

Quiz 9B

- _____ 1. Sea stars (starfish) can reproduce asexually by fragmentation if their arms are cut off, or sexually by releasing sperm and eggs into the water. Which of these is the major difference between asexual and sexual reproduction in sea stars?
- a. The chromosome number is reduced in sea stars during sexual reproduction.
 - b. The number of chromosomes is increased in sea stars during sexual reproduction.
 - c. The appearance of the sea stars is changed as a result of asexual reproduction.
 - d. There is genetic variation in the sea stars as a result of sexual reproduction.
- _____ 2. Because of base pairing in DNA, the percentage of
- a. adenine molecules in DNA is about equal to the percentage of guanine molecules.
 - b. thymine molecules is equal to that of the adenine molecules.
 - c. cytosine and uracil are found in equal proportions.
 - d. cytosine molecules in DNA is much greater than the percentage of guanine molecules.
- _____ 3. During DNA replication, a DNA strand that has the bases C-T-A-G-G-T produces a strand with the bases
- a. T-C-G-A-A-C
 - b. G-A-T-C-C-A
 - c. A-G-C-T-T-G
 - d. G-A-U-C-C-A
- _____ 4. Which of the following molecules does NOT form part of Deoxyribonucleic Acid (DNA)?
- a. nitrogenous base
 - b. phosphate
 - c. five carbon sugar
 - d. amino acid
- _____ 5. The presence of DNA is important for cellular metabolic activities because DNA
- a. directs the production of enzymes and other proteins
 - b. is a structural component of cell walls
 - c. directly increases the solubility of nutrients
 - d. is the major component of cytoplasm
- _____ 6. The Watson and Crick model of DNA is a _____, in which two strands are wound around each other.
- a. step ladder
 - b. double ladder
 - c. single helix
 - d. double helix
- _____ 7. The replication of a DNA molecule results in how many copies of the same gene?
- a. 2
 - b. 3
 - c. 4
 - d. 5
- _____ 8. A strand of DNA is exposed to intense heat. Which of these best describes what will happen to the strand of DNA?
- a. The chemical bonds of the DNA molecule will be broken.
 - b. More nitrogen base pairs will add on to the DNA molecule.
 - c. The chemical bonds of the DNA molecule will be strengthened.
 - d. The nitrogen base pairs in the DNA molecule will switch places.

Identify the following component pieces of a section of deoxyribonucleic acid.

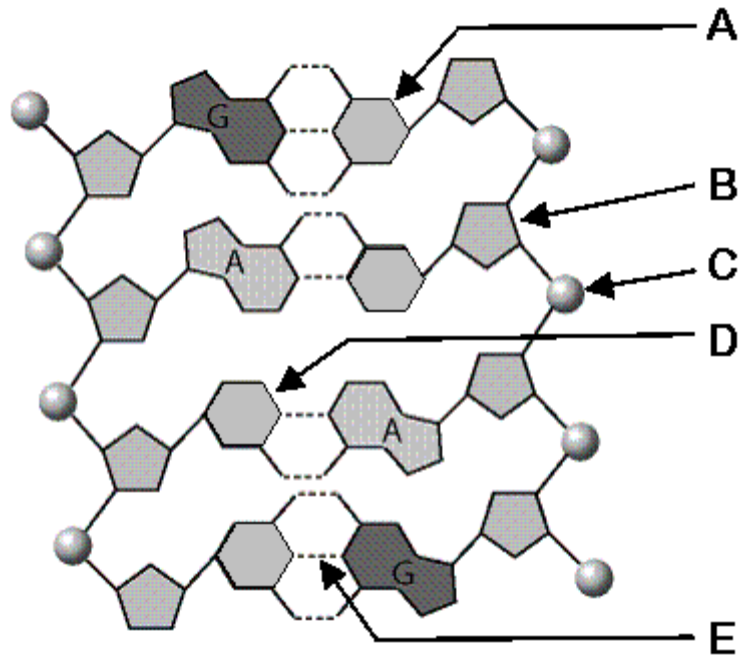


Figure 12-3

Use Figure 12-3 above to identify the following components of DNA.

- | | |
|-------------|--------------------------------|
| a. Adenine | e. Phosphate group |
| b. Guanine | f. Hydrogen Bond (mark as ab) |
| c. Cytosine | g. Sugar Molecule (mark as ac) |
| d. Thymine | h. Ribosome (mark as ad) |

- ___ 9. Letter A refers to ____.
- ___ 10. Letter B refers to ____.
- ___ 11. Letter C refers to ____.
- ___ 12. Letter D refers to ____.
- ___ 13. Letter E refers to ____.

