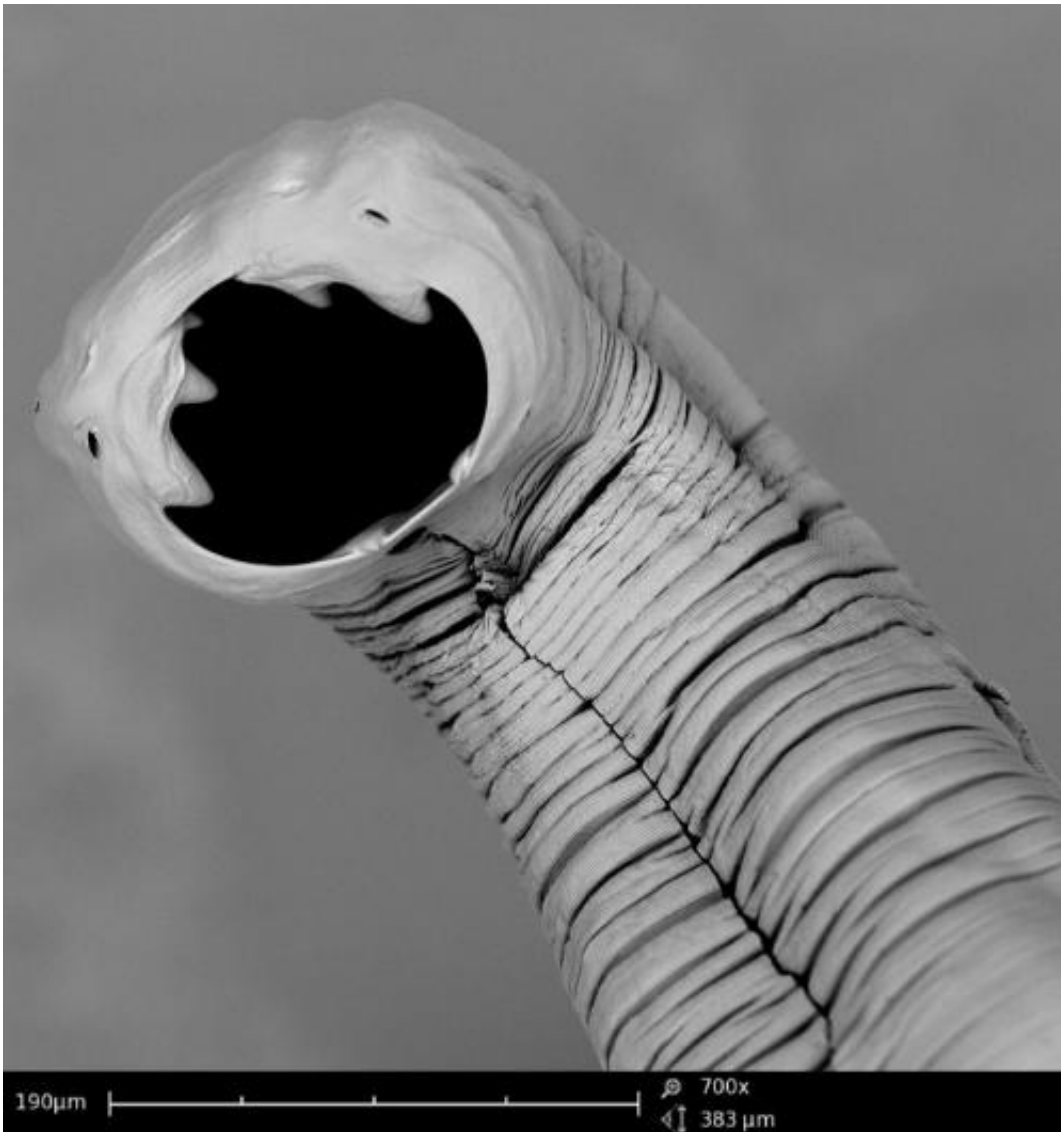


Working towards a worm protein pill for inflammatory disease

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A hookworm. Credit: James Cook University

Australian scientists who have successfully regulated the inflammatory response in coeliac patients by infecting them with hookworms are now collaborating with a major pharmaceutical company to develop a treatment for inflammatory bowel disease (IBD), based on proteins secreted by the worms.

Researchers from James Cook University's Australian Institute of Tropical Health and Medicine (AITHM) will work with Janssen Cilag Pty Limited to investigate 'a very promising protein', with a view to developing a [treatment](#).

The collaboration was facilitated by Johnson & Johnson's just-launched Asia Pacific Innovation Centre, which was unveiled at the Ausbiotech national conference on the Gold Coast today.

'In earlier research, most recently in clinical trials in which we inoculated coeliac patients with hookworms, we've been investigating the [worms](#)' ability to survive in the human gut by regulating their host's immune response,' JCU parasitologist Professor Alex Loukas said.

'After we established that the proteins the worms secrete are the key to this anti-inflammatory effect, we then sifted through all the proteins involved, synthesised the most abundant ones, investigated those, and identified our most promising candidate.

'With Janssen's support, we now plan to investigate that protein as a potential treatment – testing it on human cells and doing all the preparation required for eventually conducting human clinical trials of a potential treatment for IBD.'

The researchers will also investigate the mechanism whereby the protein reduces the [inflammatory response](#), without compromising the host's ability to fight off infectious diseases.

'Understanding that mechanism will help us determine whether the therapeutic application of this [protein](#) may also extend to inflammatory conditions other than IBD, such as asthma,' JCU immunologist Dr Severine Navarro said.

'Although IBD and asthma are very different conditions, they have in common an imbalance in certain T cell functionality, which results in overwhelming inflammatory processes.

'Our previous work has established that hookworms can change T cells from pro-inflammatory to anti-inflammatory,' Dr Navarro said. 'The good news is that these newly generated anti-inflammatory T cells don't just protect the gut, they are also able to protect other organs, such as the airways.'

Professor Loukas said collaborating with Janssen at this early stage would significantly accelerate the investigation's progress.

'Thinking of hookworms as a potential treatment isn't exactly a mainstream idea. We're excited that Janssen is willing to look outside the box for new anti-inflammatory treatments. Their expertise in drug development is going to be invaluable to us,' he said.

'This stage of research – after early discovery work but before [clinical trials](#) – can be hard to find funding for. The Asia Pacific Innovation Centre is a welcome development for researchers like us. It bridges that gap.'

Ironically, Janssen produces drugs that are used around the world to treat hookworm and other parasitic worm infections.

'Our interest is in Janssen's expertise in [inflammatory bowel disease](#),' Professor Loukas said.

'Let's hope the worms can see the poetic justice in Janssen helping us put one of their proteins to work as a healing agent.'

Provided by James Cook University

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