

Taste/gustation

Taste

- chemical sense-chemoreceptors
- allows one to separate undesirable or lethal foods from those that are nutritious.

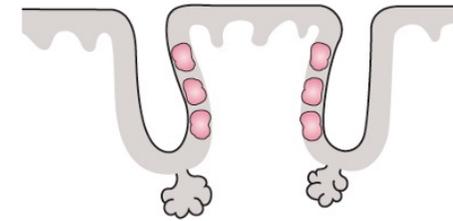
TASTE BUDS

- Present on the papillae of tongue.
- In the mucosa of epiglottis, palate, pharynx and the proximal part of esophagus.
- adults have 3-10,000 buds.
- children have more.
- beyond age 45 taste buds start to degenerate
taste becomes less critical.

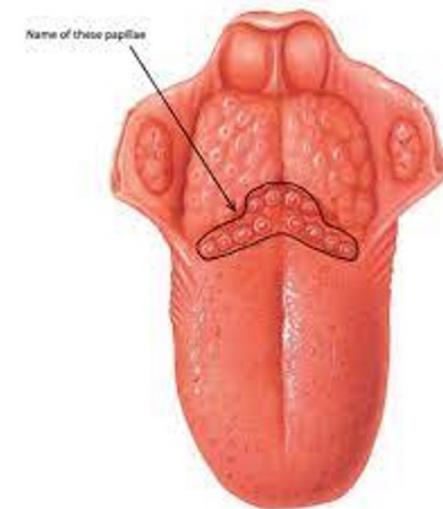
TASTE BUDS

Circumvallate Papillae

- ✓ large
- ✓ posterior part of tongue
- ✓ many in number.
- ✓ arranged in the shape of 'V'.
- ✓ Each papilla contains many taste buds (up to 100).



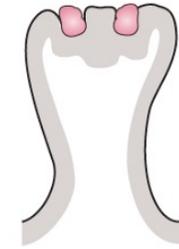
Circumvallate



TASTE BUDS

2. Fungiform Papillae

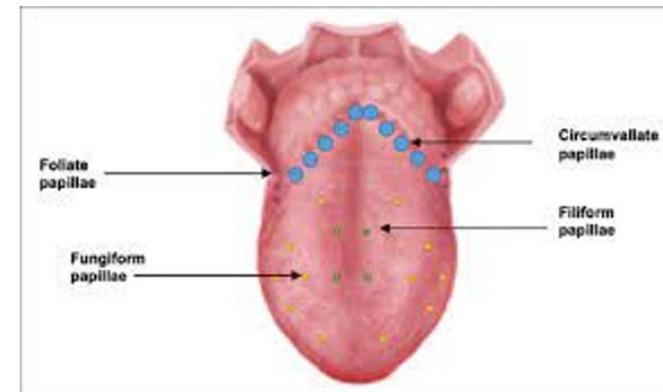
- ✓ round in shape
- ✓ over the anterior surface of tongue near the tip.
- ✓ moderate number of taste buds



Fungiform

3. Filiform Papillae

- ✓ small
- ✓ conical-shaped
- ✓ Dorsum of tongue
- ✓ Few numbers of taste buds



TASTE BUDS

4. Foliate papillae

- Lateral surfaces of the tongue
- Moderate numbers of taste buds

Additional taste buds

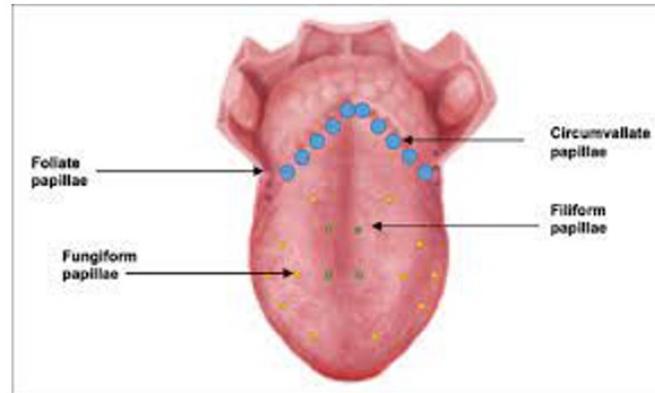
Palate

tonsillar pillars

Epiglottis

proximal

esophagus.