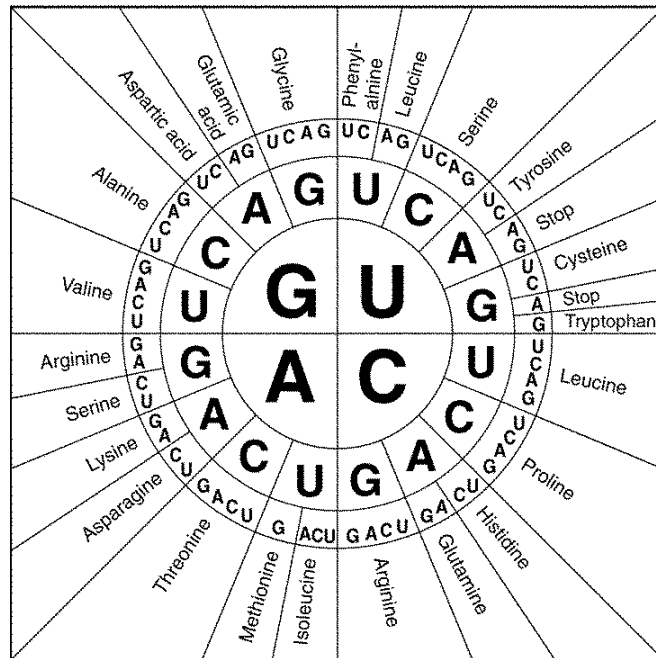


Figure 12-2

- ___ 14. Using figure 12-2 decipher the amino acid for the codon CCC
- Proline
 - Histidine
 - Leucine
 - Glycine
- ___ 15. The anticodon that is attached to the amino acid Proline is
- CCC
 - GGG
 - AAA
 - UUU
- ___ 16. When comparing anti-codons and codons one could conclude that they are
- the same
 - codons are DNA and anti-codons are RNA
 - unrelated
 - complementary
- ___ 17. During translation, the type of amino acid added to the growing polypeptide, depends on the
- codon on mRNA only.
 - anti-codon on the mRNA only.
 - anti-codon on the tRNA to which the amino acid is attached only.
 - codon on mRNA and the anti-codon on the tRNA to which the amino acid is attached.
- ___ 18. During DNA replication, what two processes must occur before the two strands of a DNA molecule can separate?
- The phosphate and sugar bonds must be broken, and the molecule must unwind.
 - The molecule must leave the nucleus, and the hydrogen bonds between the base pairs must be broken.
 - The hydrogen bonds between the base pairs must be broken, and the molecule must unwind.
 - Ribosomes must break the bonds between the base pairs, and the molecule must unwind.

- ___ 19. Choose the best answer that completes the following statement: Nucleotides are to DNA as _____.
 a. carbohydrates are to monosaccharides. c. amino acids are to proteins.
 b. sugars are to RNA. d. nuclei are to cells.
- ___ 20. A change in a sequence of DNA bases in a bacterial cell has resulted in a mutation. This mutation has increased the ability of the bacteria to break down and digest organic molecules in the environment. Bacteria with this mutation are better able to find and utilize food sources. According to the theory of natural selection, what is most likely to occur in future generations of this bacteria?
 a. The relative frequency of the mutation will increase as time passes. c. Because the mutation is abnormal, the mutation will become more rare with every passing generation.
 b. Because the mutation has changed the DNA of the bacteria, a new species will be formed. d. Bacteria with the mutation will increase in number until the food supply is exhausted, causing the bacteria to become extinct.
- ___ 21. An organism's inherited traits depend on _____.
 a. starches c. lipids
 b. proteins d. carbohydrates
- ___ 22. All of the following can cause mutations except _____.
 a. ultraviolet rays c. x-rays
 b. environmental pollutants d. carbon dioxide gas
- ___ 23. Which structure makes proteins using coded instructions that come from the nucleus?
 a. Golgi apparatus c. ribosome
 b. mitochondrion d. vacuole
- ___ 24. What happens during the process of translation?
 a. Messenger RNA is made from DNA. c. Transfer RNA is made from messenger RNA.
 b. The cell uses information from messenger RNA to produce proteins. d. Copies of DNA molecules are made.

Use the following data to answer the following six questions.

Nests of female American alligators were maintained at different temperatures and the resulting offspring counted. The data collected is presented in the chart below:

Temperature and Sex of American Alligator Offspring

Temperature (°C)	Male Offspring	Female Offspring
28.0	0	50
28.5	0	50
29.0	0	50
29.5	0	50
30.0	0	50
30.5	12	38
31.0	25	25
31.5	38	12
32.0	50	0
32.5	50	0

33.0	50	0
33.5	50	0
34.0	50	0

- _____ 25. An equal number of male and female offspring are produced at which temperature?
- 30°C
 - 31°C
 - 32°C
 - There is no temperature at which an equal number of males and females are produced.
- _____ 26. At a temperature of 29°C, what is the number of male offspring produced?
- 0
 - 12
 - 25
 - 50
- _____ 27. What general statement can reasonably be made with respect to the data?
- The temperature of the nest affects the total number of offspring produced.
 - The temperature of the nest affects the sex of the offspring produced.
 - Sex of offspring is unaffected by the temperature of the nest.
 - The nest must be maintained at 31°C in order for offspring to be produced.
- _____ 28. Which conclusion can be drawn directly from the data?
- At temperatures less than 28°C, no offspring are produced.
 - At temperatures greater than 31°C, all offspring produced are male.
 - At temperatures of 32°C to 34°C, all offspring are female.
 - At temperatures of 28°C to 30°C, all offspring produced are female.
- _____ 29. What would happen if the natural habitat of an American alligator experienced a temperature increase?
- The next generation would show an increase in the total number of male alligators only.
 - The next generation would show an increase in the number of male alligators and a decrease in the number of female alligators.
 - The next generation would show a decrease in the number of male alligators and an increase in the number of female alligators.
 - There is not enough information given to determine if there would be a change in the number of males and females.
- _____ 30. An American alligator living in a zoo produces mostly female offspring compared to another alligator at a nearby zoo. Based upon the data, what hypothesis can reasonably be made?
- American alligators often eat their young.
 - Male alligators are less hardy than their female counterparts.
 - An increase in the temperature of its nest will result in more male offspring being produced.
 - A decrease in the temperature of its nest will result in more male offspring being produced.