

# Chemical Senses



- Know the basic components of the olfactory system.
- Know the basic components of the gustatory system.

# Learning Goals

# Receptor Types Vary Across Sensory Systems

Systems differ in how many receptor types they have.

Visual system: Two broad classes of receptors (rods and cones); transduce light energy of different wavelengths.

Auditory system: Two classes of receptors (inner and outer hair cells of the cochlea); transduce mechanical energy.

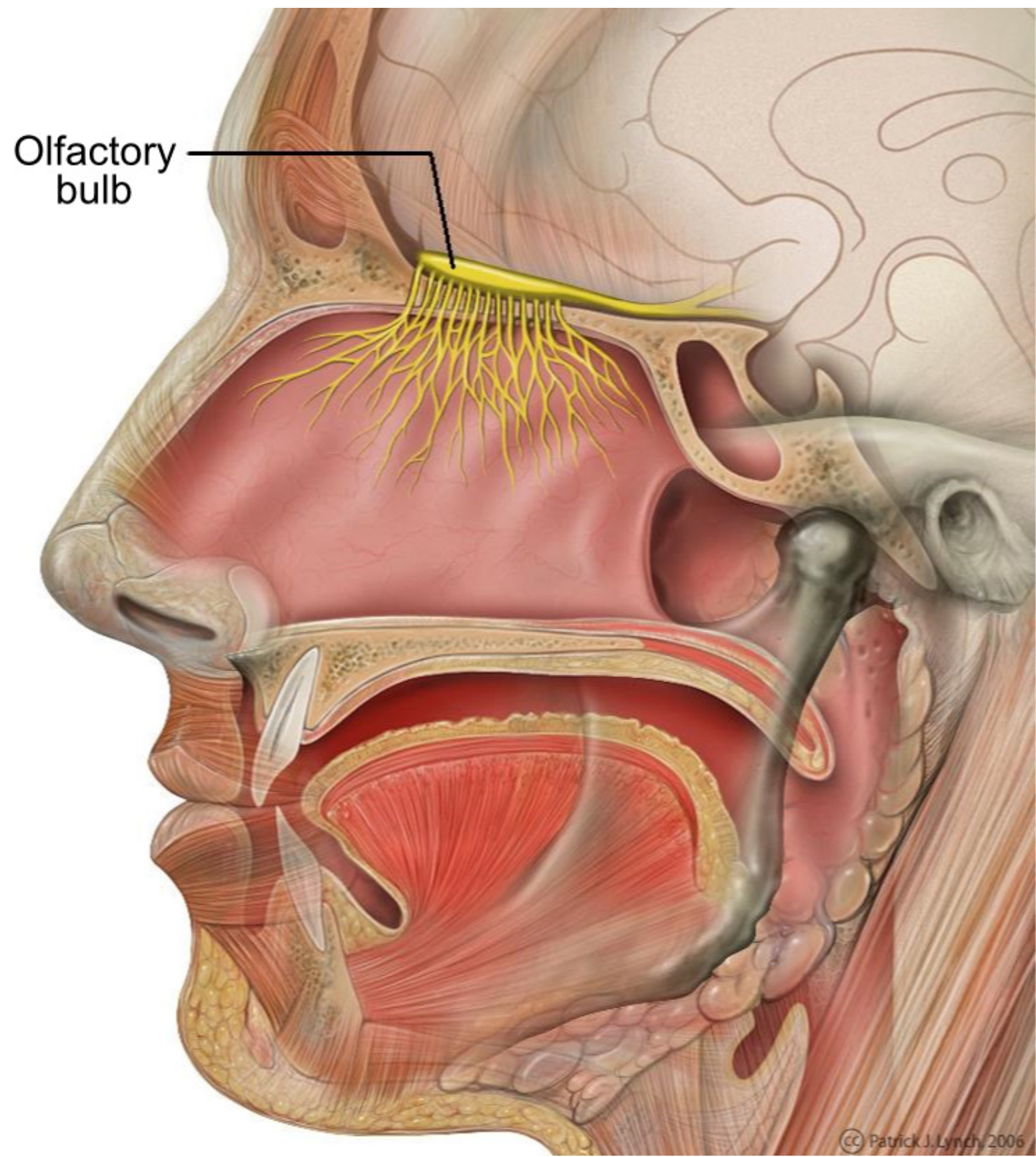
Somatosensory system: Large number of receptor types; transduce a variety of mechanical stimuli (e.g., light touch, hair deformation, vibration, temperature, tissue destruction, muscle stretch).

