

one gene, two alleles, and a ratio that gives the mechanism away

Mendel's three laws

Law of Dominance

in a heterozygote, one allele expresses fully and masks the other, which stays hidden but unaltered

Law of Segregation

the two alleles of a gene separate during gamete formation, so each gamete carries only one of them, never both

Law of Independent Assortment

alleles of different genes assort into gametes independently of each other, as long as the genes sit on different chromosomes

Key terms *

- allele: an alternative form of a gene, occupying the same locus on homologous chromosomes
- genotype: the allele combination an organism carries; phenotype: the trait that combination actually expresses
- homozygous: both alleles of a gene identical, TT or tt ; heterozygous: the two alleles differ, Tt
- a true-breeding line, self-fertilized over several generations, shows no variation in the trait being followed

Monohybrid cross: Tt selfed

	T	t
T	TT	Tt
t	Tt	tt

the same Tt parent's gametes across the top and down the side. The grid gives 1 TT : 2 Tt : 1 tt genotypically, which shows up as 3 tall : 1 dwarf in phenotype since T is dominant

Genotype vs Phenotype

Genotype

- the actual allele combination carried, e.g. Tt
- not directly visible; worked out through breeding experiments like a test cross

Phenotype

- the observable, expressed trait, e.g. tall
- what a Punnett square is ultimately trying to predict from the genotype behind it