

Scent Matching

Overview: We now know that odor molecules are diffused throughout a room by the motion of air molecules, which are constantly moving and bumping into them. These tiny odor particles can get caught in our nose and dissolve into the olfactory epithelium, which is responsible for detecting odors so that your brain can interpret them. Today we'll test how well your olfactory epithelium and brain work together to distinguish between smells.

Materials

- small containers with lids (10)
- cotton balls (10)
- lemon juice
- black coffee (1 cup)
- vanilla extract
- cinnamon oil
- soy sauce
- marker
- toothpick (optional)
- assistant

Experiment

1. Your partner should be out of the room while you prepare this experiment.
2. Take the lids off of the containers and number the first five with a 1 through 5. Mark the other five with A through E.
3. Put a cotton ball into each container. Start with the numbered containers and add some lemon, coffee, cinnamon, soy sauce, and vanilla. Record the smell for each number for reference.
4. Fill the lettered containers with the same liquids, but not in the same order. Be sure to record the material you have used for each letter and match them to the proper number.
5. Take the closed containers to your assistant. Ask them to match the scent in the first canister with the proper lettered container without opening the container. (You can use a toothpick to gently puncture the top of the container, or you can hold the container so that odor molecules can get out, but your helper can't see inside.) Note their response – are they correct?
6. Repeat step 5 for each of the containers until they all have been matched. Then check your recorded data and see how well your assistant did with matching.

Scent Matching Data Table

Item	# container	letter container	Correct?

Reading

Everything here produces a distinct odor. The smells go into your nose, where they are interpreted by the tiny hair-like smell cells in your olfactory epithelium. The smell cells work together to distinguish smells and then send the interpreted information to the brain for recognition.

We previously noted that humans have an average of 10,000,000 smell cells, but they aren't all the same. You have about 20 different types, and each detects a specific type of odor. The types work together and your brain translates their signals as a unique odor.

Exercises

1. What is the scientific name for sense of smell?
2. What is the name of the tissue which helps the brain to distinguish between smells?

Answers to Exercises: Scent Matching

1. What is the scientific name for sense of smell? (olfactory sense)
2. What is the name of the tissue which helps the brain to distinguish between smells? (olfactory epithelium)