

Name: _____ Hour: _____ Date: _____

Cracking the Code of Life

Go to <http://www.pbs.org/wgbh/nova/genome/program.html> to watch the program on-line for free.

Part 1: Answer the following questions while watching NOVA's *Cracking the Code of Life*.

1. What does DNA look like in real life when viewed by the naked eye?
2. To what percent are all humans identical in our genetic codes?
3. What is the purpose of the Human Genome Project?
4. What does Tay-Sachs disease do to a baby?
5. How big is the error in the DNA code that causes Tay-Sachs?
6. Is Tay-Sachs rare or common?
7. For a baby to have Tay-Sachs does it inherit the defective gene from one parent or from both parents?
8. Why did it take so long to find the genetic mistake for cystic fibrosis and one of the genes that increases the risk for breast cancer?
9. Eric Lander describes the human genome as being like a parts list. How is the genome like a parts list?
10. How long did Venter's private company Celera say it would take them to sequence the genome?
11. How long was the Human Genome Project originally planning to take to sequence the genome?
12. What does Dr. Lander say about how similar the DNA of one human is to another human compared to how similar the DNA of one chimpanzee is to another chimpanzee?

13. Why are humans so similar to each other?
14. About what percentage of the genes in a human are also in a banana?
15. Why is this percentage so high?
16. Can genes be patented?
17. What kind of problems do drug companies have because of the fact that genes can be patented?
18. Riley has cystic fibrosis. What does this disease do?
19. Has discovering the gene for cystic fibrosis dramatically changed how it is treated?
20. Rather than trying to fix the gene what are scientists trying to fix?
21. What is wrong with one type of protein in Riley's body because three letters in one of his genes are incorrect?
22. Why is Tony unusual for a person with cystic fibrosis?
23. The old estimate found in most textbooks for the number of genes humans have is 100,000. How many genes do scientists currently think that we really have?
24. Why is Iceland the perfect place to look for genes that cause diseases?
25. What was deCode's first project?
26. A mutation in the genes BRCA-1 or BRCA-2 raises a woman's risk of getting what?
27. Who won the race to map the human genome?

28. Are genes evenly spaced on chromosomes?

29. What is the job of 21st century biology?

Part 2: Choose **ONE** of the questions below and write a response (minimum of a paragraph) to give your opinion and explain why you feel that way. Use information that you learned about in *Cracking the Code*.

1. Would you want yourself and your partner to be tested before having children to determine whether you were both carriers for a disease? Why or why not?

2. Who do you think should have access to your DNA and all of the information it contains? (You, your parents, your doctor, your school, the government, your employer, your insurance company?) Why?

3. Do you think people or companies should be allowed to patent genes? Why or why not?

4. If there was a genetic test for a disease that would most likely kill you before your twenty-seventh birthday if you have the disease, but there was no cure or treatment for this disease, would you want to have the test done to find out if you had the gene that causes the disease? Why or why not?