

CHAPTER 12	Investigation 12.C: Feel, Taste, or Smell: Design Your Own Investigation	BLM 12.3.7A
ANSWER KEY	Answer Key	

Answers to Analysis Questions

1. You might hypothesize that results would have been more difficult to analyze if the experiment had tested a combination of senses, because all senses may not be at the same level of acuity. For example, you may have had the personal experience of losing your sense of taste when you have a bad head cold.
2. Include ways to control more of the variables in the experimental design.

Answer to Conclusion Question

3. Sensory receptors are specialized cells or neuron endings that detect specific stimuli. Human sensory receptors can be classified into 4 categories: photoreceptors, chemoreceptors, mechanoreceptors, and thermoreceptors.

Each type of receptor is able to transduce, or convert, one form of energy from a specific type of stimuli into electrochemical energy, which can be processed by the central nervous system. We can therefore distinguish the *type* of stimulus based on the receptor that is affected.

Distinguishing the *strength* of touch, taste, and smell is another matter. The strength of a stimulus here is a minimum strength of a stimulus required to generate an action potential. However, you may remember from Chapter 11 that an action potential has only one strength or magnitude (the all-or-none response). We cannot distinguish the strength of a stimulus affecting one receptor, but if a number of receptors are affected by the stimuli, we perceive the stimulus as being stronger. In an area of the body designed to be sensitive to certain stimuli, receptors are located close together so we can receive more information about strength. In all sensory receptors, the common result of all transduction is to produce a change in conductance of a membrane channel.