

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 were the biological phenomena that Mendel observed?
3. How many of Mendel's genetic factors are contributed by each parent?
4. What is a "factor"?
5. What is a Mendelian trait?

Genes are Located on Chromosomes

6. What organism was used by Thomas Hunt Morgan?
7. Why did Morgan choose these organisms?
8. What was the mutation in the flies that Morgan first noticed?
9. What was the gender of all of the white eyed flies?
10. What two sex chromosomes does a female have? What two sex chromosomes does a male have?

11. What did Morgan and his students show that is important to modern genetics?

Genes control Biochemical Events

12. What organism did Beadle and Tatum use for their experiments?

13. How many sets of chromosomes does this organism have

14. What did Beadle and Tatum do to these organisms to produce genetic changes?

16. Genes are responsible for traits and what else?

DNA carries Genetic Material

17. 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?

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?

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 does the triplet translate into?
35. What do you inherit from your parents that determines the proteins your body makes?

Restriction Enzymes

38. How did some bacteria fight against bacteriophages?
39. Where did the restriction enzymes cut?
40. What was recombinant DNA used for?