Natural Selection Mouse Lab

Problem

How do species change over time?

Hypothesis

State what will happen to each color variation of mice in both the white and brown sand environments and support why this is the case.

Materials

1. W allele cards (30) Dominant allele for white fur
2. w allele cards (30) Recessive allele for brown fur
3. S event cards (10) Mouse survives
4. D event cards (1) Mouse is killed by disease
5. P event cards (1) Mouse killed by predator
6. C event cards (18) Mouse killed by predator if it contrasts with the environment (Ex. If mouse is white on brown background or if mouse is brown on white background it is killed)
7. Live mice card (1)
8. Dead mice card (1)
9. Two Mice (one brown, one white)
10. Two sandy backgrounds (one brown, one white)

Procedures

1.Mix up the W allele and w allele cards face down on the table to make a mouse pile.

2. Shuffle the event cards and put them in one event pile.

3. Choose two allele cards from the mouse pile and determine its phenotype either white or brown).

4. Choose one event card.

5. If the mouse lives put the mouse allele cards on the live mouse card.

Procedures

6. If the mouse dies put the mouse allele cards on the dead mouse card.

7. Return event card to the bottom of the event pile.

8. Repeat steps 3-7 until the allele cards are gone.

9. Record your results in the 1st generation of your data table.

10. Leave the dead mouse allele cards untouched.

11. Mix the remaining live mouse allele cards face down on the table to make a new mouse pile.

Procedures

12. Choose two mouse allele cards and one event card.

13. If the mouse lives put the mouse allele cards on the live mouse card, and it the mouse dies put the mouse allele cards on the dead mouse card.

14. Repeat until the mouse allele cards are gone and record data in the 2nd generation of the data table.

15. Repeat steps 11-14 once more but record those results in the 3rd generation of the data table.

Procedures

16. If you have enough mice to complete a 4th generation then do so.

17. Begin experiment again using all the mouse allele cards and the event cards for generations living on brown sand. Make sure to mix all cards before the beginning of the experiment.

