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## Behind The Lens

### Local Microscope Maker Gains Impressive Clientele

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**Judy Newman Wisconsin State Journal**

**MIDDLETON**

Some of the most sophisticated, cutting-edge microscopes being used at top research institutions to learn more about the way our bodies work are being crafted at a small company here.

Prairie Technologies makes laser scanning confocal microscopes. These elaborate microscopes use a narrow beam of laser light to help create very sharp pictures of living cells that can be displayed in three dimensions on a computer screen.

Scientists hope these microscopes will help them understand how the brain works, for example, and that knowledge will be used to fight diseases such as cancer, Parkinson's and Alzheimer's. "That's the ultimate ... lofty goal," said Prairie design engineer Bill Vogt.

Established in 1996, this company, with only 13 employees, has racked up an impressive client list, from Harvard and Johns Hopkins universities to one of the top optical electronics companies in the world, Nikon.

Poised to expand to bigger quarters in a few months, Prairie Technologies has been making a profit since last year.

What's the secret of its success? Smoke and mirrors, you might say.

The smoke just happened to waft through Prairie Technologies' offices on a recent day when an oscillator burned up. It's all part of the research, company president Mike Szulczewski said, with an oh-well-these-things-happen grin.

"It's not like the car industry," where vehicles come down the line, each equipped with the same sets of parts. "A lot of things we're putting together for the first time," Szulczewski explained. "We don't know what problems we're going to run into until we start doing it."

The mirrors -- some as small as a fingertip -- are part of the microscope.

Here's how the device works: A laser light is rocked by two mirrors, sweeping across a sample -- usually a cell or a bit of tissue -- "so it hits each spot uniquely," Szulczewski said.

"You synchronize those (unique points) and it paints you an image," said Willy Hausner, director of sales and marketing. "It's precisely like MRI or CT scanning" but on a much smaller scale.

Laser microscopes are like electron microscopes in that they can zero in on a single cell. Electron microscopes provide a sharper image but they use a sample that's been removed from a subject, said Hausner. Laser microscopes can examine cells on a living subject and see how they function.

"Scientists can look at the brain of a live rat and see how blood is flowing through or how the neurons are working or cells are growing," Szulczewski said.

Prairie Technologies has cultivated a core base of 100 scientists around the United States and overseas and designs laser scanning microscopes to their individual specifications. "It's like building blocks or Legos, and we stick the Legos together," Szulczewski said modestly.

The result is a piece of equipment with a price tag that ranges from \$50,000 to \$700,000.

"The majority of life science research now at the university level is focused on living cell microscopy," said Kurt Neumann, East Coast sales manager for Nikon Instruments, in Austin, Texas. "They want to understand how and why cells are doing what they do" and living cells provide a lot more information, he said.

Prairie Technologies has been making components for Nikon's confocal microscopes for the past four years, Neumann said. As a small company, Prairie can "move very quickly and develop a "very robust, well-thought-out product" that is designed to Nikon's standards, he said. "It's a good marriage of the two companies."

Virtually every Prairie employee is an engineer, each with a different specialty. Since the company designs and develops its own products, employees have a range of skills from creating software programs to manufacturing circuit boards to designing microscopes to installing optics and trouble-shooting lasers.

Now, Prairie and Nikon are working together on a new product, a variation on the current technology, which will have a "major launch" this fall at a scientific conference. "The market right now is demanding a product like this," said Neumann.

Prairie's competitors are the giants in optics: Nikon, Olympus, Zeiss and Leica. Clients include University College London, Technion University in Israel, Duke, Stanford, Northwestern, UCLA and UW-Madison.

A West Allis native, Szulczewski, 46, is both engineer and businessman, an unusual combination in the business world today. He and two partners -- Don Wolf, a Prairie design and manufacturing manager, and Philip Haydon, professor of neuroscience at the University of Pennsylvania in Philadelphia -- have received \$1.7 million in federal grants but have taken no money from investors or venture capitalists.

"I want to build instruments for new research," Szulczewski said. "That doesn't necessarily correlate well with building up a company" for high volume output and big financial gain, he added.

It took until last year -- seven years -- to show a real profit because that's how long it took to develop Prairie's own complete microscope, beyond making components and designing prototypes. Prairie's microscope actually is a series of major additions and modifications to a basic Olympus or Nikon microscope. "Our systems are integrated into their microscopes," Szulczewski said.

Sales hit \$2 million in 2003 and are expected to top \$3 million this year. By 2005, Prairie anticipates \$5 million revenue, controller Tom Stangl said.

Last year, the company bought the confocal microscope business of the former Noran Instruments in Middleton, now part of Thermo Electron. No jobs were added at Prairie but it "expanded our coverage" and customer base, Szulczewski said.

The collaboration with Nikon is one reason Prairie needs to expand from the 3,000 square feet it occupies at 3230 Deming Way in Middleton, across from the Morey Airport.

Szulczewski is negotiating for two to three times as much space and plans to move in January. Over the next 12 months, the company will add about half a dozen employees, a 50 percent increase. It's slow growth, though. "We need to invest four to six months time per person" in training, he said.

Prairie will continue to grow as the needs of its clients grow, he said, and that means the future is "limitless," Szulczewski said. The latest federal funding Prairie received -- a \$400,000 Small Business Technology Transfer grant -- involves working with UW-Madison electrical and computer engineering professor Dan van der Weide to develop a prototype device intended for testing potential drug compounds.

The technique uses high-speed probes to observe the activity of a type of protein, in living cells. "It tells us whether a drug candidate, in fact, binds to one of these proteins, changes its behavior and how," van der Weide said. "We're offering ... drastically improved technology." Patents are pending through the Wisconsin Alumni Research Foundation.

Prairie has drawn some of the most prestigious institutions as customers because they recognize it as a "company that's responsive, a company that's honest ... and they can make the best technology there is," said neuroscience professor Haydon.

Szulczewski, a Wisconsin native educated at UW-Madison, could have located Prairie Technologies anywhere but chose to stay here, he said.

"It's the beginning of a great success story for the local community," Haydon said.

Prairie Technologies at a glance

- \* Address: 3230 Deming Way, in the Middleton Corporate Center
  - \* Product: Laser scanning confocal microscopes, used to examine living cells
  - \* Established: 1996
  - \* Employees: 13
  - \* President: Mike Szulczewski
  - \* Owners: Mike Szulczewski, design and manufacturing manager Don Wolf and University of Pennsylvania neuroscience professor Philip Haydon
  - \* Revenues: \$2 million for 2003; more than \$3 million projected for 2004
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### Return to story

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