Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Nova: Cracking the Code of Life**

***Directions****: Please answer all questions in the space provided. The questions should be in movie order.*

**1.** What percentage of our genes do we have in common with a banana?

**2.** What does DNA look like to the naked eye?

**3.** What are the 4 chemicals that make up the ‘steps’ in the DNA ladder?

**4.** How many ‘steps’ are in the human genome?

***5.*** Humans have **\_\_\_\_\_\_\_\_\_\_\_\_** as many genes as a fruit fly.

**6.** What percentage of the DNA is identical in all human babies?

**7.** What is the Human Genome Project?

**8.** How long did they think it would take to complete the human genome?

**9.** How long did it take to find the gene that causes cystic fibrosis?

**10.** What percentage of DNA is active and important in our cells?

**11.** What disease does Hayden have?

**12.** What is Tay-Sachs disease and how does it affect a child’s development?

**13.** How big is the mistake in the DNA code that causes Tay-Sachs?

**14.** What molecule/protein does the mistake affect?

**15.** Why don’t Hayden’s parents have the disease?

**16.** What were the odds of Hayden inheriting this disease?

**17.** What are the symptoms of Tay Sachs and what happens to someone with Tay Sachs disease?

**18.** Blythe is a carrier for Tay-Sachs. What does this mean?

**19.** How do scientists hope to use the human genome project as an early warning system?

**20.** How have computers helped scientists code the human genome?

**21.** What process does Venter’s lab do that speeds up the process of mapping human DNA?

**22.** What influenced Venter’s decision to map the human genome?

**23.** Venter’s group said that they could sequence the whole human genome in \_\_\_\_\_ years, even though

the government planned to do it in **\_\_\_\_\_**years.

**24.** How did Venter’s announcement affect how the government’s lab was sequencing human DNA?

**25.** Whose genes were used for the human genome project?

**26.** How does Dr. Lander compare human DNA to the similarity of chimpanzee DNA?

**27.** Why are humans and chimpanzees genetic makeup so similar to each other?

**28.** Are humans **More** or Less closely related to other humans than chimps are to other chimps?

**29.** **EVOLUTION** – Explain why humans are so genetically similar?

**30.** What percentage of human DNA is similar to a Banana? How can this be?

**31.** What percentage of the ubiquitin gene is the same in humans and yeast?

**32.** What is ubiquitin?

**33.** How are genes being turned into private property?

**34.** How long does it take a patent office to process an application?

**35.** How many applications are waiting to be processed?

**36.** Why do research companies want patents?

**37.** What are the advantages and disadvantages of patenting genes?

**38.** What disease does 2 month old Riley have?

**39.** What organ does this disease affect the most?

**40.** What does cystic fibrosis, or CF, do?

**41.** What year was the gene for CF discovered?

**42.** “Genes create **\_\_\_\_\_\_\_\_\_\_** and proteins create **\_\_\_\_\_\_\_\_**.”

**43.** How does the ***SHAPE*** of a protein define what it can do?

**44.** How many base pairs (letters) are wrong with Riley’s DNA?

**45.** What does the healthy version of the cell membrane protein do?

**46.** What happens if the CF protein is not the right shape?

**47.** How is Riley’s CF treated?

**48.** How do scientists hope to help Riley?

**49.** Why are scientists so interested in Tony’s CF case?

**50.** What do they think might be helping Tony?