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SCIENCE SNAPSHOT

by Dan Vergano



Ants build their own medicine cabinet

Life without medicine cabinets has apparently driven one species of farmer ants to extreme measures — growing their own antibiotics. Pesticides may be a relatively recent innovation for human farmers, but a team led by University of Wisconsin bacteriologist Cameron Currie says the ants, who farm fungus, have likely been keeping their crops pest-free with these antibiotics for at least 50 million years.



Ants that farm fungus have been growing their own antibiotics for at least 50 million years.

A close look at curious white spots on "Attine" ants, yielded the find, reported in the current *Science* magazine. Hidden between the mouth and forelegs of the ants are tiny "crypts" the team reports, filled with antibiotic-producing bacteria. "These crypts have small openings to the external surface of the ant," allowing the creatures to apply the antibiotics to their crops, the team found after examining the creatures with a high-tech microscope called an electron micrograph. The antibiotics kill a parasite that plagues the ants' gardens, and in return the bacteria receive a free ride and nourishment from the ants, via specialized glands.

Many other creatures host helpful "symbionts", the researchers note. Some glowing squids contain "bioluminescent" bacteria, and some plants host others that are harmful to pests. But the specialized structure of the farmer ant crypts take the practice to an elaborate level. And closely-related ants that don't grow fungus gardens show no signs of crypts or guest bacteria, they note.

Perhaps most surprising, since the ants have used antibiotics as a gardening tool for millions of years, the finding "raises the question of how the antibiotics have remained effective without rampant evolution of resistance in the parasite." Antibiotic resistance has reduced the effectiveness of many of the antibiotics used by people, for example, a problem linked to many difficult infections in hospitals. If the ants have evolved a solution for antibiotic resistance, their unlikely anatomy may offer help to humankind.

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