Research News

Cicada fungus may foster new drug discoveries

Fungus contains chemicals similar to those found in hallucinogenic mushrooms

Cicadas can carry a fungus similar to those found in hallucinogenic mushrooms.

Credit and Larger Version (/discoveries/disc_images.jsp?cntn_id=298810&org=NSF)

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If cicadas made horror movies, they'd probably film the actions of their counterparts plagued by a psychedelic fungus.

West Virginia University (/cgi-bin/good-bye?https://wvutoday.wvu.edu/stories/2019/06/25/-flying-salt-shakers-of-death-the-lives-of-fungal-infected-zombie-cicadas-explained-by-wvu-researchers) researchers funded by NSF have discovered that a cicada fungus called *Massopora* contains chemicals similar to those found in hallucinogenic mushrooms.

The fungus causes cicadas to lose their limbs, then eccentric behavior sets in. Despite the cicadas' physical state, they continue to roam around freely, infecting other cicadas with their disease.

You've heard of "The Walking Dead." This research reports the existence of "The Flying Dead." The results are published in the journal *Fungal Ecology* (/cgi-bin/good-bye?https://www.sciencedirect.com/science/article/pii/S1754504819300352).

"They're zombies in the sense that the fungus is in control of their bodies," said Matt Kasson, a WVU forest pathologist and study author.

Cicadas first encounter the fungus underground, where they spend 13 to 17 years before emerging as adults. Within seven to 10 days above ground, their abdomens begin to slough off, revealing the fungal infection.

The scientists plan to re-sequence the genome of the fungus and analyze the gene expression in both healthy and infected cicadas to better understand the genetic aspects of the discovery.

The results will foster a renewed interest in early diverging fungi and their pharmacologically important secondary metabolites, the researchers believe, which may serve as the next frontier for drug discovery.

The study was funded by NSF's Divisions of Biological Infrastructure <https://www.nsf.gov/awardsearch/showAward?AWD_ID=1349308&HistoricalAwards=false> and Environmental Biology <https://www.nsf.gov/awardsearch/showAward?AWD_ID=1655891&HistoricalAwards=false> . "Many important drugs are discovered by accident while looking for something else," says Sam Scheiner, an environmental biology program director at NSF. "This study of insects and their fungi may end up leading to new medicines."

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