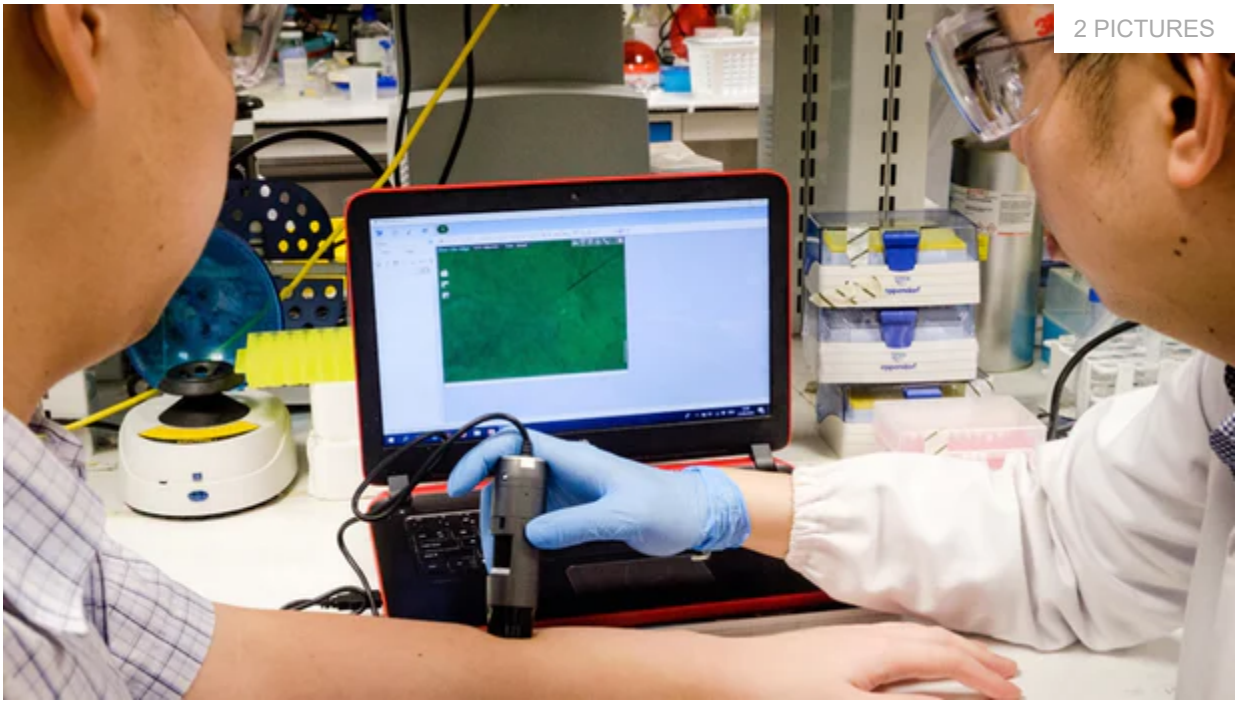
MEDICAL

Ben Coxworth 3 hours ago



2 PICTURES

Dr. David Yeo (right) uses a microscope to detect NanoFlares which were applied to the skin of Dr. Christian Wiraja (Credit: Nanyang Technological University)

