

How do we experience food?

Concepts: 1) Tastebuds as molecule receptors.

2) Saliva's role in taste (bringing molecules to tastebuds).

3) Smell's role in taste.

1) Introduction in small groups

Ask the students- How do we experience food? If they are confused by this question, ask them which sense or senses do we use?

Someone should say taste.

Tell them that today we are going to learn a little more about how we taste by conducting experiments and recording our results in a chart.

2) Experiment One: Saliva (spit) and Taste

Supplies:

Picture of taste receptor for discussion.

Tongue picture

Paper towels

Q-tips

Bits of cookie, pretzels, pirate booty in baggie for each explorer

1 cup of water/explorer

For the brave there will also be coffee powder, cinnamon, curry powder, cocoa powder, salt, mustard powder, Accent (MSG)

Vocabulary: molecule, saliva, dissolve, taste receptor

Ask your explorers if they know "how" we taste. If they want to explore- go with them.

Go through the picture provided with your explorers to follow the path flavor molecules take. (You can take some time to discuss what a molecule is). It may help to describe a child's sorting toy. Our taste buds contain taste receptors which are like the holes and the food molecules are like the shapes.

Ask the students how they think the food molecules get to the taste buds? (Don't give the answer away if they don't guess it. You will ask this again.)

Ask: How many different types of tastes are there? It may be fun to list them. You can tell them right now scientist have confirmed five, however some believe their may be a 6th one related to fat.

Bitter, Salty, Sweet, Sour, Umami (glutamate such as in MSG- we have this to try-Accent)

Explain that we are going to do an experiment to learn about how saliva (spit) contributes to taste. We are also going to experiment with smell.

Explain the procedure before starting:

- 1) Dry tongue with a paper towel.
- 2) Place larger food item on tongue OR using a q-tip rub some powder on their tongue.
- 3) Record taste observation in chart.
- 4) Eat/spit out food, rinse with water and dry tongue.
- 5) Repeat holding nose shut. (We will discuss this further)
- 6) Try 3-5 foods.

Go through the taste chart BEFORE starting so they understand how to record their data.

Discussion: Looking at all their data, what conclusions can the students draw about the role of saliva and smell in taste? Why? (Saliva dissolves the food so small molecules can reach the taste receptors. It turns out we have MANY more smell receptors than taste receptors. Humans can distinguish 10,000 smells while only 5 tastes!)

3) Can you tell the difference between an apple and potato without your nose?

Supplies:

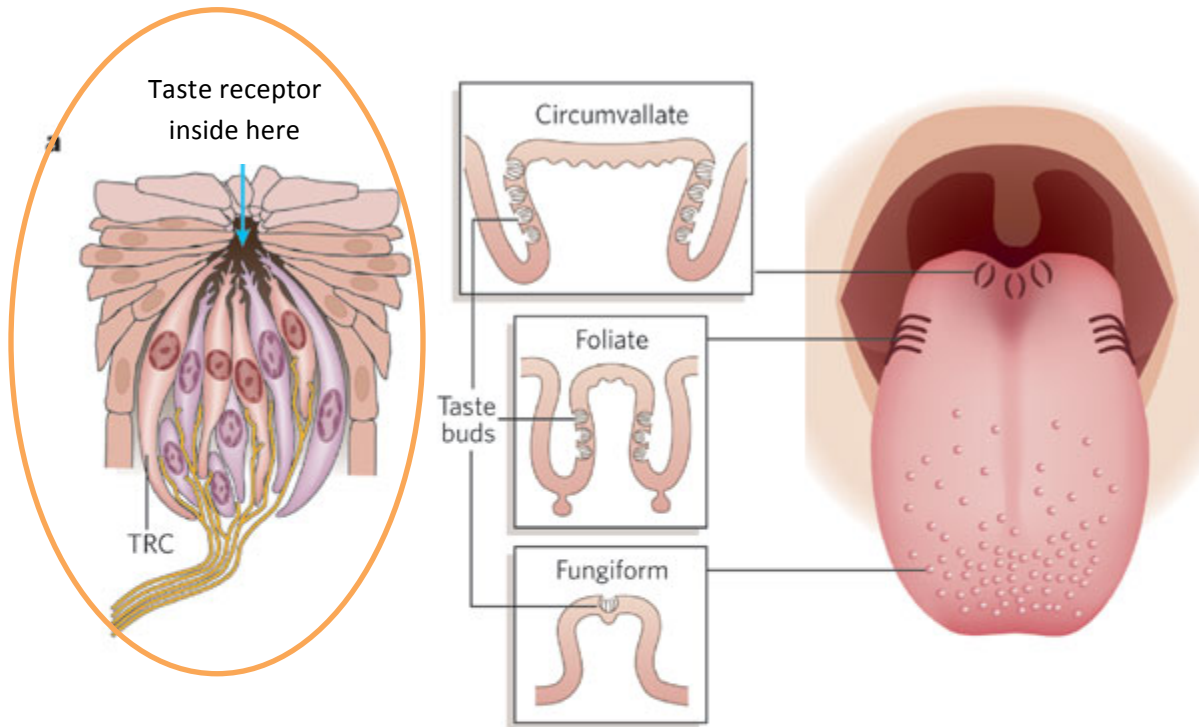
cut up potato (I may bring a different, juicier root vegetable called yacon)

cut up apple

lifesavers

- 1) Have students close their eyes to mix up the pieces. Have them hold their nose and eat them. Can they tell the difference? Have them repeat without holding their nose.
- 2) Tell the explorer they are next going to try to guess the flavor of a lifesaver. With their nose held and eyes shut you will hand them a lifesaver. Ask them immediately what the flavor is. Have them suck for a minute and then ask them if they can now guess the flavor. If they are able to eventually guess what it is, ask them why. We don't know "why" from the experiment, but what is happening is that molecules are making it up their nose through their throat!

Taste Bud



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