



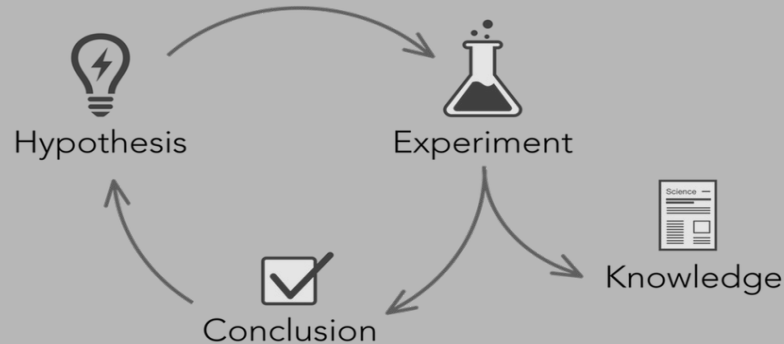
# ***LAB REPORT***

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# Introduction

**Purpose**- The lab is meant to test how animals (bunnies) with different mutations survive in specific environments.

**Hypothesis**- Bunnies with the same color fur as their environment survive better. Bunnies with bigger teeth may survive better with tough foods, and bunnies with upright ears can survive better against wolves.



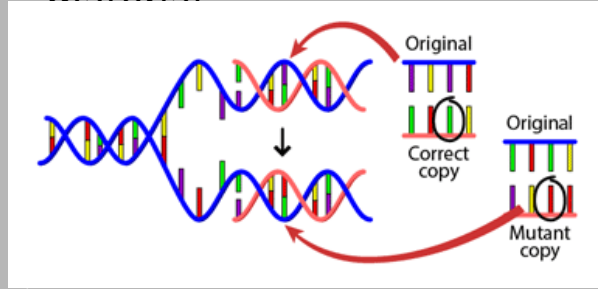
# Definitions

**Natural selection:** a process by which certain traits become more or less common in a population over time



Mutations (Dominant and Recessive), this changes the traits of future generations

**Mutation:** a change that occurs in the DNA sequence of an organism's genetic material



Natural selection, Mutation, Dominant and Recessive mutations, all are affected or change according to the weather

## **Dominant vs Recessive Mutations**

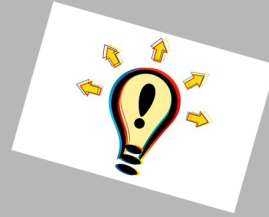
Dominant mutation is more likely to become common in the bunnies' population, while Recessive mutation is less likely to become common in the bunnies' population

	Dominant	Recessive
Fur		
Ears		
Teeth		

# Methods & Materials

## How do we start with this experiment?

1. First we tested out an idea, the hypothesis then we see if the simulator fits our idea
2. Choose weather SUN ☀ OR SNOWFLAKE ❄
3. Choose the mutations which is Dominant or Recessive = to fur, ears and teeth
4. Environmental factors= Wolves, tough food and limited food
5. As we choose fur(dominant), ears(recessive) and teeth(recessive) with Snowflake and environment factors of limitation of food source
6. Add a mate



from observing  
independent variable (alter mutation)

**Add Mutations**

	Dominant	Recessive
Fur		
Ears		
Teeth		

**Environmental Factors**

- Wolves
- Tough Food
- Limited Food

Generation 1

**Add Mutations**

Dominant  Recessive

Fur:  Brown Fur  White Fur

Ears:  Straight Ears  Floppy Ears

Teeth:  Short Teeth  Long Teeth

**Environmental Factors**

Wolves  Tough Food  Limited Food

Population  Proportions  Pedigree  None

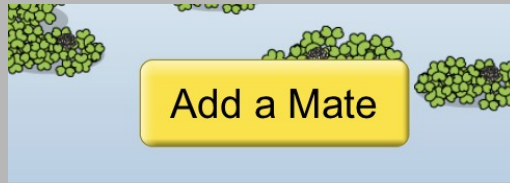
**Legend**

- White Fur
- Brown Fur
- Straight Ears
- Floppy Ears
- Short Teeth
- Long Teeth

**Start of Generation 6 bunnies**

Feature	Start of Generation 6 bunnies	Currently 6 bunnies
Fur	83% White, 17% Brown	100% White
Ears	83% Straight, 17% Floppy	100% Straight
Teeth	83% Short, 17% Long	100% Short

