STAAR CONNECTION™

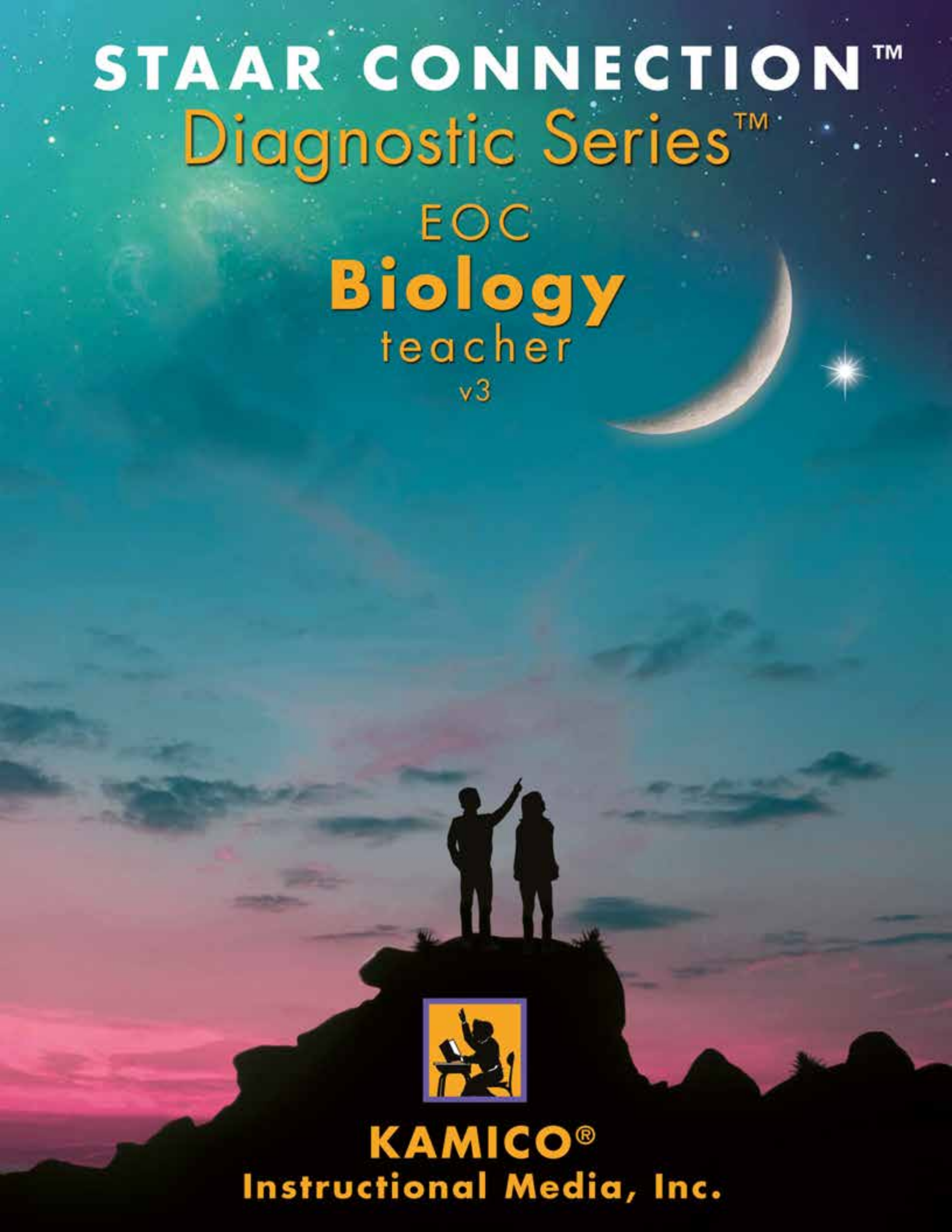
Diagnostic Series™

EOC

Biology

teacher

v3



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STAAR CONNECTION™

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teacher

Diagnostic Series™

XXX/x/MMXXVI
Version 3.1



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KAMICO® Instructional Media, Inc.
CONNECTION® to the TEKS
Introduction

KAMICO® Instructional Media's program is validated by scientifically based research. **STAAR CONNECTION™ Diagnostic Series™** and **CONNECTION® to the TEKS Developmental Series™** can be used in tandem to ensure mastery of Texas reporting categories and TEKS. The *Diagnostic Series™* consists of a bank of assessments. Each assessment covers a mixture of reporting categories and TEKS. This research-based format provides continual reinforcement for and ensures retention of mastered concepts. To take full advantage of this series, administer an assessment to students. After they have completed the assessment, use it as an instructional tool. Go over each item with the class, discussing all correct and incorrect answers. Then, use the assessment as a diagnostic tool to determine a standard for which students need remediation. Find that standard in the *Developmental Series™*.

