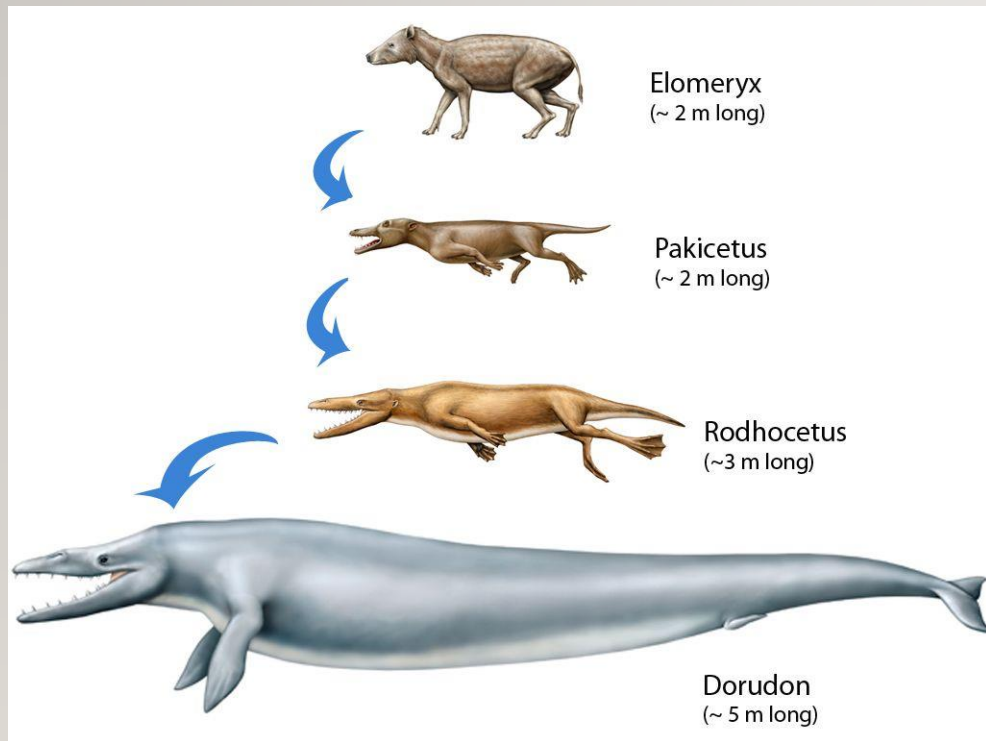
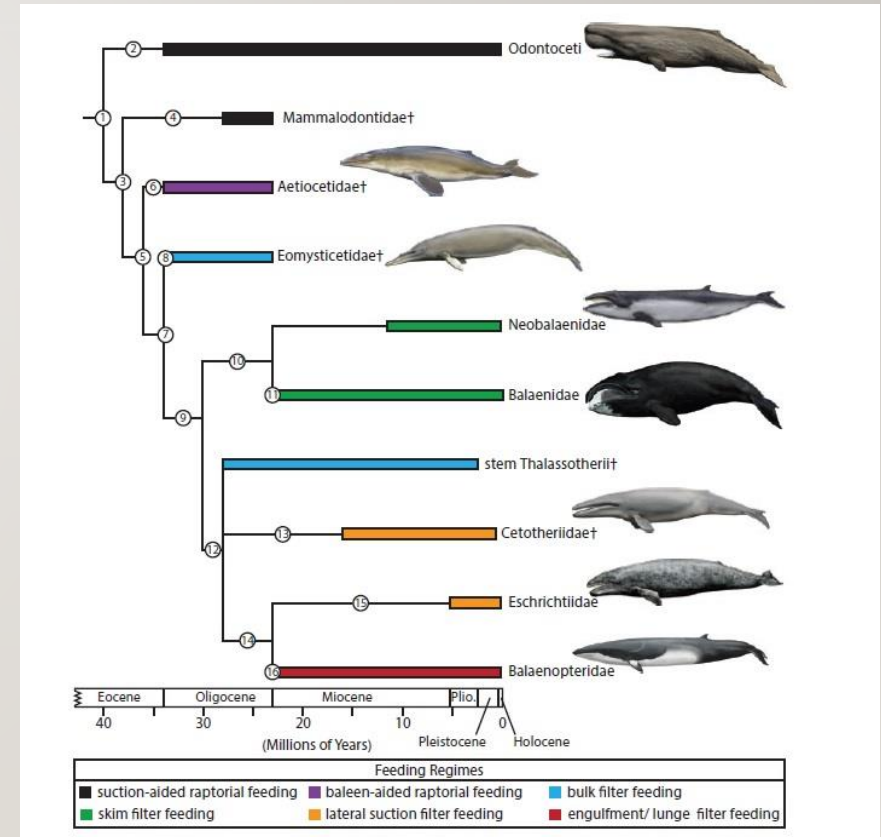


