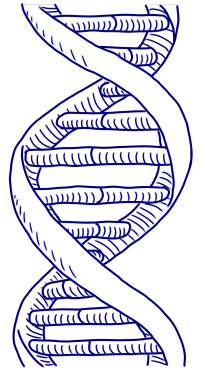


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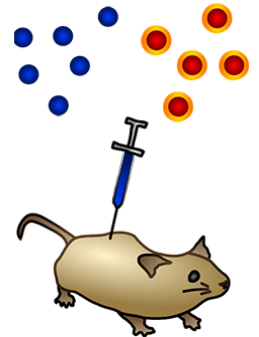
Reinforcement: The Molecule of Heredity (DNA)

1. A nucleotide is made of three parts: a _____ group, a five carbon _____, and a nitrogen containing _____.
2. The sides of the DNA ladder consist of alternating _____ and phosphates.
3. The 5' end of a single DNA strand contains a free _____, while the 3' end contains a free _____.
4. Chromosomes consist of DNA wrapped around _____.
5. DNA was not thought to be the genetic blueprint originally; instead many scientists hypothesized that _____ contained the genetic code and blueprint of life. (They were later proven wrong.)
6. Purines have _____ rings, and pyrimidines have _____ ring.



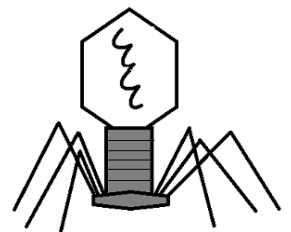
7. Check each of the following statements that are true with regard to Griffith's experiments.

- a. _____ Griffith discovered transformation in bacteria.
- b. _____ Mice injected with smooth bacteria quickly became sick and died.
- c. _____ Encapsulated bacteria can become "naked" bacteria.
- d. _____ Bacteria that do not have capsules tend to be harmless.
- e. _____ Smooth bacteria develop a capsule only after exposure to the DNA of encapsulated (rough) bacteria.
- f. _____ Griffith's transforming factor was the protein in the capsule.
- g. _____ Transformation allows bacteria to acquire new genes.
- h. _____ Enzymes that destroyed DNA would prevent transformation.



8. Check each of the following statements that are true with regard to the Hershey-Chase experiment.

- a. _____ DNA was labeled with radioactive phosphorus.
- b. _____ Protein was not labeled.
- c. _____ Radioactive sulfur was found in the offspring phages after they emerged from the cell.
- d. _____ Phage proteins were not transmitted to the host cell or to offspring.
- e. _____ New phages contained radioactive phosphorus in their DNA.



9. Chargaff's rule states that the DNA of any species contains equal amounts of _____ & _____ and also equal amounts of _____ & _____.

10. In DNA, thymine is complementary to _____ ; cytosine is complementary to _____

11. In a strand of DNA, the percentage of thymine is 30 %.

What is the percentage of cytosine in the same DNA strand? _____

12. Number the steps of DNA replication in the correct order (1, 2, 3)

_____ Polymerase travels down the DNA parent strand from the 3' to 5' direction.

_____ DNA strands are unzipped

_____ Ligase binds Okazaki fragments together

13. Why is DNA replication called "semiconservative"? _____

14. What enzyme unwinds or unzips the parent strand? _____

15. The junction between separated strands is called the _____

16. What enzyme synthesizes the new DNA strand by adding bases? _____

17. What enzyme binds fragments of DNA on the lagging strand? _____

18. DNA polymerase only travels in the _____ to _____ direction.

19. On the diagram:

Label the 3' and 5' ends.

Circle a nucleotide.

Label the sugar and phosphate.

Label the bases that are not already labeled

20. The two sides of the DNA helix are held together by _____

21. Write out the complete name for DNA: _____

22. Name the scientist(s) responsible for each of the following discoveries.

_____ Bacterial transformation

_____ The base-pair rule

_____ DNA was the hereditary material of viruses

_____ Determined the shape of DNA from X-rays

_____ Established the entire structure of DNA

