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Innovation enables MRI to see inside lungs

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A UNH physics professor's innovations enabling magnetic resonance imaging to better see inside the lungs form the core of the university's second spinout company, backed by three new grants from the National Institutes of Health.

With \$300,000 awarded and another \$2 million anticipated in NIH Small Business Technology Transfer grants over the next 2½ years, Professor, and now CEO, Bill Hersman launched Xemed LLC to commercialize the technology he developed for polarizing xenon gas.

"Prof. Hersman's initial work was driven by intellectual curiosity and wasn't designed for commercial development," said UNH Vice President for Research and Public Service John Aber. "This clearly demonstrates the value of basic research at UNH, both for our ability to improve the human condition and to support

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economic development."

When inhaled by patients, polarized xenon allows MRI to produce a clear picture of the lungs' interior, which cannot be seen with conventional techniques. It could benefit millions who suffer from chronic obstructive pulmonary disease, the fourth leading cause of death in the United States, by allowing doctors to see which parts of the lungs are affected.

Hersman has secured FDA approval to test polarized xenon with MRI in humans. The testing is scheduled for later this year with Sam Patz, a collaborator at Brigham and Women's Hospital in Boston. "The pressure is on now," said Hersman. "The world has been waiting long enough for a diagnostic procedure for lung health, so we're scrambling to provide that."

Hersman developed his technique for polarizing xenon, the most effective in the world, with previous NIH funding. The new grants will fund research to further refine the technology and shrink its size.

"To make it practical we had to make it fit into a cabinet small enough so that every hospital with an MRI unit could have one," said Hersman. "The challenge is to bring everything together into a small space without the three magnetic fields involved interfering with one another."

UNH has already filed for three patents based on Hersman's innovations and is in the process of filing for two more. "This is great for UNH and New Hampshire," said Robert Dalton, director of UNH's Office of Intellectual Property Management, "because students can continue to be involved in the development of the technology and if the company takes off, it could be located right here in the Seacoast."

Still in an RandD phase, Xemed has only one employee besides Hersman, but in the next three years he envisions hiring three or four

more to help hand-build polarizers. The company would probably not sell them, said Hersman, but rather provide annual service agreements to provide polarized xenon on site in hospitals and research institutions.

In time, Hersman said the number of employees could grow dramatically. "If we can demonstrate it is effective in not only assessing and monitoring diseases, but also in helping determine whether a patient should have drugs or surgery - it could be ten times that," he said, "and if HMO's start reimbursing for the procedure, it could be 100 times that."

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Contact: Bill Hersman
hersman@unh.edu
603-862-3512
University of New Hampshire

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