

**Warm-Up**

1). Make a list of all the genetic traits you can think of.

[Redacted]

2). Where do traits come from?

[Redacted]

3). What do you think dominant and recessive traits are?

[Redacted]

Oct 26-4:12 PM

**18 Things You Should Know About Genetics**

- What makes you different from everyone else?
- How did you get the traits you have?
- Why do some children look totally different from both of their biological parents?
- In genetics, letters from the alphabet can be used to represent different traits.

Dec 17-5:54 PM

**VOCABULARY**

**Genes** : the basic unit capable of transmitting characteristics from one generation to the next

- Example: eye color is a gene; **BB** and **Bb** are codes for the brown eye color.

**Allele**: the different forms of a gene

**B** - brown eyes

**b** - blue eyes

Nov 18-12:53 PM

**Dominant** : an allele whose trait always shows up in the organism when the allele is present

EXAMPLE: **Bb** or **BB** \*use capital letters

**Recessive** : a gene that produces an effect in an organism only when its matching allele is identical. The effect is masked when the matching allele is non-identical. \*use lower case

EXAMPLE: **Bb** or **bb**

Nov 18-1:03 PM

**Genotype**: An organisms genetic make-up

EXAMPLE: **bb** or **Bb** or **BB**

**Phenotype**: an organisms physical appearance

EXAMPLE: **blue eyes**, **brown hair**, short

Nov 18-1:05 PM

**Homozygous**: having two identical alleles for a trait

EXAMPLE: **BB** or **bb**


**Heterozygous** : having two different alleles for a trait

EXAMPLE: **Bb**

Nov 18-1:10 PM

Exploring Dominant and Recessive Traits

Jan 8-8:02 AM



**Warm-Up:**

LIST SOME OF THE PHENOTYPES OF EACH PERSON


Possible answers:

widow's peak	no widow's peak
thin eyebrows	thick eyebrows
round shaped eyes	oval shaped eyes
green eye color	brown eye color
freckles	no freckles
medium size nose	small nose
no dimples	dimples
attached earlobes	unattached
earlobes	brown hair
blond/brown hair	long eyelashes
short eyelashes	medium lips
thin lips	

Nov 9-12:54 PM

Probability Notes:

**PROBABILITY-** the likelihood that an event will occur, expressed as the ratio of the number of favorable outcomes in the set of outcomes divided by the total number of possible outcomes

**Punnett squares-** Tool used to determine probability of possible offspring 

How many alleles (forms of a trait) does each parent contribute?

Nov 17-2:53 PM

Exploring Dominant and Recessive Traits

Class Discussion:

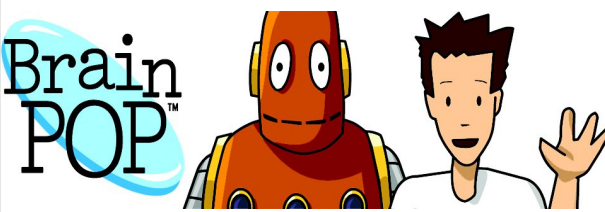
What were the traits that are dominant, actually dominant among classmates?

Is it possible for you to have traits that are not visible in your parents?

yes, if both parents have heterozygous traits (Bb) then there is a 25% chance that the recessive trait be passed to an offspring. Both parents could have the dominant trait but also be carriers for the recessive trait

Nov 17-2:44 PM

Video on Heredity



Dec 17-7:08 PM

Let's try a Punnett Square problem - copy this example down in your notes.

$Tt \times Tt$

T = tongue roller  
t = non tongue roller

		Parent #1	
		T	T
Parent #2	T		
	t		

- What do you know about each of the parents?
- What do you know about each of the four children?
- Being able to roll your tongue is a dominant trait. What is the probability that the children will be tongue rollers? Why?

Nov 18-3:08 PM

**What Color is the Pod?**

You will work in partners to complete the activity. Clean your protective sheet off when finished and place markers and sheet in center of desk.

$GG \times Gg$	$GG \times gg$								
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Jan 8-8:19 PM

**Warm Up**

- 1.) Which trait, dominant or recessive, is represented by a lower-case letter?
- 2.) What is the difference between genotype and phenotype?
- 3.) Is the following genotype homozygous or heterozygous: Bb?

Dec 19-8:05 AM

**How many genes does a person have?**  
 a person has about 70,000 pairs of genes

**What type of traits are passed down from generation to generation?**  
 A trait is a notable quality passed down from generation to generation. Some traits are PHYSICAL and observable such as hair and eye color and height. BEHAVIORAL traits refer to the way someone acts.

Oct 26-8:14 PM

What do you think the most typical person looks like? Are they male or female? What race? What facial features might they have?

