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Tapeworm vaccine gets US $200,000 funding boost

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Professor Marshall Lightowlers, from the Faculty of Veterinary and Agricultural Sciences, is the principal investigator for a US$200,000 (A$272,000) grant from the Bill & Melinda Gates Foundation for his work on a Taenia solium vaccine.

T. solium is a worm parasite that is transmitted between humans and pigs and causes neurocysticercosis, or brain cysts, in human hosts.

It is the cause of an estimated 50,000 deaths each year, most prevalent in developing countries across Africa, China, Central and South America and South-East Asia, where hygiene standards are lax and unregulated.

"This grant will go a long way to helping us develop a one-shot vaccine that will break the lifecycle of this harmful parasite, which is the most frequent cause of late onset seizures and epilepsy in the developing world," Professor Lightowlers said.

"We hope to change that."

The University of Melbourne has already developed a vaccine for use in pigs against infection from *T. solium*, which is on the brink of becoming commercially available as of next year.

But to be successful, the vaccine requires two immunisations.

That's a near-to-impossible feat in countries where pig communities are

free-roaming and not closely monitored.

The Gates Foundation grant runs over two years, with MIT to test vaccine formulations and forward them on to the University of Melbourne for clinical trials.

The *T. solium* parasite and neurocysticercosis were once endemic throughout Europe and other developed parts of the world, but improved public sanitation and other measures saw it eventually eliminated.

Professor Lightowlers said a vaccine could potentially do the same for the world's developing nations within our lifetime.

But first-world countries are still not immune to the effects.

Professor Lightowlers highlighted an example of an orthodox Jewish family, from which two members were diagnosed with larvae of a pork tapeworm in their brains. It was later found that a domestic employee from Mexico with a *T. solium* infection had unintentionally contaminated the family's food during preparation.

"Keep in mind that people from poor countries can travel anywhere with their intestinal residents and deliver their tapeworm eggs to you or me," he said.

"So it is vital in the global sense to see a reduction in the parasite's transmission."

In endemic areas, the *T. solium* parasite is associated with 29 percent of people with epilepsy, making it the most frequent cause of seizure disorders.

Provided by University of Melbourne