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# UNH Inventors Receive Three Patents

## Number of university's active patents increases to seven

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DURHAM, N.H. -- Three patents have been awarded to University of New Hampshire researchers for inventions and processes developed at the university, bringing the number of the university's active patents to seven.

"When we look at the technology that UNH is developing, we're constantly looking for commercialization opportunities that use the technology and also build the research programs of the university," says Bob Dalton, director of the Office of Intellectual Property Management.

The Office of Intellectual Property Management, which opened in November 2000, supports research programs through the protection of proprietary research by patents, copyright, trademarks or other means. The office not only sees UNH inventors through the process of applying for a patent, it pays the cost of the patenting process, assists researchers in identifying federal programs that support their research and helps them find commercial partners for their inventions.

Obtaining a patent is a time-consuming and costly process. Applying for a patent costs about \$12,000. If the patent is awarded -- nine of every 10 patents submitted to the U.S. Patent and Trademark Office are rejected -- maintenance fees for the 20-year life of the patent run \$3,000.

"If you look at UNH overall, there's a lot of fantastic research going on that we need to be a little bit more

focused on in commercializing," Dalton says.

Taylor Eighmy, professor of civil engineering, received a patent for his phosphate mineral-based reactive barrier containment system. Eighmy, who helped establish the Environmental Research Group in 1987, has focused his research on finding solutions for environmental problems.

His invention is a containment system that employs a barrier to prevent the release of contaminants from waste materials, sediments or dredged materials using a phosphate mineral-based reaction. The barrier encapsulates the contaminated materials and is designed to be used to contain heavy metals.

"His application is critical for treatment and containment of hazardous materials -- metal contamination -- both in dredging operations and in containment/restoration operations. We think Taylor's technology is extremely broad and has huge potential," Dalton says. "We have two organizations right now that have expressed interest in the technology."

James Ryan, John Macri and Mark McConnell received a patent for a method and apparatus for imaging through three-dimensional tracking of protons. This invention has real-world applications in the treatment of cancer and other diseases. It uses a high-energy proton beam to deliver radiation as precisely as possible to tumors, minimizing radiation to healthy tissue.

In the past, cancer treatment centers relied on X-rays with surgically implanted markers that allowed a therapist to target radiation treatment at the tumor over the span of multiple treatment sessions.

Originally designed to measure solar flare neutrons from spacecraft in Earth's orbit, this invention eliminates the need for surgically implanted markers and delivers a more exact target for therapists. The radiation beam can deliver the maximum dose of treatment to the tumor -- and nothing else.

"It also has potential application in the environmental marketplace with monitoring so it's a technology with application that is very broad," Dalton says.

Kevin Short, assistant professor of mathematics, and graduate students Dan Hussey and Kimo Johnson, received a patent for a new method and apparatus for compressed chaotic music synthesis. Short's invention provides a new method for music synthesis. It produces musical waveforms that offer a rich, harmonic structure and sound like musical instruments.

Real-world applications include use with synthesizers for which music compression is critical, Dalton says.

Short's invention is based on Chaotic Compression Technology (CCT), which was introduced by Chaoticom, UNH's first spin-out company launched in early 2001. Chaoticom's investors include members of the eCoast Angel Network and Kodiak Venture Partners.

Short has several patent applications pending that relate to CCT, including one that is expected to be issued within three months that deals with encryption. Other CCT uses include audio and video compression.

"We began to realize that this had huge potential," Dalton says.

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