

Episode 24 - The Genetic Code

1. What are some of the ways mentioned that proteins are used in our bodies?
2. How many subunits are found in hemoglobin? What atom is found in the center of each?
3. Briefly describe the four types of protein structure.
4. What is special about the binding of oxygen in hemoglobin?
5. What may be the result of a change of one amino acid in a protein structure? Give an example.
6. In DNA, how many bases are required to code for one amino acid in protein synthesis?
7. How does the video define a gene?
8. Where does protein synthesis take place?
9. What are the two types of RNA needed to carry out protein synthesis?
10. What can be the result of the improper coding of a protein during its synthesis?

Answer Key

1. What are some of the ways mentioned that proteins are used in our bodies?

Structure, transport, enzymes

2. How many subunits are found in hemoglobin? What atom is found in the center of each?

There are four subunits, each containing 2 α - helices and 2 β - sheets. An atom of iron is found in the center of each.

3. Briefly describe the four types of protein structure.

Primary - the sequence of amino acids in the protein chain

Secondary - the formation of α - helices or β - sheets from the protein chain

Tertiary - the folding of protein chains into more compact structures

Quaternary structure - the interactions of polypeptide chains in the protein

4. What is special about the binding of oxygen in hemoglobin?

The binding of the first oxygen makes it easier for the other oxygen(s) to bind.

5. What may be the result of a change of one amino acid in a protein structure? Give an example.

The protein may not function normally. Sickle Cell Anemia

6. In DNA, how many bases are required to code for one amino acid in protein synthesis?

Three

7. How does the video define a gene?

Enough triplets (DNA bases) to code for the synthesis of a polypeptide chain (protein)

8. Where does protein synthesis take place?

Ribosomes

9. What are the two types of RNA needed to carry out protein synthesis?

Transfer and messenger.

10. What can be the result of the improper coding of a protein during its synthesis?

A genetic disease may result - hemophilia, cystic fibrosis, Tay-Sachs Disease