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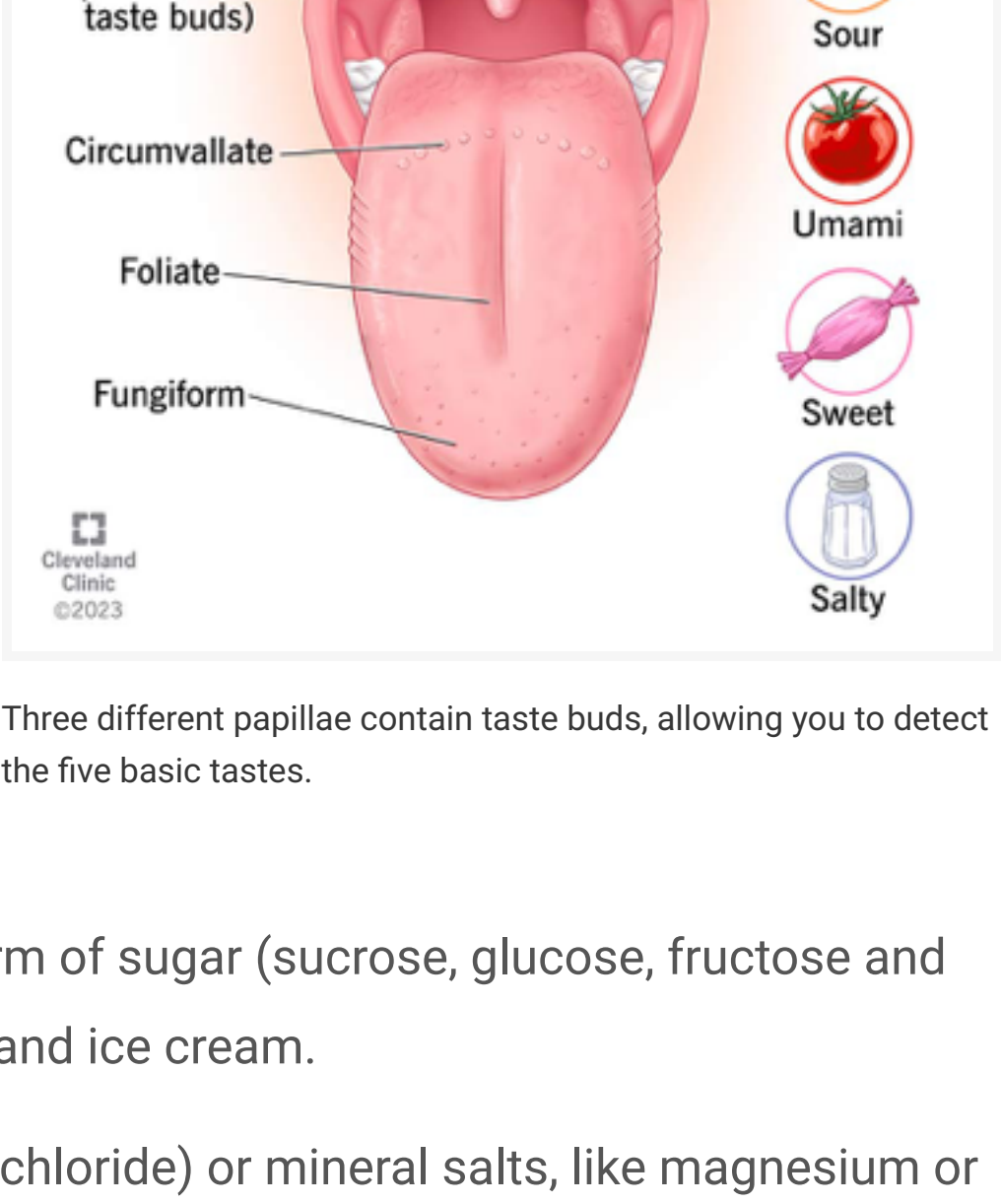
Taste Buds

Taste buds are cells on your tongue that allow you to perceive tastes, including sweet, salty, sour, bitter and umami. Taste buds regenerate approximately every 10 days, which means injured taste buds usually repair on their own.

Overview

What are taste buds?

Taste buds are tiny sensory organs that allow you to experience taste. They're located inside the tiny bumps covering your [tongue](#) called papillae. Taste buds let you know what you're eating and drinking and whether it tastes "good" or "bad." This information makes eating pleasurable, which helps keep your body nourished. Your taste buds also alert you when something isn't safe to consume, like spoiled milk or rotten meat.



What tastes can taste buds detect?

Taste buds detect five basic tastes, including:

- Sweet:** Sweet foods mostly contain some form of sugar (sucrose, glucose, fructose and lactose). They include foods like honey, fruit and ice cream.
- Salty:** Salty foods contain table salt (sodium chloride) or mineral salts, like magnesium or potassium. Think of foods like pretzels, chips and movie theater popcorn.
- Bitter:** Bitter foods may contain ingredients like caffeine or compounds from plants, among others. Bitter is a complex taste regarding whether your taste buds recognize it as "good" or "bad." For example, some people like bitter foods, like coffee and dark chocolate, while others don't.
- Sour:** Sour foods, like citrus fruits and vinegar, often contain some form of acid (acetic acid, citric acid, lactic acid).
- Umami:** Umami is a savory, rich or meaty flavor. Many foods that your taste buds register as umami contain a substance called glutamate. Umami foods include tomatoes, asparagus, fish, mushrooms and soy.

Your taste buds experience these tastes in various combinations, making your experience of food and drink all the more complex. For example, taste buds may register a food as mostly sweet but also salty and umami. Or, a drink may taste mostly bitter but also sweet.

