Texas STAAR 2017 Biology

Exam Materials
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Answer Key Materials
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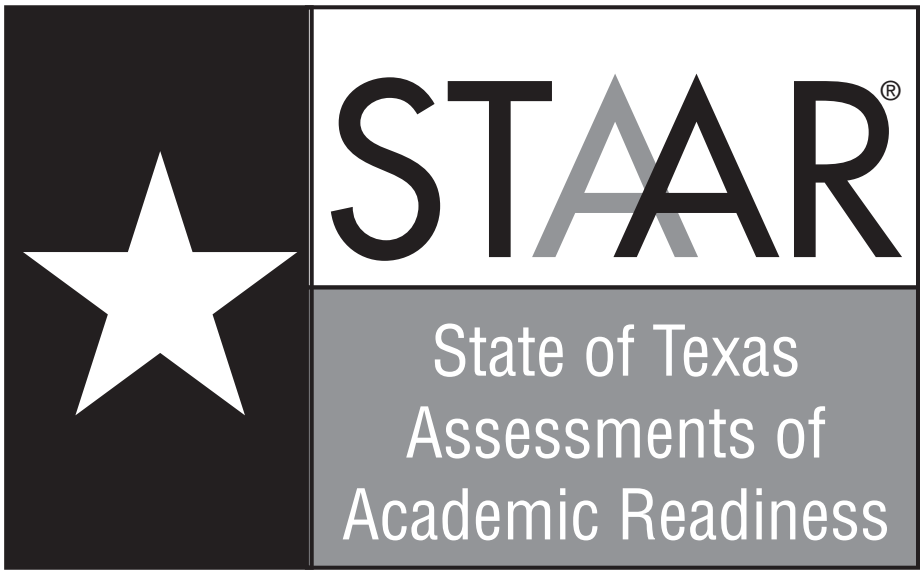


Biology

Administered May 2017

RELEASED

DIRECTIONS

Read each question carefully. Determine the best answer to the question from the four answer choices provided. Then fill in the answer on your answer document.

1 The picture shows a student using a microscope to study a prepared slide of a single-celled organism.

A single-celled organism can be classified as a prokaryote based on the absence of —

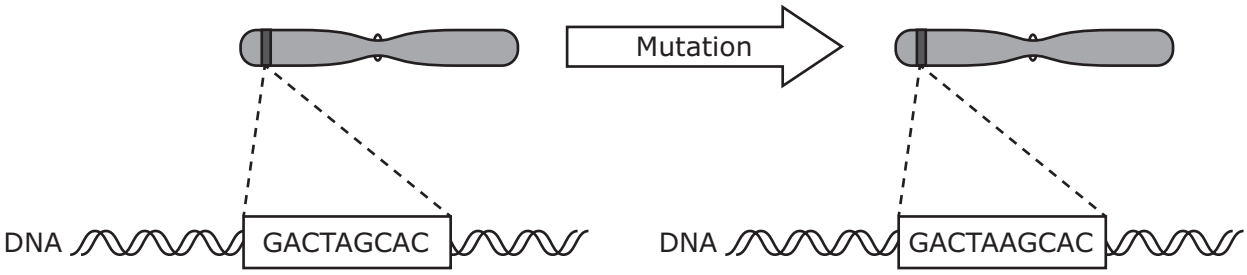
A a cell membrane

B ribosomes

C chromosomes

D a nucleus

2 Different types of mutations can occur in DNA. The diagram represents a type of mutation.



Which statement describes the mutation in the diagram?

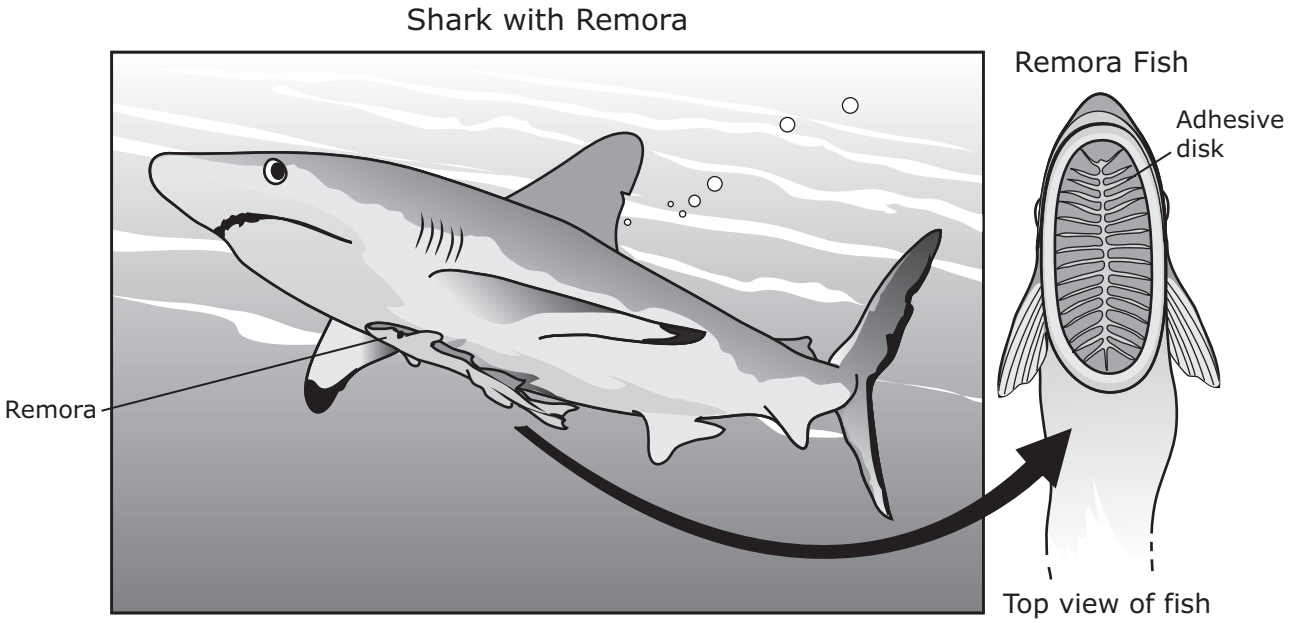
F A silent mutation results in the insertion of a different amino acid.

G A substitution occurs with the adenine base.

H A deletion of a cytosine base occurs.

J A base is inserted into one strand of the DNA.

3 A remora is a fish that has an adhesive disk on the back of its head that it uses to attach itself to a large shark. When food floats away from the shark's mouth as it feeds, the remora collects the scraps. Drawings of a shark with a remora attached and a remora's adhesive disk are shown below.



The relationship between the remora and the shark is an example of —

A predation

B parasitism

C commensalism

D competition

GO ON

4 Invasive plant species affect the interactions of living and nonliving components of an ecosystem, so the removal of invasive plants is often necessary. The goal of most plant-control methods is to disrupt or inhibit the function of different plant systems. For example, insects can be used to chew through roots in order to reduce a plant's ability to absorb water.

Which of these functions would be most immediately affected by a reduction in water uptake by roots?

F Disease resistance

G Seed dispersal

H Sunlight absorption

J Photosynthesis

5 The picture shows a pika, a small mammal found in grassland ecosystems. The vast grasslands of the Tibetan plateau are home to the plateau pika. The numerous pikas are prey for many predators of the grasslands, which serve as a major watershed for much of the area. The watershed drains large quantities of groundwater during the rainy season, or the monsoon season. Pikas have extensive burrows that help drain groundwater rapidly and are used as nesting sites by many bird species. However, many people advocate the eradication of the plateau pikas because they compete with livestock for grass.

Which of these will most likely happen if the plateau pikas are completely removed from the Tibetan plateau grasslands?

A The ecosystem will become unstable because predators will have fewer prey, the birds will have fewer nesting sites, and the area downriver will become vulnerable to flooding without the burrows to aerate the soil and provide drainage for monsoon rains.

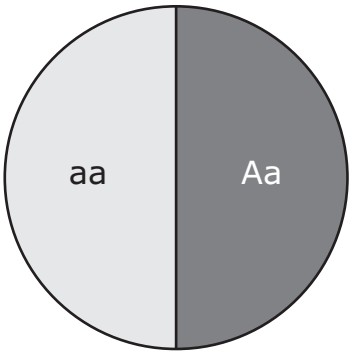
B The ecosystem will become more stable because the pika will be replaced by other species of small mammals that can fill the niche, bird species will adapt to nesting aboveground, and the soils will become compacted without the burrows.

C The ecosystem will become unstable because the predators will migrate to nearby ecosystems, the birds will nest in nearby trees, and the soils will be aerated by other small mammals.

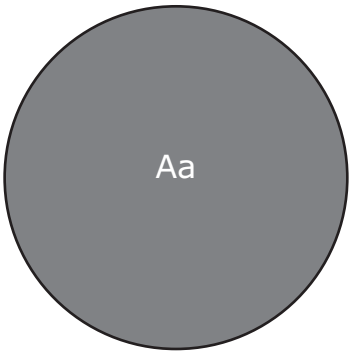
D The ecosystem will become more stable because the pika will no longer be there to eat the grasses, the birds will migrate to other ecosystems during nesting season, and the soils will be able to absorb more of the monsoon rains without the pika burrows.