**Olfactory system:** ~300 receptor proteins; chemical stimuli bind to receptor proteins in dendrites of olfactory receptors.

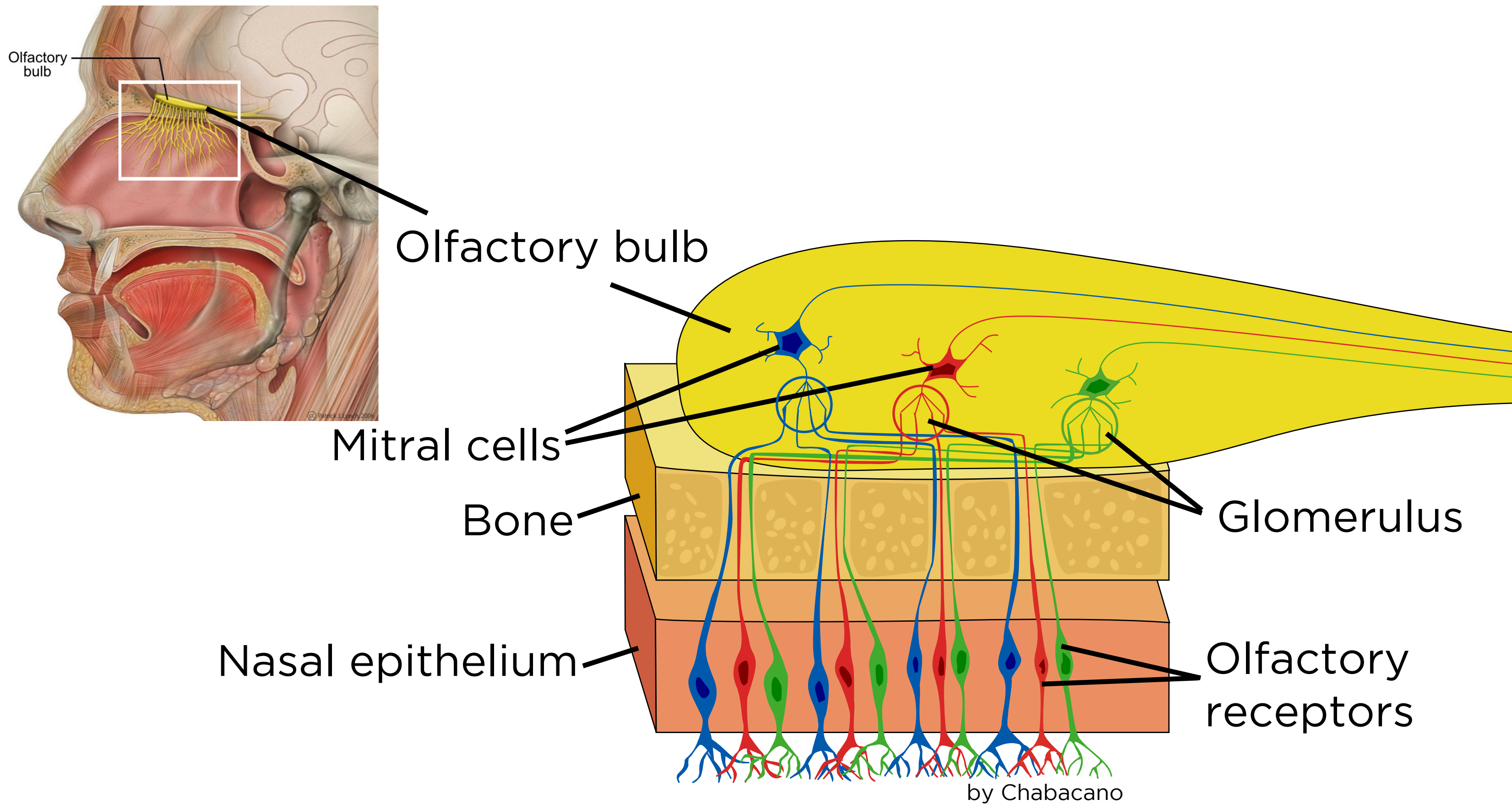
**Gustatory system:** 34(?) receptor proteins: 1 umami, 2 sweet, 30 bitter, 1(?) salty receptor proteins (note: no sour receptor proteins identified as yet).

