

# Heredity

How *you* became *you*!

# Essential Questions

- Why do individuals of the same species vary in how they look, function and behave?

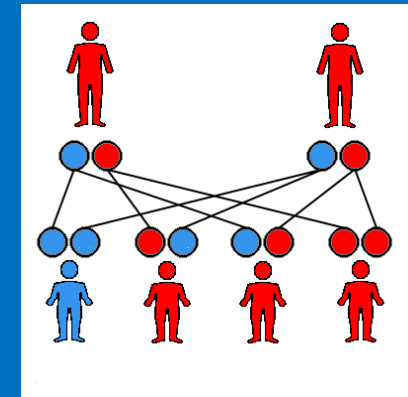
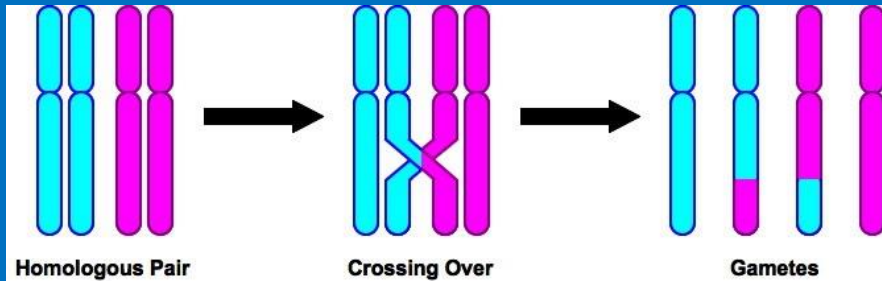
# Why do individuals of the same species vary in how they look, function and behave?

Answer: Genetic variation!

Natalie	ATA	TGA	TCA	ACA	CTT
Steven	ATA	TGA	TCA	ACA	GTT

Sources:

*Crossing Over/Mutation/Sexual Reproduction*



# Essential Questions

- How does sexual reproduction lead to genetic variation?

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- You get half of your DNA from mother and half from father, so you end up being a new combination of all of their DNA!



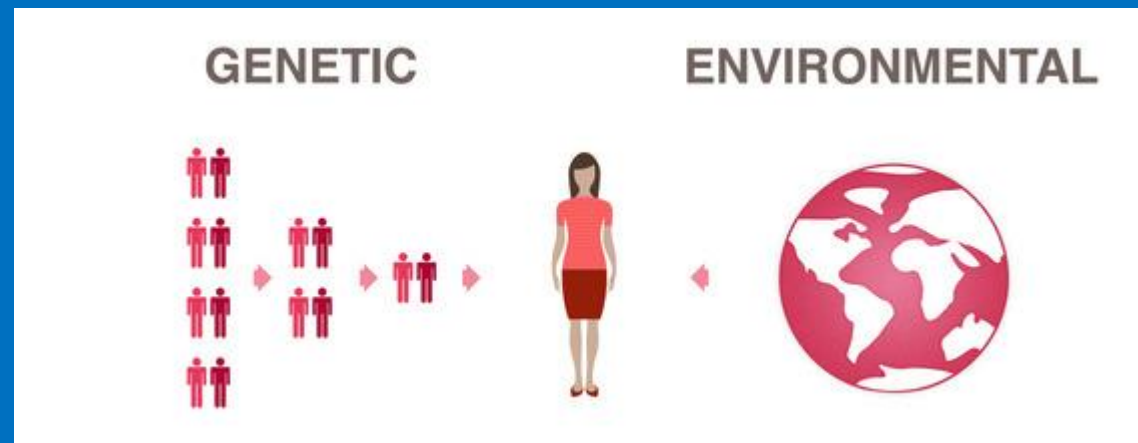
# Essential Questions

- Is there anything besides genetics that can influence Genetic variation in a population?