6 Albinism is an autosomal recessive condition. Which circle graph shows the genotype probability when an albino female mates with a male that is heterozygous for the albinism trait?

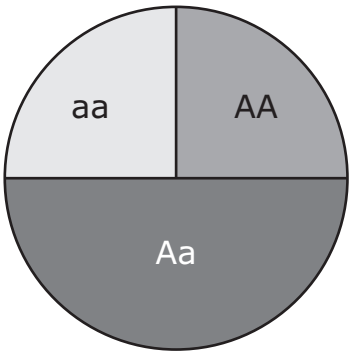
F



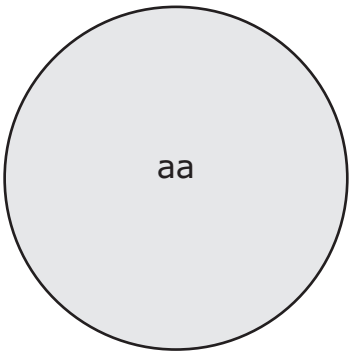
H



G

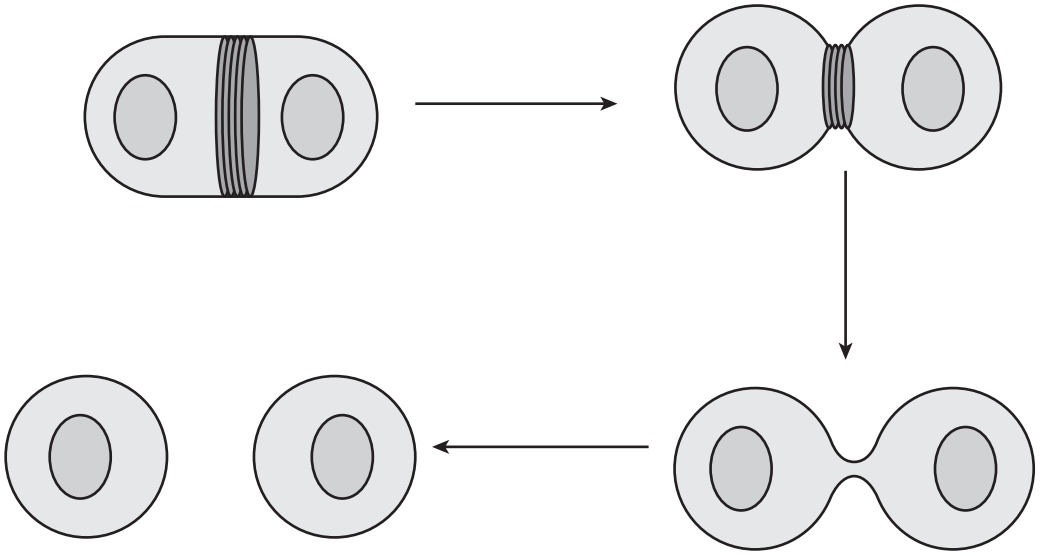


J



GO ON

7 Part of the cell cycle is shown in this simplified model.



This part of the cell cycle is best described as the process that —

A duplicates the DNA

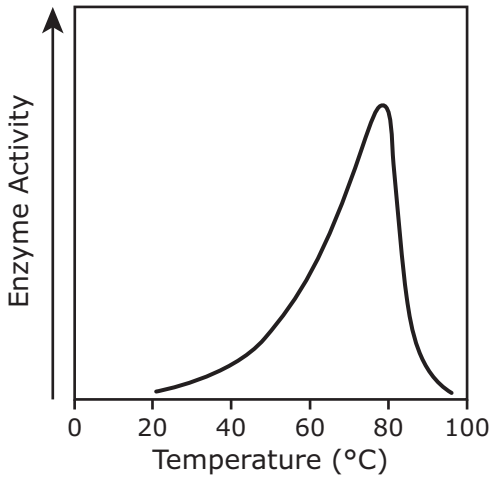
B completes cell division

C maintains genetic homeostasis

D synthesizes new molecules

GO ON

8 Taq polymerase is an enzyme used in the polymerase chain reaction (PCR) to replicate fragments of DNA. A study published in 1976 examined the properties of Taq polymerase after the enzyme was isolated from *Thermus aquaticus*, a thermophilic bacterium that lives in the hot springs of Yellowstone National Park. The graph shows one of the results of the study.



Source: Chien et al., "Deoxyribonucleic Acid Polymerase from the Extreme Thermophile *Thermus aquaticus*," *Journal of Biology*, 1976

Which statement about enzyme activity is best supported by this graph?

F An enzyme must be composed of multiple polypeptides, or subunits, to be active.

G An enzyme's rate of activity increases with time until it becomes inactive.

H An enzyme functions best under specific temperature conditions.

J An enzyme works equally well in bacteria that are adapted to high temperatures and in eukaryotic cells such as human cells.

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9 The human immunodeficiency virus (HIV) often infects and destroys CD4 T cells. These CD4 T cells are one of many kinds of white blood cells that are an important part of the immune system.

The most common danger related to the destruction of CD4 T cells is —

A an increase in the risk of high blood pressure

B an increase in the threat of diseases caused by microorganisms and viruses

C a decrease in the flow of blood to vital organs

D a decrease in the amount of oxygen being transported to tissues

10 Common baboons live on the savanna in breeding groups called troops. While females tend to stay with the troop, younger or less dominant males may leave to join a neighboring troop. Which of these is a likely outcome of movement by young males?

F Gene flow occurs between populations.

G Allele frequencies suddenly change.

H Relative genotypic frequencies reach a constant state.

J Intermediate phenotypes increase in the species.

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11 An estuary collects sediments from the ocean and rivers that feed into it. The sediments swirl around and then settle to form a mudflat. Eel grass is then established on the mudflat. The ecosystem changes over time and ultimately develops into a salt marsh that contains mangrove trees.

Which of the following is likely NOT involved in this example of ecological succession?

A The rotting remains of plants add to the fertility of the soil.

B The soil becomes so fertile that eel grass is replaced by other plant species.

C The roots from plants help stabilize the sediment, keeping it in place.

D The concentration of salt becomes so high that all plant life is destroyed.

---

12 Differences in traits such as hair texture are determined by differences in —

F the location of sugar groups in DNA

G the sequence of nucleotides in DNA

H the number of nitrogenous bases in DNA

J the molecules attached to the phosphate in DNA

13 Students were given a list of seven elements and asked to identify the four elements that are most abundant in biomolecules. Which table correctly identifies the four most-abundant elements in biomolecules?

A

Element	Abundant?
Carbon	✓
Fluorine	
Hydrogen	✓
Iodine	
Nitrogen	✓
Oxygen	✓
Phosphorus	

C

Element	Abundant?
Carbon	✓
Fluorine	✓
Hydrogen	
Iodine	
Nitrogen	
Oxygen	✓
Phosphorus	✓

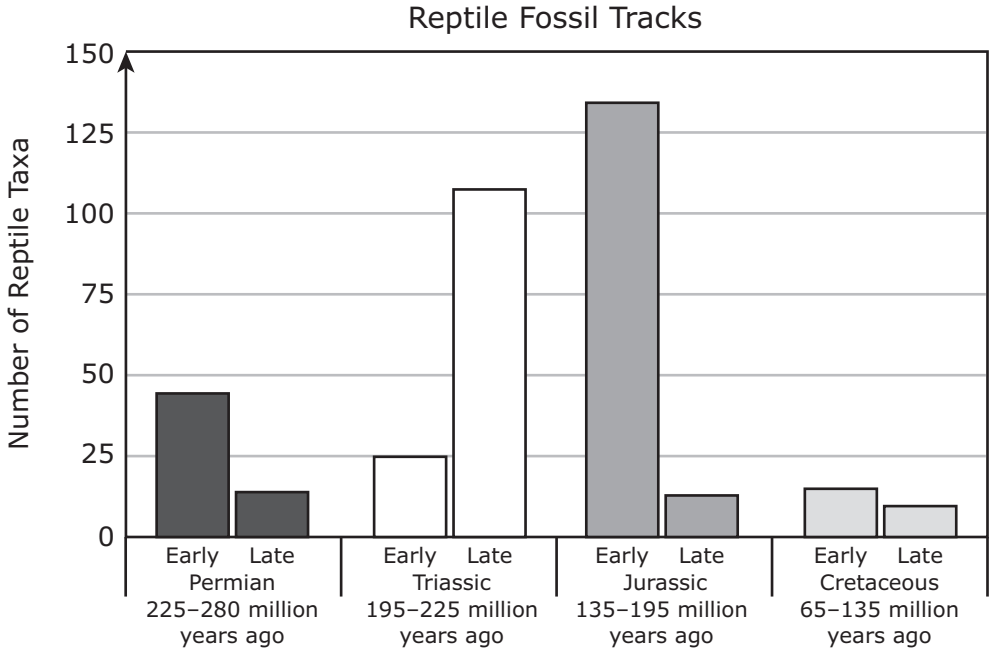
B

Element	Abundant?
Carbon	
Fluorine	
Hydrogen	✓
Iodine	
Nitrogen	✓
Oxygen	✓
Phosphorus	✓

D

Element	Abundant?
Carbon	✓
Fluorine	
Hydrogen	✓
Iodine	✓
Nitrogen	
Oxygen	✓
Phosphorus	

14 The graph shows the number of taxa of reptiles whose fossilized tracks have been found.



Which statement is best supported by these data?

