



## Biotech company rethinking the microscope

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San Francisco-based 3Scan is one of the 10 companies enrolled in The Iron Yard LLC's inaugural digital health accelerator in downtown, which officially ended on Thursday.

The company was founded by Todd Huffman, who is currently serving as CEO. Huffman has assembled an executive team that includes Megan Klimen, chief financial officer, software guru Matthew Goodman and hardware expert Cody Daniels.

3Scan's officers have been splitting time between their research lab on the West Coast and Spartanburg.

They plan to take advantage of the years' worth of free touchdown space at The Iron Yard offered through the accelerator while they continue to grow the company.

"We're past excitement and up to our eyeballs in work," Huffman said. "But what we're doing is big, and it's going to change the world in a lot of ways. There's a lot of work that needs to be done to get there. We're focused right now on working on how to make this a reality."

3Scan's technology is based on the "Knife Edge Scanning Microscope" developed in the late 1990s by Bruce McCormick, founder of the Brain Networks Lab at Texas A&M University.

Huffman worked as a neuroinformatics researcher at Texas A&M in 2003 and actually worked on the KESM.

He left Texas A&M and went to work on a couple of startups and projects, including an open source data-sharing and crowd-sourced system in Afghanistan. In 2009, he returned to his roots with a new vision for the KESM, and that's when he decided to

start 3Scan.

“I wanted to bring this product to the world, but I knew that it would be difficult to accomplish that in academia,” Huffman said. “I felt the best place would be in the commercial market.”

The company was awarded a \$350,000 grant from Breakout Labs in April 2012 to develop 3-D digital reconstruction of a mouse’s brain tissue.

Daniel said 3Scan’s microscope falls into the category of a serial sectioning microscope, meaning it pulls together elements of machine vision, inspection line optics and microtomography, or CT scanning.

The company’s current prototype can scan a slice of tissue up to a submicron thin, which is basically a human hair cut lengthwise 50 times.

Essentially, the company is hoping to do for pathology, the study and diagnosis of disease, what CT scanning has done for radiology.

3Scan’s process allows for an entire organ to be loaded into a block of plastic and into the microscope. The company has combined the microscope and microtome (cutting device) into one tool. Each slice is scanned as it comes off the knife blade, and all of the slices are compiled into a 3-D image.

Daniel displayed one of the company’s projections of the microvasculature of a mouse brain, which showed all of the blood vessels that can’t be seen in a 2-D model.

Huffman said the company wants to use its technology to measure what’s going on in biology, understand the problem and then allow for the design of treatments or pharmaceuticals to fix it.

The company is continuing to seek investment dollars. Daniel said the company has a few contracts rolling in, and its customer base is continuing to grow.

“This has been a really fun experience going through this process, developing this tool and getting to work with prime researchers in the field,” Daniel said

The company wants to operate a pure service model where “customers send in tissue” and 3Scan helps them “with the analysis,” Daniel said.

He said the next step will be to get the instrument into a clinical setting, such as hospitals, research institutions, or drug discovery companies, where 3Scan hopes to set up operations and work as a tool manufacturer and servicer.

“It’s refreshing to work with a team who isn’t afraid to tackle incredibly complex problems,” said Kate McCarthy, program manager for The Iron Yard. “I think they live for it, actually... The team at 3Scan is uniquely talented. They have an incredible ability to see the world in terms of what is possible and the intellectual horsepower to build that vision.”

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