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## Michigan eLab invests in biotech startup for cancer research

By Tom Henderson

**Michigan eLab LLC**, a venture capital firm founded in Ann Arbor last year by three veterans of Silicon Valley, has made its first local investment in **Akadeum Life Sciences LLC**, a startup that hopes to make it easier, cheaper and faster to prepare tissue, water or food samples for testing.

Michigan eLab invested \$150,000 in the seed round of funding in Akadeum, which was founded last March by John Younger, a physician and researcher at the **University of Michigan**, and Brandon McNaughton, a local tech veteran who has been an entrepreneur in residence with the **Detroit Innovate Fund**, a lecturer at the **Center for Entrepreneurship** at UM and a consultant for startup companies in UM's **Office of Technology Transfer**.

Akadeum is unusual for a new biotech startup in that it already has paying customers, eight so far. The company makes tiny glass beads that are coated with antibodies to quickly gather and concentrate the particular kinds of cells that are being looked for in a culture.

While traditionally it can take two or three days to grow enough target cells in a culture to make an identification, Akadeum's technology can reduce that time significantly. McNaughton doesn't want to be specific about reductions of time, which will vary with what is being cultured, until more studies are done, but said they will be significant, especially for those trying to identify a particular pathogen.

Akadeum's first customer was Ebrahim Azizi, M.D., who heads a team at the UM **Comprehensive Cancer Center** that studies tumor cells circulating in the blood.

To do the studies, Azizi's team must gather what are relatively tiny numbers of cancer cells from millions of other cells in blood samples. "It is a needle-in-the-haystack problem," he said.

After a meeting with Younger, Azizi said, he ordered some beads and ran a trial in late December. He coated some beads with the specific antibody that would attach to cancer cells, coated some with the wrong antibody and left some uncoated.

The trial went well, he said. The beads coated with the correct antibodies collected cancer cells quickly and efficiently. The beads were dispersed throughout a sample of blood, then floated to the top, the antibodies that coated them having latched onto the cancer cells he was looking for.

As the beads floated to the surface, they concentrated the cancer cells into a much smaller volume than when they were evenly dispersed in the blood. "It made it easier to manipulate the cancer cells and take

them out," said Azizi.

He said that it takes five to six hours to gather the cancer cells using the beads, cutting the traditional time about in half, but the real promise is in ease of use and cost.

He said other methods of separating cancer cells require trained technicians using expensive equipment that often is unavailable because it is being used by other researchers, while Akadeum's process requires no specialized equipment or training.

Azizi said further tests are needed, and that Akadeum is currently working on making beads more effective for his cancer studies by making them smaller.

Currently the beads are 15-18 microns in diameter. There are 25,400 microns in an inch.

"This is a disruptive technology that can move quickly to market," said Doug Neal, one of eLab's general partners. "What I love is they are attacking a problem in the market where there's been no innovation in 30 years. There's been no innovation on the cell preparation side."

Bill Mayer, vice president of entrepreneurial services at **Ann Arbor Spark**, says Akadeum is an example of the cooperative nature of the local entrepreneurial community.

The company got a grant from Spark that paid for 80 hours of time from a consultant to provide market research and profile potential end-users. Spark also helped arrange a provisional patent application for Akadeum by Jeffrey Schox, whose **Schox Patent Group** is a highly regarded Silicon Valley patent firm.

Akadeum is a member of the **Great Lakes Stem Cell Innovation Center** at Detroit's **TechTown**, where it makes the tiny glass beads at the heart of its technology.

Akadeum is based in the **TechArb** in Ann Arbor, a tech incubator that shares space and resources with **Menlo Innovations**, a highly regarded software design firm.

And **NSF International**, an Ann Arbor nonprofit that helps develop public health standards to protect food, water and consumer products, has agreed to conduct a pilot study for Akadeum on how its technology can help test for pathogens in food.

"Akadeum has been doing the right thing. It's got solid technology and a strong team. John has a deep background in scientific research, and Brandon has a deep business background, and that's a combination that gets you excited," said Mayer.

"They're sharp guys who understand what steps they need to take to validate the technology. There's a real market opportunity here. It's a value proposition that is real," he said.

Mayer said Akadeum has been lining up other funding support, if needed, from **Invest Michigan**, a Detroit organization affiliated with the MEDC that runs the Michigan Pre-Seed Capital Fund 2.0, and from Detroit-based **Invest Detroit**, a nonprofit that has two early stage investment funds.

Patti Glaza, an Invest Detroit vice president who is managing director of its Detroit Innovate and First Step funds, said she continues to follow Akadeum's progress for a possible investment.

"Absolutely. We're staying very close. We're meeting with them once a month," she said. "They're having some pilot tests we'll be looking at. Brandon is extremely smart, and he clearly understands the need for

market validation. It's cool technology, but how do you move the technology to a point where it's commercializable?"

McNaughton said Akadeum is planning to raise a much larger round of funding in the second half of the year. "We're already starting to talk to some people," he said.

Previously, McNaughton founded **Life Magnetics Inc.**, which in 2011 was briefly the hottest of UM's spinoffs, growing out of a paper he had published about being able to detect single bacterial cells by measuring changes in rotational velocity of tiny beads in a magnetic field.

The company got some seed funding, but McNaughton and the management team soon realized that they had more of a science experiment than a company, and that the path to market would be too long and costly.

Michigan eLab was founded in 2012 by four entrepreneurs with longtime ties to Silicon Valley. Three of them also have ties to UM.

It recently held a first close of more than \$20 million of what it hopes to be a \$40 million fund to do early-stage investing in tech companies. In January 2013, the firm got a commitment of \$2.25 million from the Pure Michigan Venture Development Fund, a \$9 million fund overseen by the Michigan Strategic Fund of the **Michigan Economic Development Corp.**

Neal spent 15 years in Silicon Valley in leadership positions at **Hewlett-Packard Co.** and **Symantec Corp.** and then as CEO of **Mobile Automation**, a software security company for mobile platforms that he co-founded in 2000.

After Mobile Automation was sold to **iPass Inc.** in 2005 for \$20 million, Neal returned to Michigan to raise his family. Since then, he has been on the review board of the Michigan Pre-Seed Capital Fund; helped found TechArb, an incubator in downtown Ann Arbor that houses student-run startups; and, from 2009 until June 2013, was managing director of the Center for Entrepreneurship at UM.

The three other eLab founders, who are also general partners, are:

- **Rick Bolander**, who has a master's degree in electrical engineering from UM and an MBA from the **Harvard Business School** and in 1999 co-founded San Mateo, Calif.-based **Gabriel Venture Partners**, an early-stage VC firm that invests in clean tech and information technology.
- **Scott Chou**, a venture capitalist since 1997 who specializes in tech spinoffs from universities and government labs and who is also a managing director at Gabriel Venture Partners.
- **Bob Stefanski**, a UM engineering and law school grad who is a partner in the Silicon Valley law firm of **Reed Smith LLP**. He has been involved with UM's Center for Entrepreneurship since its founding in 2007 and has been an adviser and mentor at TechArb.

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