

Biologists' favorite worm gets viruses

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Scientists have discovered that *C. elegans*, a microscopic worm biologists have used in the lab to identify important biological phenomena, suffers from natural viral infections. This may mean that *C. elegans* can help scientists learn more about how hosts and viruses interact. Credit: Marie-Anne Felix, the Monod Institute

A workhorse of modern biology is sick, and scientists couldn't be happier.

Researchers at Washington University School of Medicine in St. Louis, the Jacques Monod Institute in France and Cambridge University have found that the nematode *C. elegans*, a millimeter-long worm used extensively for decades to study many aspects of biology, gets naturally occurring [viral infections](#).

The discovery means *C. elegans* is likely to help scientists study the way viruses and their hosts interact.

"We can easily disable any of *C. elegans*' genes, confront the worm with a virus and watch to see if this makes the infection worse, better or has no effect," says David Wang, PhD. "If it changes the worm's response to infection, we will look to see if similar genes are present in humans and other mammals."

Wang notes that several fundamental aspects of human biology, including the ability of cells to self-destruct to prevent cancer, and [RNA interference](#), an important process for regulating how genes are used to make proteins, were first identified in *C. elegans* and later affirmed to be present in humans.

The findings appear online in *PLoS Biology*.

Marie-Anne Felix, PhD, a researcher who studies nematodes at the Monod Institute, began the study by gathering *C. elegans* from rotting fruit in French orchards. Felix noted that some of her sample [worms](#) appeared to be sick. Treatment with antibiotics failed to cure them.

Felix then repeated a classic biology experiment that led to the discovery of viruses.

"She ground up the sick worms, passed them through a filter fine enough to remove any bacterial or parasitic infectious agents, and exposed a new batch of worms to the ground-up remains of the first batch," Wang says. "When the new batch got sick, she knew that a viral infection was likely to be present."

Wang, associate professor of pathology and immunology and of [molecular microbiology](#), specializes in the identification of novel

viruses. He found the worms had been suffering infections from two viruses related to nodaviruses, a class of viruses previously found to infect insects and fish. Nodaviruses are not currently known to infect humans. Tests showed one of the new viruses can infect the strain of *C. elegans* most commonly used in research.

"Model organisms are essential to important steps forward in biology, and we're eager to see what *C. elegans* can teach us about the way hosts and viruses interact," Wang says.

More information: Felix M-A, Ashe A, Piffaretti J, Wu G, Nuez I, Belicard T, Jiang Y, Zhao G, Franz CJ, Goldstein LD, Sanroman M, Miska EA, Wang D. Natural and experimental infection of *Caenorhabditis* nematodes by novel viruses related to nodaviruses. *PLoS Biology*, January 25, 2011. doi:10.1371/journal.pbio.1000586

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