

Study finds women prefer perfumes that mimic their immune system cells

January 24 2013, by Bob Yirka



Credit: Wikipedia (public domain)

(Phys.org)—A research team in Germany has found that when given the choice, women prefer the smell of perfume that has chemicals in it that mimic the smell of their own immune proteins. In their study published in the *Proceedings of the Royal Society B*, the researchers found that female volunteers applying perfumes preferred those with a synthetic ingredient similar to major histocompatibility complexes (MHCs) found in their own cells.

Virtually every cell in the [human body](#) has MHC, it's a protein the body uses to help keep track of which cells belong in the body, and which are

invasive. [Cells](#) that have the protein are not attacked by the immune system. But MHCs, according to this new research, also have an odor that may play a part in [mate selection](#).

Prior research has shown that women prefer the scent of a man that has MHCs that are similar to their own, but not too similar. In this new effort, the researchers looked into the possibility that women use [perfume](#) as a means of enhancing their own MHCs, thereby, assisting in choosing a mate that will help provide [offspring](#) with a strong immune system.

To test this idea, the researchers enlisted the aid of 22 female volunteers who were asked to shower, wear a non odor producing t-shirt and to apply different perfumes to their underarms – each was created to smell identical to the others, the difference was in the synthetic MHCs that were added. The study went on for two nights and afterwards, each of the volunteers were asked to report which perfumes they preferred. The synthetic MHCs added to the perfumes were created to mimic those found in an average sample of people, except for one – that one was intended to recreate the volunteer's actual MHCs.

In analyzing the preferences given by the volunteers, the researchers found that they consistently (smokers and those with colds were excluded) chose the perfume that had the synthetic MHC in it that mimicked the one produced naturally in their own bodies. This, the researchers claim, shows that while women prefer others to smell of MHCs that are different from theirs, they prefer the smell of their own MHCs on themselves. To bolster this assertion, they asked another group of women to sniff different perfumes with different MHCs in them while undergoing an fMRI exam. In so doing, they noted that only the perfume with the MHC that mimicked the person's own proteins, caused the middle frontal cortex to become active.

Taken together, the researchers propose that the evidence indicates that the real purpose of perfume is likely to enhance the MHC odor of their own bodies to aid in attracting a mate that is most suitable from an immunological perspective.

More information: Major histocompatibility complex peptide ligands as olfactory cues in human body odour assessment, Published online January 23, 2013 [doi: 10.1098/rspb.2012.2889](https://doi.org/10.1098/rspb.2012.2889)

Abstract

In many animal species, social communication and mate choice are influenced by cues encoded by the major histocompatibility complex (MHC). The mechanism by which the MHC influences sexual selection is a matter of intense debate. In mice, peptide ligands of MHC molecules activate subsets of vomeronasal and olfactory sensory neurons and influence social memory formation; in sticklebacks, such peptides predictably modify the outcome of mate choice. Here, we examine whether this evolutionarily conserved mechanism of interindividual communication extends to humans. In psychometric tests, volunteers recognized the supplementation of their body odour by MHC peptides and preferred 'self' to 'non-self' ligands when asked to decide whether the modified odour smelled 'like themselves' or 'like their favourite perfume'. Functional magnetic resonance imaging indicated that 'self'-peptides specifically activated a region in the right middle frontal cortex. Our results suggest that despite the absence of a vomeronasal organ, humans have the ability to detect and evaluate MHC peptides in body odour. This may provide a basis for the sensory evaluation of potential partners during human mate choice.

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