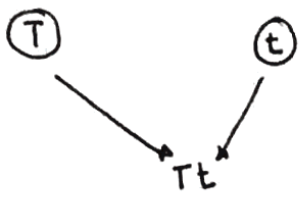
GENES

Eg. Tall + Dwarf plants

Phenotype : tall dwarf
Genotype : TT tt

each has two copies of the same allele so it is homozygous

Gametes : (sex cell)

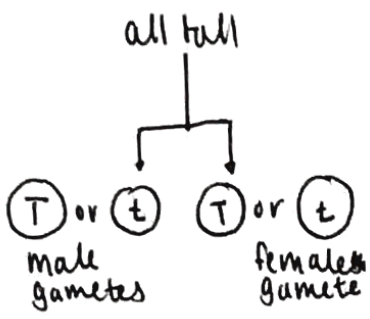


sex cells formed by meiosis so have one allele

Genotype of F_1 Tt

it is heterozygous

phenotype of F_1 all tall



F_1 allowed to self fertilise

Genotype of F_2

female gametes

male gametes	T	t
T	TT	Tt
t	Tt	tt

Phenotypes of F_2 3 tall : 1 t

Tall is dominant so it powers/works/expressed
dwarf is recessive so if there is tall then ~~there~~ it is not expressed and if it is another recessive, it's expressed.

TEST CROSS (breeding experiment)

Unknown genotype is tested of organism showing dominant feature.

Plant bred with must have a known genotype - therefore it ~~must~~ must be recessive

Breed the unknown plant (eg. either Tt or TT) with (tt) eg. dwarf plant b/c recessive

Can predict outcome with PUNNET Square

Genotypes TT tt Tt tt

	t	t
T	Tt	Tt
T	Tt	Tt

	T	t
t	Tt	tt
t	Tt	tt

Genotype of F_1 all Tt — 50% Tt or tt, 1 Tt : 1 tt

Phenotype all tall — 50% tall : 50% short

If homozygous - all will be tall
If heterozygous - 50% tall or short.

CONT III

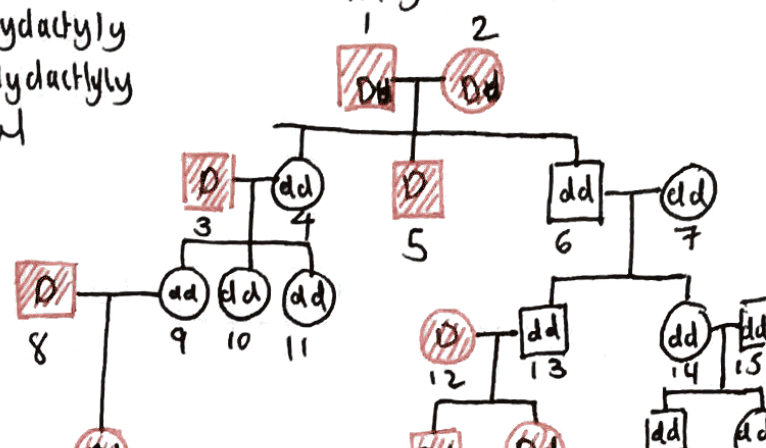
phenotype - feature that results from the phenotypes.

Genotype describes ~~each~~ the alleles for each cell for a certain feature.

Pedigree diagram eg. Polydactyly - extra digits on hands & / feet

is dominant allele
DD - has polydactyly
Dd - has polydactlyly
dd - normal

firstborn is on the left hand (4) connected by vertical line



1. although 1, 2 have poly 4, 6 don't so it must be heterozygous for 1, 2
2. We can work the rest from here
3. 5 could be DD or Dd (higher chance of Dd)
4. The outsiders from the family also could be Dd, DD, not nuff' info.

CODOMINANCE

if two alleles are expressed together - are codominant.
(they are represented by different letters to show co-dominance)

Genotypes RR WW
Gametes R W

	R	R
W	RW	RW
W	RW	RW

If red + white breed ~~and~~, all are pink flowers

When there's a third phenotype out of the mix = codominance at play

Genotypes RW RW
Gamete R W R W

	R	W
R	RR	RW
W	RW	WW

Genotype 1RR : 2RW : 1WW
phenotype $\frac{1}{4}$ white or red
$\frac{1}{2}$ pink

SEX DETERMINATION

determined by the presence of the Y chromosome.

phenotype	male	female
genotype	XY	XX
gametes	X or Y	X

	X	Y
X	XX	XY

phenotype ratio: 50% XX : 50% XY

phenotype 50% male : 50% female