# House mice may modulate their vocalizations depending on the sex of the receiver

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House mice may modulate their vocalizations depending on the sex of the receiver. Credit: Bettina Wernisch

Wild-derived house mice call at higher rates and frequencies during interactions with the opposite sex than with the same sex, according to a study published December 13, 2017 in the open-access journal *PLOS ONE* by Sarah Zala from Konrad Lorenz Institute of Ethology, Austria, and colleagues.

During social and sexual interactions, house mice make surprisingly complex ultrasonic vocalizations with features similar to bird song. These ultrasonic vocalizations have been classified into more than 10 distinctive elements, and these "syllables" are often emitted in "phrases" of repeated sequences. Moreover, these calls appear to serve functions including social recognition, intimidating rivals, and attracting mates.

However, the role of these vocalizations has been studied primarily in laboratory mice. Zala and colleagues studied vocalizations in the first generation of house mice born to wild-caught parents. The researchers compared vocalizations of mice when they were paired with the same sex to those when they were paired with the opposite sex. Vocalizations were recorded for 20 males and 20 females, and each trial lasted 10 minutes. Spectrographic analysis of each element—or candidate syllable—in the vocalizations included frequency, amplitude and time.

The researchers found that in wild-derived house mice, rates and frequencies of calling were higher among both males and females when paired with the opposite sex than with the same sex. In addition, call amplitudes tended to be higher when a male was paired with another male rather than with a female. These findings suggest that house mice modulate their vocalizations depending on the sex of receivers.

In addition, study mice emitted up to 2,083 ultrasonic vocalization elements per trial, with most mice (60%) emitting 50 or fewer elements. As a species that is studied intensively, the house mouse has great potential as a model system for investigating animal communication and behavioral biology.

"Interestingly, mice vocalized at higher rates during opposite- compared to same sex interactions," says Zala. "Females called at higher frequencies when presented with a male than a female mouse and males called at higher frequencies when presented with a female than a male mouse."

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