NATURAL SELECTION

OBJECTIVE: I CAN IDENTIFY THE STEPS OF NATURAL SELECTION AND DESCRIBE HOW IT LEADS TO THE EVOLUTION OF A SPECIES



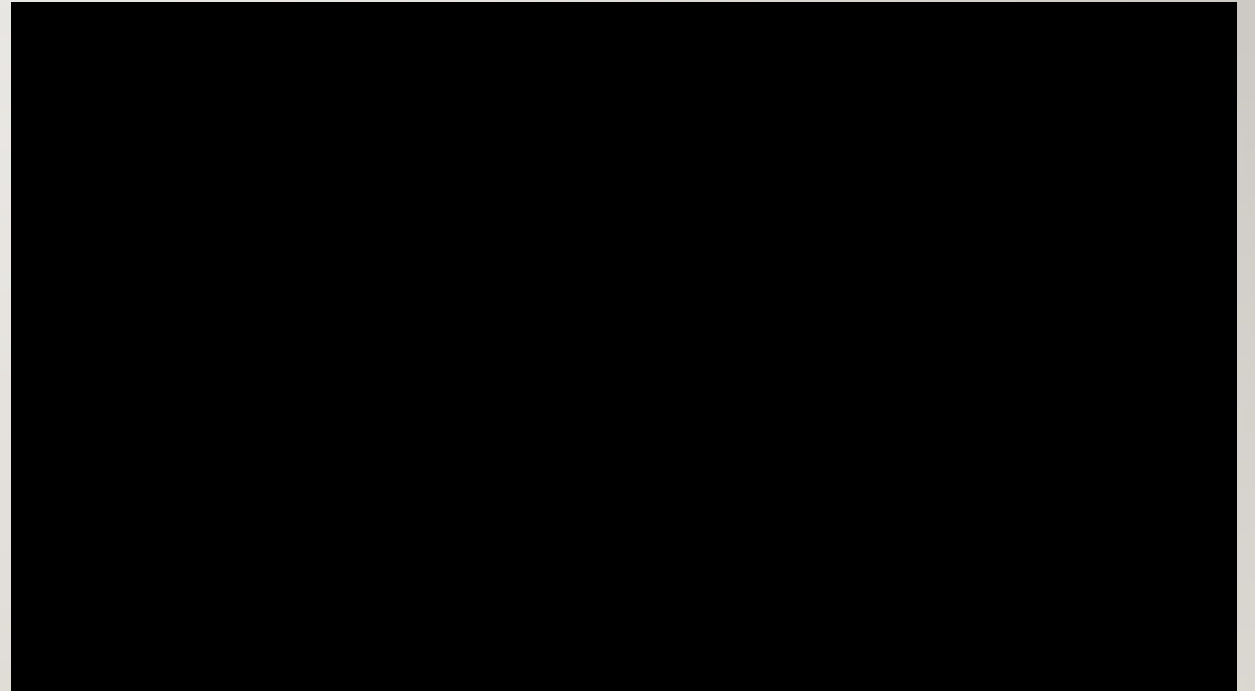
Standards: 3.1 f-h



ACTIVATING PRIOR KNOWLEDGE/MOTIVATION

**What do you see
happening?**

Write your thoughts on both your guided notes and on the discussion board. Reply to at least one other classmate!



Evolution: A process in which species change over time caused by natural selection.

