



Chapter 13 Protein Synthesis

Illustrating Protein Synthesis

Lab # 13 Answers

Analysis

1.) Describe Transcription in at least a paragraph of five sentences.

Answers will vary but they should contain the following: The process of forming the nucleic acid messenger RNA (m-RNA) from DNA.

DNA functions as the template. As the strands of corresponding nucleotides unzip, the corresponding nitrogen base on m-RNA is transcribed. During the transcription process, a series of three nitrogen bases becomes a code called a codon. These codons become the message for the specific amino acid to be brought back to the ribosome to form the specific protein molecule.

2.) Describe Translation in at least a paragraph of five sentences.

Answers will vary but they should contain the following: The process of forming the nucleic acid transfer RNA (t-RNA) from m-RNA.

DNA functions as the template. As the strands of corresponding DNA nucleotides unzip in the nucleus, the corresponding nitrogen base on m-RNA is transcribed. That messenger RNA is sent out of the nucleus to the ribosome where it will be translated. During the translation process, a series of three nitrogen bases becomes a code called an anti-codon. These anti-codons become the code for the specific amino acids to be brought back to the ribosome from the cytoplasm to form the specific protein molecules.

3.) Give the stop codon for DNA.

The stop codon for DNA is A-C-T.

4.) What is a stop codon?

The stop codon is like a period at the end of a sentence.

5.) What is a codon?

During the transcription process, a series of three nitrogen bases becomes a code called a codon.

6.) What is an anti-codon?

During the translation process, a series of three nitrogen bases becomes a code called an anti-codon.

7.) Why is a ribosome important for the function of protein synthesis?

The ribosome is where proteins are synthesized or created.

8.) Name and give the function of the two types of RNA described in the lab.

The names of the two types of RNA described in the lab are messenger and transfer

RNA. Messenger RNA carries the transcribe code to the ribosome. Transfer RNA translates the transcribed code coming from the DNA inside the nucleus.

9.) What is the function of messenger RNA in transcription?

The function of messenger RNA in transcription is to carry the message from the original molecule inside the nucleus to the ribosome where the message will be translated by the transfer RNA.

10.) What are the functions of the enzymes DNA Polymerase and RNA Polymerase?

DNA Polymerase is the enzyme that is involved in breaking the weak hydrogen bonds that hold two corresponding nitrogen bases together.

RNA Polymerase is the enzyme that produces m-RNA inside the nucleus. As the DNA Polymerase cuts the weak hydrogen bonds that hold each corresponding nitrogen base pair together, then RNA Polymerase produces the M-RNA nitrogen bases coded by the DNA template. This in turn makes messenger RNA.

11.) A certain protein is made up of 120 amino acids. What is the smallest number of RNA bases in the messenger RNA that is required to carry the code for Protein Synthesis to take place? Be Specific.

Three nitrogen bases are required to code for one amino acid. Since you have 120 amino acids, you will multiply 120 by 3. The answer is 360 RNA bases.