

*General Senses*

Name: \_\_\_\_\_

Block: \_\_\_\_\_

What do sensory receptors monitor?

Explain the difference between general senses and special senses.

What do the following general sensory receptors detect:

Exteroceptors

Proprioceptors

Interoceptors

These general sensory receptors divide further. What is this division based upon?

What are the four divisions of general sensory receptors & what does each detect?

What are the five special senses?

Where does olfaction take place?

What is an odorant?

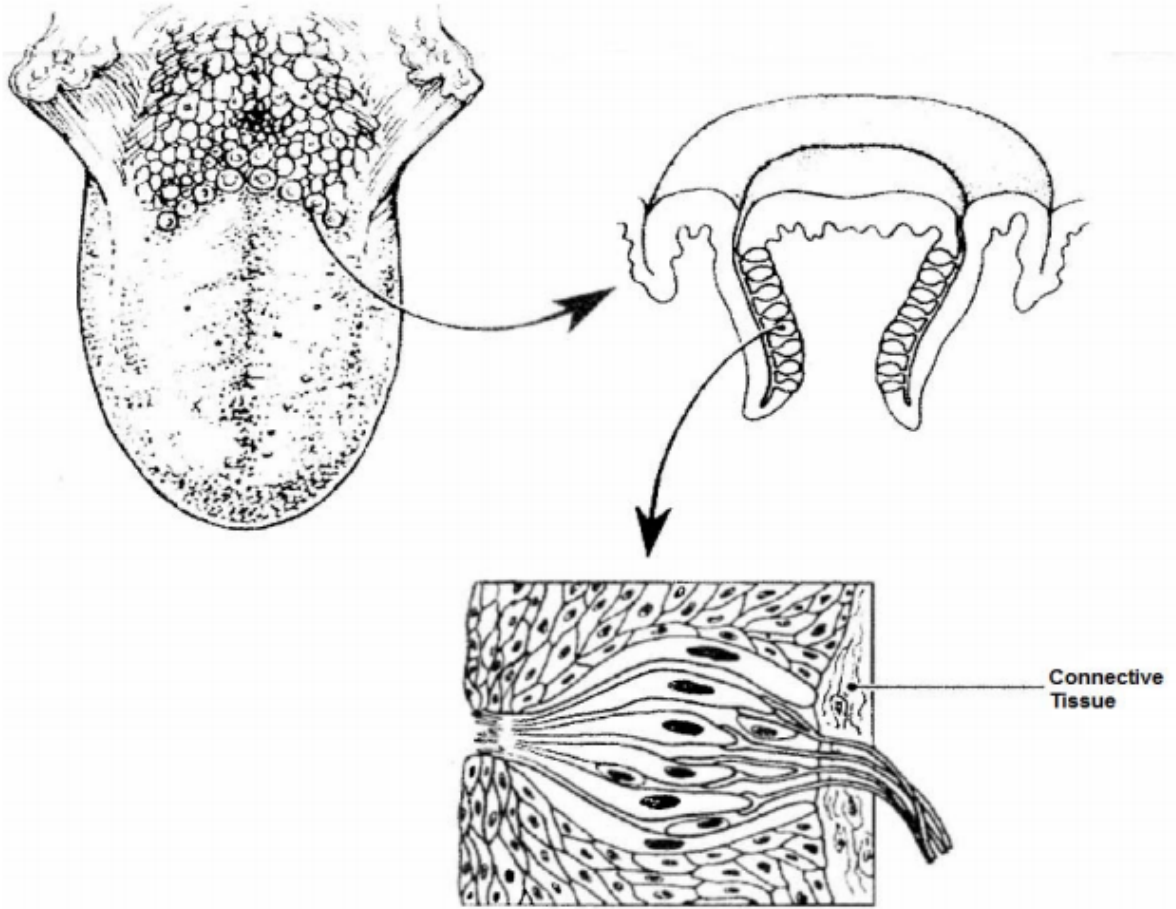
What is gustation?

