

Malaria weapon: Genetically engineered fungus with spider, scorpion venom

A research team from the University of Maryland has genetically engineered a fungus with spider and scorpion toxins to enhance its artillery and boost its mosquito-killing power.

[In response to pesticide-resistant mosquitoes carrying the malaria parasite,] the recent research, [published in *Scientific Reports*](#), began with the fungus *Metarhizium pingshaensei*, which in its natural state already kills of the two disease-carrying mosquito species *Anopheles gambiae* and *Aedes aegypti*. Its gruesome mechanism of action entails penetrating the mosquito's exoskeleton and gradually killing it from the inside out.

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[However,] the researchers therefore decided to give the fungus a genetic makeover, pasting in several new genes expressing neurotoxins derived from both spider and scorpion venom.

"Unlike chemical insecticides that target only sodium channels, many spider and scorpion toxins hit the nervous system's calcium and potassium ion channels, so insects have no pre-existing resistance," explains senior author Professor Raymond St. Leger.

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To keep the potent toxins from disseminating into the broader environment, the team attached a highly specific promotor sequence of DNA to the toxin genes, acting as a genetic "switch" to ensure the expression of the toxins was only triggered once in the blood of an insect.

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion, and analysis. Read full, original post: [Mutant fungus uses spider and scorpion venom to kill malaria mosquitos](#)