Natural Selection: A process in which organisms that are better adapted to their environment tend to survive and produce more offspring. Referred to as “Survival of the fittest”
children

Necessary Factors for Natural Selection

- 1. Variation must exist:** Differences amongst traits in the population must exist.
(Ex. Fur color, height, horns)
- 2. Trait must be heritable:** The variation must be coded in DNA and be able to be passed down to offspring (Ex. Coded in DNA of a gamete)
- 3. Reproductive advantage:** One of the variants must be better adapted to survive, therefore, the frequency of that trait increases over time! (Ex. White fur camouflages with snow, allows organism to avoid predators and survive to make more offspring with white fur)
Number

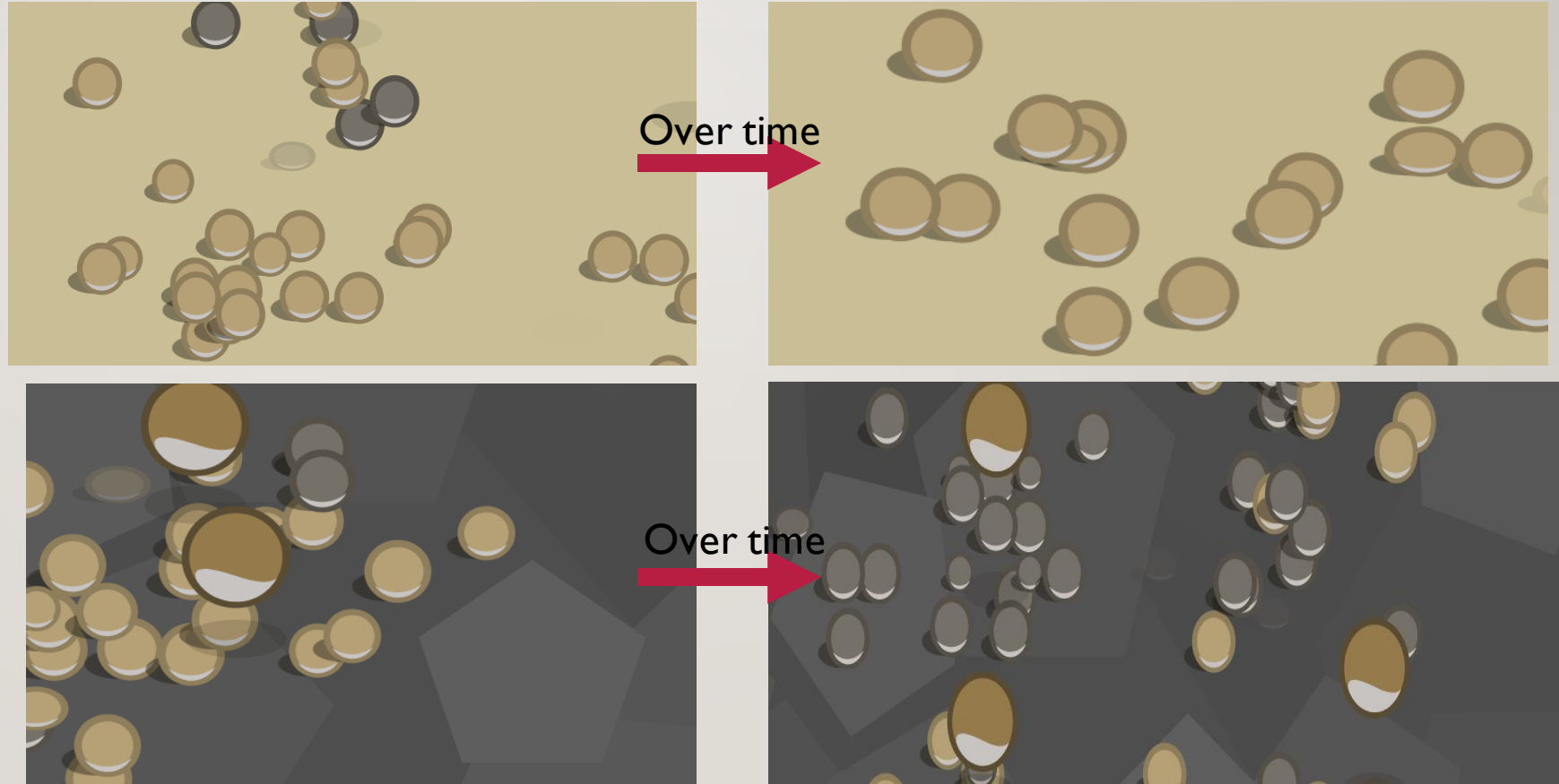
How do variations occur in populations?

