MALAGHAN INSTITUTE OF MEDICAL RESEARCH

MEDIA RELEASE

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A 'flu shot' for asthma and allergy?

Preventing asthma and allergy with a small jab in the arm is not as far-fetched as you might think, say scientists at Wellington's Malaghan Institute.

Every winter we are encouraged to get our annual flu shot, to forearm our immune system with all the information it needs to ward off potential influenza infections. The same principle can be applied to the prevention of asthma and allergy.

"New Zealand's asthma and allergy rates are amongst the highest in the world," says Malaghan Institute Director Prof Graham Le Gros. "It is clear that there is something about the environment our young Kiwi kids are growing up in that is predisposing them to develop allergic reactions later on in life."

"We thought we could stop the onslaught of allergic disease by removing the cause – if there was a family history of food allergy, then parents were encouraged to delay the introduction of potential allergy causing foods," he says. "However, since implementing these avoidance strategies, asthma and allergy rates have actually gone up."

"What we need is a more rational approach, which can only be achieved through evidence-based knowledge about the allergic disease process."

Allergic diseases such as asthma, food allergy, eczema and hay fever are caused by an overreaction of the immune system to harmless environmental triggers that we breathe in, touch or eat. In fact it is only one part of the immune system that is activated – the so-called Th2 immune response, which normally functions to protect us from parasitic worm infections.

"We don't know why the immune systems of individuals with asthma or food allergy respond to house dust mites and food proteins as though they were parasites," says Prof Le Gros. "But what we do know from our research is that if we shut down the Th2 immune response before it gets going, we can prevent the development of asthma and allergy symptoms."

The steroid inhalers currently used to treat allergic disease work in the same way, only they suppress all immune responses – both good and bad. This can leave users more susceptible to common infections.

"What we are attempting to do here at the Malaghan Institute is develop an immunotherapy or vaccine that specifically shuts down the Th2 immune response. This is a more natural approach to treating allergic disease, because we are effectively using the immune system to do all the work. All we are doing is pointing it in the right direction."

While the availability of an over the counter vaccine or 'allergy shot' is still some time off, Prof Le Gros and Prof Franca Ronchese, and their team of asthma and allergy researchers at the Malaghan Institute, have made significant progress in the basic research required to make the vaccine, some of which was published today in the international scientific journal *PLoS ONE*.

"Our *PLoS ONE* paper describes how our immune system generates responses that control each other," says Prof Ronchese. "We think that the purpose of this is to ensure that the immune responses made are big enough to do their job, but not bigger than necessary.

"We need to do more work to fully understand the implications of these results but they might help to explain why some people are more likely to become allergic than others."

This latest research complements earlier work by Prof Ronchese and Prof Le Gros that was published in the *Journal of Immunology* in February, showing how a specific class of immune cells called cytotoxic T lymphocytes (CTLs) were able to prevent the development of asthma in disease models. Identifying how best to target the activity of these cells with immunotherapy is the subject of ongoing investigation.

By undertaking carefully constructed investigations using well-defined disease models, Malaghan Institute scientists believe they are on the right track to producing a viable treatment option for reversing New Zealand's asthma and allergy epidemic.

"Years from now I hope to see susceptible children being vaccinated against asthma and allergy, in much the same way they are currently protected against infectious diseases," says Prof Le Gros.

"We also need the government to take notice of how severe our allergy problem is in this country, and invest more in allergy research and in resources for those working out in our communities with families affected by allergic disease," he says.

"Until this happens, we are unlikely to see significant improvements in New Zealand's asthma and allergy rates."

The Malaghan Institute's asthma and allergy research is supported by research grants from the Health Research Council of New Zealand, New Zealand Lottery Health Research, The Dr Marjorie Barclay Trust, The Royal Society of New Zealand Marsden Fund and the Wellington Medical Research Foundation.

For further information

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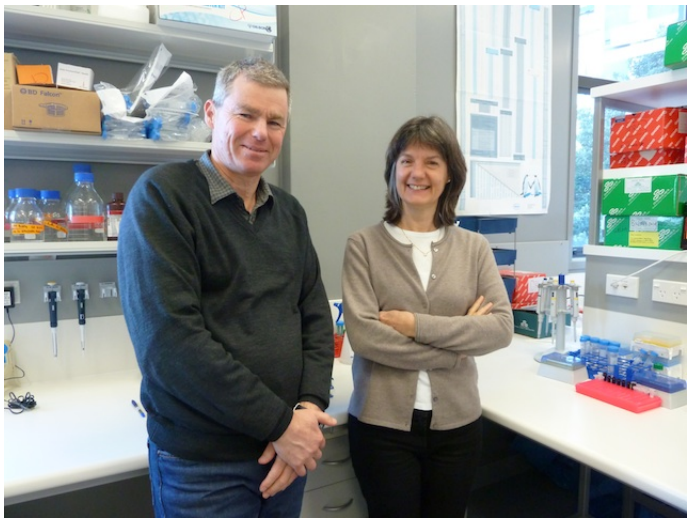
About the Malaghan Institute of Medical Research

The Malaghan Institute of Medical Research is New Zealand's leading vaccine and immunology research institute and is based at Victoria University of Wellington's Kelburn campus. The Institute operates independently and is a charitable trust. Researchers at the Malaghan Institute are focused on developing innovative ways to harness the strength and potency of the immune system, the body's own natural defence against disease, to treat cancer, asthma and allergy, arthritis, multiple sclerosis and infectious disease.



Malaghan Institute Asthma and Allergy Researchers Prof Graham Le Gros and Prof Franca Ronchese.