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Vaccines through microneedle skin patches

by Swansea University

Innoture's transdermal patch is ergonomically designed to be flexible t...

A revolutionary new way to give vaccines through microneedle skin patches is being tested at Swansea University, thanks to £200,000 of EU funding announced by the Welsh Government.

The COVID-19 pandemic is giving extra urgency to the search for vaccines and new ways of delivering them.

This important research is being conducted by Innoture, a leading UK company with expertise in applying medicines through the skin. This represents a significant milestone for Innoture, and further validation of their next-generation transdermal delivery system.

The innovative technology has the potential to make a meaningful difference to improve patient and public health in Wales and beyond.

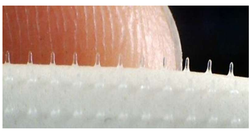
Innoture have worked with Swansea University since 2012. The company's R&D department is based in the University's Institute of Life Sciences, where research has been conducted in collaboration with the University's Centre for Nanohealth.

Traditional hypodermic needles can be frightening and painful for children and adults alike. Microneedles could improve patient compliance and therefore yield better health outcomes.

Microneedles are tiny needles, measured in millionths of a metre (µm), designed to deliver medicines through the skin. They have more in common with transdermal patches, such as those used to deliver nicotine to help people give up smoking, than with hypodermic needles.

The research will develop and test technology for delivering a vaccine dose via the skin. It will also test a simple and secure disposal process, which would allow the patches to be administered at home.

Dr. Michael Graz, Chief Scientific Officer of Innoture, said:



Innoture's unique microstructure designs are small (less than 1mm) an...

"In the wake of the coronavirus pandemic, vaccine developers and manufacturers face a major challenge to rapidly develop and upscale their vaccination programmes as the demand for needles, glass vials plus other treatment delivery supplies, increases. Therefore, it is vital that alternative delivery options are considered by the UK—and international—health community."

He added:

"Our transdermal delivery system has the potential to improve patient experience and significantly reduce the burden on the NHS and other healthcare systems. The patch is painless and minimally invasive for patients to self-administer.

At a time when self-isolation is necessary, the patch can be applied with ease in the home under guidance from a healthcare professional, reducing the need for people to attend a clinic. In addition, for healthcare professionals, it shortens consultation or appointment times and potentially removes the need for cold-chain storage."

Research from Swansea University's microneedle fabrication and transdermal testing facilities within the Centre for Nanohealth, is underpinning a host of microneedle technologies.

Prof. Owen Guy, Head of Chemistry and Director of the Centre for Nanohealth at Swansea University, said:

"Microneedle vaccine patches are an exciting development of Innoture's transdermal patch technology".

Dr. Sanjiv Sharma, Senior Lecturer in Medical Engineering at Swansea University, added:

"This project could provide a revolutionary approach to vaccination in the future. As a long-term partner of Innoture, we look forward to supporting this exciting venture".

The award of £200,000 for the research comes from the Welsh Government via SMARTCymru 2014-2020 European Regional Development Fund, West Wales and the Valleys. This supports Welsh businesses to develop, implement and commercialise new products, processes and services.

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Provided by Swansea University

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