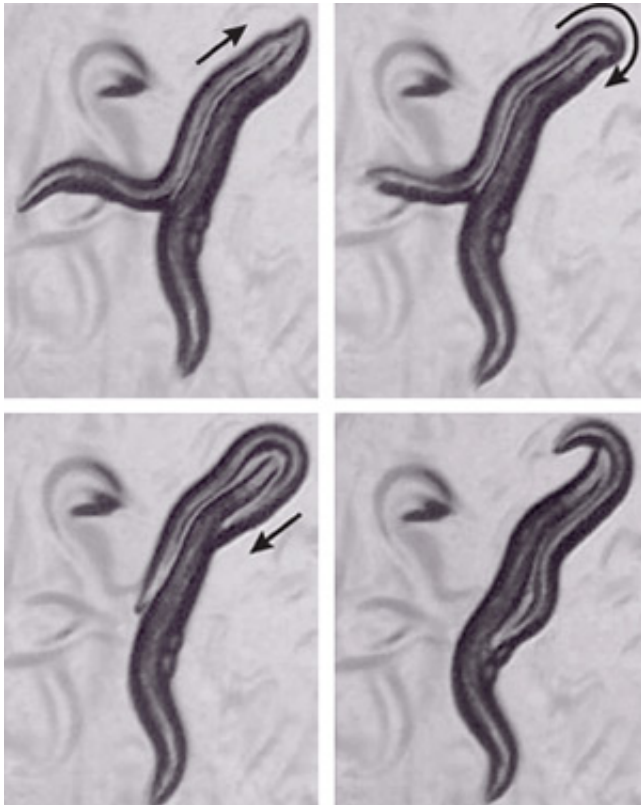


Neurotransmitters linked to mating behavior are shared by mammals and worms

26 October 2012



Bad sex. By quantifying the amount of time that worms took to complete several individual mating steps, scientists have demonstrated that individuals lacking the nematocin peptide have poor "reproductive efficiencies."

When it comes to sex, animals of all shapes and sizes tend to behave in predictable ways. There may be a chemical reason for that. New research from Rockefeller University has shown that chemicals in the brain—neuropeptides known as vasopressin and oxytocin—play a role in coordinating mating and reproductive behavior in animals ranging from humans to fish to invertebrates.

"Our research shows that molecules similar to vasopressin and [oxytocin](#) have an ancient and evolutionarily conserved role in controlling a critical

[social behavior](#), mating," says Cori Bargmann, Torsten N. Wiesel Professor and head of the Lulu and Anthony Wang Laboratory of Neural Circuits and Behavior. "This work suggests that these molecules encode the same kind of information in the brains of very different animals."

Bargmann, whose laboratory studies the relationship between genes, [neural circuits](#) and behavior in the *C. elegans* roundworm, says vasopressin and oxytocin have been implicated in a variety of reproductive and social behaviors in humans and other mammals, including pair bonding, maternal bonding and aggressive and affiliative behaviors. Mice that lack oxytocin may develop social amnesia, and humans who sniff oxytocin through an inhaler change their [cooperative behavior](#) in computer games, behaving as though they "trust" other players more.

Bargmann's team, led by postdoc Jennifer Garrison, identified a peptide and two receptors in *C. elegans* worms that were similar to the mammalian oxytocin/vasopressin signaling system. Male worms that were engineered to lack this peptide, dubbed nematocin, were clumsy sexual partners.

"Although they could perform the motor aspects of mating, their sequences were inefficient, disorganized and repetitious," says Garrison. "Only a fraction of males lacking the peptide were able to complete mating by transferring sperm within five minutes of first contacting a partner, a time in which normal worms are usually successful."

Males lacking nematocin or its receptors also spent less time looking for mates, as though they were less motivated to find partners.

More information: Garrison, J. et al., Oxytocin/Vasopressin-related peptides have an ancient role in reproductive behavior. *Science* online: October 26, 2012.

Provided by Rockefeller University

APA citation: Neurotransmitters linked to mating behavior are shared by mammals and worms (2012, October 26) retrieved 22 November 2019 from <https://phys.org/news/2012-10-neurotransmitters-linked-behavior-mammals-worms.html>

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