

# Brain response to odor and light differs

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Researchers have determined how odors create signals that eventually go to one's brain -- but the findings contradict long-held beliefs.

Current textbooks say our sense of smell converts odors into brain signals, just as our vision converts light into brain signals. But research at the Johns Hopkins' Institute for Basic Biomedical Sciences suggests while a key protein pathway is used in both, it behaves differently in one's nose than in one's eyes.

"Most of the information about this pathway comes from studies of vision, and people just assumed it worked the same way elsewhere in the body," said King-Wai Yau, a Johns Hopkins professor of neuroscience.

Since about 1980, scientists have understood how light triggers specific G-protein-coupled receptors in cells called rods at the rear of the eye. It was assumed G-protein signaling would similarly amplify signals in other systems. That assumption is incorrect.

"We found that most of the time, a single molecule doesn't trigger a response," said Vikas Bhandawat, a Johns Hopkins neuroscience graduate student. "And even when it does, the response ... is about 100 times lower than reported for rods,"

The research appears in the journal *Science*.

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