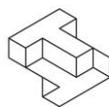


# Who has the gene?

Lab Related Activity: *DNA and Genetics*



**The Tech**  
Museum of Innovation

201 S. Market St.  
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thetech.org

This activity is meant to extend your students' knowledge of the topics covered in our DNA and Genetics lab. Through this activity, your students will be able to test their family for the PTC taster gene and compare to themselves.

**Grade Level: 7-12**

**Estimated time: 20 minutes**

## Student Outcomes:

1. Students will be able to determine the possible PTC gene combinations of their family members and themselves.

### **Next Generation Science Standards**

#### ***Disciplinary Core Idea***

**Grades 6-8:** LS3.A Inheritance of Traits

### **Common Core ELA Standards**

**Grades 6-12:** Writing W.7; *Speaking and Listening* SL.1b-e

### **California State Science Standards**

#### ***Biology/Life Sciences:***

**Grade 7:** 7.2.b-e; **Grades 9-12:** 2.e, g; 3.a

#### ***Investigation and Experimentation:***

**Grade 7:** 7.7.a; **Grade 8:** 8.3.a;

**Grades 9-12:** 1.a, d

## **Vocabulary**

*Familiarity with these terms and concepts will enhance students' experience in the activity*

- DNA (deoxyribonucleic acid): The genetic material of living organisms, located in the chromosomes of each cell; the "blueprint" or "recipe" for life.
- Gene: The basic physical unit of heredity.
- PTC (Phenylthiocarbamide): a chemical compound that tastes either very bitter or no taste depending on the genetic makeup of the individual.
- Trait: A genetically determined characteristic or condition, like hair-color, dimples, or sex.

## **Materials:**

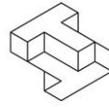
- PTC paper strips (provided by The Tech Museum)
- PTC worksheet (provided by The Tech Museum)

## **Procedure:**

1. This activity is meant to be performed individually by the student with his or her family. Results should be brought back to the classroom for further analysis.
2. Cut the PTC strip into small pieces; enough for each family member being tested.
3. Have each family member put the piece of PTC paper on their tongue for 5 seconds. Family members should record their reaction on the form provided.
4. Based on family member's responses and personal response, students should be able to determine what their PTC gene combination is as well as their family members'.
  - Taste for PTC is a dominant gene.
  - No taste for PTC is a recessive gene.

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## Extended Learning:

- Are you a Super Taster? Super tasters are people who have more taste buds on their tongue than most other people. This means that food flavors are significantly stronger for Super Tasters than most others. Does broccoli taste so bitter it makes you cringe? Is ice cream so sweet it's like eating a spoonful of pure sugar? Then you might be a Super Taster. Take the following test to find out!

## What you need:

- cotton swab
- blue food coloring
- plastic reinforcement ring (used in three hole binders)
- mirror

## What to do:

1. Dab blue food coloring on the tip of your tongue with the cotton swab.
2. Place the plastic reinforcement ring on the tip of your tongue.
3. Look in the mirror. Count the number of pink bumps you see inside the ring. The bumps are the fungiform papillae. Each one contains hundreds of taste buds! If you count more than 25 bumps inside the ring, you're a supertaster!