

## Test for DNA to Protein Synthesis Activity

Name \_\_\_\_\_ Teacher \_\_\_\_\_

Date \_\_\_\_\_ Class \_\_\_\_\_

Check one:

Pretest

Posttest

1a. How many amino acids will result from the following strand of DNA?

A C G C C C A A A T A C

- a. two
- b. four
- c. eight
- d. twelve

Answers B	1
Other	0

1b. Explain your choice.

<b>Response includes...</b>	
Every triplet of nucleotides in a nucleic acid sequence specifies a single amino acid. There are four triplets in this sequence.	2
You need more than one nucleotide to code for an amino acid. Answer doesn't include specifics.	1
Other	0

2. Which of the following best describe the function of DNA in protein Synthesis?

- a. The sequence of amino acids in DNA is copied to create a new protein.
- b. The sequence of nucleotides in the DNA creates a protein directly in the nucleus.
- c. The sequence of amino acids in the DNA instructs a cell on how to make proteins.
- d. The sequence of nucleotides in the DNA instructs a cell on how to make proteins.

Answers D	1
Other	0

3. Describe in sequence, the process of protein synthesis. (Hint: Include at least 5 steps)

## Explanation Score

	Response includes...
Complete (3)	<ul style="list-style-type: none"><li>• DNA serves as a blueprint for proteins</li><li>• Transcription occurs. This is the process through which a DNA sequence is copied to produce a complementary RNA.</li><li>• The newly formed mRNA travels from the nucleus into the cytoplasm and attaches to a ribosome.</li><li>• At ribosome translation occurs. This is the process that converts an mRNA sequence into a chain of amino acids that form the protein.</li><li>• The ribosome moves along the mRNA strand reading each codon. The tRNA anticodon bonds to it complementary codon. The amino acid carried by the tRNA is bonded to the polypeptide</li><li>• The resulting polypeptide chain once complete folds in the cytoplasm into a specific shape.</li></ul>
Mostly complete (2)	At least 3 of the steps above in proper sequence. The steps need to convey the full sequence including DNA contains the code that is copied to produce mRNA, the mRNA is translated, a process by which tRNA carries amino acids to complimentary codon, and amino acids bond together resulting in a peptide change.
Partial (1)	Just mentions transcription and translation but doesn't provide enough detail or proper sequence.
Incorrect (0)	Other