SIMULATION =

[HTTPS://LEARN.GENETICS.UTAH.EDU/CONTENT/EVOLUTION/ADVANTAGE/](https://learn.genetics.utah.edu/content/evolution/advantage/)

Try the simulation at the link above and answer the following questions:

1. Is there variation? If so, describe it.
2. Which trait is favorable?
3. Change the background color to gray by sliding the bar on the bottom. Describe what happens?
4. After changing the background color, which trait was favorable?
5. What color did the population evolve to over time?

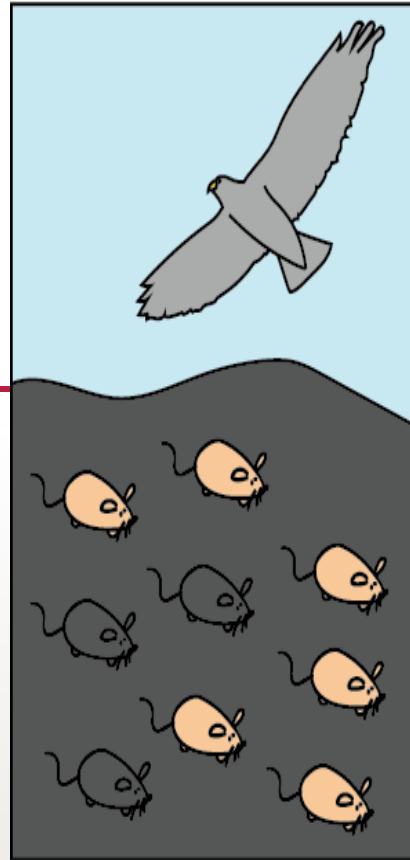


Try It!

1. Variability: Does the trait vary among individuals in the population?

2. Heritability: Is the trait influenced by genes that pass from parents to offspring?

3. Reproductive Advantage: Are individuals with a certain trait variation more successful at surviving/reproducing than others?



Some mice are eaten by birds



Mice reproduce, giving next generation



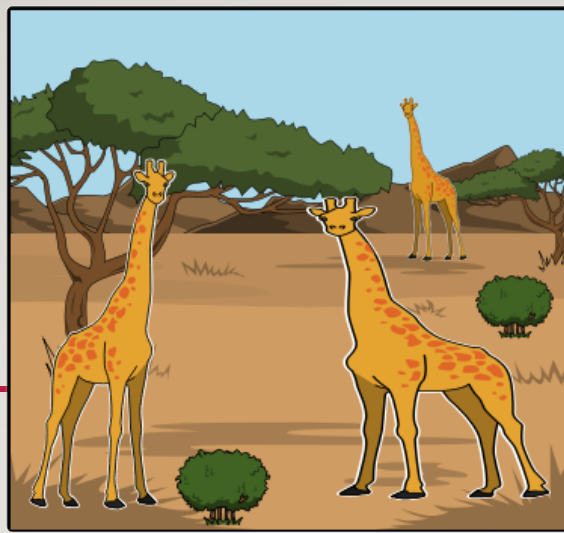
A population of mice has moved into a new area where the rocks are very dark. Due to natural genetic variation, some mice are black, while others are tan.

Tan mice are more visible to predatory birds than black mice. Thus, tan mice are eaten at higher frequency than black mice. Only the surviving mice reach reproductive age and leave