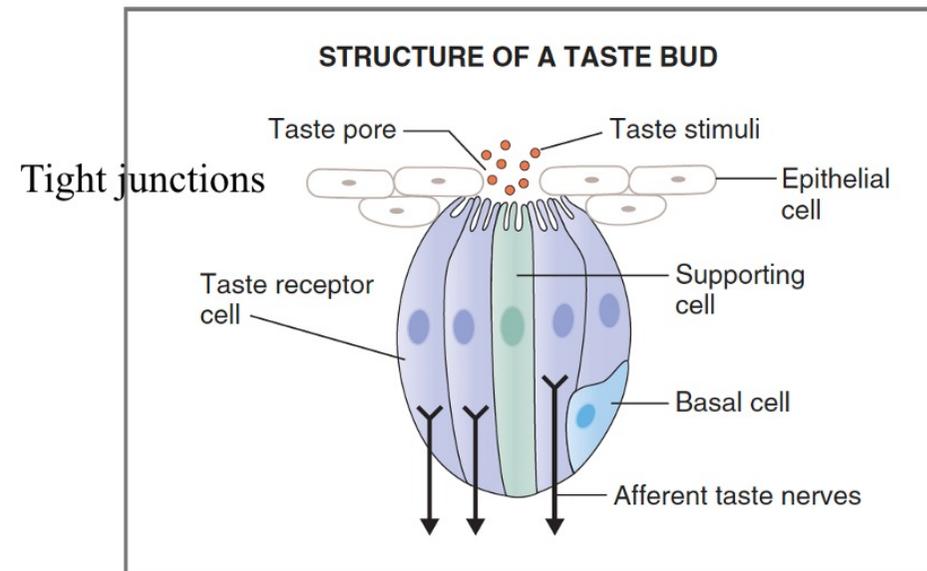


STRUCTURE OF TASTE BUD

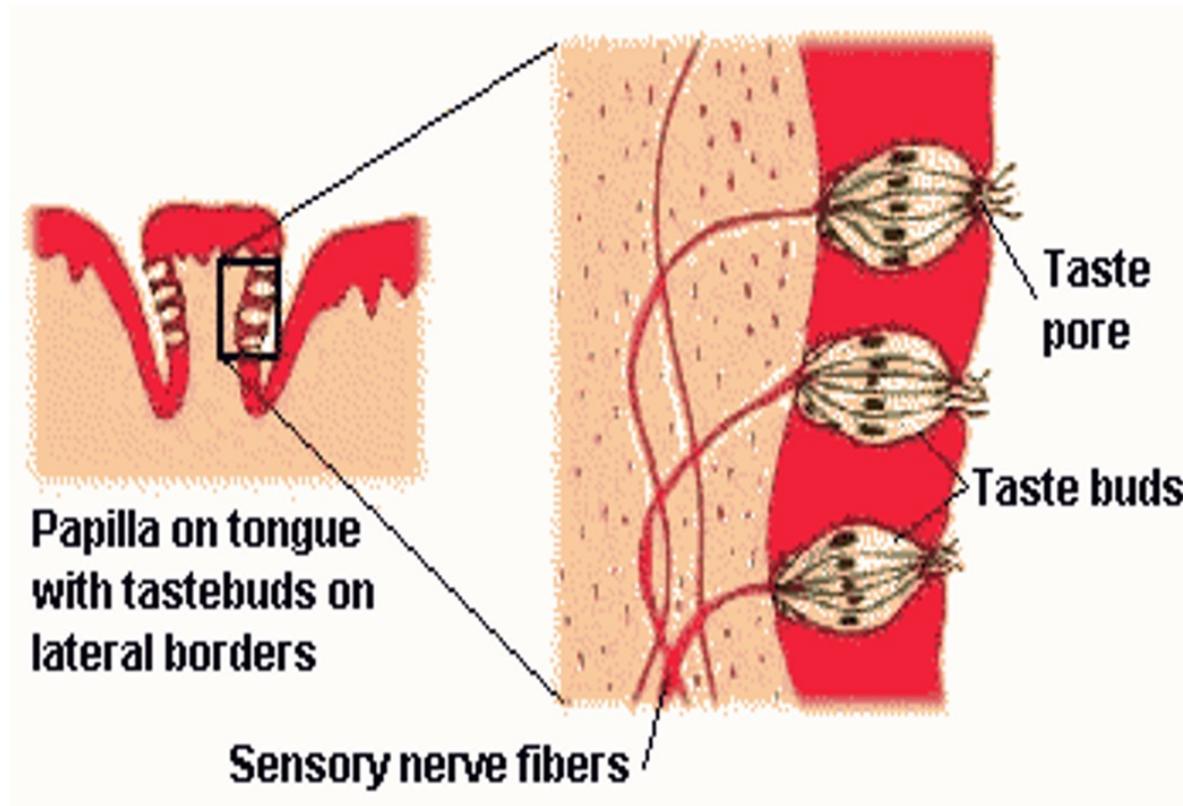
Type of Cells in Taste Bud

- Taste receptor cells (epithelial cells)-microvilli
Taste pore
- Sustentacular cells- -microvilli
- Basal cells

Cells of taste buds undergo constant cycle of growth, apoptosis and regeneration.



Taste Buds



Primary Sensation of Taste

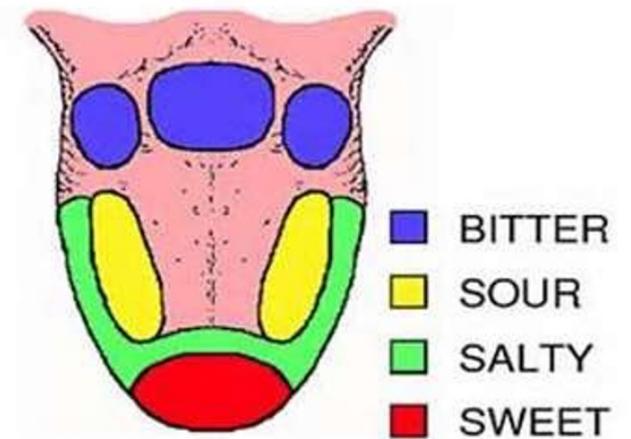
- can perceive hundreds of different tastes
- all are various combinations of the five primary taste sensations
 - sour
 - salty
 - sweet
 - bitter
 - umami
- similar to the perception of color

