**Genetics: X Linked Genes**

In fruit flies, eye color is a sex linked trait. Red is dominant to white.

1. What are the sexes and eye colors of flies with the following genotypes:

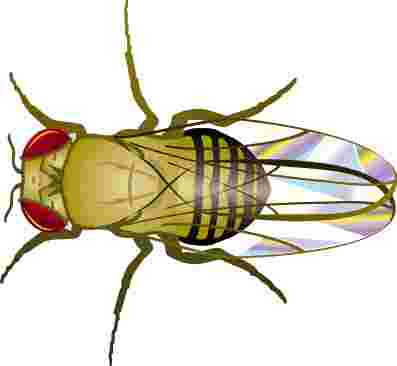
X R X r \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_X R Y \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

X R X R \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_X r Y \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. What are the genotypes of these flies:

white eyed, male \_\_\_\_\_\_\_\_\_\_\_\_ red eyed female (heterozygous) \_\_\_\_\_\_\_\_

white eyed, female \_\_\_\_\_\_\_\_\_\_\_ red eyed, male \_\_\_\_\_\_\_\_\_\_\_

3. Show the cross of a white eyed female X r X r with a red-eyed male X R Y .

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4. Show a cross between a pure red eyed female and a white eyed male.  
 What are the genotypes of the parents:

\_\_\_\_\_\_\_\_\_\_\_& \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How many are:

white eyed, male\_\_\_

white eyed, female \_\_\_

red eyed, male \_\_\_\_

red eyed, female \_\_\_\_

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5. Show the cross of a red eyed female (heterozygous) and a red eyed male. What are the genotypes of the parents?

\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How many are:

white eyed, male\_\_\_white eyed, female \_\_\_

red eyed, male \_\_\_\_ red eyed, female \_\_\_\_

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Math: What if in the above cross, 100 males were produced and 200 females. (think about the percentage of the total #)

How many total red-eyed flies would there be?

6. \_\_\_\_\_\_\_\_\_\_\_\_

7. In humans, hemophilia is a sex linked trait. Females can be normal, carriers, or have the disease. Males will either have the disease or not (but they won’t ever be carriers)

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| XHXH = female, normal  XHXhh= female, carrier  XhhXhh = female, hemophiliac | XhhY= male, normal  XHY= male, hemophiliac |

Show the cross of a man who has hemophilia with a woman who is a carrier.

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8. What is the probability that their children will have the disease? \_\_\_\_\_\_\_\_\_\_

9. A woman who is a carrier marries a normal man. Show the cross. What is the probability that their children will have hemophilia? What sex will a child in the family with hemophilia be?

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10. A woman who has hemophilia marries a normal man. How many of their children will have hemophilia, and what is their sex?

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