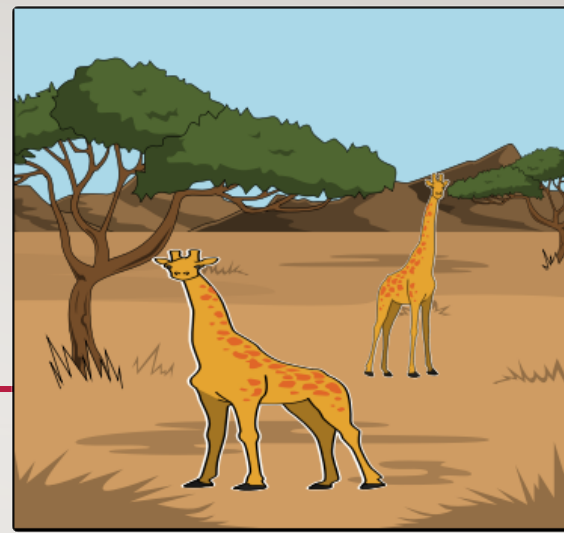
Because black mice had a higher chance of leaving offspring than tan mice, the next generation contains a higher fraction of black mice than the previous generation.

Try It!

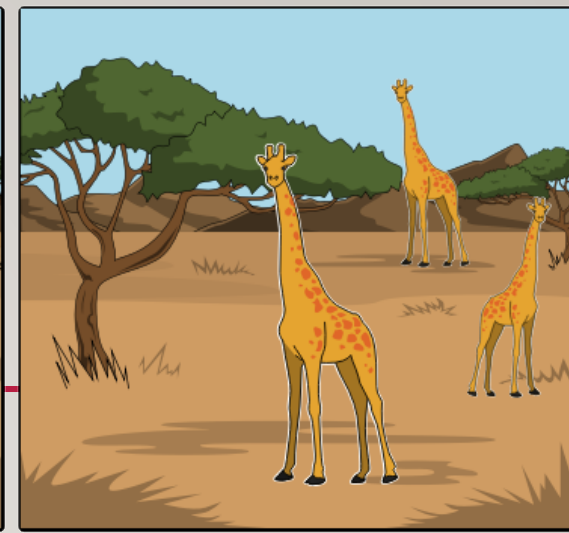
1. Variability: Does the trait vary among individuals in the population?



Millions of years ago, there were 2 types of giraffes. Short neck and Long neck.

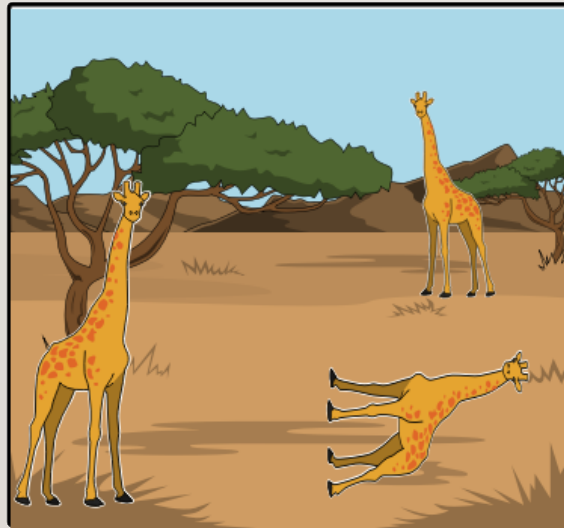


As the environment changes the only leaves available were high up in the trees.

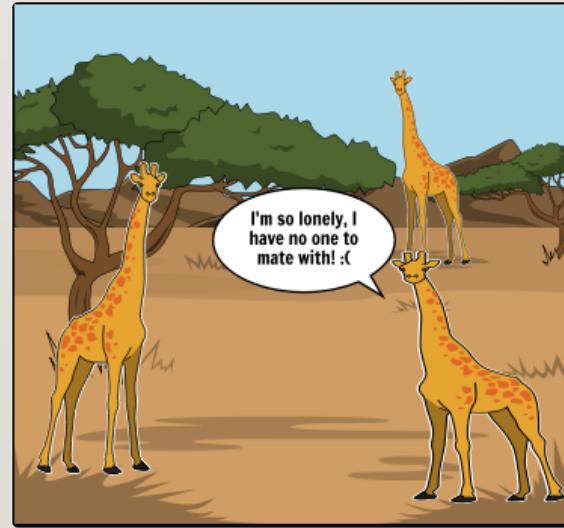


As the leaves were up so high only the long neck giraffes could reach them, not the short neck giraffes.

