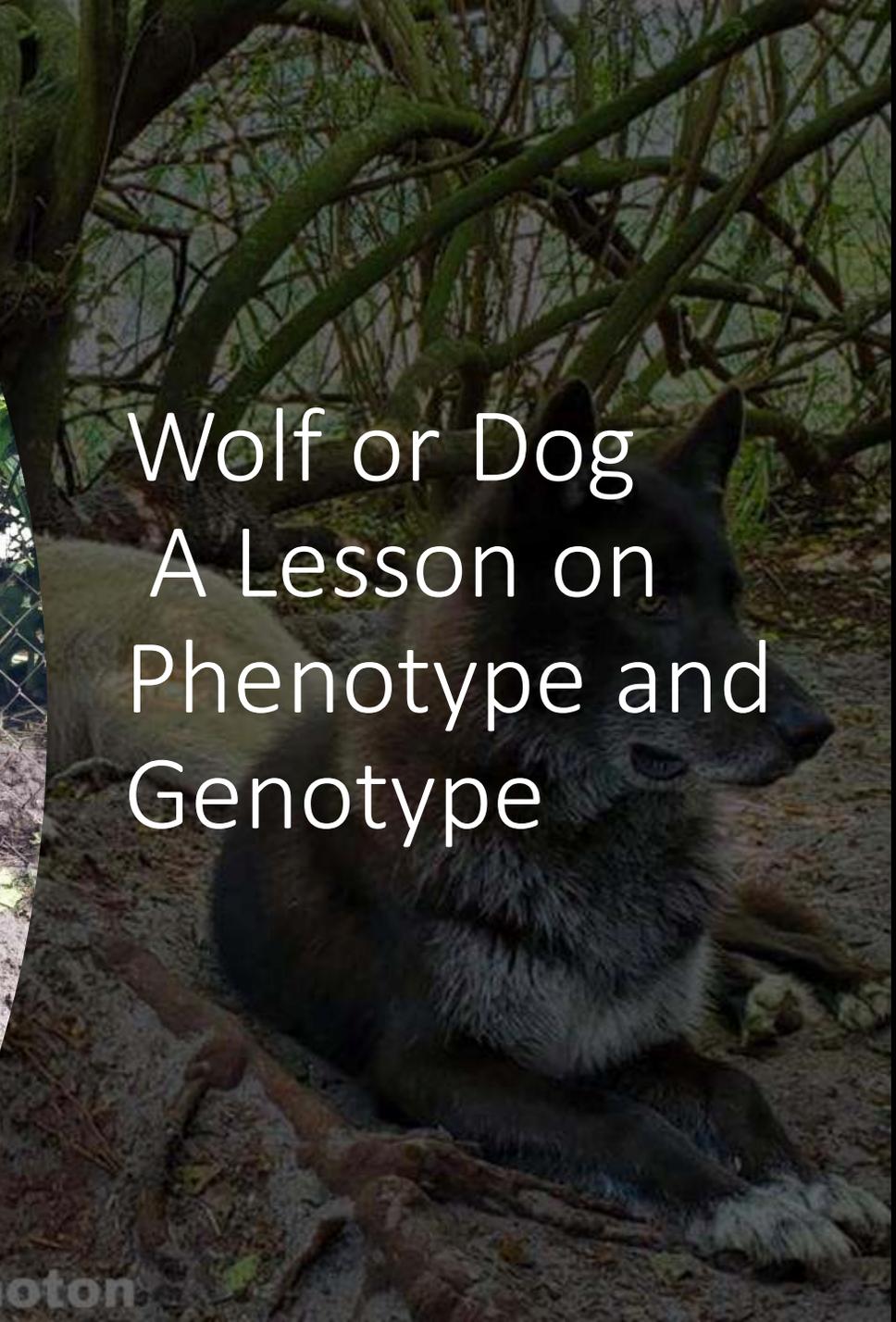




**Hallow**  
**Photo: Kat Herman**

# Wolf or Dog A Lesson on Phenotype and Genotype

**Rhodon**



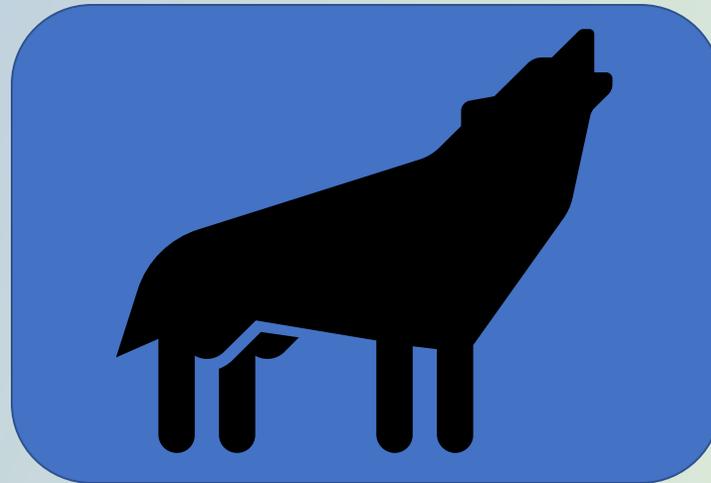


## Objectives:

- \*Students will develop an understanding of how genetics plays a role in determining the phenotype of an animal
- \*Students will verbalize the difference between genotype and phenotype
- \*Students will compare and contrast the phenotype characteristics of a wolf with a dog.
- \*Students will participate in determining traits of a wolf dog

