



New plants from old

Worksheet 5 - What did Mendel discover?

T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T
S	S	S	S	S	S	S	S	S	S	S	S	S
S	S	S	S	S	S	S	S	S	S	S	S	S
S	S	S	S	S	S	S	S	S	S	S	S	S

Cut out these letters (don't lose any!) and follow the instructions to see what Mendel discovered, and how recessive genes can pop out again in the third generation.

Step 1. First generation.

You have two genes, Tall and Short. Cross these to see the results.

There are three possible groupings: Tall parent + Tall parent
Short parent + Short parent
Tall parent + Short parent

Put the correct letters in the box. It will look like this:

T + T	S + S	T + S
--------------	--------------	--------------

That means the new plants will have these genes — one from each parent:

TT	SS	Ts
-----------	-----------	-----------

Step 2. Second generation.

You now have three types of parents:

TT, **SS** and **Ts**. (These are A, B, C on the other Worksheet)



New plants from old

Worksheet 5 - What did Mendel discover?

Step 3.

Now you have to show the six combinations that exist. We are showing you only the first one - two tall parents (or D on the other worksheet. You do the rest (for E, F, G, H and I). (Remember, if you are in trouble, ask your friends or the teacher for help.)

TT + TT					
----------------	--	--	--	--	--

Step 4. Generation 3

Now you have to work out what genes the 'children' will inherit from the 'parents'. Here is a special way of working that out. It is called a Mendel's punnett square. Put the letters for the two parents around the edges of the square. The set from one parent is in the top row, the set for the other parent to the left column. (It doesn't matter which parent goes in the top row)

Now distribute the genes among the 4 'children' in the 4 inner squares. Every child gets one half of every parent's genes. So give one of the top T genes to two of the 'children below, and the other to the other 2. Then do the same for the side 'parents' — one of the genes goes to the 2 children opposite, the other to the other 2. It will look like this:

(D)	(E)	(F)	(G)	(H)	(I)
	T T				
	S TS TS				
	S TS TS				

Now use the letters you have cut out to do the same thing for D, F, G, H, I

Then work out how many of the 'children' are **T**all and how many are **S**hort.

Of these 4 'children' ____ are T all and ____ are S hort	Of these 4 'children' ____ are T all and ____ are S hort	Of these 4 'children' ____ are T all and ____ are S hort	Of these 4 'children' ____ are T all and ____ are S hort	Of these 4 'children' ____ are T all and ____ are S hort	Of these 4 'children' ____ are T all and ____ are S hort
---	---	---	---	---	---

Now look back to what Mendel discovered — see if you have got it right, and how it happened that 1 in 4 'small' offspring seemed to come out of nowhere. You should now be able to see where that recessive gene was 'hiding' in each case.