

Closing the gap on developing a vaccine for middle ear infections

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Professor Michael Jennings (standing) and Dr John Attack, from Griffith University's Institute for Glycomics. Credit: Griffith University

Researchers from Griffith University's Institute for Glycomics, together with the Nationwide Children's Hospital in Ohio, have uncovered

groundbreaking evidence to help vaccine developers prevent middle ear infections.

A research paper entitled 'A biphasic epigenetic switch controls immunoevasion, virulence and niche adaptation in non-typeable *Haemophilus influenzae*' has been published in the journal *Nature Communications*.

A Principal Research Leader at the Institute for Glycomics, Professor Michael Jennings said middle ear infections, or otitis media, are the most frequent reason children attend a doctor or undergo paediatric surgical procedures.

"The treatment of otitis media is currently with antibiotics and the insertion of ear tubes (tympanostomy)," he said.

"If there was a vaccine developed, this would dramatically reduce the amount of antibiotics prescribed."

Professor Jennings found that the bacterial pathogen *Haemophilus influenzae*, which causes illnesses such as pneumonia, chronic obstructive pulmonary disease and otitis media, contains a system that randomly changes gene expression causing the bacteria to switch between two different cell types.

He said this "moving target" is what had made [vaccine development](#) difficult in the past.

"Through this research we have been able to understand the lifestyle of the bug and its adaptation to us as hosts, and therefore we now have a better idea of which surface proteins are good targets for vaccine development," he said.

"This is a very important stepping stone to a vaccine and will save developers a considerable amount of time and money."

Professor Jennings worked with Dr Lauren Bakaletz and her team at The Research Institute at Ohio's Nationwide Children's Hospital, along with a team from Griffith's Institute for Glycomics that included Dr John Attack. The research was undertaken through support from the National Health and Medical Research Council (Australia).

Professor Jennings said the next step was to see if this discovery would relate to other illnesses caused by *Haemophilus influenzae*, such as chronic [obstructive pulmonary disease](#).

The Director of the Institute for Glycomics, Professor Mark von Itzstein, said he was delighted with the outstanding work by the team led by Professor Jennings, adding it provided an exciting opportunity towards the discovery of a [vaccine](#) to protect against a serious childhood disease.

"This research study highlights the Institute's commitment in finding solutions for difficult childhood diseases," he said.

More information: *Nature Communications*,
www.nature.com/ncomms/2015/150...full/ncomms8828.html

Provided by Griffith University

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