

Hand odor can reveal a person's sex, study shows

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Representation of a hand odor plume with chemicals characteristic for females and males. Credit: Eduardo Merille, Florida International University, CC-BY 4.0 (creativecommons.org/licenses/by/4.0/)

The profile of scent compounds from a person's hand can be used to predict their sex, according to a new study led by Kenneth Furton of Florida International University, and published in the journal *PLOS ONE*.

In [criminal investigations](#), dogs have long been used to reliably identify and track people based on their [odor](#). But while human scent evidence from the field is well established, researchers have made little progress in analyzing human scent profiles in the lab.

In the new study, researchers used an analysis technique called [mass spectrometry](#) to analyze the volatile scent compounds present on the palms of 60 individuals—half male and half female. After identifying the compounds in each sample, the team performed a [statistical analysis](#) to see if they could determine the individual's sex based on their profile of scents. The analysis successfully predicted a person's sex with a 96.67% accuracy rate.

Robberies, assaults and rape are all crimes that are often executed with a perpetrator's hands, and thus have the potential to leave behind valuable trace evidence at a [crime scene](#).

The new study shows that it is possible to predict a person's sex based on hand scents, and existing human odor research indicates scent compounds can also reveal a person's age and racial or ethnic group. With further validation, the chemical and statistical analyses presented in this paper could be used to uncover many details about a potential

perpetrator solely through their hand scent profiles.

The authors add, "This approach to analyzing hand odor volatiles can be applied when other discriminatory evidence such as DNA is lacking and allow for differentiation or class characterization such as sex, race and age."

More information: Multivariate regression modelling for gender prediction using volatile organic compounds from hand odor profiles via HS-SPME-GC-MS, *PLoS ONE* (2023). [DOI: 10.1371/journal.pone.0286452](https://doi.org/10.1371/journal.pone.0286452)

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