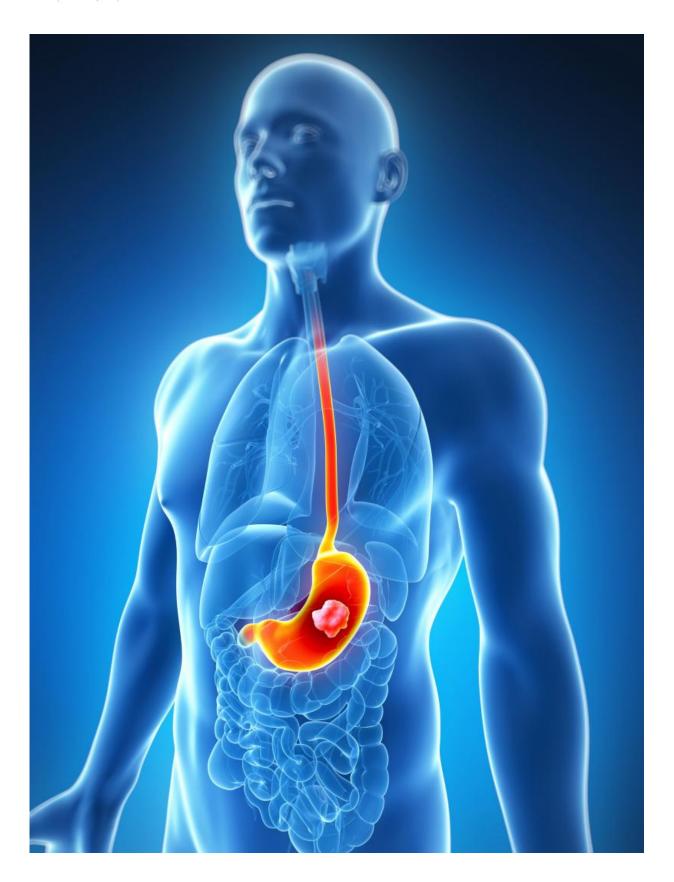# A non-invasive tool for diagnosing cancer

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Gastric cancer – the second deadliest cancer worldwide – has a particularly high prevalence among Asian populations. Credit: 123rf.com

Researchers in Singapore have developed an ultrasensitive method to detect micro-RNAs: tiny molecules that can indicate the presence of tumours. They are applying the technology toward a non-invasive screening test for gastric cancer.

In 2012, 8.2 million lives were lost to cancer around the world. This number is expected to double by 2030. However, many cancer deaths could be prevented if the disease was detected earlier.

To improve cancer detection, researchers in Singapore have developed a new method for diagnosing cancer non-invasively. It involves detecting micro-RNAs (miRNAs): small, non-coding RNA molecules that are important in the regulation of gene expression. Certain abnormalities that can occur in miRNAs have been implicated in various diseases, including cancer.

Research has shown that miRNA molecules are incredibly stable in blood, making them an excellent biomarker of disease. In fact, tumour-specific miRNAs have recently been reported. However, these molecules are difficult to detect because they are present at extremely low levels in the blood.

Researchers from the Agency for Science, Technology and Research (A*STAR) Bioprocessing Technology Institute and the National University of Singapore have developed an algorithm and miRNAdetection technology that is much more sensitive than those currently in use. The technology, which is compatible with existing laboratory instruments, can measure hundreds of miRNAs from a few

drops of blood with unparalleled precision, sensitivity and speed.

The researchers, who have since spun off MiRXES, a biotechnology startup, are now working with the Singapore Gastric Cancer Consortium and the A*STAR Diagnostic Development Hub to develop a test that detects gastric cancer before symptoms appear. A clinical study involving thousands of patients is in the planning phases. If successful, it will be the first noninvasive screening test for gastric cancer: the second deadliest cancer worldwide and one with a particularly high prevalence among Asian populations.

Provided by Agency for Science, Technology and Research (A*STAR), Singapore