# Receptors



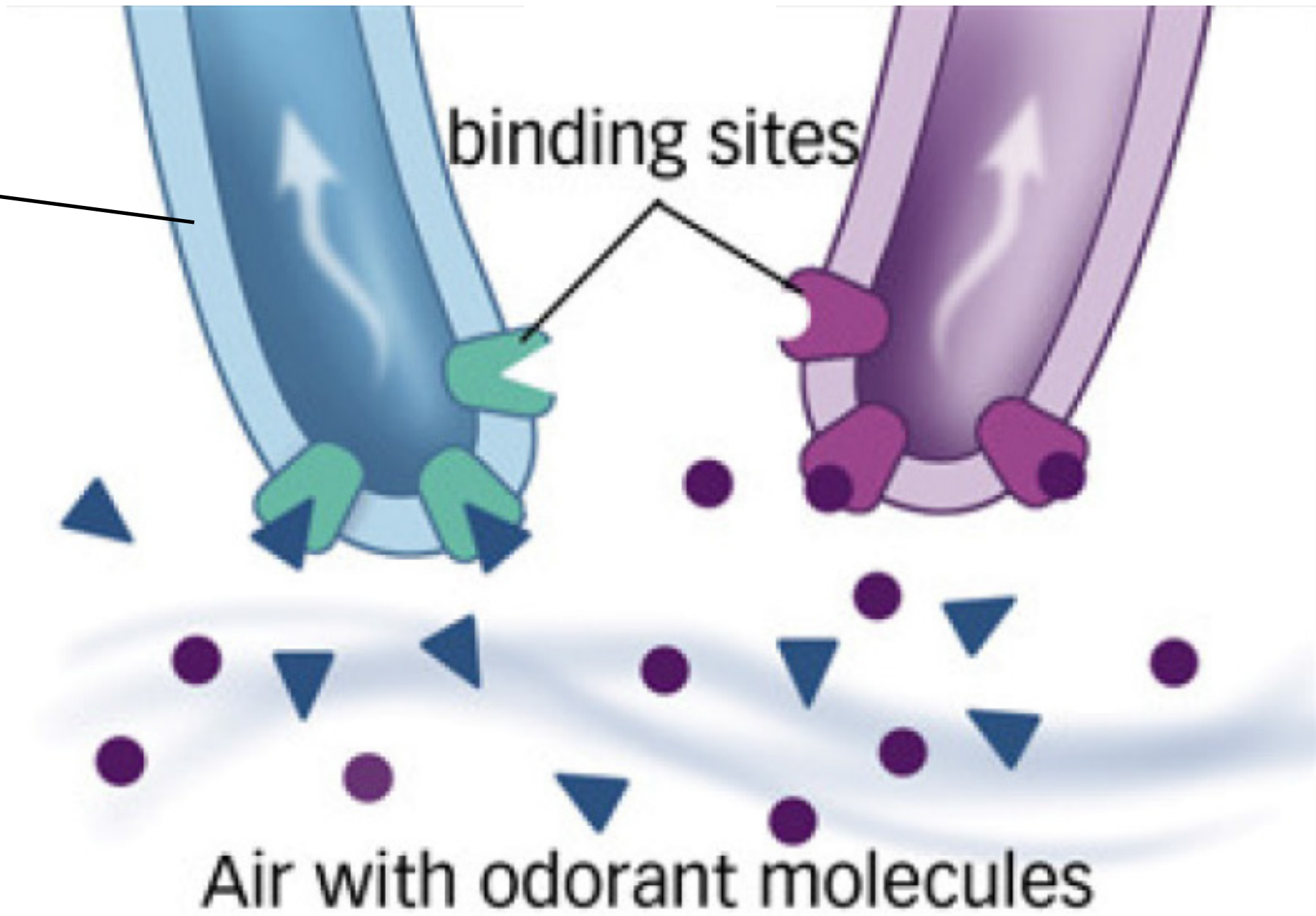
