

MSU technology spin-out company to market portable biohazard detection

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Biosensor chips for use in handheld devices for detecting biohazards in the field, developed by biosystems and agricultural engineering professor Evangelyn Alocilja. Credit: Kurt Stepnitz

A new company formed around Michigan State University nanotechnology promises to move speedy detection of deadly pathogens and toxins from the laboratory directly to the field.

Food contamination and other biohazards present a growing public health concern, but [laboratory analysis](#) consumes precious time. The company, [nanoRETE](#), will develop and commercialize an inexpensive test for handheld [biosensors](#) to detect a broad range of threats such as E.coli, Salmonella, [anthrax](#) and tuberculosis.

A significant leap forward in detection and diagnostic technology, it

utilizes novel [nanoparticles](#) with magnetic, polymeric and [electrical properties](#) developed by Evangelyn Alocilja, MSU professor of biosystems and agricultural engineering and chief scientific officer of nanoRETE.

“Our unique preparation, extraction and detection protocol enables the entire process to be conducted in the field, without significant training,” Alocilja said. “Results are generated in about an hour from receipt of sample to final readout, quickly identifying contaminants so that proper and prompt actions can be taken.”



A scanning electron microscope image of E. coli O157:H7 bacteria captured on the surface of a biosensor chip. Credit: Evangelyn Alocilja laboratory

The mobile technology comes at only a fraction of the cost of the closest currently available competing technology, company officials said.

“Although the technology originates from research for biodefense applications, its potential reaches far beyond the initial scope,” said Fred Beyerlein, CEO of nanoRETE. “Our X-MARK platform-based technology has the ability to detect multiple [pathogens](#) or toxins at one

time, in a rapid, point-of-use, cost-effective manner. Imagine the potential applications for food growers, packagers or sellers. Contaminated food or water could be quickly identified, isolated and resolved before reaching the ultimate consumer – you or me.”

nanoRETE is backed by Michigan Accelerator Fund I, a Grand Rapids, Mich., investment partnership focused on Michigan-based early stage life science and technology companies.

“Our task was to find promising technologies, identify strong management and support with investment dollars,” MAF-1 managing director Dale Grogan said. “We reviewed literally hundreds of technologies developed within MSU and determined that this particular technology best fit our investment model. We are excited about nanoRETE’s future and hope this is the first of many companies we help develop with MSU.”

“We have had great faith that Dr. Alocilja’s work in nano-scale detection would be a very successful platform on which to start a new company,” said Charles Hasemann, executive director of MSU Technologies. “MAF-1 has been a great partner in building nanoRETE. With its partnership and investment, we expect to move rapidly to a marketable product.”

Provided by Michigan State University

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