



# Pre-Assessment

Adaptation of Species  
Organisms and Environments

Name: \_\_\_\_\_ Date: \_\_\_\_\_

KEY

1 A barrel cactus is a plant adapted to survive in the harsh conditions of a desert. Individual barrel cacti might vary in several traits. Which of the following variations would have the greatest effect on the ability of individual barrel cacti to survive in an arid climate?

- A Color of flower petals
- B** Thickness of waxy coating
- C Length of spines
- D Number of seeds produced in fruit



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2 Which internal structures of animals are specifically adapted to use contraction to cause movement?

- A Blood cells
- B Bones
- C Glands
- D** Muscles



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3 Several years of drought affect a population of plants in southwest Texas. Which of the following characteristics would you expect to see more frequently in the plants over the next several generations?

- A Abundant broad leaves
- B** Waxy coating on leaves
- C Flowers blooming regularly
- D Tall, narrow stems



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4 A table of physical traits of chickens is provided.

Trait	Presence in Generation 1	Presence in Generation 5	Presence in Generation 10
Feather color	65% white 35% brown	71% white 29% brown	68% white 32% brown
Weight	1.5 kg	2.75 kg	<b>4 kg</b>
Beak length	5 cm	4.8 cm	5.1 cm
# of tail feathers	38	41	<b>36</b>





A breeder records the average data on three generations of a chicken population that has been bred. For which trait is the breeder most likely selectively breeding?

- A** Heavier bodies
- B Longer beaks
- C More white feathers
- D More abundant tail feathers



# Pre-Assessment

- 5 Illustrations of four antlers from four specimens in a population of moose, along with other data, are provided in the table.

	Shape	Width (cm)	Height (cm)	Mass (kg)
A		138	140	17
B		158	87	20
C		66	20	9
D		135	160	25

To support antlers, male moose must expend large amounts of energy stored up from food. All other factors being equal, male moose with which antlers are best adapted to survive a particularly cold and barren winter?

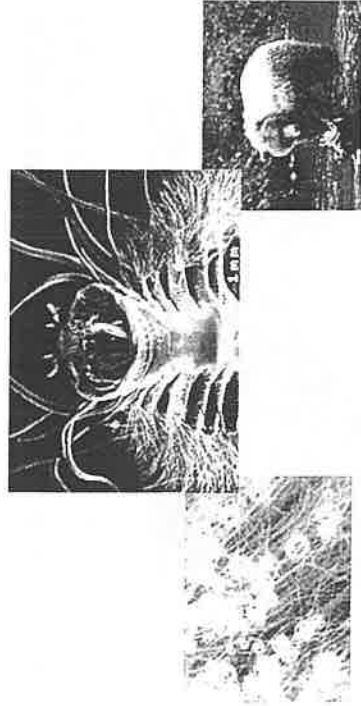
A Moose A

B Moose B

C Moose C

D Moose D

# Physiology



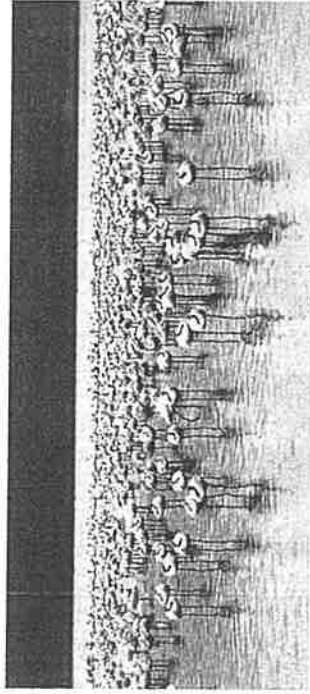
The study of internal and external functions of living systems

# Trait



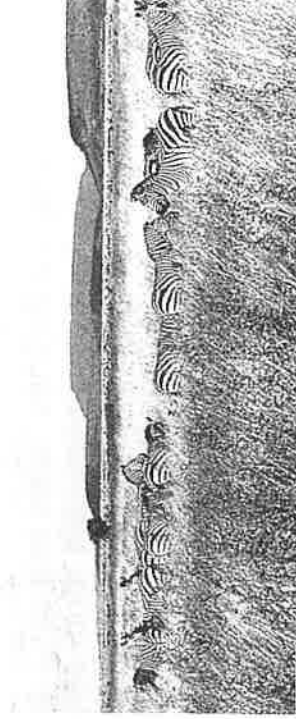
A characteristic of an organism; can be genetic or acquired

