

## Human Genetics Review

1. How many alleles do males inherit in sex linked traits? \_\_\_\_\_
2. How many alleles do females inherit in sex linked traits? \_\_\_\_\_
3. What is a sex influenced trait? \_\_\_\_\_
4. Down syndrome is an example of what? \_\_\_\_\_
5. What is a mutagen? \_\_\_\_\_
6. What are the two types of mutations discussed in class?  
\_\_\_\_\_
7. \_\_\_\_\_ is an environmental factor which damages DNA.
8. A \_\_\_\_\_ is a change in the DNA.
9. A picture of a cell's chromosomes is called a \_\_\_\_\_.
10. A person that is heterozygous for a recessive disorder is called a \_\_\_\_\_.
11. What is chorionic villi sampling? \_\_\_\_\_

12. In human blood types, A and B alleles are co-dominant. Both A and B alleles are dominant to type O. A man with type AB blood marries a woman with type O blood. Give the genotypes and phenotypes of all possible offspring.

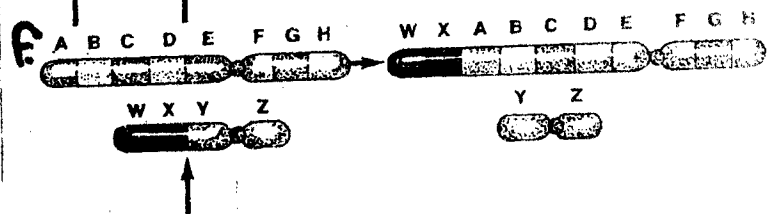
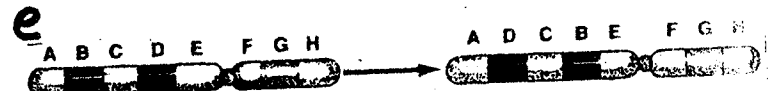
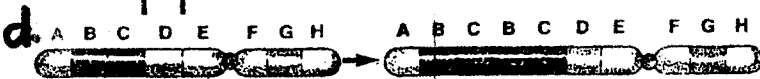
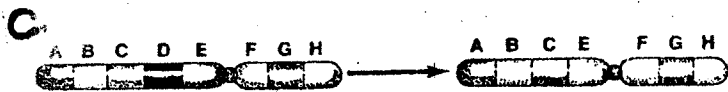
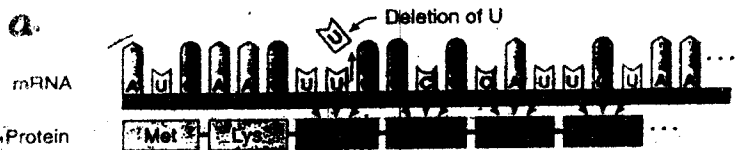

13. If a man with blood type A, one of whose parents had blood type O, marries a woman with blood type O, what percentage of their offspring would have blood type OO?


14. What is the probability that 2 parents with normal color vision will have color blind sons and daughters if the mother's father is colorblind?


15. Red—green color blindness is a sex-linked recessive trait. Suppose a man with the disease marries a normal woman. Will any of their children have the disease?


16. For each of the following indicate the type of mutation and indicate if it is a chromosome or gene mutation.

Type	Chromosome or Gene
a.	
b.	
c.	
d.	
e.	
f.	



17. Sex-linked. Cross a female that is a carrier for hemophilia with a male that does not have hemophilia. What percent of the boys will have the disease?

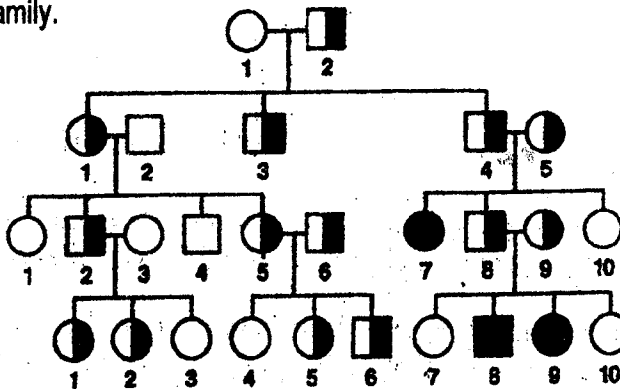
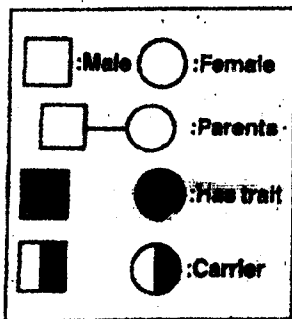

## Reading a Human Pedigree

### Problem

How can you use a human pedigree to trace the inheritance of sickle cell anemia through several generations of a family?

### Procedure

1. Study the following key for the symbols used on a human pedigree.
2. Study the pedigree shown here. This pedigree traces the pattern of inheritance of sickle cell anemia in several generations of a single family.



Sickle Cell Anemia Pedigree

### Observations

1. How many generations are shown on the pedigree? \_\_\_\_\_
2. Which parent in the first generation had sickle cell anemia? \_\_\_\_\_
3. How many children were born in the second generation? \_\_\_\_\_
4. How many of these children are carriers of sickle cell anemia? \_\_\_\_\_
5. How many children in the third generation have sickle cell anemia? How many are carriers? \_\_\_\_\_

### Analysis and Conclusions

1. Is sickle cell anemia a sex-linked trait? How can you tell? \_\_\_\_\_
2. Is the gene for sickle cell anemia more likely to be dominant or recessive? Explain your answer.  
\_\_\_\_\_

### A Question of Inheritance

Solve each of the following problems. Then in the space provided after each problem use Punnett squares to explain how you reached a solution.

1. A man with Group A blood is said to be the father of a child with Group O blood. The mother has Group B blood. Could the man be the father? Explain.

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2. A colorblind man marries a woman with normal vision. Of their three daughters, one is colorblind. One of their two sons is also colorblind. What are the genotypes of the parents?

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