Each book in the **CONNECTION® to the TEKS Developmental Series™** consists of instructional activities and assessments over isolated TEKS to allow for the remediation and development of specific TEKS. For every TEKS, there is at least one individual or group activity. The activities provide a fun, challenging, yet nonthreatening, way to develop mastery of the TEKS. In addition to these activities, each *Developmental Series™* book contains assessments on isolated TEKS to be used to identify mastery or the need for further skill development or reinforcement. Continue to alternate between the **STAAR CONNECTION™ Diagnostic Series™** and the **CONNECTION® to the TEKS Developmental Series™**.

KAMICO's **Game Gallery®** consists of over 300 board games in English and in Spanish. These games create a game-based learning environment to facilitate additional reinforcement of TEKS.

KAMICO® Instructional Media, Inc., supports efforts to ensure adequate yearly progress and eliminate surprises in high-stakes test results.

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STAAR CONNECTION™
Diagnostic Series™
EOC Biology
Table of Contents

Eligible Texas Essential Knowledge and Skills 7

Assessment 1 11
Assessment 2 18
Assessment 3 26
Assessment 4 33
Assessment 5 40
Assessment 6 48
Assessment 7 57
Assessment 8 65
Assessment 9 73
Assessment 10 80
Assessment 11 89
Assessment 12 97
Assessment 13 104
Assessment 14 113
Assessment 15 120

Answer Key 130
Student Bubble Answer Sheet 143
Bubble Answer Key 147

TEKS Alignment Chart 151
Student Progress Chart 159

State of Texas Assessment of Academic Readiness
Biology Assessment
Eligible Texas Essential Knowledge and Skills

STAAR Biology Assessment
Reporting Category 1
Biological Structures, Functions, and Processes

(B.5) The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:

(A) relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell ***Supporting Standard***

(B) compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity ***Readiness Standard***

(D) compare the structures of viruses to cells and explain how viruses spread and cause disease ***Supporting Standard***

(B.6) The student knows how an organism grows and the importance of cell differentiation. The student is expected to:

(A) explain the importance of the cell cycle to the growth of organisms, including an overview of the stages of the cell cycle and deoxyribonucleic acid (DNA) replication models ***Supporting Standard***

(B) explain the process of cell specialization through cell differentiation, including the role of environmental factors ***Supporting Standard***

(C) relate disruptions of the cell cycle to how they lead to the development of diseases such as cancer ***Readiness Standard***

(B.11) The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:

(A) explain how matter is conserved, and energy is transferred during photosynthesis and cellular respiration using models, including the chemical equations for these processes ***Supporting Standard***

(B) investigate and explain the role of enzymes in facilitating cellular processes ***Readiness Standard***

(B.12) The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:

(A) analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals ***Supporting Standard***

(B) explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures ***Readiness Standard***

Reporting Category 2
Mechanisms of Genetics

(B.7) The student knows the role of nucleic acids in gene expression. The student is expected to:

(A) identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA ***Supporting Standard***

(B) describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA) ***Supporting Standard***

(C) identify and illustrate changes in DNA and evaluate the significance of these changes ***Readiness Standard***

(B.8) The student knows the role of nucleic acids and the principles of inheritance and variation of traits in Mendelian and non-Mendelian genetics. The student is expected to:

(A) analyze the significance of chromosome reduction, independent assortment, and crossing-over during meiosis in increasing diversity in populations of organisms that reproduce sexually ***Supporting Standard***

(B) predict possible outcomes of various genetic combinations using monohybrid and dihybrid crosses, including non-Mendelian traits of incomplete dominance, codominance, sex-linked traits, and multiple alleles ***Readiness Standard***

Reporting Category 3
Biological Evolution

(B.9) The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple lines of evidence. The student is expected to:

(A) analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental ***Supporting Standard***

(B) examine scientific explanations for varying rates of change such as gradualism, abrupt appearance, and stasis in the fossil record ***Readiness Standard***

(B.10) The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms. The student is expected to:

(A) analyze and evaluate how natural selection produces change in populations and not in individuals ***Supporting Standard***

(B) analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success ***Readiness Standard***

