

Genetics Student Worksheet #3

Drosophila

The majority of organisms have 2 copies of each gene. One on the chromosome inherited from the mother (XX) and one on the chromosome inherited from the father (XY).

Alternate versions of a gene are called alleles.

When an individual carries 2 *identical alleles of a gene*, that gene is considered homozygous and can be expressed with 2 capital letters (AA if the gene is dominant) or 2 lowercase letters (aa if the gene is recessive).



If the individual carries 2 *different allele types*, the gene is heterozygous and is expressed with a capital and lowercase letter (Aa).

Male Drosophila (XY) – dark, rounded abdomen
Female Drosophila (XX) – Long, pointy, striped abdomen

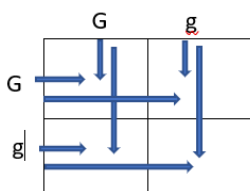
Drosophila traits –

Eye color: red (dominant), white (recessive), sepia or brown (recessive)
Body color: yellow (dominant), black (recessive), grey (recessive)
Wing type: long wings (dominant), no wings (recessive), short wings (recessive)

When filling out a Punnett square:

Carry each letter over from either the top or the side until I have two letters in one box. This creates my predicted results.

Predict the offspring of two gray cats. Gray is dominant over white.



	G	g
G	GG	Gg
g	Gg	gg

Phenotype result: 75% gray fur, 25% white fur
Genotype result: 25% GG, 50% Gg, 25% gg



Punnett Square Practice:

1. Cross a female, red-eyed fly with a male, white-eyed fly.

	R	R
r		
r		

Phenotype result (physical trait description):

Genotype result (genetic makeup):

2. Cross a male homozygous short-winged fly with a female heterozygous long-winged fly.

Phenotype result:

Genotype result:

3. Cross a homozygous grey female with a heterozygous black male.

Phenotype result:

Genotype result:



4. Cross a male and female randomly selected from your card piles.

Phenotype result:

Genotype result:

5. Cross a male and female randomly selected from your card piles.

Phenotype result:

Genotype result: