

Catching cancer early by chasing it

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Reaching a clinic in time to receive an early diagnosis for cancer—when the disease is most treatable—is a global problem. And now a team of Chinese researchers proposes a global solution: have a user-friendly diagnostic device travel to the patient, anywhere in the world.

As described in the journal *Biomicrofluidics*, which is produced by AIP Publishing, a team led by Gang Li, Ph.D., from Shanghai Institute of Microsystem and Information Technology at the Chinese Academy of Sciences, is developing a portable device for point-of-care [diagnostic testing](#) to detect cancer at its earliest stages. It identifies [cancer biomarkers](#), which are biological indicators of the disease that often circulate in the blood prior to the appearance of symptoms.

The new device is based on microfluidics—a technology that has rapidly expanded over the past decade and involves miniature devices that tightly control and manipulate tiny amounts of fluids for analysis through channels at the micro- and nano-scales.

Researchers value microfluidic technology for its low cost, speedy analysis of fluids and non-turbulent flows, and small footprint, Li said.

Inexpensive and easy-to-use, the Li team's device eliminates the need for an external power supply by relying on a specially fabricated pump to sample reagents and move fluids through microchannels.

"Our device is well suited to helping early diagnosis in resource-limited settings where no mechanical pumps or power sources are readily

available because it is portable, affordable, sensitive, and specific, and delivered by technology with a user-friendly analytical platform," Li said.

He noted that the specialized pump can be prepared in advance and stored in an air-tight package. To further suit it to low-tech, rural or field conditions of use, the device allows users to read results with the naked eye or a digital camera, eliminating the need for any expensive and complicated equipment.

More information: The article, "Direct Detection of Cancer Biomarkers in Blood Using a "place n play" modular PDMS pump" by Honglian Zhang, Gang Li, Lingying Liao, Hongju Mao, Qinghui Jin and Jianlong Zhao appears in the AIP Publishing journal *Biomicrofluidics*. [dx.doi.org/10.1063/1.4807803](https://doi.org/10.1063/1.4807803)

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