Taste Perception

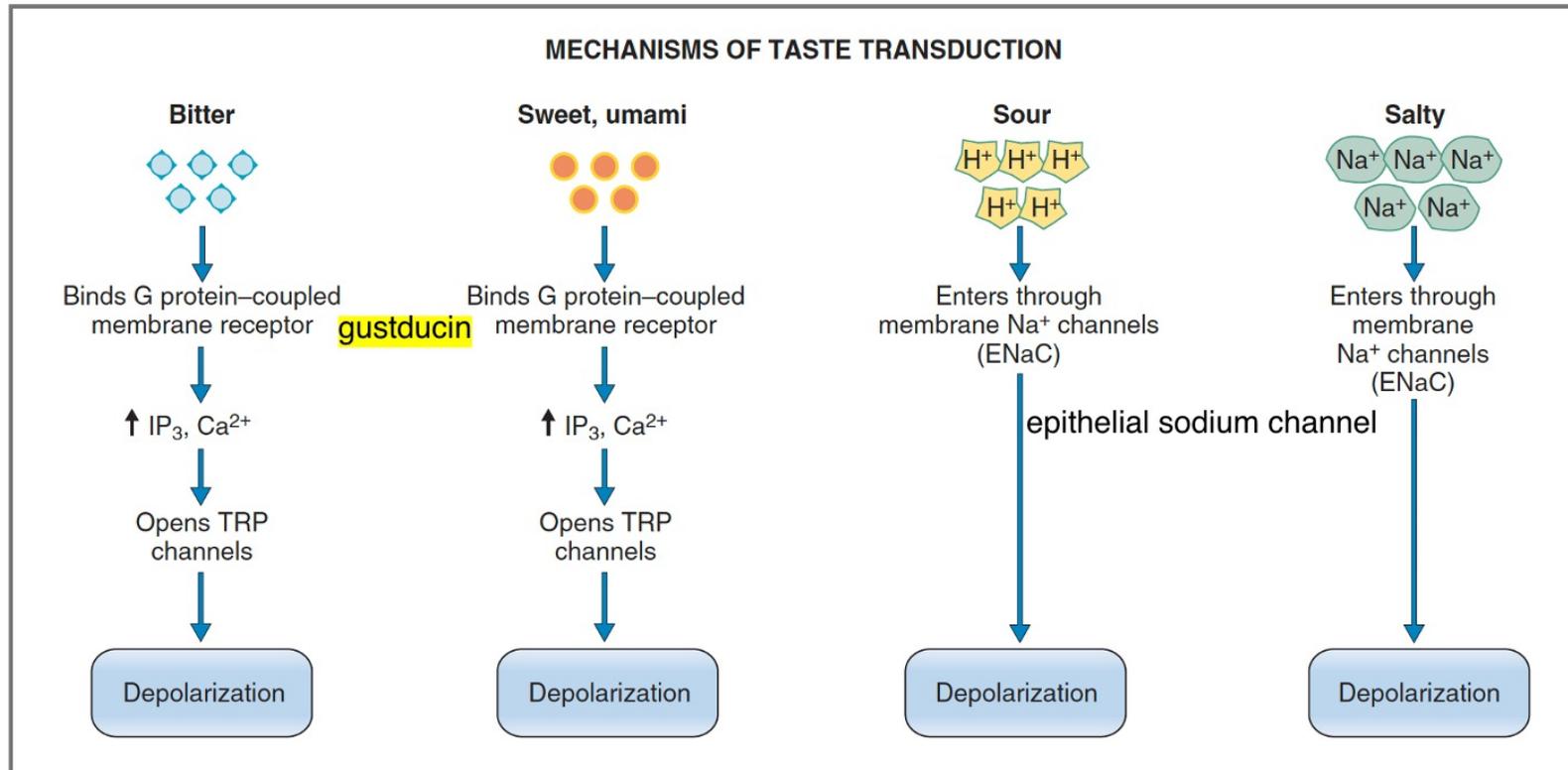
- sour
 - caused by acid concentration
- salty
 - caused by ionized salts
- sweet
 - many chemicals mostly organic compounds
- bitter
 - long chain organic substances containing nitrogen
 - alkaloids
- umami
 - glutamate

Taste Bud Facts

- **sweet and salty** buds located on the tip of the tongue.
- sour on the lateral sides of the tongue.
- bitter on the posterior tongue and soft palate.



TASTE TRANSDUCTION



change in electrical potential in the taste cell is called the receptor potential → AP in terminal endings of afferent nerve fibers

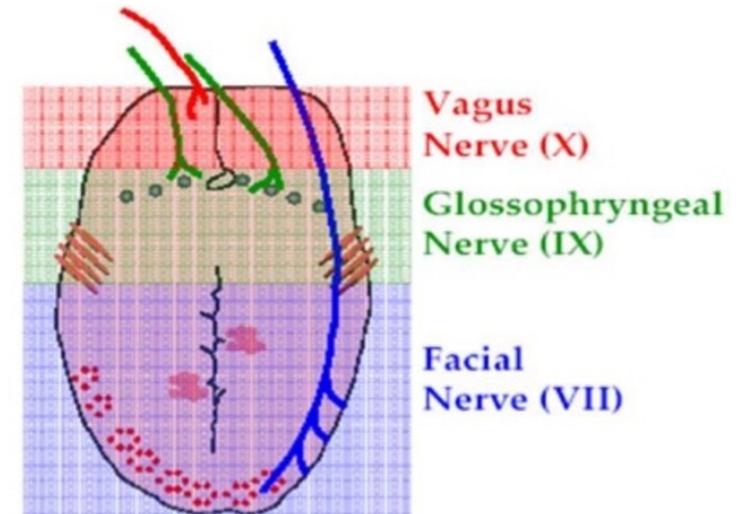
Primary modalities of taste

Responses of Taste buds:

