

- Which members of the family above are afflicted with Huntington's Disease? \_\_\_\_\_
- There are no carriers for Huntington's Disease- you either have it or you don't. With this in mind, is Huntington's disease caused by a dominant or recessive trait? \_\_\_\_\_
- How many children did individuals I-1 and I-2 have? \_\_\_\_\_
- How many girls did II-1 and II-2 have? \_\_\_\_\_ How many have Huntington's Disease? \_\_\_\_\_
- How is individual III-2 and II-4 related? \_\_\_\_\_ I-2 and III-5? \_\_\_\_\_

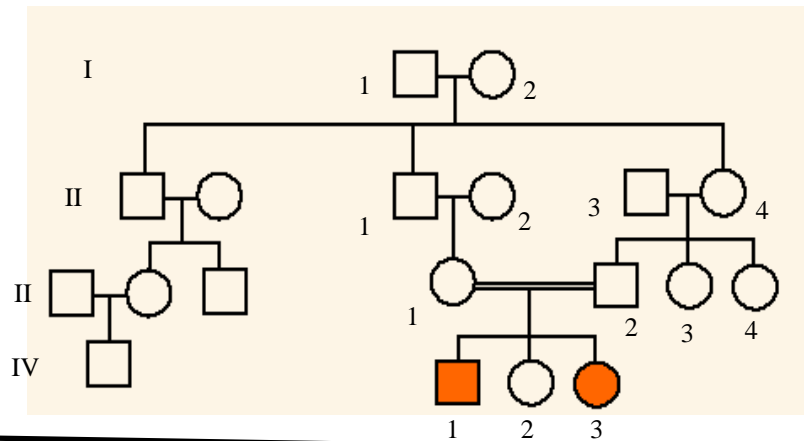
6. The pedigree to the right shows the passing on of Hitchhiker's Thumb in a family. Is this trait dominant or recessive? \_\_\_\_\_

7. How do you know? \_\_\_\_\_

8. How are individuals III-1 and III-2 related? \_\_\_\_\_

9. Name 2 individuals that have hitchhiker's thumb. \_\_\_\_\_

10. Name 2 individuals that were carriers of hitchhiker's thumb. \_\_\_\_\_



11. Is it possible for individual IV-2 to be a carrier? \_\_\_\_\_ Why? \_\_\_\_\_

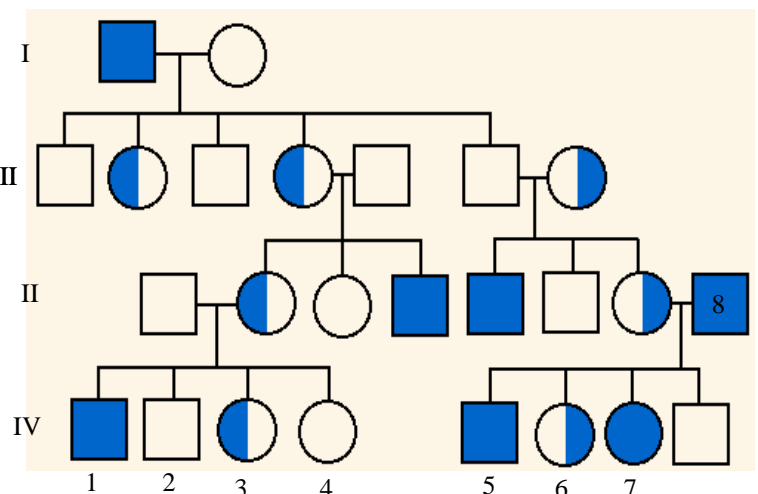
12. The pedigree to the right shows the passing on of colorblindness. What sex can ONLY be carriers of colorblindness? \_\_\_\_\_

13. With this in mind, what kind of non-mendelian trait is colorblindness? \_\_\_\_\_

14. Why does individual IV-7 have colorblindness? \_\_\_\_\_

15. Why do all the daughters in generation II carry the colorblind gene? \_\_\_\_\_

16. Name 2 IV generation colorblind males. \_\_\_\_\_



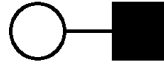
1. Do a **punnett square** for the cross shown below between a male and female, both with Hemophilia, an X-linked recessive disease. Females are represented by a circle and males by a square. Darkened shapes mean the individual has the disease.



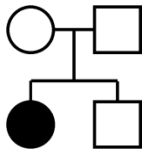
2. Write the **genotypes of the parents** next to their shapes. Then do a punnett square for the recessive disease in the cross shown below between a male and female.



