

DNA WebQuest
(From GVL)

Go to: <http://learn.genetics.utah.edu/content/basics/>

Click on “What is DNA?” at the top and go through the animation. Answer the questions.

- 1) What is DNA? **Deoxyribo Nucleic Acid**
- 2) The complete set of instructions for making a human being is found where? **DNA**
- 3) What do genes tell the cell to make? **Other molecules called proteins.**

Click on “What is a gene?” at the top and go through the animation. Answer the questions.

- 4) How many genes do humans have? **25,000**
- 5) What is the function of the protein hemoglobin? **Capture and carry oxygen**
- 6) How is sickle-cell anemia caused? **A cell is mutated**
- 7) What are some other proteins that genes code for? **Pigment in your eyes and keratin responsible for growing hair and nails**

Click on “What is a chromosome?” at the top and go through the animation. Answer the questions.

- 8) How long would the DNA in one human cell be? **3 meters long**
- 9) How is DNA packaged to fit into the small space of a cell nucleus? **They are packed into compact units called chromosomes**
- 10) How many chromosomes are in a human cell? **46**
- 11) Why are there “pairs” of chromosomes? Where do they come from? **One from each parent make up a pair**
- 12) Describe the sex chromosomes. **There are 2 sex chromosomes that determine if you are male or female. They are labeled X and Y. Females have 2 X Chromosomes and Males have an X and a Y**

Click on “What is a protein?” at the top and go through the animation. Answer the questions.

- 13) What is the role of proteins in transmitting pain messages? **Receptor proteins are responsible for picking up the (pain) signal and pass it along to the next cell through the nerve network.**
- 14) Describe structural proteins. **They are like bricks stacking together forming column like supports giving the cell its shape.**
- 15) “There are proteins involved in the making of proteins.” Explain this sentence. **Answer will vary...**

Click on “What is heredity?” at the top and go through the animation. Answer the questions.

- 16) Give an example of the environment acting on the expression of a genetic trait. **Hair color: exposure to chemicals and or sunlight can change the color.**
- 17) Where do we get our traits? **We get our traits from our parents**
- 18) Explain how each child born to the same parents will have a different combination of chromosomes. **Each parent has 2 sets of chromosomes, since parents contribute chromosomes randomly to each new child.**

Click on “What is a trait?” at the top and go through the animation. Answer the questions.

- 19) What is a trait? **Is a notable feature or quality in a person.**
- 20) List the types of traits that exist. **Physical, Behavioral, Predisposition to a medical condition,**
- 21) Give an example of how an environmental factor can influence a trait. **Training a dog to roll over and play dead.**
- 22) Briefly explain how the Hitchhiker’s Thumb trait is determined using the following words: allele, dominant, recessive, homozygous, heterozygous. **This answer can vary**

Go to: http://nobelprize.org/educational_games/medicine/dna_double_helix/

Click on “Play DNA Game”; Click “next” and reading each page, continue to click next until you come to the game.; Click on organism #1 and match the base pairs as fast as you can! It is hard!

Click Next and then click on each organism until you identify the one that belongs to chromosome #1; continue playing the game with the other two chromosomes, filling in the chart below. **The Chromosomes change here so there is no definitive answer, please do your best.**

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

Adapted in part from Genetic Science Learning Center Tour of the Basics. *Learn Genetics*. from <http://learn.genetics.utah.edu/content/begin/tour/>