**DNA & Replication Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ # \_\_\_\_\_\_\_**

**REVIEW- Use the PPT**

**History of DNA**

1. Early scientists believed that \_\_\_\_\_\_\_\_\_ was the genetic material of the cell. Explain why.

2. Proteins are made of 20 different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Long chains of amino acids make up \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. Fred Griffith worked with what type of bacteria?

5. What did he find to be true after his experiments with the S and R strains of bacteria?

6. This process of picking up DNA from the environment is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. Did Griffith's experiment prove DNA was the genetic material?

8. What 2 main things make up chromosomes?

9. What did Hershey and Chase use in their experiments to prove DNA was the cell's genetic material?

10. Hershey and Chase radioactively tagged the viral DNA with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the protein capsid with \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

11. Which radioactive substance was injected into and took over the host cell's DNA?

12. What scientists showed the amount of the 4 nitrogen bases present in DNA?

13. Name the bases and their amounts found in somatic or body cells of humans.

14. What bases are complementary (pair with each other) on DNA?

15. What type of bonds join base pairs on DNA?

16. Are these strong or weak bonds?

17. What was Rosalind Franklin's contribution to finding DNA's structure?

18. Who built the first model of DNA and what did they use to help get the correct measurements for the molecule?

**DNA Structure**

19. DNA is two coiled strands known as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

20. What makes up the sides of a DNA molecule?

21. What bonds the deoxyribose sugars to the phosphate groups?

22. Where are the nitrogen bases found on DNA & how are they bonded?

23. Most DNA has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ twist with \_\_\_\_\_\_\_\_ base pairs in a complete turn.

24. DNA stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

25. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the subunits making up DNA.

26. Name the 3 parts of a nucleotide.

27. Why is deoxyribose called a pentose sugar?

28. Sketch a pentose sugar and include the carbons correctly numbered.

29. The sugars on one DNA strand of DNA are from 5' to \_\_\_\_\_\_\_\_\_, while the sugars on the other strand are antiparallel running from \_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_.

30. Double ring nitrogen bases are called \_\_\_\_\_\_\_\_\_\_\_\_, while single ring nitrogen bases are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

31. Name the purines.

32. Name the pyrimidines.

33. Purines will only pair with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

34. \_\_\_\_\_\_\_\_\_\_ hydrogen bonds are required to join guanine to cytosine, while only \_\_\_\_\_\_\_\_ bonds join adenine to thymine.

35. If there is 30% adenine, how much cytosine is present?

**DNA Replication**

36. Cells must copy their DNA before they do what? Explain why.

37. During what part of the cell cycle is DNA copied?

38. In eukaryotes, where are the copies of DNA made?

39. The process of copying DNA is known as DNA \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

40. Replication of DNA begins at points called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

41. The two DNA strands \_\_\_\_\_\_\_\_\_\_\_\_\_\_ at origins of replication forming Y-shaped areas called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

42. New DNA strands grow at the \_\_\_\_\_\_\_\_\_\_\_\_\_.

43. As the two strands open at the origins of replication, replication \_\_\_\_\_\_\_\_\_\_\_\_\_ form.

44. Prokaryotic chromosomes have a \_\_\_\_\_\_\_\_\_\_\_ replication bubble, while eukaryotic cells have \_\_\_\_\_\_\_\_\_\_\_ bubbles.

45. What enzyme uncoils DNA so it can be replicated or copied?

46. What other job does this enzyme perform?

47. What is the job of single-strand binding proteins?

48. What enzyme relieves stress on the DNA strands at the replication forks?

49. An RNA \_\_\_\_\_\_\_\_\_\_ must be present to start the addition of new nucleotides.

50. What enzyme makes the RNA primer?

51. DNA \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the enzyme that adds new complementary base pairs.

52. DNA polymerase can only add nucleotides to what end of the DNA molecule?

53. Which DNA strand is synthesized continuously as a single strand?

54. The leading strand is made from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ toward the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as it opens.

55. The \_\_\_\_\_\_\_\_\_\_\_\_ strand is synthesized \_\_\_\_\_\_\_\_\_\_\_\_ the overall direction of replication.

56. The lagging strand is made in \_\_\_\_\_\_\_\_\_\_ short segments from the \_\_\_\_\_\_\_\_\_\_\_\_\_ fork toward the \_\_\_\_\_\_\_\_\_\_\_\_\_ of replication.

57. The short segments of the lagging strand are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ fragments.

58. What enzyme joins Okazaki fragments together into one strand?

59. Sketch half of a replication bubble. Label the point of origin and the replication fork. Draw two arrows showing the leading strand and the lagging strand.

60. Explain the semiconservative model for DNA replication.

61. Who developed this idea about replication?

62. Chemicals and \_\_\_\_\_\_\_\_\_\_\_\_\_ radiation can damage DNA in our body cells so it must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ repaired.

63. What is the complementary DNA strand for: 5' -CGTATG -3' ?