

# Breakthrough in HIV and Hep C vaccine research

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(Medical Xpress)—Plans for a new type of DNA vaccine to protect against the deadly HIV and Hepatitis C viruses have taken an important step forward, with University of Adelaide researchers applying for a patent based on groundbreaking new research.

Professor Eric Gowans from the University's Discipline of Surgery, based at the Basil Hetzel Institute at the Queen Elizabeth Hospital, has submitted a patent application for what he describes as a relatively simple but effective technique to stimulate the body's immune system response, thereby helping to deliver the vaccine.

While pre-clinical research into this vaccination technique is still underway, he's now searching for a commercial partner to help take it to the next stage.

Professor Gowans' work has focused on utilising the so-called "accessory" or "messenger" cells in the immune system, called [dendritic cells](#), to activate an immune response. These are a type of white blood cell that play a key role during infection and vaccination.

"There's been a lot of work done in the past to target the dendritic cells, but this has never been effective until now," Professor Gowans says. "What we've done is incredibly simple, but often the simple things are the best approach. We're not targeting the dendritic cells directly - instead, we've found an indirect way of getting them to do what we want."

Professor Gowans and his team have achieved this by including a protein that causes a small amount of cell death at the point of vaccination.

"The [dead cells](#) are important because they set off danger signals to the body's [immune response](#). This results in inflammation, and the dendritic cells become activated. Those cells then create an environment in which the vaccination can be successful," Professor Gowans says.

Using a micro-needle device provided by United States company FluGen Inc., the researchers can puncture the skin to a depth of 1.5mm, delivering the vaccination directly into the skin. "We chose the skin instead of the muscle tissue, which is more common for DNA vaccines, because the skin has a high concentration of dendritic [cells](#)," Professor Gowans says.

Because the technique has the potential to translate to other, more common viruses in addition to the devastating HIV and Hepatitis C, the project attracted seed funding from The Hospital Research Foundation, and additional funding from the National Health and Medical Research Council (NHMRC).

The research is still in the pre-clinical phase, with a patient study due next year. "This technique has worked much better than I anticipated," Professor Gowans says. "We're now ready for a commercial partner to help us take this to the next phase, and we're in discussions with some potential partners at the moment."

Provided by University of Adelaide

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