# Population



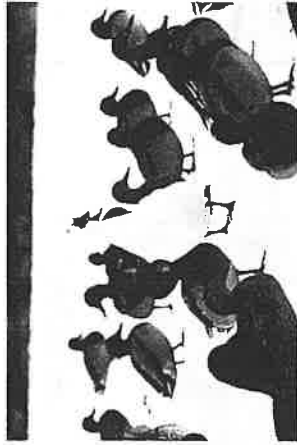
A group of interacting individuals of the same species located in the same area

# Adaptation



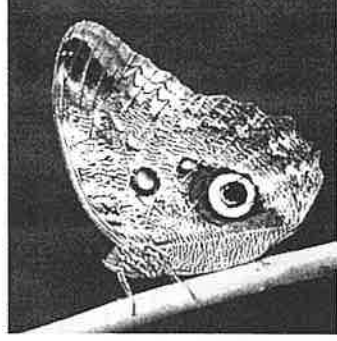
A process by which a population becomes better suited to its environment by increasing the frequencies of alleles that provide benefits to survival and reproduction

## Variation



The occurrence of an organism, trait, or gene in more than one form

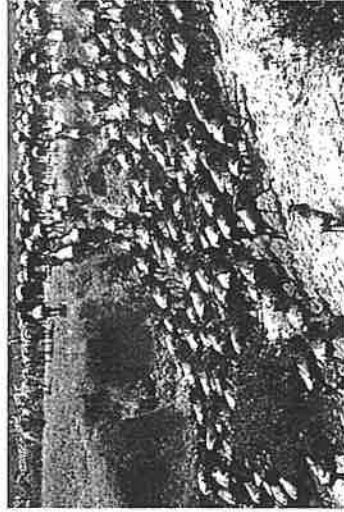
## Natural Selection



Giant Owl Butterfly

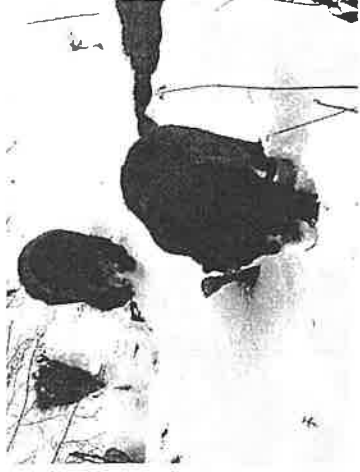
A process by which organisms with favorable traits produce more successful offspring than organisms with less favorable traits, causing the favorable traits to become more common in the population

## Migration



Movement to a different geographical region where conditions are more favorable

## Hibernation



A slowed physiological state of an organism to survive long periods of cold temperature or reduced food supplies

## Selective Breeding



A form of artificial selection whereby deliberate breeding results in desired traits in plants or animals

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## Species



A group of organisms that are similar to one another and can combine to produce more of their kind.

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## Mutation



Occurs when a DNA gene is damaged or changed in such a way as to alter the genetic message carried. The change can be harmful, beneficial, or neutral

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## Behavioral Adaptation



The process by which an organism or a species changes its pattern of action to better suit its environment.  
(Ex. migration or hibernation)

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# Adaptations of Species



	36 words in <u>vocabulary</u>	
	Study! <u>all!</u>	



# Concept Attainment Quiz

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## I. Vocabulary Matching

Match the term to the correct definition.

- |   |                       |
|---|-----------------------|
| 1. <u>B</u> A genetic characteristic that allows an organism to survive and reproduce                                   | A. Natural selection  |
| 2. <u>A</u> The process where organisms best fit for the environment are more likely to survive and reproduce           | B. Adaptation         |
| 3. <u>D</u> The process by which humans take control of the breeding process to choose favorable traits to be passed on | C. Hibernation        |
| 4. <u>C</u> A characteristic of some animals to enter a state of deep sleep during the winter months                    | D. Selective breeding |
| 5. <u>E</u> A process where plant breeders intentionally cross-pollinate two different varieties of plants              | E. Hybridization      |

## II. Identification

Use the clues provided to fill in the blanks.

### Word Bank

Adaptation	Migration	Structural	Xylem
Hibernation	Behavioral	Natural selection	

- The monarch butterfly's response to seasonal changes by traveling a far distance is known as migration.
- The white fur of an arctic fox helps camouflage it in winter. This is an example of a structural adaptation.
- The hibernation of bears during winter months is a behavioral adaptation.
- xylem is an internal adaptation that allows plants to carry water up their stem.





