Quantum Leaps in Disease Detection
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USF researchers are making quantum leaps in disease detection with the development of portable biosensors that can detect deadly diseases like malaria virtually instantaneously, with as little as a drop of blood. The sensors utilize bio-photonic technology that measures and interprets the interaction of light with cells or other particles contained in body fluids, water and air. Disease markers are identified by miniature spectrometers and interpreted through the use of patented algorithms contained in proprietary software.

The result is a low-cost, hand-held device featuring new technology that eliminates the costly and time-consuming lab work currently required for cell culture and analysis. For developing countries in particular - where malaria is the leading cause of death - the technology could save tens of thousands of lives a year in places where clinics and laboratories are inaccessible or unaffordable. Furthermore, a single blood sample can be used to scan for many diseases at once.

USF is the only group in the world pursuing this multi-faceted technology, which has a wide range of applications, including identification of harmful pathogens in water, blood typing and quality control of blood products in blood banks, and the detection and characterization of diseases in blood and bodily fluids. Within the $30-billion in vitro diagnostic industry alone, the technology is poised to capture a significant share of the market. Other markets include public health, defense and R&D for drug testing and development.

Scientific proof of concept was completed in 2004 in a series of diagnostic trials conducted by USF in Venezuela. The technology is currently being further tested by scientists at Los Alamos Laboratory for defense applications, and Kimberley Clark, Baxter. The licensees are Claro Scientific for medical diagnosis and Spectral Detection for environmental and industrial applications. Funding is currently being sought to conduct clinical trials necessary for USDA approval.

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