

BIO-QUEST 2

1. (3 points) What is a gene?

A gene is a sequence of DNA nucleotides that codifies the production of a protein. A gene is the smallest unit of heredity.

2. (3 points) What are alleles of a gene?

Different versions of the same gene.

3. (3 points) What is a phenotype?

A phenotype is every observable characteristic of a living being conditioned by its genes. Some phenotypes may be altered by nongenetic factors (for example, artificial hair coloring). Specific phenotypes are also called phenotypical traits.

4. (4 points) If you unwound a DNA molecule, how long would it be? 1.8 meters
5. (4 points) What are nucleic acids?

DNA and RNA, the nucleic acids, are the molecules responsible for the hereditary information that commands the protein synthesis in living beings. The name “nucleic” derives from the fact that they were discovered (by the Swiss biochemist Friedrich Miescher, in 1869) within the cell nucleus. In that time it was not known that those substances contained the hereditary information.

6. (4 points) Who were James Watson, Francis Crick and Maurice Wilkins?

James Watson (North American), Francis Crick (British) and Maurice Wilkins (New Zealander) were the discoverers of the molecular structure of DNA, the double helix made of two polynucleotide chains paired by their nitrogen-containing bases. They won the Nobel prize in Medicine in 1962 for the discovery.

7. (5 points) What is the name of the DNA duplication process? What is the main enzyme that participates in it?

The process of copying, or duplication, of the DNA molecule is called replication. The enzyme that participates in the formation of a new DNA chain is the DNA polymerase. There are also other important enzymes in the replication process, the helicase, the gyrase and the ligase.

8. (3 points) What is a "codon"?

A sequence of three nucleotides.

9. (6 points) What holds one strand against the other in the double helix?

Hydrogen bonds between nitrogen and hydrogen across the covalent bonds involving a free pair of electrons

10. (5 points) Where was the discovery of DNA first announced? In a Cambridge pub