**Essential Question:**  
How does the phenotype of a  
wolf compare to a dog?

# Vocabulary Review Quizlet

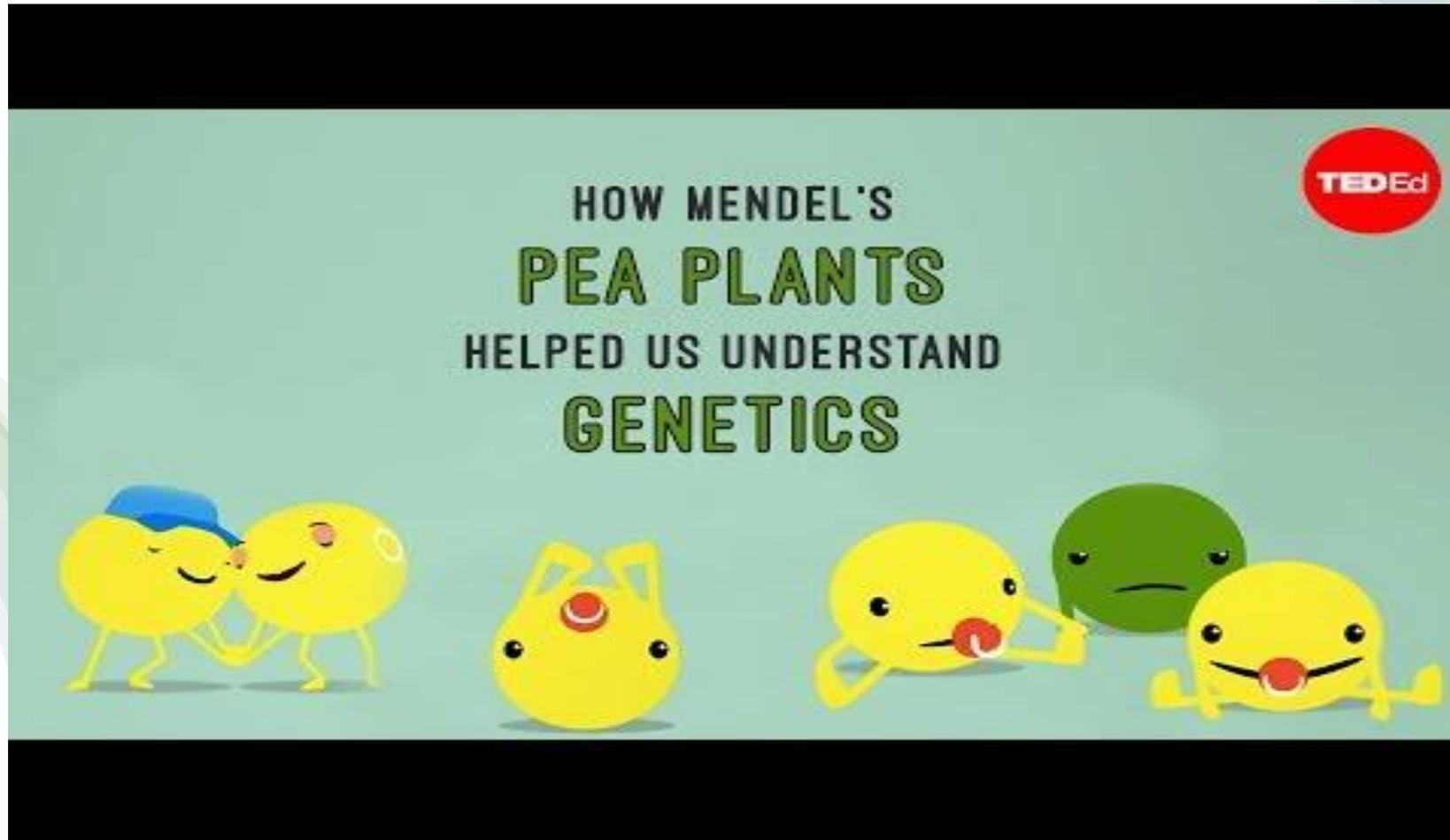


# Make a table....

- Take a few minutes to reflect on your own heredity. In a table like the one below list at least ten characteristics you have. Next to them list whether you inherited this from your mother, father, or a more distant relative.

Trait	Inherited From	Any additional information
Example: Brown eyes	My mom	My brother and father have hazel eyes

Watch the video.  
Be prepared to answer questions.



If you need to link to the  
[video](#) Click Here

# Answer

1. Why did we need to watch a video about long ago to learn about genetics?
2. What is an example from the video of a genotype?
