

Pheromone: Fact or Figment?

I suspect I am one of many, many people who go through their days without giving a thought to pheromones. But I've discovered there's a whole community that revolves around pheromones, commonly defined as secreted or excreted chemical factors that trigger a social response in members of the same species. That definition draws from Wikipedia, the first of some 2.5 million hits when I Googled *pheromone*.

The very next site had a different tone: "Pheromones for Men & Women By Dr. Amend. Get The Pheromone Advantage! Pheromones can help with sexual attraction."

There are at least two on-line forums: "PHEROTRUTH.COM," which calls itself the only uncensored pheromone Internet forum, and PheroTalk, which claims to be "The world's largest pheromone community." The person behind the "Do Pheromones Work?" site spent three pages reviewing *The Scent of Eros for Men*, a fragrance apparently laced with pheromones. After conducting 10 "field tests," he provides details for one of them. During a one-on-one sales meeting with a "quite attractive" young woman, he becomes aware that his scent is having the desired effect. The other party "became noticeably more relaxed, at ease, and friendly with me" and spent part of the time "intensely staring at me."

On the other hand, the reading public is left in no doubt as to how Richard Doty, Ph.D., professor in Penn's Department of Otolaryngology: Head and Neck Surgery, feels about the pheromone phenomenon. The title of his recent book is *The Great Pheromone Myth* (Johns Hopkins Press, 2010). As he notes in Chapter 8, "pheromone-laden products are now a substantial element of the multibillion-dollar personal care

products industry." In discussing studies purporting to show the effectiveness of products containing "proprietary synthesized human sex pheromones," he does not mince words: "In light of the discrepant findings among these studies, their funding source, the unidentified nature of the agents involved, the questionable marginal statistical effects, the relatively small number of subjects tested, and the numerous logistic and experimental design problems, one must question whether these putative pheromones have any meaningful influences on human sociosexual behavior."

Mammals Are Much More Complex

But it is not only the more obviously commercial uses or misuses of pheromones that Doty, who is also director of the Smell and Taste Center, attempts to discredit. According to Doty, it's a momentous leap from the insect world to the world of mammals, and people have made untenable connections between them. In the 1930s, entomologists sought to describe the many chemicals involved in how insects communicate and reproduce. *Pheromone* eventually became the preferred term. But over the last 50 years, the term was increasingly used in studying mammals as well. As Doty explained this fall in a talk at Penn's book store, the basic tenet of pheromones "is generally fallacious when applied to mammals." Even more strongly: "I'm basically saying there are no such things as pheromones."

In his book, Doty painstakingly examines many previous studies on "pheromones" and their supposed effects. Indeed, almost one-fourth of the book is notes and references. Even the more publicized studies, according to Doty, have major design flaws. In essence, Doty's thesis is that "it is erroneous to infer that a plurality of mammalian behaviors and endocrine responses is uniquely determined in an invariant way by single or small sets of chemical stimuli. . . ." While acknowledging the influence of biological secretions, he asserted in his talk that "mammals are not automatons." He also has an argument with the semantics involved – *pheromone* seems to be much too loosely used. When asked what to replace it with, he replied, "My feeling is you don't need the term," which is loaded with inherent beliefs. Operationally – to describe the actual science involved in the complex nervous systems of mammals – it is unnecessary.

Showing some humor, Doty invited the listeners to "stand up and tell me I'm full of it" after his talk. Nobody did.

That is not the case universally. When Doty wrote an essay based on his book for *New Scientist* (27 February 2010), an Oxford zoologist dissented in a letter to the editor. Most of the writers commenting on coverage of *The Great Pheromone Myth* in England's *Daily Mail* also disagreed. James V. Kohl, an independent laboratory scientist who has published widely on pheromones, has mounted a kind of online campaign against Doty's book. In one site, he writes that Doty "missed something that continues to be of huge significance to us all." According to an Internet product review, Kohl is one of the developers of the aforementioned Scent of Eros, which sells, the review notes, for about \$50 a bottle.

I suspect Doty will not back down. ■