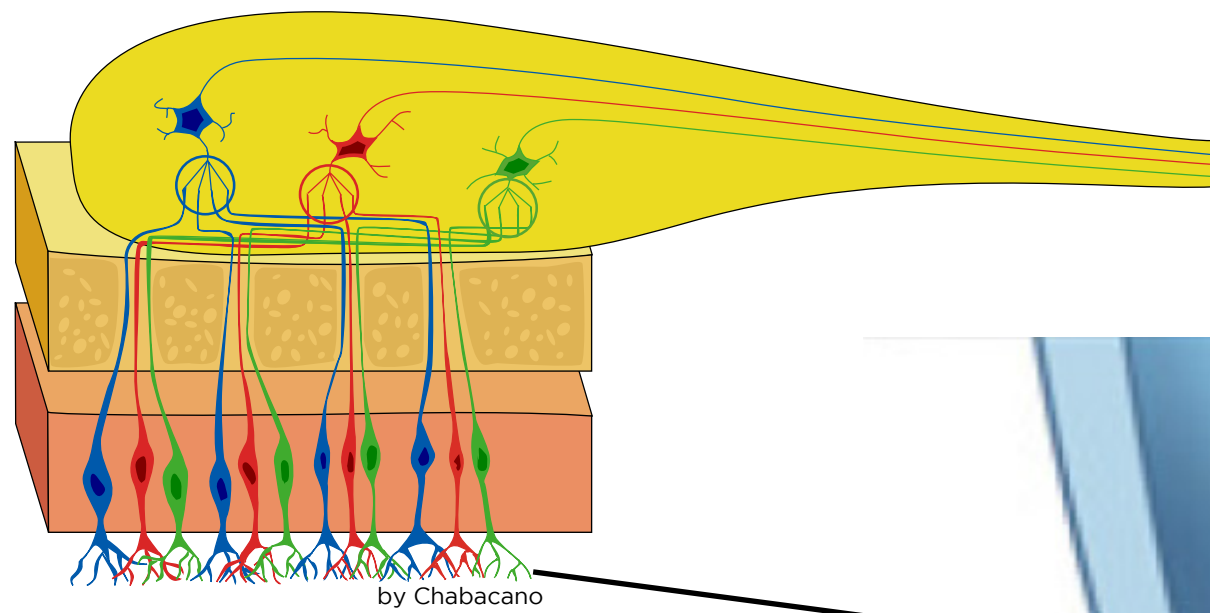


