

DNA Web-quest

Use the websites provided on the "DNA Web-quest" page of my website to answer the questions below about the structure and function of nucleic acids in our cells.

DNA: The Double Helix (from Nobel Prize):

http://www.nobelprize.org/educational/medicine/dna_double_helix/dnahelix.html

1. What is the full name of DNA?
2. What is the shape of DNA?
3. What are the "rungs" of the ladder?
4. Which nitrogenous bases pair together?
5. Play the game for all three organisms. Record your answers after completing each organism in the chart below.

Chromosome #	How many chromosomes?	How many base pairs?	How many genes?	What is the organism?
1				
2				
3				

DNA Replication Simulation:

<http://www.johnkyrk.com/DNAreplication.html>

6. DNA must be replicated prior to _____.
7. Errors during DNA replication are called _____.
8. Describe a hydrogen bond. How many hydrogen bonds form between A and T? G and C?
9. Does DNA replication start at only one place in the DNA or in many places at once?

10. In the chart below, describe what each enzyme does during the replication process.

Name of Enzyme:	Function during DNA replication:
Helicase	
RNA primase	
DNA polymerase	
Exonuclease	
Ligase	

11. The two types of cell division are _____ and _____.

Genetics Tour:

<https://learn.genetics.utah.edu/content/basics/oldtour/>

12. The DNA strand is made of letters, the letters make words, and the words make sentences. These sentences are called _____.

13. What is a gene?

14. Approximately how many genes are encoded in the DNA of humans?

15. _____ is a genetic disease that results in the mutation of hemoglobin protein within our red blood cells.

16. Other than providing instructions for building a hemoglobin molecule, what are two other examples of traits that are controlled by genes?

17. Look at the set of human chromosomes displayed on the slideshow. Is this set of chromosomes from a male or female? How do you know?

18. Humans have 46 chromosomes. Mosquitoes have _____. Onions have _____. Carp have _____.

19. If our body is compared to a car engine, why can proteins be compared to the parts of the engine?

20. _____ proteins allow a cell to keep its shape.

21. Where within the cell are proteins made?

22. The passing of _____ is the basis of heredity.

23. Other than genes, what is the other major factor that helps define our traits?

24. What is a zygote?

25. When looking at the "First Baby's Possible Chromosomes" and the "Second Baby's Possible Chromosomes" from their parents, determine if the babies are identical or fraternal twins. How do you know?

26. What is a trait?

27. What is the difference between a physical trait and a behavioral trait?

28. What are some diseases that can be passed down as genetic traits? List 5 or more.

29. When thinking about the risk of developing heart disease, what can be influenced by genetics? What is influenced by behavior?

30. Will people that have the genotype "Hh" have two straight thumbs, two hitchhiker's thumbs or one of each?

31. The flower's petals are influenced by a principle called _____.

32. All humans share _____% identical DNA.