# CLOZE-ing in on Science

## Word Bank

<del>Behavioral</del>	Fat	Adaptation	Population
Environment	<del>Organism</del>	Migration	<del>Hibernation</del>
			<del>Beak</del>

### CLOZE 1

An adaptation is a genetic characteristic that allows an organism to survive and reproduce. These genetic characteristics usually spread throughout an entire

population, rather than being isolated to a single organism, as a response to the environment. Adaptive characteristics vary between organisms. Some organisms, like geese, respond to seasonal changes by traveling to a new area. This is known as

migration. Polar bears do not travel but instead store layers of fat to

## Word Bank

Population	Natural selection	<del>Uniformity</del>	Food	Traits
Species	Adaptation	Beak shape	Variation	<del>Predator</del>

### CLOZE 2

Natural Selection is a process by which organisms best fit for the environment are most likely to survive and reproduce. This is possible because of the genetic

variation between individuals in a population. After many generations, the

traits that enhance survival become more widespread through the

population over those that do not. Once all the members of a population have this favorable trait, then it is referred to as an adaptation. This selection has occurred

with nearly every species on Earth. The Galapagos medium ground finch, for example, has developed a beak shape that is different from other finches on the

island. This adaptation occurred due to different food sources.



# CLOZE-ing in on Science

INSTRUCTIONS: Use the words in the box below to fill in the blanks based on what you have learned about the adaptations of species. Words may be used more than once or not used at all.

## Word Bank

Traits	Selective breeding	Population	Crop species	Domestic
<del>Uniform</del>	Hybrid	<del>Real</del>	Diverse	Artificial

### CLOZE 3

Selective Breeding occurs when humans take control of the breeding process. The favorable traits to be passed on are chosen by the breeder to create a new or improved variety. Farmers have bred crop species, like corn, to produce more food in a smaller area. These hybrid plants result by crossing parent plants for their desired traits. Domestic animals, like dog breeds, have also been bred to be incredibly diverse compared to the diversity of their ancestors. This selecting of traits is also known as artificial selection. Similar to natural selection, the population of a species changes over time, and some traits become more common.



## Progress Monitoring Assessment

Adaptation of Species  
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

- 1 A population of birds walks along the shores of a swampy area eating small crabs. Climatic changes cause the water level in the area to increase. Which genetic variation in the bird population will be at an advantage leading to greater survival in the area?

- A Longer legs for wading.
- B A thicker coat of feathers.
- C Shorter, stronger beaks.
- D Sharper talons on the feet.

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## Progress Monitoring Assessment

Adaptation of Species  
Organisms and Environments

- 3 Over time, a certain species of hummingbird has developed traits including a small body, brightly colored feathers, a long, narrow beak, and the ability to drop its body temperature while it sleeps. Which of these characteristics is most likely a trait that developed in response to available food sources?

- A Small size
- B Bright coloration
- C Long, narrow beak
- D Body temperature decrease

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## Progress Monitoring Assessment

Adaptation of Species  
Organisms and Environments

- 2 The habitat of a rabbit undergoes a rise of two degrees Celsius above normal. What variation will increase in the population in response to this change?

- A Wider eyes that take in more light.
- B Larger ears that radiate heat.
- C Longer whiskers that sense vibrations.
- D Stronger hind legs for running faster.

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## Progress Monitoring Assessment

Adaptation of Species  
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- 4 Which internal structure is an adaptation that provided organisms with the function to perform gas exchange on land?

- A Gills
- B Lungs
- C Hollow bones
- D Chambered heart

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5 What environmental condition is likely to increase the frequency of brightly colored and highly scented flowers in a species of plants over many generations?

- A Increase in shade
- B Heavy precipitation
- C Higher soil nutrient levels
- D Available insect pollinators



6 Mudskippers are a species of fish which, over thousands of generations, have developed adaptations that allow them not only to survive outside of the water, but to actually travel from one water source to another. What environmental condition most likely led to these adaptations?

- A Lower temperatures
- B Frequent droughts
- C Larger predators
- D Increased precipitation



7 Galapagos finches are birds that live on islands off the coast of South America. The finches on the various islands are very different from each other. As a result of the different food resources on the islands, which of the following structures of the Galapagos finches experienced the greatest change through natural selection?

- A Head size
- B Eye shape
- C Feather color
- D Beak shape