

MBB 331 Quiz 1 (Summer 2026)

Instructions: Fill in your hard copy bubble sheet and hand it in during your tutorial in week 2.

- The early notion of one-gene/one enzyme-hypothesis was not true because of which of the following?
 - Many genes contain the information for making polypeptides that are not enzymes
 - The end product of some genes are not polypeptides
 - An enzyme can be composed of more than one polypeptide
 - All of the answers are correct
 - None of the answers are correct
- Which of the following conclusions was drawn from Griffith's experiment with mice?
 - DNA is not involved in transformation
 - Transformation requires RNA
 - Heat-killed virulent bacteria cannot influence living cells
 - Only proteins carry genetic information
 - Non-virulent bacteria can become virulent through transformation
- The double-stranded DNA genome of human herpes simplex virus 1 has about 1.05×10^5 base pairs. How many full double-helical turns does this DNA contain?
 - 10^4 turns
 - 10 turns
 - 10^3 turns
 - 100 turns
 - 10^5 turns
- The linking number (L) is a topological property of closed dsDNA. When the linking number changes, some of the resulting strain is usually compensated by writhe (supercoiling) and some by changes in twist, giving rise to the equation:
 - $L = T + W$
 - $L = T * W$
 - $L = T / W$
 - $L = T - W$
 - $L + T = W$
- You purify the nucleic acid in the Ebola virus. When you heat the nucleic acid, the UV light absorption at 260 nm does not increase. You also determine that uracil is present in the nucleic acid. What nucleic acid is present and what is the likely structure of the nucleic acid?
 - Double stranded DNA
 - Single stranded DNA
 - Double stranded RNA
 - Single stranded RNA
 - DNA/RNA duplex

6. The best method for separating large DNA fragments **greater than 1Mb** is by **standard** electrophoresis in 1% agarose gels.
- A. True
 - B. False
7. The ribo- and deoxy-ribonucleotide synthesis pathways of cells grown in the presence of isotopes will use the radioactive atoms in the construction of DNA and RNA. Which one of the following isotopes would NOT be found in either DNA or RNA?
- A. ^{32}P
 - B. ^{35}S
 - C. ^3H
 - D. ^{15}N
 - E. ^{14}C
8. The double-stranded DNA from the human herpes simplex virus (HSV) contains 34% guanine. What percent of the HSV genome is adenine?
- A. 68%
 - B. 16%
 - C. 32%
 - D. 34%
 - E. 8%
9. The complementary sequence of one of the following is a palindrome. Which one?
- A. CCTTCC
 - B. AATAT
 - C. GCTAGC
 - D. TTAATT
 - E. AGCTTCGA
10. Which structural feature distinguishes a nucleoside from a nucleotide?
- A. Lack of phosphate group
 - B. Presence of ribose
 - C. Additional base pairing
 - D. A phosphodiester bond
 - E. Being found only in RNA
11. When 84 bp of DNA is underwound to 7 turns instead of 8, what happens?
- A. No change
 - B. DNA melting
 - C. Positive supercoiling
 - D. B-Z formations
 - E. Negative supercoiling