‘Stop’ signal in honey bee communication discovered by biologist

By ANI  February 12th, 2010

WASHINGTON - A biologist at UC (University of California) San Diego has discovered that honey bees warn their nest mates about dangers they encounter while feeding with a special signal that’s akin to a “stop” sign for bees.

The discovery resulted from a series of experiments on honey bees foraging for food that were attacked by competitors from nearby colonies fighting for food at an experimental feeder.

The bees that were attacked then produced a specific signal to stop nest mates who were recruiting others for this dangerous location.

Honey bees use a waggle dance to communicate the location of food and other resources.

Attacked bees directed “stop” signals at nest mates waggle dancing for the dangerous location.

The stop sign is a brief vibrating signal made by the bee that lasts for about a tenth of a second with the bee vibrating at about 380 times a second.

“It is frequently delivered by a sender butting her head into a recipient, although the sender may also climb on top of the receiver,” said James Nieh, an associate professor of biology at UCSD.

Bee researchers originally called it a “begging call,” because they believed the signaling bee made it to obtain a food sample from the receiver.

But Nieh discovered in his experiments that one trigger for this signal—which caused the waggle dancers to stop and leave the nest—was attacks from bee competitors and simulated predators.

The more dangerous the predator or competitor, he found, the more the stop signals bees produced to stop other bees from recruiting to that location.

“This signal is directed at bees who are recruiting for the dangerous food location and decreases their recruitment,” explained Nieh.

“Thus, fewer nest mates go to the dangerous food site. This is important because an individual experiences danger and stops recruiting, but the stop signal enables her to ‘warn’ nest mates who have not yet experienced danger and are still recruiting,” he said.

“The end result is that the colony will reduce or cease recruitment to the dangerous food patch in proportion to the danger experienced,” he added.

Nieh found in his experiments that during aggressive food competition, attack victims significantly increased their production of stop signals to nest mates, some by more than 40 times.

“What’s interesting to biologists about the discovery of the stop sign is that it’s
an example of a negative feedback, in which the colony’s actions are stopped for the good of the colony,” Nieh aid. (ANI)

Related News

Honey bees warn nest mates of danger
February 12th, 2010 WASHINGTON - Honey bees warn nest mates about the dangers they encounter, with a special signal that is like a 'stop' sign for others foraging for food at "dangerous" locations, research says. The discovery resulted from a series of experiments on honey bees foraging for food that were attacked by competitors from nearby colonies fighting for food. (ANI)

Scientists create artificial honey bee silk
February 5th, 2010 MELBOURNE - Using genetically modified bacteria, a team of Australian researchers has created artificially produced honey bee silk. "The silks would be good for tough, lightweight textiles, and high-strength applications like advanced aviation and marine composites," ABC Science quoted CSIRO entomologist Dr Tara Sutherland, who led the team of research researchers, as saying.

Scientists discover stroke’s ‘death signal’
January 22nd, 2010 WASHINGTON - A group of scientists has identified a way to block a "cell death signal" that they believe triggers brain damage during strokes. The finding was made by biomedical scientists from the University of Central Florida and Louisiana State University.

We Have Cranberry Honey
Cranberry honey, straight from the bee to your table.
www.BeeFolks.com

Bee’s tiny brain marvel of evolutionary engineering
January 4th, 2010 SYDNEY - The tiny seed-sized brain of the honey bee is such an evolutionary marvel that it can estimate the exact energy expenditure while foraging for pollen. "To make honey, bees must gather more nectar from flowers than the energy spent collecting it, so in order to forage efficiently they need to know how much energy each foraging trip costs them," said Andrew Barron, study author and senior lecturer at Macquarie University.

Scientists jam bacterial chat to fight virulent infections
December 25th, 2009 LONDON - An enzyme capable of disrupting bacterial chats offers a novel way of fighting infections, says a new study. Although bacteria are simple single-celled organisms, they are capable of chatting with one another, by exchanging tiny hormone-like signal molecules.