

Could targeting the skin help prevent the spread of HIV?

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Applying a vaccine patch to the skin with thousands of tiny micro-needles could help boost the body's immune response and prevent the spread of life-threatening infections like HIV and TB, a major Cardiff University study aims to uncover.

Professor Vincent Piguet from Cardiff University's School of Medicine, has been awarded almost a million dollars by the Bill & Melinda Gates Foundation to examine how key immune cells in the [skin](#) can be targeted to cause the immune system to produce antibodies against infection.

Recent advances in the prevention and treatment of HIV - and other life threatening infections like Tuberculosis (TB) and Cytomegalovirus (CMV) - have focused in two main areas.

Scientists have developed a new vaccine and secondly, the use of gels, applied to the skin before intercourse which are capable of killing or destroying certain micro-organisms that commonly cause human infection.

Now, Cardiff research aims to take the success of these two areas of research a step further.

The new research will examine how targeting the vaccine at a specific area of the skin and modulating these cells could help boost the body's response to the vaccine and prevent the transmission and progression of the infection.

"Our two studies will target key cells called dendritic cells in the skin," said Professor Piguet, who leads the Cardiff research.

"Dendritic cells are our body's first line of defence against infections like HIV and TB. They also help determine how our immune system responds to infection.

"Using small microneedles in a patch applied to the skin we hope we can target these cells more efficiently and help induce the body's immunity against [HIV](#) as well as other serious infections like TB and CMV.

"We will also seek to modulate the dendritic cells functions – by doing, we hope to increase their potency and therefore increase the body's [immune response](#)," he added.

Working alongside colleagues from Switzerland, the University of Oxford and Harvard University the Cardiff team will use human blood and skin [cells](#) to map the immune response and mimic the human response.

Professor Piguet adds: "Technical advances of new intradermal vaccination means that potentially we can could take advantage – increase safety, reduce costs and increase efficiency.

"Effective prevention against infection would prove a major advance in helping to address a major global health challenges – especially in those developing countries where access to antiviral and antibacterial drugs are limited."

Provided by Cardiff University

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