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OptiNose is breathing some new life into old drugs

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STAFF WRITER

YARDLEY — Peter Miller was sniffing around for his next entrepreneurial opportunity last summer when he decided to join OptiNose as CEO of the Bucks County company that has developed a new way to deliver medicine.

"I fell in love with two things," said Miller, who has served on the company's board since 2008. "One was the technology. It's brilliant technology. The second was the founders, a husband and wife team from Norway."

OptiNose is developing a bi-directional nasal technology it is applying to existing therapies to make them more effective.

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>
> **Peter Miller**
> OptiNose

The technology — invented by Dr. Per Djupesland, an ear, nose and throat specialist from Oslo — uses the natural flow of a patient's breath to propel medications into the nasal cavity.

Miller noted with conventional nasal sprays, only about 20 percent of the medicine reaches its intended destination.

"The front of the nose acts as a filter," Miller said. "The body doesn't want foreign matter coming in through the nose." Pills that are swallowed, he noted, encounter a similar problem in that much of the drugs gets "chewed up" in the stomach.

Djupesland's technology is the basis for a breath-powered nasal delivery device. The low-cost, largely plastic device is about the size of a small cell phone.

Using the device involves inserting a tight-fighting nozzle into one nostril, and placing a mouthpiece into the mouth. The user exhales into the device, which causes the soft palate to automatically and completely close off the nasal cavity, which prevents the unwanted loss of drug. The breadth enters one nostril through a sealing nozzle and triggers the release of drug particles into the air flow. The drug particles are then carried beyond the nasal valve to the target site.

With the nasal cavity closed off from the mouth and throat medication can be more broadly dispersed through the nasal area. The process provides greater access to nasal membranes that can quickly absorb and transport drugs into the blood.

Dr. James Palmer, an associate professor and director of the division of rhinology at the University of Pennsylvania, said he is a fan of the company's technology and drug-delivery device.

"What I think is so revolutionary about OptiNose's new device for nasal sprays is that it will allow retrograde application (back to front) of medications to the nose and sinus areas, which previously we could not reach without surgery," Palmer said. "The OptiNose device has the potential to be the delivery system for all intranasal medications, and may also create a paradigm shift in the way we treat chronic sinusitis, which [affects] 19 percent of the population."

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CEO Peter Miller demonstrates the company's nasal delivery technology.

The 11-year-old company, founded in Norway, is about to begin late-stage testing of its device to deliver fluticasone, an intranasal steroid used to treat nasal polyps, and sumatriptan, a medication used to treat migraines. Those two products have a sales potential of $300 million to $400 million a year, according to Miller.

OptiNose's original goal was to develop the technology and license it to pharmaceutical companies.

Miller became CEO last summer — in conjunction with the company raising $48.5 million through a venture capital investment by New York-based Alvista Capital Partners. "I believe we can use this device to build a real company, a specialty pharmaceutical company," he said. "We are taking good drugs and making them meaningfully better."

Accomplishing that goal meant moving the company last year from Norway to Yardley to be closer to potential customers and to recruit experienced staff for the company, which now has 17 employees.

Helena Kyttari Djupesland, who was the company's first CEO, is now its vice president of business development. The Djupeslands supported the changes in CEO and headquarters, Miller said, as OptiNose matured from being a developmental-stage company.

Miller, who once served as worldwide president of Johnson & Johnson-Merck Consumer Pharmaceuticals, first entered the entrepreneurial world when he co-founded Conshohocken-based Take Care Health System with Hal Rosenbluth in 2004. Miller was president and CEO of Take Care Health, which operates primary-care clinics inside retail pharmacies. Walgreens bought Take Care Health in 2007.

Miller said the pharmaceutical industry has changed since his time at Johnson & Johnson. Drug companies, he said, are struggling to develop new drugs in an environment where the process takes, on average, $1 billion and more than 10 years. In addition, he said, the Food and Drug Administration has grown more conservative and more demanding in their approach to approving experimental products, while insurance companies are more particular in the drugs for which they will authorize reimbursement.

Because OptiNose is focused on improving the effectiveness of drugs that have already gone through the regulatory approval process, Miller estimated the costs of getting one of their products to market at $25 to $35 million.

OptiNose's long-term plans are to apply its technology to multiple debilitating diseases and platforms such as vaccines, biologics and over-the-counter medications.