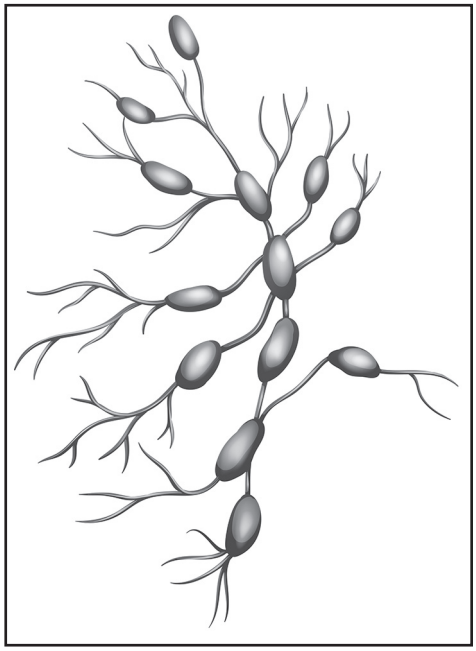
F Competition for food and shelter among reptile species was very low during the Triassic period.

G A great extinction occurred during the Jurassic period.

H Environmental conditions for speciation were most favorable for reptiles during the Permian period.

J Reptiles adapted to a terrestrial environment during the Cretaceous period.

15 The picture shows bean-shaped glands called nodes. The clusters of cells in nodes include macrophages that break down viruses and other potentially harmful materials. Nodes also contain cells that produce protein particles capable of capturing harmful materials that flow in tissue fluid through the nodes. Different parts of the body are drained by nodes in different regions of the body.



Which body systems are directly responsible for regulating these nodes and protecting the body from harmful materials in tissue fluid?

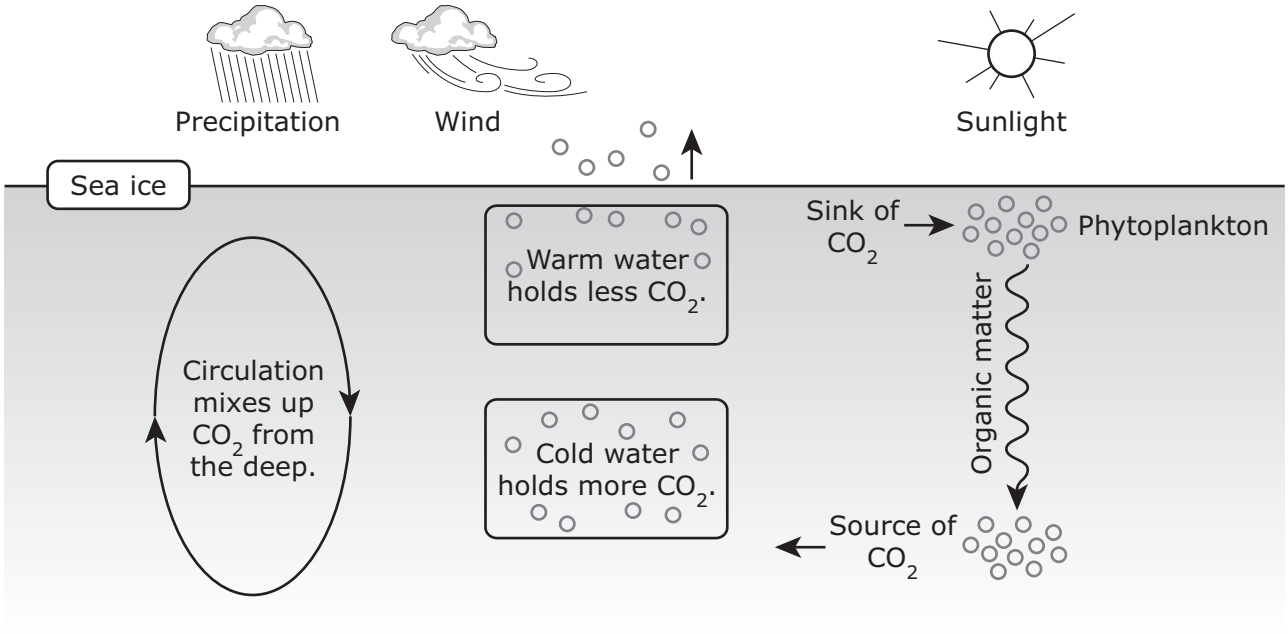
A Immune and lymphatic systems

B Digestive and nervous systems

C Endocrine and digestive systems

D Circulatory and nervous systems

16 This diagram demonstrates why the ocean is a large carbon sink.



An increase in the amount of carbon dioxide in the atmosphere can cause atmospheric temperatures to increase. Which statement explains how this could affect the ocean as a carbon sink?

F Less atmospheric carbon dioxide would be available to phytoplankton.

G Dissolved carbon dioxide gas in the ocean would increase because surface winds would cause a deeper circulation pattern, making more room for the gas.

H Less carbon dioxide gas would be contained in the ocean because increasing precipitation would dilute the carbon entering the ocean.

J Less carbon dioxide would be dissolved in the ocean because increasing atmospheric temperatures would cause ocean temperatures to increase.

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17 Which molecule synthesized by plants is a major source of energy for cellular processes in both plants and animals?

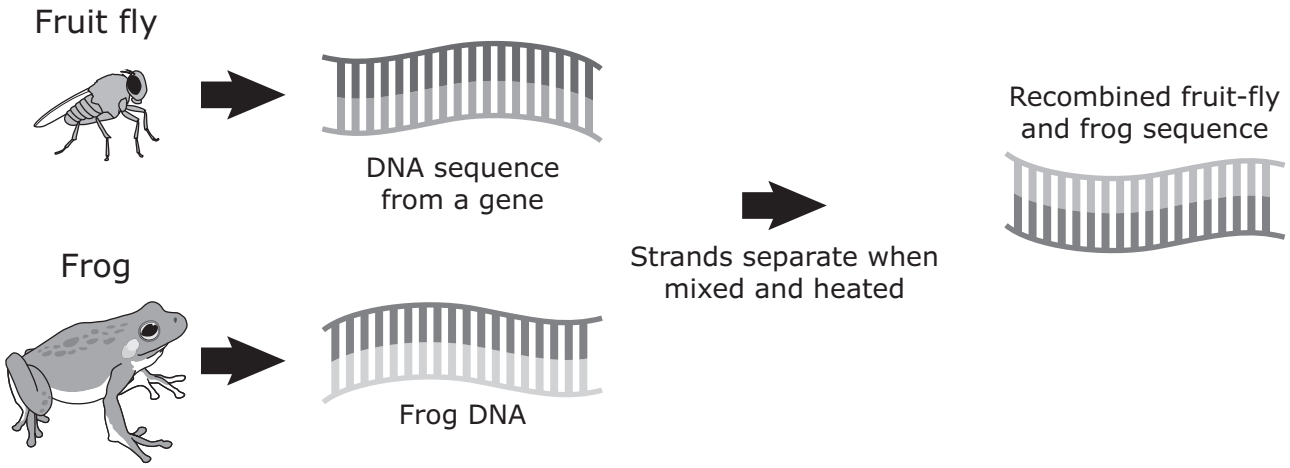
A Wax

B Nucleic acid

C Glucose

D Chlorophyll

18 Researchers combined sequences of fruit-fly DNA from a gene for a particular trait with frog DNA. The mixture was heated to separate the DNA strands. Cooling allowed the single strands to form pairs. The researchers observed that some of the fruit-fly DNA paired with frog DNA.



The results provide evidence that —

F similar nucleotides are present in both fruit-fly and frog DNA

G fruit flies and frogs can be made to develop some of the same physical traits

H heat can cause mutations in the DNA sequences of organisms

J the replication of genetic material can occur at any temperature

---

19 From a single fertilized ovum undergoing a series of rapid cell divisions, a human infant develops. The embryonic cells become specialized for a variety of functions. Which of these statements best describes how different cell types develop?

