

Chapter 16 Study Guide

1. What did Griffith observe during his transformation experiments? What conclusions did he make from these experiments? Why was this significant?
 - ① DNA from heated (Killed) virulent (S) became part of non-virulent (R) + became disease causing.
 - ② Descendants then carry disease causing DNA
 - ③ Something being passed ↓ from gen to gen injected into cell + inherited
2. What was the independent variable in the Hershey and Chase experiments? Why was the choice of these variables key to proving that DNA was the heritable factor not proteins?
 - ① what the phage was labeled with (Sulfur or Phos)
 - ② Sulfur in proteins P in DNA so could see what was inherited
3. What was Erwin Chargaff's contribution to the discovery of the structure of DNA?
 - %A = %T
 - %C = %G

H N¹⁵ P-Gen
 H F₁
 H F₂

4. Describe how Meselson and Stahl's experiment was able to prove Crick's hypothesis that DNA replication followed the semiconservative model.
 - N¹⁵ heavy isotope
 - N¹⁴ lighter
 - heavy strands → N¹⁴ → N¹⁵
5. In a species of bacteria, the amount of adenine was determined to be 23.5%. What would be the percent of the other three bases?
 - ~23.5% T, 26.5% C, 26.5% G
6. Identify the key principles that Watson and Crick used to solve the mystery of the structure of the double helix.
 - pyrimidine - purine
 - 3 ring diameter
7. What is the monomer of DNA? What are the three parts that make up this structure?
 - nucleotide
 - A-T (2 H bonds)
 - C-G (3 H bonds)
8. What type of bonds hold one strand of DNA to the complimentary strand?
 - weak H-bonds
9. Compare and contrast replication in prokaryotes and eukaryotes.
 - Pro: single pt 1 DNA
 - Eukar: multiple points multiple

10. Distinguish between the function of DNA polymerase I and III in DNA replication.
 - replaces primers w/ DNA
 - add nucleotides to building strand (builder)
11. What is the functions of the RNA primers and the Okazaki fragments in DNA replication?
 - designate start region for replication
 - (5'-3')
12. Distinguish between the leading and lagging strand. Be very specific in their role during DNA replication and the direction in which the replication occurs.
 - moves in same direction as fork (5'-3')
 - opposite of fork
13. What are telomeres and what is the function of telomerase? What problem does telomerase prevent?
 - repeating DNA seq. at ends
 - keeps 3'-5' end from shortening
 - shortening of chromosomes
 - lays down fragments
 - Helicase - unwinds + breaks H-bonds