Name _____ Date _____ Period _____

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Discovery of DNA's Structure

Biology

Directions: Answer each question in the space provided. Show your work for every calculation. For Claim, Evidence, Reasoning (CER) questions, write all three parts.

1. Match each scientist or team to the evidence they provided. Write the letter on the line.

____ 1. Griffith

____ 2. Avery, MacLeod, and McCarty

____ 3. Hershey and Chase

____ 4. Chargaff

____ 5. Franklin, Gosling, and Wilkins

____ 6. Watson and Crick

a. Built a double helix model that fit the other evidence

b. Measured the bases: A is about T and G is about C

c. Radioactive labels showed that DNA entered the bacteria

d. Heat-killed S bacteria changed live R bacteria

e. X-ray patterns showed a helix and gave its size

f. Destroying DNA stopped the change, but destroying protein did not

2. A mouse injected with live R bacteria lived, and a mouse injected with heat-killed S bacteria lived. A mouse injected with both died. Explain what this result showed.

3. In the Hershey-Chase experiment, why was the protein labeled with radioactive sulfur and the DNA with radioactive phosphorus?

4. A sample of double-stranded DNA is 21% guanine. Find the percent of C, A, and T. Show your work.

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5. The table shows illustrative results from a Hershey-Chase style experiment. Write a Claim, Evidence, Reasoning response: which molecule is the genetic material?

Label	% in supernatant	% in pellet (bacteria)
Protein (S-35)	85	15
DNA (P-32)	25	75

6. Two samples were analyzed (percent of bases). Which sample is consistent with Chargaff's pattern? Explain.

Sample	% A	% T	% G	% C
Sample X	27	26	24	23
Sample Y	33	21	17	29

7. Name two things that X-ray patterns of DNA told scientists, and name two people who made these patterns.

8. Explain how pairing A with T and G with C explains Chargaff's data.

9. Put these in order from earliest to latest by writing 1 to 4: ____ Watson and Crick's model ____ Griffith's mouse experiment ____ Hershey-Chase experiment ____ Avery, MacLeod, and McCarty's tests

10. Explain why no single scientist solved the structure of DNA alone. Use two examples.

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