

Flu 'border patrol' starts at the nose

Under embargo until 0400 Saturday 3 June AEST

A yearly shot in the arm may become a thing of the past, following the discovery, by researchers at the Peter Doherty Institute for Infection and Immunity, that it's possible to stop the influenza virus spreading to the lungs by immunising the upper respiratory tract.

The finding, published today in the journal *Science Immunology*, could be the key to preventing complications such as pneumonia, and take scientists closer to developing a one-shot flu vaccine.

University of Melbourne researchers Angela Pizzolla and Linda Wakim, at the Doherty Institute, said while previous influenza research had focused on the flu-fighting powers of immune cells residing in lung tissue, these cells decay too quickly to be useful in developing a vaccine.

"We took a step back and thought, 'What if we could stop the virus in the nose before it made it to the lungs?'"

"We moved our focus to investigating immune responses in nasal tissue, which is where the body first encounters flu viruses – a kind of nasal border patrol."

Dr Wakim's team found that nasal resident memory CD8 T cells in animal models were highly effective in protecting against several different strains of flu – and lived long enough to fight off the virus.

"We found a population of these cells that, unlike their cousins in the lung, persisted for a very long time, and that they could block inhaled virus particles from reaching the lung, preventing severe flu-related lung infections.

"We stopped influenza at the gates".

Dr Wakim said the findings highlight the potential of targeting these cells in new influenza vaccines.

"We are now trying to work out the best way to lodge these flu-fighting resident memory T cells in the nasal tissue, with the ultimate goal of developing a new vaccine that can provide long term protection against flu viruses"

Journal article:

<http://immunology.sciencemag.org/lookup/doi/10.1126/sciimmunol.aam6970>



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About the Peter Doherty Institute for Infection and Immunity

Finding solutions to prevent, treat and cure infectious diseases and understanding the complexities of the immune system requires innovative approaches and concentrated effort. This is why The University of Melbourne – a world leader in education, teaching and research excellence – and The Royal Melbourne Hospital – an internationally renowned institution providing outstanding care, treatment and medical research – have partnered to create the Peter Doherty Institute for Infection and Immunity (Doherty Institute); a centre of excellence where leading scientists and clinicians collaborate to improve human health globally.

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