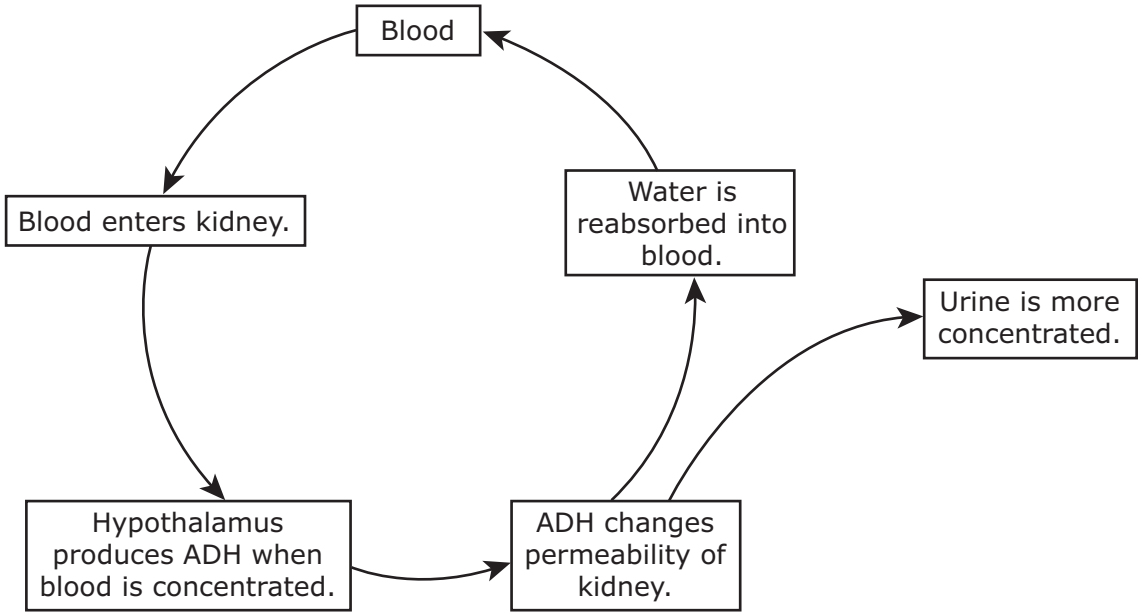
A Each cell type contains only the active parts of the DNA needed for that cell type.

B Each cell type has only one chromosome containing the DNA needed for that cell type.

C Each cell has an identical copy of DNA with enzymes controlling the expression of specific genes, leading to a variety of cells.

D Each cell has multiple copies of DNA that are affected in different ways by the environment to change the function of the cell at regular intervals.

20 The diagram demonstrates a feedback process involving antidiuretic hormone (ADH). ADH increases the permeability of parts of the nephrons of the kidney, resulting in less water in the urine.



This feedback loop is likely to be activated when —

F the body experiences dehydration

G blood glucose levels are stable

H body temperature drops

J the urinary tract is infected

GO ON

21 In the 1940s, the scientist J. B. S. Haldane linked many human red blood cell disorders with the tropical regions where malaria occurs. Haldane hypothesized that the widespread presence of these red blood cell disorders as well as traits that protect individuals from malaria were the result of natural selection. Haldane's hypothesis was later confirmed by the research of A. C. Allison.

The resistance to malaria carried by individuals in areas where malaria is widespread is the result of —

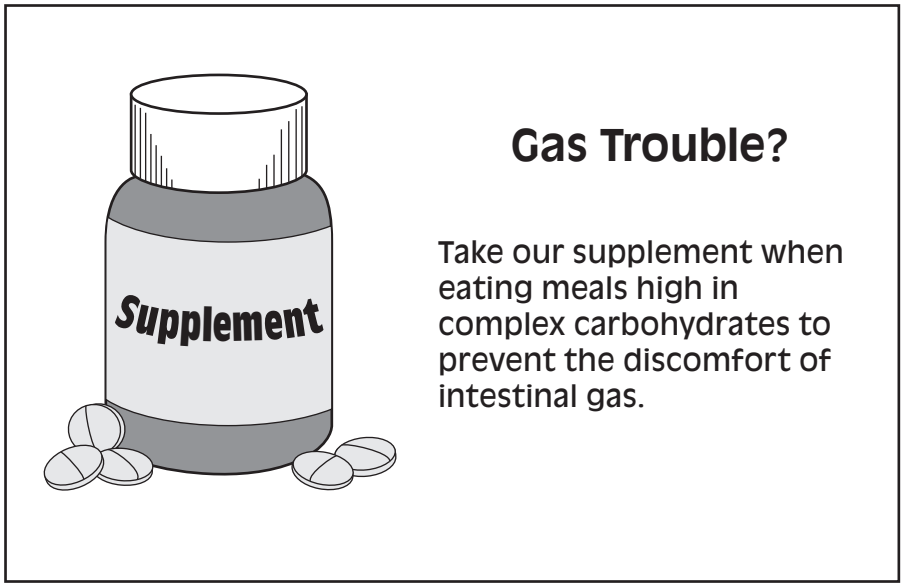
A a vaccine against malaria

B the individuals' genetic composition

C antibiotic medications

D the individuals' behavior in avoiding those with the infection

22 Some foods that are rich in complex carbohydrates can be difficult to digest. Gas often forms as the foods are slowly digested by bacteria in the large intestine. The advertisement is for a nutritional supplement that prevents intestinal gas.



Which of the following represents evidence that could be used to support the claims about this product?

F Complex carbohydrates are found in vegetables and grains, which are good sources of fiber, vitamins, antioxidants, and minerals. Vegetables and grains are known to reduce the risk of heart disease.

G Some nutritional supplements provide vitamins and minerals that are missing from a person's diet. These types of nutritional supplements contain important nutrients that reduce the risk of malnutrition.

H Consuming enzymes specific for carbohydrate digestion helps the body digest complex carbohydrates more quickly in the stomach and small intestine.

J Some nutritional supplements add beneficial bacteria to a person's diet. These bacteria populate the stomach and prevent carbohydrate digestion.

23 Researchers studying populations of lizards from the genus *Gallotia* on the Canary Islands compared the protein cytochrome b in different populations. The table shows the number of differences in the cytochrome b protein between different populations.

Changes in Cytochrome b

	G. stehlini	*G. atlantica*	*G. galloti palmae*	*G. galloti eisentrauti*	*G. galloti galloti*	*G. bravoana*	*G. simonyi*
G. stehlini							
G. atlantica	36						
G. galloti palmae	41	25					
G. galloti eisentrauti	40	23	8				
G. galloti galloti	40	19	10	6			
G. bravoana	45	24	19	19	15		
G. simonyi	49	28	19	21	17	4	

Which conclusion about the relatedness of the lizards do these data support?

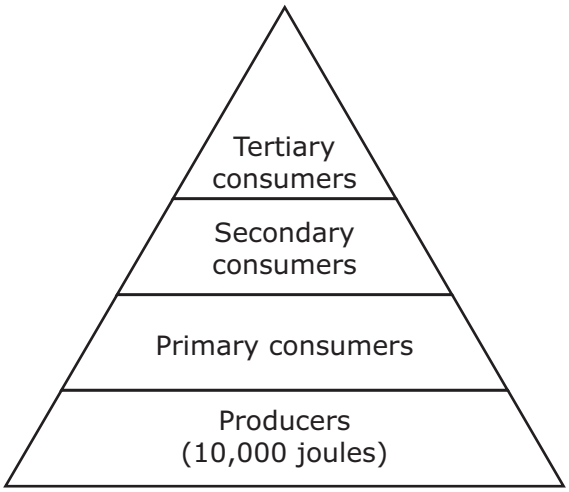
A *G. atlantica* and *G. stehlini* are the least closely related.

B *G. simonyi* and *G. bravoana* are the most closely related.

C *G. galloti eisentrauti* and *G. galloti palmae* are the most closely related.

D *G. galloti eisentrauti* and *G. galloti galloti* are the least closely related.

24 The energy pyramid below shows the energy made available by producers.



Based on the energy flow between trophic levels in an energy pyramid, how much energy would be expected to be found at the secondary consumer level in this pyramid?

F 100 joules

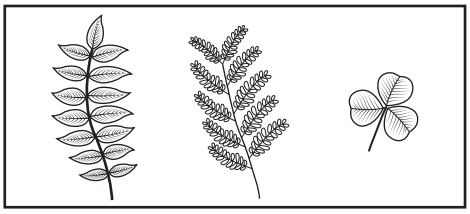
G 500 joules

H 1,000 joules

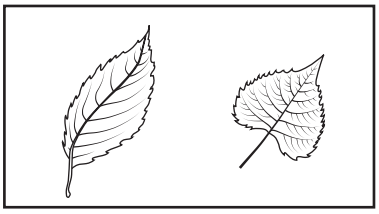
J 50 joules

25 Simple leaves have a single leaf on a petiole, or stem, while compound leaves have more than one leaflet on a petiole. This unknown leaf can be identified using the dichotomous key.

