

Plants Know When They Are Being Eaten (and Freak Out)

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If you didn't already recognize plants as sentient beings, maybe this study from the [University of Missouri](#) will change your mind:

Researchers at the University of Missouri, in a collaboration that brings together audio and chemical analysis, have determined that plants respond to the sounds that caterpillars make when eating plants and that the plants respond with more defenses.

"Previous research has investigated how plants respond to acoustic energy, including music," said Heidi Appel, senior research scientist in the [Division of Plant Sciences](#) in the [College of Agriculture, Food and Natural Resources](#) and the [Bond Life Sciences Center at MU](#). "However, our work is the first example of how plants respond to an ecologically

relevant vibration. We found that feeding vibrations signal changes in the plant cells' metabolism, creating more defensive chemicals that can repel attacks from caterpillars."

Appel collaborated with Rex Cocroft, professor in the [Division of Biological Sciences at MU](#). In the study, caterpillars were placed on Arabidopsis, a small flowering plant related to cabbage and mustard. Using a laser and a tiny piece of reflective material on the leaf of the plant, Cocroft was able to measure the movement of the leaf in response to the chewing caterpillar.

Cocroft and Appel then played back recordings of caterpillar feeding vibrations to one set of plants, but played back only silence to the other set of plants. When caterpillars later fed on both sets of plants, the researchers found that the plants previously exposed to feeding vibrations produced more mustard oils, a chemical that is unappealing to many caterpillars.

"What is remarkable is that the plants exposed to different vibrations, including those made by a gentle wind or different insect sounds that share some acoustic features with caterpillar feeding vibrations did not increase their chemical defenses," Cocroft said. "This indicates that the plants are able to distinguish feeding vibrations from other common sources of environmental vibration."

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