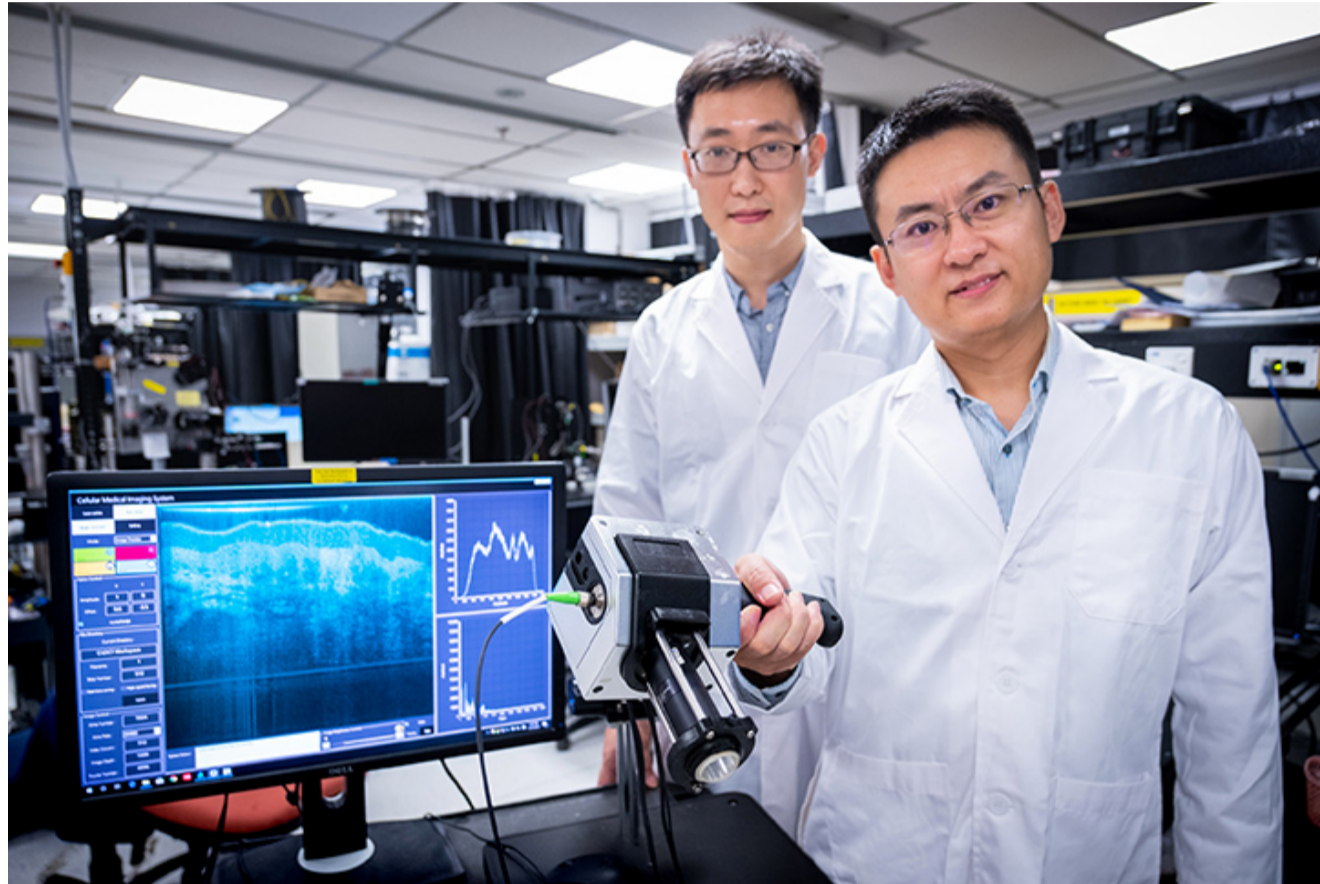


# Micro-OCT Lets Docs Spot Tumors Below Tissue Surface

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DERMATOLOGY, DIAGNOSTICS, GI, ONCOLOGY, PATHOLOGY, RADIOLOGY



A collaboration between researchers at Nanyang Technological University, Harvard Medical School, and University of Alabama has led to the development of a prototype device capable of imaging through tissues at resolutions down to 1 micrometer ( $\mu\text{m}$ ). The micro-OCT imager takes advantage of optical coherence tomography (OCT) at wavelengths between 700 and 950 nanometers. At these wavelengths, the near-infrared light can penetrate a few millimeters below the skin, as well as other soft tissues, to elucidate the structure of individual cells below.

The technology doesn't rely on expensive equipment, such as CT and MRI, and doesn't involve ionizing radiation, which should make it appropriate for screening and diagnosis of a number of cancers.

To allow the micro-OCT to produce 3D images, the device emits infrared light and measures the bounce back from the tissues. A computer algorithm converts these data, coming from individual 2D cross-section slices, into a colorized 3D representation of the cellular structures being imaged.



The technology is easy enough for just about anyone to use by simply applying the imager against the tissue of interest and activating it. It works in a matter of minutes and the results can be analyzed by non-pathologist physicians.

"Our device is a fraction of the size of existing machines and produces clear, high-resolution images in real-time," said Liu Linbo, the lead researcher at Nanyang Technological University. "It uses light to harmlessly penetrate the skin, and it does not involve specialized lead-shielded X-ray equipment or MRI scanners. It is small enough to be handheld, so images could be captured by the bedside."

The device has already been tested at Wuhan University for the detection of colon polyps, back before the COVID-19 emergence, and it allowed non-pathologists to be in 95% agreement, regarding malignancy, with senior pathologists analyzing the same tissues.



Study in journal *Clinical and Translational Gastroenterology*: Rapid, High-Resolution, Label-Free, and 3-Dimensional Imaging to Differentiate Colorectal Adenomas and Non-Neoplastic Polyps With Micro-Optical Coherence Tomography

Flashbacks: microOCT Gives a Closer Look at Coronary Vasculature

Via: Nanyang Technological University

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