**7 Billion -Are You Typical?**

Dec 17-7:00 PM


**FATHER OF GENETICS**

Gregor Mendel is known as the "Father of Genetics". He was the first person to study genetics and make conclusions about dominant and recessive traits.

1. What was Gregor Mendel's profession?  
Gregor Mendel was an Austrian Monk
2. What plants did Gregor Mendel study in order to learn about how traits are inherited?  
He studied pea plants
3. What traits did he see in the pea plants that he began to study?  
Some of the traits he studied were: shape of seed, color of seed, tall and short stem plants, tall and short plants
4. During Mendel's lifetime was his work in the field of genetics recognized by other scientists?  
He was NOT recognized during his lifetime.

Dec 7-4:38 PM

**Father of Genetics**



Dec 8-10:30 AM

## Spongebob Genetics and Vocab Quiz Round 2



Students who need to take the quiz again, get out a half-sheet of paper and number it 1-8. Make sure your name is on it!

Everyone else, work on the Spongebob worksheet until the end of class. Complete for homework if not finished in class. Turn into tray when complete.

Jan 12-9:48 PM

## Warm Up

- 1.) What does a dominant trait do to a recessive trait?
- 2.) Who is the "Father of Genetics?"
- 3.) Create a Punnett Square for the following cross: Bb and bb.

Jan 2-8:04 AM

Try This Activity: The Eyes Have It



One inherited trait is eye dominance—the tendency to use one eye more than the other. Here's how you can test yourself for this trait.

- Hold your hand out in front of you at arm's length. Point your finger at an object across the room.
- Close your right eye. With only your left eye open, observe how far your finger appears to move.
- Repeat Step 2 with the right eye open. With which eye did your finger seem to remain closer to the object? That eye is dominant.

Nov 9-2:04 PM



Let's check our SB Genetics homework!

Be ready to be called on for an answer. You may be asked to work it out on the board! And yes, you have to answer.

Jan 13-9:40 PM

## Create Your Own Punnett Square Problem!

*Materials: 1 large index card*

- Create a Punnett Square problem for others to solve. Write your question on one side of the index card.
  - > Your question/problem needs to be in sentence/word problem format. (No simple tt x TT).
  - > Provide a Punnett Square to show your work.
  - > Make it as challenging as you can!
- On the back of your card, show the work to your Punnett Square and answer your own question.
  - > Make sure your name is on the back as well.
- When ready, place your index card into the covered sleeve, with the answer hidden.
- When I say so, pass your Punnett Square to the person next to you. You will then complete the problem you've been given. Work fast, this is timed!

Your Punnett Square problem will be turned in!

Jan 13-9:43 PM

## Warm Up

- 1.) Can an individual with a heterozygous genotype physically display the recessive trait?
- 2.) Create a Punnett Square for the following cross: A heterozygous short-tailed hamster is crossed with a long-tailed hamster. Use the letter T/t.
- 3.) What is the probability that the offspring will be homozygous dominant?

Jan 4-8:00 AM

- Create Your Own Punnett Square swap
  - > Edit your problem as needed.
  - > Rotate your problems down the tables
  - > Try your classmates' Punnett Square problems!
- Monster Genetics partner activity
  - > You will work with your partner to complete the activity
  - > Follow the directions on the worksheet and don't lose the pop sickle sticks!
- Alien Genetics Worksheet
  - > Work individually
  - > Turn in when finished

Jan 15-8:11 AM

### Warm Up

- 1.) How are a gene and an allele related?
- 2.) Write the genotype for the following organism: A heterozygous tall plant (using letter T/t).
- 3.) Give the phenotypes for the following organisms regarding height (tall is dominant to short): TT, Tt, tt

Jan 3-7:52 AM

### VIDEO QUIZ



Nov 17-2:52 PM

### Warm Up

- 1.) Create a Punnett Square for the following cross: hh x Hh
- 2.) Create a Punnett Square for the following cross: Kk x Kk

Jan 7-8:23 AM

### Warm UP

- 1.) Where do you think traits like wavy hair and spots come from?
- 2.) What does the prefix "co" mean (coworkers, cooperate)?
- 3.) What does incomplete mean?

Dec 16-7:55 AM

Not all the traits we inherit are done so by simple dominant and recessive traits. Some are passed down through different inheritance patterns.

#### Codominance

- Alleles are neither dominant nor recessive; both are shown/represented in the offspring. (spots)


Ex: crossing a black chicken and a white chicken results in chickens with both black and white feathers (pg 89)

#### Incomplete dominance

- When alleles are not fully expressed in offspring; you end up with a mixture of the two traits (wavy hair)

Ex: crossing white flowers with red flowers results in pink flowers

Dec 8-10:45 AM



**HETEROZYGOATS**  
Just allele uneven.

- In these cases, heterozygous individuals have neither a dominant nor recessive trait, so one does not mask the other like it typical problems.
- These are the only problems where you can use different letters for each allele.

