**Biology 12 – 12-3 Protein Synthesis – Phschool.com – CODE: cbp-4123**

**Name: Date: December 5, 2019**

**Introduction**

are coded  instructions that control the production of

within the cell. The first step in these genetic message is to copy part of the

into or ,

in a process known as . The new RNA strand contains

coded information for making proteins in a process called ,

or .

**Transcription**

In the , RNA molecules are produced by copying part of the DNA sequence in a process known as . An enzyme, , separates the DNA strand to create a for the bases. RNA bases then pair up with the DNA bases. The resulting strand is called messenger RNA ( ) because it carries all of the information of the DNA.

**Translation Begins**

, or protein synthesis, begins with a messenger RNA (mRNA) molecules enters the and attached to a . Translation begins at the start codon . A RNA (tRNA) with bases that are to the start codon is brought into the ribosome to bind with the complementary mRNA. The is released from the tRNA to start the protein, or , chain.

**Translation Ends**

The protein chain continues to grow until the ribosome reaches a on the mRNA. The ribosome then the completed polypeptide.

**DO NOT SUMMIT THIS PAGE WITH THE FOLLOWING ASSIGNMENT**

**COMPLETE AND MAKE A COPY FOR YOURSELF**

***Name: Date: December 5, 2019 DUE: December 6, 2019***

***USE WEBSITE AND/OR NOTES TO COMPLETE THE FOLLOWING***

*Match the terms on the left with the definitions on the right.*

1. the process of producing RNA by copying part of the DNA sequence
2. an enzyme that separates a DNA strand to create a template for RNA bases
3. DNA instructions that control the production of proteins within a cell
4. also known as protein synthesis
5. RNA that carries the genetic instructions for protein production
6. \_\_\_\_\_ RNA polymerase
7. \_\_\_\_\_ gene
8. \_\_\_\_\_ translation
9. \_\_\_\_\_ messenger RNA
10. \_\_\_\_\_ transcription
11. Identify the steps of transcription.
12. What structure does messenger RNA attach itself to in a cell?
13. What type of RNA is responsible for moving amino acids to the ribosome?
14. Translation begins at AUG, the codon.
15. Complete the following RNA strands with the complementary tRNA bases (anticodon).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **U** | **A** | **C** | **A** | **A** | **G** |  | **C** | | **U** | | **G** | | **U** | | **G** | | **A** | |
| \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ | \_\_\_ |  | | \_\_\_ | | \_\_\_ | | \_\_\_ | | \_\_\_ | | \_\_\_ | | \_\_\_ | |

1. There are three types of RNA involved in the process of protein synthesis: mRNA, tRNA, and rRNA. Identify which type of RNA matches with the role/function indicated below.
   1. \_\_\_\_\_\_\_\_\_\_\_\_ is the molecule that carries copies of the instructions (from DNA) for assembling amino acids into proteins.
   2. \_\_\_\_\_\_\_\_\_\_\_\_ is part of the ribosome, or protein builders, of the cell and are responsible for translation, or the process our cells use to make proteins.
   3. \_\_\_\_\_\_\_\_\_\_\_\_ is a type of RNA molecule that helps decode a messenger RNA (mRNA) sequence into a protein.
2. What are the roles of RNA polymerase during transcription?

a.

b.

c.

1. What is the name of the site where RNA polymerase attaches to on the DNA strand?
2. The DNA of eukaryotic genes contains sequences of nucleotides that are not involved in coding for a proteins called .
3. The DNA sequences that code for proteins are called because they are expressed in the synthesis of proteins.
4. Proteins are made by joining amino acids into long chains called .
5. The genetic code is ready letters at a time so that each “word” of the code message is three long.
6. A codon consists of three consecutive that specify for a single amino acid that is added to the polypeptide.
7. If AUG is the initiation or start codon for protein synthesis, what is the complementary code on the DNA template strand?
8. There are three (2 words) that do not code for any amino acid (act like a period at the end of a sentence that signify the end of a polypeptide).
9. One can compare the different roles played by DNA and RNA molecules in directing protein synthesis to the two types of plans used by builders. DNA is referred to as the “master plan” while RNA is referred to as the “ “.

**TOTAL VALUE 40**