

NEWS

Deaf mouse study hints at gap between squeaks, speech

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Do mice use their high-pitched vocalizations to communicate, just as people use speech? It's not likely, according to an unpublished study of deaf mice presented yesterday at the **2014 Society for Neuroscience annual meeting** in Washington, D.C.

The question is key for autism research, given the swelling number of **mouse models of the disorder**. Many of these models show **abnormal ultrasonic vocalization patterns**, which some say are akin to the communication problems of people with the disorder.

"Humans, when they see each other, talk; mice, when you put them together, vocalize in the ultrasonic range. There's an intuitive connection there," says **Mu Yang**, assistant adjunct professor of psychiatry at the University of California, Davis, who presented the new findings. "But we have to be careful when we make this link," she says, because this science is **in its infancy**.

Yang's study began serendipitously when her team was characterizing the behaviors of mice missing one copy of **16p11.2**, a chromosomal region that has been **tied to autism** and **other neurodevelopmental disorders**. The researchers were shocked to realize, while testing for startle responses to loud sounds, that the animals **can't hear**. "These animals are stone deaf," Yang says.

That unexpected deafness presented an opportunity to better understand the nature of mouse cries.

Yang placed a male 16p mouse in a chamber with a female. In normal mice, this interaction prompts the male to emit vocalizations, but the 16p mutants cry much less, Yang says. “You could say, ‘Well, they’re smaller, they’re deaf, of course there’s something wrong with them,’” she says.

Interestingly, though, when Yang took the female out of the cage for a few minutes and then returned her, the 16p mutant made just as many vocalizations as control mice. That means, Yang says, that “whatever apparatus they need for emitting vocalizations is there.”

What’s more, the vocalization repertoire, or the range of sounds the animals make, is similar between 16p mice and controls, Yang says. This suggests that mouse vocalizations are largely instinctive, Yang says, rather than intentional, reciprocal communication as speech is in people.

“Some people will hate me for saying this because there’s a huge controversy out there,” she adds. For example, a 2012 study found that mice **adjust their calls** depending on what other mice they’re housed with.

When studying autism mouse models, researchers should be cautious in interpreting their results, Yang says. “Just because we get less calls, or different calls, does not mean we have a model for a communication deficit.”

One caveat to the study is that Yang does not know whether the mice are born deaf or lose their hearing over the course of early development. If the latter is true, then it’s possible that the animals learned some of their vocalization behaviors before going deaf.

*For more reports from the 2014 Society for Neuroscience annual meeting, please **[click here](#)**.*