**Genetics: Genotypes and Phenotypes**

Genotypes refer to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an organism.

Phenotypes refer to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an organism.

Genotypes

* Tell us which form of the gene (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) an organism has.
* We use letters of the alphabet to represent the genes.
  + Use the first letter of the dominant characteristic
  + Use **CAPITAL** letters to show \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ traits and **lowercase** letters to show \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ traits.
  + Examples:
    - Tall plants are dominant to short plants
      * Use the letter \_\_\_\_\_
      * \_\_\_\_ is tall plant
      * \_\_\_\_ is short plant
    - Dimples are dominant to no dimples
      * Use the letter \_\_\_\_\_
      * \_\_\_\_ is dimples
      * \_\_\_\_ is no dimples
    - Round ears in cats is recessive to pointed ears
      * Use the letter\_\_\_
      * \_\_\_\_ is pointed ears
      * \_\_\_\_ is round ears
* Genotypes can be heterozygous which means having two \_\_\_\_\_\_\_\_\_\_\_\_\_\_ alleles of a gene or they can be homozygous which means having two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ alleles of a gene.
  + \_\_\_\_\_\_\_\_\_is heterozygous
  + \_\_\_\_\_\_\_\_\_is homozygous dominant
  + \_\_\_\_\_\_\_\_\_is homozygous recessive

Phenotypes

* Tell us what the organism \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Physical characteristics like tall, has dimples, pointed ears.
* You use the genotype to figure out the phenotype.
* Examples:
  + Straight hair is dominant to curly. If a person has a genotype of Ss, what is their phenotype?
  + In aliens, pointed heads are dominant to round heads. If an alien has a genotype of pp, what is their phenotype?
  + Wrinkled seeds are recessive to round seeds, if a plant has a genotype of RR, what is its phenotype?

Let’s Practice- Take 2 minutes and do this on your own, then we will review!

For each genotype below indicate if it is homozygous dominant (hoD), homozygous recessive (hoR) or heterozygous (he)

\_\_\_\_ AA \_\_\_\_Ii \_\_\_\_QQ \_\_\_\_\_vv \_\_\_\_\_Bb \_\_\_\_zz \_\_\_\_\_Mm

For each genotype, determine what phenotypes would be possible.

Brown eyes are dominant to green eyes.

BB is \_\_\_\_\_\_\_\_\_\_\_ Bb is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bb is \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Yellow flowers are dominant to pink flowers.

YY is \_\_\_\_\_\_\_\_\_\_ Yy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ yy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Short hair is recessive to long hair in cats.

LL is \_\_\_\_\_\_\_\_\_\_ Ll is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ll is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For each phenotype, list the possible genotypes.

Almond eyes in cats are dominant to round eyes.

\_\_\_\_\_\_\_\_\_\_\_\_ Almond \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Round

Purple flowers are dominant to white flowers.

\_\_\_\_\_\_\_\_\_\_\_\_ Purple \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_White

White dogs are recessive to gray dogs.

\_\_\_\_\_\_\_\_\_\_\_White \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Gray