# Olfactory System

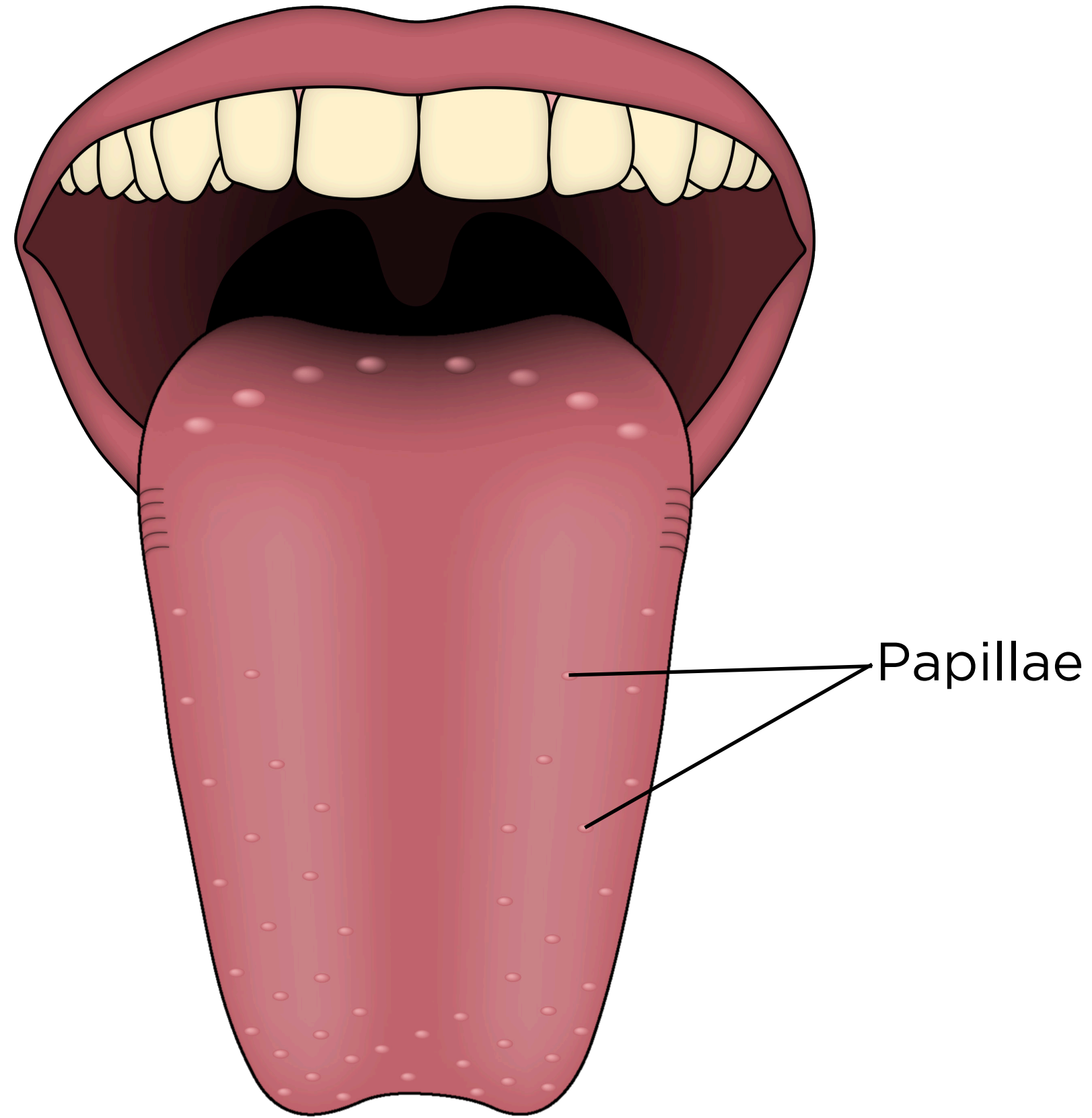


# Olfactory System

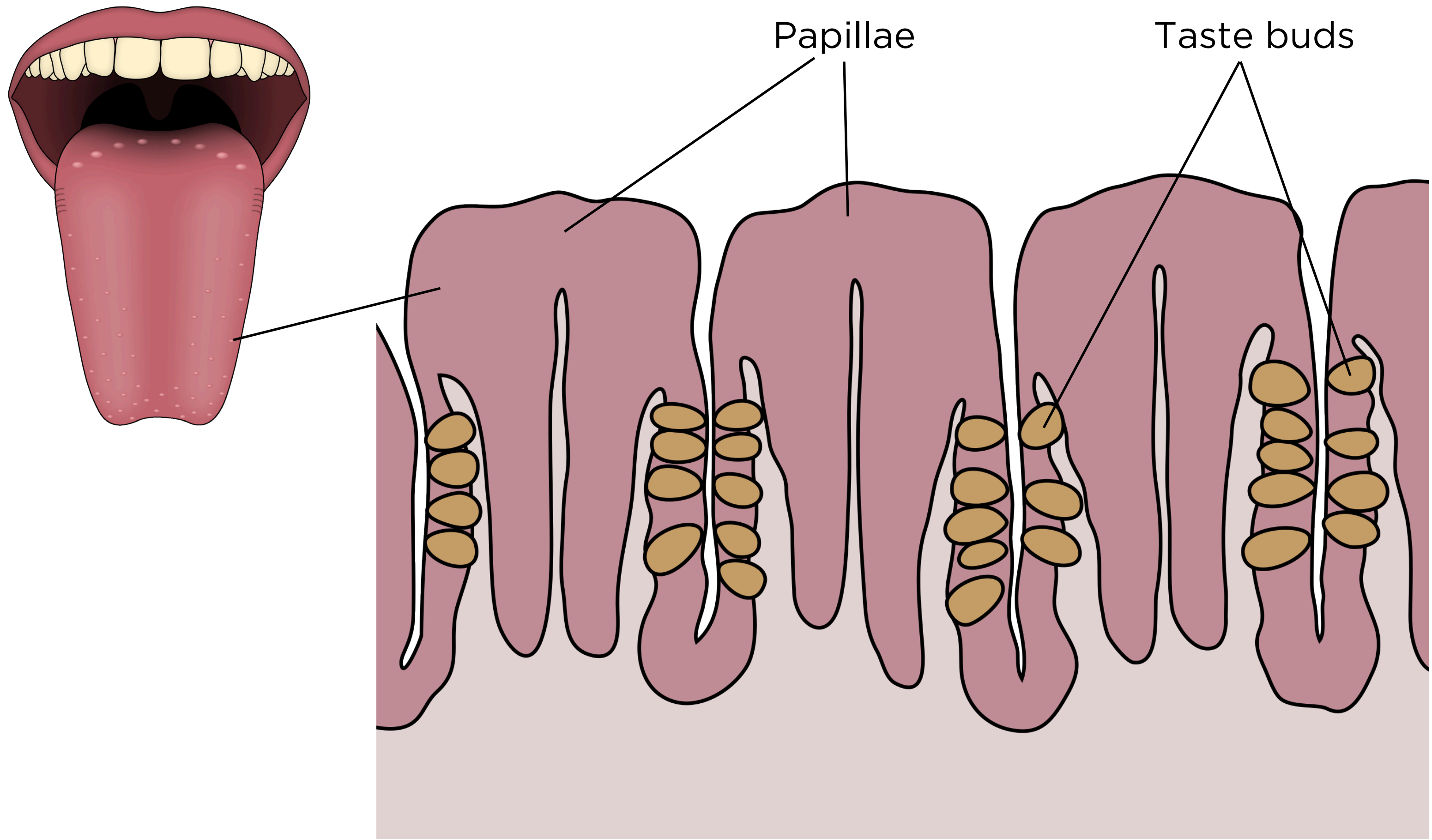




# Olfactory System

