

Mice use their sense of smell to identify potential mates.



Love Is in the Air

NEW PHEROMONE PATHWAY FOUND IN BRAINS OF MICE

THE PROFITS OF the perfume and cologne industries rely on the notion that fragrance can boost our sex appeal. Some creative companies even claim to have bottled human pheromones, chemicals that could lead to a subconscious link between scent and sexual arousal. But unlike the smell of Axe body spray, the scientific evidence of that connection is not yet overwhelming.

Now, a discovery by two Arts and Sciences researchers could bolster the idea that when it comes to choosing mates, the nose knows more than we think. James Cherry, an associate professor of psychology, and Michael Baum, a professor of biology, have identified a new pathway for odor that activates the reproductive centers in mouse brains. If such a pathway also exists in humans, it could mean that the sense of smell does influence sexual attraction.

The fact that odor plays a role in mouse sexual behavior was no surprise to the two scientists, who have spent the last decade studying olfaction and the other sensory inputs of mouse brain. Recently, working with biology doctoral student Ningdong “Cam” Kang (GRS’09), Cherry and Baum have traced the pathway of telltale chemicals through the mouse brain, from the olfactory system to the brain’s reproductive core. They found that mouse brains process pheromones not only through the accessory olfactory system, which picks up on the odors from direct physical contact, but also through the main olfactory system, previously thought to process only volatile odors in the air. “We found direct connections from the main olfactory system to these reproductive centers in the brain,” Cherry says. What that could mean for humans, says Baum, is that our brains may be able to process pheromones after all. Their findings could reinforce other evidence of human receptivity to pheromones that has accumulated over recent decades, beginning with a series of studies in the 1970s and the 1980s that showed that underarm odor triggered “menstrual synchrony” in female roommates. In 2005, Swedish researchers used magnetic resonance imaging to show that women and homosexual men had more brain activity than heterosexual men when exposed to the odor of a testosterone derivative commonly found in male sweat; the brains of men and homosexual women reacted more to the scent of a steroid common in female urine.

Showing brain activation is one thing, and demonstrating a link to behavior is another. Now that Cherry and Baum have demonstrated the connections between the main olfactory system and the reproductive center of the mouse brain, the next steps, says Cherry, are “to demonstrate that, functionally, it’s driving some of these important reproductive behaviors and to look into the extent to which this system is involved in these behaviors in comparison to the accessory system.”

For humans, “the olfactory system is the third-fiddle sense or even fourth-fiddle,” he says. “People think you could live without it, that it’s sort of a quality-of-life sense. But to think that our mate choice, one of the most critical decisions we make in life, could be affected by how some other individual smells — that’s intriguing.” **CHRIS BERDIK**