

A defense mechanism to kill intestinal worms

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Intestinal worm. Credit: Lewis Entwistle

Researchers have discovered a mechanism that kills intestinal worms, which affect nearly a third of the world's population as well as livestock. The findings, published in *Cell Host & Microbe*, could help scientists create new vaccines or drugs to combat intestinal worm infections.

The worm-killer is an [enzyme](#) that is thought to disrupt vital cell processes in intestinal worms. Although scientists have previously known how worms are expelled from the body through the gut, this is the first time that a mechanism of worm killing has been discovered.

"If we can figure out how the enzyme is regulated, increasing the amount may promote immunity to intestinal worms," says Lewis Entwistle, first author of the paper and researcher at the Francis Crick Institute.

The research was led by the Francis Crick Institute, in collaboration with the London School of Hygiene and Tropical Medicine, the University of Cincinnati College of Medicine, and Genentech Inc.

The team first suspected that this enzyme might have a role in killing intestinal worms when mice that are immune to worm infections were found to have sustained high levels of the enzyme.

When they knocked out the gene in mice, so that they didn't make the enzyme, intestinal worms were not killed and expelled from the body as normal. But when they pre-treated worms with the enzyme before [infection](#), killing and expulsion from the mice was restored.

Mark Wilson, senior author of the paper and Group leader at the Francis Crick Institute, says: "Building up the armory is pointless, without the right bullet. The immune system certainly plays a role in getting rid of intestinal worms, but this enzyme is the 'bullet' that kills them.

"There is an emerging problem of drug-resistant worms, and a need for

better vaccines against them. Our findings provide a new avenue for developing novel drugs and vaccines, to combat the infections."

To find out how the enzyme kills intestinal worms, the team compared enzyme-treated worms with controls. Chemical analysis revealed that enzyme-treated [worms](#) had fewer phospholipids - molecules in cell membranes that are required for many crucial processes.

"Designing drugs that mimic the effect of the enzyme on [intestinal worms](#) could also be a fruitful avenue for combating worm infections," says Lewis.

The paper 'Epithelial cell-derived phospholipase A2 group 1B (PLA2g1B) is an endogenous anthelmintic' is published in *Cell Host & Microbe*.

Provided by The Francis Crick Institute

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