# Human Pedigrees

A pedigree is a type of diagram that shows the phenotypes of the members of several generations in a family line with respect to a particular trait. The trait recorded in a pedigree could be a normal trait, such as eye colour, or a defective trait, such as a genetic disease. From the patterns of inheritance revealed in a pedigree, it is often possible to determine if a trait is dominant or recessive, and sex-linked or not sex-linked. Pedigrees help genetic counselors assess the probability of a couple having a genetically defective child.

Pedigrees are constructed according to certain rules. Females are represented by the circles and males by squares. Shading of a circle or of a square indicates that the individual exhibits the trait. Marriages are represented by a horizontal line connecting a male and a female. Vertical lines connect offspring to marriage lines.

Problems

1. Below is a pedigree for four generations of a family, some of whose members exhibit a particular trait. From the information in the pedigree, determine:
   a) if the trait is dominant or recessive (Hint: what gender is affected only?)
   b) Which of the lettered individuals is a carrier (heterozygous for the trait)?
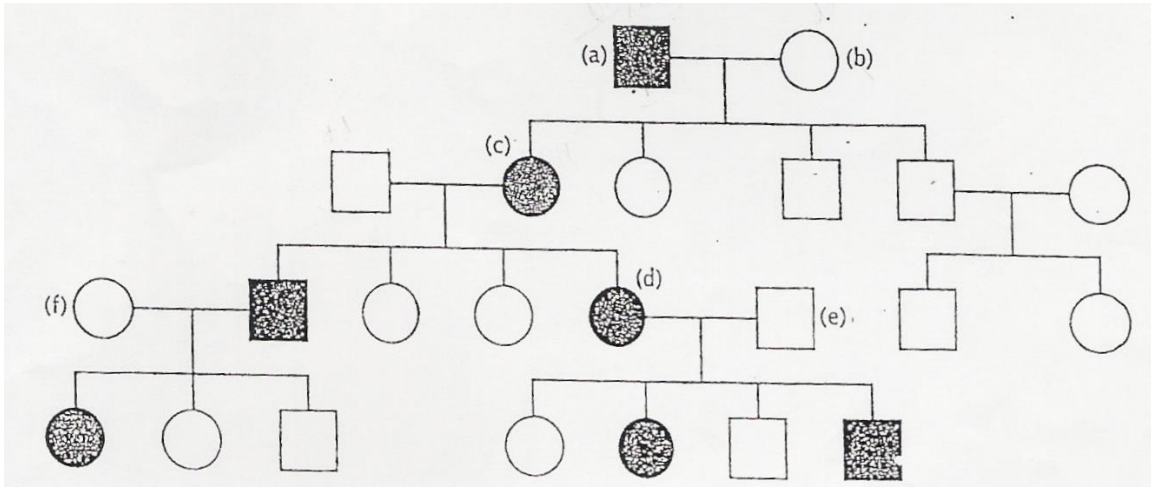   c) Fill out the possible genotypes
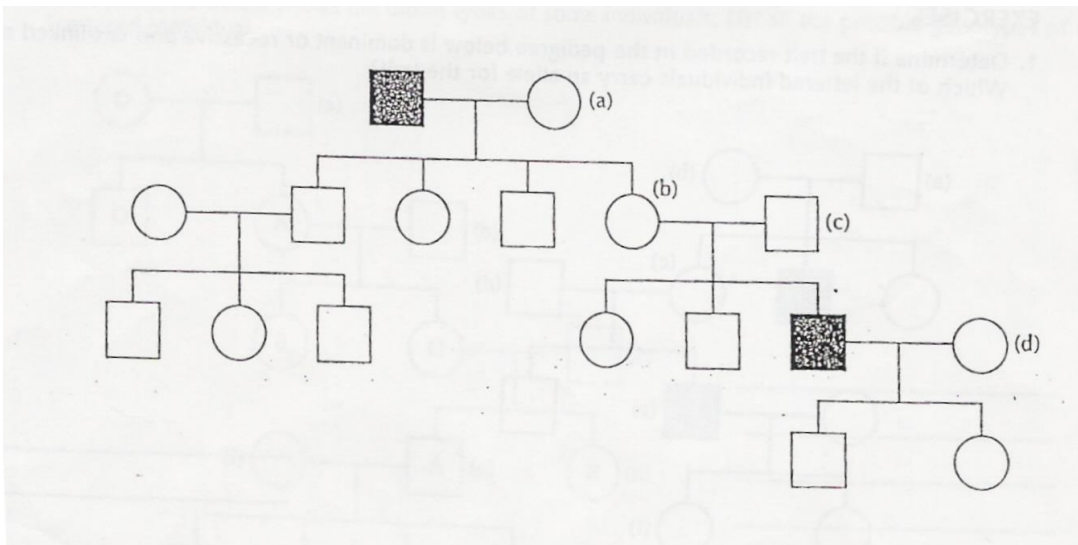
2. Determine if the trait recorded in the pedigree below is:
   a) dominant or recessive (Hint: consider all generations to see if the trait skips)
   b) sex-linked or not sex-linked
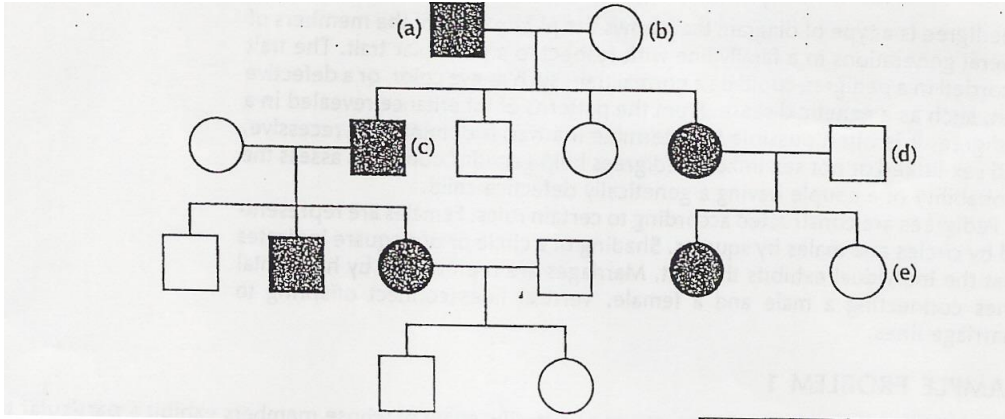
3. Determine if the trait recorded in the pedigree below is:
   a) dominant or recessive
   b) sex-linked or not sex-linked (gender?)
   c) Which of the lettered individuals carry an allele for the trait?
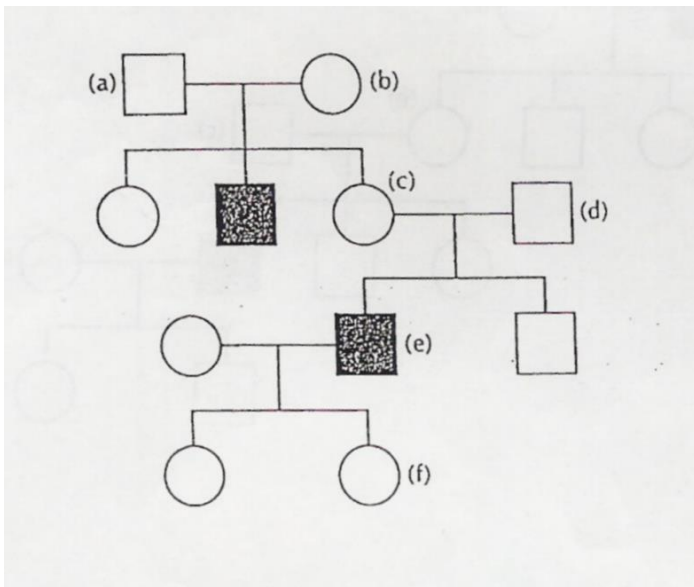
4. Determine if the trait recorded in the pedigree below is:
   a) dominant or recessive
   b) sex-linked or not sex-linked
   c) Which of the lettered individuals are heterozygous for the trait?

5. The pedigree below shows the blood types of some individuals. List all the possible genotypes of each lettered individual.