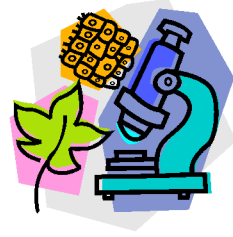


Roland-Story Biology Class
Chapter 9 Study Guide
DNA the Genetic Material



Name _____

1. What was Griffith trying to accomplish by injecting mice with pneumonia causing bacteria?
2. Why were the *S* bacteria but not the *R* bacteria virulent?
3. Why were the heat-killed *S* bacteria harmless?
4. Why was the mixture of heat-killed *S* bacteria and *R* bacteria virulent?
5. What did Griffith discover as a result of his experiments?

6. How did Avery discover that the material responsible for transformation was DNA?

Complete each statement by underlining the correct term or phrase in the brackets.

7. Viruses that infect bacteria are called [bacteriophages / rough].
8. A virus is made of DNA and a [protein coat / cell wall].
9. Hershey and Chase showed that when a phage attacks a bacterium, the [protein coat / DNA] remains outside the bacterium.
10. Radioactive sulfur was used to label the [DNA / protein] in the viruses.
11. Radioactive phosphorus was used to label the [DNA / protein] in the viruses.
12. Hershey and Chase discovered that most of the radioactive sulfur was found in the layer containing [bacteria / phage].
13. Hershey and Chase discovered that after the ³²P-labeled phages infected the bacteria, most of the radioactive phosphorus was found in the layer containing [bacteria / phage].

Complete each statement by writing the correct term or phrase in the space provided.

14. Hershey and Chase removed the phages from the surface of the bacteria by using a(n)

15. Hershey and Chase separated the phages from the bacteria by using a(n)

16. Hershey and Chase concluded that the _____
of the virus was injected into the bacteria.

In the space provided, write the letter of the description that best matches the term or phrase.

_____ 1. double helix

_____ 2. nucleotides

_____ 3. deoxyribose

_____ 4. DNA

_____ 5. hydrogen bond

_____ 6. nitrogen base

_____ 7. adenine

_____ 8. cytosine

- a. a five-carbon sugar
- b. type of bond that holds the double helix together
- c. one of three parts of a nucleotide made of one or two rings of carbon and nitrogen atoms
- d. subunits that make up DNA
- e. one of two pyrimidines used as a nitrogen base in nucleotides
- f. one of two purines used as a nitrogen base in nucleotides
- g. abbreviation for deoxyribonucleic acid
- h. two strands of nucleotides twisted around each other

In the space provided, explain how the terms in each pair are related to each other.

9. base-pairing rules, complementary:

10. adenine, thymine

11. cytosine, guanine

Read each question, and write your answer in the space provided.

12. What was Chargaff's observation about the nitrogen bases in DNA?

13. What role did the photographs of Wilkins and Franklin play in the discovery of the structure of DNA?

14. What did Watson and Crick deduce about the structure of DNA?

Section: The Replication of DNA

In the space provided, write the letter of the description that best matches the term or phrase.

_____ 1. DNA replication

_____ 2. DNA helicases

_____ 3. replication forks

_____ 4. DNA polymerases

_____ 5. synthesis

- a. add nucleotides to the exposed nitrogen bases according to the base-pairing rules
- b. process of making a copy of DNA
- c. the two areas that result when the double helix separates during DNA replication
- d. open up the double helix by breaking the hydrogen bonds between nitrogen bases
- e. phase during the life cycle of a cell during which DNA replication occurs

Read each question, and write your answer in the space provided.

