

Source: [KBhBIO101MutationsAllelsInheritance](#)

1 | Genetic Inheritance

How to deal with **Heterozygus** (two different alleals of one gene) genes

- Mendelian: dominant vs recessive versions of genes (Mendel's pea plants)
- Incomplete dominance (snap dragons)
- Codominance (human blood types)
- Polygenic inheritance (human height & skin color)
- Epistasis (dog coat color)
- Sex-linked inheritance (color-blindness)

1.1 | Mendelian Inheritance

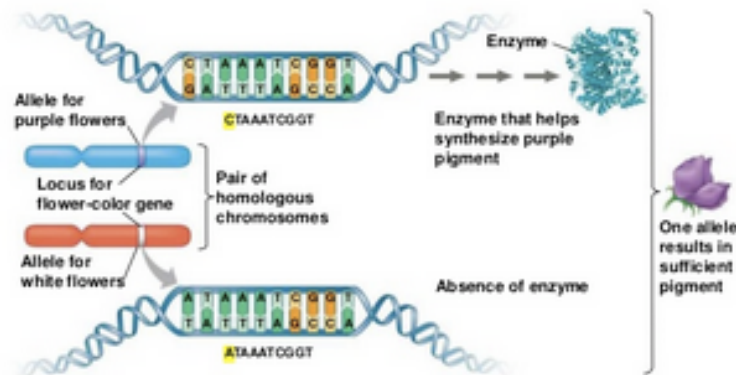
If two alleal for a gene differ, one could dominate the phenotype.

- In order to see the recessive gene, a plant needs two copies of their traits.
- In order to see the dominant gene, the plant only need one copy of the trait

But..... What's actualy! happening?

Variation, alleles, and traits: an example

Figure 14.4

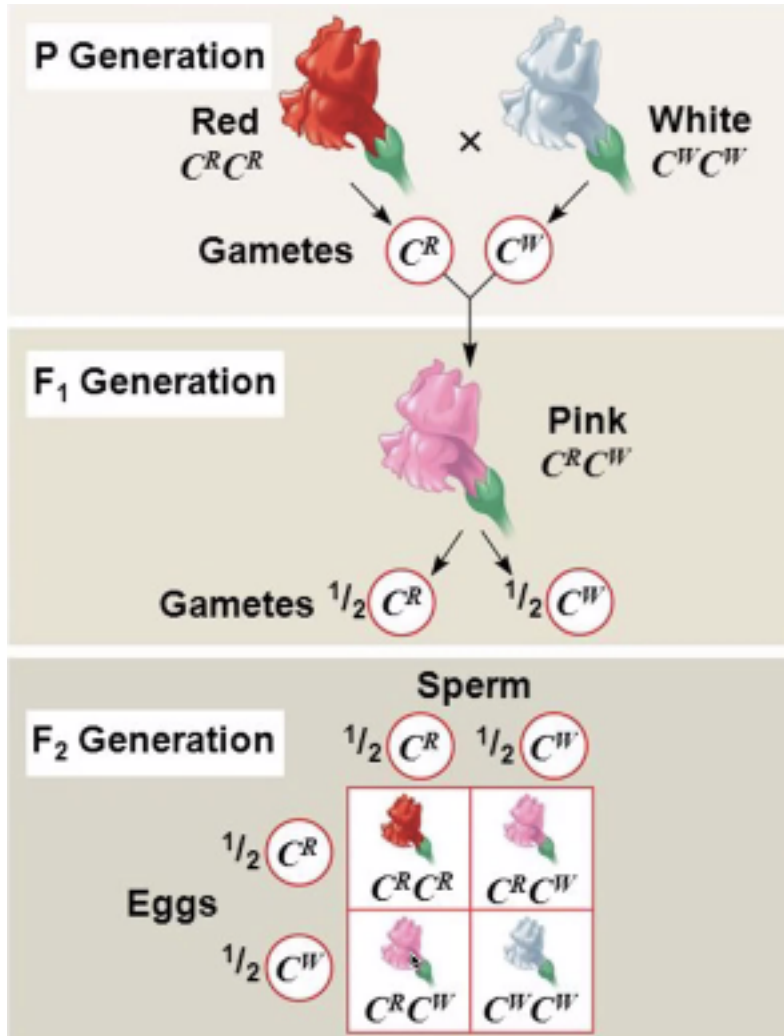


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The “recessive” gene usually is a gene that does not code for the functional enzyme. Hence, if you have one alleal with the functional DNA, even if the other alleal is broken, a functional enzyme is created and hence the individual will “express” this trait. It is *only* with both copies being broken that the enzyme that create that trait will not exist and hence can’t function.

