HealthWatch: Horse Whinnies Packed with Info

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Through their whinnies, horses convey specific information about their identities, including sex, height, and weight, according to French researchers. In the first study of its kind in horses, the investigators found that acoustic analyses of whinnies and the reactions of horses to various recorded whinnies also suggest that vocal calls play an important social role and appear to be unique to each horse.

Horses are historically considered to be dependent on sight as opposed to hearing for their social communication, so this finding represents a shift in researchers' understanding of equine behavior.

Dr. Martine Hausberger, director of the Laboratory of Animal and Human Ethology, a branch of the French national research center (CNRS) and of the University of Rennes 1, said the lab focuses on the link between social bonds and auditory communication in various species.

The researchers characterized the whinny as a three-part call, with an introduction, a climax, and an end, that varies in frequency according to sex. Stallions have low-pitched frequencies, whereas mare and gelding calls are higher. Two of the study's intact stallions, which were subordinate to other stallions in their social group, also had high-frequency calls similar to those of mares.

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Whinny recordings of some of the study horses were played back to isolated study horses to observe their reactions. The listeners were clearly able to recognize the social category of the caller, whether it was a horse they knew well, knew from a distance, or didn't know at all, the researchers said. The physical reactions of the horses were very sound-specific, varying significantly in terms of attention and attraction.

"Our results show that horses recognize the voices of their social partners even when they can't see them, which explains their reactions when they are separated," Hausberger said. "If they're still within hearing range (1 km / 0.6 mile) of each other, their reactions are going to be strong."

Study: Single EHV-1 Mutation Can Cause Lethal Neurologic Disease

A single mutation in the genome of the equine herpesvirus-1 (EHV-1) was "necessary and sufficient" to cause neurologic disease in horses in a new study, reported Cornell University researchers.

All strains of EHV-1 can cause respiratory disease and abortion, but only a subset of EHV-1 strains can cause neurologic disease, said Dr. Nikolaus Osterrieder and colleagues. It has previously been suggested that some strains of EHV-1 have a single mutation in the gene that encodes the enzyme called DNA polymerase. This mutation results in a single, seemingly relatively innocuous amino acid substitution in the enzyme, but the researchers wanted to determine whether the mutation was "not only necessary, but also sufficient" to cause neurologic disease.

They studied this by taking a non-neurovirulent strain of EHV-1 and inserting the single point mutation into its genome. They inoculated six horses with the mutated virus and three horses with the native, non-neurovirulent virus.

The non-neurologic form of EHV-1 resulted in only very mild upper respiratory disease and a complete absence of neurologic signs. In contrast, two of the six horses inoculated with the mutated virus rapidly developed neurologic signs, leading researchers to surmise that the single mutation was, indeed, responsible for the ability of the virus to cause neurologic disease in horses.

What continues to perplex the researchers is how a single mutation that is not in the enzyme's catalytic (active) site can

have such a drastic impact. Research is ongoing.
