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Fabrication of Microneedle Patches V.2

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1 Works for me dx.doi.org/10.17504/protocols.io.8cehste

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ABSTRACT

The goal is to create a microneedle. patch, which, by applying it on a leaf, will extract amplification-ready DNA.
All MN patches used for DNA extraction were fabricated using polydimethylsiloxane molds. These molds were fabricated by laser ablation, and the dimension of each mold is approximately 10 mm × 10 mm, which has 15 × 15 arrays of microneedle conical cavities. The height of each cavity is 800 µm, and the diameters of the tip and base are 10 and 300 µm, respectively.

EXTERNAL LINK

https://2019.igem.org/Team:EPFL/Microneedles

Mold preparation

1 Clean the polydimethylsiloxane molds.

1.1 Heat deionised water to 100 degrees Celsius **100 °C** using a becher.

1.2 Put the mold(s) into the water and stir softly.

1.3 Remove the molds and let them dry in a chemical hood for 1-2 hours.

A solutionPVA SPVA SolutionP

2 Prepare the PVA solution

2.1 Heat 28g of deionised water to 110 degrees Celsius **110 °C** .

2.2 Add 4g of poly(vinyl alcohol) (30– 70 kDa, 10 wt %) powder and stir until transparent.

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Microneedle Fabrication

3 Fabricate the Microneedles

3.1 Stick the molds on the bottom of an adequate recipient using double-sided tape.

3.2 Add 1.5 mL of PVA solution on top of the mold.

3.3 Centrifuge at 4000 rmp for 20 minutes at 40 degrees Celsius.

3.4 Let the microneedles dry under a chemical hood overnight.

3.5 Remove the microneedles from the molds.

Use Microneedles !

4 The microneedles are ready for use.

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