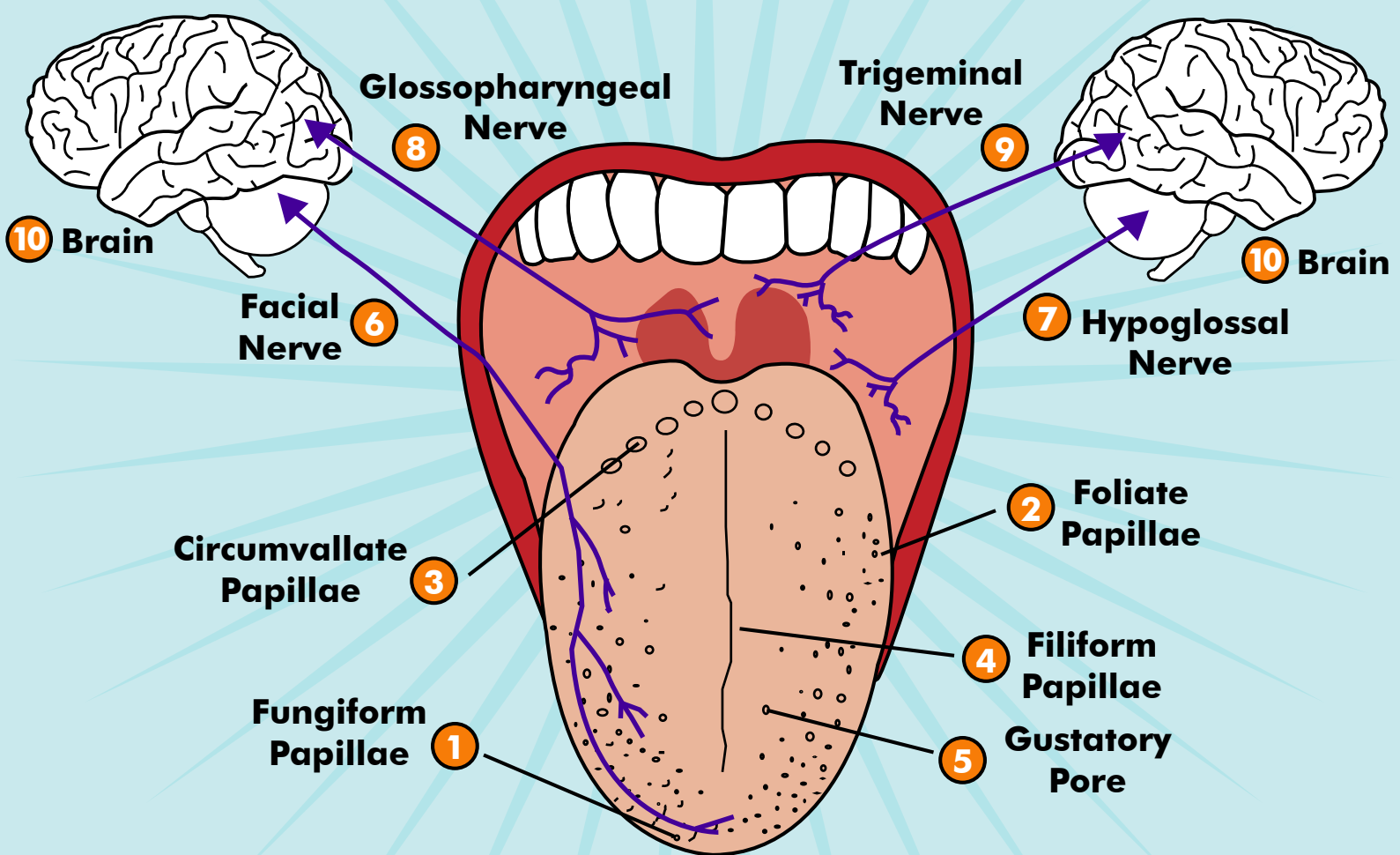


# SENSORY PROTEINS

## TASTE

The sense of taste involves the reaction of chemicals with nerve cells which send messages to the brain to create the perception of flavor.



### PROCESS OF TASTING

**Papillae (1-4):** Structures that contain taste buds and sensory cells on the tongue

- 1 Fungiform Papillae** Mushroom-shaped papillae located at the front of the tongue.
- 2 Foliate Papillae** Leaf-shaped papillae located on the side of the tongue.
- 3 Circumvallate Papillae** Papillae organized in a chevron at the back of the tongue.
- 4 Filiform Papillae** Long, thin, V-shaped papillae located on the surface of the tongue. Filiform papillae do not contain taste buds.
- 5 Gustatory Pore:** Small opening on the surface of the tongue through which molecules and ions from food enter to reach the receptor cells inside.
- 6 Facial Nerve:** Carries messages from the anterior 2/3 of the tongue.
- 7 Hypoglossal Nerve:** Carries messages from the posterior tongue.
- 8 Glossopharyngeal Nerve:** Carries messages from the throat and palate.
- 9 Trigeminal Nerve:** Carries messages relating to temperature, touch & pain.
- 10 Brain:** Perceives a particular flavor of sweet, sour, salty, bitter or umami.



#### SWEET

**Role:** Detection of carbohydrate sources of calories.

**Proteins:** TAS1R2/TAS1R3 heterodimer receptor recognizes diverse natural and synthetic sweeteners (1, 2, 5).



#### BITTER

**Role:** Detection of potentially harmful compounds.

**Proteins:** TAS2R1 functions as a bitter taste receptor. PROP controls the detection of the bitter compound 6-n-propyl-2-thiouracil (3, 4).



#### SOUR

**Role:** Detection of ripeness of fruit & potentially spoiled food.

**Proteins:** HCN1 and HCN4 are potassium channels that serve as sour taste receptors (5, 6)



#### UMAMI

**Role:** Detection of protein content in food.

**Proteins:** The TAS1R1/TAS1R3 heterodimer receptor recognizes stimuli from umami tastes, such as monosodium glutamate (5, 7).



#### SALTY

**Role:** Detection of minerals, and is essential for fluid and electrolyte homeostasis.

**Proteins:** Salty tastes are mediated by taste receptor cells expressing the epithelial sodium channel, ENaC. (5, 8).

