Ten-Minute Cancer Test

Researchers are developing a microfluidics device that can identify cancer cells during a routine visit to the doctor's office.

(iStockPhoto)

By Katherine Bourzac
Aug. 21

Technology Review PUBLISHED BY MIT

Researchers at the University of Texas are developing a microfluidics device that detects oral-cancer cells in 10 minutes and is simple and cheap enough for use in the dentist's office. The device could be adapted to test for other cancers, including cervical cancer. It works well on cancer cells grown in the lab and is currently being tested on biopsies from oral-cancer patients.

Font Size
A A A
E-mail
Print
Share

RELATED STORIES

- Antioxidants May Up Skin Cancer Risk
- Not Just for Weight Loss: Healthy Diet Cuts Cancer Risk

TOP TECHNOLOGY & SCIENCE STORIES

- NBC Bails on iTunes, Pulling Shows
- IBM: Closer to Ultra-Tiny Storage Devices
- Municipal Wi-Fi Faces Financial Hurdles

Many oral cancers are painless or, in their early stages, resemble dental disease, so patients and doctors may overlook them, says Carter Van Waes, chief of head and neck surgery at the National Institute on Deafness and Other Communication Disorders. The National Cancer Institute estimates that, this year, 22,560 people will be diagnosed with oral cancer, and more than 5,000 will die of the disease. "Even though oral cancer is not common, it's usually advanced when it's diagnosed," says Spencer Redding, chair of dental-diagnostic science at the University of Texas Health Science Center, in San Antonio. Redding is helping test the new device, which was developed by John McDevitt, professor of chemistry at the University of Texas at Austin.

"The goal is to identify patients earlier," when the survival rate is about 90 percent, says Redding. Patients diagnosed in the later stages of the disease don't respond well to treatment, and only about 50 percent survive. McDevitt and Redding envision a compact device that would be standard in dental offices. Any suspicious-looking sores in a patient's mouth could be scraped and tested for signs of cancer while the patient is still in the dentist's chair.

The device, made of acrylic, has a small reaction chamber fed and cleaned via tiny inlet and outlet channels. A solution of scrapings from a patient's mouth enters through the inlet and is strained through a cell-catching filter. Caught cells are then flooded with a solution containing fluorescent protein tags. The tags stick to a protein, called a cancer biomarker, that's made in much greater quantities by oral-cancer cells than by normal cells. Under a fluorescence microscope, cancer cells