

NOSING AROUND

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“NRI engineer develops an electronic nose!” was the headline. Vivek Subramanian, an engineer at Berkeley has fabricated an electronic sensor which can sense different smells. Depending on the kind of polymer used in the sensor, the “electronic proboscis” can tell whether the wine one is drinking is fresh or stale or even if the harmless shoe box has RDX! The electronic detector is far more efficient than a chemical one which can be used only for a particular kind of smell.

The sense of smell is surely one of the most undervalued of our five senses. Most people when asked which sense they value most would almost never think of smell. But, clearly the multi billion dollar perfume and deodorant tells us otherwise. For most of us, smells are associated with situations- the peculiar smell of a mixture of human effluents and milk that comes as soon as one enters a household with an infant, the strong body odour of the man standing next to us in the Blueline bus, the heady smell of the latest Elizabeth Arden creation.

Understanding smell is actually very complicated. There are literally thousands of distinct smells that an average person can distinguish. How does the nose know the difference between the smell of rotten eggs and Chanel 5? About 15 years ago, scientists discovered a class of proteins called olfactory receptors which sit on the nerve cells in our snouts. There are about a thousand different kind of receptors which bind to the different molecules found in the chemicals that enter our nose. Molecules of different shapes bind to different receptors.

A missing link in the puzzle was and, to an extent still is, the question of how a thousand receptors can distinguish between so many smells. Some scientists believe that the receptors act like alphabets of a language which can be combined to form smells. Others believe that the receptors are sensitive to the vibrations of the atoms in the olfactory stimulus. Clearly the answer to such questions are important. The Nobel Committee recognized this by giving the 2004 Nobel Prize to Dr. Axel and Dr. Buck who proposed that a single receptor can be sensitive to more than one smell at the same time.

Clearly we don't know how the nose knows! But that is of little consolation to us when the man sitting next to us in the train takes off his shoes and the windows need to be opened- pity the “poor” AC 3 –tier travelers! Smell invokes strong memories. One such memory is of entering any apartment complex with sub continental tenants in the US. As soon as you entered the foyer, a strong smell of sambhar powder would hit you. And this was uniform- it did not matter whether there were South Indians in the complex or not!

For some of us the sense of smell is critical- a friend of mine was pursuing a PhD in Chemistry. One day, she was working alone in the lab, blissfully oblivious to the fact that a gas pipeline had leaked and the lab was filled with gas. Fortunately for her, a colleague entered the lab and discovered the leak in time. It turned out that my friend had almost no sense of smell! A pretty tricky disability given her profession! She went on to become a chemist with a major multinational but after that day, she was careful of

telling her colleagues about her inability to smell. But now, maybe she could wear one of Dr. Subramanian's electronic nose around her neck- an essential accessory, much like the ubiquitous cell phone!