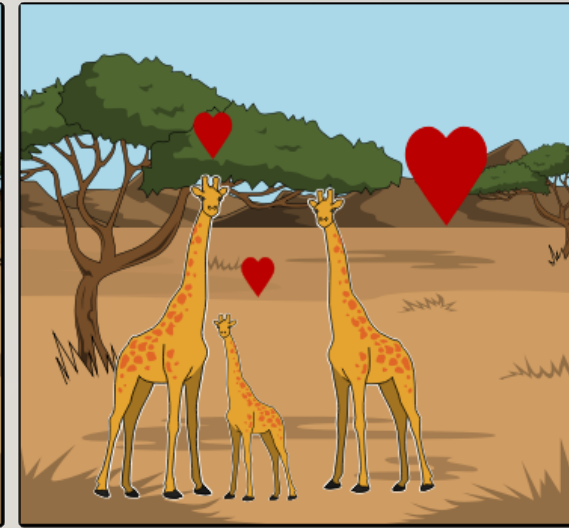
2. Heritability: Is the trait influenced by genes that pass from parents to offspring?



Short neck giraffes were not receiving enough food and started to die out, due to natural selection.



As the short neck giraffes died out, they were less and less available for reproduction.



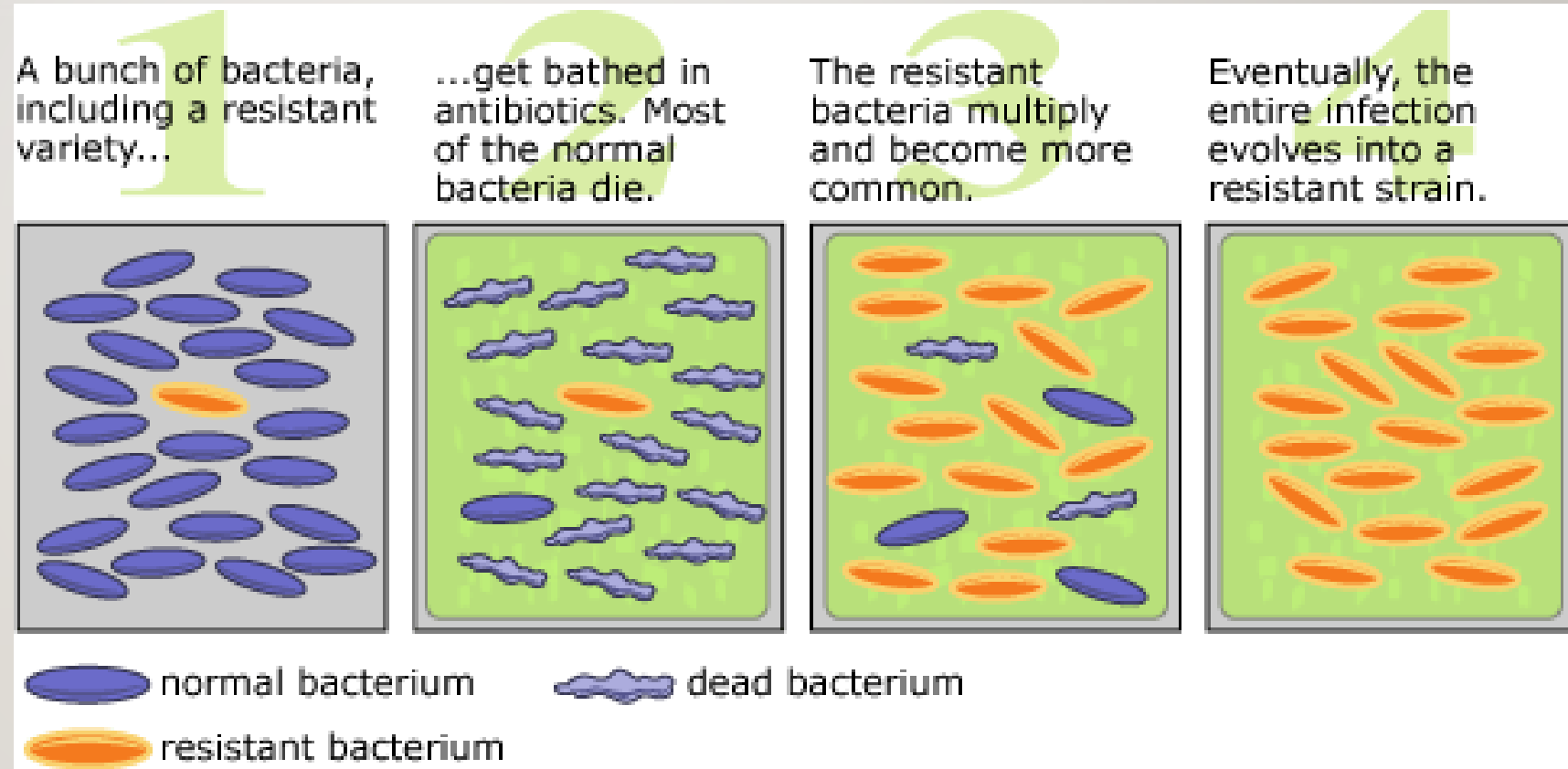
Long neck giraffes successfully attracted more females and were able to reproduce

