

Brain arousal heightens sexual activity in male mice

January 27 2010

(PhysOrg.com) -- Ever since the dawn of time, teenage boys have been defined by their sexual urges. Stereotype or not, the same fate has now befallen male mice. In new research that harkens back to those awkward high school moments and uncomfortable coming-of-age memories, scientists now show that male mice genetically selected for high levels of nervous energy act like sex-crazed teenage boys: highly motivated, but awkward and inefficient.

The most powerful sexual organ, it's said, is the brain. Now here's the evidence. New research from Rockefeller University shows that an overly excitable brain hastens [sexual activity](#) in male mice and increases their nervous energy, a finding that not only points to the existence of a central [brain mechanism](#) that gives rise to all behaviors but also begins to untangle the driving force behind all motivational and emotional states.

Donald W. Pfaff, head of the Laboratory of [Neurobiology](#) and Behavior, and his colleagues, including first author Zachary M. Weil, a postdoc in the lab, are conducting an ongoing large-scale selective breeding project to produce mice that have high or low levels of generalized arousal, the fundamental force of the [central nervous system](#) that gives rise to all mammalian behaviors. In only six generations, the researchers observed that mice with high levels of generalized arousal were highly excitable, mounted females quickly but awkwardly and finished very rapidly.

“These male mice genetically selected for elevated brain arousal are a little bit like teenage boys,” says Pfaff, who led the research. “They are

very excited by the opposite sex but they don't know exactly what to do and so they rush around and mount the animal in all kinds of inappropriate positions, like from the side, which of course does not work. It takes them a long time to get to an intromission, an actual insertion. But then once they get that first intromission, they ejaculate rapidly."

The researchers further sorted the mice by their own generalized arousal score versus their parents' and observed their anxious-like behavior. Compared to mice whose parents scored low on brain arousal, those with high-scoring parents ventured less often into open or lit spaces, where they could be snatched by a predator; they also reacted more to neutral odors, suggesting that their sensory system was on high alert. However, when it came to test differences in mice that actually scored high or low on generalized arousal, the researchers didn't find any.

The finding may explain how the nervous energy of high-scoring males can lead to successful yet awkward sexual exploits that in the end are evolutionarily advantageous. "The same twitchiness that leads to this crazy, sexual excitability, I believe, also leads to the anxiety," says Pfaff. "In evolutionary terms, a high level of generalized arousal is probably highly beneficial."

Problems in the controls over arousal mechanisms may explain a number of diseases, including depression and attention deficit/hyperactivity disorder, Pfaff explains. Depression, for instance, often manifests as an inability to initiate motivated behaviors like getting out of bed or doing simple household chores. On the other hand, ADHD may arise from an overactive arousal mechanism that needs to be tamped down. "This research tries to get to the bottom of what activates behavior," says Pfaff. "It tries to untangle what puts it into gear."

More information: *Proceedings of the National Academy of Sciences*

online: January 14, 2010, Impact of generalized brain arousal on sexual behavior, Zachary M. Weil, Qiuyu Zhang, Allison Hornung, David Blizard and Donald W. Pfaff

Provided by Rockefeller University

Citation: Brain arousal heightens sexual activity in male mice (2010, January 27) retrieved 10 April 2024 from

<https://medicalxpress.com/news/2010-01-brain-arousal-heightens-sexual-male.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--