

<b>CHAPTER 12</b>	<b>Investigation 12.C: Feel, Taste, or Smell: Design Your Own Investigation</b>	<b>BLM 12.3.7</b>
<b>HANDOUT</b>		
<b>Question:</b> How can you design an investigation to show how a particular sense, or a combination of senses, can distinguish various sensations?		

### Safety Precautions

- Do not bring food meant for consumption into the laboratory.
- Do not eat or drink anything in the laboratory.

### Topic 1: Feel Those Sensations

Design an investigation to distinguish the different sensory receptors found in the skin, including the receptors for touch, pressure, pain, heat, and cold.

#### Suggested Materials

- 500 mL beaker of hot water (60 °C)
- 500 mL beaker of ice water (0–2 °C)
- non-permanent pen for marking gridlines on the body
- alcohol thermometer
- finishing nails

### Topic 2: Tantalize Those Taste Buds

Design an investigation to distinguish the four basic tastes (sweet, salty, sour, and bitter) using the tongue. Also investigate the relationship between smell and taste. **Note:** You must conduct this investigation at home or in the school cafeteria, *not* in the laboratory.

#### Suggested Materials

- salty water
- sugary water or candy
- onion juice or tonic water
- clean toothpicks or cotton swabs
- lemon juice
- garbage bin
- blindfold

### Topic 3: Expose Your Nose

Design an investigation to determine the ability of the olfactory receptors to distinguish various smells.

#### Suggested Materials

- ginger
- lemon
- menthol
- peppermint
- perfume
- blindfold
- pine needles
- vanilla
- vinegar

### Experimental Plan

1. As a group, record the question(s) that you plan to investigate.
2. Write a hypothesis related to your experimental question(s).
3. Using the suggested materials as a starting point, develop a procedure to investigate your topic. List the manipulated, responding, and controlled variables. Note what you can use as a control test or trial (point of reference for your experimental trials).

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- Decide how your group will make the appropriate measurements, how many samples you will use, and whether you will pool your data with other groups' data. Design a table to record your data.
- After obtaining approval from your teacher for your experimental design, conduct your investigation.

### **Data and Observations**

Record your data. When you have completed your investigation, present your experimental design and results to the rest of the class. Include a diagram that shows the neural pathway from the sensory receptors to the area of the brain where perception occurs.

### **Analysis**

- Describe any unexpected results. Hypothesize if and how your results would have been different if you had tested a combination of senses.

- How could you improve your experimental design?

### **Conclusion**

- How are the sensory receptors organized so that we can distinguish different strengths and types of touch, taste, and smell?