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## Development of a novel vaccine to treat middle ear infection in Australian indigenous children

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*Moraxella catarrhalis* and nontypeable *Haemophilus influenzae* are Gram-negative microorganisms that are opportunistic respiratory tract pathogens responsible for 60% otitis media cases in children and 4.2 million deaths globally as a result of chronic obstructive pulmonary disease in adults. In-fact the prevalence of otitis media is quite high especially in Australian indigenous community, where 99% of children will contract this infection by the time they reach 3 years of age and the 2<sup>nd</sup> leading cause of surgery in infants worldwide. These bacteria cause disease by up-regulating inflammation and mucin production, causing damage to Eustachian tube making it to swell-up and close, which traps the mucin being produced in middle ear, which pushes against the eardrum making it very difficult for the infant to hear properly, this has a huge impact on a child's learning capability, as this the learning stage in a child's life cycle. Both bacteria have been shown to produce beta-lactamase, which has led to emergence of antibiotic resistance. Currently, there is no licensed vaccine for *M. catarrhalis* and NTHi infections. It is well known that virulence factors are traits that contribute to bacterial pathogenicity and for many Gram-negative organisms lipopolysaccharide on the bacterial surface is a known virulence factor. In-fact several studies have suggested that this cell surface glycan could potentially be incorporated into vaccines to prevent infections by these bacteria. Therefore, the aim of current study is to develop a novel vaccine using lipooligosaccharide of *M. catarrhalis* and an outer membrane protein from NTHi.

### Biography

Sanjesh Singh has completed his graduation from Robina State High School and undertook a Bachelor of Health Sciences at Griffith University and graduated in 2012. He started his Master of Medical Research with the intention to apply for PhD. He is currently a PhD candidate at the School of Medical Science, Institute for Glycomics and Menzies Health Institute Queensland at Griffith University, Australia. He is investigating Gram-negative bacterial surface glycans and their possible use to develop vaccines.

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