3. The father shown below has Hemophilia, an X-linked recessive disorder. If this couple had a son, could the son have the disease? What genotype(s) would be possible for that son?



4. The couple shown by the pedigree below, have 2 children, 1 girl with the disease and 1 boy without the disease as shown. What is the mode of inheritance? (is the disease recessive, dominant, or X-linked recessive?) Explain why you think this. Fill in the genotypes to help you answer this.

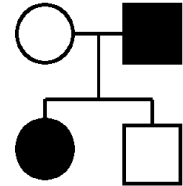


5. For the pedigree shown to the right:

Is it possible for the trait to be recessive? Explain why?

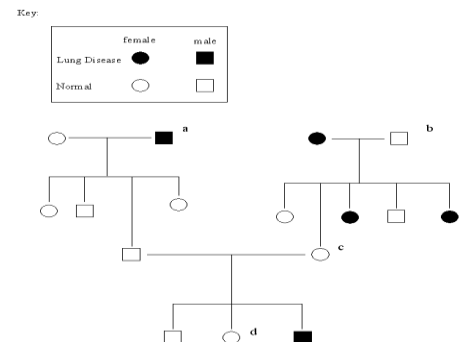
Is it possible for the trait to be dominant? Explain why?

Is it possible for the trait to be X-linked recessive?



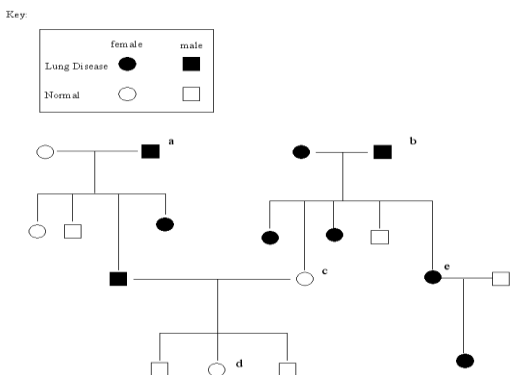
### Pedigree Problem:

To the right is a pedigree for an inherited lung disease. Provide the genotypes of each. Remember normal can be heterozygous or homozygous.



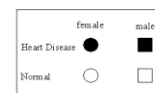
### Pedigree Problem 2:

To the left is a pedigree for an inherited lung disease. Provide the genotypes of each of the individuals.

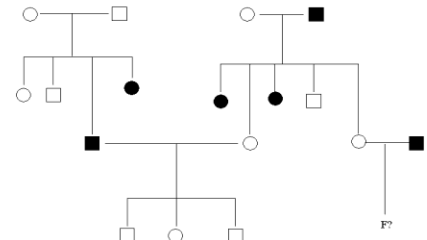


### Pedigree Problem 3:

Key



To the right is a pedigree for an inherited heart disease. What is the probability that their child F would have the inherited heart disease?



Use the information provided below to create a pedigree. Then answer the question at the end of each description.

- A man and woman marry. They have five children, 2 girls and 3 boys. The mother is a carrier of hemophilia, an X-linked disorder. She passes the gene on to two of the boys who died in childhood and one of the daughters is also a carrier. Both daughters marry men without hemophilia and have 3 children (2 boys and a girl). The carrier daughter has one son with hemophilia. One of the non-carrier daughter's sons marries a woman who is a carrier and they have twin daughters. What is the percent chance that each daughter will also be a carrier?
- The great-great maternal grandmother of a boy was a carrier for color-blindness, an X-linked disorder. His great uncle on his mother's side was colorblind but this great uncle's father was unaffected. The boy's mother has 2 brothers (1 colorblind, 1 unaffected) and 1 sister (unaffected). The boy's grandmother on his mother's side had 1 brother who was colorblind and 3 sisters. Two of these sisters were unaffected and one was a carrier. The boy's great grandmother on his mother's side had 4 sisters. The boy has one unaffected sister and he is colorblind. What is the probability of the boy's sons being colorblind if he marries a non-carrier?
- An unaffected man marries a woman who is a carrier for Duchenne Muscular Dystrophy, which is attributed to an X-linked gene. They have four children, one with Duchenne, one carrier daughter and a daughter and son who are unaffected. The child with Duchenne Muscular Dystrophy dies in childhood. The carrier daughter marries and has three children of her own, two of which are carriers and one of which is unaffected. What is the most likely sex of these two carrier children given the fact that they are unaffected by the X-linked gene?