Generation 1



# Results 1

**Generation 1** - Started off with **two** matins (both with white fur, both straight ears, an

**Generation 2** - After mating, **6** bunnies in

(6 white fur, 0 brown fur, 5 straight ears, 1 floppy ears, 5 short teeth)

**Generation 3** - The total population at this point is **18**

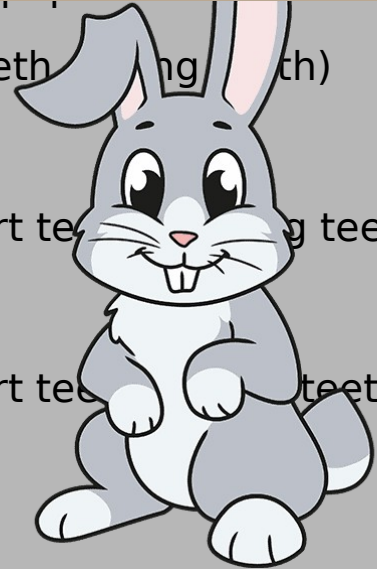
(18 white fur, 0 brown fur, 15 straight ears, 3 floppy ears, 15 short teeth)

**Generation 4** - The total population - **55** bunnies

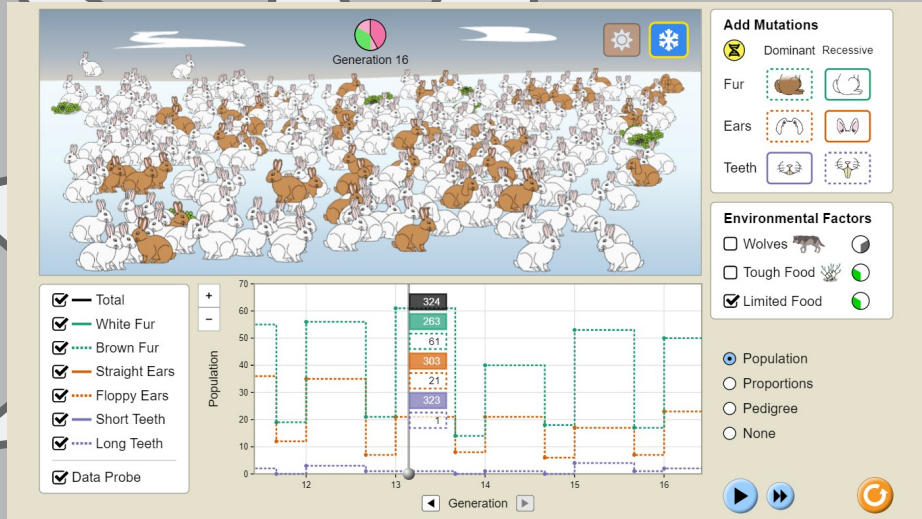
(53 white fur, 3 brown fur, 46 straight ears, 9 floppy ears, 46 short teeth)



- The first two generation ended up with the same data
- Yet all ended up relatively the same
- the dominant trait for bunnies in winter like environment through generations is white fur, as for ears there most likely straight ears and short teeth. The limitations in food wasn't a big effect in population rate until it reach peek max pop then it drops significantly.