(C) analyze and evaluate how natural selection may lead to speciation ***Readiness Standard***

(D) analyze evolutionary mechanisms other than natural selection, including genetic drift, gene flow, mutation, and genetic recombination, and their effect on the gene pool of a population ***Supporting Standard***

Reporting Category 4
Interdependence within Environmental Systems

(B.13) The student knows that interactions at various levels of organization occur within an ecosystem to maintain stability. The student is expected to:

(A) investigate and evaluate how ecological relationships, including predation, parasitism, commensalism, mutualism, and competition, influence ecosystem stability ***Supporting Standard***

(B) analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models ***Supporting Standard***

(C) explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles ***Supporting Standard***

(D) explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability ***Readiness Standard***

Name _____ Date _____

1 A deer is eating grass in a meadow when it hears a sound. The deer looks up and spots a wolf. This activates the deer's stress response.

Write the name of each system next to the part of the stress response it is responsible for. Each answer may be used more than once.

Nervous

Cardiovascular

Respiratory

Digestive

Endocrine

	Releases stress hormones, including adrenaline and cortisol
	Causes muscles to tense in preparation of running or fighting
	Increases heart rate and blood pressure
	Causes rapid breathing to increase oxygen intake
	Slows absorption of nutrients as energy is diverted to other body processes
	Narrows focus on the threat, becoming less aware of other sensory inputs

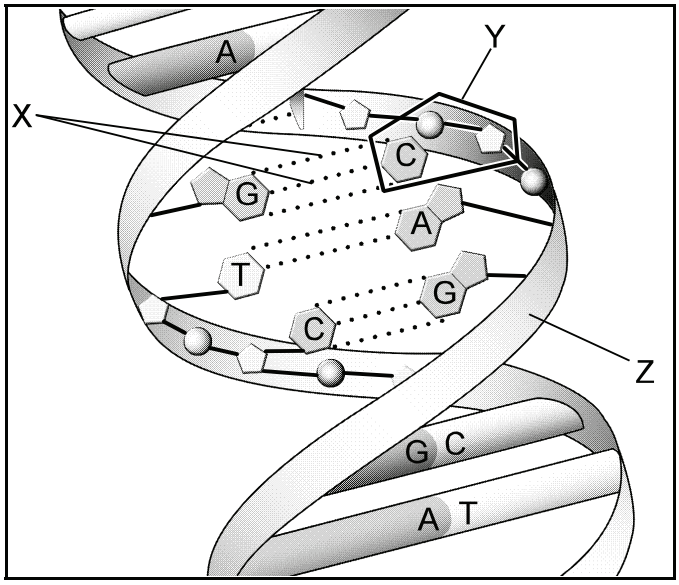
2 The biomolecule used by organisms to store and transmit cellular information is

Ⓐ lipid
Ⓑ protein
Ⓒ carbohydrate
Ⓓ nucleic acid

.

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3 Study the diagram of a section of DNA.



Which labels correctly identify the components of DNA?

Ⓐ X — hydrogen bond, Y — nucleotide, Z — sugar-phosphate base

Ⓑ X — nucleotide, Y — hydrogen bond, Z — sugar-phosphate base

Ⓒ X — nucleotide, Y — sugar-phosphate base, Y — hydrogen bond

Ⓓ X — sugar-phosphate bond, Y — nucleotide, Z — hydrogen bond

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4 The following frame shift mutation occurs.

Original Sequence	UUC	AGA	AAG	GUC	GCA	UAC
Amino Acid	Phe	Arg	Lys	Val	Ala	Tyr
Mutated Sequence	UAG					
Amino Acid	Stop					

What is the result of this mutation? Use the words below to complete the paragraph.

codon

nucleotide

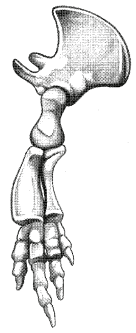
protein

stop codon

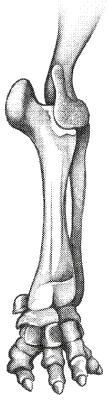
The removal of a single _____ causes a shift in the _____ reading frame. A _____ is introduced where there was none before. This means that the resulting _____ will be shortened.

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5 A biologist reads an article in a scientific journal that describes how the legs of different organisms look and function differently, but appear to be constructed from the same basic bones. He compares a drawing of the skeletal structure of a porpoise's fin with one of an elephant's leg.



Porpoise fin



Elephant leg

What aspect of the theory of evolution do these drawings support?

