

The 'Big O': How and why evolution brought us the female orgasm

The female orgasm is perplexing. It's not necessary to get pregnant. Penis-in-vagina sex is not the best way to generate one, although that's still the most efficient way to make a baby. And when thinking in human evolution terms, it seems hard to find a compelling reason why humans need have one at all.

A study in the [Journal of Experimental Zoology](#) takes a look at the female orgasm by comparing not just to the male orgasm but also to the hormonal and physiological changes in females of other species. Evolutionary biologists Mihaela Pavlicev and Gunter Wagner say there is reason to believe that female orgasms used to be necessary because it induced ovulation in our pre-human ancestors.

Humans and other primates are cyclic ovulators. Hormonal cycles drive ovulation on a regular schedule, depending on health, nutrition and environment. But many other mammal species are [induced ovulators](#). Females in these species are signaled to release an egg by having sex. It seems likely based on our knowledge of evolution that our common ancestors were also induced ovulators. So, at one time in human history 'orgasm'—or rather the hormone flood that induces ovulation—was absolutely necessary to reproduce.

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The authors also looked at genital morphology across species, from induced ovulators to humans and other primates. Interestingly, as we move from induced ovulator species to spontaneous ovulators the clitoris seems to move too. The clitorises of rabbits for example are located in the reproductive canal. They are directly stimulated in mating which triggers the release of a hormone flood that induces ovulation. [Carl Zimmer writes](#):

Many female mammals release oxytocin and prolactin during sex—the hormones released by women during orgasms. What's more, in many of those species, females use a radically different kind of reproduction. While women release an egg each month, other female mammals, such as rabbits and camels, release an egg only after mating with a male. Ovulatory cycles evolved in only a few lineages of mammals, including our own, Dr. Pavlicev and Dr. Wagner found. Before then, our ancient mammal ancestors originally relied on ovulation triggered by sex with a male.

In humans, there is great variation in clitoris size and location, but the organ steadfastly remains outside of the vaginal canal. This is part of the reason why many women report difficulty in having orgasms from intercourse unless there is additional clitoris-specific stimulation.

Holly Dunsworth, an evolutionary anthropologist at the University of Rhode Island who was not involved in the study, praised the paper's focus on anatomy and physiology rather than human's social relationships.

"It's refreshing to see someone look at the physiology rather than continue to hypothesize about orgasm's

role in mate value,” she said.

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There are a couple of caveats to the study. Pleasure is not restricted just to the moment of orgasm in either male or females. It’s unclear if the induced ovulators are feeling euphoria during mating like that associated with primate orgasms. Female orgasm in induced ovulators is a hot, but under funded area of veterinary research. So while we know the hormone rush in induced ovulators and orgasms are similar, it’s difficult to say they are exactly the same.

Another interesting question is if men can ejaculate without orgasm which would be evidence of the separation between pleasure and reproduction in males as it is in females. In the current medical literature, the phenomenon is quite rare. There are documented cases of men with this experience but it is usually tied to either depression or as a side effect from treatment of depression with [anti-depressants](#). The most compelling follow up question, and hopefully one that draws further research, is how and why spontaneous ovulation evolved in the first place.

Many commentaries on Pavlicev and Wagner’s study compare the female orgasm to the [male nipple](#). Although extraneous, they continue to exist to perpetuate their counterparts in the other sex where they are vital for reproduction and breastfeeding respectively. [Shanoor Seervai writes at STAT](#):

It may have lost its biological function, but the female orgasm is here to stay. That’s because the clitoris and the penis develop from the same part of the embryo. “If the clitoris went away through evolution, so may the penis,” said Wagner. No penis means no way for sperm to naturally enter a woman’s body, so unless we reproduce via medical procedures like in vitro fertilization and artificial insemination, this could threaten the survival of the human race.

But that may also be a stretch. Although a female orgasm is not necessary for pregnancy, [women do care](#) if they’re having them. And they may be using them as a signal for mate choice. After all, if your mate is conscientious enough to care you have an orgasm, he might also be conscientious enough to make sure you and your mutual offspring have enough food to survive.

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