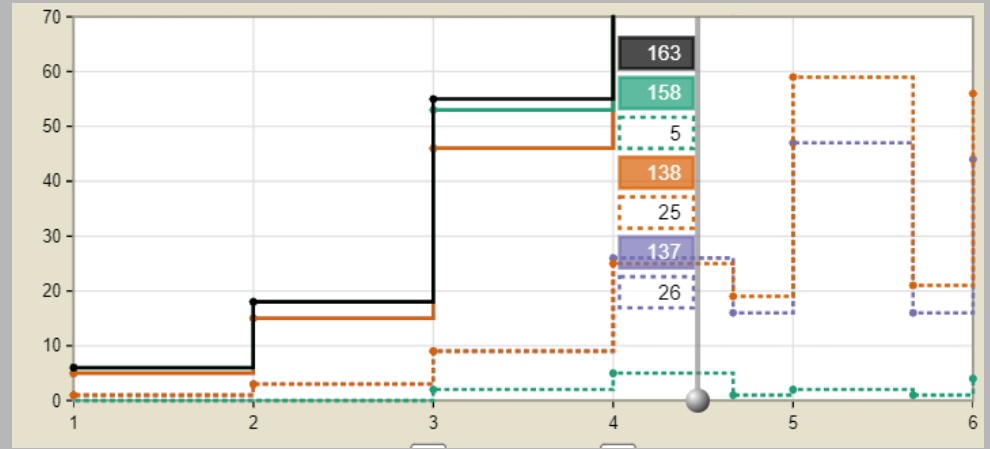
# Results 2



- **Second set of mutations for comparison to our hypothesis. Which her is Recessive fur, recessive ears and dominant teeth**
- **Relatively healthy relationship between population**
- **Even due to the fact this time around there's more browned fur bunnies keeping up through generations**
- **Meaning bunnies can**

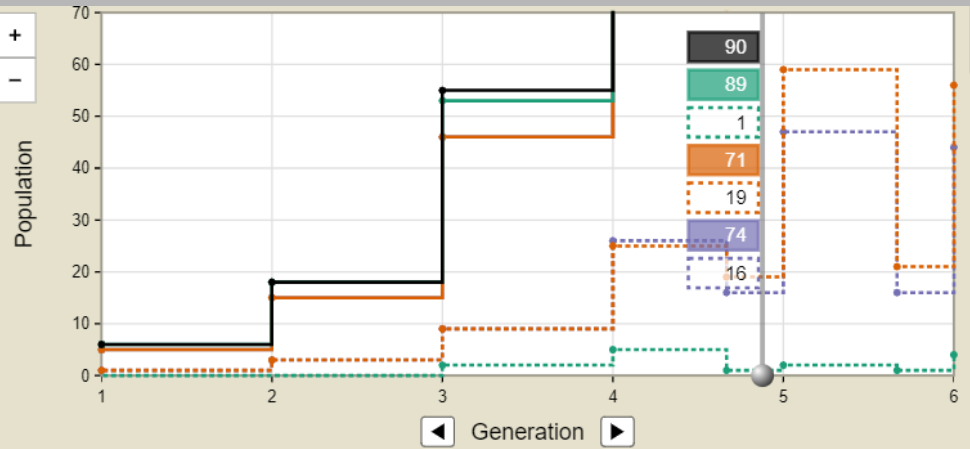
# Relationship between High Population and food limitation