Lab Table Organization

"W" allele and "w" allele cards scattered face down

Shuffled event cards in pile, face down

Live Mice

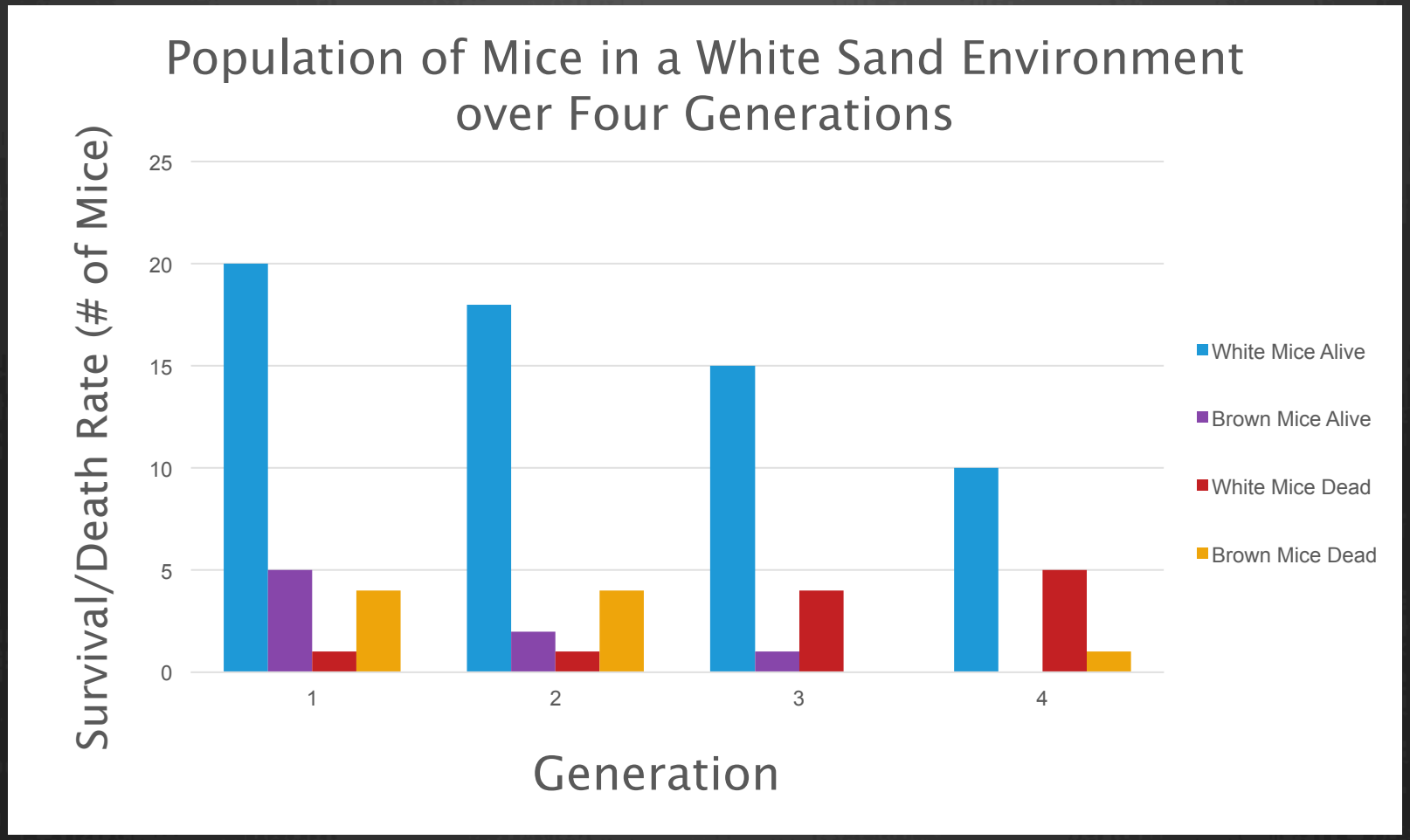
Dead Mice

Data Tables

White Sand	Surviving White Mice	Surviving Brown Mice	Death White Mice	Death Brown Mice
Generation 1				
Generation 2				
Generation 3				
Generation 4				

Brown Sand	Surviving White Mice	Surviving Brown Mice	Death White Mice	Death Brown Mice
Generation 1				
Generation 2				
Generation 3				
Generation 4				

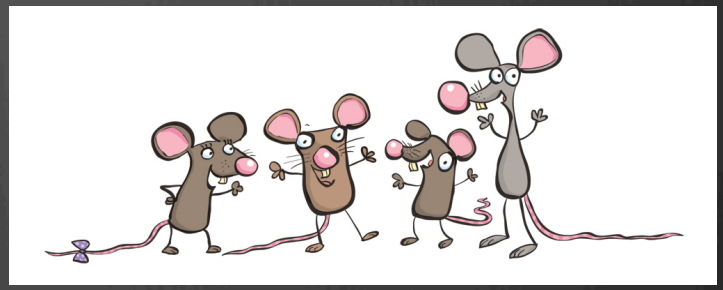
Sample Graph



Analysis

- Calculate in Part 1, how many white mice and brown mice there were in each generation.
- If the events in Part 1 occurred in nature, predict how the group of mice would change over time.
- How did the results in Part 2 differ from those in Part 1?
- How would it affect the data if you increased or decreased the number of “C” cards?
- What are some ways this lab investigation models natural selection?
- What are some ways in which natural selection differs from this model?

Conclusion



- Restate the purpose.
- Restate the hypothesis.
- Describe whether the data supported or did not support the hypothesis.
- Describe any errors that may have taken place and any things that would be changed if repeated.
- Based on what was learned, make suggestions for future experiments to be performed.