

Receptors and their functions

Purpose: The purpose of the experiments done is to understand the different receptors we experience with day-to-day activities. Purposefully activate receptors with different stimuli.

Procedure: A-1: Two-point discrimination - The ability to distinguish two distinct points on the skin surface will be recorded. 1. With your partner's eyes closed, apply two caliper pinpoints as closely together as possible on your partner's skin on the palm of his/her hand. 2. Remove the pins and move them 1 millimeter apart. Reapply the caliper points to your partner's skin. Repeat this procedure until your partner can distinguish two distinct points. 3. Record this distance between pins at which your partner can discriminate two separate caliper points. 4. Compare results obtained from the following areas: a. palm of hand b. back of hand c. fingertip d. outer edge of the lips. back of neck 5. Have your partner repeat this experiment on your skin. 6. Interpret the results you have obtained.

A-2: Accommodation of thermoreceptors. Accommodation, or sensory adaptation, occurs when receptors generate fewer impulses during constant stimulation. Accommodation of cutaneous thermoreceptors will be recorded. Procedure 1. Place your left fingers in 15°C water and your right fingers in warm water (37°C) and record the sensation of each. Keep hands immersed for 2 minutes. 2. After two minutes, describe the sensation in each hand. 3. Remove hands and promptly place them both in 25°C water. Describe the immediate sensation in each hand.

6/7-B: Olfactory adaptation - The adaptation of olfactory chemoreceptors will be timed. Procedure 1. Block your left nostril. Uncork and hold the bottle of camphor oil under your nose until you can no longer detect the camphor. Do not consciously sniff the contents of the vial! Record the adaptation time. 2. Remove the camphor and place the bottles of cloves, then peppermint oil under your nose. Distinguish the smells of cloves and peppermint oil. 3. Uncork and hold the bottle of camphor under your nose again until the smell is no longer recognized. Record this second adaptation time 4. Unblock your left nostril to determine if the camphor is detected. 5. Interpret these results.

C-1: Tuning fork tests These tests utilize the principle of bone conduction to directly vibrate the cochlear hair cells. They should be done in a quiet room for the most reliable results. 1. Rinne's test (checks for middle ear damage) Procedure 1. Plug your left ear with cotton or hold your hand over it and test the right ear. 2. Hold the handle of a vibrating tuning fork to the right mastoid process. 3. When the sound disappears, move the fork near the external auditory canal. 4. Reappearance of the sound indicates no middle ear damage. 5. Repeat the test with your left ear. 6. Record the results for each ear.

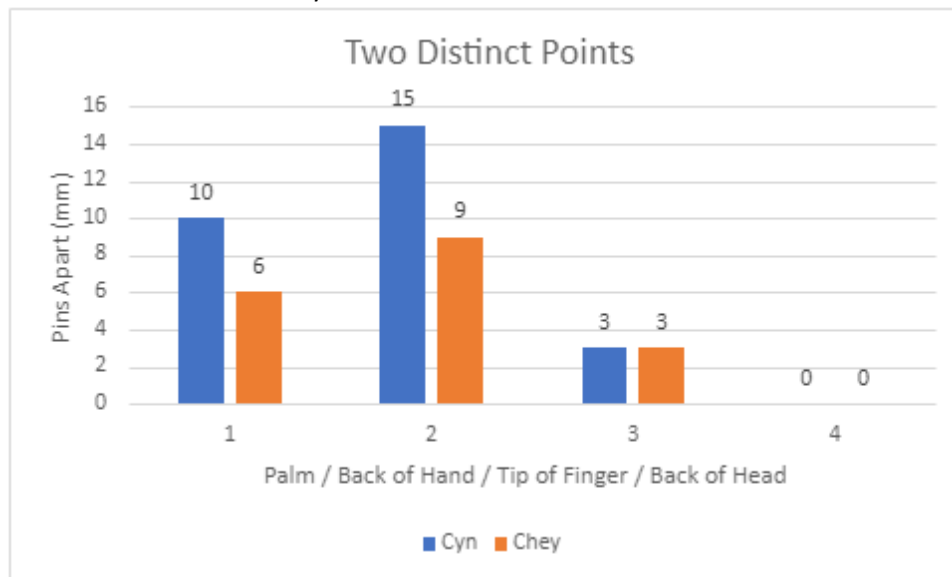
E-1: Demonstration of the blind spot - Procedure 1. Cover your left eye and focus the right eye on the center of the cross below. 2. Slowly bring the page closer to your eye until the spot disappears. 3. Have your partner measure this distance from your eye to page. 4. The image of the spot is now superimposed on the optic nerve. Explain the lack of vision at this point.

