



*The Making of the Fittest:  
Natural Selection and Adaptation*

**LESSON  
STUDENT HANDOUT**

4. Watch the Howard Hughes Medical Institute’s short film *The Making of the Fittest: Natural Selection and Adaptation*. As you watch, look for an explanation for the differences among the illustrations that will help you confirm that the order in which you arranged the illustrations is correct. Think about the following as you watch the film:

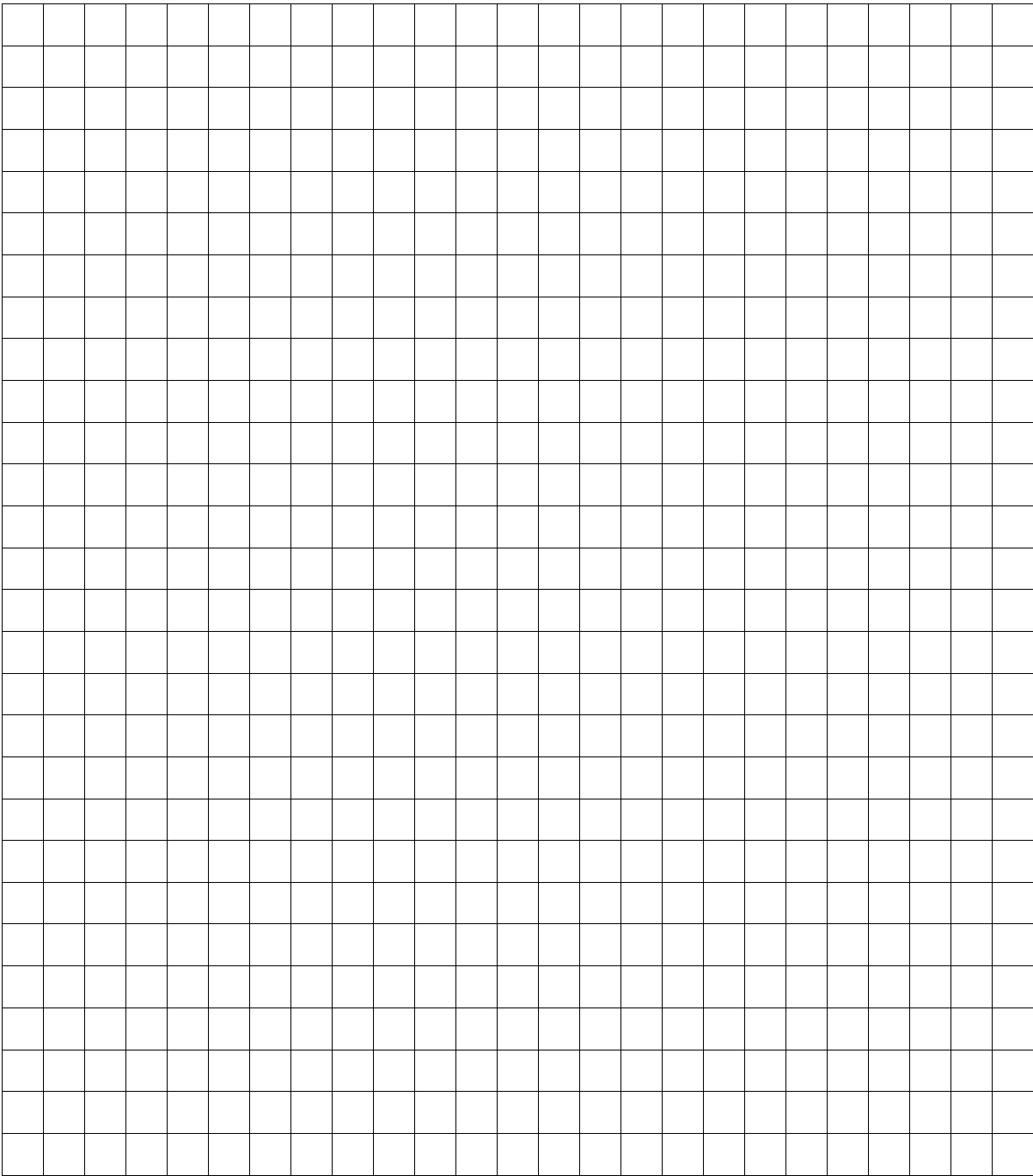
- Why are some mice light colored and some mice dark colored?
- Does fur color provide any selective advantage or disadvantage?
- What role does the rock pocket mouse play in the desert food web?
- What can explain the differences among the illustrations?

5. Using what you learned by watching the film, check the order in which you arranged the illustrations. Change the order as necessary. Once you are satisfied that you are correct, fill out the data table below using the counts you recorded above the illustrations.

