

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

## Chapter 7-4 Human Genetics and Pedigrees

- I. A pedigree is a chart for tracing genes in a family-
  - A. Human genes are inherited according to Mendel's principles.
  - B. \_\_\_\_\_ are charts that are used to show the \_\_\_\_\_ within a family and can also track the \_\_\_\_\_ of traits.
  - C. Rules for making pedigrees
    - Males are represented by \_\_\_\_\_
    - Females are represented by \_\_\_\_\_
    - An individual who exhibits the trait in question is represented by a \_\_\_\_\_
    - A horizontal line between two symbols represents a \_\_\_\_\_
    - The offspring from a mating are connected to each other by a horizontal line above their symbols and connected to their parents by a vertical line
    - \_\_\_\_\_ symbolize the generations
    - \_\_\_\_\_ symbolize birth order within each generation
    - Individuals can be identified by generation and birth order number (i.e. individual II3)

### Making a Pedigree

#### Objectives:

I can trace inherited traits through a family's history by constructing a pedigree.

#### Constructing a Pedigree QUESTIONS (Answer on your pedigree paper)

1. What type of information does a pedigree show?
2. How do you show the presence of a trait in a pedigree?
3. How do you denote males and females in a pedigree?
4. From your Passage 1 pedigree, is the presence of dimples a dominant or recessive trait? Explain how you can tell this from the pedigree.
5. How could examining a family pedigree be helpful to a couple wanting to have children?

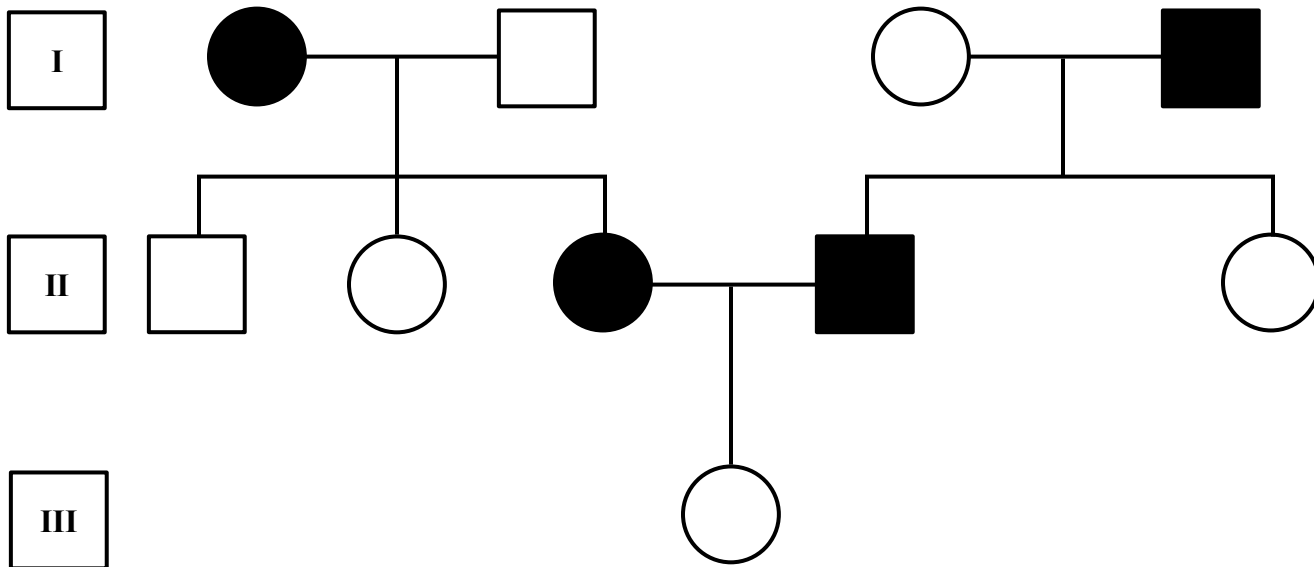
**Procedures:**

**PART I:**

1. Examine Figure 1 below that traces the ability to roll your tongue through three generations in a family.

**Remember: Filled in shapes show the trait!**

2. Determine which parents and offspring would be able to roll their tongue.



**Figure 1**

**PART II:**

3. Read the Passage 1 about the Smith family and their inherited trait of dimples
4. Make a pedigree showing all family members in each generation that do and do NOT have dimples.
5. Label the genotypes of each individual in the family.
6. Repeat steps 4-5 for Passage 2

**PASSAGE 1**

Grandfather and Grandmother Smith smiled a lot and showed off their dimples each time. They had a son named John, who had dimples, and a daughter named Julie, who did not. Julie died at an early age, but her brother John met and married Mary because she had the most beautiful dimples when she smiled. They had 4 children: 1 boy and 3 girls. Their son, Tom, had dimples and their daughters Judy and Kay had dimpled smiles. Their sister June lacked dimples. After college, Tom met and married Jane. They had 3 children, all girls (Betty, Sally and Amanda), who shared their parent's dimpled smile. Tom's sister Kay married a lawyer named James who seldom smiled and didn't have dimples. Their only son Matthew was like his mother when he smiled. Judy never married. Tom's sister, June, married a doctor named Rudy and had 5 children. Three of the children were boys, Jay, Fred and Mike. Mike and Fred had dimples like dad, but Jay's smile was like his mom's lacking dimples. One sister, Susan, had dimples, but the other, Katherine, didn't. (Use the letter D for dimples; having dimples is the dominant trait)

**PASSAGE 2**

Harold has a unibrow that is a recessive sex-linked trait. Harold's wife, Shirley, does not have a unibrow that is a dominant sex-linked trait. Harold's sister, Maude, also does not have a unibrow, as does her husband, Phil, and daughter, Marsha, but their identical twin boys, Alvin and Simon, both do have unibrows. Harold and Maude's parents, Edgar and Florence, do not have unibrows.