**PhET Lab: Natural Selection 2**

This is an Extra Credit Assignment designed to reinforce what you already know about natural selection, and to provide you with an opportunity increase your grade in Science. Since this is extra credit, you must answer all parts of this lab correctly to earn credit for this assignment. You will independently work to determine which adaptations are best suited for a bunny’s survival in various environments and which adaptations are not well suited for survival. Go to the **PhET Website**, hover over the **simulations** tab, and in the **drop down menu, click biology**. Go to the **Natural Selection Icon** and **click it to start**. Click the **LAB icon** for today’s assignment.

Before you begin today’s lab, click the snowflake icon in the upper right corner of the simulation to make the background snow-covered. Also, check all of the boxes under the left side of the simulation including the data probe.

In the add mutations box at the top right portion of the screen, select all of the mutations in the **left column for the first three simulations you run**. Run the simulation by **clicking add mate at the bottom of the simulation screen**. After one generation has occurred, **click one of the following boxes (Wolves**, **Tough Food**, or **Limited Food)** in the Environmental Factors box of the simulation. Click one environmental factor only. After getting through five complete generations or after all the bunnies die, pause the simulation and record your data in the table below.

Data Table: Environmental Factors VS Bunny Survival after Five Generations (Use the data probe to fill the table below at the 5-generation mark)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Total Bunnies | White Fur | Brown Fur | Straight Ears | Floppy Ears | Short Teeth | Long Teeth |
| Wolves |  |  |  |  |  |  |  |
| Tough Food |  |  |  |  |  |  |  |
| Limited Food |  |  |  |  |  |  |  |

Question: Which environmental factor seems to have the greatest impact on bunny survival, and why? What information in your data table proves this?

ANSWER:

Question: Which environmental factor seems to have the least impact on bunny survival, and why? What information in your data table proves this?

ANSWER:

Click the reset button in the lower right corner of the screen, and click the snowflake button in the scene to make the background snow-covered again. Also, check all of the boxes under the left side of the simulation including the data probe.

In the add mutations box at the top right portion of the screen, select all of the mutations in the **right column for the next three simulations you run**. Run the simulation by **clicking add mate at the bottom of the simulation screen**. After one generation has occurred, **click one of the following boxes (Wolves**, **Tough Food**, or **Limited Food)** in the Environmental Factors box of the simulation. Click one environmental factor only. After getting through five complete generations or after all the bunnies die, pause the simulation and record your data in the table below.

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| Wolves |  |  |  |  |  |  |  |
| Tough Food |  |  |  |  |  |  |  |
| Limited Food |  |  |  |  |  |  |  |

Question: Which environmental factor seems to have the greatest impact on bunny survival, and why? What information in your data table proves this?

ANSWER:

Question: Which environmental factor seems to have the least impact on bunny survival, and why? What information in your data table proves this?

ANSWER:

QUESTION: Using information from the two data tables you just completed, which adaptations are the most important for bunny survival and how do you know? Is white fur or brown fur more important and why? Are straight ears or floppy ears better and why? Are short teeth or long teeth better for survival and why?

ANSWERS: