

Name: _____ Date: _____

Life Science Notes 14
Incomplete Dominance and Co-dominance

Incomplete Dominance

- Mendel was fortunate in his findings. He happened to choose a plant whose traits always seemed to have one dominant and one recessive allele.
- What if an organism had traits where **both** alleles were dominant? Recessive?
- After Mendel, many researchers tried to duplicate his findings with other plants and animals. Most of the time, they had the same results as Mendel did, but sometimes they got different results.
- One scientist crossed a pure red four o'clock plant with a pure white four o'clock plant. He hypothesized that the red allele was dominant over the white allele and predicted that he would get all red flowers. What he got instead was all pink flowers.
- This happened because neither the red nor the white alleles in four o'clock plants are dominant over the other. When a plant has both alleles, it will have a color that is in the middle of the two.

R = Red allele
W = white allele

	R	R
W	RW	RW
W	RW	RW

offspring
G: 100% RW
P: 100% Pink

	R	W
R	RR	RW
W	RW	WW

offspring
G: 25% RR, 50% RW, 25% WW
P: 25% Red, 50% Pink, 25% white

Co-dominance (multiple Alleles)

- Eventually, researchers found that some traits have more than two

alleles for a gene controlling a particular trait. (multiple alleles)

- Results for these crosses can be very confusing. Sometimes you will have more than one dominant allele mixed in with recessive alleles.

- The classic example is blood type.

- There are 4 main blood types:

- A
- B
- AB
- O

- The A allele and the B allele are both dominant while the O allele is recessive.

- We use I^A to represent the A allele, I^B to represent the B allele and i to

i represent the O allele.

	I^A	I^B
I^B	$I^A I^B$	$I^B I^B$
I^B	$I^A I^B$	$I^B I^B$

	I^A	i
I^B	$I^A I^B$	$I^B i$
i	$I^A i$	$i i$

G: 100% $I^A I^B$
P: 100% AB

G: 25% $I^A I^B$, 25% $I^B i$, 25% $I^A i$, 25% $i i$
P: 25% AB, 25% B, 25% A, 25% O

- Finally, some traits are controlled by multiple genes and the outcomes are extremely hard to predict as there are so many variations. Skin color is one of them.