**PhET Natural Selection: Lab Questions**

During class yesterday, you had the opportunity to familiarize yourself with a Phet Interactive Science Simulation. Today, you will revisit that lab simulation and answer questions based on the simulation. There are two simulations you will need to access to answer the questions. Each of the questions for today’s lab were reviewed yesterday when we explored this website as a group. Complete sentence responses to each question are worth **2 points.**

In your search bar on your computer, type in **PhET**

At the website, **hover over simulations, then click biology** near the top right of the screen. **Scroll through the list** until you get to **Natural Selection**.

Click **Natural Selection** and then **click the right arrow** to start the simulation.

**Click the intro Box on the left side** of the two possible options.

**Spend 5 minutes just exploring the simulation to familiarize yourself with what each of the buttons do.**

This simulation does not produce the exact same results every time it is used. Natural Selection, or survival of the fittest as it is sometimes called, does not guarantee the survival of an organism. An organism (like the rabbits in this simulation) improves the odds of survival based on certain traits, or combinations of traits. Almost no organism on the planet has all dominant or recessive traits. Typically, organisms have combinations of trait types.

**Before starting the lab, click the reset button on the lower right corner of the screen. It is a round button with an arrow going in a counter-clockwise direction.**

**On the left side of the screen, check** all of the following boxes by **left clicking** them: **White Fur, Brown Fur, Data Probe.** Also, **click the fur box on the left side** in the **Mutation box** at the upper right corner of the screen.

Now, to **start the simulation**, click the **Add Mate button** in the lower center part of the screen with the white bunny in it. Answer the questions below from the simulation. You may need to reset and restart the simulation several times to answer all of them.

QUESTION 1: Other than color differences, is there any difference between the brown or white bunnies in the simulation?

**ANSWER:**

QUESTION 2: Which bunny type (brown or white) has the best camouflage in the desert background?

**ANSWER:**

QUESTION 3: Why do you think the bunnies “take over the world” so quickly?

**ANSWER:**

QUESTION 4: In the simulation, which bunny color is dominant for each of the generations?

**ANSWER:**

QUESTION 5: How is your answer to the previous question possible, considering the color of the environment?

**ANSWER:**

QUESTION 6: What information does the Data Probe give you?

**ANSWER:**

**Click the reset button** in the **lower right corner of the screen**. It is the round button with an arrow inside going in a counterclockwise direction.

Now, for this part of the experiment, you will change one of the two environmental factors. You may **check** either the **Wolves** or the **Limited Food** box in the **Environmental Factors** box and run the simulation. Remember, to start the lab simulation, the must click the add mate button at the bottom of the screen with the desert scene in it.

QUESTION 7: How did changing the presence of wolves in the simulation affect the population?

**ANSWER:**

QUESTION 8: What are the independent and dependent variables from question 7?

**ANSWER:**

QUESTION 9: How did changing the amount of limited food affect the population?

**ANSWER:**

QUESTION 10: What happens if you change the color of the environment by **clicking the snowflake** at the **top right corner of the simulation screen**? How does changing the environment affect the survival of the various colored bunnies?

**ANSWER:**