Genes & Supertasters, Teacher Resource

Topic	Coverage
Goals	1. Understand that our taste likes and dislikes come from our genetics and that taste and smell are important to our survival. 2. Identify supertasters and non-tasters and how they experience food differently. 3. Understand how Miraculin can enhance flavors and help nontasters experience a wider range of flavors. 4. Conduct a simple experiment to determine if they are a supertaster, nontaster, or normal. 5. Formulate a hypothesis and test it using the materials provided. 6. Use observation and record their thoughts and reactions to the experiment.
Why do we like certain foods over others?	Our taste likes and dislikes stem from our genetics. Our caloric needs and meal size preferences also come from our genetic makeup. Do you like cilantro or does it taste soapy? This taste comes from your genetics, specifically it is a variation in your smell genes. We are born with taste preferences, unlike smell that needs to be developed and learned.
Why is taste important to life?	In ancient times and today, taste is an indicator of life or death. Taste helped our ancestors distinguish between spoiled and toxic foods, indicating fluids, and energy needs in our body.
What are supertasters?	• **Supertasters** are people who have strong likes or dislikes for different foods because they experience stronger flavors. They often have the PAV genotype and are more sensitive to bitter foods and have more taste buds. • **Non-tasters** are people who have low likes and dislikes for different foods because they are less sensitive to flavors. They have the AVI genotype. This is where the cilantro debate comes into play. • https://www.youtube.com/watch?v=W7Pzhvypg9A Taste buds by count: • Normal: 15-30 • Supertaster: > 30 • Nontaster: < 15

How can a nontaster become a supertaster?	A nontaster can heighten their senses with Miraculin. This protein enhances the flavors of every food they consume. Those who are less sensitive or unable to taste the spectrum of flavors can now understand why supertasters have such strong food choices. Those who are nontasters can often be less satisfied with meals compared to supertasters. For example desserts. When your body detects something sweet, the brain gets the feeling of satisfaction and ending of a meal, similar to dessert after the main course. With nontasters, they may still want some more sweets.

Experiment: Students will test if they are a supertaster, nontaster or normal.

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Hypothesis	Hypothesis: if _____, then _____ Have students write their hypothesis on how many taste buds they think they will have and which kind of taster they are
Materials Needed	1 Blue Regular Lollipop, blue is the best color to show your taste buds. You can also use blue food coloring 1 Sour Lollipop or any sour candy 3-hole punched paper - Scissors - Magnifying glass or phone camera 1 mberry Miracle Fruit Tablet
Procedure Part One	1. Get in groups of two and one person completing this at a time 2. Begin eating blue lollipop or add a couple drops of food coloring to their tongue and have them spread with a finger 3. Cut a square around your hole on your paper, this will serve as the specific area they need to count 4. Once your tongue is entirely blue, put the piece of paper on your tongue towards the front 5. Have their partner count the amount of taste buds they have in that circle. They made need tissues because of drool 6. Switch turns!
Procedure Part Two	1. Open your sour lollipop/candy and see how sour it truly is by tasting 2. Open and place an mberry tablet on your tongue and use it similar to a mint. Be sure to move the tablet all around your tongue for a few minutes until dissolved or soft to chew 3. Now they can taste their sour candy/lollipop 4. Have them record their thoughts and reactions