How many different taste buds do we have? Name & describe each one.

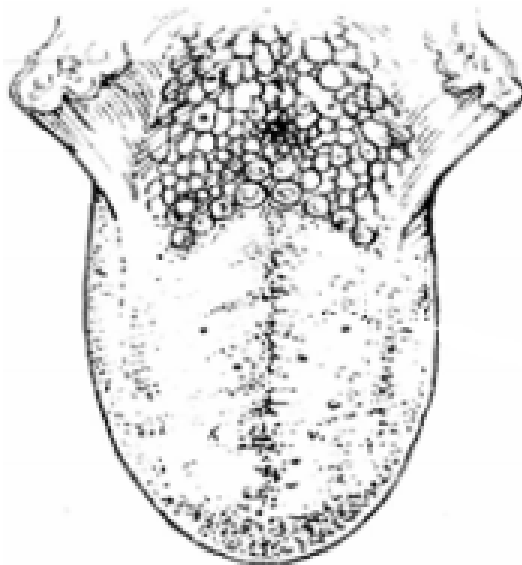
What are the 6 tastes the human tongue can detect & where are the receptors for each taste found?

Using different colors and the list below, color and label the different parts involved with the sense of taste.

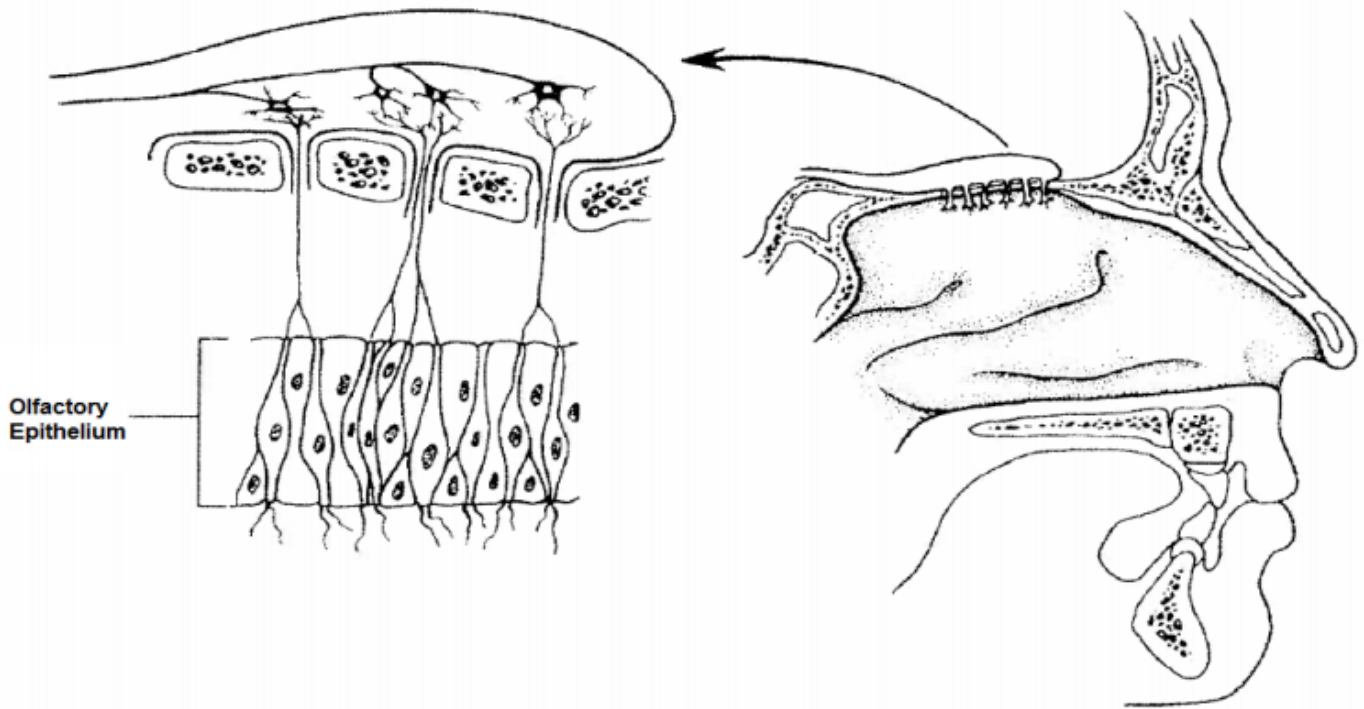
- Taste hairs
- Papillae
- Sensory nerve
- Supporting cell
- Taste bud
- Taste cell
- Taste pore



