

Hand-held unit to detect cancer in poorer countries

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An engineering researcher and a global health expert from Michigan State University are working on bringing a low-cost, hand-held device to nations with limited resources to help physicians detect and diagnose cancer.

Syed Hashsham, a professor of civil and environmental engineering at MSU, is developing the Gene-Z device, which is operated using an iPod Touch or Android-based tablet and performs genetic analysis on microRNAs and other genetic markers. MicroRNAs are single-stranded molecules that regulate genes; changes in certain microRNAs have been linked to [cancer](#) and other health-related issues.

He is working with Reza Nassiri, director of MSU's Institute of International Health and an associate dean in the College of Osteopathic Medicine, on the medical capabilities for the device and establishing connections with physicians worldwide.

Cancer is emerging as a leading cause of death in underdeveloped and developing countries where resources for [cancer screening](#) are almost non-existent, Nassiri said.

"Until now, little effort has been concentrated on moving cancer detection to global health settings in resource-poor countries," he said. "Early cancer detection in these countries may lead to affordable management of cancers with the aid of new screening and diagnostic technologies that can overcome global health care disparities."

Hashsham demonstrated the potential of the Gene-Z at the National Institutes of Health's first Cancer Detection and Diagnostics Conference. The conference, held recently in Bethesda, Md., was sponsored by the Fogarty International Center and the National Cancer Institute.

"Gene-Z has the capability to screen for

established markers of cancer at extremely low costs in the field," Hashsham said. "Because it is a hand-held device operated by a battery and chargeable by solar energy, it is extremely useful in limited-resource settings."

The NIH conference was attended by several U.S. research institutions, including MSU. One of the primary objectives of the meeting was to address the utility of new [cancer detection](#) technologies.

Since cancer diagnostics and rapid screening methods currently are not suitable for low-income and resource-limited countries, Nassiri said a concentrated effort should be made to develop more appropriate and cost-effective technologies such as the one developed by Hashsham for widespread global use.

Nassiri said the goal is to continue the partnership between Hashsham and MSU's Institute of International Health to promote his Gene-Z device globally and validate it in the field with clinical care partners across the world.

Working with Hashsham in the development of the Gene-Z [device](#) was a team of MSU students, led by Robert Stedtfeld and including Farhan Ahmad, Dieter Turlousse and Greg Seyrig. The cancer marker approach was led by Maggie Kronlein, a civil and environmental engineering undergraduate researcher.

Provided by Michigan State University

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