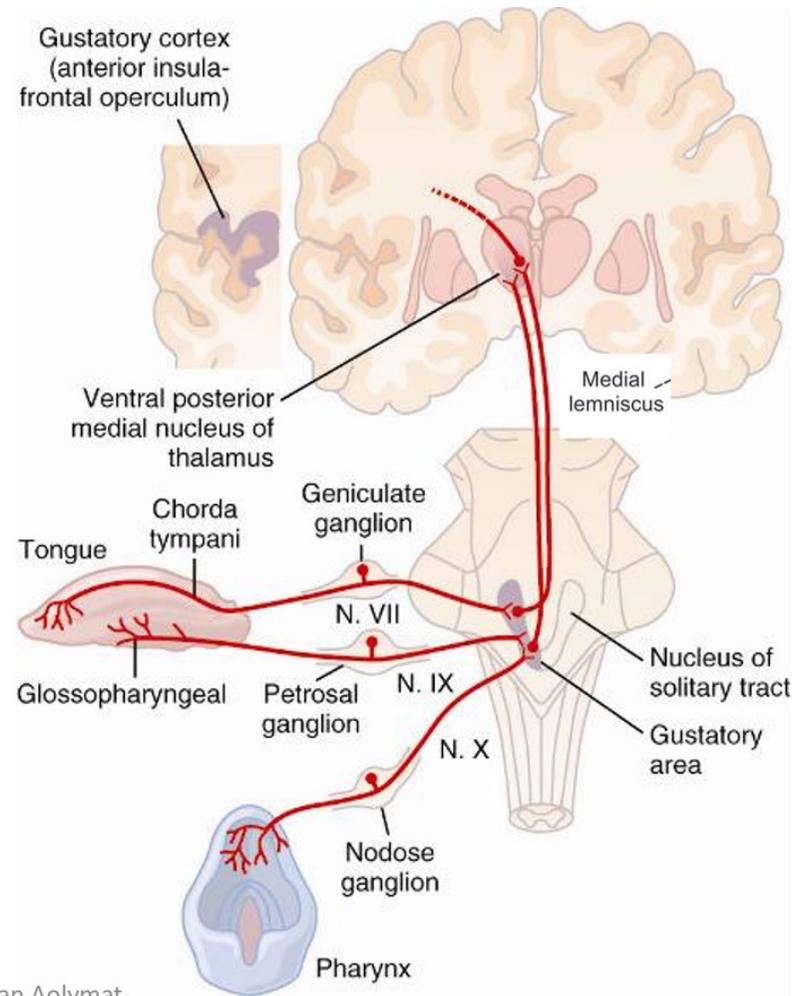
- Each taste bud responds strongly to one type of taste
- But they also respond to other tastes as well

Transmission of Taste Sensations

- activation of taste buds excite taste fibers.
- anterior 2/3 of tongue through facial nerve.
- posterior 1/3 of tongue through glossopharyngeal nerve.
- posterior aspects of the mouth through vagus nerve.
- transmitted to **solitary nucleus**.
- from solitary nucleus to **thalamus**.
- from thalamus to **cortex**.



Taste Pathways



Taste Perception

- Influenced by information derived from other receptors, especially odor
- Temperature and texture of food influence taste
- Psychological experiences associated with past experiences with food influence taste
- How cortex accomplishes perceptual processing of taste sensation is currently unknown

Adaptation of Taste

- taste sensations adapt rapidly.
- adaptation of the taste buds themselves accounts for only about 50% of the adaptation.
- central adaptation must occur but the mechanism for this is not known.

Clinical considerations

- Ageusia: Absence of sense of taste
- Dysgeusia: Disturbed sense of taste
- Hypogeusia: Diminished sense of taste
- Hypergeusia: increased sense of taste

The end