Try It! (Regents Concept)

1. Variability: Does the trait vary among individuals in the population?

2. Heritability: Is the trait influenced by genes that pass from parents to offspring?

3. Reproductive Advantage: Are individuals with a certain trait variation more successful at surviving/reproducing than others?



REGENTS “MUST KNOW FACTS”

1. Variations in populations come from **Mutations** and **Sexual Reproduction** (Meiosis)
2. In order to changes in DNA to be **heritable**, they must occur in **Gametes** (sperm/egg)!
3. For Natural Selection and Evolution to occur, there must be **variations** within the population!
4. Natural Selection causes the **frequency** of the **advantageous** trait to **increase** over time!
number helpful Go up

Regents Buzz Words

1. Increase in favorable traits
2. Increase of advantageous traits
3. Survival of the fittest
4. Bacterial Resistance! (they love asking questions about how bacteria has evolved bacterial resistance!...refer to slide 6)

REGENTS PRACTICE:

1. Natural selection is best described as

- A) a change in an organism in response to a need of that organism
- B) a process of nearly constant improvement that leads to an organism that is nearly perfect
- C) differences in survival rates as a result of different inherited characteristics
- D) inheritance of characteristics acquired during the life of an organism

2. Which two factors could lead to the evolution of a species over time?

- A) overproduction of offspring and no variation
- B) changes in the genes of body cells and extinction
- C) struggle for survival and fossilization
- D) changes in the genes of sex cells and survival of the fittest

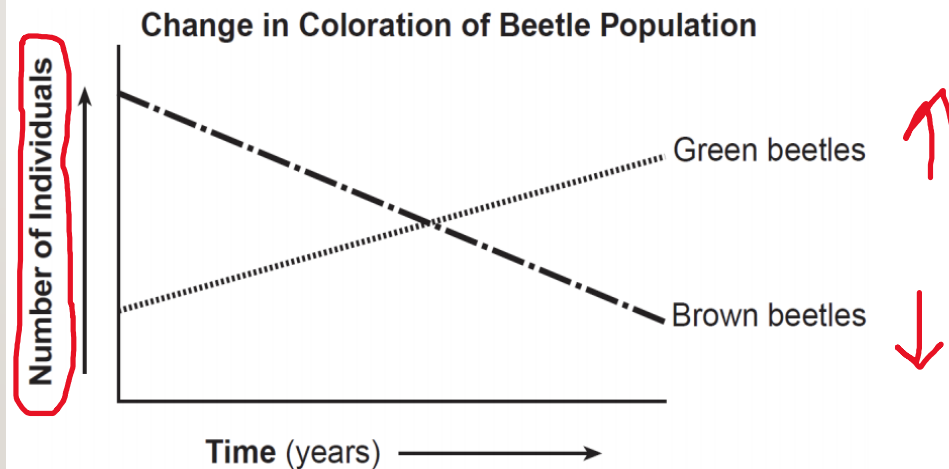
3. Evolution can occur at different rates; however, for evolution to occur, there must be

- A) variations within a species
- B) extinction of the species
- C) asexual reproduction
- D) no change in the genes of an organism

3. Over time, data that support the successful evolution of a species would include observations that describe

- A) an increase in the genetic changes occurring in body cells
- B) a decrease in the genetic variety carried in sex cells
- C) an increase in the proportion of offspring that have favorable characteristics
- D) a decrease in the proportion of the population that has beneficial traits

4.



