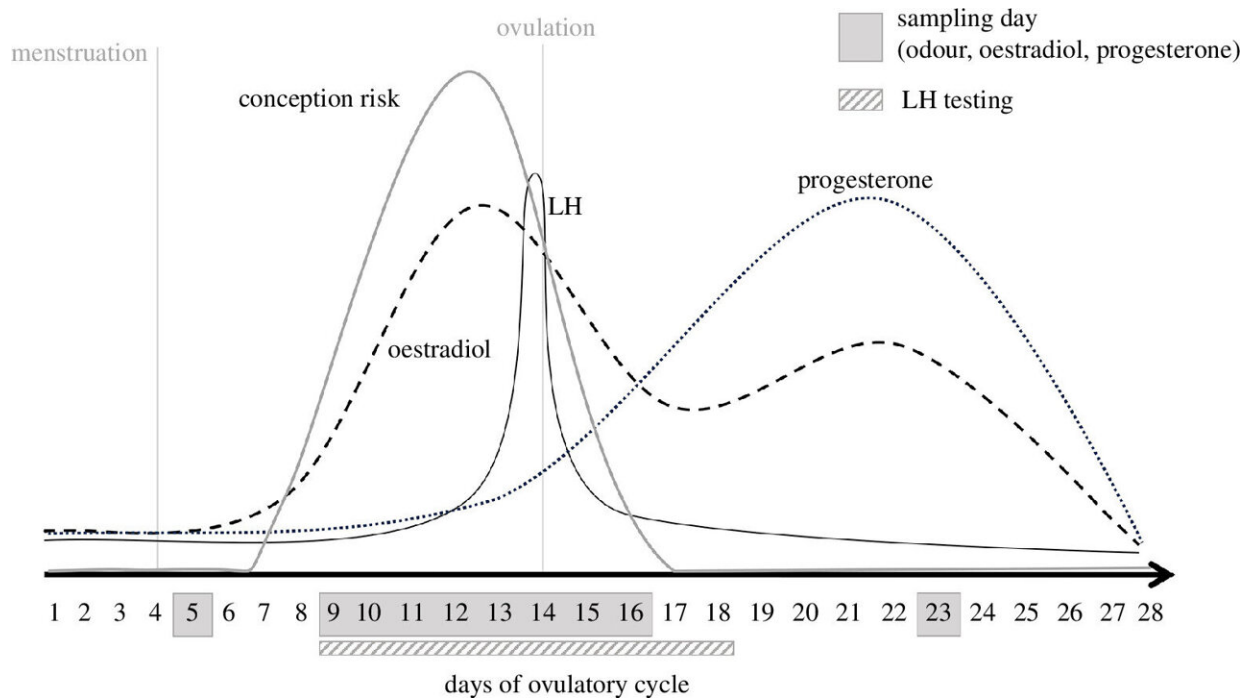


Does fertility affect a woman's body odor? Study finds no evidence

July 25 2024, by Nina Vogt



Timing of sample collection across an exemplary ovulatory cycle of 28 days. Patterns of conception risk, ovarian hormones, cycle length and timing of ovulation are idealized for illustration. Depicted are the three ovarian hormones relevant to our study with luteinizing hormone abbreviated as LH. Credit: *Proceedings of the Royal Society B: Biological Sciences* (2024). DOI: 10.1098/rspb.2023.2712

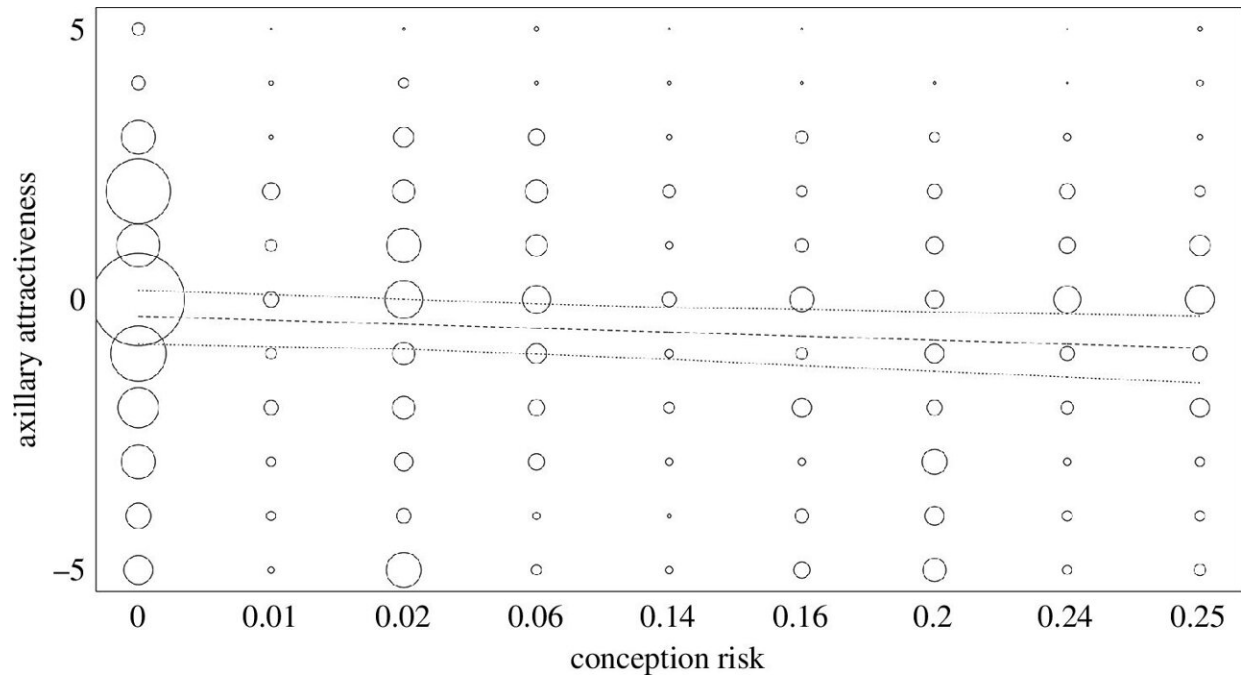
Who we choose as a partner depends in part on who we find attractive