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**Yes!**

Environmental Factors can also have an influence  
If one trait is better at helping an organism survive than another,  
that trait will show up more over time



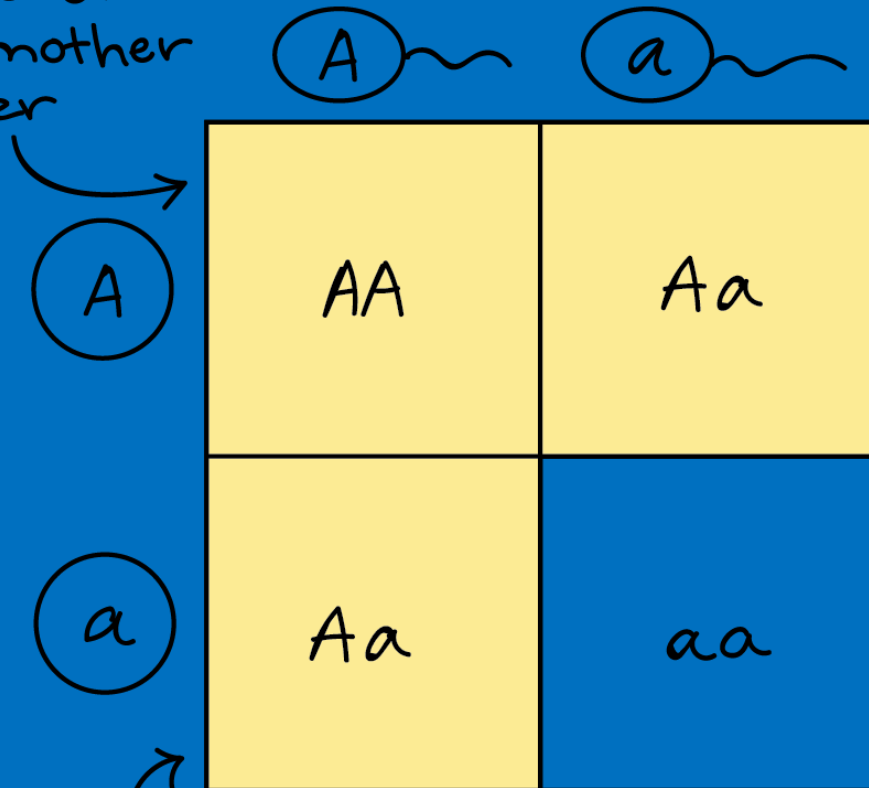
# Essential Questions

- How is probability used to predict the expression of traits?



# How is probability used to predict the expression of traits?

$\frac{1}{4}$  chance of  
As from mother  
and father



$\frac{1}{4}$  chance of  
A from mother  
and a from father

$\frac{1}{4}$  chance of  
a from mother  
and A from father

Chance of dominant  
phenotype (ANY of  
these 3 events):

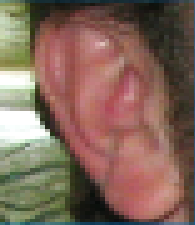
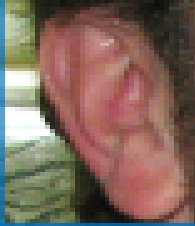
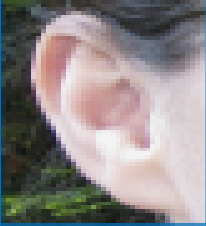
$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$$

# Essential Questions

- How does genotype affect phenotype?

