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Contact: Patricia DeLacey, 734-647-8213, pdelacey@umich.edu

Katherine McAlpine, 734-647-7087, kmca@umich.edu

Captions: At-home melanoma testing: skin patch test works in mice

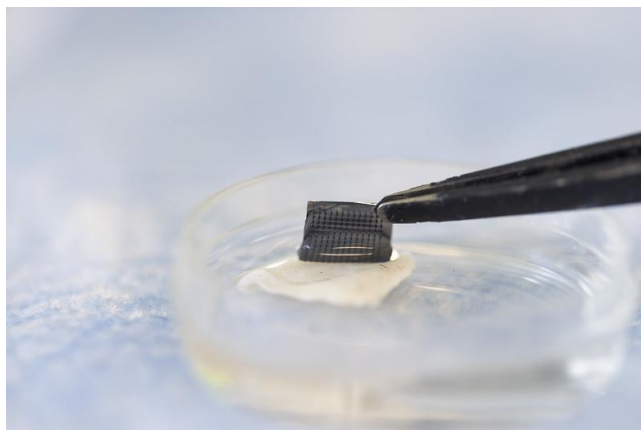
[YouTube Video: A prototype for detecting skin cancer using a microneedle patch.](#)

Video Description:

- Opening scenes feature closeups of a tweezer selecting one small silicone patch from hundreds of patches lined up in a grid.
- The tweezers place the few-millimeters-wide silicone patch in a palm.
- Scenes of the Biointerfaces Institute laboratory hallway.
- Two graduate students, Scott Smith and Abha Kumari, work in a laboratory setting while wearing lab coats, goggles and gloves.
- A close up on the patch puts the 0.6 millimeter long needles covering the patch surface in focus.
- Scott Smith places the patch on top of a small white mouse skin sample within a petri dish, then picks it up again.
- He pipettes out of a solution containing the patch, then dispenses liquid on a test strip.
- A close up of two test strips side by side. A healthy strip has one line and a melanoma strip has two lines

Text on screen:

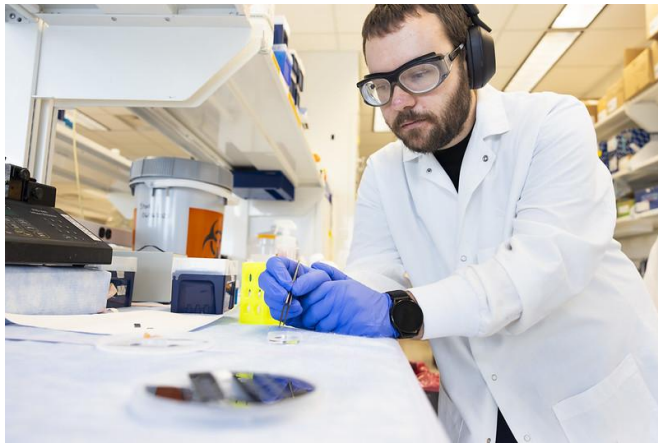
- This tiny patch could detect signs of skin cancer within 15 minutes.
- Designed by U-M Engineering researchers, this non-invasive method that proved successful in mice could detect melanoma in the early stages.
- And it could be performed at home, without the need to visit a clinic.
- It's made of microneedles that press into the surface of the skin.
- The needles are coated in a gel that attracts and binds to cancer indicators within the top-most layer of skin.
- It's then put in a solution and applied to a test strip which will reveal a positive or negative result.
- Next up, the researchers are planning to move into human clinical trials.



ExoPatch-Petri.jpg The newly designed ExoPatch being removed from a sample of mouse skin successfully distinguished melanoma from healthy skin in mice. A gel coating the microneedles picks up cancer indicators from the top-most layer of the skin. Dissolving the gel releases exosomes into a solution, which is then used on a

two-lined test strip, similar to an at-home COVID-19 test. Credit: Jeremy Little, Michigan Engineering.

