

Biology 1000 – Unit 4

DNA: The Secret of Life Movie Questions

Introduction

1. What is the common thread running through all of life; the secret of life?
2. What does this common thread of life carry along its length?
3. Where is this molecule located?
4. What does this molecule contain?
5. When are the molecules in question 1 visible?
6. What was the greatest question in biology?
7. What are the four chemical building blocks of DNA?
8. For what does DNA stand?

Discovering the Structure of DNA

1. Who were two of the scientists working to solve the structure of DNA?
2. Watson caught a “sneak preview” of the photograph of the X-ray crystal structure of DNA made by _____.
3. Based on the X-ray crystal structure of DNA, Watson concluded that the shape of DNA was _____.
4. What did Watson and Crick learn about the structure of DNA when they used cardboard cut out models of the components?
5. What happens when the strands of DNA are untwisted?
6. Why is DNA sometimes called the double helix?

7. How are the instructions in DNA encoded?
8. What is the relationship between the two strands?
9. Adenine (A) pairs with _____ and cytosine (C) pairs with _____.
10. What was the key to understanding how genetic information can be passed from one generation to the next generation?

DNA Replication

1. How is genetic information passed on?
2. What is the enzyme that unwinds the double helix?
3. Are both strands copied in the exact same manner?
4. What is the end result of this process?
5. What is this process of copying DNA called?
6. How accurate is the DNA copying process?

From DNA to Protein

1. What is a gene?
2. What are proteins?
3. What is the function of proteins that act as enzymes?
4. Helicase does not copy DNA. Helicase unwinds DNA. The DNA _____ makes the new complementary strand of DNA.

5. What is hemoglobin?
6. What is the function of hemoglobin?
7. What are the building blocks of proteins?
8. How many different kinds of amino acids are there?
9. How do amino acids form proteins?
10. How many nucleotides (DNA letters) code for each amino acid?
11. What is the triplet code?

The Central Dogma

1. What is the central dogma of biology?
2. Where do the factors assemble?
3. What molecule is the close chemical cousin of DNA?
4. What is one of the chemical differences between DNA and its RNA copy?
5. What is the process of making RNA called?
6. Where does this process occur?
7. After the process occurs, what happens to the RNA?
8. What is the name of the protein-making factories?
9. What is the function of the transfer molecules (transfer RNAs-tRNAs)?
10. Each transfer molecule binds a specific _____
and carries a specific _____ code.
11. How is the code read on the RNA for each amino acid?
12. The RNA code is then matched to the _____ code on the transfer molecule.
13. What happens when the correct amino acid is plugged in?
14. What determines the type of protein made by the ribosome?

Genetic Disease

1. From what disease does the young woman (Katrece McGhee) suffer?
2. What are some of the complications of this disease?
3. What happens to the red blood cells and hemoglobin in this disease?
4. What is the cause of sickle-cell disease?
5. How did Katrece get the disease?

The Human Genome Project

1. What had to be done before the genome was sequenced?
2. According to the DVD, what is the total number of genes in the human genome?

(NOTE: This number has been recently revised to 25 000- 30 000 genes.)
3. What is the percentage of the genome that codes for proteins?
4. Are the genes evenly distributed on all chromosomes?
5. What is the most surprising discovery from the human genome project?
6. What does this observation confirm?

Summary

1. What is the secret of life?
2. Why is it the secret of life?