Heredity

How are traits passed from parents to offspring?

A trait is a **characteristic** such as color or size that is **inherited** by an offspring from its parents. The **genes** that control a trait come in pairs, one gene from each parent. We represent these gene pairs by writing a combination of two capital or lowercase letters. For example, if one parent contributes a gene for blue eyes (b), and the other parent contributes a gene for brown eyes (B), then we write the offspring's eye color trait as **Bb**. **Bb** is called the **genotype**.

Each letter in a gene pair stands for one form of the trait. **The forms of a trait are called alleles**. In this example, the alleles are **blue eye color** and **brown eye color**.

The two types of alleles are **dominant** and **recessive**. A dominant allele is written as a capital letter, and a recessive allele is written as a lowercase letter. If a gene pair contains a dominant allele, then the offspring will show this dominant trait. Recessive alleles can only show up when there is no dominant allele present to suppress them. The form that shows up (physical characteristic) is the **phenotype. Brown eyes are dominant, so the phenotype for Bb is Brown eyes.**

___ For Dimples(D) and no dimples(d), if you get Dd, your genotype is _____ and your phenotype is _____.

In this Virtual Lab you will use a Punnett square to find possible gene combinations and to create a crazy animal.

Objectives:

__1. Identify the **genotypes** and **phenotypes** of an offspring from a crazy **genetic cross.**

__2. Use **Punnett Squares** to identify the outcomes of genetic crosses.
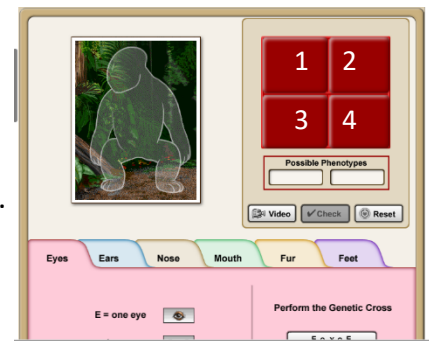
Procedure:

__1. Click the Video button. Watch the video about Punnett squares.

__2. Select a trait from the list of six traits (eyes, ears, nose, mouth, fur, and feet).

__3. Click the Perform the Genetic Cross button to cross the pairs of alleles. This will set up the Punnett square showing the four possible **genotypes**.

__4. Click and drag Possible **Phenotypes** into the boxes of the Punnett square. If you want to change your selection, first drag the previous phenotype out of the Punnett square

__5. After you have filled all four boxes of the Punnett square, click the Check button to check your matches. Incorrectly matched phenotypes will be highlighted in yellow. Correct your matches and click the Check button again.

__6. When the Punnett square is correct, use this key and flip coins to determine the creature's traits. You need 2 flips for each trait.   (See the box numbers in the ↑screen image.)
           KEY: HH = box 1   HT= box 2   TH = box 3   TT = box 4

__7. Continue to flip and record your **Genotype** (See KEY) and the **Phenotype** for each.

	eyes	ears	nose	mouth	fur	feet
Genotype:						
Phenotype:						

__8. Click on each chosen trait to add it to your fictional animal.

__9. Have your SCREEN Checked _____