3. What is an example of a phenotype?
4. What is the difference between phenotype and genotype?

Watch the video.  
Be prepared to answer questions.



[Wolf](#)

If you need to link to the  
video Click Here

# Answer

1. What is the wolf's name?
2. True or False: Most wolves have blue eyes?
3. Why is the sanctuary called "Shy Wolf"?



# Answer

1. List at least one trait a dog might have.
2. Which has a curled up tail a dog or a wolf?
3. Which of the three wolf dogs you saw was the most "wolfy"?

**Heredity** is the passing of the physical characteristics from parents to offspring.  
**Offspring** a new organism produced by one or more parents



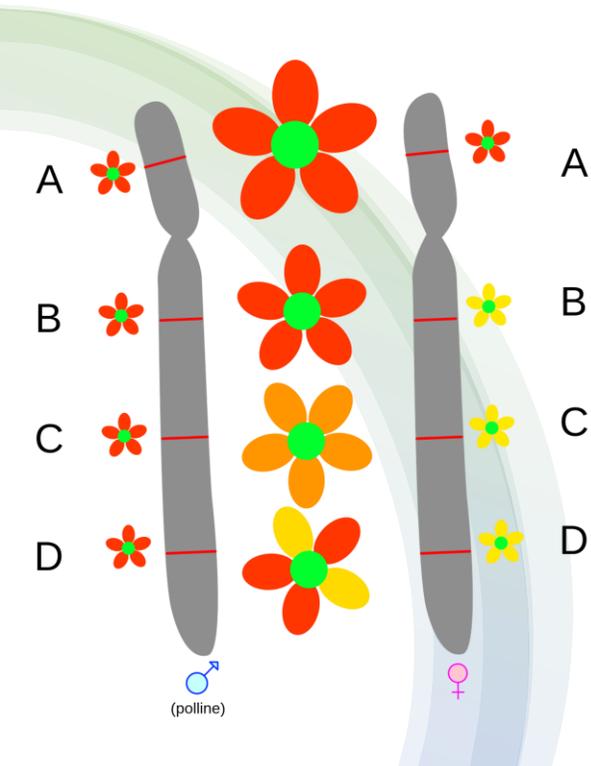
Scientists use the word **gene** to describe the factors that control a trait.

