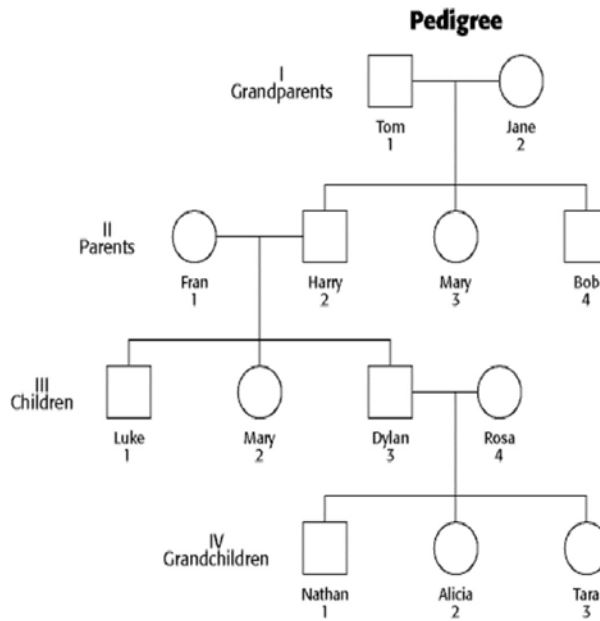


# Tracing Traits

Have you ever wondered about the traits you inherited from your parents? Do you have a trait that neither of your parents has? In this project, you will develop a family tree, or pedigree, similar to the one shown in the diagram below. You will trace an inherited trait through a family to determine how it has passed from generation to generation.

## PROCEDURE

- The diagram at right shows a family history. On a separate piece of paper, draw a similar diagram of the family you have chosen. Include as many family members as possible, such as grandparents, parents, children, and grandchildren. Use circles to represent females and squares to represent males. You may include other information, such as the family member's name, birth date, or picture.



- Use table below to record data about your family. Survey each of the family members shown in your family tree. Ask them if they have hair on the middle segment of their fingers. Write each person's name in the appropriate square. Explain to each person that it is normal to have either trait. The presence of hair on the middle segment is the dominant form of this trait.

		Family members with the dominant trait	Family members with the recessive trait
<b>Dominant trait</b>	<b>Recessive trait</b>		
Hair present on the middle segment of fingers (H)	Hair absent on the middle segment of fingers (h)		

**Tracing Traits *continued***

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3. Trace this trait throughout the family tree you diagrammed in step 1. Shade or color the symbols of the family members who demonstrate the dominant form of this trait.

**ANALYZE THE RESULTS**

1. What percentage of the family members demonstrate the dominant form of the trait? Calculate this by counting the number of people who have the dominant trait and dividing this number by the total number of people you surveyed. Multiply your answer by 100. An example has been done below.

**Example:** Calculating percentage

$$\frac{10 \text{ people with trait}}{20 \text{ people surveyed}} = \frac{1}{2}$$

$$\frac{1}{2} = 0.50 \times 100 = 50\%$$

- 
2. What percentage of the family members demonstrate the recessive form of the trait? Why doesn't every family member have the dominant form of the trait?
- 
3. Choose one of the family members who demonstrates the recessive form of the chosen trait. What is this person's genotype? What are the possible genotypes for the parents of this individual? Does this person have any brothers or sisters? Do they show the dominant or recessive trait?

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Tracing Traits *continued***DRAW CONCLUSIONS**

4. In the space below, draw a Punnett square like the one at right. Use this to determine the genotypes of the parents of the person you chose in step 3. Write this person's genotype in the bottom right-hand corner of your Punnett square. **Hint:** There may be more than one possible genotype for the parents. Don't forget to consider the genotypes of the person's brothers and sisters.

	Father	
	?	?
?		
?		

# Tracing Traits

## Teacher Notes

### TIME REQUIRED

Two 45-minute class periods, separated by several days so students have time to complete their surveys

### LAB RATINGS

Teacher Prep–1  
 Student Set-Up–1  
 Concept Level–2  
 Clean Up–1

Easy ← 1 2 3 4 → Hard



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### LAB NOTES

Family histories will vary. Encourage students to include at least three generations in their histories.

Survey results will vary. Make sure that students actually surveyed each family member who was available. Responses will vary. You may check family members with shaded symbols against the survey results for accuracy.

Percentages will vary. A family member may receive a recessive allele from the father and a recessive allele from the mother. In such a case, this family member will exhibit the recessive form of the trait rather than the dominant form. Because so many children are adopted or live in foster homes or group homes, please emphasize to your students that they may choose any family to study.