

Laboratory Investigation

CHAPTER 3 ■ Human Genetics

Reading a Human Pedigree

Problem

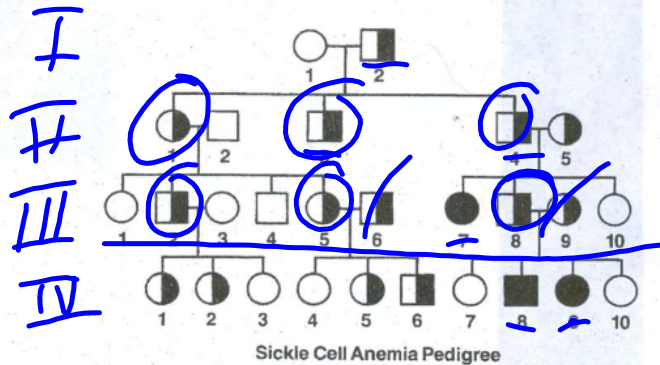
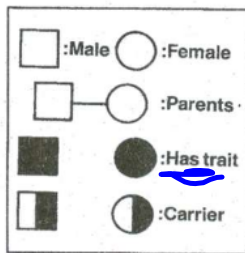
How can you use a human pedigree to trace the inheritance of sickle cell anemia through several generations of a family?

Materials

paper
pencil

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.



Observations

1. How many generations are shown on the pedigree? 4
2. Which parent in the first generation had sickle cell anemia? none
3. How many children were born in the second generation? 3
4. How many of these children are carriers of sickle cell anemia? 3
5. How many children in the third generation have sickle cell anemia? How many are carriers? 1 3

Analysis and Conclusions

1. Is sickle cell anemia a sex-linked trait? How can you tell? NO, males CANNOT be carriers for X-linked or Y-linked traits. Both males & females have the disease.

2. Is the gene for sickle cell anemia more likely to be dominant or recessive? Explain your answer. Recessive, only 3 people have the disease, if it was dom. the majority of the family would show the trait.

3. **On Your Own** How could a genetic counselor use a pedigree to advise parents who are worried about passing on an inherited disorder to their children? _____