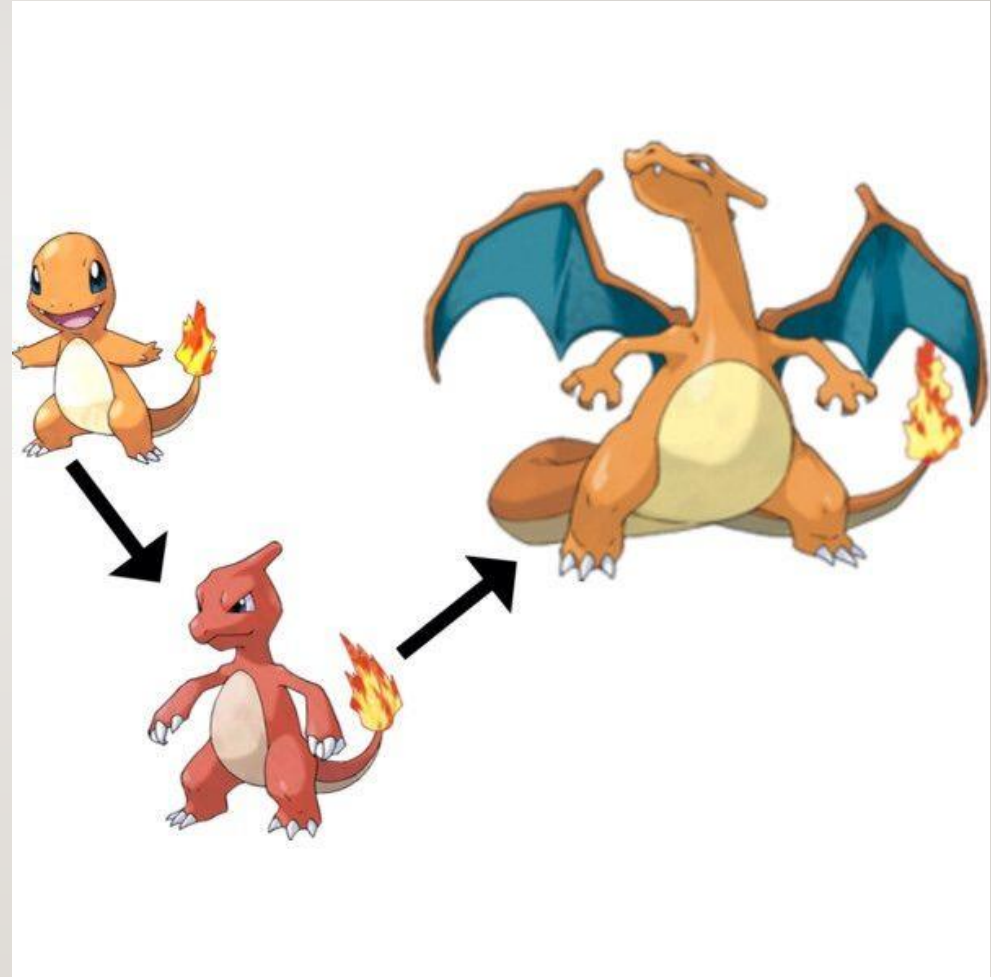
The change observed in the number of green and brown beetles in the population is most likely due to

- A) natural selection
- B) selective breeding
- C) gene manipulation
- D) a common ancestor

CLOSURE

WHY WAS POKEMON WRONG ABOUT EVOLUTION?

WRITE YOUR ANSWER IN YOU GUIDED NOTES AND POST ON THE DISCUSSION BOARDS. REPLY TO ONE CLASSMATE!



EXIT ASSESSMENT:



- Log into CastleLearning.com to complete your exit assessment.
- Message me on Microsoft Teams or Remind if you need help.

CHALLENGE

- For extra credit, create your own Evolutionary story!! Post it on the discussion board when your done! Comment on your peers!
- Use website: StoryBoardThat.com (<https://www.storyboardthat.com/>)
- Make FREE account

