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* Friday 24 March 2017 01:37 GMT

### **First ever blood tests to diagnose cancer 'could be ready in one year’**

Californian researchers claim to be on cusp of breakthrough but cancer expert says while such blood tests show 'enormous potential', he is doubtful they will be ready in such a short time

Scientists are racing to develop the world’s first blood tests that can diagnose [cancer](http://www.independent.co.uk/topic/Cancer) – and prototype tests could be ready in a year, one researcher has claimed.

Jasmine Zhou and her team at the [University of California, Los Angeles](http://www.independent.co.uk/topic/ucla) (UCLA) have developed a computer program that uses genetic data to detect tumour DNA in blood samples and specify where in the body it is coming from.

The program, which the scientists have called CancerLocator, works by measuring the amount of tumour DNA circulating in the blood.

Once this DNA has been located, it can be compared to a database of genetic information from hundreds of people to identify where the tumour is located, said Professor Zhou.

“I hope it [a diagnostic test] will be available within a year. It depends on training data, testing and machine learning,” she told *The Independent*. “With enlarged training and testing data we are confident to achieve much higher performance.”

The new study, published in the journal *Genome Biology*, focussed on three cancer types – breast, liver and lung, and was able to detect early stage cancers in 80 per cent of cases.

Professor Zhou said the next step was to collect solid tissue samples to improve the accuracy of the blood tests, which could then be trialled in a clinical setting.

Lara Bennett, of Worldwide Cancer Research, said while blood testing methods were still being researched, she believed they “will have an important part in the future of diagnosing cancer”.

“The fact its non-invasive is a huge thing,” she said, adding that it could save lives if it succeeds in spotting cancers early. “We are very excited by it, but it's not ready to go, due to limited blood samples, and they've only done it in three cancer types.”

In the meantime, another Californian research team, led by Kun Zhang at the University of California, San Diego (UCSD), is developing a similar blood test based on different technology that they also say could be ready in a couple of years.

Dr Zhang told *The Independent* he had filed patents related to their method in 2014 and hoped to “complete the product development and clinical validation within the next two to three years”.

He said his team’s research did share similarities with Professor Zhou’s, but there were “many technical differences on how each approach works” and “major medical challenges don’t get solved by one team working alone”.

“The work by the UCLA group is a computer program, that reduced the error from roughly 60 per cent to 26.5 per cent. They demonstrated that on cancer data published previously by other groups.

“In contrast, we developed a new theoretical framework, generated our own data from over 100 patients and healthy people, and our accuracy of locating cancer to an organ is around 90 per cent”.

But Paul Pharoah, a professor of cancer epidemiology at the University of Cambridge, told *The Independent* while such blood tests showed “enormous potential”, he was doubtful they would be ready in such a short time frame.

“If you were going to use this test as a screening test – ie to detect cancer in otherwise healthy people – it would need to be evaluated as a screening test.  Any study of any screening modality takes years to do,” he said.

“For example, to show you could detect pancreatic cancer early, before symptoms develop, would take a trial of hundreds of thousands of people over years.”

Professor Zhou’s team used their new computer program to study blood samples from 29 liver cancer patients, 12 lung cancer patients and five breast cancer patients.

She said she hopes to include a broader range of cancer types in the tests, but some were easier to detect in the blood than others due to their position in the circulatory system.

“It's much easier to capture the tumour DNA for liver and lung cancer than for breast, because it's not as well circulated,” said Professor Zhou.

For now, the work continues. Researchers at Swansea Medical School are also [working on a blood test](http://www.independent.co.uk/news/science/cancer-breakthrough-news-latest-smoke-detector-test-symptoms-check-a7227786.html) that can spot cancer before symptoms are noticeable.

And a team at Purdue University in Indiana, USA, said they have announced a [major breakthrough](https://www.purdue.edu/newsroom/releases/2017/Q1/breakthrough-discovery-may-make-blood-test-feasible-for-detecting-cancer.html) to spot proteins in the blood that can signify the presence of cancer.