

Notes for Dihybrid Crosses

Monohybrid Cross – A cross that only uses one gene.

Dihybrid Cross – A cross using two separate genes, each with two or more alleles.

Since we are using two separate genes, there are more possible combinations and we need a larger square. We also need to figure out the possible combinations of the two genes for each parent.

In pea plants, **tall plants (T)** are dominant over **short plants (t)**.
Having flowers **along the stem (A)** is dominant over having flowers at the **tip only (a)**.

What are the codes for...

...a pure tall plant
with flowers at
the tip only?

TTaa

...a short plant with
flowers along the
stem (homozygous)?

++AA

...a plant that is
heterozygous
for both?

T+Aa

Each parent plant passes on one allele from each gene (one T/t and one A/a). To find the possible combinations of letters, we use the FOIL method.

	<u>TTaa</u>	<u>++AA</u>	<u>T+Aa</u>
F – First	Ta	+A	TA
O – Outer	Ta	+A	Ta
I – Inner	Ta	+A	+A
L – Last	Ta	+A	ta

Notes for Dihybrid Crosses

Show a cross between...

...a homozygous tall pea plant (TT) that is
heterozygous for flower position (Aa), and
...a pea plant that is heterozygous for height (Tt)
and only has flowers at the tips (aa).

	<u>T_a</u>	<u>T_a</u>	<u>t_a</u>	<u>t_a</u>
<u>TA</u>	TTAa •	TTAa •	TtAa •	TtAa •
<u>T_a</u>	TTaa •	TTaa •	Ttaa •	Ttaa •
<u>TA</u>	TTAa •	TTAa •	TtAa •	TtAa •
<u>T_a</u>	TTaa •	TTaa •	Ttaa •	Ttaa •

Parent Codes: TTAa Ttaa

FOIL

<u>TA</u>	<u>T_a</u>
<u>T_a</u>	<u>T_a</u>
<u>TA</u>	<u>t_a</u>
<u>T_a</u>	<u>t_a</u>

G-Ratio: 4:4:4:4 → 1:1:1:1

P-Ratio: 8:8 → 1:1