

Honeybees use right antennae to tell friend from foe | Zoology

Asymmetry in sense of smell alters behavior

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To avoid a scuffle, a wayward honeybee might do best to stay on a stranger's left. That's because honeybees preferentially use their right antenna to distinguish between compadres and intruders, researchers report June 27 in *Scientific Reports*.

Scientists knew that the bees' left and right antennae picked up different sensory cues, but the new work makes clear that this asymmetry extends into how bees navigate social situations.

The study also helps scientists understand a "big and interesting question: Why are our brains asymmetric?" says honeybee physiologist Julie Mustard of Arizona State University in Tempe. "The idea is that asymmetries allow the brain to have more area for processing complex information."

Honeybee antennae are blanketed with a jungle of hairlike sensilla, microscopic protrusions housing neurons that transmit sensory information to the brain. Compared with the left antenna, the right contains more sensilla dedicated to smell, known to play a key role in honeybee communication.

To find out whether lopsidedness would influence behavior, researchers led by Giorgio Vallortigara of the University of Trento in Italy snipped bees' right or left antennae and then paired off the clipped bees in petri dishes. When both members of the pair came from one hive, couples with intact right antennae responded quickly with a French kiss of sorts: They used their tongues to sample each other's fluids. But leftie hive-mates held back the friendly overtures, sometimes exposing their jaws or pointing stingers at each other.

In pairs of bees from two different colonies, the right-antennaed bees were more likely to act aggressively toward strangers than the lefties, which mounted fewer stinger-baring displays toward the foreign bees.

The right and left sides of the bees' brains perform different functions, Vallortigara says, making their brains more like humans' than scientists had expected. The open question is whether a common genetic recipe leads to brain asymmetry across species, Vallortigara says.

Honeybees with only a right antenna recognize and behave cordially toward each other. But bees with only a left antenna go on the attack, even though they are hive-mates.

Credit: Courtesy of Giorgio Vallortigara



Citations

L.J. Rogers et al. A right antenna for social behavior in honeybees. *Scientific Reports*. Published June 27,

Suggested Reading

T. Saey. DNA tags may dictate bee behavior. Science News. Vol.182, October 20, 2012, p. 10. Available online: [\[Go to\]](#)