

UW-Health: Parasitic worms use their keen sense of smell to wriggle through their hosts

Posted on Friday, Jul 10, 2020

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MADISON – Parasitic filarial nematodes infect hundreds of millions of people, causing diseases such as river blindness and lymphatic filariasis, which can lead to elephantiasis, a severe swelling of the limbs.

Mosquitoes spread the parasitic worms, which engage in sophisticated migrations within their insect and mammal hosts. One worm, *Brugia malayi*, starts in the mosquito's gut, migrates to its flight muscles, then to its mouth. In its human host, the worm travels between the lymphatic system and the blood. Researchers have little idea how the nematodes achieve these nomadic lifestyles that are crucial for their survival.

In new research, University of Wisconsin-Madison scientists provide the first look at the genetic underpinnings of the worms' migration through their hosts. They identified two genes the nematodes use to respond to cues in their host environment. When the genes are disrupted, the worms are lost and less effective at infecting their hosts.

The genes are part of the nematodes' chemosensation network, a combination of chemical-sensing proteins and nerve cells that let the parasites detect and respond to molecules in their environment. Because these responses are key for the nematode's complex life cycle, they're a potential target for future treatments.

"We're hopeful that a better understanding of how worms are transmitted between hosts and move within them may lead to new approaches for parasite treatment and control," says Mostafa Zamanian, a professor of pathobiological sciences in the

UW-Madison School of Veterinary Medicine and senior author of the report. The work was published in June in the journal PLOS Biology.

STORY CONTINUES AT <https://news.wisc.edu/parasitic-worms-use-their-keen-senses--to-wriggle-through-their-hosts/>