# How does genotype affect phenotype?

- Genotype: Actual genetic makeup (what copies of a gene you have)
- Phenotype: Traits that you actually get from your genotype

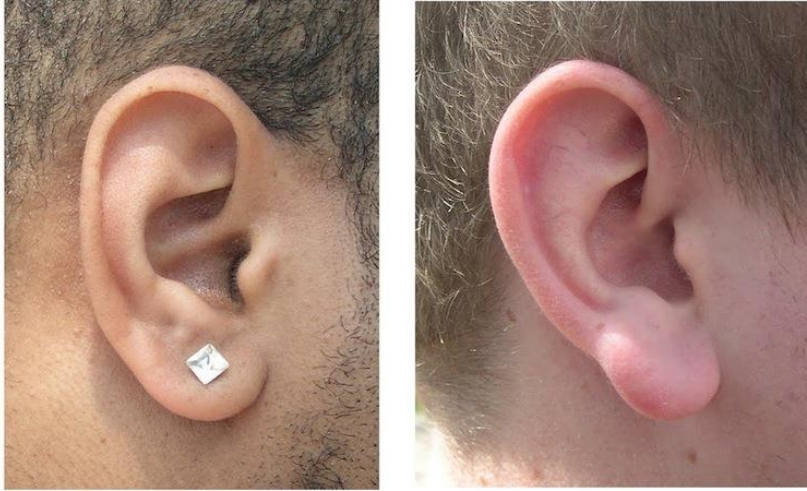
Genotype	Phenotype
<b>EE</b> Homozygous dominant	Detached Earlobes 
<b>Ee</b> Heterozygous	Detached Earlobes 
<b>ee</b> Homozygous recessive	Attached Earlobes 

# An Inventory of my traits

- Let's take a look at some of your traits!!!!
- I'll be showing pictures as we go through check whether you have each form of the trait discussed.
- After you will meet with your groups to pool all of your data together and graph it.
- Then we will meet back as a class to collect whole class data and graph it.

