Name: _____ Date:_____

Proteins & Miraculin

What elements are in a protein? _____

_____

What different types of proteins are there? List at least 3 _____

_____

Explain the functions of enzymes in the body. _____

_____

Experiment:

You are a scientist who has discovered a new protein in the West African fruit known as the Miracle Berry. This protein, called miraculin, has the unique ability to change the way we taste foods.

What questions would you ask about the properties of miraculin, and why?: _____

_____

_____

What methods/techniques would you use to analyze the structure & function of miraculin?

_____

_____

Materials Needed:

- 2 spoons
- 2 slices of lemon or 1 teaspoon lemon juice
- 2 slices of grapefruit
- 3 drops of Tabasco
- 2-3 salt & vinegar chips
- 1 packet of ketchup
- 1 packet of yellow mustard
- 1 teaspoon of apple cider vinegar
- 1 mberry Miracle Fruit Tablet
- 1 paper plate

Procedure:

1. Begin by tasting each food once to remember their original flavors
2. 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. Begin re-tasting each food and recording changes in flavor below

Food	Compare & contrast each food item tasted
Lemon	
Grapefruit	
Tabasco	
Salt & Vinegar Chips	
Ketchup	
Mustard	
ACV	

Conclusion: What are some observations you can conclude about the Miracle Berry based off of your experiment?

_____

_____

_____

_____

Based on your understanding of the chemical properties of Miraculin and its interaction with taste receptors, how do you think Miraculin works at a cellular and molecular level? Explain your answer using information from the teacher's resource and your experiment.

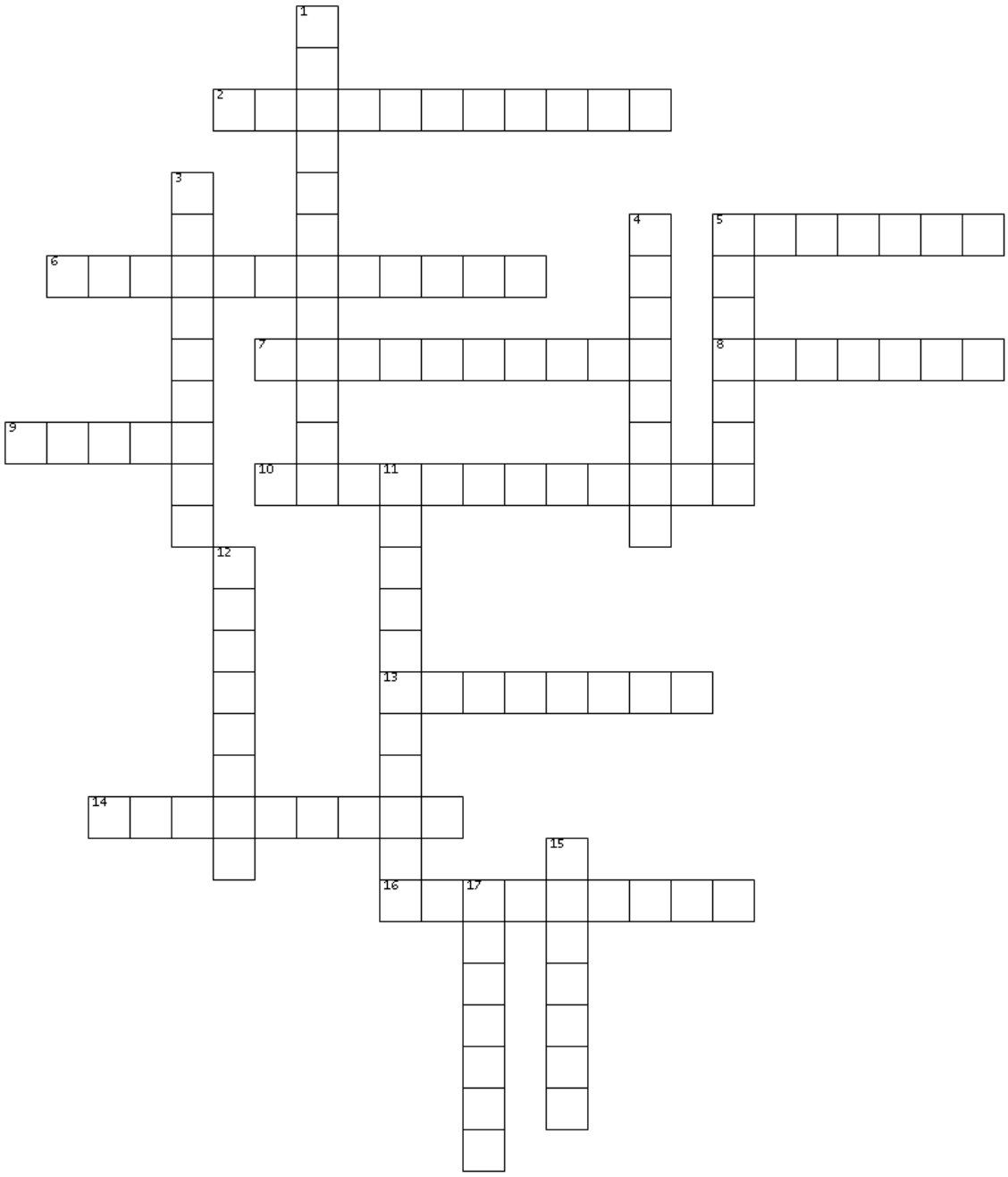
Design an experiment to test the effects of Miraculin on a different food or beverage of your choice. Include a hypothesis, materials list, procedure, and expected results. How do you think the taste of the food or beverage will change after the introduction of Miraculin? What implications could this have for the food industry or for individuals with taste disorders?

Hypothesis:

Materials Needed:

Procedure:

Expected Results:



Use the clues to fill in the words above.
Words can go across or down. Letters are shared when the words intersect.

ACROSS

2. _____ amino acids that are used when there is foreign cells in the bloodstream
5. Only made up of nitrogen, carbon, oxygen, and hydrogen
6. The fruit that has Miraculin
7. Functions include new cell growth and decrease bone loss, a protein
8. _____-stimulating hormones is a function of a glycoprotein
9. Acid Used to build proteins
10. Only made up of carbon, hydrogen, and oxygen
13. Fights against foreign cells in the body, a protein
14. The protein that changes flavors
16. ____ amino acids that can only come from food

DOWN

1. _____ amino acids that can come from food or be created by the body
3. Moves molecules in the body, a protein
4. Is an example of a glycoprotein
5. organic compound needed to live life
11. Responsible for muscle movements, a protein
12. Controls growth and hormones, a protein
15. Needed to live life, a protein
17. Stores amino acids around the body, a protein