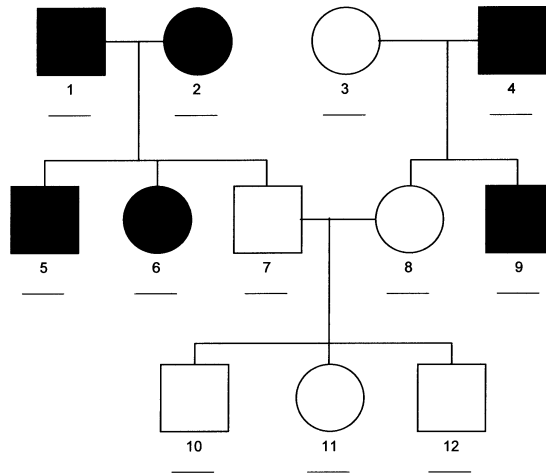


Dominant Inheritance Patterns

1. Fill in the genotypes for all individuals in the pedigree. I am telling you that the trait is dominant so you can practice identifying the genotypes. *Use A and a



2. If Individual 9 marries a woman without the trait, what are the chances they will have a child with the disease? Set up a punnett square to help explain your answer.

3. Dominant Disease Pedigree:

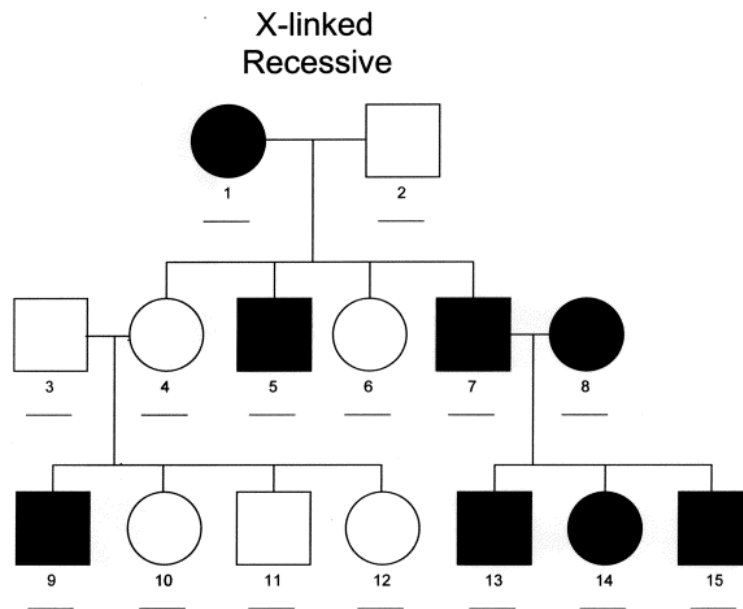
- a. Draw a pedigree based on the story
- b. Assign a genotype for each of the individuals in the family based on the story (Use BB, Bb, bb)
- c. Make sure to shade the boxes/circles correctly - REMEMBER this pedigree will NOT have carriers because the disease is dominant; so the individuals with the disease could be BB or Bb and their shape will be FULLY shaded in.

Ashley married Tommie and had Jerod, Jason, and Jacob. Ashley has Huntington's Disease, a dominant disorder carried on chromosome 4. Jason has Huntington's Disease, but Jerod and Jacob are unaffected. Jacob marries Aliyah, who has Huntington's Disease. They have three girls, Lillian, Lindsey, and Lisa. Lillian is diagnosed with Huntington's, but neither Lisa or Lindsey have the disease.

4. If Lindsey marries a man who is heterozygous for Huntington's disease, what are the chances they have a child with Huntington's Disease?

Sex-Linked Inheritance Patterns *Can be Dominant or Recessive

5. Fill in the genotypes for all individuals in the pedigree. I am telling you that the trait is sex-linked recessive so you can practice identifying the genotypes. *Use A and a along with the sex chromosomes → remember the trait is carried on the X only



6. If Individual 15 marries a woman who is a carrier for the x-linked recessive trait, what are the chances their child will inherit the disease? Set up a punnett square to help explain your answer.

7. X-Linked Recessive Disease Pedigree:

- a. Draw a pedigree based on the story
- b. Assign a genotype for each of the individuals in the family based on the story (Use B and b as the superscript on the X for each individual)
- c. Make sure to shade the boxes/circles correctly - This pedigree will have female carriers only - Pay close attention to how to shade/not shade each person.

