

Scientists discover how to send insects off the scent of crops

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Biotechnology and Biological Sciences Research Council (BBSRC)-funded research, published this week in *Chemical Communications*, describes how scientists have discovered molecules that could confuse insects' ability to detect plants by interfering with their sense of smell. This could reduce damage to crops by insect pests and contribute to food security.

Lead researcher Dr Antony Hooper of Rothamsted Research, an institute of BBSRC said: "One way in which insects find each other and their hosts is by smell, or more accurately: the detection of chemical signals - pheromones, for example. Insects smell chemicals with their [antennae](#); the chemical actually gets into the antennae of the insect and then attaches to a protein called an odorant-binding protein, or OBP. This then leads to the insect changing its behaviour in some way in response to the smell e.g. flying towards a plant or congregating with other insects."

Studying an OBP found in the silkworm moth *Bombyx mori*, Dr Hooper and his team were able to look at how the OBP and a relevant pheromone interact. They also tested the interaction between OBP and other molecules that are similar to, but not the same as, the pheromone.

Dr Hooper continued: "As well as learning about the nature of this interaction we've actually found that there are other compounds that bind to the OBP much more strongly than the pheromone. We could potentially apply these compounds, or similar ones, in some way to block

the insects' ability to detect chemical signals - the smell would be overwhelmed by the one we introduce. We'd expect the insects to be less likely to orientate themselves towards the crop plants, or find mates in this case, and therefore could reduce the damage.

"There is a lot of work to do from this point. We want to test this idea with important crop [pests](#) - we'll probably start with aphids because they are a serious pest and we have some idea of what the [aphid](#) OBPs are like from the [genome sequence](#). We'd also hope to apply our knowledge to [insects](#) such as tsetse flies and mosquitoes that carry human diseases. And ultimately we'll look at developing ways to design suitable compounds to control these pests."

Professor Douglas Kell, BBSRC Chief Executive said: "Around a quarter of crops are lost to pests and diseases and so if we are to have enough food in the future it is not just a matter of increasing gross yield. To secure our future food supply we must look for new and innovative ways to prevent and control pests and diseases. This is an interesting finding that could be applied across a number of important insect pests and may have far reaching implications for preventing human disease as well."

Source: Biotechnology and Biological Sciences Research Council ([news : web](#))

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