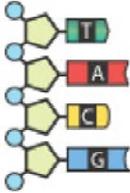


2015 Biology Quiz Unit 4 Quiz 3 EQs 1-5 DNA, Structure, Function, Replication Week of 7-11 December

- _____ 1. Which scientists figured out the three-dimensional structure of DNA by using a model of metal and wood?
- Watson and Crick
 - Pauling and Franklin
 - Chargaff and Griffith
 - Hershey and Chase
- _____ 2. As a result of the Hershey and Chase experiments, scientists believe that
- radioactive isotopes can be used safely.
 - the "transforming principle" is DNA.
 - viruses use bacterial DNA to reproduce.
 - bacteriophages can be grown in culture medium.
- _____ 3. After examining the DNA of different organisms, which of the following did Erwin Chargaff conclude about the four bases?
- $A = T$ and $C = G$
 - $A = C = G = T$
 - $A = C$ and $G = T$
 - $A + T = C + G$
- _____ 4. What three components make up a nucleotide?
- | | |
|---|---|
| a. a phosphate, an enzyme, and a nitrogenous base | c. an enzyme, a deoxyribose, and a nitrogenous base |
| b. a phosphate, a deoxyribose, and a nitrogenous base | d. a deoxyribose, a phosphate, and an enzyme |
- _____ 5. The main difference between the four nucleotides that make up DNA is that they have different
- bonds.
 - sugars.
 - uracil.
 - nitrogen bases.
- _____ 6. The four types of nucleotides that make up DNA are named for their
- nitrogen-containing bases.
 - phosphate groups.
 - hydrogen bonds.
 - ring-shaped sugars.

- _____ 7. What holds base pairs together?
- sugar-phosphate backbones
 - hydrogen bonds
 - nitrogen-carbon bonds
 - pairs of double-ringed nucleotides
- _____ 8. Which nitrogenous bases are needed to complete the DNA strand pictured below? Give your answer in order, from top to bottom.



- adenine, thymine, guanine, cytosine
 - cytosine, guanine, thymine, adenine
 - thymine, adenine, guanine, cytosine
 - adenine, thymine, cytosine, guanine
- _____ 9. When one DNA molecule is replicated, the result is two DNA molecules. What is true of the second DNA molecule?
- It is twice the size of the first DNA molecule.
 - The sequence of bases, from top to bottom, is opposite the sequence in the first DNA molecule.
 - It is half the size of the first DNA molecule.
 - It is identical or nearly identical to the first DNA molecule.
- _____ 10. Chemical analysis of Avery's extracts showed that the ratio of nitrogen to phosphorus was consistent with that of
- protein.
 - DNA.
 - bacteria.
 - enzymes.
- _____ 11. What is the role of enzymes in the DNA replication process?
- Enzymes link adjacent nucleosides together, becoming an integral part of the structure of the new strands of DNA.
 - Enzymes split the DNA molecule into two rails and then transport corresponding nitrogenous bases to each rail.
 - Enzymes link together to form a template for a new DNA molecule to be built.
 - Enzymes read the DNA code and build a new DNA molecule from scratch.

- _____ 12. Combining the work of other scientists with their own research, Watson and Crick discovered that two strands of DNA join together to form a(n)
- X in a circle.
 - nucleotide.
 - covalent bond.
 - double helix.

- _____ 13. Figure 8.1 shows a single strand of DNA. Choose the first three nucleotides of the other DNA strand.



FIG. 8.1

- GGT
 - TTA
 - CCT
 - GGC
- _____ 14. Hershey and Chase chose to use bacteriophages in their experiments because these viruses
- contain little more than DNA and protein.
 - will not grow in radioactive culture.
 - can be seen with a light microscope.
 - can infect only bacteria, not humans.
- _____ 15. Which scientist conducted tests on extracts made of bacteria to show that the genetic material in bacteria is DNA?
- Martha Chase
 - Alfred Hershey
 - Oswald Avery
 - Frederick Griffith
- _____ 16. Which of the following DNA sequences is complementary to the base sequence ACCGTAT?
- CAATGCG
 - UCCGTAT
 - GTTACGC
 - TGGCATA
- _____ 17. The process that makes an exact copy of a cell's DNA is called
- conservation.
 - preservation.
 - replication.
 - synthesis.

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- _____ 18. What are the main functions of DNA polymerase?
- breaks hydrogen bonds and exposes bases
 - holds DNA strands apart and attracts bases
 - zips and unzips the double-stranded DNA
 - binds nucleotides and corrects base pair errors
- _____ 19. Which of the following events occurs directly after a DNA molecule is unzipped?
- Mismatched nucleotide bases are identified and replaced.
 - Free-floating nucleotides pair up with exposed bases.
 - Identical double-stranded DNA molecules are formed.
 - Enzymes break hydrogen bonds between base pairs.
- _____ 20. The process of making new DNA molecules is semiconservative. This means that every new DNA molecule is composed of
- two completely identical strands of DNA.
 - one original and one new strand of DNA.
 - one strand of DNA and one strand of RNA.
 - two strands that mix original and new DNA.
- _____ 21. When new DNA molecules are formed, almost all errors are detected and fixed by
- the correct nucleotide.
 - the sugar-phosphate backbone.
 - DNA polymerase.
 - one DNA strand.