In Brief: A symbiotic, color-changing relationship

November 21 2010

For the tiny pea aphid, body color is a matter of life and death: Red and green color morphs determine their susceptibility to various predators and parasites in the wild.

Now, researchers have identified a particular bacterium, known as Rickettsiella, which changes the insects' body colors from red to green—a discovery that makes it clear that factors other than genetics can influence this important physical trait.

Tsutomu Tsuchida and colleagues were screening the genomes of pea aphids in France, when they found several strains of green aphids that produced red offspring.

As the offspring grew, the researchers noticed that the insects' body colors changed from red to green.

So, the researchers began investigating the various endosymbionts that are known to infect aphids and influence a wide range of their characteristics, such as tolerance of high temperatures or resistance to natural enemies.

The researchers identified a previously unrecognized bacterial symbiont and used antibiotic treatments to rid the aphids of other infections and hone in on this new one, Rickettsiella.

Tsuchida and colleagues say that Rickettsiella appears to increase the

amount of blue-green pigments in aphids without affecting their yellow-red pigmentation very much at all.

In light of these findings, the researchers suggest that this endosymbiotic relationship influences predator-prey interactions, as well as parasitic relationships, among populations of this well-known insect pest.

More information: "Symbiotic Bacterium Modifies Aphid Body Color," by T. Tsuchida et al. *Science*: DOI:10.1126/science.1195463