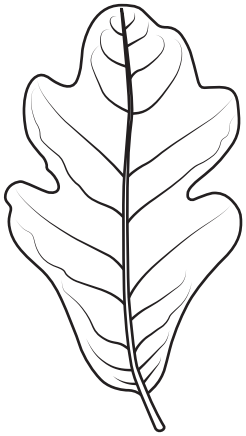
Compound Leaves



Simple Leaves



Unknown Leaf



Step	Characteristic	Identification
1a	Compound leaf	Go to 2
1b	Simple leaf	Go to 3
2a	Leaf pointed at the tip	*Ungnadia speciosa*
2b	Leaf rounded at the tip	*Sophora secundiflora*
3a	Leaf length four or more times greater than width	*Salix nigra*
3b	Leaf length less than four times the width	Go to 4
4a	Leaf pointed at the tip	*Arbutus xalapensis*
4b	Leaf rounded at the tip	*Quercus laceyi*

Which tree does the unknown leaf come from?

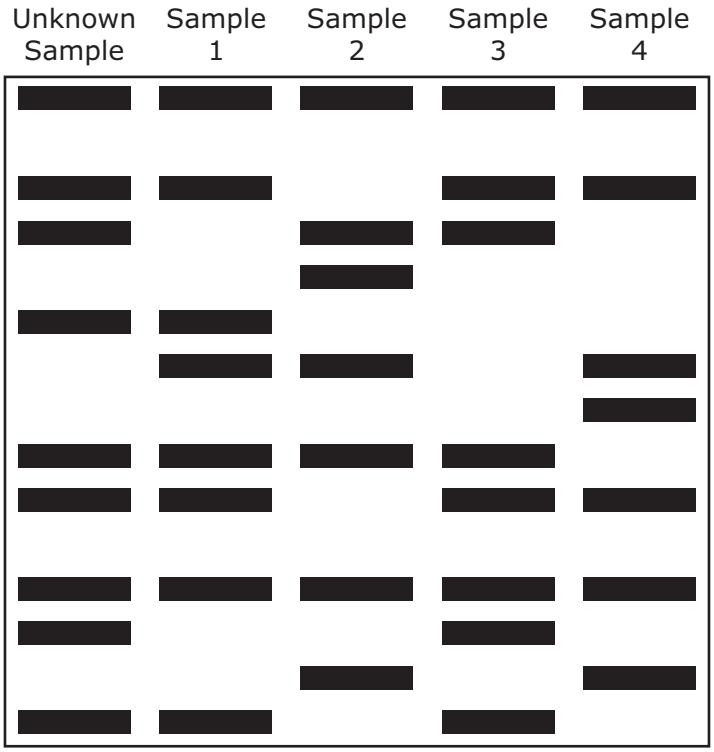
A *Ungnadia speciosa*

B *Sophora secundiflora*

C *Salix nigra*

D *Quercus laceyi*

26 In gel electrophoresis a DNA sample from an unknown donor is placed in a small well at one end of a special gel-coated plate. Samples from known donors are placed in other wells on the plate. An electric current is passed through the plate, causing the DNA fragments to separate. The size and location of the separated fragments can be compared for similarities. The more similar the locations and sizes of the fragments, the more closely the donors of the samples are related. The diagram shows four samples being compared with an unknown sample.



The donor of which sample is most closely related to the donor of the unknown sample?

F Sample 1

G Sample 2

H Sample 3

J Sample 4

27 A student reads this advertisement for a product containing a plant micronutrient that can be added to soil.

Miracle Micro-B Makes Your Garden Grow!

Miracle Micro-B contains 2.0 g of boron, a micronutrient that is vital to reproduction in plants. We recommend continuous application of Miracle Micro-B to your garden plants or crops.

Based on this information, the student can conclude that boron is absorbed by plant roots from soil and then —

A transported to reproductive tissues by the plant's shoot system

B stored in plant stems until the flowers are pollinated

C concentrated in the roots until the plant's reproductive tissues mature

D transported by the phloem to the stomata in leaves, where it attracts pollinators

---

28 The surface of the stomach is lined with epithelial cells called surface mucous cells. These cells produce a thick mucus that coats the epithelium on the inside surface of the stomach. What is the purpose of the mucous coating?

F It allows the epithelium to aid in the process of digestion.

G It causes the epithelium to expand as food enters the stomach.

H It protects the epithelium from the acid content of the stomach.

J It traps nutrients inside the epithelium as food passes through the stomach.

29 In Holstein cattle the allele for black hair color (B) is dominant over the allele for red hair color (b), and the allele for polled (P), or lacking horns, is dominant over the allele for having horns (p).

What is the expected phenotypic ratio of the offspring of a BbPp $\times$ BbPp cross if these alleles sort independently?

A 16 black/polled : 0 black/horned : 0 red/polled : 0 red/horned

B 12 black/polled : 0 black/horned : 0 red/polled : 4 red/horned

C 4 black/polled : 4 black/horned : 4 red/polled : 4 red/horned

D 9 black/polled : 3 black/horned : 3 red/polled : 1 red/horned

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30 A student researching bacteria concluded a report with the claim in the box.

> All bacteria disrupt the health of organisms they inhabit, including humans.

Which statement correctly addresses the validity of the claim?

F The claim is valid because many studies and experiments have shown that bacteria disrupt homeostasis.

G The claim is invalid because there are many types of bacteria that help organisms maintain homeostasis.

H The claim is invalid because only microorganisms such as viruses disrupt the health of organisms.

J The claim is valid because bacteria cause disease.

31 Which of the following is an example of the endocrine system directly interacting with the nervous system?

A The vertebrae protect the spinal cord from injury.

B Hormones provide feedback that affects neural processing.

C Sensory receptors in bones send signals about body position to the brain.

D The brain sends signals that control the speed at which food moves through the intestines.

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32 Roads are often built through forests for industrial purposes or as land is developed for residential and commercial needs. How would road construction through a forest most likely affect the ecosystem?

F Non-native species would replace native species.

G The number of primary consumers would increase.

H The natural succession of vegetation would change.

J All producers would be eliminated from the community.

33 People who have leukemia, a cancer that affects white blood cells, are often given Cytarabine. This drug inhibits the synthesis of DNA. Which phase of the cell cycle is most affected by Cytarabine?

A G_1 phase

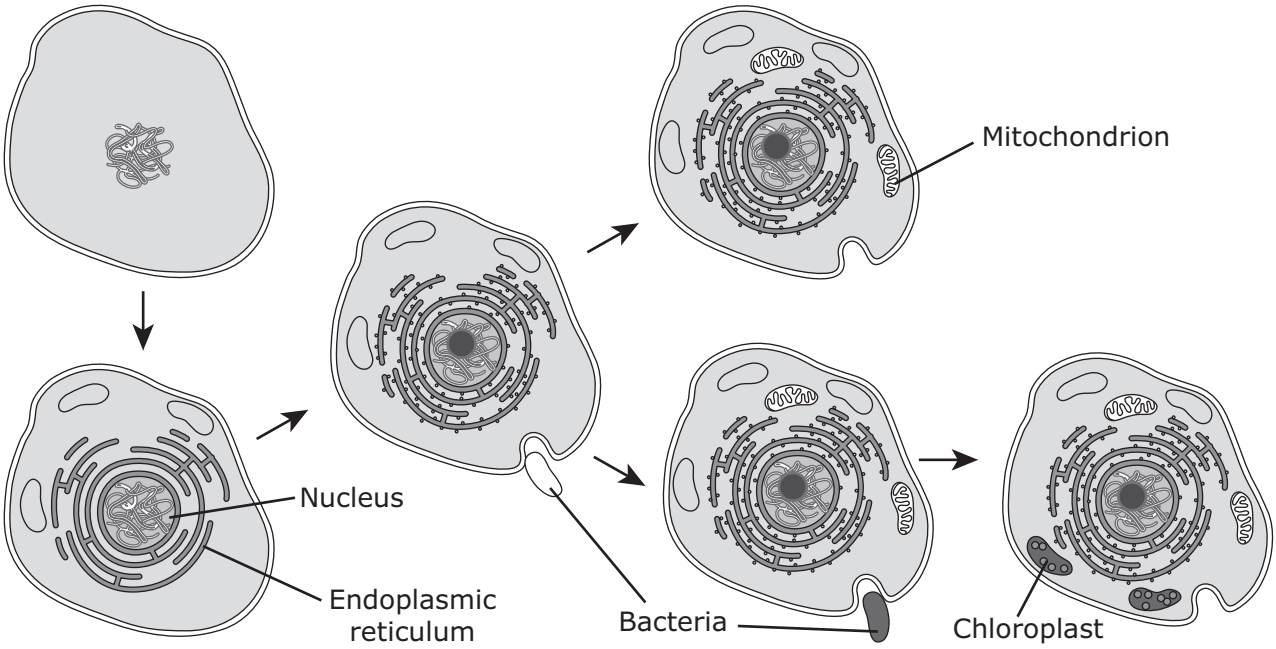
B S phase

C G_2 phase

D M phase

GO ON

34 The diagram represents a theory about cells.



Which theory is represented in this diagram?

