

Study: Humans Can Smell 1 Trillion Scents

Researchers say our sense of smell is stronger than previously thought.

DANA SMITH/MAR 25 2014, 5:00 PM ET



A woman smells the roses at a flower show in Essen, Germany. (Michael Sohn/AP)

Smell always seems to get the short shrift of the sensory world. We don't rely on it to navigate and communicate like we do sight and sound; it doesn't send shivers up our spine like a caress; and no one's ever claimed a whiff of roses to be orgasmic, like they might a bite of

chocolate peanut butter cheesecake.

This may be due to the notion that our powers of smell just aren't that strong, conventional wisdom being that we are only able to detect a paltry 10,000 odors, compared with 2 to 7 million different colors.

But new research published in *Science* reveals that our olfactory abilities are far stronger than anyone had previously imagined, enabling us to detect more than 1 trillion different scents.

A team of researchers from Rockefeller University and the Howard Hughes Medical Institute set about to debunk this science myth by testing peoples' powers of olfaction on a variety of different odor combinations. Unlike sight, where there are only a set number of light wavelengths that we can (or cannot) see, scents are made up of hundreds of different molecules, so the number of odor combinations is practically infinite. This means that it is very difficult to test our capacity for smell, so

although the assumption was capped at 10,000 odors, it was never actually tested.

To get around this problem, the researchers combined 128 common scents, like orange and peppermint, into new smells containing 10, 20, and 30 of these different odor molecules. They then had participants compare three vials of these odor combinations, two of which were the same and one that was different, and try to pick out which one was not like the other.

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By comparing participants' abilities to discern the different odor on more than 250 sets of three, researchers were able to extrapolate our total ability for smell. Study author Dr. Leslie Vosshall explained, "It's like the way the census works: to

count the number of people who live in the United States, you don't knock on every single door, you sample and then extrapolate. That's how I like to think of this study. We knocked on a few doors."

For example, even when more than 50 percent of the odor molecules in two scents were identical, participants were still able to distinguish between the two smells. While this may not sound that impressive, when you consider the sheer number of possible odor combinations available, this indicates we're actually pretty good at telling them apart.

The Atlantic

Dr. Andreas Keller, the lead author on the paper, surmised, "The message here is that we have more sensitivity in our sense of smell than we give ourselves credit for. We just don't pay attention to it and don't use it in everyday life."

So next time you stop and smell the roses, breathe deep. There may be more in there than you thought.

Source: The Atlantic.

<http://www.theatlantic.com/health/archive/2014/03/study-humans-can-smell-1-trillion-scents/359505/>