



State of Texas Assessments of Academic Readiness

# **Biology**

## Short Constructed Response Scoring Guide

### Sample

## **General Information**

Beginning with the 2022–2023 school year, science assessments will include a short-constructed response at every assessed grade level. Students will be asked to provide a short response to a question. Responses will be scored using a prompt-specific two-point rubric.

This State of Texas Assessments of Academic Readiness (STAAR®) constructed response scoring guide provides student exemplars at all score points for a short-constructed response question from the STAAR Biology stand-alone field test. The question is presented as it appeared on the field test, and responses were scored based on the two-point rubric that was developed with the input of Texas educators. A response earns a specific score point based on the completeness of the response provided as measured against the rubric.

The responses in this guide are actual student responses submitted online during the testing window. To protect the privacy of individual students, all names and other references of a personal nature have been altered or removed. Otherwise, the responses appear as the students wrote them and have not been modified.

## Biology Prompt

**Prompt:** A gene from a plant is inserted into a bacterial chromosome. The bacterium is then able to express the plant gene.

- What do the two organisms have in common that allows the bacterium to express the plant gene?
- Which type of molecule is the final product of gene expression?

Read the questions carefully. Then enter your answers in the box provided.

## Item-Specific Rubric

### Score: 2

The student describes that **all organisms use the same nucleic acids, DNA, RNA, nitrogenous bases, genetic code, common code, or nucleotides**, and that **the products of gene expression are proteins**.

### Score: 1

The response provides only half of the correct details.

### Score: 0

The response is incorrect or irrelevant.

## Sample Student Responses

### Score Point 0s

They both are living things  
The plant molecule

#### Score Point 0

No correct identification of what the two organisms have in common that allows the bacterium to express the plant gene is given (*are both living things*), and an incorrect attempt to identify the type of molecule that is the final product of gene expression is provided (*plant molecule*).

The bacteria will simply be mixed with the plant dna.

#### Score Point 0

The identification given of what the two organisms have in common that allows the bacterium to express the plant gene is completely incorrect (*bacteria . . . mixed with plant dna*). No attempt to identify the type of molecule that is produced as the final product of gene expression.

The two organisms may have a common ancestor.

#### Score Point 0

The identification given of what the two organisms have in common that allows the bacterium to express the plant gene is completely incorrect (*two organisms may have a common ancestor*). No attempt to identify the type of molecule that is produced as the final product of gene expression.

### Score Point 1s

The two organisms have the same number of chromosomes. The final product of gene expression is a protein molecule.

#### Score Point 1

The student correctly identifies the type of molecule that is the final product of the gene expression (*protein molecule*), but an incorrect attempt is made to identify what the two organisms have in common that allows the bacterium to express the plant gene (*have the same number of chromosomes*). A partial understanding of the stimulus material is provided.

These two organisms share a common genetic code allowing the bacterium to express the plant gene. A multicellular molecule will be the final product of this gene expression.

*Score Point 1*

The student correctly identifies what the two organisms have in common that allows the bacterium to express the plant gene (*share a common genetic code*) but an incorrect attempt is made to identify the type of molecule that is the final product of the gene expression (*A multicellular molecule*). A partial understanding of the stimulus material is provided.

The DNA within both cells allow for the gene expression to occur.  
The type of molecule is nucleic acids that make up the DNA.

*Score Point 1*

The student correctly identifies what the two organisms have in common that allows the bacterium to express the plant gene (*DNA*) but an incorrect attempt is made to identify the type of molecule that is the final product of the gene expression (*type of molecule is nucleic acids*). A partial understanding of the stimulus material is provided.

**Score Point 2s**

The bacterium is able to express the gene because it has the same DNA as the plant.  
When the gene is expressed a specific protein is made that will affect the bacterium.

*Score Point 2*

The student correctly identifies what the two organisms have in common that allows the bacterium to express the plant gene (*same DNA*) and correctly identifies the type of molecule that is the final product of the gene expression (*a specific protein is made*). A complete understanding of the stimulus material is provided.

1. All organisms have DNA, including plants and bacteria.
2. Proteins are produced as a result of gene expression.

*Score Point 2*

The student correctly identifies what the two organisms have in common that allows the bacterium to express the plant gene (*DNA*) and correctly identifies the type of molecule that is the final product of the gene expression (*Proteins are produced*). A complete understanding of the stimulus material is provided.

Both of the organism's genes function with the same 4 nitrogenous bases. A functional protein is produced after gene expression.

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*Score Point 2*

The student correctly identifies what the two organisms have in common that allows the bacterium to express the plant gene (*same 4 nitrogenous bases*) and correctly identifies the type of molecule that is the final product of the gene expression (*A functional protein is produced*). A complete understanding of the stimulus material is provided.