

Name: _____

Block: _____

Greatest Discoveries with Bill Nye: Genetics

Directions: Answer the following questions in the spaces provided as you watch the video. This is individual work! Turn in this worksheet when the video is over.

The Laws of Inheritance

1. What plants did Mendel work with?
2. What happened when Mendel crossed a round seed with a wrinkled?
3. What happened when Mendel crossed the round offspring seeds?
4. About how many of the second generation peas were wrinkled?
5. How many of Mendel's genetic factors are contributed by each parent?
6. What is a Mendelian trait?

Genes are Located on Chromosomes

7. What organism was used by Thomas Hunt Morgan?
8. Why did Morgan choose these organisms?
9. What was the mutation in the flies that Morgan first noticed?
10. What was the gender of all of the white eyed flies?
11. What two sex chromosomes does a female have? What two sex chromosomes does a male have?
12. What did Morgan and his students show that is important to modern genetics?

Genes control Biochemical Events

13. What organism did Beadle and Tatum use for their experiments?
14. What did Beadle and Tatum do to these organisms to produce genetic changes?
15. What changes did this process cause to the organisms being studied?
16. Genes direct the production of what type of biochemical?

DNA carries Genetic Material

17. What organism were Hershey and Chase working with?
18. How does a bacteriophage attack a bacteria cell?
19. What two chemicals are present in a virus?
20. Which of these chemicals did Hershey and Chase discover inside the bacteria after they were infected by the virus?
21. What did Hershey and Chase determine to be the genetic material?

The Double Helix

22. Which scientists were involved in the discovery of the structure of the DNA molecule (HINT: there are four mentioned in this section)?
23. How many base chemicals are in a DNA molecule?
24. What is the name for the shape of a DNA molecule?
25. What type of bonds hold the bases together in a molecule of DNA?
26. What has to happen to a DNA molecule for it to make a copy of itself?
27. Why was Rosalind Franklin not awarded the Nobel Prize for her contribution to the discovery of the structure of DNA?

Messenger RNA

28. Cells that produce lots of proteins may contain lots of what special chemical?
29. How many strands is an RNA molecule? A DNA molecule?
30. What is produced in a bacteria cell soon after viral RNA appears in the cell?
31. Where are proteins made in the cell? (HINT: not mentioned in the video but you are supposed to know this from our study of cell structures)

The Genetic Code

32. How many total amino acids are in your body that can be used in the production of a protein?
33. What is a triplet?
34. What information does RNA contain?
35. What do you inherit from your parents that determines the proteins your body makes?
36. How many triplets are in the entire DNA genetic code?
37. How many DNA codes are used by life on Earth?

25,000 Genes

38. What is our complete genetic blueprint called?
39. When did the two teams announce that they had completely decoded the human genome? (Hint: Include month and year)
40. How many total genes did the researchers find in the human genome?
41. What are three other genomes that have been completely sequenced by the teams?
42. Now that scientists have found the genes, what do they need to study next?
43. How many years did it take for science to go from Mendel to the sequencing of the human genome?