

Making Pedigrees Activity

Introduction:

A pedigree is a diagram of family relationships that uses symbols to represent people and lines to represent genetic relationships. These diagrams make it easier to visualize relationships within families, particularly large extended families. Pedigrees are often used to determine the mode of inheritance (dominant, recessive, etc.) of genetic diseases.

Making a Pedigree:

1. Females are represented by circles	
2. Males are represented by squares	
3. A union is represented by a horizontal line between the parents	
4. Offspring are represented by a vertical line from the horizontal line between the parents.	
5. The offspring are then numbered (1, 2, 3...)	
6. If a person has a trait, the shape is shaded in	
7. If a person is a carriers of the trait but does not express it, half of the shape is shaded in	
8. The genotypes of the individuals below the shape	
9. If the genotype is unknown or partially unknown, a blank space is used in the pedigree	
10. To complete the pedigree, use roman numerals to number the different generations (I, II, III...)	See Sample Below

Here is a sample pedigree showing 3 generations:
What are the relationships between...

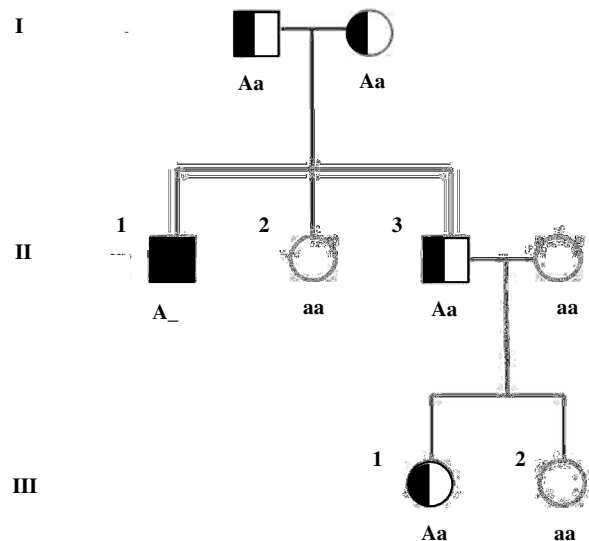
A. **Female Generation I and Male (1) Generation II**

Mother and Son

B. **Female Generation I and Female (2) Generation III**

C. **Male (3) Generation II and Female (2) Generation II**







D. **Male (1) Generation II and Female (1) Generation III**



Now that you have had a chance to familiarize yourself with a pedigree chart, you will now apply what you have learned about genetics in the construction of pedigrees for the characters in the "Harry Potter" series.

Muggle or Magic: A Human Pedigree Activity

Assume that magical ability (m) is a recessive to non-magical ability (M). A person without any magical abilities is also known as a muggle. Use the key below to answer the questions.

Witch	
Wizard	
Muggle	   

- If Mr. and Mrs. Weasley are a wizard and a witch, whose parents were wizards and witches also, what are their genotypes?

Mr. Weasley _____ Mrs. Weasley _____

- What must be the genotype of all of their children (Bill, Charlie, Percy, Fred, George, Ron, and Ginny)?

- Draw a pedigree for the Weasley family below. Be sure to follow all the rules for making a proper pedigree.

- Now let's look at Hermione Granger's family. Hermione is a witch but her parents are both muggles. What are the genotypes for the three member of the Granger family?

Mom _____ Dad _____ Hermione _____

- Draw a pedigree for the Granger family below. Use shading to indicate genotype. Be sure to follow all the rules for making a proper pedigree.

Challenge: Draw a family pedigree of three generations of Harry Potter's family on a separate sheet of paper.

Harry is a wizard. His father, James, was a wizard and his mother, Lily, was a witch. Both of Harry's dad's parents had magical abilities; however, Harry's mother's parents did not nor does her sister, Harry's Aunt Petunia. Petunia is married to Vernon Dursley and they have a son, Dudley. None of the Dursleys have magical powers. Use shading to indicate genotype. Also, write the names and genotypes below each of the circles or squares. For those who only one allele is known, write the known allele and a blank line.