Function

What do taste buds do?

Taste buds work with the olfactory receptors in your [nose](#) to allow you to experience flavor. When you chew food, your [teeth](#) and the saliva in your mouth work together to break it down. This breakdown releases chemicals from the food that flow to your taste buds. These chemical signals also travel up your nasal passages to receptors in your nose. Together, these signals from your nose and mouth allow you to experience flavor. Think of, for instance, how holding your nose doesn't prevent you from tasting something, but it can change the flavor or dampen its intensity.

Other cells in your mouth and throat contain receptors that register how hot or cold a food or drink is. "Hot" includes temperature and spice. "Cold" includes temperature and certain flavor sensations, like mint or eucalyptus.

Multiple sensitive cells work together to shape your experience of eating and drinking.

Anatomy

How many taste buds do humans have?

The average adult has anywhere from 2,000 to 10,000 taste buds. We lose taste buds as we age, which means that children have more taste buds than adults. Sizes and numbers of taste buds vary from person to person.

These differences mean that, although everyone detects the same five tastes, perceptions and experiences of these tastes vary.

How big is a taste bud?

Taste buds come in different sizes. On average, they have a diameter of about one-thirtieth of a millimeter and a length of one-sixteenth of a millimeter.

Where are taste buds located?

Taste buds primarily cover your tongue. To a lesser extent, you also have taste buds on the roof of your [mouth](#) and in your throat. The taste buds on your tongue are housed inside visible bumps called papillae. There are three types of papillae that contain taste buds:

- Fungiform:** Located on the sides and tip of your tongue. They contain approximately 1,600 taste buds.
- Circumvallate:** Located on the back of your tongue. They contain approximately 250 taste buds.
- Foliate:** Located on the back portion of your tongue, on each side. There are about 20 of these papillae, and they contain several hundred taste buds each.

It's a common misconception that your tongue contains taste zones, or specific regions devoted to just one taste. Instead, taste buds that detect sweet, salty, bitter, sour and umami are scattered throughout your tongue. Some parts of your tongue are a bit more sensitive to certain tastes.

For example, taste buds on the back of your tongue are especially sensitive to bitter tastes. This is likely an evolutionary feature. Toxic substances often contain compounds your taste buds register as bitter and unpleasant. Identifying something as unpleasant (and potentially hazardous) before you swallow can save your life.

What do taste buds look like?

Imagine a collection of cells arranged like a peeled orange or rosebud. At the top of the rosebud, a slight opening called a taste pore allows food and drinks to come into contact with the cells inside that detect taste.

What is the structure of a taste bud?

A taste bud is a collection of cells grouped inside the bumps on your tongue called papillae. A taste bud includes:

- Taste receptor cells:** Each taste bud has between 50 to 150 taste receptor cells. These cells contain receptors that extend upward inside the taste pore. These extensions are taste hairs called microvilli. The microvilli come into contact with the chemicals in the food and drink you consume. Taste receptor cells connect to nerves that transmit taste signals to your brain. Your brain registers the chemical that came into contact with the receptor as sweet, salty, etc.

- Basal cells:** These cells are stem cells that eventually become taste receptor cells. Your body replaces taste receptor cells approximately every 10 days.

- Supporting cells (sustentacular cells):** These cells are scattered throughout your taste buds alongside taste receptor cells. Although they're in your taste buds, they can't detect taste.

How often do taste buds change?

Basal cells develop into new taste receptor cells every week or two (10 days on average). Our taste buds decrease as we age, which means that your perception of taste changes at different stages of life. The foods you love as an adult may differ from those you love as a child. Similarly, taste perception changes as you transition through adulthood.

Conditions and Disorders

What common conditions and disorders affect your taste buds?

A group of conditions called taste disorders changes your sense of taste. They include:

- Ageusia:** Complete loss of taste.
- Dysgeusia:** Distorted sense of taste.
- Hypergeusia:** Increased sense of taste.
- Hypogeusia:** Reduced sense of taste.
- Phantom taste disorder:** Unpleasant taste that lingers even when there's nothing in your mouth.

In addition, any of the following can affect your taste buds, causing food to taste differently:

- Infections in your mouth or throat, including [gingivitis](#).
- Inflammation in your mouth.
- A deficiency of [vitamin B12](#) or zinc.
- Metabolic disorders, including [diabetes](#) or [hypothyroidism](#).
- Neurological disorders, including [Parkinson's disease](#) and [multiple sclerosis](#).
- Nerve damage.
- [GERD \(chronic acid reflux\)](#).
- Smoking or chewing tobacco.
- Heavy alcohol consumption.
- Certain medications, including [chemotherapy](#).
- [Dry mouth](#).
- A [burned tongue](#).
- A [swollen taste bud](#).

Care

How can I keep my taste buds healthy?

The good news is that your taste buds repair and regenerate regularly. Injured taste buds usually heal on their own. Still, repeated damage — from frequent infections and smoking — can prevent your taste buds from healing and impact your sense of taste.

To prevent injuring a taste bud:

- Don't use tobacco products.
- Limit alcohol consumption.
- Take good care of your teeth, gums and tongue ([oral hygiene](#)).
- Allow foods to cool before eating them.
- Don't put anything frozen directly onto your tongue.

A note from Cleveland Clinic

Taste buds are tiny sensory organs with a huge job. Along with sensors in your nose, they allow you to experience flavor. If you've injured a taste bud, chances are it'll repair in a week or two so you can enjoy food again. In the meantime, prevent injury by allowing foods and drinks to cool before eating or drinking. Avoid using tobacco products, which can cause long-term damage to your taste buds.



Medically Reviewed

Last reviewed on 02/07/2023.

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