F The theory that all living organisms are made of cells

G The theory that all living organisms share the same basic genetic components

H The theory that organisms function best when their internal conditions are maintained within narrow limits

J The theory that complex cells evolved after primitive cells engulfed bacterial cells that continued functioning

35 Recent studies in bone research indicate that using ultrasound on a broken bone can decrease the healing time by 25%. Which of these are the most basic levels of organization involved when a bone heals?

A Cells and tissue

B Cells and organ system

C Organ system and organism

D Tissue and organ system

---

36 Which of these is the direct result of an error in the transcription of a DNA nucleotide?

F The nuclear membrane is ruptured.

G Amino acids do not bond to tRNA.

H A codon sequence is incorrect.

J Transportation of mRNA does not occur.

37 Four common relationships between organisms are listed in the box.

1. Bees pollinate plants as they move from flower to flower gathering nectar.
2. Green algae grow on the backs of spider crabs living in shallow water, camouflaging the spider crabs while the crabs protect the algae from predators.
3. Fleas live on the skin of dogs and obtain nutrients from the dogs' blood.
4. Nitrogen-fixing bacteria obtain nutrients from their host plants and use the nutrients to supply nitrogen to the plants.

Which statements best describe these relationships?

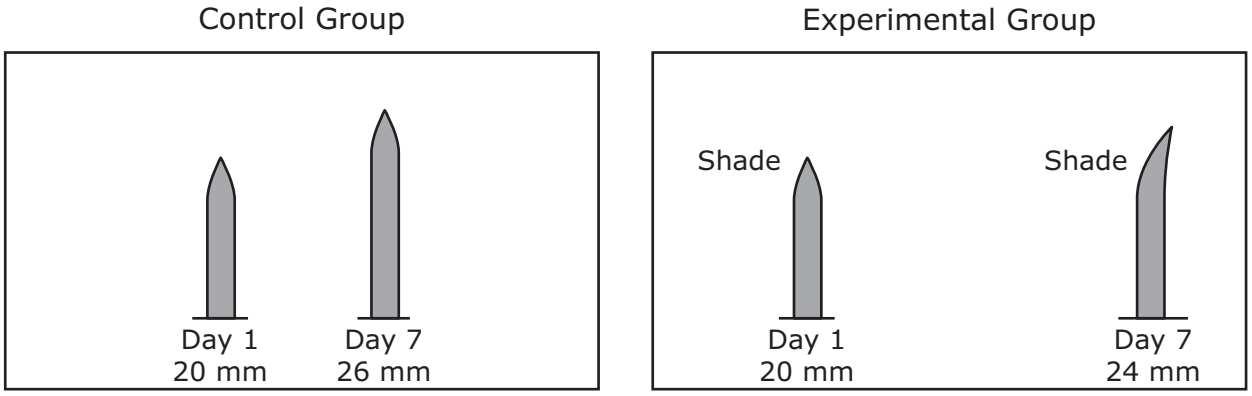
A Relationships 1 and 4 are examples of mutualism.
Relationship 2 is an example of commensalism.
Relationship 3 is an example of parasitism.

B Relationships 1 and 2 are examples of commensalism.
Relationships 3 and 4 are examples of mutualism.

C Relationship 1 is an example of commensalism.
Relationships 2 and 4 are examples of mutualism.
Relationship 3 is an example of predation.

D Relationships 1, 2, and 4 are examples of mutualism.
Relationship 3 is an example of parasitism.

38 A student conducted an investigation to study phototropism in grasses. The only difference between the control group and the experimental group was light conditions. The control group was provided full light, while the experimental group was shaded on one side. The diagrams show the average heights and positions of blades of grass in the investigation.



Which statement best explains why the grass tips of the experimental group bent toward the light?

F Water evaporated faster on the side of the plant having full light.

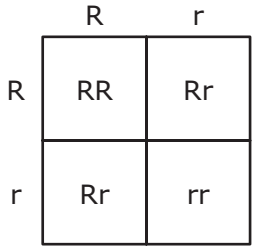
G Light sensors in the grass tips stimulated a hormone in the shoot system.

H The xylem in the root system absorbed more nutrients from the shaded side.

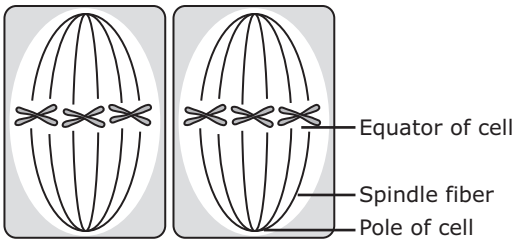
J The side facing the light has a greater chance of absorbing carbon dioxide from the atmosphere.

39 Which diagram demonstrates how crossing-over contributes to genetic variety during meiosis?

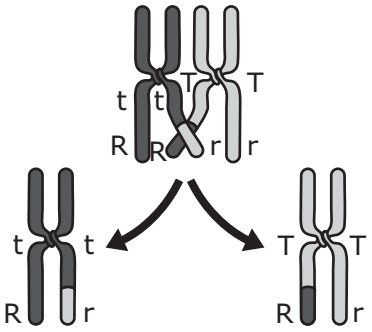
A



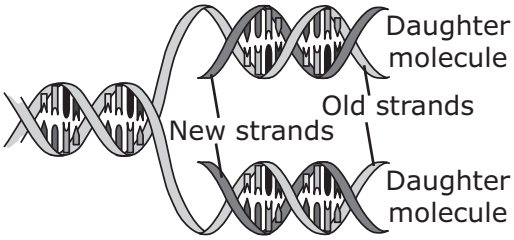
B



C

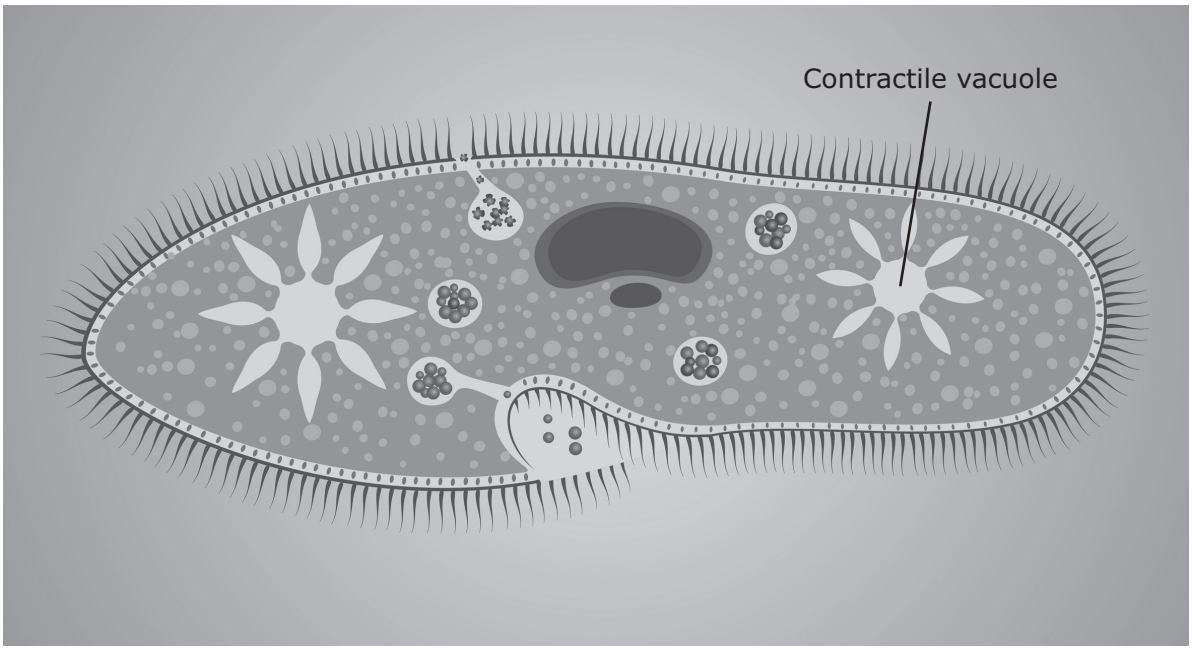


D



GO ON

40 The picture shows a contractile vacuole of a unicellular freshwater organism. The contractile vacuole regulates the flow of water into and out of the cell in an aquatic environment.



What conditions cause the contractile vacuole to fill with water?

F The concentration of water is greater outside the cell than inside the cell.

G The temperature of water in the vacuole is higher than the temperature of its environment.

H The concentration of water inside the cell is the same as the concentration outside the cell.

J The temperature of water in the vacuole is lower than the temperature of its environment.

41 The rocky material left behind by a retreating glacier forms what is called a moraine. When primary succession occurs on a moraine, which life-forms will help create the soil by breaking down bare rock?

A Insects

B Lichens

C Grasses

D Deciduous trees

---

42 Organisms are classified today using the Linnaean system, and the following table shows the taxonomic classification of two marine organisms living along the Pacific Coast.