on the outside. Scientists have long wondered whether potential partners can also sense a woman's fertility, for example through subtle changes in her body odor.

Researchers from Leipzig University, the Max Planck Institute for Evolutionary Anthropology and the University of Göttingen have now turned their attention to this question. In a new study, [published](#) in *Proceedings of the Royal Society B: Biological Sciences*, they not only looked at how men rated women's odors on different days, but also, for the first time, carried out a [chemical analysis](#) of the odor samples. Using both methods, they found no evidence that women smell more attractive to men on their fertile days.

The researchers combined two methods to test whether and how body odor changes during the female cycle and whether men perceive it differently depending on the day of the cycle. They took samples of underarm odor from 29 women on 10 days spread over a [menstrual cycle](#), with more samples taken during the fertile period. A group of 91 men were then asked to rate the odor samples. In 16 of the women, the research team also looked at whether the chemical composition of the odor samples differed between the women's fertile and infertile days.

The results of both tests pointed in the same direction: there was no evidence from the odor ratings that men found a woman's odor more attractive—and therefore that they preferred her—on her fertile days than on her infertile days. Chemical analysis of the odor samples also showed no correlation between the composition of the underarm odor and the women's current fertility status.



Ratings for axillary attractiveness predicted by conception risk. Ratings on the y-axis range from extremely unattractive (−5) to extremely attractive (+5). Credit: *Proceedings of the Royal Society B: Biological Sciences* (2024). DOI: 10.1098/rspb.2023.2712

New results from combined and more stringent methods

There is some controversy in the research literature about the theory that a woman's body odor smells better to men around ovulation than on infertile days. The findings from Leipzig and Göttingen now add to our understanding of body odor and hormonal influences.

Madita Zetsche, biologist and first author of the study, explains that the results of her research differ from some previous studies because of the combined and more robust methodology.

"The female cycle is an incredibly complex process. This makes research into the effects associated with the cycle very challenging, especially when it comes to finding the right methodology," explains Zetsche.

For example, in most previous studies, women's fertile days were determined based only on the length of their cycle, whereas the new analysis also confirmed the day of ovulation using hormones, which is much more accurate.

"We now have more robust methods at our disposal. This means that it is possible that newer and more methodologically rigorous studies will come to different conclusions than those of 10 years ago."

Zetsche adds that there are still no agreed methodological standards for investigating cycle-related perceptual effects, such as changes in body odor perception between fertile and non-fertile days.

Professor Lars Penke, a psychologist at the University of Göttingen, led the perceptual analysis in the research project. He said, "We hope that the results of our study will help to keep the dialogue in this field of research open and that further collaboration will pave the way for a robust methodological standard. This would also help us to re-examine the findings of older studies."

More in-depth research into the chemical and evolutionary aspects of body odor

The research team sees its new study as an important contribution to the question of how and whether changes in body odor can be detected chemically, a question that has remained unanswered for decades.

Professor Anja Widdig, a biologist from Leipzig University who led the

chemical analysis, says, "We hope that this study will inspire further research that looks more closely at the chemical component of body odor."

Evolutionary issues are another focus of the research. "In some [non-human primates](#), my team and I have managed to demonstrate a link between body odor and fertility. How this phenomenon has developed in the course of human evolution is therefore of great interest to us."

More information: Madita Zetzsche et al, Combined perceptual and chemical analyses show no compelling evidence for ovulatory cycle shifts in women's axillary odour, *Proceedings of the Royal Society B: Biological Sciences* (2024). [DOI: 10.1098/rspb.2023.2712](https://doi.org/10.1098/rspb.2023.2712)

Provided by Leipzig University

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