Color & label the different areas of taste on the tongue.



Using different colors and the list below, color and label the different parts involved with the sense of smell.



- Olfactory bulb
- Olfactory cilia
- Olfactory neuron
- Olfactory nerve (Cranial Nerve I)
- Olfactory tract

Find a partner and complete the following activities.

**Activity 1:**

Touch localization is the ability to determine where exactly the skin has been touched. Depending on the density and distribution of the receptors, localization varies on different body parts. Those areas with higher concentrations of touch receptors should be more accurate in pinpointing the spot touched.

**Procedure:**

1. With your eyes closed, have your partner touch the palm of your hand with a pencil or pen.
2. Now, try to place the eraser of the pencil or the tip of the pen on the spot touched by your partner.
3. Have your partner measure the difference in distance between the two spots. Record the distance.
4. Repeat the steps two more times and record the results in the table below.
5. Average the results.
6. Repeat the experiment on the back of the hand, a fingertip, the ventral surface of the forearm, and the back of the neck.
7. Record your results.
8. Repeat the activity on your partner.

Localization: Distance Between Touch Spot & Guess

Body Region	Trial 1	Trial 2	Trial 3	Average
Palm of Hand				

Back of Hand				
Fingertip				
Forearm				
Back of Neck				

**Activity 2:**

Touch receptors are grouped in fields along our skin. Instead of deciphering information from each individual receptor, touch is perceived in fields. This means that all the touch receptors of a field work together and their stimulation is perceived as one “touch” by the cerebral cortex. This phenomenon can be explored using the two-point discrimination test. Two-point discrimination determines the ability of the skin to decipher if the skin is being touched in one or two spots. If receptors from two different fields are being stimulated, the two points will both be perceived. If however, the two touch spots are close enough to only stimulate receptors in one field, only one touch will be perceived.

**Procedure:**

1. With your eyes closed, have your partner touch the palm of your hand with either one or two points of the the paper clip.
2. Measure, in millimeters, the closest distance between the two points of the paper clip that can be felt as two points when applied to the palm.
3. Repeat the activity two more times and average the results. Record the averages in the table below.
4. Repeat the experiment on the back of the hand, the fingertip, the ventral surface of the forearm, the back of the neck, and the back of the leg.
5. Record your results in the table provided.
6. Repeat the activity on your partner.

Two-Point Discrimination: Distance of the Two Points When Felt

Body Region	Trial 1	Trial 2	Trial 3	Average Distance
Palm				
Back of Hand				
Fingertip				
Forearm				
Back of Neck				
Back of Leg				

**Activity 3:**

Adaptation is the ability of the sensory system to filter out old information and basically ignore it in an attempt to be prepared for new incoming sensory stimuli. We have explored adaptation in several other senses and can (and will) also explore it in the sense of touch.

Procedure:

1. Close your eyes and have your partner place a coin on the ventral surface of your forearm. Note how long (in seconds) it takes for accommodation to occur. (When do you no longer feel the coin?)
2. Record the time in the space below.
3. After the sensation disappears, add three more coins of the same size on the first coin. If the sensation returns, note how long the sensation lasts.
4. Record the results in the space below.

Adaptation

Time of adaptation for one coin: \_\_\_\_\_

Did you feel the additional coins when stacked? \_\_\_\_\_

If so, time of adaptation for additional coins: \_\_\_\_\_