

LAB: SEX LINKED TRAITS

Introduction: To simulate a random selection of chromosomes during a lab, a coin flip is usually used. This lab will use pennies to simulate the sex cells of two potential parents.

Part 1: Male Pattern Baldness

1. Using masking tape, label two coins – One $X^B X^b$ and one $X^B Y$
2. The dominant trait is for normal hair growth. The recessive is for baldness (develops later in life).
3. What are the phenotypes of the parents?

a. Mother:

Father:

4. Flip both coins to simulate random chromosome selection when making an offspring and fill in the genotypes the chart below. Repeat until the chart is completely filled in.

#	Result	#	Result
1		21	
2		22	
3		23	
4		24	
5		25	
6		26	
7		27	
8		28	
9		29	
10		30	
11		31	
12		32	
13		33	
14		34	
15		35	
16		36	
17		37	
18		38	
19		39	
20		40	

Summary:

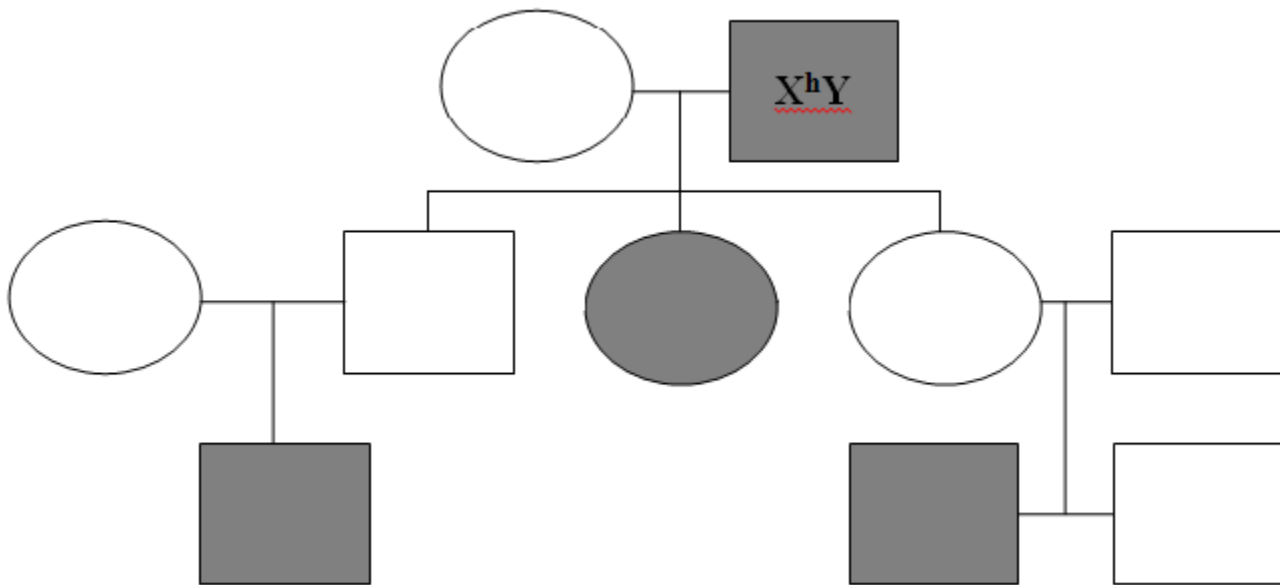
Observed Results: How many females were: $X^B X^B$ _____ $X^B X^b$ _____

How many males were: $X^B Y$ _____ $X^b Y$ _____

Expected Results

1. What are the expected results of the lab? (Show the Punnett Square)
2. Do the expected results match with the observed results? Why or why not?
3. Is it possible to have two normal haired parents produce an offspring with baldness? Explain
4. If the mother is heterozygous for a sex linked trait, she is called a _____ of the trait.
5. Assuming no mutations occur, is it possible to have a child with baldness from a mother who is homozygous dominant for baldness? Explain.

The following pedigree tracks hemophilia in a family. Hemophilia is a sex linked disorder where the blood clots slowly and may lead to extensive blood loss or even death. Squares represent males and circles represent females. A non-shaded individual does not have hemophilia and a shaded one has the disorder. Complete the pedigree by filling in all of the genotypes of the individuals based on the known information. P-#2 (The top right square) is completed for you.



6. How many affected individuals are present?
7. Why is it easy to determine the male genotype?
8. What is the genotype of a carrier?
9. How many carriers are in the pedigree?
10. What is the genotype of F1-#4?