

Potential vaccine to prevent deadly strep A infection

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Using a novel technology Griffith University Institute for Glycomics researchers are closer to the development of a new vaccine aimed at preventing the deadly *Streptococcus A* (strep A), which kills more than 500,000 people globally per year.

"Strep A colonizes the upper respiratory tract and skin. Repeated infections can cause auto-immune complications and progress to invasive and immune-mediated diseases such as [rheumatic fever](#) and [rheumatic heart disease](#)," says lead researcher Dr. Manisha Pandey.

"There is currently no vaccine available as immunity to strep A in humans takes years to develop. This is because it is highly virulent and subverts innate and acquired immunity."

The researchers identified two small proteins from strep A and combined them with a potent adjuvant (immunological agent) to enhance the body's immune response. Immune responses generated against these proteins induce enduring immunity and protect the host in the respiratory tract as well as elsewhere in the body for long periods of time.

"In this study, we have demonstrated for the first time, the efficacy of a strep A vaccine that can provide protection against multiple strains, including highly [virulent strains](#) at both the mucosal and skin entry points," says Dr. Victoria Ozberk, co-first author on the study.

"The demonstration by the toxicology study that the vaccine is safe to be used in humans is very encouraging and gives us high hopes regarding the success of this vaccine."

In pre-[clinical studies](#), the researchers found two standard intramuscular vaccinations followed by an intranasal vaccine boost induces vaccine-specific antibodies that protects the throat and skin from strep A.

Professor Michael Good AO, laboratory head for the streptococcal vaccine research at the Institute for Glycomics, said the group had been working closely with colleagues in Denmark for many years to advance the novel technology and the team was now well positioned to proceed

with clinical trials.

He said that streptococcal disease was a significant problem for Indigenous Australians who suffered the highest rates of disease in the world.

"A [vaccine](#) would have a transformative effect on the health of remote Indigenous communities. I thank the Heart Foundation, the Snow Foundation, the Lowitja Institute, the National Foundation for Medical Research and Innovation and the Australian Government through the NHMRC for their ongoing support over many years."

The study has been published in *mBio* and researchers hope to proceed to clinical trials in early to mid-2022.

More information: Victoria Ozberk et al. Prime-Pull Immunization with a Bivalent M-Protein and Spy-CEP Peptide Vaccine Adjuvanted with CAF®01 Liposomes Induces Both Mucosal and Peripheral Protection from covR/S Mutant *Streptococcus pyogenes*, *mBio* (2021). [DOI: 10.1128/mBio.03537-20](https://doi.org/10.1128/mBio.03537-20)

Provided by Griffith University

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