6. How did the complementary relationship between the sequences of nucleotides lead to the discovery of DNA replication?

7. What prevents the separated DNA strands from reattaching to one another during DNA replication?

8. What prevents the wrong nucleotide from being added to the new strand during DNA replication?

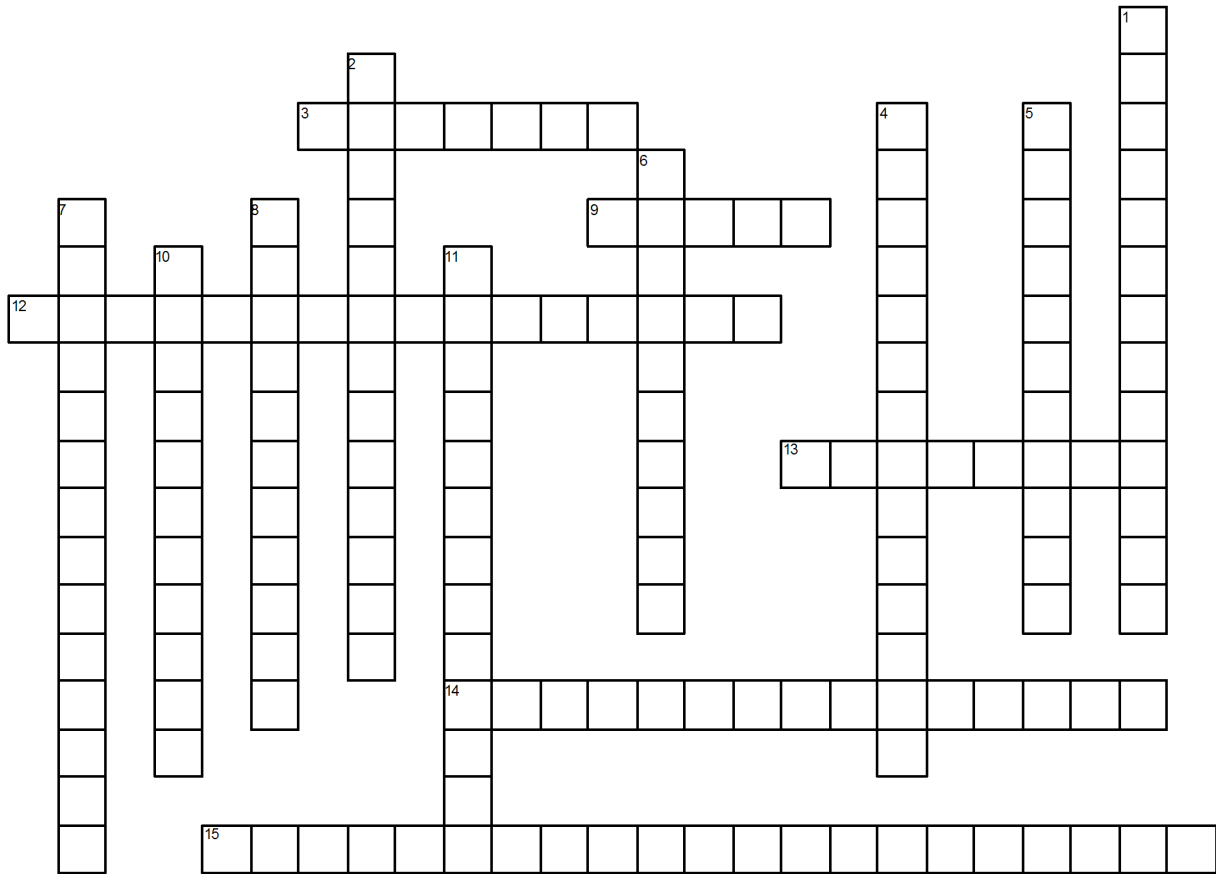
Complete each statement by writing the correct term or phrase in the space provided.

9. Prokaryotic DNA is reproduced with replication forks.

10. Each human chromosome is replicated in about sections.

11. The number of nucleotides between each replication fork in human DNA is approximately .

Crossword Puzzle of Vocabulary Terms



www.CrosswordWeaver.com

Clues are on next page

ACROSS

- 3 is a harmless version of a disease-causing microbe
- 9 The part of the molecule for which deoxyribonucleic acid is named
- 12 rules stating that in DNA a purine on one strand always pairs with a pyrimidine on the opposite strand
- 13 describes a microorganism or virus that causes disease and that is highly infectious
- 14 a Y-shaped point that results when the two strands of a DNA double helix separate so that the DNA molecule can be copied
- 15 the nucleotide bases in one strand of DNA or RNA that are paired with those of another strand; adenine pairs with thymine or uracil, and guanine pairs with cytosine

DOWN

- 1 due to the strict pairing of nitrogen bases in DNA molecules, the two strands are _____ to each other
- 2 a virus that infects bacteria
- 4 the transfer of genetic material in the form of DNA pieces from one cell to another or from one living thing to another
- 5 the spiral-staircase structure that is characteristic of the DNA molecule
- 6 the basic subunit of DNA or RNA; each nucleotide is made of a sugar, a phosphate, and a nitrogenous base
- 7 the process of making a copy of DNA
- 8 an enzyme that unwinds the DNA double helix during DNA replication
- 10 a five-carbon sugar that is a part of DNA nucleotides
- 11 an enzyme that catalyzes the formation of the DNA molecule during DNA replication