Genetics and Heredity

How traits are passed on

WHAT IS IT?

Genetics studies how traits pass from parents to offspring through genes, which are sections of DNA. Each gene comes in versions called alleles, and the mix you inherit shapes your traits.

	B	b
B	BB	Bb
b	Bb	bb

Bb × Bb gives 1 BB : 2 Bb : 1 bb

THE BIG IDEAS

1. You inherit one allele of each gene from each parent.
2. A dominant allele shows when present; a recessive one only when there are two copies.
3. A Punnett square lists the possible allele pairs of offspring.
4. Genes and environment together shape most traits.

YOU SEE IT WHEN ...

- Why family members can look alike
- Pea plant experiments by Gregor Mendel
- Breeding of garden plants and crops

WORDS YOU WILL MEET

Gene
a section of DNA that guides a trait

Allele
one version of a gene

Genotype
the alleles an organism has, like Bb

Phenotype
the trait you can see

Dominant
shows even with one copy

Recessive
shows only with two copies

GOOD TO KNOW FIRST

Cells and DNA basics, plus simple fractions and ratios.

IN YOUR COURSE YOU WILL ...

- Fill in Punnett squares
- Predict ratios of offspring
- Read pedigree charts
- Learn how DNA is copied and read

Start tip: Write the parents' alleles along the top and side before filling the boxes.

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