Jan 21-7:36 PM


**Practice Problems -copy into notebook**

1.) A solid brown bunny ( $F^B F^B$ ) is crossed with a solid white bunny ( $F^W F^W$ ).  
 2.) A red rose ( $RR$ ) is crossed with a white rose ( $WW$ ).

- Is this codominance or incomplete dominance?
- Create a Punnett Square for this cross:
- List all possible outcomes:

- Is this codominance or incomplete dominance?
- Create a Punnett Square for this cross:
- List all possible outcomes:

Jan 21-7:24 PM



**Incomplete Dominance Practice with Spongebob!**

**Due tomorrow.**

Jan 21-7:52 PM

**Warm Up**

1.) What is the difference between codominant and incomplete dominant traits?

2.) A spotted brown and white bunny ( $F^B F^W$ ) is crossed with a solid white bunny ( $F^W F^W$ ). Complete a Punnett Square for this cross and list all possible genotypes and phenotypes.

Jan 10-8:00 AM

**Blood Types**

Who discovered blood types? Karl Landsteiner, an Austrian American physician


What are the four major blood types? **A, B, AB, and O**

Dominant Blood Types: **A,B**  
 Recessive Blood Type: **O**  
 Codominant Blood Type: **AB**

Dec 22-9:33 AM

**BLOOD TYPE CHART!**

**COPY THE CHART IN YOUR NOTES!!!!!!**



<http://www.redcrossblood.org/learn-about-blood/blood-types>

Dec 22-10:37 AM

Blood type chart:

Allele from Parent 1	Allele from Parent 2	Genotype of Offspring	Blood Types of Offspring
A	A	AA	A
A	B	AB	AB
A	O	AO	A
B	A	AB	AB
B	B	BB	B
B	O	BO	B
O	O	OO	O

1.) Which 2 sets of alleles will create type B blood? BB and BO  
 2.) Which 2 sets of alleles will create type A blood? AA and AO  
 3.) Which alleles must be present in order to form AB blood? AB  
 4.) Is it possible for a parent with A blood and a parent with B blood to have a child with O blood? Yes, as long as both parents the recessive allele for O

Jan 9-8:27 PM

### Warm Up

1.) What does being a universal donor or receiver mean?

2.) Can people from different ethnic groups donate to one another?

3.) A person with type B blood marries a person with type O blood. Is it possible for them to have 2 children, each with a different blood type?

Dec 16-2:36 PM

### Warm Up

What are the sex chromosomes?

Which pair of sex chromosomes make a boy? A girl?

Who is determines the gender of the baby?

Jan 24-12:43 PM

What are sex-linked traits? Traits that are found on the X or Y chromosome.  
 Female: XX  
 Male: XY

How are they passed? Passed down on the X or Y chromosome. Males are more likely to display the trait.

What is a carrier? Someone who carries a trait but doesn't display that trait (heterozygous)

Jan 23-12:06 PM


Example **Colorblindness:**

A woman who is a carrier, marries a man who is colorblind. What are the chances they will have male child that is colorblind? What about the female child?

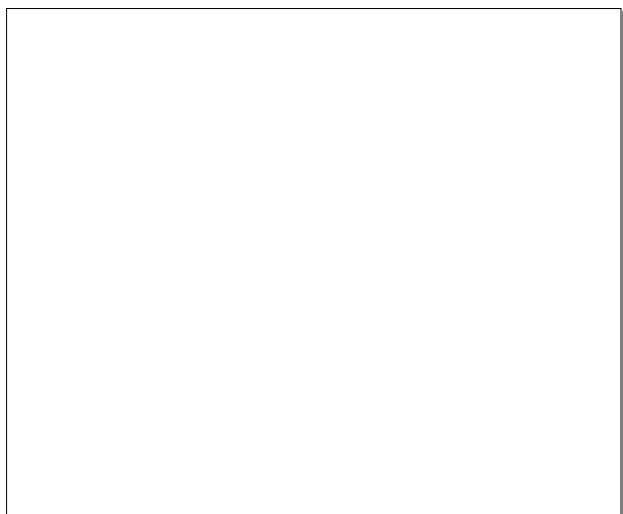
Jan 23-12:15 PM

### More Practice with Blood Types

-You have 10 mins to complete on your own  
 -We will check it together in class



Jan 12-9:44 PM



Jan 24-8:59 AM