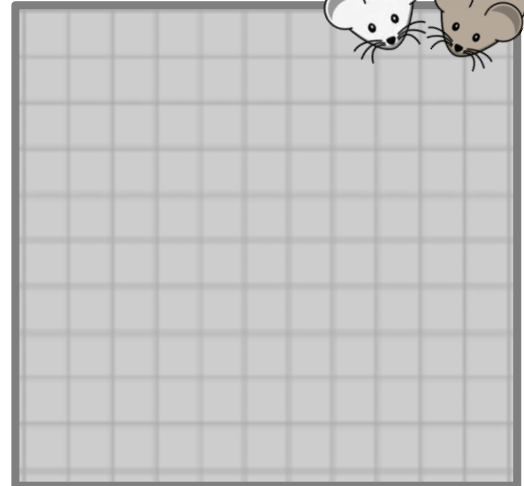


Mouse Generations Data Chart (Tally your results.)

Sand Color	Generation	Lived	Lived	Died	Died
		White	Brown	White	Brown
	1				
	2				
	3				
	4				
	5				



The Mouse Generations:

1. Work on this lab with one another person. Keep the cards organized for the next use.
2. You need 3 piles: Mouse Cards, Event Cards and Mutation Cards. Mix each pile.
You need a sign for the **Sand Color** and a sign for future piles of **Live Mice and Dead Mice**.
3. The first environment is **Brown Sand Dunes**. You will use the cards to model what might happen to a group of mice that live in an environment of brown sand dunes.

Listen for Sand Change!

4. **Player 1: Choose 2 Mouse Cards**, one from each parent, to represent the hair color traits in the sex cells.
 - a) Gene allele B is dominant for Brown hair color, or Brown mice. BB and Bb produce brown mice.
 - b) Gene allele b is recessive for white hair. "bb" produces white mice.
5. **Choose an event card.**
 - a) A Survival card means the mouse survives (lives).
 - b) A Disease or a Predator All card means the mouse dies.
 - c) A Predator Contast card means the mouse dies if its color contrasts with the sand dunes. (Only brown mice die if sand dunes are white.)
 - d) A Mutant Mouse card? Choose a Mutation Card. **Paperclip the Mutation Card to 1 mouse card.**

6. **Record the fate of the mouse with a tally mark () in the data table. (Everyone tally for everyone at table.)**

7. Place the mouse (2 cards) in the correct pile, Live or Dead.

8. Put the Event Card at the bottom of its pack.

9. **Player 2 (or the next player): Starts at #4.** Take turns. Record all results.

Record Mutations here that result in live mice. Use them if you work a 2nd day.

Listen for Generation Change!

10. **NEW GENERATION:** Start a new generation if you run out of mouse cards, or if there is an announcement.
11. a) Move your **Live Mice** Mouse Cards and use them for new mice. **Mutations stay with their mouse card.**
12. b) Leave the dead mice in the Dead Mice pile untouched.
13. c) You may use Mouse Cards from your original Mouse Card pile.

Work until you have data for both brown and white sand.

14. Graph the live populations of each color of mouse.
Mark environmental changes with a vertical line.

Continue to Page 2.

Mouse Name _____ Period _____
Change-Over-Time Player 2 _____

Consider: Natural Selection → Change-Over-Time → Evolution

- ___15. This activity is designed to help you think about Change-Over-_____ or the slow evolving of traits. When the environment changes, some organisms do better, some do _____. Those that do better will survive, have offs _____ and pass their genetic _____ on to the next gen _____. Over time, a whole species can change.
- ___16. A Mutation (an unpredictable change in a chromosome or D _ _) sometimes cause a noticeable change that increases or _____ the ability of an organism to sur _____. Helpful mutations start with 1 organism and spread slowly by re _____. Organisms that have generations of helpful mutations become "Super" organisms". An "Super" example is disease-causing bacteria that are resistant to antibiotics.
- ___17. The increase in survival, reproduction & population is called Natural Selection. When Natural Selection results in trait change(s) in an entire group or species, it is also Change-Over-Time or evolution. Most changes are small and go unnoticed.
- ___18. If a mutation causes a mouse to have white fur with pale brown spots, then that mouse may be able to avoid predators on either white or _____ sand and produce spotted brown offspring. If, as the sand changes colors, the spotted mice are the only survivors, then that would be Change-over-_____ and an example of a species evolving. Enough change becomes a new species, which is a group with similar DNA that produce similar offspring.
- ___19. If the environment changes so much that not enough offspring survive and reproduce, then the species may become e _____.
- ___20. If the beach (and its mice) were divided into multiple new beaches, (as the G _____ Islands where Charles Darwin visited and studied) then over time a new species may develop on only one of the new _____.