

# TAKE OUT #3

- DNA replication is semiconservative because
  - both parental strands serve as templates for transcription.
  - only one parent strand serves as a template for transcription.
  - DNA polymerase is socially liberal but fiscally responsible.
  - promoters have consensus sequences.
- In a deoxyribonucleotide, 5' and 3' refer to the
  - carbons where (respectively) the pyrimidine and purine bases are attached.
  - short pieces of RNA that initiate DNA replication.
  - carbons where (respectively) the phosphate and hydroxyl groups are attached.
  - the number of nucleosomes in homologous chromosomes.
- One RNA primer is sufficient for initiating replication of the leading strand whereas a new primer is needed for each Okazaki fragment on the lagging strand.
  - T
  - F
- An RNA primer is required to initiate DNA replication because
  - DNA polymerase can only add nucleotides to a free 3' OH.
  - the RNA primer opens up the helix and makes single stranded DNA.
  - the RNA primer joins Okazaki fragments and remains in the daughter strands.
- There are several different DNA polymerases, each with unique properties. Some of the DNA polymerases can synthesize DNA strands in the 5' → 3' direction and also have DNA exonuclease activity in the 3' → 5' direction.
  - T
  - F
- Draw a sketch of a eukaryotic bidirectional origin of DNA replication. In your diagram,
  - Show the overall direction of replication for each replication fork.
  - Label the leading and lagging strands at each of the replication forks.
  - Label the two strands where DNA synthesis occurs via Okazaki fragments.

(2pts) Overall direction at each fork - 2pts for two correct forks  
1pt for one correct fork

(2pts) Leading/lagging strands labeled - 2pts for two correct forks  
1pt for one correct fork

0pts for a bidirectional bubble

(2pts) site of DNA synthesis (okazaki) labeled - 2pts for two correct forks  
1pt for one correct fork

(2pts EXTRA CREDIT) artwork - 2pts for correct, colorful, artistic drawing  
1pt for correct, nice, pencil drawing  
1pt for incorrect, but really nice drawing