1.2 | Incomplete Dominance

Both alleles are visible in the phenotype, and so neither is dominant really. Think about the genetic explanation of inheritance above. In the case of “incomplete dominance”, not enough enzymes are created to fully express a trait (like “red pigment”) such that the resulting organism will have an “incompletely” dominant trait.



1.3 | Codominance

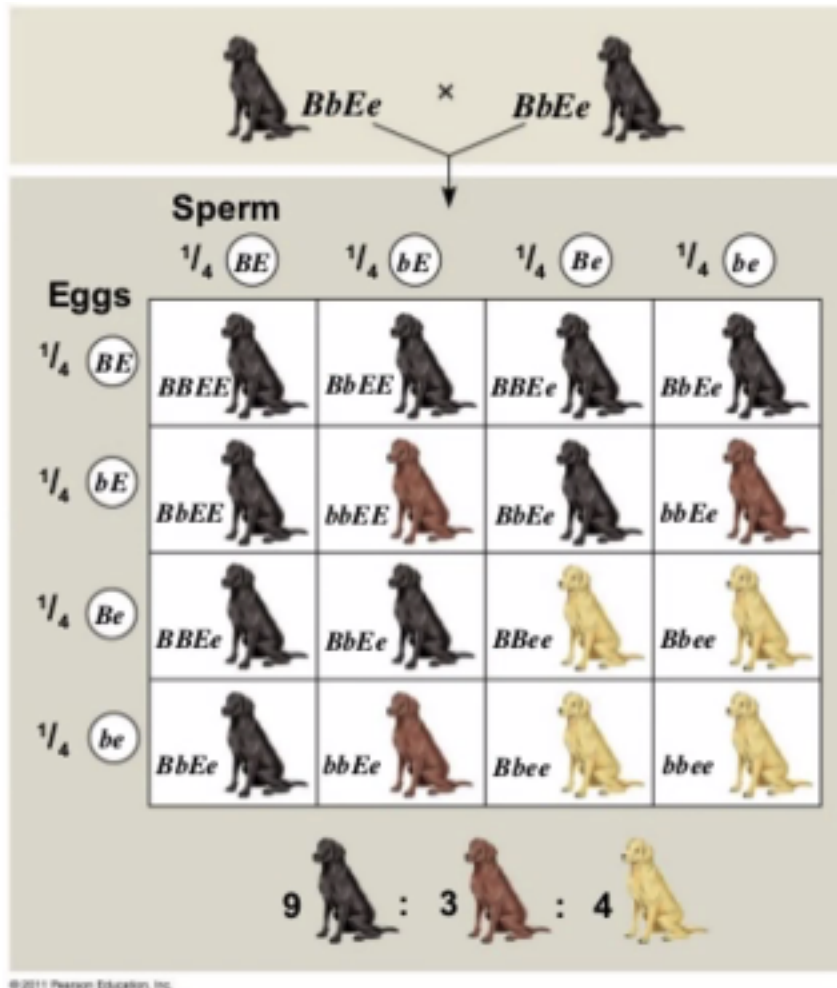
Both alleles are *fully present*. For instance, in blood types, the AB alleles will result in their codominance to create AB blood. This is different from incomplete dominance in that it is simply a half-mix.

1.4 | Polygenic Dominance

Where a trait exists on the gradient of the combination of multiple genes, it results in a phenotype.

1.5 | Epistasis

Alleles that could only be expressed if another allel is already expressed. For instance, the Ee gene in labrador retrievers control whether a pigment could be deposited. So, if a dog has ee gene, it will have golden coat whether or not the black-ness Bb gene is expressed b/c the lack of colour expression.



1.6 | Sex-Linked Inheritance

- Two X chromosomes: most women
- XY chromosomes: most man

Because men usually only have one X chromosome, even if a sex-linked mutation carries recessively, they do not have a chance of being dominated. Examples of these include red-green colour blindness.