Word Roots & Vocabulary I

**helic-** = a spiral (*helicase*: an enzyme that untwists the double helix of DNA at the replication forks)

**liga-** = bound or tied (*DNA ligase*: a linking enzyme for DNA replication)

**semi-** = half (*semiconservative model*: type of DNA replication in which the replicated double helix consists of one old strand, derived from the old molecule, and one newly made strand)

**telos-** = an end (*telomere*: the protective structure at each end of a eukaryotic chromosome)

**DNA ligase**- = A linking enzyme essential for DNA replication; catalyzes the covalent bonding of the 3’ end of a new DNA fragment to the 5’ end of a growing chain.

**DNA polymerase**- = An enzyme that catalyzes the elongation of new DNA at a replication fork by the addition of nucleotides to the existing chain.

**Double helix**- = The form of native DNA, referring to its two adjacent polynucleotide strands wound into a spiral shape.

**Lagging strand**- = A discontinuously synthesized DNA strand that elongates in a direction away from the replication fork.

**Leading strand**- = The new continuous complementary DNA strand synthesized along the template strand in the mandatory 5’ ( 3’ direction.

**Mismatch repair**- = The cellular process that uses special enzymes to fix incorrectly paired nucleotides.

**Nuclease**- = An enzyme that hydrolyzes DNA and RNA into their component nucleotides.

**Nucleotide excision repair**- = The process of removing and then correctly replacing a damaged segment of DNA using the undamaged strand as a guide.

**Okazaki fragment**- = A short segment of DNA synthesized on a template strand during DNA replication. Many Okazaki fragments make up the lagging strand of newly synthesized DNA.

**Origin of replication**- = Site where the replication of a DNA molecule begins.

**Primase**- = An enzyme that joins RNA nucleotides to make the primer.

**Primer**- = A polynucleotide with a free 3´ end, bound by complementary base pairing to the template strand, that is elongated during DNA replication.

**Replication fork**- = A Y-shaped region on a replicating DNA molecule where new strands are growing.

**Semiconservative model**- = Type of DNA replication in which the replicated double helix consists of one old strand, derived from the old molecule, and one newly made strand.

**Single-strand binding protein**- = During DNA replication, molecules that line up along the unpaired DNA strands, holding them apart while the DNA strands serve as templates for the synthesis of complementary strands of DNA.

**Telomerase**- = An enzyme that catalyzes the lengthening of telomeres. The enzyme includes a molecule of RNA that serves as a template for new telomere segments.

**Telomere**- = The protective structure at each end of a eukaryotic chromosome. Specifically, the tandemly repetitive DNA at the end of the chromosome’s DNA molecule. *See also* repetitive DNA.

**Topoisomerase**- = A protein that functions in DNA replication, helping to relieve strain in the double helix ahead of the replication fork.