

'Jekyll and Hyde' bacteria offer pest control clue

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New research at York has revealed so-called 'Jekyll and Hyde' bacteria, suggesting a novel way to control insect pests without using insecticides.

Researchers at the University of York studied the relationship between plant-dwelling insects and the bacteria that live in them – and discovered an unexpected interaction.

Plants are not 'easy meat' for insects. In fact, many insects thrive on plant food only because of the presence of a third party: symbiotic bacteria that live in the insects and provide extra nutrients.

While studying interactions between black bean aphids and their associated bacteria, York researchers discovered an intriguing new category of organism that they dubbed 'Jekyll and Hyde' bacteria.

Black bean aphids can live on a number of different plant species. In most situations, their internal bacteria are harmless or even beneficial – this is their 'Jekyll' side.

But on certain plants, the relationship between insect and bacteria changes with the microscopic organisms exhibiting a disruptive 'Hyde' side. The insects grow and reproduce very slowly, while the bacteria themselves proliferate to very high densities in a short time – almost as if the bacteria were 'betraying' their hosts.

Further experiments have suggested that the factor triggering this strange

change is the composition of nutrients in the plants where the creatures live.

The results, published in the *Proceedings of the Royal Society B*, may point the way to new methods to control aphids and other insect pests.

Professor Angela Douglas, of the University's Department of Biology, said:

“We now have the basis to explore precisely how these insect pests control their bacteria – and perhaps to develop ways to make the bacteria ‘turn nasty’ on the insects. These findings offer exciting new opportunities to control aphids and other pests without using insecticides.”

Source: University of York

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