

Researchers on the cusp of a new vaccine modality breakthrough

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Professor Bernd Rehm and Dr. Shuxiong Chen from the Griffith Institute for Drug Discovery (GRIDD) and Griffith's Center for Cell Factories and Biopolymers have succeeded in developing a new vaccine modality that is a stable particulate vaccine.

The new vaccine modality is at proof-of-concept stage and in [early development](#). The paper "Polymeric epitope-based vaccine induces protective immunity against group A Streptococcus" has been published in *npj Vaccines*.

To demonstrate this vaccine approach, it was tested with a more established Griffith vaccine against Strep A that is currently performing strongly in [human clinical trials](#) in Canada.

Professor Rehm said the tests we've run so far show this technology facilitates development of vaccines that are safe and induce strong immune responses against Strep A.

"It's a synthetic vaccine based on our innovative technology that uses reprogrammed safe Escherichia coli cells to assemble vaccine particles at [high yield](#)," he said.

"To develop the vaccine, we reprogrammed bacterial cell factories to assemble biopolymer particles coated with the Griffith Strep A antigens and found the particles were safe and protected against infection.

"We developed a cost-effective manufacturing process and the resulting vaccines are ambient-temperature stable, strongly facilitating stockpiling and dissemination in developing countries where refrigeration is not always available."

Dr. Chen said this advancement has the potential to be a medical breakthrough for developing many vaccines.

"The next steps are to produce vaccines at high quality and to evaluate their performance in [clinical trials](#)," Dr. Chen said.

Group A Streptococcus is a global human pathogen that leads to a wide

range of infections from illnesses such as mild pharyngitis and impetigo to invasive diseases such as [toxic shock syndrome](#), necrotizing fasciitis, and cellulitis.

Mortality due to Strep A is indirectly caused by the development of antimicrobial resistance resulting from the massive consumption of antibiotics.

Globally, Strep A causes 700 million human infections each year and there are more than 500,000 deaths.

Professor Bernd Rehm and his team collaborated with Professor Michael Good from Griffith's Institute for Glycomics whose team provided expertise to test the technology in a model of Strep A infection.

Professor Good's team developed a Strep A vaccine which is currently being tested in a human clinical trial in Canada.

More information: Shuxiong Chen et al, Polymeric epitope-based vaccine induces protective immunity against group A Streptococcus, *npj Vaccines* (2023). [DOI: 10.1038/s41541-023-00695-x](https://doi.org/10.1038/s41541-023-00695-x)

Provided by Griffith University

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