

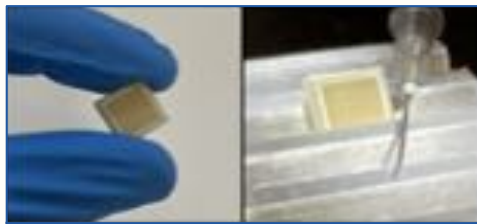
HD-MAP – Covid immunity with a single patch?

A study with the goal of finding more convenient vaccination methods

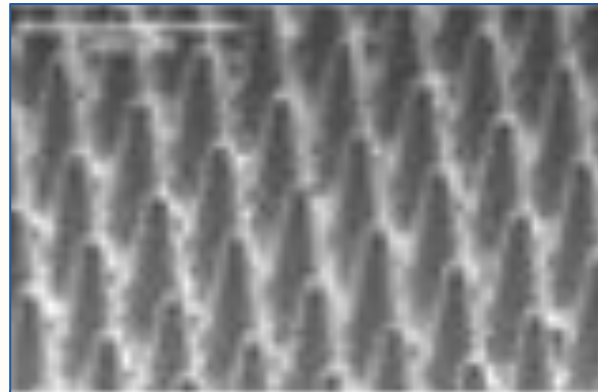
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No needle necessary

The vaccine is delivered using a so-called **high-density microarray patch (HD-MAP)**. The patch is 1 by 1 cm in size and contains **5000 individual microscopic spikes**, which are 0.2 mm in length.



HD-MAP in comparison to the traditional injection method



Electron microscope image of the microarray patch

Spring-loaded application

The patches are applied using a spring-loaded **applicator** at speeds of 18 to 20 m/s. This process delivers **spike protein subunits** of SARS-CoV-2 directly to the **epidermal** and **upper dermal** layers of the skin.

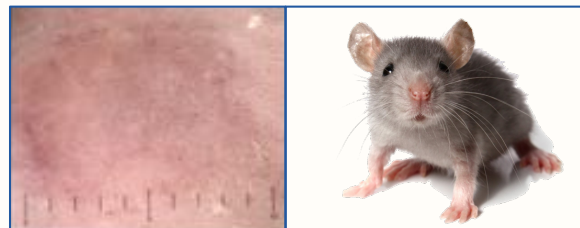


The patch in the spring-loaded applicator

The different skin layers

Tested on mice

In this study female **mice** were immunized with one or two doses of the HD-MAP vaccine. Additionally, a **control group** was left untreated.



The flank of a treated mouse immediately after application

The study was conducted on female mice.

Protection in one dose

The **currently available** covid vaccines require **two doses** in order to be fully effective, while one of the tested HD-MAP prototypes provided a mouse with **complete protection in only one dose**.

Improved thermostability

Some of the existing covid vaccines require **ultralow-temperature storage**. The HD-MAP vaccine was shown to be **stable** for a month at **25°C** and for a week at **40°C**.



Scan to read the original paper.