Taxonomic Classification

Common dolphin	Killer whale
Animalia	Animalia
Chordata	Chordata
Vertebrata	Vertebrata
Mammalia	Mammalia
Cetacea	Cetacea
Delphinidae	Delphinidae
Delphinus	*Orcinus*
delphis	*orca*

Taxonomic classification is important to marine biologists because it provides a way to —

F prove that marine evolution occurs

G discover and name every marine organism on Earth

H designate Latin as the universal language of marine biology

J identify marine organisms and find evolutionary relationships between them

43 Proteins and carbohydrates have many functions in the body of an organism. Specific proteins and carbohydrates perform specific tasks. Information about a protein and a carbohydrate is given below.

Ferritin	Glycogen
Ferritin is a protein containing iron, which is needed by all living things. Iron is found in hemoglobin and in cytochromes, which function in metabolism. Free iron can damage proteins, lipids, and nucleic acids.	Glycogen is a carbohydrate that consists of glucose molecules. It can be hydrolyzed as glucose as needed by an organism.

How are ferritin and glycogen similar in their primary functions for an organism?

A Both store materials needed by the organism.

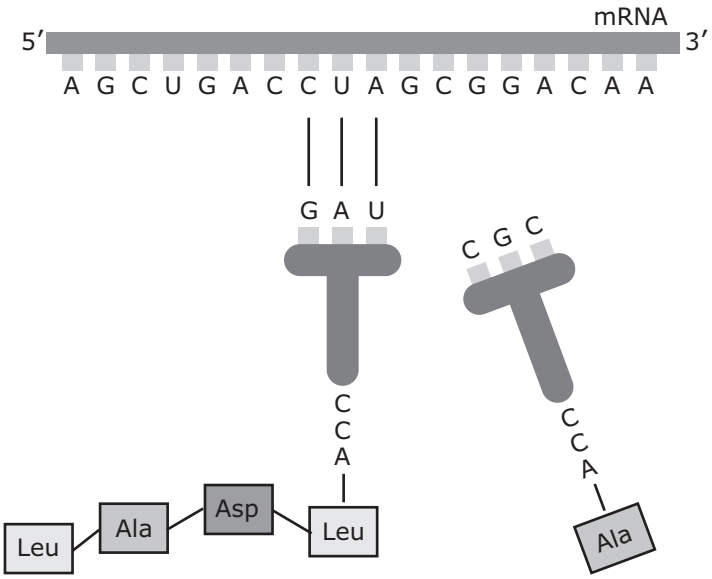
B Both store energy used by the organism.

C Both support the structure of the organism.

D Both store information for the organism.

GO ON

44 A model of a biological process is shown.



What is the purpose of this process?

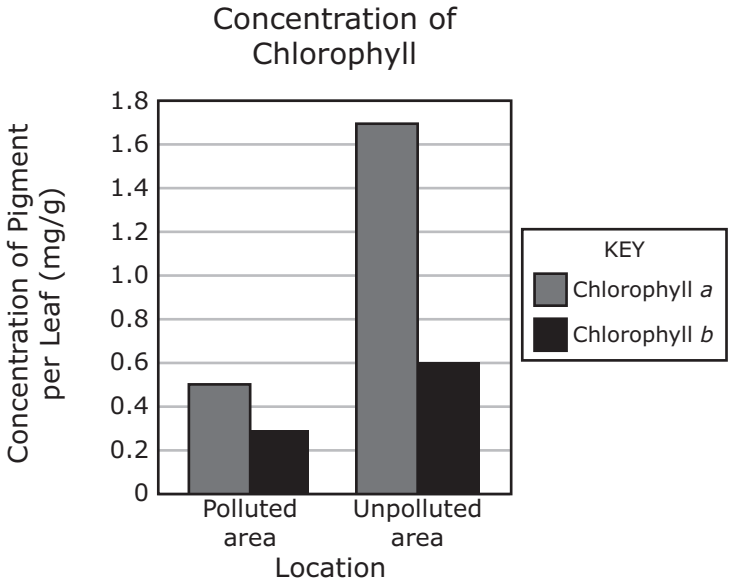
F To replicate the DNA of an organism before cell division

G To assemble nucleotides in an mRNA chain along a DNA template

H To synthesize amino acids used to unzip strands of DNA and copy the genetic code

J To translate the genetic code into a specific sequence of amino acids

45 Scientists conducted an investigation to study the possible effects of air pollution on chlorophyll *a* and chlorophyll *b* in plants. The scientists gathered plants from polluted areas and unpolluted areas and then measured the presence of chlorophyll in 50 mg of plant leaves. The results are shown in the graph.



Source: Giri et al., "Effect of Air Pollution on Chlorophyll Content of Leaves," *Current Agriculture Research Journal*, 2013

Which inference do these data support?

A Gene expression for chlorophyll is not affected by pollution.

B Plants in polluted areas can adapt in order to survive.

C Photosynthesis decreases in response to air pollution.

D Cellular respiration increases in plants in polluted areas.

---

46 Viruses can be transmitted through air, water, food, insect bites, and direct skin contact. Once a virus gains entry to the body, it invades a host cell in order to —

F deactivate the host cell's defenses

G synthesize antibodies for defense

H metabolize host proteins and grow

J access cellular processes for replication

47 The table shows the survival rate of two types of beetles in the same environment over a period of three years.

Survival Rates

Year	Green Beetle (%)	Brown Beetle (%)
1	78	31
2	83	29
3	77	28

Which statement about the beetles in this environment is best supported by the data?

A Green beetles are more fit for the environment than brown beetles are.

B Brown beetles undergo a greater number of unfavorable mutations than green beetles do.

C Green beetles have a greater gene frequency among their population than brown beetles have.

D Brown beetles have a shorter life cycle than green beetles have.

---

48 Photosynthesis and cellular respiration both involve the use and release of gases. Which statement correctly identifies the role of gases in the two processes?

F Photosynthesis and cellular respiration both use carbon dioxide and release oxygen.

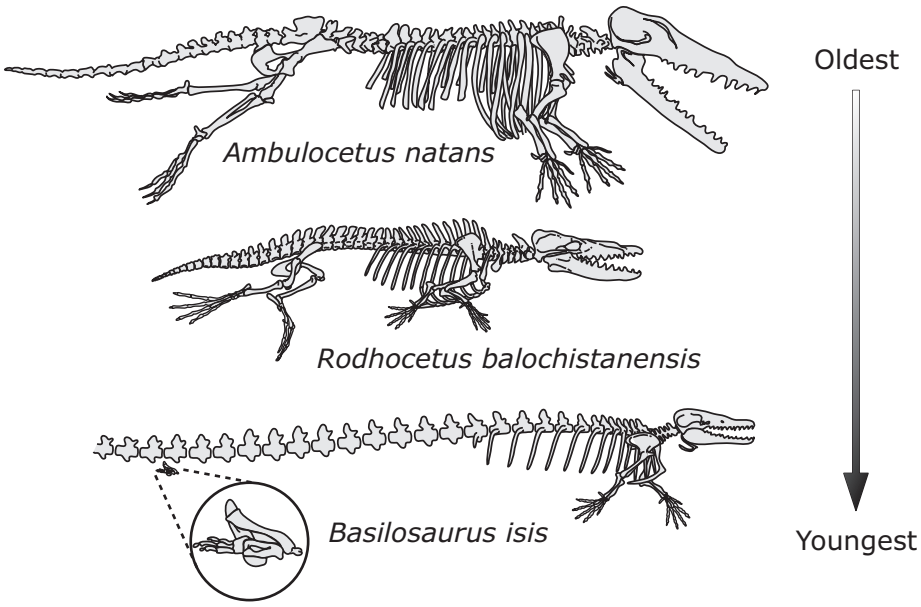
G Photosynthesis and cellular respiration both use oxygen and release carbon dioxide.

H Cellular respiration uses oxygen and releases carbon dioxide, while photosynthesis uses carbon dioxide and releases oxygen.

J Cellular respiration uses carbon dioxide and releases oxygen, while photosynthesis uses oxygen and releases carbon dioxide.

49 Cetaceans are whales and their relatives. The diagram shows some fossils of cetaceans.

Fossils of Some Cetaceans



Which statement provides the best evidence that *Ambulocetus natans* is an ancestor of *Basilosaurus isis*?

A Homologous structures occur in each fossil.

B Similar nitrogenous bases are found in the DNA of each fossil.

C The fossils were found in different locations.

D The youngest fossil is larger than the older fossils.

GO ON

50 A student studying interactions between body systems constructs this table. The student plans to fill out the table with phrases that describe an interaction between each pair of systems.

	Skeletal	Circulatory	Muscular	Digestive	Respiratory	Urinary	Nervous
Skeletal							
Circulatory							
Muscular							
Digestive			**X**				
Respiratory							
Urinary							
Nervous							

Which of these phrases could be placed in the position marked with an X?

F Provides nutrients to kidney cells

G Provides nutrients to brain cells

H Provides nutrients to nerve cells

J Provides nutrients to muscle cells

---

51 A student used poster board to construct this model of a section of DNA.

Which statement describes this model of DNA?