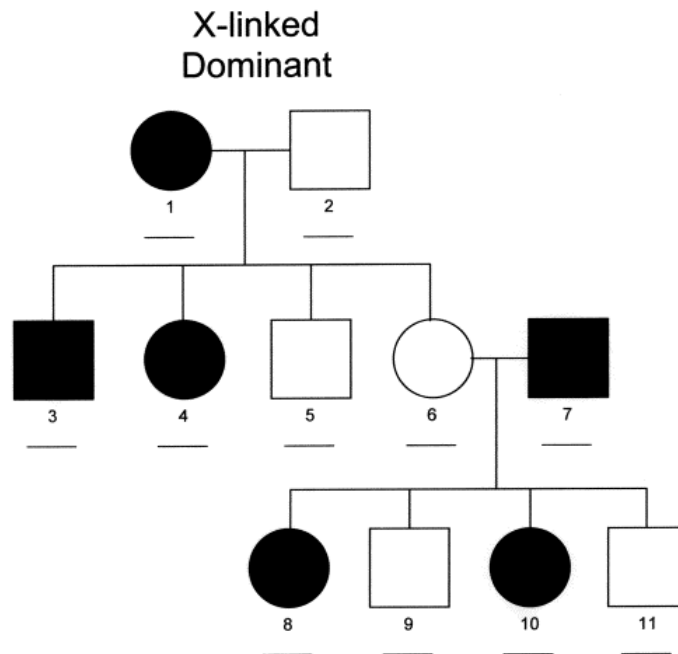
The Story of Red-Green Colorblindness in the Smith Family

John has red-green colorblindness. John and Lynne are married and have five children. Rob is the oldest, Kelly, who is a carrier of the trait, is next, and then comes Matt. Peter is the youngest and came in line after Sara, who is also a carrier. Sara married Darin and Peter married Wendy, another carrier of the red-green colorblindness trait.

Darin and Sara have three children. The names of their children, youngest to oldest, are Beth, Betty, and Bobby. Beth is carrier of red-green colorblindness and Bobby is affected by red-green colorblindness. Beth married Mike and have four children. The names of their children, youngest to oldest, are Steven, Jacob, Jenna, and Samantha. Steven is also affected by red-green colorblindness, while Jenna is a carrier.

8. If Rob marries a woman who is a carrier of red-green color blindness, what are the chances they will have a child with red-green color blindness? Set up a punnett square to help explain your answer.

9. Fill in the genotypes for all individuals in the pedigree. I am telling you that the trait is sex-linked dominant so you can practice identifying the genotypes. *Use A and a along with the sex chromosomes → remember the trait is carried on the X only



10. If Individual 11 marries a woman who is heterozygous for the X-linked dominant trait, what are the chances their child will inherit the disease? Set up a punnett square to help explain your answer.

11. X-Linked Dominant Disease Pedigree:

- a. Draw a pedigree based on the story
- b. Assign a genotype for each of the individuals in the family based on the story (Use F and f as the superscript on the X for each individual)
- c. Make sure to shade the boxes/circles correctly - REMEMBER this pedigree will NOT have carriers because the disease is dominant.

This is the story of Grandma and Grandpa Flipnob, and their clan! They were married way back in 1933, and have been just like newlyweds ever since. From their union, 4 individuals were created. Elizabeth, the eldest, was born in 1935. Fred soon followed in 1936. In 1939 Michelle was brought into this world. Mickey (a surprise to the whole family was the baby of the family, not being born until 1950. Elizabeth fell in love at a young age, and wed her high school sweetheart, David, in 1954. From this marriage, two bundles of joy came about (at the same time): John and Sonny - 1955 (twins)! It took Fred a little longer to find his soul mate. Finally in 1970, Fred found the woman of his dreams, Wilma, and they were married. Since they married so late in life, they only brought one new person into this world: Barney - 1972 Michelle was a hard working woman, and never found time in her schedule for love. She led a very productive and fulfilling life, but she never did marry and have children. Mickey was a wild one!! After a long string of girlfriends, he finally chose Monica to spend the rest of his life with. They were wed in 1975 and brought two girls into this world: Krista - 1977 Janet - 1979

The following individuals HAVE Fragile X Syndrome: Grandma, Elizabeth, Wilma, Mickey, Barney, Krista, Janet

***** Be careful when you are figuring out the genotypes → Fragile X Syndrome is a X-linked Dominant Disease**

12. If Barney marries a homozygous recessive woman. What are the chances they will pass on the fragile X syndrome to their children? Set up a punnett square to help explain your answer.