



DOES COCAINE MAKE HONEY BEES DANCE?

\$243,000

Australia

National Institutes of Health

Honey bees in Australia are flying high, dancing under the under the influence of cocaine.

Gene Robinson, a researcher at the University of Illinois at Urbana–Champaign, received more than \$242,600 from the National Institutes of Health to examine the impact of cocaine on the dancing behavior of bees.³⁹⁵ Robinson teamed up with Andrew Barron from Macquarie University in Australia and others to conduct studies at The Australian National University Research School of Biological Sciences, Canberra.³⁹⁶

Cocaine did increase bee dancing. The bees under the influence “were about twice as likely to dance” and circled “about 25 percent faster.”³⁹⁷

The bees, however, “only danced when in the appropriate social environment of the dance floor” when interacting socially within the hive.

“It’s not like they’re gyrating wildly on the dance floor out of control,” Robinson notes.³⁹⁸

“Foragers treated with cocaine but held in small vials isolated from the hive never performed any movements resembling dances.”³⁹⁹ This indicates “cocaine stimulates dancing only in the appropriate social context of a forager returning resources to the colony.”⁴⁰⁰

“Cocaine increased the likelihood of an individual bee dancing, but did not make bees dance every time, demonstrating that cocaine did not simply release dance behaviour in every treated bee.”⁴⁰¹

Unlike the hokey pokey, the YMCA, the macarena, the electric slide, or the nae nae, the honey bee dance known as the waggle is an “incredibly complex set of activities,” Robinson explains. “It’s a very integrated communication system, very elaborate and very elegant, one of the seven wonders of the animal behavior world.”⁴⁰²

Dancing is an important form of communication. “Forager honey bees perform symbolic dances to advertise the location and value of floral resources to their nest mates,” note the authors of this study.⁴⁰³

But the cocaine caused the bees to “overestimate the value of the floral resources they collected,” with the drugged bees essentially exaggerating the amount of nectar to the rest of the colony.⁴⁰⁴

“In these experiments, bees were given freebase cocaine.”⁴⁰⁵ Barron notes the cocaine used in the study was kept “in a safe bolted to a concrete floor within a locked cupboard in a locked room in a locked building with a combination code not known even to me. A technician from the ethics department has to walk across campus to supervise the release of the cocaine.”⁴⁰⁶

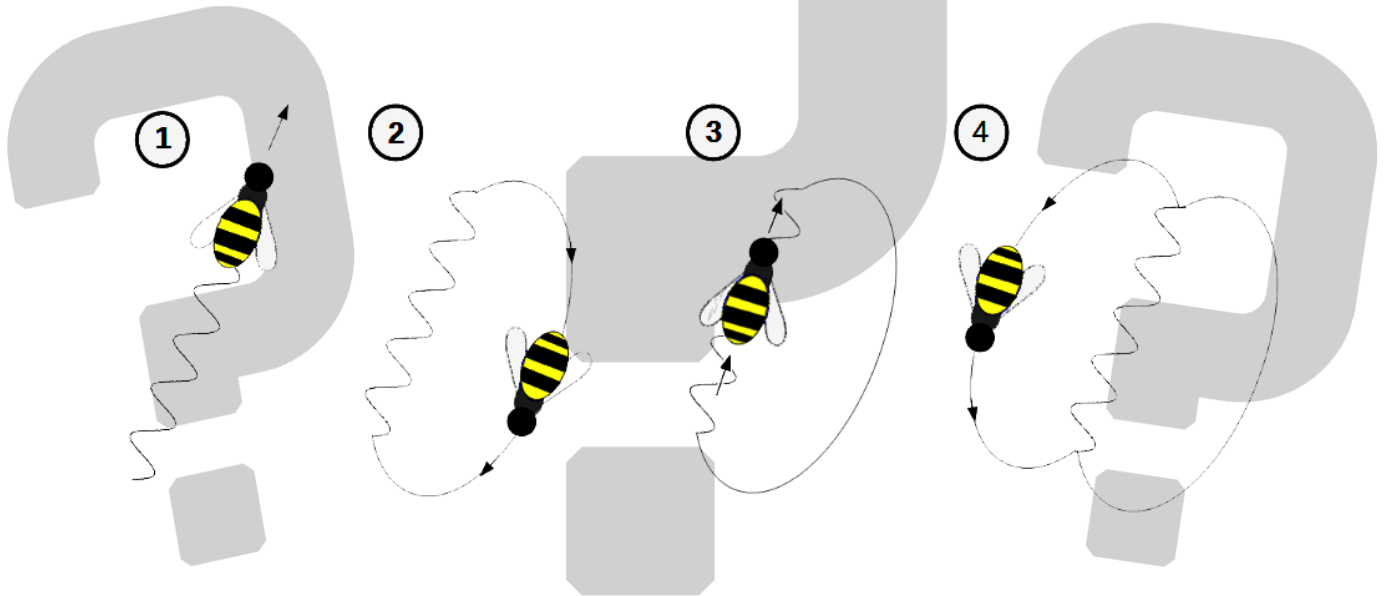
To administer the cocaine, the bees were first “chilled briefly to immobility by ~2 min exposure to -20°C in a domestic freezer,” then individually treated topically with the cocaine being applied to the dorsal thorax.⁴⁰⁷

The dose of cocaine administered did not appear to interfere with the bee’s ability to fly.⁴⁰⁸ However, the bees exhibited withdrawal-like symptoms when no longer given the drug.⁴⁰⁹

The bee dances were video recorded.⁴¹⁰

Scientists are now studying “whether bees begin to crave cocaine and need more for the same effect, like humans.”⁴¹¹

Enough dancing around the issue, these studies that are bee bopping with taxpayers’ money should buzz off.



The honey bee dance known as the waggle consists of a set of motions that is varied to convey information to other bees. The dance involves this set of four general movements.⁴¹²