Somatosensation (Sense of Touch)

"Ooooohhh, STOP! That TICKLES!!!!"

Your **sense of touch** (**somatosensation**) is controlled by tiny receptor cells in your skin. Since your skin is the largest organ in your body, you have millions of these receptor cells scattered throughout your body. Somatosensitive cells respond to four separate sensations: **pleasure**, **pressure**, **pain**, or **temperature**.

Let's do some experimenting to see which parts of your skin are most sensitive.

Materials

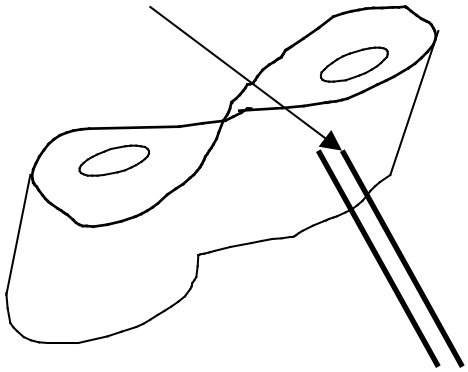
- Tooth picks
- 4 pieces of packing material (Styrofoam) or Cork stoppers for flasks
- Centimeter ruler
- Blindfold

Procedures

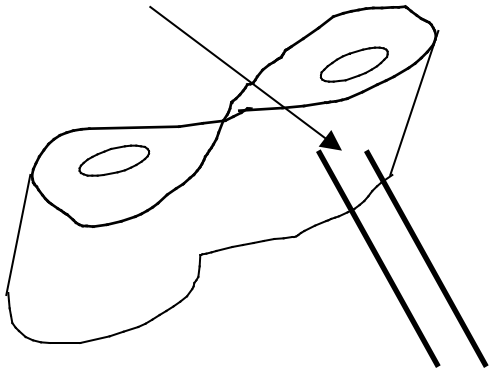
- Make you testing devises by:
  - Inserting two toothpicks (1mm apart) in one piece of Styrofoam or cork.
  - Inserting two toothpicks (3mm apart) in one piece of Styrofoam or cork.
  - Inserting two toothpicks (5mm apart) in one piece of Styrofoam or cork.
  - Inserting two toothpicks (10mm apart) in one piece of Styrofoam or cork.

Examples

Toothpicks 3mm apart



Toothpicks 5mm apart



- Complete the hypothesis section of **Data Table 1**.
- Blindfold your partner (subject).
- Gently place the testing device with the toothpicks 1mm apart on one of the following five areas of the body: **fingertip** **back of hand** **palm** **forearm** **back of neck**

- Ask your subject to tell you if they can feel both toothpicks, or only one. (*NOTE: We all know that there are two toothpicks. Please be honest with your answers so that the data we collect is valuable*).
- Enter your data in **Data Table 1**.
- Repeat procedures with the other four areas of your subject's body.
- Now place the testing device with the toothpicks 3mm apart on the same parts, then the device with toothpicks 5mm apart and then 10mm apart on the same parts, recording your data as before.
- Switch places and repeat all procedures.
- Complete **Challenge Activities**.

Data Table 1

Subject's name: _____

Body part tested	**Hypothesis** **write a 1 by the part you you think is the most sensitive, a 2 by the part you think is next, and so on…**	**Data** **place a + if two toothpicks are felt** **place a - if only one toothpick is felt**			
		1mm	**3mm**	**5mm**	**10mm**
fingertip					
back of hand					
palm					
forearm					
back of neck					

Your name: _____

Body part Tested	Hypothesis write a 1 by the part you you think is the most sensitive, a 2 by the part you think is next, and so on, …	Data place a + if two toothpicks are felt place a – if only one toothpick is felt 1mm	3mm	5mm	10mm
fingertip					
back of hand					
palm					
forearm					
back of neck					

Challenge Activities

1. Which part of your body seems to have the **least** sensitivity?

   _____

2. Which part of your body seems to have the **most** sensitivity?

   _____

   Why do think that part of your body is so sensitive? _____

   _____

3. Your skin is designed to help protect you from harm. Describe at least two situations in which your skin helped protect you or was trying to protect you.

_____

_____

_____

_____

_____

_____

_____

4. You've probably noticed that when you sit for a long period you have to shift your weight from one part of your gluteus maximus (rear) to the other. You simply become uncomfortable and must move a bit. Why do you think that happens? (Why do the sensory cells in that part of your skin indicate too much pressure?)

_____

_____

_____

Involving a related subject, what do you think people who are paralyzed from the waist down (paraplegics) must do every 20 to 30 minutes whether they can feel anything or not? Why?

_____

_____

_____

5. For more information on skin sensitivity and **somatosensation**, visit these websites.
http://faculty.washington.edu/chudler/chtouch.html
http://www.trueamerica.com/Essays/Touch/Touch.htm
http://www.immersion.com/overview.html
http://boojum.hut.fi/research/brain/general.html