Ⓐ The structures of these organisms are homologous, providing evidence that they descended from a common ancient ancestor.

Ⓑ The two organisms have the same DNA, giving evidence that they originated from the same species.

Ⓒ The similarity between the two organisms in the structures supports the theory that random occurrences in nature cause organisms to evolve.

Ⓓ The similarity between the two organisms in the structures provides evidence that porpoises will eventually evolve into elephants.

6 When genes are transferred from one population to another, evolution occurs. For example, if all red-haired people were to leave Ireland, the following generation would probably have fewer red-haired people. Which type of mechanism results in evolutionary change due to the transfer of genes from one population to another?

Ⓐ genetic drift

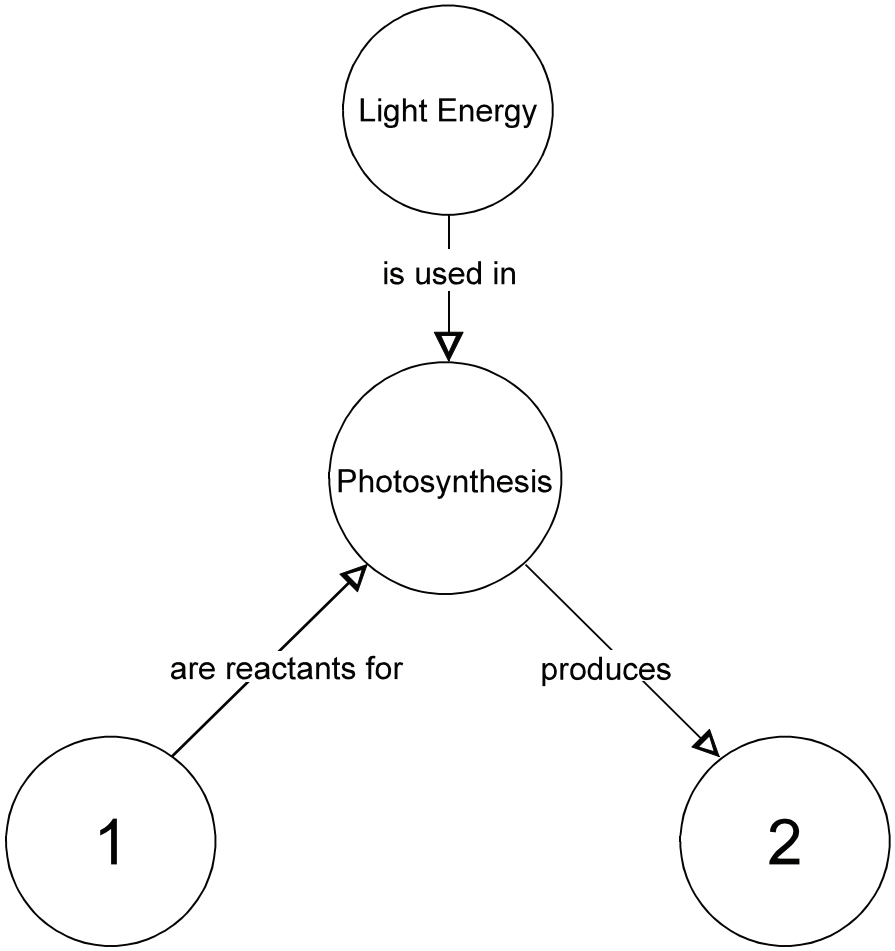
Ⓑ gene flow

Ⓒ gene therapy

Ⓓ gene mutation

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7 Look at the incomplete concept map that outlines the energy flow in photosynthesis.



Which reactants and products belong in the circles labeled "1" and "2"?

1		2
Ⓐ Carbon and Oxygen	;	Ⓐ Sugars and Oxygen
Ⓑ Carbon Dioxide and Water		Ⓑ Oxygen and Water
Ⓒ Sugars and Water		Ⓒ Hydrogen and Nitrogen
Ⓓ Carbon Dioxide and Sugars		Ⓓ Carbon Dioxide and Oxygen

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8 A biology student wears protective gloves as he studies a bacterium cell under a microscope. Using the microscope, what observation does the student make that allows him to correctly classify the bacterium cell?

Ⓐ The student observes that the bacterium cell is a single-celled organism, and therefore, the bacterium is a eukaryote.

Ⓑ The student observes that the bacterium cell does not have a cell membrane, and therefore, the bacterium is a prokaryote.

Ⓒ The student observes that the bacterium cell cannot reproduce, and therefore, the bacterium is a eukaryote.

