

Name, Date, Hr/Pr _____

Genetics: X-Linked Genes

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

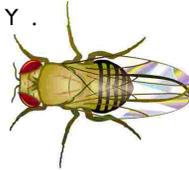
1. What are the sexes and eye colors of flies with the following genotypes:

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

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 $X^R Y$.



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 _____

****Math**:** What if in the cross to the left, 100 males were produced and 200 females. How many total red-eyed flies would there be? _____

6. In humans, hemophilia is a sex linked recessive 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)

$X^H X^H$ = sex: _____ phenotype = _____ $X^H Y$ = sex: _____ phenotype = _____
 $X^H X^h$ = sex: _____ phenotype = _____ $X^h Y$ = sex: _____ phenotype = _____
 $X^h X^h$ = sex: _____ phenotype = _____

7. 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?

8. 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?

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

10. In cats, the gene for calico (multicolored) cats is a COdominant, sex linked trait. Females that receive an X^B [black] and a X^{Bi} [orange] gene have black and orange splotches on white coats. Males can only be black or orange, but never calico.

Show the cross of a female calico cat with a black male.

What percentage of the kittens will be black & male? _____
 What percentage of the kittens will be calico & male? _____
 What percentage of the kittens will be calico & female? _____

11. Show the cross of a female black cat, with a male orange cat.

What percentage of the kittens will be calico and female? _____

What color will all the male cats be? _____

12. Color blindness is caused by a sex-linked recessive allele. *use X^N = normal vision and X^n = color blind Can a color blind female have a son that has normal vision? _____

a. Genotype Femle: _____

b. Genotype Male: _____

13. Baldness is a sex-linked trait. *use X^H = normal hair, and X^h = bald What parental genotypes could produce a bald woman?