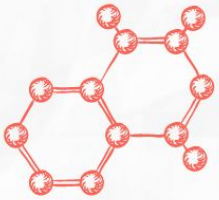
Name _____ Date _____

DNA Replication



Fill in the blanks:

1. _____ are enzymes involved in a variety of activities, including replication, proofreading, and mismatch repair.
2. _____ modify double-stranded DNA supercoiling by transiently cleaving one or both strands of DNA.
3. _____ enzymes synthesizes short RNA sequences.
4. Short nucleic acid sequences, known as _____ are necessary for replication initiation.
5. Following DNA unwinding, _____ stabilize individual parental DNA strands, preventing the strands from repairing.
6. _____ synthesizes the leading strand from the 5' to 3' direction following RNA primer addition.
7. _____ "glues" Okazaki fragments together by catalyzing the formation of a phosphodiester bonds at single-stranded DNA breaks.
8. After cleaving primers from both the leading and lagging strand,_____replaces the primers with DNA nucleotides.
9. While not a major player in chromosomal replication,_____has both proofreading and primase capabilities.
10. The _____ is a single-stranded DNA molecule that is replicated from the 5' to 3'.
11. The _____ is a single-stranded DNA molecule synthesized in the 3' to 5' direction during DNA replication.
12. _____ are short DNA sequences synthesized discontinuously on the lagging strand during replication. They are later joined together via the enzyme .
13. _____ enzymes bind to and separate double-stranded DNA into single-strands during replication.
14. _____ is the process in which polymerase enzymes detect and replace incorrectly paired nucleotides.
15. _____ is a strand-specific process in which enzymes identify incorrect nucleotides inserted into newly synthesized DNA daughter strands. To do so, the parental DNA strand is used as template.
16. _____ are a class pf enzymes that remove mispaired individual nucleotides via hydrolysis of phosphodiester bonds.
17,_____ is a molecular technique used to perform DNA amplification, or replication of specific sequences.

Word bank:

Helicase Okazaki fragments DNA polymerases Topoisomerase DNA ligase (2x) DNA polymerase I DNA polymerase II DNA polymerase III Primase Single-stranded DNA binding proteins Mismatch repair Polymerase chain reaction Lagging strand Primers Exonucleases Exonucleases Leading strand Proofreading