Ⓓ The student observes that the bacterium cell does not contain a nucleus, and therefore, the bacterium is a prokaryote.

9 Hydrilla is an invasive aquatic weed that forms thick mats on the water surface in the absence of natural enemies. The fast-growing weed takes away habitat from other aquatic plants and open-water inhabiting organisms. Thick mats on the water surface reduce the amount of sunlight reaching plants in deeper water, reducing their ability to photosynthesize.

What is the most likely response of the aquatic community to the invasion of hydrilla in their aquatic environment?

Ⓐ An overgrowth of hydrilla would introduce a new food source, resulting in increasing the diversity of different organisms and plants and their populations that live in the aquatic environment.

Ⓑ An overgrowth of hydrilla would deplete the amount of dissolved oxygen in the water, resulting in the death of large populations of aquatic organisms and plants.

Ⓒ An overgrowth of hydrilla would not change the organisms in the aquatic community because the organisms will reclaim their original habitats by killing the hydrilla.

Ⓓ An overgrowth of hydrilla would result in fewer numbers of organisms in populations because the organisms would be eaten by more land-based organisms that move to the aquatic community.

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10 Pandas depend on bamboo for food. The pandas' bamboo source grows only in certain temperate forests in China. Many of these forests have been cleared for timber and farmland. As a result, the population of pandas in the world is declining.

Which of the following adaptations would most likely evolve in order to allow the species to survive?

Ⓐ In order to escape predators, pandas evolve to have different coloring in their coats.

Ⓑ In order to require less food, pandas evolve to need a longer hibernation period.

Ⓒ In order to increase the panda population, pandas evolve to have larger litters of babies.

Ⓓ In order to increase their supply of food, pandas evolve to include other sources of food in their diet.

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STAAR CONNECTION™
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Answer Key

Assessment 1

1

Endocrine	Releases stress hormones, including adrenaline and cortisol
Nervous	Causes muscles to tense in preparation of running or fighting
Cardiovascular	Increases heart rate and blood pressure
Respiratory	Causes rapid breathing to increase oxygen intake
Digestive	Slows absorption of nutrients as energy is diverted to other body processes
Nervous	Narrows focus on the threat, becoming less aware of other sensory inputs

2 **D** nucleic acid

3 **A** X — hydrogen bond, Y — nucleotide, Z — sugar-phosphate base

4 The removal of a single **nucleotide** causes a shift in the **codon** reading frame. A **stop codon** is introduced where there was none before. This means that the resulting **protein** will be shortened.

5 **A** The structures of these organisms are homologous, providing evidence that they descended from a common ancient ancestor.

6 **B** gene flow

7 **B** Carbon Dioxide and Water;
A Sugars and Oxygen

8 **D** The student observes that the bacterium cell does not contain a nucleus, and therefore, the bacterium is a prokaryote.

9 **B** An overgrowth of hydrilla would deplete the amount of dissolved oxygen in the water, resulting in the death of large populations of aquatic organisms and plants.

10 **D** In order to increase their supply of food, pandas evolve to include other sources of food in their diet.

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STAAR CONNECTION™
Diagnostic Series™ EOC Biology
TEKS Alignment Chart

For each grade or course, TEA has identified some of the TEKS eligible to be assessed on STAAR as readiness standards. These readiness standards will be emphasized on the STAAR assessments. The remaining TEKS eligible to be assessed on STAAR are considered supporting standards. Although supporting standards will be assessed, they will not be emphasized on STAAR. KAMICO® has shown whether each question assessed in this book is aligned to a readiness standard or a supporting standard.

Readiness standards

- are essential for success in the current grade or course,
- are important for preparedness for the next grade or course,
- support college and career readiness,
- necessitate in-depth instruction, and
- address broad and deep ideas.

Supporting standards, although introduced in the current grade or course,

- may be emphasized in a subsequent year,
- may be emphasized in a previous year,
- play a role in preparing students for the next grade or course but not a central role, and
- address more narrowly defined ideas.

Assessment 1				
Question Number	**Answer**	**Reporting Category**	**TEKS**	**Supporting or Readiness**
1	SR	1	B.12A	Supporting
2	D	1	B.5A	Supporting
3	A	2	B.7A	Supporting
4	SR	2	B.7C	Readiness
5	A	3	B.9A	Supporting
6	B	3	B.10D	Supporting
7	B, A	1	B.11A	Supporting
8	D	1	B.5B	Readiness
9	B	4	B.13A	Supporting
10	D	3	B.10A	Supporting

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