

## Scientists license speedy blood test Invention can spot diabetes in finger prick

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Two researchers at Colorado State University have formed a company to commercialize the pair's technology for rapidly testing blood for signs of diabetes and cardiovascular disease.

The company, Advanced MicroLabs LLC, hopes one day to produce testing devices that could compete for part of the \$19 billion annual diabetic monitoring market. The company's products could eventually save patients and physicians significant time and money.

Using a combination of chemistry and engineering, CSU professor Charles Henry and his team apply patterning techniques developed by the semiconductor industry to inexpensively fabricate diagnostic devices. The Henry group developed a simple means of detecting biomarkers within these devices through electrochemical detection.

With this advancement, small sample volumes can be analyzed cheaply, rapidly and with a high degree of sensitivity. Blood from a simple finger prick instead of a blood draw can be analyzed for markers of health conditions such as diabetes and cardiovascular disease.

Henry and his team have created Advanced MicroLabs LLC to commercialize the invention, and Advanced MicroLabs has licensed the technology from the Colorado State University Research Foundation.

"Diabetes has become a major health issue in the United States and around the world, and it's only expected to get worse because of lifestyle changes people are making," said Dale Willard, co-founder of the company, senior research scientist and the company's only full-time employee.

According to the American Diabetes Association, 20.8 million children and adults in the United States, or 7 percent of the population, have diabetes. According to the World Health Organization, the number of diabetics will double by 2025.

Henry sees the company rolling out its diabetic testing devices in stages.

"Initially the devices could be used for monitoring in a doctor's office or a clinic," said Henry. "From there, we could move into an integrated monitoring test for glucose and other markers that could be used in the home."

Henry and Willard envision a path that involves first proving conceptually that the technology works, and then partnering with a larger diabetic instrumentation manufacturer to help produce the monitoring devices.

For the time being, the pair has leased office space from the university's chemistry department. Advanced MicroLabs has hired another Ph.D. chemist and five undergraduates part-time to assist with the company's initial work.

"As funding increases, we will continue to hire," said Willard. "This is a great example of a company's marriage with the university — we can pull people out of CSU as we need them and give them real-life training."

Advanced MicroLabs is focusing on the growing market called "lab on a chip" — a field that promises to perform complicated diagnostic analyses on a small format, rapidly and

inexpensively. Analyses that once required large and expensive bench top equipment can now be performed in a format that fits into one's hand.

Two government agencies have already embraced the new technology by supporting preliminary research to bring the patent-pending technology to the marketplace. The National Science Foundation has provided \$600,000 in funding through the Small Business Innovative Research grant program for diabetes-related work. The National Institutes of Health has provided an additional \$100,000 grant for cardiovascular disease work. In both cases, the work is done in a collaborative effort between Advanced MicroLabs and Henry's laboratory at Colorado State University.

"We're expected to deliver a prototype device in 18 months, at the end of the grant," said Willard. "We'll then embark on a four-year clinical trial period."

The company's grants will fund startup activities, but Advanced MicroLabs is hoping to soon attract an angel investor or venture capital to accelerate growth. The company hopes to move out of the university as funding allows, and perhaps partner with the Fort Collins Small Business Incubator in the future.

"If we get the level of funding we're hoping for, we'd actually move sooner," said Henry. "A lot depends on how things pan out. I can easily see 25 to 50 employees down the road and doing some manufacturing on site. We have a multidimensional technology that can be applied to anything from the medical field to the environment."