**Alleles** are the different forms of a gene.

An organism's **traits** are controlled by the alleles it inherits from its parents. Some alleles are dominant, while other alleles are recessive.

A **dominant allele** is one whose trait always shows up in the organism when the allele is present.

A **recessive allele** is hidden whenever the dominant allele is present.



According to Gregor Mendel a **purebred** organism is the offspring of many generations that have the same form of a trait  
A hybrid is an offspring that has a dominant and recessive allele for a trait.



Photo: Corbis

# Phenotype

A phenotype is an organism's physical appearance, or visible traits. The phenotype may be what color hair the organism has or how tall the organism is.



# Genotype

Genotype is an organism's genetic makeup, or allele combinations. Represented by Alleles

**Bb**      **Hh**      **BB**  
**HH**                      **bb**

# Wolf

## Phenotype

Blended Coat  
Heavy Fur  
Cape on back  
Long slender legs,  
slim chest  
Straight tail,  
points down  
Large paws,  
webbing between  
toes



# Dog

## Phenotype

Evident Markings  
Lighter Fur  
Wide chest,  
Fur not as thick  
Tail curved  
upward  
Smaller paws

## Lesson Vocabulary

**Heredity** - The passing of traits from parent to offspring

**Hybrid** - the offspring resulting from combining the qualities of two organisms of different breeds, varieties, species through sexual reproduction

**Purebred** - The offspring of many generations that have the same traits

**Characteristics** - distinguishing traits, qualities, or properties

**Inherited trait** – a characteristic passed from parents to their offspring

**DNA** - A molecule containing the genetic information that makes up the chromosomes. Deoxyribose Nucleic Acid

**Alleles** – different forms of a gene, for example, black, brown hair

**Phenotype** - An organism's physical appearance, or visible traits.

**Genotype** - An organism's genetic makeup, or allele combinations.

**Sexual reproduction** - Reproduction that requires two parent cells; increases variety

**Offspring** - Product of reproduction, a new organism produced by one or more parents

# Wolf

## Phenotype

Heavily furred ears,  
Round tip  
Almond shaped eyes  
amber or yellow  
NEVER blue  
Large head,  
blended markings



- **Fearful or skittish behavior when around people**
- **Extreme independence and problem solving**
- **Intense digging and destruction of enclosures and items**
- **Attempts to escape, gets bored**
- **Howls - very little to no barking**
- **Steals objects of interest (keys, hair bands)**