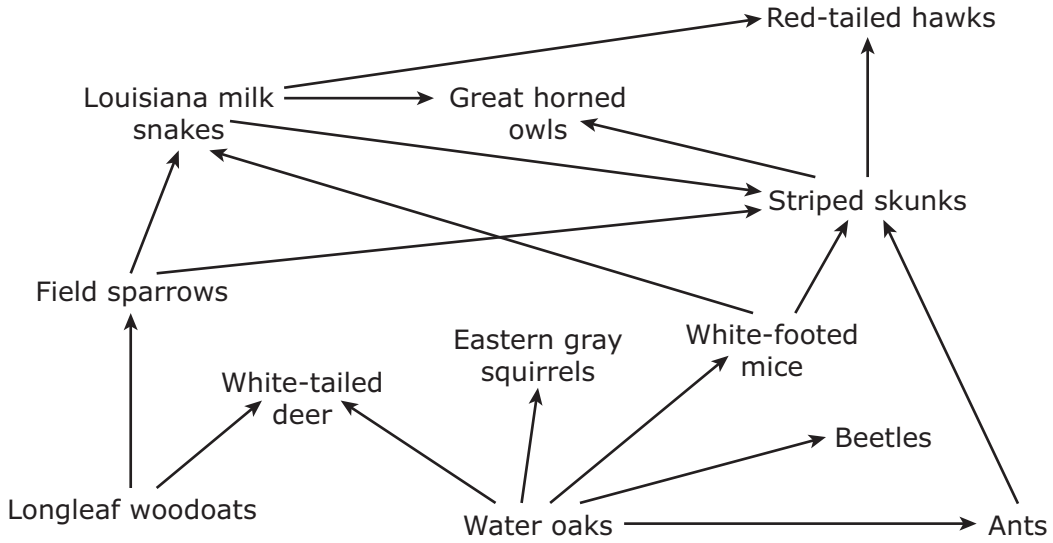
A The model is inaccurate because the base pairs are incorrect.

B The model is accurate because it contains correctly paired bases.

C The model is accurate because it shows each base splitting to form a double helix.

D The model is inaccurate because some typical bases in DNA are missing.

52 The diagram shows a partial East Texas food web.



Which table correctly classifies these organisms?

F

Producers	Striped skunks, great horned owls, red-tailed hawks
Primary consumers	Striped skunks, Louisiana milk snakes
Secondary consumers	Field sparrows, white-tailed deer, eastern gray squirrels, white-footed mice, beetles, ants
Top predators	Longleaf woodoats, water oaks

G

Producers	Longleaf woodoats, water oaks
Primary consumers	Field sparrows, white-footed mice, beetles, ants
Secondary consumers	Striped skunks, Louisiana milk snakes, eastern gray squirrels, white-tailed deer
Top predators	Striped skunks, great horned owls, red-tailed hawks

H

Producers	Longleaf woodoats, water oaks
Primary consumers	Field sparrows, white-tailed deer, eastern gray squirrels, white-footed mice, beetles, ants
Secondary consumers	Striped skunks, Louisiana milk snakes
Top predators	Great horned owls, red-tailed hawks

J

Producers	Longleaf woodoats, water oaks, beetles, ants
Primary consumers	Field sparrows, white-tailed deer, eastern gray squirrels, white-footed mice
Secondary consumers	Striped skunks, Louisiana milk snakes
Top predators	Striped skunks, great horned owls, red-tailed hawks

53 The classifications of four trees are shown in the table.

Common Name	Order	Family	Genus	Species
Taiwan beech	Fagales	Fagaceae	*Fagus*	*hayatae*
Lodgepole pine	Pinales	Pinaceae	*Pinus*	*contorta*
Taiwan catkin yew	Pinales	Taxaceae	*Amentotaxus*	*formosana*
Japanese maple	Sapindales	Sapindaceae	*Acer*	*palmatum*

Which two trees are the most closely related?

A Taiwan beech and Taiwan catkin yew

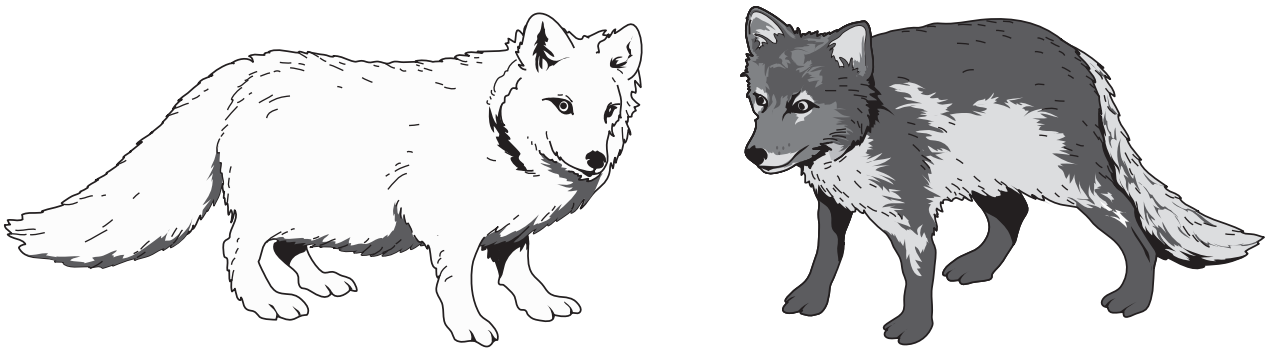
B Taiwan catkin yew and lodgepole pine

C Lodgepole pine and Japanese maple

D Japanese maple and Taiwan beech

GO ON

54 The arctic fox inhabits northern areas of North America. The same arctic fox is shown in the drawing at different times of the year.



January July

What causes this change in fur color?

F The alleles for fur color change as the arctic fox grows older.

G Gene expression for fur color is regulated by latitude.

H The arctic fox has two traits for fur color that are determined at birth.

J Gene expression for fur color is regulated by temperature.

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS ON THE ANSWER DOCUMENT.

STOP

Item Number	Reporting Category	Readiness or Supporting	Content Student Expectation	Process Student Expectation	Correct Answer
1	1	Supporting	B.4(A)	B.2(F)	D
2	2	Readiness	B.6(E)	B.2(G)	J
3	5	Readiness	B.12(A)		C
4	4	Readiness	B.10(B)		J
5	5	Readiness	B.12(F)	B.2(G)	A
6	2	Readiness	B.6(F)	B.2(F)	F
7	1	Readiness	B.5(A)	B.2(G)	B
8	4	Supporting	B.9(C)	B.2(G)	H
9	1	Readiness	B.4(C)		B
10	3	Supporting	B.7(F)		F
11	5	Readiness	B.11(D)		D
12	2	Readiness	B.6(A)		G
13	1	Readiness	B.9(A)	B.2(G)	A
14	3	Supporting	B.7(B)	B.2(G)	G
15	4	Readiness	B.10(A)		A
16	5	Supporting	B.12(E)	B.2(G)	J
17	1	Readiness	B.4(B)		C
18	2	Supporting	B.6(B)	B.3(F)	F
19	1	Supporting	B.5(C)		C
20	4	Supporting	B.11(A)	B.2(G)	F
21	3	Readiness	B.7(E)	B.3(F)	B
22	4	Supporting	B.9(C)	B.3(C)	H
23	3	Readiness	B.7(A)	B.2(G)	B
24	5	Readiness	B.12(C)	B.2(G)	F
25	3	Readiness	B.8(B)	B.2(F)	D
26	2	Supporting	B.6(H)	B.3(D)	H
27	4	Readiness	B.10(B)		A
28	1	Supporting	B.5(B)		H
29	2	Readiness	B.6(F)		D
30	5	Supporting	B.11(C)		G
31	4	Readiness	B.10(A)		B
32	5	Readiness	B.12(F)		H
33	1	Readiness	B.5(A)		B
34	3	Supporting	B.7(G)	B.2(C)	J
35	4	Supporting	B.10(C)		A
36	2	Readiness	B.6(E)	B.2(G)	H
37	5	Readiness	B.12(A)	B.2(G)	D
38	4	Readiness	B.10(B)		G
39	2	Supporting	B.6(G)	B.2(G)	C
40	1	Readiness	B.4(B)		F
41	5	Readiness	B.11(D)		B
42	3	Supporting	B.8(A)		J
43	1	Readiness	B.9(A)		A
44	2	Supporting	B.6(C)	B.2(H)	J
45	5	Supporting	B.11(B)	B.2(G)	C
46	1	Readiness	B.4(C)		J
47	3	Readiness	B.7(E)	B.2(F)	A
48	4	Supporting	B.9(B)		H
49	3	Readiness	B.7(A)	B.2(G)	A
50	4	Readiness	B.10(A)	B.2(G)	J
51	2	Readiness	B.6(A)		A
52	5	Readiness	B.12(C)	B.2(G)	H
53	3	Readiness	B.8(B)	B.2(G)	B
54	2	Supporting	B.6(D)		J