

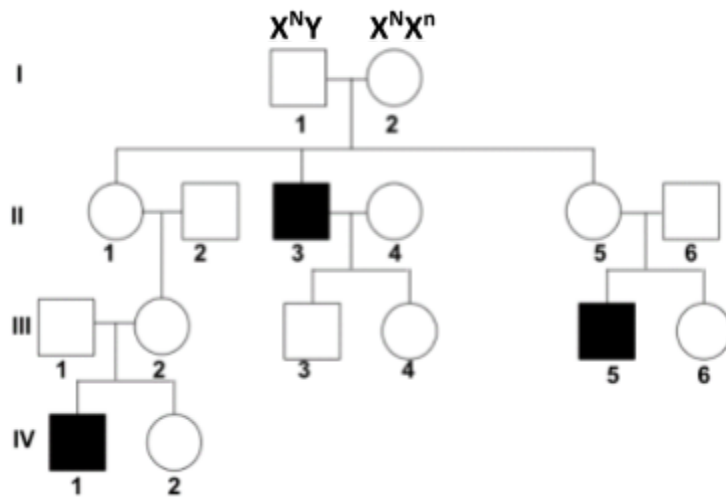
Name: \_\_\_\_\_

Hour: \_\_\_\_\_

## Human Genetics Review

1. What is the mode of inheritance for passing the Fxp3 gene? (Fxp3 is a gene that has been implicated in hereditary prostate cancer and is found on the X chromosome). Having the gene is being followed.  
(Circle two of the terms below)

Autosomal      OR      Sex-linked      AND      Dominant      OR      Recessive



2. Based on the genotypes labeled on Generation I, write all other genotypes above every other symbol.

3. Cite 2 pieces of evidence that support your answer for #1. Use the numbers (e.g. III-4) in your evidence to identify individuals.

4. Use the Punnett square at the right to show the cross between individual III-1 and III-2. Circle any box within the Punnett square that contains an individual who has the foxp3 gene.
5. In this cross, what are the chances that a son will be more susceptible to prostate cancer? \_\_\_\_\_


6. Tusklessness is a recessive trait. Cross two elephants who have tusks, each of which has a tuskless parent.
- Parent genotypes (Use the letters T and t): \_\_\_\_\_ x \_\_\_\_\_
  - Complete the Punnett square
  - What is the probability of having a tuskless calf? \_\_\_\_\_%
  - What is the probability of having a calf with tusks? \_\_\_\_\_%


## 7. Incomplete Dominance

A cross between two parents in which one allele is not dominant over another and the result is a 'blend' of the two phenotypes.

Example: 4 o'clock flowers show a pink color when a red and a white allele is present (RW)

Step 1: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Cross a red flowered plant with a white flowered plant

Step 2:

Step 3:


Step 4:  
Genotypic Ratio

Phenotypic Ratio

## 8. Codominance

In a certain fish, blue scales (BB) and red scales (RR) are codominant. When a fish has the hybrid genotype, it has a patchwork of blue and red scales.

Step 1: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Cross a Blue Fish with a Patchwork fish

Step 2:

Step 3:


Step 4:  
Genotypic Ratio

Phenotypic Ratio

## 9. Blood Types

Neither A nor B are dominant to each other but are dominant to O-type blood. A person can be AA, AO, BB, BO, AB or O

Step 1: AA, AO = \_\_\_\_\_

BB, BO = \_\_\_\_\_

AB = \_\_\_\_\_

OO = \_\_\_\_\_

Cross a person with Type AB blood with someone who is Type O blood

Step 2:

Step 3


Step 4:  
Genotypic Ratio

Phenotypic Ratio

- Pretend that Brad Pitt is homozygous for the type B allele, and Angelina Jolie is type "O." What are all the possible blood types of their baby?
- Draw a Punnett square showing all the possible blood types for the offspring produced by a type "AB" mother and an a Type "AB" father. Could a child with B blood be their child?

## 10. Dihybrid Crosses and Multiplication Rule

In mice, the ability to run normally is a dominant trait. Mice with this trait are called running mice (R). The recessive trait causes mice to run in circles only. Mice with this trait are called waltzing mice (r). Hair color is also inherited in mice. Black hair (B) is dominant over brown hair (b). For each of the following problems, determine the parent genotypes, determine possible gametes then use a dihybrid cross to solve.

- Cross a heterozygous running, heterozygous black mouse with a homozygous running, homozygous black mouse
- Genotypic Ratio:
- Phenotypic Ratio:


- Using the Multiplication Rule, What is the probability of getting a black waltzing mouse from a heterozygous black running mouse and brown waltzing mouse?

