

13 RNA and Protein Synthesis

Chapter Test A

Multiple Choice

Write the letter that best answers the question or completes the statement on the line provided.

- _____ 1. Which of the following are found in both DNA and RNA?
- ribose, phosphate groups, and adenine
 - deoxyribose, phosphate groups, and guanine
 - phosphate groups, guanine, and cytosine
 - phosphate groups, guanine, and thymine

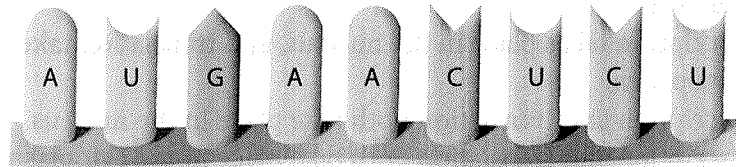


Figure 13-1

- _____ 2. Which nucleotide in Figure 13-1 indicates the nucleic acid above is RNA?
- uracil
 - guanine
 - cytosine
 - adenine
- _____ 3. What is produced during transcription?
- RNA molecules
 - DNA molecules
 - RNA polymerase
 - proteins
- _____ 4. During eukaryotic transcription, the molecule that is formed is
- complementary to both strands of DNA.
 - identical to an entire single strand of DNA.
 - double-stranded and inside the nucleus.
 - complementary to part of one strand of DNA.
- _____ 5. There are 64 codons and 20 amino acids. Which of the following is true?
- Several different codons can specify the same amino acid.
 - Each codon specifies a different amino acid.
 - Some amino acids have no link to a codon.
 - Each amino acid is specified by only one codon.
- _____ 6. A promoter is a
- binding site for DNA polymerase.
 - binding site for RNA polymerase.
 - start signal for replication.
 - stop signal for transcription.
- _____ 7. During translation, the type of amino acid that is added to the growing polypeptide depends on the
- codon on the mRNA and the anticodon on the rRNA.
 - anticodon on the mRNA and the anticodon on the tRNA.
 - anticodon on the rRNA and the codon on the mRNA.
 - codon on the mRNA and the anticodon on the tRNA.

- _____ 8. What is an exception to the central dogma of molecular biology?
- Viruses sometimes transfer information from RNA to DNA.
 - Viruses sometimes transfer information from DNA to RNA.
 - Viruses sometimes transfer information from proteins to DNA.
 - Viruses can translate without RNA.
- _____ 9. In eukaryotes
- Transcription takes place in the cytoplasm, and translation takes place in the nucleus.
 - Transcription takes place in the nucleus, and translation takes place in the cytoplasm.
 - Transcription and translation both take place in the nucleus.
 - Transcription and translation both take place in the cytoplasm.
- _____ 10. Which of the following is the name of a type of chromosomal mutation AND a type of gene mutation?
- substitution
 - insertion
 - deletion
 - inversion
- _____ 11. What are some characteristics of polyploidy plants?
- They tend to be weaker and smaller than diploid plants.
 - They tend to be bigger and stronger than diploid plants.
 - They tend to be weaker, but bigger than diploid plants.
 - They tend to be smaller, but stronger than diploid plants.
- _____ 12. A *lac* repressor turns OFF the *lac* genes by
- binding to the promoter.
 - DNA polymerase.
 - binding to the operator.
 - binding to the *lac* genes.
- _____ 13. Gene regulation in eukaryotes
- usually involves operons.
 - is simpler than in prokaryotes.
 - allows for cell specialization.
 - includes the action of an operator region.
- _____ 14. What regulates the expression of most eukaryotic genes?
- miRNA
 - transcription factors
 - dicer enzymes
 - silencing complexes
- _____ 15. Hox genes
- determine when bacteria replicate their chromosome.
 - determine where the flagellum is on a bacterium.
 - determine when a dog's cells replicate their DNA.
 - determine the location of a dog's ears.