

# Chapter 11

## DNA and Genes, continued

### Reinforcement and Study Guide

#### Section 11.2 From DNA to Protein

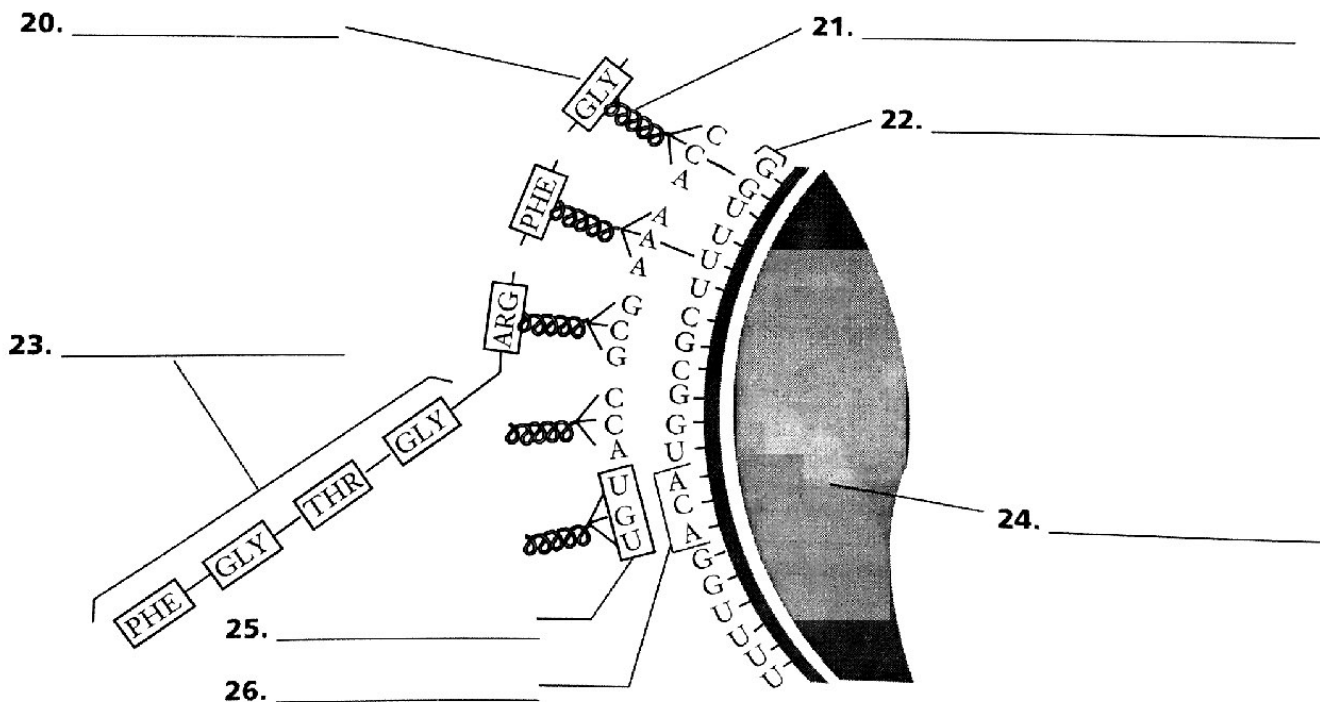
*In your textbook, read about transcription from DNA to mRNA.*

Complete each statement.

15. Proteins are made in the cytoplasm of a cell, whereas DNA is found only in the \_\_\_\_\_.
16. The process of making RNA from DNA is called \_\_\_\_\_.
17. The process of transcription is similar to the process of DNA \_\_\_\_\_.
18. \_\_\_\_\_ carries information from the DNA in the nucleus out into the cytoplasm of the cell.
19. mRNA carries the information for making proteins to the \_\_\_\_\_.

*In your textbook, read about translation from mRNA to protein.*

Label the diagram. Use these choices: transfer RNA (tRNA), amino acid, amino acid chain, codon, anticodon, messenger RNA (mRNA), ribosome.



**Section 11.3 Genetic Changes**

*In your textbook, read about mutation—a change in DNA.*

**Circle the letter of the choice that best completes the statement.**

1. A mutation is any mistake or change in the
  - a. cell.
  - b. DNA sequence.
  - c. ribosomes.
  - d. nucleus.
2. A point mutation is a change in
  - a. several bases in mRNA.
  - b. several bases in tRNA.
  - c. a single base pair in DNA.
  - d. several base pairs in DNA.
3. A mutation in which a single base is added to or deleted from DNA is called
  - a. a frame shift mutation.
  - b. a point mutation.
  - c. translocation.
  - d. nondisjunction.
4. Chromosomal mutations are especially common in
  - a. humans.
  - b. animals.
  - c. bacteria.
  - d. plants.
5. Few chromosome mutations are passed on to the next generation because
  - a. the zygote usually dies.
  - b. the mature organism is sterile.
  - c. the mature organism is often incapable of producing offspring.
  - d. all of the above.
6. When part of one chromosome breaks off and is added to a different chromosome, the result is a(n)
  - a. translocation.
  - b. insertion.
  - c. inversion.
  - d. deletion.
7. Many chromosome mutations result when chromosomes fail to separate properly during
  - a. mitosis.
  - b. meiosis.
  - c. crossing over.
  - d. linkage.
8. The failure of homologous chromosomes to separate properly is called
  - a. translocation.
  - b. disjunction.
  - c. nondisjunction.
  - d. deletion.
9. Mutations that occur at random are called
  - a. spontaneous mutations.
  - b. nonspontaneous mutations.
  - c. nonrandom mutations.
  - d. environmental mutations.
10. An agent that can cause a change in DNA is called a(n)
  - a. zygote.
  - b. inversion.
  - c. mutagen.
  - d. mutation.
11. Mutations in body cells can sometimes result in
  - a. new species.
  - b. cancer.
  - c. sterile offspring.
  - d. hybrids.