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Farming ants run microbe motels

The ants that grow fungus in little gardens face a problem that is well known to human farmers – pests. Scientists have just discovered that farming ants are covered in little "motel rooms" that serve as shelter for bacteria that protect their crops.

The scientists discovered many fungus-farming ants with "cubby holes" on their bodies that provide both food and shelter to tiny organisms called bacteria that make pest-control chemicals.

These antibiotics kill tiny pests that might otherwise get out of control and hurt the fungus that the ants are growing for food.

When the scientists removed white clumps of bacteria from the undersides of ants from the rainforests of Panama, they discovered crescent-shaped cavities on their undersides between the head and first pair of legs. These cavities provide shelter for antibiotic-producing bacteria. The scientists also discovered special cells in these cavities that appear to serve meals for the tiny residents.

The researchers also found cavities for housing bacteria on the bodies of other fungus-gardening ants, but not on ants that do not tend gardens of fungus. The fact that gardening ants (but not ants without gardens) are covered in homes for bacteria that make chemicals useful for ant gardens suggests that ants, fungus, garden parasites and antibiotic-producing bacteria have all been engaged in close relationships for a very long time and have evolved together.

The fact that the antibiotics seem to have remained effective for such a long time is especially interesting given the fact that many antibiotics that humans have recently started using to fight off infections have already stopped working because the pests have "outsmarted" the antibiotics through the process of antibiotic resistance.

This new research is from Cameron Currie at University of Wisconsin-Madison in Madison, WI; the University of Kansas in Lawrence, KS and at Smithsonian Tropical Research Institute in Balboa, Ancon, Panama and his colleagues. It appears in the 06 January 2006 issue of the journal *Science*.

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