*Last ¼ of that same 5th generation a low drop in population 55.2%*



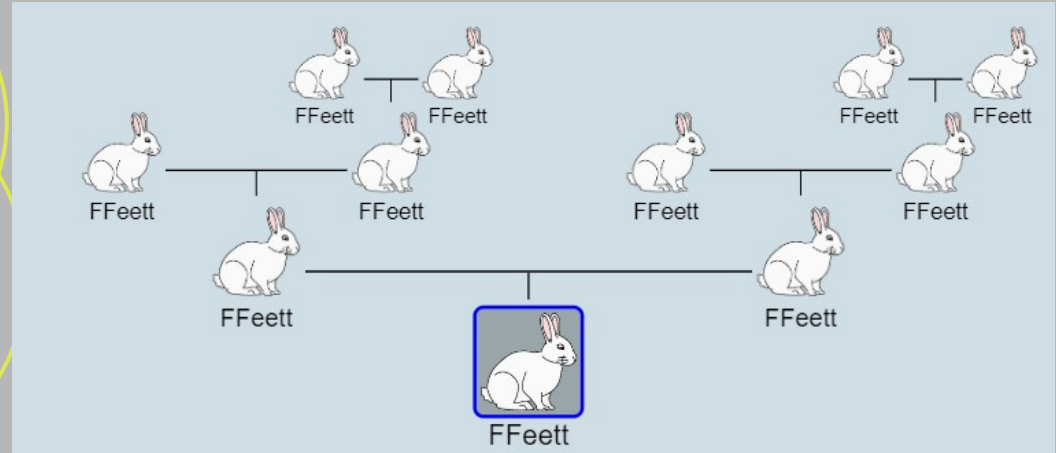
*First highest population peak of bunnies ¾ of the 5th generation*

- The data highlights how if an environment is limiting factors like water, food and space. An Competition in resource increases, and could result into diseases or simply death which drops population.



# Break down on dominant and recessive alleles

- FF , EE, TT - dominant genes
- Ff , Ee, Tt- recessive yet paired with a dominant , dominant can over power from how weak it can be (recessive )
- ff, ee, tt - recessive



Example



# Discussion



Generation 6



## **Hypothesis (Theory):**

**We chose different mutations in specific environmental changes.**

**We predicted over time these would be the dominant traits throughout the population.**

**Our reasoning behind it was that these traits seemed most suitable for the environment and the things in them.**

## **Results (Lab):**

**Our hypothesis and predictions seem to have been correct**

**The selected mutations were dominant over time and didn't become recessive**

**We chose different mutations in specific environmental changes.**

Start Over

# Conclusion

The results vary significantly depending on the changes made, for example, our two labs that we did give us almost the same results at the end of the third generation

Short teeth: plenty to eat

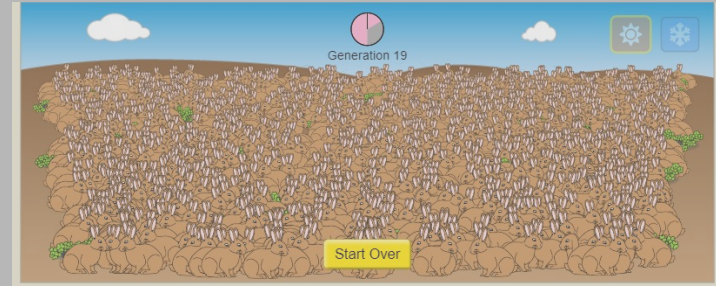
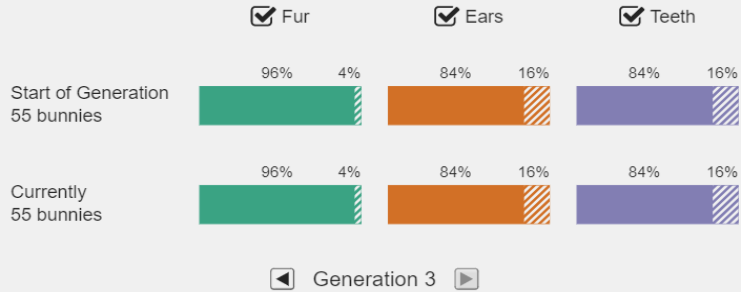
Long teeth: unable to eat properly meaning unable to keep it short

Straight ears : more alerted in wild

Floppy ears : common to house pets

Brown fur: easily spotted in snow

White fur : easy to camouflage



However, this is not always the case; in some circumstances, the consequences can vary a lot. While if no predators are introduced, the bunnies' population continues to grow until it becomes too large, but when wolves are introduced, the bunnies' population tends to disappear. This can also change according to mutations and the environment in which the bunnies live. However, there is one exception in this hypothesis: when wolves are introduced from generation 5 onwards, the number of bunnies increases drastically.