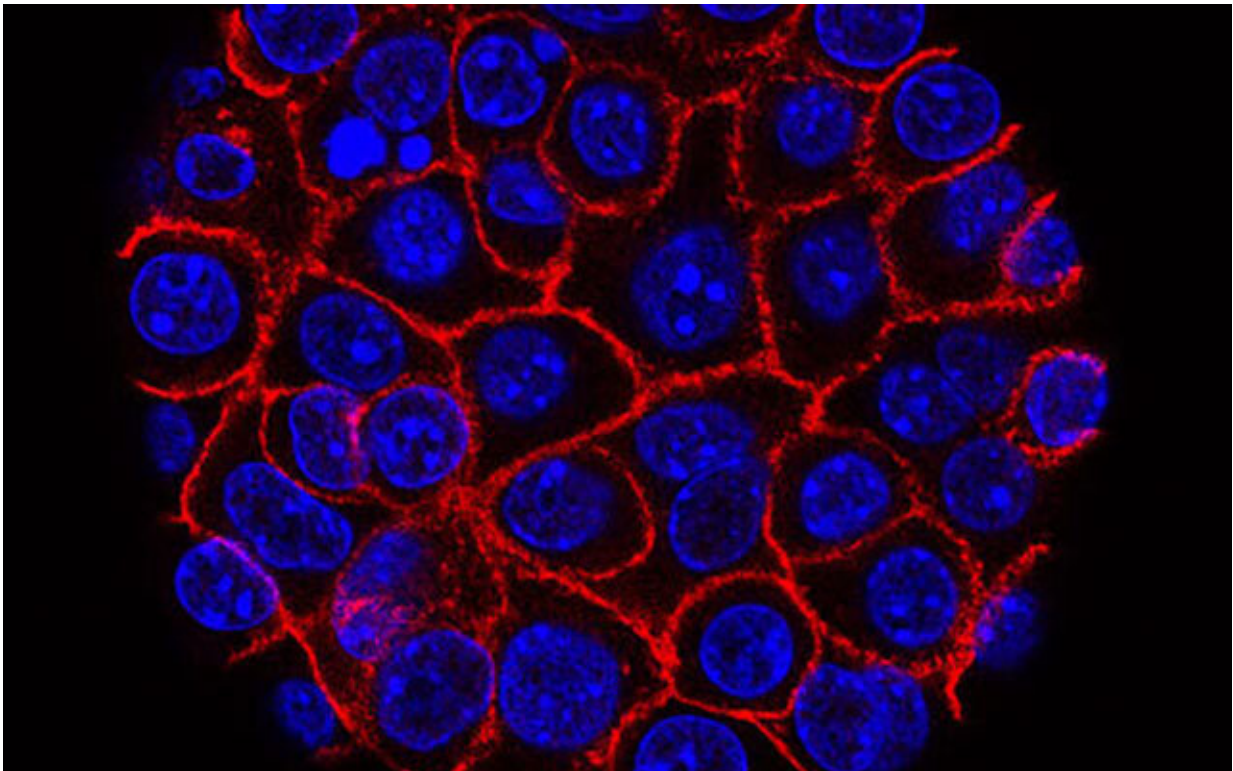


# What a worm! Japan firm uses nematodes to sniff out cancer

November 16 2021

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Pancreatic cancer cells (blue) growing as a sphere encased in membranes (red).  
Credit: National Cancer Institute

A screening test using tiny worms to detect early signs of pancreatic cancer in urine has been developed by a Japanese biotech firm, which hopes it could help boost routine screening.

Scientists have long known that the bodily fluids of [cancer](#) patients smell different to those of healthy people, with dogs trained to detect the disease in breath or [urine samples](#).

But Hirotsu Bio Science has genetically modified a type of worm called "C. elegans"—around one millimetre long, with an acute sense of smell—to react to the urine of people with [pancreatic cancer](#), which is notoriously difficult to detect early.

"This is a major technological advancement," CEO Takaaki Hirotsu, a former academic who studied the tiny worms known as nematodes, told AFP.

The Tokyo-based firm has already used the worms to detect cancer in [screening tests](#), though without specifying which type.

The new test is not meant to diagnose pancreatic cancer, but could help boost routine screening as urine samples can be collected at home without the need for a hospital visit, Hirotsu said at a press conference on Tuesday.

And if the worms raise the alarm, the patient would then be referred to a doctor for further testing, he said.

He is hopeful it could help boost cancer detection rates in Japan, which like many countries has seen screening rates drop during the pandemic as people avoided medical visits.

Even before the pandemic, Japanese patients showed up for cancer screenings less often than many of their peers in developed countries, according to OECD data.

"This is a game-changer... People need to change the way they think

about cancer [screening](#)," said Eric di Luccio, head of the firm's research centre.

Hirotsu and Osaka University detailed *C. elegans*' cancer-detecting skills in a joint study published earlier this year in the peer-reviewed journal *Oncotarget*.

In separate tests conducted by the firm, the worms correctly identified all 22 urine samples from pancreatic cancer patients, including people with early stages of the disease.

Tim Edwards, a senior lecturer in psychology at the University of Waikato in New Zealand, who has studied dogs' ability to detect lung cancer, said using the worms appeared "promising".

Edwards, who is not affiliated with the Japanese firm, noted that unlike dogs, the [worms](#) needed no training to sniff out cancer in patients.

Daniel Kolarich, an associate professor at the Australian Centre for Cancer Glycomics, pointed out that the "unconventional" nature of the method could be "one reason why this has not received more attention."

"Personally, I think we need to pursue every sensible strategy to develop and identify tests that can help us identify cancer as early as possible," he told AFP.

But he cautioned that new diagnostics must "have superior specificity and sensitivity to ensure that cancer is detected as early as possible and that false-positive cancer diagnoses can be avoided".

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