**Number of Mice at Different Locations**

		Sequence			
		First (oldest)	Second	Third	Fourth (most recent)
<b>Location A</b>	<b>Number of Mice with Light Fur</b>				
	<b>Number of Mice with Dark Fur</b>				
<b>Location B</b>	<b>Number of Mice with Light Fur</b>				
	<b>Number of Mice with Dark Fur</b>				

6. Use colored pencils to prepare a bar graph based on the data that shows the distribution of the mice at locations A and B through time. Be sure to provide an appropriate title for the graph, and titles and labels for the x- and y-axes. You may record all of your data for each time period (A and B) on one bar graph or split A and B and make two graphs.



**QUESTIONS**

1. Explain why a rock pocket mouse's color influences its overall fitness. Remember that "fitness" is defined by an organism's ability to survive and produce offspring.

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2. Explain the presence of dark-colored mice at location A. Why didn't this phenotype become more common in the population?

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3. Write a scientific summary that describes changes in the rock pocket mouse populations at location B. Your summary should include

- a description of how the population has changed over time,
- an explanation of what caused the changes, and
- a prediction that describes what the population will look like 100 years in the future. Base your prediction on trends in the data you have organized. You can assume that environmental conditions do not change over the 100 years.

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4. Use the data and what you have learned about evolution to explain how mutation is a random process, but natural selection is not random.

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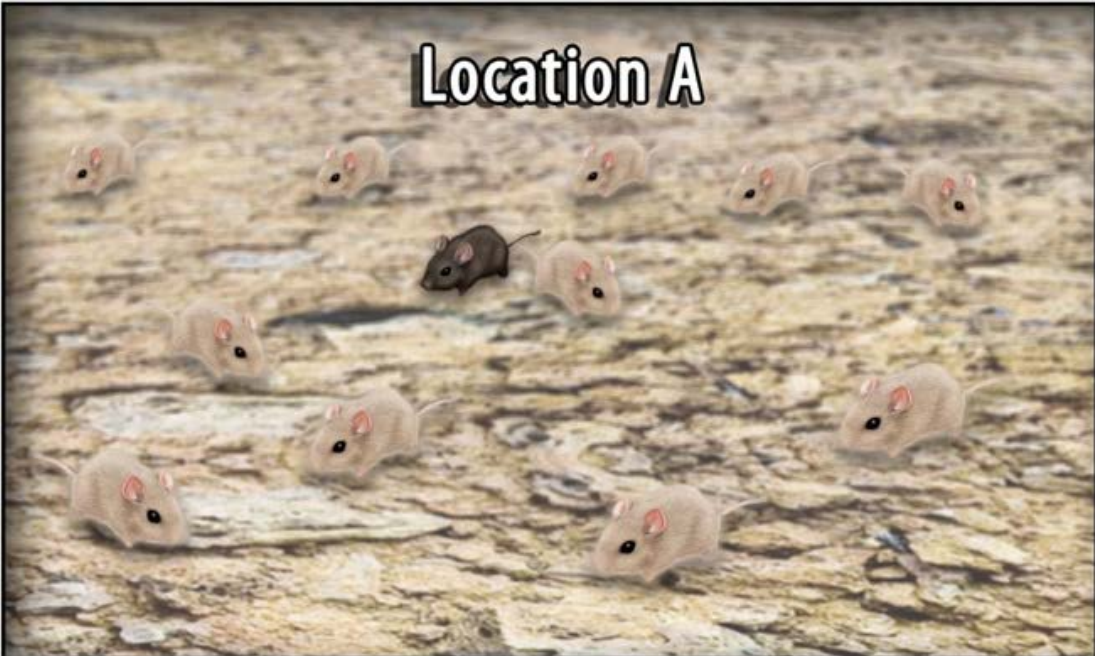
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LESSON  
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1

Location A: Number of mice with light-colored fur \_\_\_\_\_ Number of mice with dark-colored fur \_\_\_\_\_  
Location B: Number of mice with light-colored fur \_\_\_\_\_ Number of mice with dark-colored fur \_\_\_\_\_



When all four illustration pages are placed in order, this one is the first (oldest) second third fourth (most recent).  
(Circle the appropriate number.)

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2

Location A: Number of mice with light-colored fur \_\_\_\_\_ Number of mice with dark-colored fur \_\_\_\_\_

Location B: Number of mice with light-colored fur \_\_\_\_\_ Number of mice with dark-colored fur \_\_\_\_\_



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3

Location A: Number of mice with light-colored fur \_\_\_\_ Number of mice with dark-colored fur \_\_\_\_

Location B: Number of mice with light-colored fur \_\_\_\_ Number of mice with dark-colored fur \_\_\_\_



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**4**

Location A: Number of mice with light-colored fur \_\_\_\_\_ Number of mice with dark-colored fur \_\_\_\_\_

Location B: Number of mice with light-colored fur \_\_\_\_\_ Number of mice with dark-colored fur \_\_\_\_\_



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