

Biology-Chapter8 (Biology-Chapter8)

Name: _____ Date: _____
— —

1. Cells secrete proteins, often as enzymes, that have been engineered or directed by the DNA in the nucleus. Which processes are involved in protein synthesis?

- A. transfer to RNA, then to amino acids
- B. transcription into RNA, then translation into amino acids
- C. replication of DNA, then transcription into enzymes
- D. translation into RNA, then replication into DNA

2. During translation, the tRNA anti-codon GGA codes for what amino acid?

- A. alanine
- B. tyrosine
- C. proline
- D. glutamic

3. If the sequence of nucleotides were AGC on a strand of DNA, what would be the nucleotide sequence on a strand of mRNA formed during transcription?

- A. ACG
- B. UCG
- C. TGC
- D. TCG

4.

The function of mRNA is to

- A. carry genetic information from the nucleus to the site of protein synthesis.
- B. begin the "unzipping" of the DNA molecule.
- C. maintain homeostasis within the cell during mitosis.
- D. direct the movement of centrosomes during meiosis.

5. What is (are) formed during replication?

- A. amino acids
- B. DNA
- C. protein
- D. RNA

6. Which is in the shape of a double helix?

- A. amino acid
- B. deoxyribonucleic acid
- C. enzyme
- D. protein

7. Messenger RNA carries genetic information in groups of three bases known as

- A. amino acids.
- B. codons.
- C. enzymes.
- D. helixes.

8. Which **best** shows the proper code-structure sequence in protein synthesis?

- A. DNA, mRNA, mRNA, polypeptide, enzyme
- B. DNA, mRNA, tRNA, polypeptide, enzyme
- C. enzyme, polypeptide, mRNA, mRNA, DNA
- D. mRNA, DNA, mRNA, enzyme, polypeptide

9. Proteins are built up or synthesized by the code stored in the DNA molecules. Which concept about protein synthesis in an organism is NOT correct?

- A. The DNA code of nitrogen bases is the same as the protein code.
- B. RNA is a chemical that acts as a messenger for DNA.
- C. The ribosomes are the parts of cells where proteins are manufactured.
- D. The sequence of DNA bases determines the arrangement of amino acids in a protein.

10.

Which of the following DNA base pairs are correct?

- A.
- B.
- C.
- D.

11. In living things, whether plant or animal, the carrier of hereditary instructions is

- A. DNA.
- B. genetic vacuole.
- C. messenger RNA.
- D. mitochondria in animals, chloroplasts in plants.

12. The process by which the order of bases in messenger RNA (mRNA) codes for the order of amino acids in a protein is called

- A. translation
- B. transcription
- C. replication
- D. nondisjunction

13. Which of the following correctly shows the shape of a DNA molecule?

- A.
- B.
- C.
- D.

14. Which of the following shows how information is transformed to make a protein?

- A. DNA RNA protein
- B. gene chromosome protein
- C. cell respiration ATP protein
- D. ATP amino acid protein

15. Why is the particular sequence of bases in a segment of DNA important to cells?

- A. Some base sequences code for protein production.
- B. Some base sequences cause the release of lipids from the nucleus.
- C. Some base sequences contain the order of sugars in polysaccharides.
- D. Some base sequences produce electrical signals sent to the cytoplasm.

This online assessment item contains material that has been released to the public by the Massachusetts Department of Education.

16.

Which statement correctly describes the difference between DNA and RNA?

- A. RNA contains the base thymine, while DNA contains the base uracil.
- B. DNA contains the sugar ribose, while RNA has the sugar deoxyribose.
- C. RNA is shaped like a single chain, while DNA is shaped like a double-helix.
- D. RNA is always found inside the nucleus of a cell, while DNA is often found outside of the nucleus of a cell.

17.

Which statement BEST describes the role that DNA plays in storing and transmitting cellular information?

- A. DNA acts as a molecular blueprint for proteins, storing information in the nucleus.
- B. DNA carries amino acids to the ribosome in the construction of proteins.
- C. DNA acts as a message that tells ribosomes what proteins to make.
- D. DNA travels from cell to cell carrying messages.

18.

A certain gene for albinism occurs in alligators. When the defective gene is present, the alligator's skin is white and the animal has blue eyes. The DNA gene sequences for the normal coloration gene and for the albino gene are shown.

Normal: AAC CAC GGT AGC CCC

Albino: AAC CAA GGT AGC CCC

What type of DNA point mutation leads to albino alligators?

- A. deletion
- B. duplication
- C. insertion
- D. substitution

19.

What type of information-coding biomolecule NEVER has uracil in its sequence?

- A. DNA
- B. messenger RNA
- C. ribosomal RNA
- D. transfer RNA

20.

A certain sequence of DNA codons is shown.

AAC CAT CGG

How would these codons be different if this were a messenger RNA transcript of the same sequence?

- A. There would be no difference between the two sets of codons.
- B. The codons would be complementary resulting in TTG GTA GCC.
- C. The codons would be the same, but T would change to U, resulting in AAC CAU CGG.
- D. The codons would be complementary and T would be changed to U, resulting in UUG GUA GCC.

21.

What is the primary reason that DNA is stored in the nucleus of a cell for the purposes of information transfer?

- A. When the DNA is in one central location, ribosomes can migrate to the nucleus to read the code and make their proteins.
- B. DNA is in the nucleus because the nucleus also stores amino acids to make the proteins in the directions.
- C. The chromosomes where the DNA code is stored are much too large to be read by individual ribosomes, so many RNA messages are sent from the nucleus.
- D. The DNA is housed in the nucleus because the nucleus is passed on to daughter cells in one intact package, when cells divide.

22.

A type blood-clotting disorder, known as Factor V deficiency, results when a single DNA base is deleted from the gene for the protein. The correct sequence for this gene appears as this:

AAC TAT TTG TAG CAT CCG GAG

Based on this correct sequence, which defective DNA sequence would result in Factor V deficiency?

Defective I: AAC TAT TTG GTA GCA TCC GGA G

Defective II: AAC TTT TTG TAG CAT CCG GAG

Defective III: AAC ATT TGT AGC ATC CGG AG

Defective IV: AAC TAT TTG TTG TAG CAT CCG GAG

- A. Defective Sequence I
- B. Defective Sequence II
- C. Defective Sequence III
- D. Defective Sequence IV