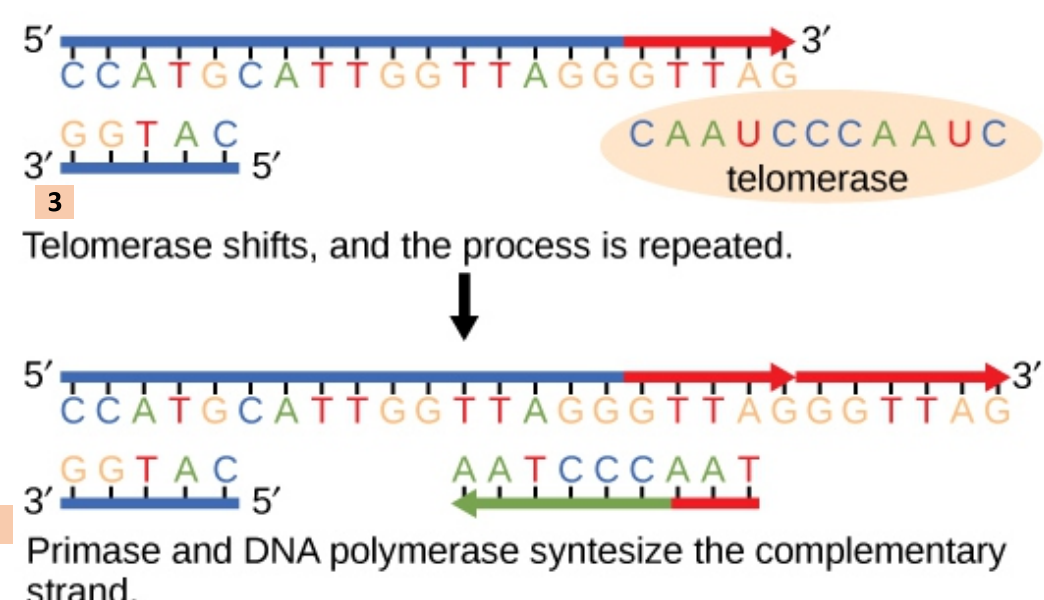
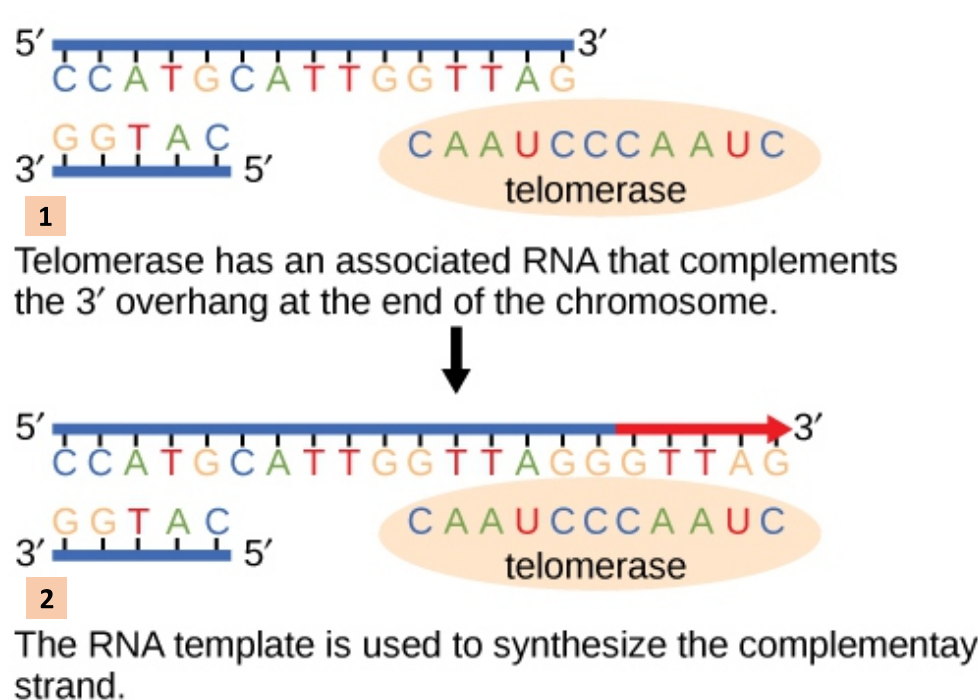
3 With each cell division, the copied DNA loses more of the end section.



4 Telomeres are repeated sequences on the ends of DNA strands. They help protect the DNA strand from getting shorter during cell division.



TELOMERE REPLICATION



CSIR NET

Life Science 2022

A Foundation Course

Complete Prep of Life Science for June 2022 Aspirants

Why take this course?

- 400+ Hrs Live Classes & Doubt Sessions for complete conceptual clarity
- 3000+ Practice Questions covering all levels of difficulty
- 20+ Unit Wise Study Modules & Mind Maps
- 50+ Full Mock Tests, Chapter Wise Mock Tests, PYQs Mock Tests

