

Olfaction (Smell) Discrimination

“OooooohWEEE! Child, you’ve got too much cologne on!” chastises your parental unit. “Go wash some of that stinky stuff off right now.”

“I do not have too much on,” you protest.

“Then why,” asks your Mom, “are there so many gnats around you!!!”

Your sense of **smell** or **olfaction** is perhaps your most powerful sense. Your eye can detect three primary colors: red, blue, or green. Your tongue can detect four tastes: salty, sour, bitter, and sweet. Your **olfactory cells** in your nose can detect so many different odors that scientists are having a difficult time isolating and naming them. One reference names **seven primary smells: floral, musky, camphorous, peppermint, ethereal, pungent, and putrid.**

Olfaction is the primary sense for many animals. Let’s do some testing to see how precise your sense of smell is.

Materials

- Cups
- Cotton balls
- Perfume or cologne
- Medicine dropper
- Stopwatch, clock, or timer

Procedure

- Label the bottom of ten cups 1 –10.
- Place one cotton ball in each cup.
- In **cup one**, use the medicine dropper to place **one drop** of perfume or cologne on the cotton ball.
- In **cup two**, use the medicine dropper to place **two drops** of perfume or cologne on the cotton ball.
- Similarly, place **three drops** on the cotton in **cup three**, four in four, five and five, and so on, until in cup ten you’ve got ten drops.
- Have your partner (subject) close his/her eyes while you mix up the cups so they are in no particular order.
- Have your subject open her/his eyes, start timing, and ask your subject to place the cups back in correct order just by smelling the cups.
- Once your subject has the correct order, stop timing, and record the time in **Data Table 1.**
- Switch places and repeat the experiment.
- Complete **Challenge Activities.**

Data Table 1

Subject’s name:	Subject’s name:
Time:	Time:

Challenge Activities

1. Who appears to have the “better” olfactory cells: you or your subject?

2. By now the entire room smells of cologne. This experiment was not controlled very well. Use the space below to describe how you would test for the ability to discriminate (tell the difference) among different concentrations of smells.

3. The shape of an organism’s cranium (skull) can affect the discrimination factor of olfaction. Why is a dog better adapted for olfaction than a human? _____

4. For a better look at a comparison of olfaction among different species, visit these websites:

<http://animaldiversity.ummz.umich.edu/index.html>

<http://faculty.washington.edu/chudler/neurok.html>

www.neurophys.wisc.edu/brain/

**Idea adapted from *Neuroscience for Kids*,
<http://faculty.washington.edu/chudler/neurok.html>**