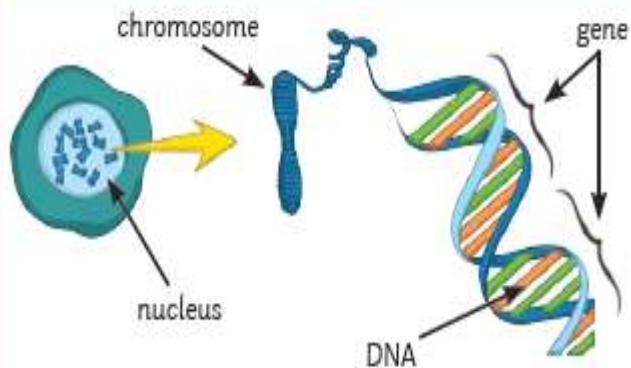


Knowledge Organiser



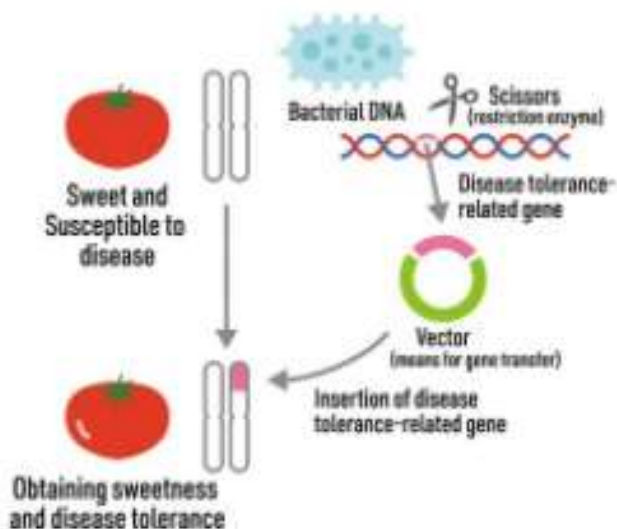
Sex Determination

		mum		
		X	X	
dad	X	XX	XX	female
	Y	XY	XY	male

Females carry two X chromosomes.

Males carry one X and one Y chromosome.

Genetic Modification



Probability

There are four possible combinations of gametes that offspring can inherit.

		male genotype	
		A	a
female genotype	A	AA	Aa
	a	Aa	aa

One of these four has the genotype aa – that's $\frac{1}{4}$, 25% or 0.25.

The recessive phenotype has a ratio of 1:3 because only one combination will show the phenotype while the other three will not.

Variation

Variation may be due to differences in:

- the genes that have been inherited (genetic causes);
- the conditions in which they have developed (environmental causes);
- a combination of genes and the environment.

How to Complete a Punnet Square

	A	a
A		
a		

Step 1:

Put the two alleles from one parent into the boxes at the top. This parent is a heterozygote. This means they have one dominant and one recessive allele.

	A	a
A		
a		

Step 2:

Put the two alleles from the second parent into the boxes on the left. This parent is also a heterozygote.

	A	a
A		
a		

Step 3:

Put the alleles from the first parent into the two boxes underneath them.

	A	a
A	AA	Aa
a	Aa	aa

Step 4:

Put the alleles from the second parent into the two boxes to the right of them.

What is Adaptation?

The process which enables organisms to adjust to their environment in order to ensure survival.

fur to keep warm

feathers and wings for flying

smooth skin for breathing

legs for walking