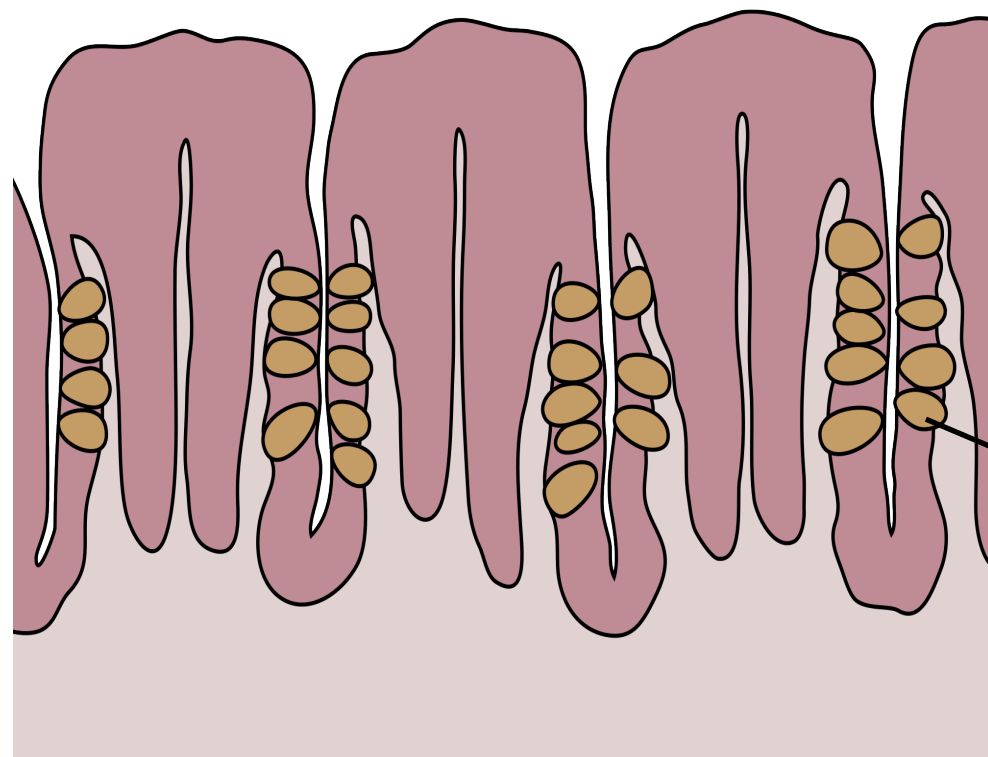


# Gustatory System



# Gustatory System





oral cavity

taste pore

taste receptor

afferent  
nerve fibers

# Gustatory System