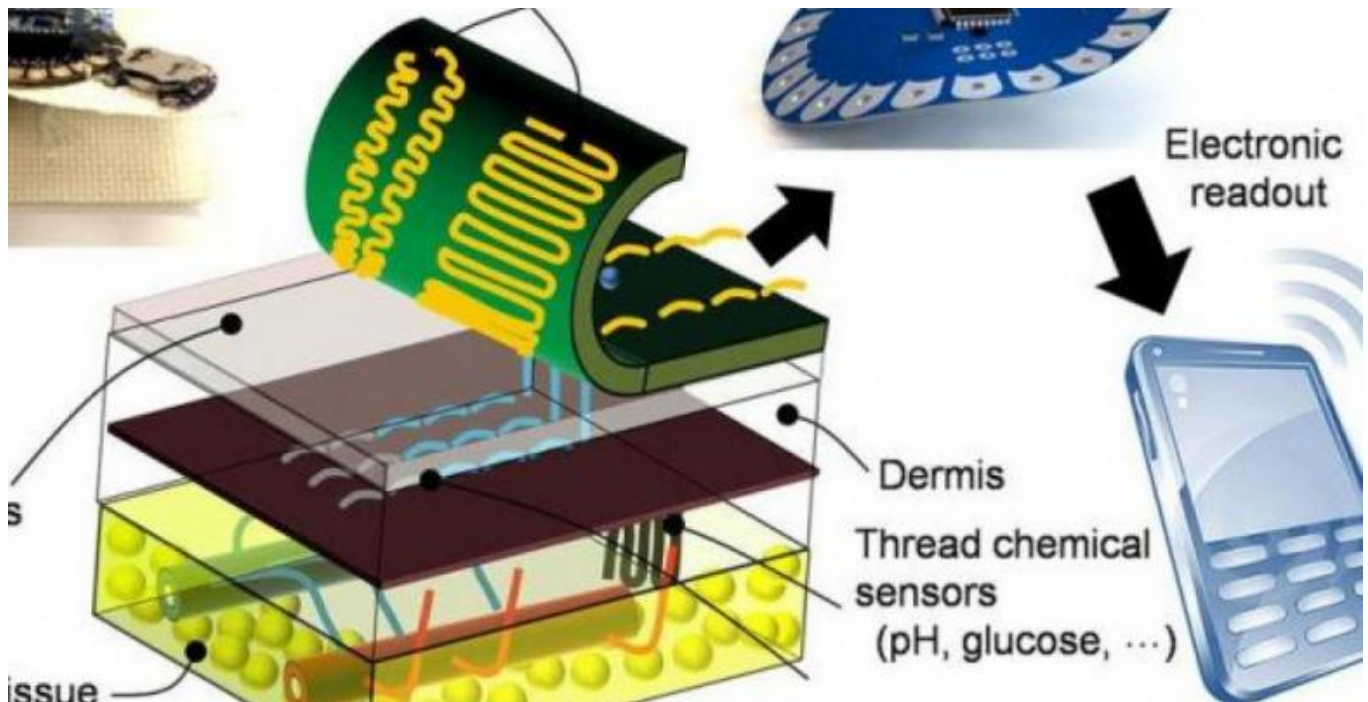

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BOSTON, July 18 (UPI) -- The next time you have surgery, you may get sewn up with "smart" stitches.

Researchers at Tufts University have developed a new type of surgical thread capable of gathering diagnostic data and communicating it wirelessly in real time.

The development process allows scientists to integrate nano-scale sensors, electronics and microfluidics into a range of thread types -- something as basic as cotton or as complex as synthetics.

Once dipped in a series of sensory chemicals, the threads can measure the pressure, stress, strain and temperature inside a region of tissue. The smart threads can also measure pH and glucose levels. Such data can help doctors keep tabs on the healing process and alert caretakers to the early signs of infection.

The thread could be sewn into organs, wounds or orthopedic implants. The thread has yet to be tested in human patients, but it has revealed its potential in lab rats and test tube experiments.

Still, more research is needed to ensure the threads' biocompatibility.

"The ability to suture a thread-based diagnostic device intimately in a tissue or organ environment in three dimensions adds a unique feature that is not available with other flexible diagnostic platforms," researcher Sameer Sonkusale, director of the interdisciplinary Nano Lab at Tufts' School of Engineering, [said in a news release](#). "We think thread-based devices could potentially be used as smart sutures for surgical implants, smart bandages to monitor wound healing, or integrated with textile or fabric as personalized health monitors and point-of-care diagnostics."

Researchers detailed their diagnostic thread technology in a new paper published this week [in the journal Microsystems and Nanoengineering](#).

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