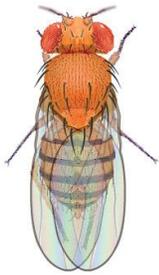


Activity 7.1.4 Experiment 6 White Eyed Male

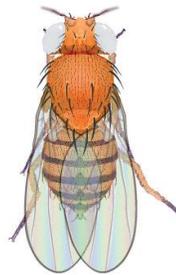
Background

In *Drosophila melanogaster* fruit flies, as in humans, the sex of an animal is determined by the sex chromosomes X and Y. An XX individual is female, while an XY individual is male. A gene found on the X chromosome that has no corresponding gene on the Y chromosome is said to be sex-linked. White eyes in *Drosophila* is sex-linked, as is red-green color blindness in humans. Genes carried on sex chromosomes are represented as a superscript on the letter, such as X^w .

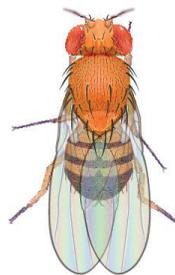
The wild gene for red eye color is dominant over the mutant, white gene. The symbol used for the wild gene is W and the mutant w . A heterozygous female, $X^W X^w$, would have the wild eye color. A male has only one chromosome containing the gene and will either be $X^W Y$ or $X^w Y$.



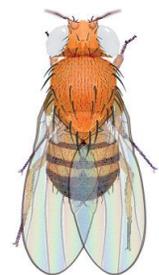
Wild Female



White Eyed Female



Wild Male



White Eyed Male

Procedures

1. Open the *Drosophila* Genetics Lab on your computer as instructed by your teacher.
2. Click on the **Reset** button and then **Select** button.
3. Select **Saved Parents** and then **Exp06.mfp**.
4. Drag each of the parents over to the **Observation Platform** and record their phenotype and genotype in question 1 of Predictions.
5. Complete questions 2 and 3 of the Predictions to determine the probability of wild eyed flies and white eyed flies in this mating.
6. Click the **Breed** button. Examine and record the phenotype of 100 offspring in Table 1.
7. Complete question 1 of the Results Analysis.
8. Drag one male and one female into the **Hold Jar**.
9. Empty the **Parent/Offspring** area.
10. Drag the held flies into the **Parent** jar and select **Breed**. This is your Hybrid, or F₁, cross.
11. Examine each parent from the hybrid cross and record their phenotype and genotype in question 4 of Predictions.
12. Complete questions 4 – 6 of the Predictions to determine the probability of wild eyed flies and white eyed flies in this mating.
13. Examine and record the phenotype of 200 offspring in Table 2. Complete questions 2 and 3 of the Results Analysis.

Predictions

- Determine the information below for each of the original parents, one of which is a homozygous wild female and the other a white eyed male.

Parent	Phenotype	Genotype
Female		
Male		

- Complete the Punnett Square for the parent cross.

	Genes from the male	
	_____	_____
Genes from the female		

- What would you expect the ratio of wild eyed flies to white eyed flies to be in the Punnett Square you just completed?

_____ wild : _____ white eyed

- Determine the information below for each of the hybrid parents in your F1 cross. Note that only the female is heterozygous.

Parent	Phenotype	Genotype
Female		
Male		

- Complete the Punnett Square for the hybrid cross.

	Genes from the male	
	_____	_____
Genes from the female		

- What would you expect the ratio of wild eyed flies to white eyed flies to be in the Punnett Square you just completed?

_____ wild female : _____ wild male : _____ white eyed female : _____ white eyed male

Results Analysis

Table 1. Parent Cross Results

Parent Description			
Female Genotype _____		Male Genotype _____	
Female Phenotype _____		Male Phenotype _____	
Wild Eyed Flies		White Eyed Flies	
Female	Male	Female	Male
Total =	Total =	Total =	Total =
Total Wild Eyed Flies =		Total White Eyed Flies =	
Ratio of Wild eyes : White Eyes		:	

1. How does the ratio of wild : white eyed flies observed in the parent cross experiment compare to the ratio predicted in your Punnett Square?

Table 2. Hybrid Cross Results

Hybrid Description			
Female Genotype _____		Male Genotype _____	
Female Phenotype _____		Male Genotype _____	
Wild Eyed Flies		White Eyed Flies	
Female	Male	Female	Male
Total =	Total =	Total =	Total =
Total Wild Eyed Flies =		Total White Eyed Flies =	

Ratio of Wild female : Wild male : White eyed female : White eyed male

_____ : _____ : _____ : _____

2. How does the ratio of wild female : wild male : white eyed female : white eyed male flies observed in the hybrid cross experiment compare to the ratio predicted in your Punnett Square?
3. How many females were white eyed in this experiment? What can you infer about sex-linked traits based on this?