**Two-point discrimination:**

**Materials**: Several 2 point discriminator calipers. Make sure that when the sliding part is pushed all the way up, the 2 sharp ends form what feels like a single point on the pad of your index finger. (If this is not the case, don’t use it.) Ask rowdy children to be careful with the calipers, as they are easily bent out of shape.

**Here’s how it works:**

1. Two people are required. One person administers the test, the other is the volunteer. If business is slow, you can administer the test. If there are many people around, tell them to pair up and take turns with each role.
2. Ask the volunteer to put out the tip of their index finger and close their eyes. Start with the caliper closed (2 sharp points feel like 1 point). Ask the volunteer how many points they feel (should be 1). Slowly slide down the moveable piece of the caliper while re-poking the volunteer until they say they can feel 2 points, and note how wide the caliper is open at this time. (For the tip of the index finger, people can often feel the 2 points as soon as the caliper is visibly open)
3. Next, test another part of the body. The cheek works very well (and is convenient in winter if everyone is wearing jackets), the upper arm also can work. [At this point, you can ask older students whether they think the distance required to feel the 2 points will be the same or larger than for the tip of the finger. Point out that this is their hypothesis.] Again, start with the caliper closed, where the volunteer should feel only 1 point. Slowly open the caliper while re-poking until the volunteer feels 2 points. The distance required to feel the 2 points should be much greater than for the tip of the index finger. Point this out.

**Explanation:**

Our sense of touch is mediated by sensory receptors, which are all over our skin. The density of receptors is different for various parts of the body. This makes sense, right? We need to be able our touch to be more sensitive for the tip of the index finger than for our cheek, so we can use our fingers to do intricate things like type, or sew or play a musical instrument.

**Extended explanation:**

The density of sensory receptors for various parts of the body are coordinated with the size of the brain region that interprets these signals. The brain region involved in interpreting sensory signals forms what is called a homunculus (there is a picture of this on the poster board). Homunculus means little man. Here is a diagram that represents the size of the brain region designated for each part of the body. Notice

how big the lips and fingers are, which have a very high density of sensory receptors, compared to the stomach and legs, which have lower densities of sensory receptors.

**Additional activities for classes:**

If a class came to visit on a field trip, we could have the students mark down their measurements for class analysis post-trip.