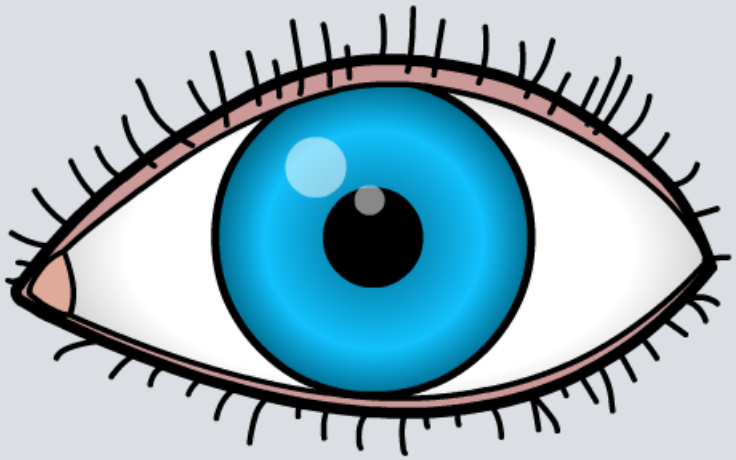
Patterns of Inheritance

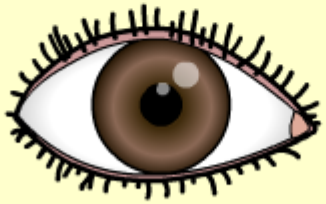


Homozygous cross

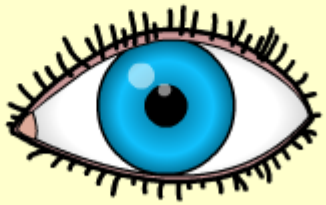
Eye color in the offspring of homozygous parents

The allele for **brown** eyes (**B**) is dominant over the allele for **blue** eyes (**b**).

If a **homozygous brown-eyed** person and a **homozygous blue-eyed** person reproduce, what are the possible eye colors of their offspring?



Click "**start**" to find out.



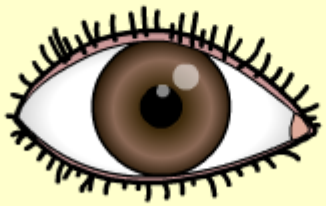
start

Heterozygous cross

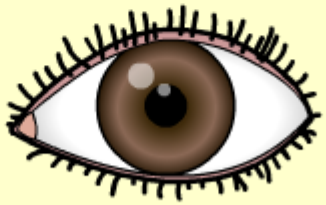
Eye color in the offspring of heterozygous parents

The allele for **brown** eyes (**B**) is dominant over the allele for **blue** eyes (**b**).

If two F1 **heterozygous brown-eyed** parents reproduce, what are the possible eye colors of their offspring?



Click "**start**" to find out.



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Finding the genotype

For some characteristics, the genotype of a homozygous recessive individual can be determined from their phenotype.

For example, the allele for brown fur (B) in mice is dominant over the allele for white fur (w). This means that all white mice must therefore have the genotype ww.

But what about individuals that have brown fur? Is their genotype BB or Bw?

A **test cross** can be used to determine whether an individual is homozygous or heterozygous for a dominant trait.

What is a test cross?

During a test cross, an individual with an unknown genotype is crossed with a homozygous recessive individual. The phenotype of the offspring will reveal the unknown genotype.

- If **all** the offspring display the dominant phenotype, then the parent of unknown genotype must be **homozygous** for the characteristic.

- If **half** the offspring show the dominant phenotype, and **half** show the recessive phenotype, then the parent must be **heterozygous** for the characteristic.

Using test crosses to find genotype

Using test crosses to find out genotype

The allele for **brown** fur (**B**) in mice is dominant over the allele for white fur (w).

The genotype of a white mouse is always ww, but the genotype of a **brown** mouse can be unknown.

Click "**start**" to find out how a test cross can determine the genotype of the brown mouse.

start