# Dog

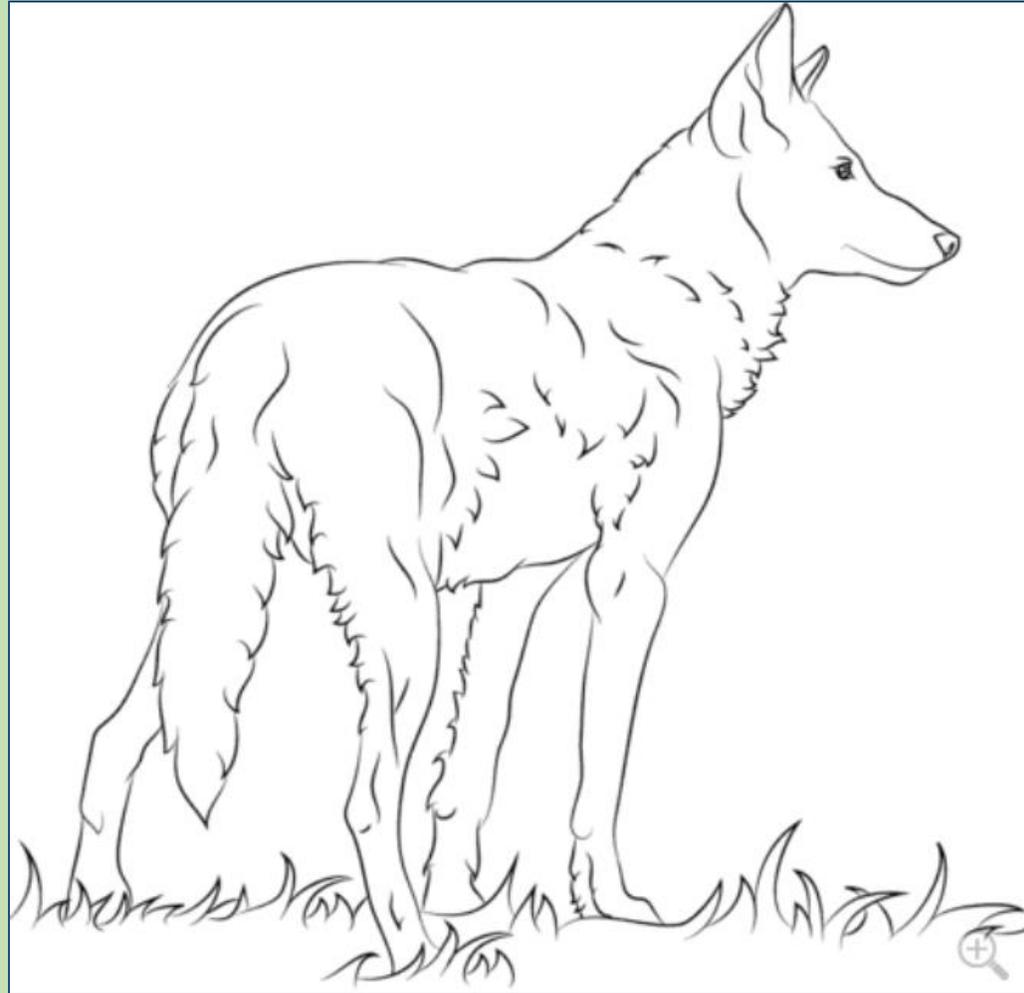
## Phenotype

Lightly furred ears,  
pointy or bent  
Brown or blue eyes  
Mask or clear  
facial markings  
Smaller head, more  
room between ears,  
notable markings



- **Sociable, seeks contact with people**
- **Good at problem solving**
- **Obedient, easily trained**
- **Barks**

# Label the Animal



Using phenotype characteristics identify each animal. One is a wolf and one is a dog. Describe at least two of the qualities you used to help you identify each.



# Paw Prints



**Wolf**  
Biggest  
Long and Wide 4"  
Walk in straight  
line

**Coyote**  
Slightly smaller  
More Narrow

**Fox**  
Smallest  
2-3"  
Drag their feet  
Have more hair  
Fuzzy Print

**Dog**  
Similar to Wolf  
and Coyote  
Toes point  
outward  
Walk in circles  
or zig-zag



You are out in the woods and encounter the two sets of tracks shown above. You don't know what they might be, wolf, dog or coyote. Use the previous slide to determine what it is you see. Write a paragraph describing which animal they each belong to and how you know this.

# Resources:

*Science Curriculum Resources*, [www.pearson.com/international-schools/british-curriculum/Subjects/Science.html](http://www.pearson.com/international-schools/british-curriculum/Subjects/Science.html).

Shy Wolf Sanctuary, Wolf Characteristics: <https://www.youtube.com/watch?v=MAXGy7IXre0>

How Mendel's pea plants helped us understand genetics - Hortensia Jiménez Díaz: <https://www.youtube.com/watch?v=Mehz7tCxjSE&app=desktop>