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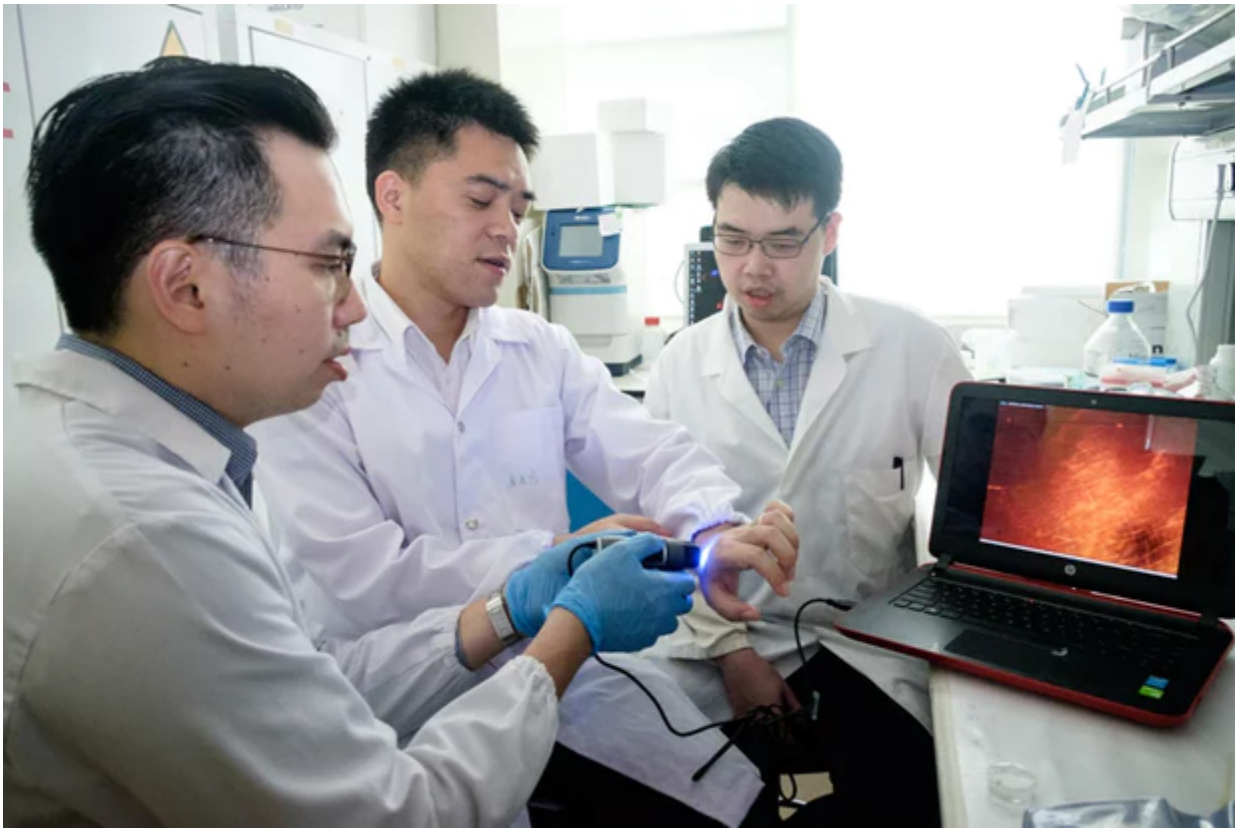
Not only are large scars often unsightly, but the stiff scar tissue can also limit a person's range of motion, causing discomfort. And although there are procedures that minimize scarring, it's not always apparent if such measures need to be taken. Newly-developed nanoparticles could help doctors decide.

Developed in a collaboration between Singapore's Nanyang Technological University (NTU) and Northwestern University in the US, the tiny particles are known as NanoFlares. Each one consists of a gold nanoparticle covered with specifically-sequenced DNA strands, which stick out from it like spikes.

A cream containing thousands of these particles is initially applied to a recently-closed wound – it's already been tested on mice, rabbits, and human skin samples, showing negligible toxicity. The wound is then left for 24 hours, during which time the particles

penetrate up to 2 mm below the surface of the skin. After that, a handheld fluorescence microscope is used to inspect the wound.



"Upon binding with a specific tell-tale gene released by the scar cells, smaller DNA spikes are knocked loose and light up under the microscope like little light flares," says NTU's assistant professor Xu Chenjie. "The more flares we see, the more scarring activity there is."

If it's determined that there will be excessive scarring, doctors can then take preventative actions such as applying a silicone sheet to the wound, in order to keep the tissue flat and moist.

Down the road, if strands of a differently-sequenced DNA were used, which targeted different biomarkers, it's possible that the nanoparticles could also be used to non-invasively detect skin diseases.

NTU is now working on commercializing the technology, which was recently described in a paper published in the journal *Nature Biomedical Engineering*.