



LESSON PLAN: Do you SMELL that?

Topic: How the brain knows that a scent has been smelled

Subjects| Stream:

Biology
Science

Grade Level:

Junior (Grades 4 to 6)

Objective(s):

- To demonstrate how the brain comprehends that a scent has been smelled.
- For participants to take part in a visual simulation that portrays how scent - information is relayed from the nose, through movement of hairs in the nose, to a chain of neurons in the brain.

Brief Summary:

This activity aims to teach students about how a piece of scent-information that enters the nose travels to the brain, through a chain of neurons, to allow the individual to comprehend what they have smelled.

Background Information:

Everyone has hundreds of tiny hairs in their nose. At the end of these tiny hairs, towards the skin of the nose, is a cell that is like a button that is pressed down whenever the hairs are moved. Whenever a scent enters the nose, its vibrations move the hair follicles, pushing down on these 'buttons' (cells) and ultimately sending a message to the brain that a certain scent has been smelled. The brain then tells you what scent has been smelled by relaying information through a chain of neurons.

Resources:

- Enough space for participants to form rows of 6-7 students
- Small plastic jars (one jar per row)





Activity Instructions:

Step 1: Divide the total number of participants into groups of 6-7 students and ask them to stand in rows beside each other (i.e., analogous to students lined up to play under-over).

Step 2: The student at the front of each row is designated as the NOSE. The student standing behind the NOSE represents HAIR. The student standing at the end of the row represents the BRAIN. All other students in the row represent NEURONS.

The students that represent neurons must stand up with their arms out to their side; they are essentially representing neurons that receive messages through the right hand, and then relay the message to another neuron (i.e., another student) through their left hand, until that message reaches the BRAIN.

Step 3: The instructor must tell the class that they have a small jar with something inside (hold the jar up for everyone to see) and hand each jar to the first student (i.e., the NOSE) in each row; ensure that the class waits to start the activity until the instructor finishes hand a jar to each chain.

When the instructor yells GO, the first student in each row (who is the NOSE) must open the jar, smell what is inside, and then close the jar again; they will then hand over the jar to the student behind them (who represents HAIR).

Once the HAIR receives the jar, they must open the jar, smell what is inside, and then close the jar. Upon closing the jar, they must shake their body to show that the hairs in the nose have moved. Simultaneously, they must hand the jar to the student behind them and then high-five them (i.e., the high-five represents that the hair cells have pressed down on the 'button' (i.e., the neuron) that signals to the brain that a scent has been smelled.

Each student then must open the jar, smell what is inside, close the jar, and then hand it over to each subsequent person behind them down the chain until the final student in the row (the BRAIN) has been handed the jar.

The final student (the BRAIN) must then open the jar, smell what is inside, and then raise their hand and whisper the scent to the instructor (they should not yell it out loud so as to disrupt the other chains).





NOTE THAT DUE TO MOST SCHOOLS BEING FRAGRANCE-FREE ZONES, THERE WILL BE NO DISTINCT SMELL IN THE JARS; THERE IS NO CORRECT ANSWER FOR THE IDENTIFIED SCENT (STUDENTS CAN BE AS CREATIVE AS THEY DESIRE)

Each row is competing against each other; the first row to have successfully passed along the scent-information to the BRAIN wins!

Step 4: The instructor must reiterate to the students that this activity shows how scent-information is relayed from the moment it enters the nose, to its movement of the hairs in the nose, to its destination in the brain.