# Detached Earlobes tongue

Roll my



**FREE LOBES**



**ATTACHED LOBES**



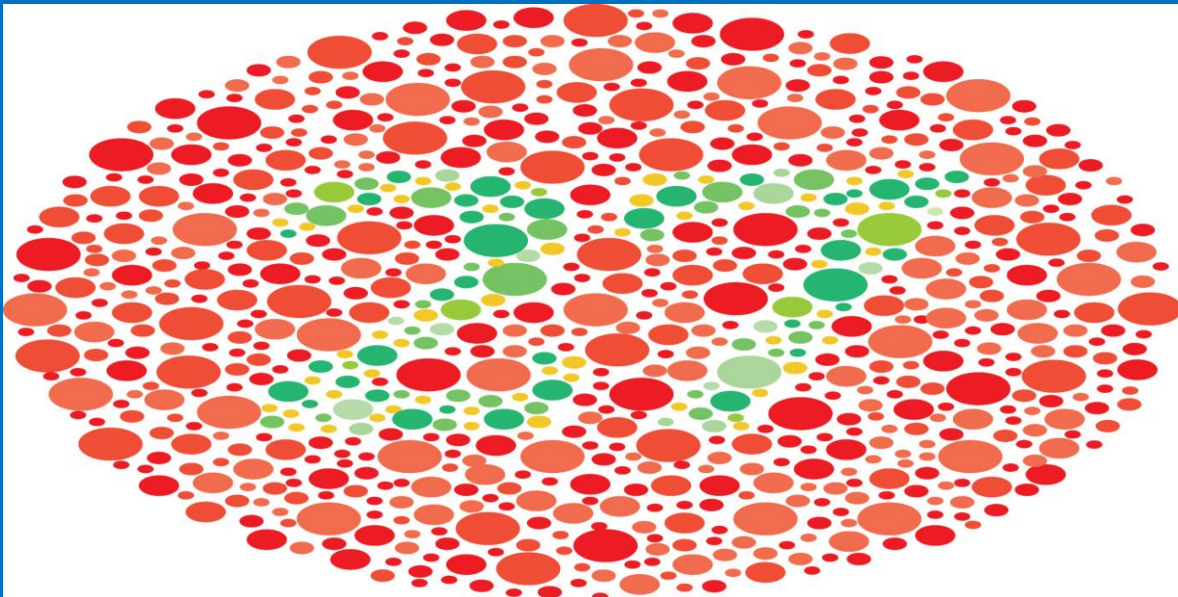
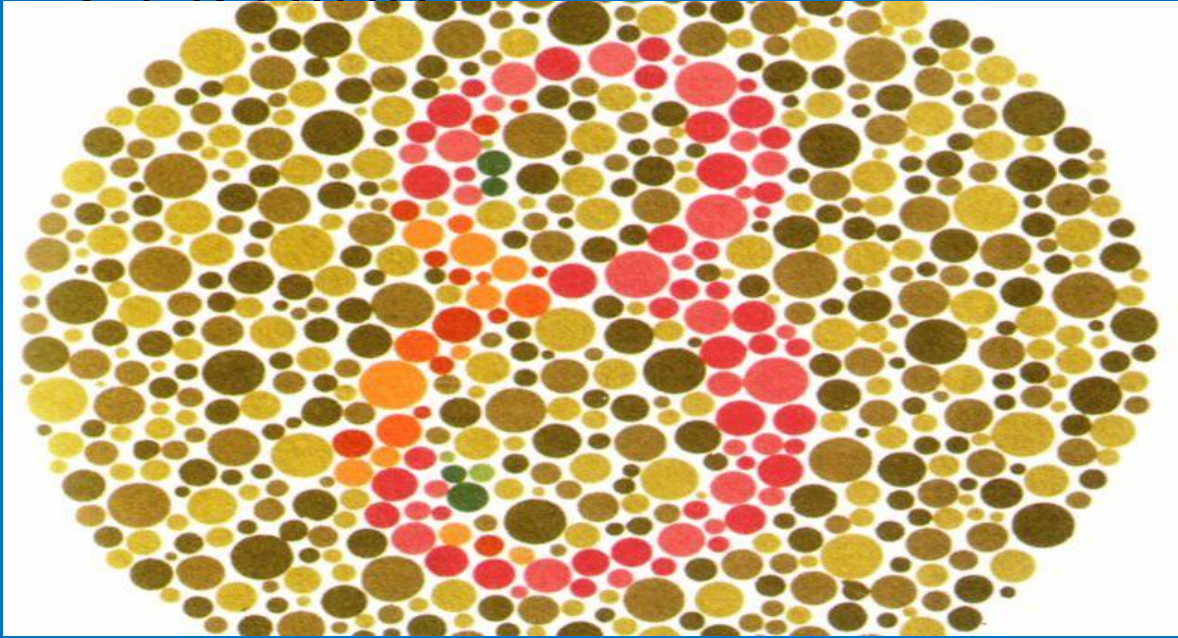
# Have Dimples Cleft Chin



Cleft Chin



Smooth Chin



## Hand Clasp Right over Left?



Cross Right Thumb Over Left



Cross Left Thumb Over Right

Fold your hands together by interlocking your fingers without thinking about it.  
Which thumb is on top &€" your left or your right?

# Straight hairline





# Class Traits Data

Trait	Yes	No
Detached Earlobes		
Tongue Rolling		
Dimples		
Right-Handed		
Freckles		
Naturally Curly Hair		
Cleft Chin		
Allergies		
Cross left thumb over right		
See colors red and green		
Have a straight hairline		

# Dominant or Recessive?

Trait	
Detached Earlobes	Dominant
Tongue Rolling	Dominant (70% of population)
Dimples	Dominant
Right-Handed	Dominant (93% of population)
Freckles	Recessive
Naturally Curly Hair	Recessive
Cleft Chin	Recessive
Allergies	Recessive
Cross left thumb over right	Unsure (50/50)
See colors red and green	X Linked (why colorblindness is more common in men)
Have a straight hairline	Recessive

# Analyze your traits

**On the back of your sheet answer the following questions:**

1. Which traits did you have that were most common?
2. Are dominant traits always the ones that the most people have?
3. What traits can you think of that you have that your parents DO have?
4. What traits can you think of that you have that your parents DO NOT have?
5. If you have traits that your parents DO NOT have, how could this have happened?