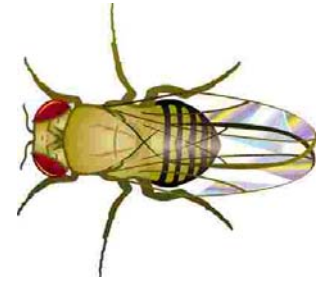


GENETICS: X LINKED GENES



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

$X^R X^r$ _____
 $X^R X^R$ _____

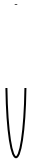
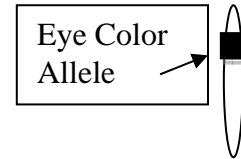
$X^R Y$ _____
 $X^r Y$ _____

2. What are the genotypes of these flies:

white eyed, male _____
 white eyed, female _____

red eyed female (heterozygous) _____
 red eyed, male _____

3. In fruit flies, eye color is a sex linked trait. Red is dominant to white. Using the Punnett square mat, construct the Punnett square below. Fill in each square of the square with the appropriate popsicle sticks so that the correct genotype is shown.



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

Normal Female Chromosome	Normal Male Chromosome
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How many are:
 white eyed, male ____
 white eyed, female ____
 red eyed, male ____
 red eyed, female ____

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 ____

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 ____

Hemophilia has played an important role in Europe's history, for it suddenly cropped up in the children of Great Britain's Queen Victoria. It became known as the "Royal disease" because it spread to the royal families of Europe through Victoria's descendants.

6. 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)

$X^H X^H$ = female, normal

$X^H Y$ = male, normal

$X^H X^h$ = female, carrier

$X^h Y$ = male, hemophiliac

$X^h X^h$ = female, hemophiliac

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

What is the probability that their children will have the disease? _____

7. 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?

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