

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## ■ Dominant and Recessive Alleles Reading Passage

# DOMINANT & RECESSIVE ALLELES

Sexually reproducing organisms have pairs of chromosomes. Organisms that have pairs of chromosomes have pairs of genes and thus two alleles for every gene. An allele is a form of a gene that controls a trait.

For most traits there are two alleles for every gene. The “stronger” allele is called the dominant allele. The **dominant allele** codes for the dominant trait. The dominant allele is always expressed when present. The “weaker” allele is called the recessive allele. The **recessive allele** codes for the recessive trait. The recessive allele is hidden and not expressed when a dominant allele is present. The recessive allele is only expressed when an organism has two recessive alleles.

There are three possible combinations of genes that an organism can have because organisms have two alleles for every gene. An organism can have two dominant alleles, two recessive alleles and one dominant allele and one recessive allele. If an organism has two of the same kind of gene for a trait, it is called pure or **homozygous**. An organism that has two dominant alleles is said to be **homozygous dominant** and will express the dominant form of that trait. An organism with two recessive alleles for a trait is said to be **homozygous recessive** and will express the recessive form of that trait. An organism with two different alleles for a trait is called **heterozygous** or hybrid. In this case, the dominant allele will appear and the recessive allele will be hidden. Organisms that are homozygous dominant and heterozygous have different genotypes because they have different combinations of alleles. However, they have the same phenotype because they both have at least one dominant allele.

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### Questions

1. What is a dominant and recessive allele (and trait)?
2. What are the three possible combinations of alleles?
3. What is the difference between homozygous dominant and homozygous recessive?
4. How is heterozygous different from homozygous dominant and recessive?
5. Can you tell what an organism's genotype is if you know its phenotype? Justify your answer.