

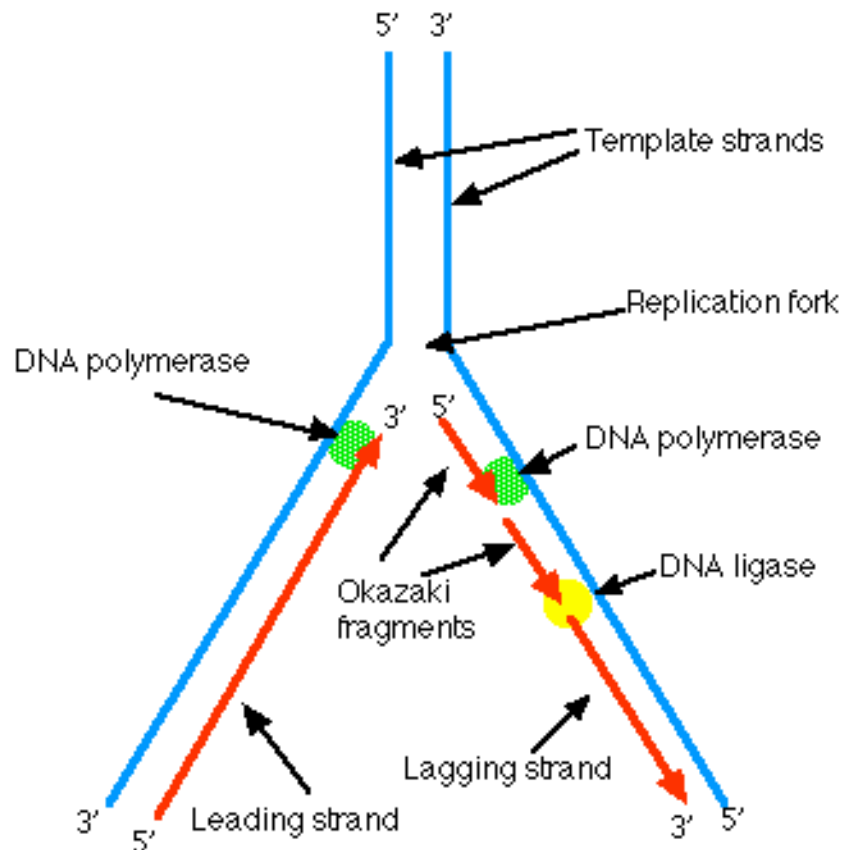
## DNA and RNA Review

1. Who won the Nobel Prize for describing DNA?
2. Who's critical data was used without her knowledge and consent by the DNA model builders?
3. What is pictured in photo 51?
4. What key revelation about DNA was revealed by photo 51?
5. A strand of DNA is described structurally as a double helix, and resembles a twisted ladder. In the twisted ladder analogy, what do the rungs (part that you step on) represent and what do the rails (part that you hold on to) represent?
6. Describe how a strand of DNA replicates itself. Include the names and roles of the 2 key enzymes.
7. Draw a replication fork. Label the leading and lagging strands. Draw arrows indicating the direction of replication on each side.
8. What does DNA stand for?  
What does RNA stand for?
9. How many primers are found on the leading strand? The lagging strand?
10. What is an Okazaki fragment and where are they found?
11. In what 3 ways do DNA and RNA differ?(hints: sugars, strands, bases)
12. What are the complementary base pairs for DNA?
13. What are the complementary base pairs for RNA?
14. Upon analysis, a double stranded section of DNA was comprised of 15 % T. What is the % of A,G,C and U?
15. Fill in the missing bases for the following DNA replication sequence.

AGCTTCGAATCAAGCTGAGTTCCGATCATGC  
TCGAAGCTTAGTTTCG

# KEY

1. Who won the Nobel Prize for describing DNA? **Watson and Crick**
2. Who's critical data was used without her knowledge and consent by the DNA model builders?  
**Rosalind Franklin**
3. What is pictured in photo 51? **The wet form of DNA**
4. What key revelation about DNA was revealed by photo 51? **It's an antiparallel double helix**
5. A strand of DNA is described structurally as a double helix, and resembles a twisted ladder. In the twisted ladder analogy, what do the rungs (part that you step on) represent and what do the rails (part that you hold on to) represent? **rungs = base pairs**      **rails = sugar phosphate backbone**
6. Describe how a strand of DNA replicates itself. Include the names and roles of the 2 key enzymes  
A portion of the DNA unwinds and opens up (unzips). On one side of the open DNA (leading strand) the replication works toward the fork. Here an RNA primer is added to the parent strand an enzyme **DNA polymerase** binds to and moves along fitting in new complementary nucleotides. On the second side of the open DNA (lagging strand), the replication works away from the fork. Again an RNA primer is followed by **DNA polymerase** which binds to the open DNA and moves along fitting in new complementary nucleotides. However in this direction only smaller fragments called "Okazaki fragments" are formed and these must eventually be stitched together by another enzyme **DNA ligase**.
7. Draw a replication fork. Label the leading and lagging strands. Draw arrows indicating the direction of replication on each side.



8. What does DNA stand for? **Deoxyribonucleic Acid**  
What does RNA stand for? **Ribonucleic Acid**
9. How many primers are found on the leading strand? **ONE** The lagging strand? **More than one.**
10. What is an Okazaki fragment and where are they found? **Fragments of DNA found only on the lagging strands of DNA during replication.**
11. In what 3 ways do DNA and RNA differ?(hints: sugars, strands, bases)
  - i) **RNA has ribose as sugar (DNA deoxyribose)**
  - ii) **RNA is single stranded (DNA double)**
  - iii) **RNA has uracil DNA has thymine as base**
12. What are the complementary base pairs for DNA?  
**Adenine pairs with Thymine**  
**Cytosine pairs with Guanine**
13. What are the complementary base pairs for RNA?  
**Adenine pairs with Uracil**  
**Cytosine pairs with Guanine**
14. Upon analysis, a double stranded section of DNA was comprised of 15 % T. What is the % of A,G,C and U? **15% A, 35% G, 35% C and 0% U**
15. Fill in the missing bases for the following DNA replication sequence.  
AGCTTCGAATCAAGCTGAGTTCCGATCATGC  
TCGAAGCTTAGTTCG**ACTCAAGGCTAGTACG**