E-2: The Snellen test - The ability to discriminate fine detail is known as visual acuity. The Snellen test uses a standardized eye chart to evaluate visual acuity. You will be using one of several versions of this eye chart in the form of the wall chart in the laboratory. Procedure 1. Stand 20 feet away from the Snellen chart. Cover your left eye. 2. Attempt to read the line designated "20". 3. If you cannot read line

20, attempt line 30, 40, 50, 70, 100 or 200 until a line is legible. Perform these attempts with your left eye, covering your right eye.4. The Snellen chart is analyzed in the following way: Visual acuity =Distance you read the letters Lowest line read clearly at 20 feet Examples: Nearsightedness (myopia) = 20/30Normal = 20/20Farsightedness (hyperopia) = 30/20

Results:

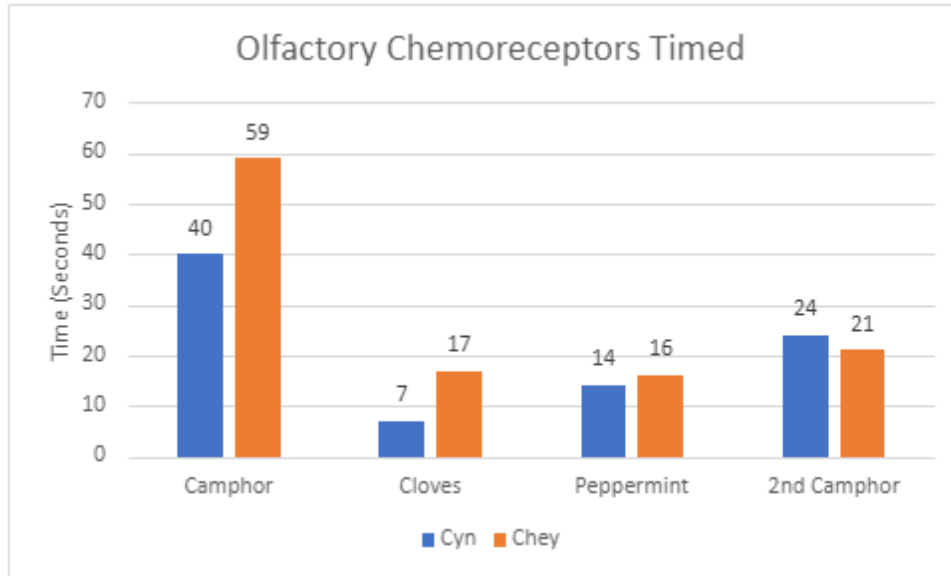
A1 Data		Palms	Back of Hand	Tip of Finger	Back of head
	Pins Apart (mm)				
	Cyn	10	15	3	0
	Chey	6	9	3	0



A2 Data	Feeling in Left Students Hand (In Cold Water)	Feeling in Right Hand (In Lukewarm Water)	Switch Hands in bowls After switching bowls=	Feeling in Left Hand2 (In Lukewarm Water)	Feeling in Right Hand2 (In Cold Water)
Cyn	Pain and Cold	Warm		Warm	Cold
Chey	Cramping and Pain	Normal		No Feeling	Cold

Changed Olfactory Chemoreceptors  
B Data Timed

	Camphor	Cloves	Peppermint	2nd Camphor
Cyn	40	7	14	24
Chey	59	17	16	21



C1 Data	Ear	Rinne's Test- Checking for Ear Damage	Outcome
		Reappearance of the tuning fork	
	Right Ear	Sound Reappeared =	No middle ear damages
	Left Ear	Sound Reappeared =	No middle ear damages

E1 Data	Seeing the Blind Spot	Inches
	Chey	8 inches
	Cyn	7 1/2 inches

E2 Data	The Snellen Test	Right Eye	Left Eye
	Self	20/15	20/20

Discussion: Each experiment was done with the instructions given, we had to select which ones to do, since some of the stations were being occupied. The Snellen test seemed too easy, looking with my left

eye, but once I tried with my right eye, it seemed hard to do so. I was surprised to see that I did better with my left eye than my right.

Conclusion: These experiments helped me understand better the receptors in our bodies. The Thermoreceptors were activated with different temperatures, the Mechanoreceptors were activated with touch and sound stimuli, Chemoreceptors were activated when different odors were smelled, and photoreceptors, the rods and cones, when visual stimuli were involved. Understanding the phasic and tonic receptors as well.