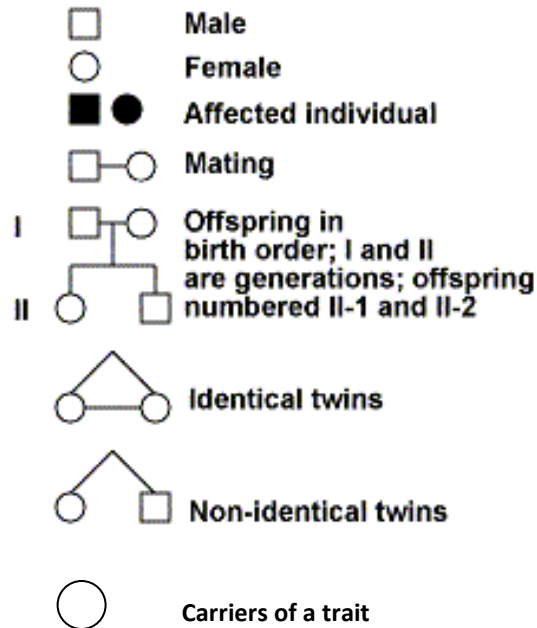


Assignment 4 - Pedigree Chart Activity

Complete the following assignment on your own sheet of paper

All living things have pedigrees. A pedigree is a diagram that shows the occurrence and appearance (phenotype) of a particular genetic trait, as it is passed from one generation to the next in a given family. From this information, along with an understanding of inheritance, genotypes of individuals can often be determined.

Symbols for a Pedigree Chart



Follow the story below and create a pedigree chart.

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

Answer the following questions:

1. Who are the in-laws?
2. What is the relationship between the people in the third generation?

Now that you have your pedigree chart together, shade the appropriate circles and squares using the information below. Remember that individuals who possess the RECESSIVE trait are to be filled in completely. Individuals not shaded in carry at least one dominant allele.

Dominant/Recessive Inheritance – Freckles

Not having freckles is a recessive trait.

Grandpa Flipnob did not have freckles, but his beautiful bride did.

Fred and Michelle were the only two of their siblings to have freckles.

Of the grandchildren, the twins did not have freckles, and neither did Barney, but the two girls did.

Using the guide provided, determine the genotypes of all individuals in this pedigree chart for freckles. Remember, having no freckles is a RECESSIVE trait.

STEP 1

Assign two recessive genes to any person on the pedigree whose symbol is shaded. Small letters are written below the person's symbol.

STEP 2

Assign one dominant gene to any person on the pedigree whose symbol is unshaded. A capital letter is written below the person's symbol.

STEP 3

Use the information given to you to determine the second alleles for each person with the dominant phenotype.

Example: We know that Grandpa Flipnob does not have freckles. If Grandma were BB, could any bb children be produced from Grandma and Grandpa? If Grandma were Bb, could any bb children be produced from them? Complete punnett squares below to determine your answer.

1. From your results, what is Grandma's genotype?
2. What must be the genotypes of their children?
3. What are the genotypes of their grandchildren?
4. Label your pedigree with the correct genotypes for each generation.