

Developing Hypotheses

Take a Class Survey

In this lab, you'll explore how greatly traits can vary in a group of people—your classmates.

Problem

Are traits controlled by dominant alleles more common than traits controlled by recessive alleles?

Materials

mirror (optional) PTC paper

Procedure

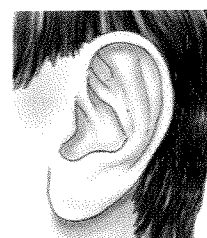
Part 1 Dominant and Recessive Alleles

- Write a hypothesis reflecting your ideas about the problem question. Then copy the data table.
- For traits A, B, C, D, and E, work with a partner to determine which trait you have. Circle that trait in your data table.

- For trait F, wash and dry your hands. Taste the PTC paper your teacher gives you. Circle either "can taste PTC" or "cannot taste PTC" in your data table. **CAUTION:** Never taste any substance in the lab unless directed to by your teacher.
- Count the number of students who have each trait. Record that number in your data table. Also record the total number of students.

DATA TABLE			
Total Number _____			
Trait 1	Number	Trait 2	Number
A Free ear lobes		Attached ear lobes	
B Hair on fingers		No hair on fingers	
C Widow's peak		No widow's peak	
D Curly hair		Straight hair	
E Cleft chin		Smooth chin	
F Can taste PTC*		Cannot taste PTC*	

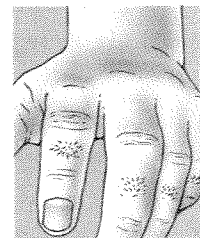
*PTC stands for phenylthiocarbamide.



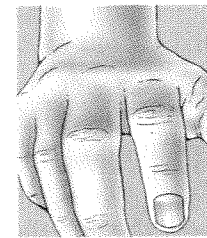
Free ear lobe



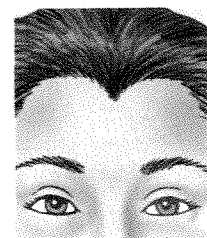
Attached ear lobe



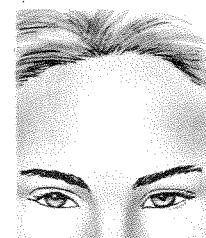
Hair on fingers



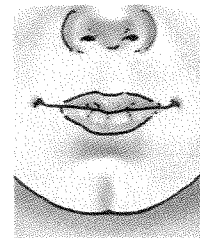
No hair on fingers



Widow's peak



No widow's peak



Cleft chin



No cleft chin

Part 2 Are Your Traits Unique?

- Look at the circle of traits below. All the traits in your data table appear in the circle. Place the eraser end of your pencil on the trait in the small central circle that applies to you—either free ear lobes or attached ear lobes.
- Look at the two traits touching the space your eraser is on. Move your eraser onto the next description that applies to you. Continue using your eraser to trace your traits until you reach a number on the outside rim of the circle. Share that number with your classmates.

- How many students ended up on the same number on the circle of traits? How many students were the only ones to have their number? What do the results suggest about each person's combination of traits?
- Think About It** Do your data support the hypothesis you proposed in Step 1? Explain your answer with examples.

Design an Experiment

Do people who are related to each other show more genetic similarity than unrelated people? Write a hypothesis. Then design an experiment to test your hypothesis.

Analyze and Conclude

- The traits listed under Trait 1 in the data table are controlled by dominant alleles. The traits listed under Trait 2 are controlled by recessive alleles. Which traits controlled by dominant alleles were shown by a majority of students? Which traits controlled by recessive alleles were shown by a majority of students?

