— Exclusive

First Aussies to get needle-free COVID-19 vaccine patch

Yolanda Redrup *Reporter*

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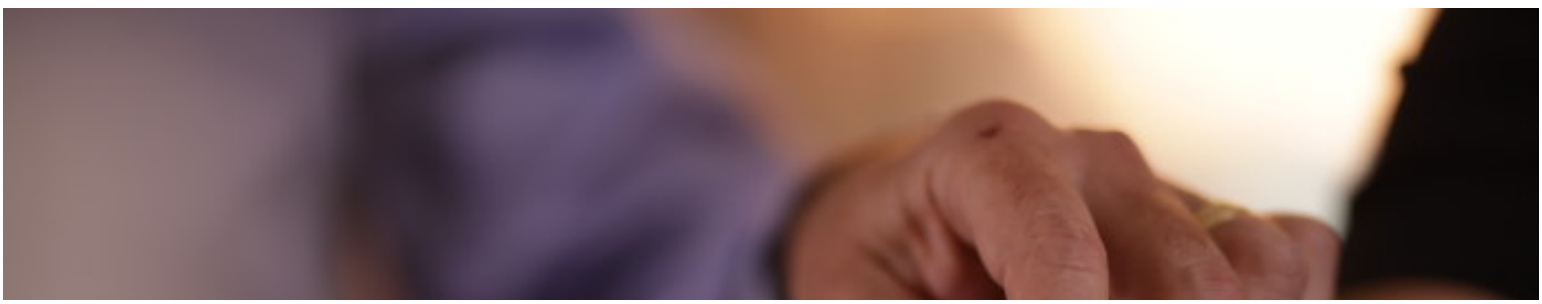
Brisbane-based vaccine technology company Vaxxas has kicked off its first human clinical trial of its needle-free patches to combat COVID-19.

The phase one trial is taking place at the University of the Sunshine Coast's Sippy Downs clinical research location and will involve 44 Australians aged 18 to 50, each of whom have had three doses of a COVID-19 vaccine previously, the most recent of which was an mRNA vaccine like Pfizer or Moderna.

The company, which already has a trial underway using its patches for measles and rubella vaccines and is working on one for influenza [https://www.afr.com/companies/healthcare-and-fitness/fresh-funds-for-qld-needle-free-vaccine-tech-start-up-vaxxas-20201004-p561wg], was founded in 2011 by the University of Queensland's commercialisation arm, UniQuest.



The Vaxxas needle-free vaccine patch has shown excellent results in administering a COVID vaccine in pre-clinical trials, researchers say. **University of Queensland**

Its technology enables vaccines to be delivered via a 1 centimetre squared patch with 5000 little projections that are invisible to the naked eye, but lightly prick the skin when applied.

The projections are coated in a dry version of the vaccine, which can be kept at room temperature, rather than requiring refrigeration, providing advantages for manufacturing, storage and transportation.
Vaxxas CEO David Hoey told *The Australian Financial Review,* that the company had made "tremendously efficient" progress with its COVID-19 patch, going from publication of its pre-clinical trial results to starting its phase one trial within a year.

He said the company would start getting results from the new study in late February and once they received the final results, expected in late April and early May, it would aim to progress to a phase two trial by early 2024.

"Phase one is all about safety, but you're basically measuring the antibody response to the vaccine... so you get a very good idea about the potency of the vaccine [and potential efficacy]," Mr Hoey said.

More effective on variants

“We’ll run two doses [of the vaccine] to understand the response... and we’re looking at what level of boost to antibody levels [there is] and other levels of the functional response.”

Vaxxas holds the exclusive licence from The University of Texas at Austin to its SARS-CoV-2 spike subunit vaccine for vaccination using a patch.

If it progresses to a phase two study, this will likely involve people who have already had four doses of an injectable COVID-19 vaccine.

Animal studies suggest patch delivery of the vaccine is considerably more effective in neutralising COVID-19 variants than needle-based vaccines.

The skin has the highest population of immune cells in the body, and Vaxxas’ patch technology causes micro injuries which activate the immune system, enabling cells in the skin to easily find the vaccine antigen.

Vaxxas, which is backed by the OneVentures, Brandon Capital, Brandon BioCatalyst and US-based HealthCare Ventures, has raised more than $66 million in equity funding and more than $40 million in non-dilutive funding to date from the likes of The Bill and Melinda Gates Foundation.

The 11-year-old business has also already secured a deal with biotech giant Merck to use its technology for an undisclosed vaccine [https://www.afr.com/companies/healthcare-and-fitness/top-global-biotech-backs-queensland-vaccine-tech-innovator-20200527-p54x23], despite not yet having a vaccine on the market using its patch technology.

Vaxxas CEO David Hoey believes the company can have a patch vaccine in the market within four years.

The company now employs 115 people and is due to move into a new facility in the Brisbane suburb of Hamilton, which will be able to support its first pilot-scale production line.

Within four years, Mr Hoey said the company expected to be shipping its first vaccines.

“Of the stable of vaccines we have, it’s an eclectic mix and the regulatory pathway is a little different for each,” he said.

“[15 years] is a normal product gestation for a biotech, and now we’re hiring a lot more manufacturing folks. We’ve hired Scott Fry from Ellume [https://www.afr.com/street-talk/rich-lister-bruce-mathieson-caught-up-in-ellume-collapse-20220928-p5blkd] as our chief operating officer.

“We’re transitioning to becoming a revenue-generating company. We also want to expand the number of clinical programs we’re working on with different partners.

“But, in a regulated market we’re gated by how fast we can progress things.”

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