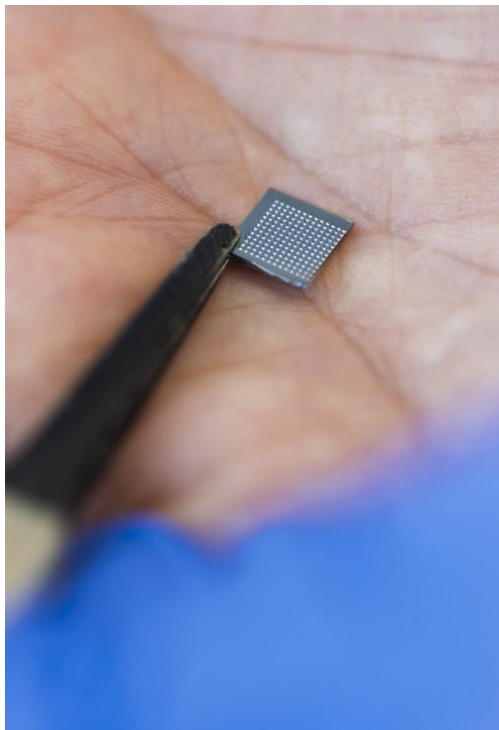
[Alt: A clear petri dish contains a clear liquid and a small mouse skin sample. Black tweezers pull a gray silicone square with tiny needles on one side off the skin sample.]



■ Scott-Smith-Lab.jpg Chemical engineering doctoral student Scott Smith places the ExoPatch into a petri dish containing a mouse skin sample to test for melanoma. Credit: Jeremy Little, Michigan Engineering.

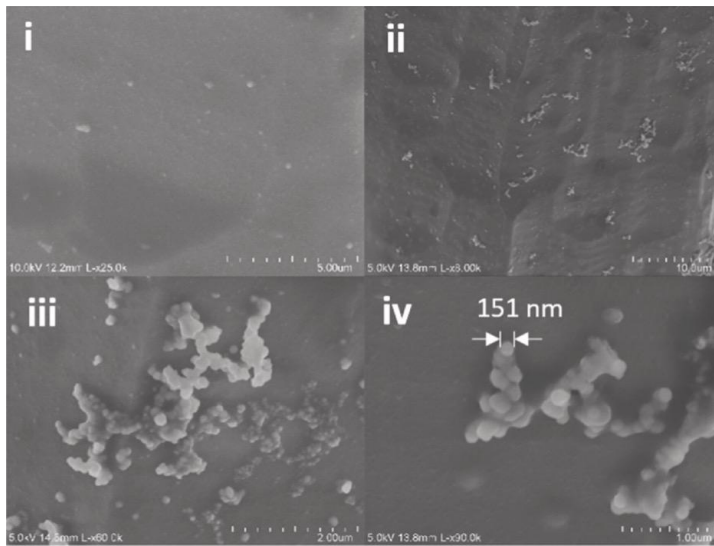
[Additional photo.](#)

[Alt-text: A man wearing a laboratory coat, goggles and gloves uses tweezers to place a small silicone patch with microneedles into a petri dish in a laboratory setting.]



■ ExoPatch-Closeup.jpg The silicone patch for at-home melanoma testing has star-shaped microneedles, just 0.6 millimeters long, that press into skin without drawing blood. A gel that coats the needles attracts exosomes that come from cancerous cells. Credit: Jeremy Little, Michigan Engineering.

[Alt-text: A close up of a palm holding a square silicone patch, just a few millimeters wide, that has tiny microneedles on one side. Tweezers hold the patch in place.]



■ Microneedle-exosomes-SEM....

Scanning electron microscopy images of exosomes from (i) healthy mouse skin and (ii-iv) melanoma mouse skin on different parts of the microneedle. Because the patch selectively picks up exosomes from cancerous cells, the number of exosomes indicates the presence of melanoma. Credit: Smith et al., 2025.

[Alt: Four panels of gray scanning electron microscope images

labeled 1 to 4. 1: A few sparse spherical exosomes on a light gray background. 2: Tens of clusters of exosome spheres on the microneedle teeth. 3: Close view of the clustered spheres form a chain on the needle. 4: A closer view of the clustered spheres points to a single exosome with the width labeled 151 nanometers.]