

A winning equation

Colorado universities are making major strides in successfully transferring technological innovations to the private sector.

By Kimberly S. Johnson
Denver Post Staff Writer

Researchers Robert Nelson and Matt Seefeldt work in a sparsely furnished laboratory. Their focus is on a small picnic cooler holding a metal cylinder suspended in water and connected to tubes and valves.

The two are the only employees, in addition to the chief executive, at the startup company spun out of the University of Colorado.



"A lot of great ideas come out of academia. It's not the type of thinking corporate America can pull off," said Nelson, who works at Lafayette-based BaroFold Inc. Although it looks like a high-school science project to a layman, the cylindrical apparatus is a hydrostatic pressure machine designed to ungroup proteins that can play a vital role in developing new, lifesaving drugs.

Robert Nelson conducts research at BaroFold Inc., a privately held startup biotechnology company based in Lafayette that was spun off from the University of Colorado during the 2003-04 fiscal year. (Post / John Epperson)

The machine also represents the successful transfer of ground-breaking technology from a university lab into a new business venture - a process that is enjoying increasing success in Colorado, particularly at the University of Colorado.

"A lot of things that come out of the university are enabling-types of technologies or platforms that can be licensed," said John Carpenter,

co-creator of the hydrostatic pressure machine and the scientific co-founder of BaroFold. He is also a professor of pharmaceutical science and co-director of CU's Center for Pharmaceutical Biotechnology.

In the 2004-05 fiscal year, CU launched nine new private companies.

Those companies

aim to produce products ranging from new antibiotics to biometric identifiers.

BaroFold, a three-person firm, is one of nine companies spun out of the university during the 2003-04 fiscal year. It has several clients using its technology, which is useful to drug companies creating protein-based drugs.

CU's tech-transfer efforts are the most aggressive among the state's public institutions. In addition to its spinout companies, it had 177 invention disclosures during the 2005 fiscal year and 139 patent applications for those disclosures.

Colorado State University's tech transfer resulted in two patents during the last fiscal year and six agreements to license research. The Colorado School of Mines reported one spinout, one license agreement and 30 patent applications.

Besides creating new companies, universities also license new innovations to other companies, receiving revenues and royalties should the innovation lead to the development of a commercial product. At times, the school benefits from selling stock in companies that it helped fund.

David Allen, CU's associate vice president for technology transfer, said the key to tech transfer is getting researchers to disclose their discoveries to the university.

His office then matches professors and researchers with venture capitalists, attorneys and serial entrepreneurs to figure out the best use for new discoveries.

A serial entrepreneur creates a new business, develops it, then moves on to another venture.

"Our primary role is to identify intellectual property that is disclosed to us by (researchers), patent protect and commercialize it," said Allen.

Allen took over the department of 16 employees in 2001 with a plan to help the university and Colorado economy profit from innovative research, forecasting annual growth of 15 percent.

Work done by the school's researchers in Boulder, Colorado Springs and the Health Sciences Center in Denver in conjunction with the university's tech-transfer office also resulted in the creation of six companies in the 2002-03 academic year and three for 2001-02.

"They have very extensive experience and a very good system," said Reed Ayers, a professor and researcher at the School of Mines' Institute for Space Resources.

Ayers and another colleague have a patent pending for orthopedic implants that have a chemical makeup very similar to bone. The material can be used in hip replacements, cranial reconstruction and dentistry.

Ayers applied for his patent in 2001 through CU's technology-transfer office, where he also works as a research associate. He said the School of Mines "is just beginning to see" the benefits of technology transfer.

"We're still in the small stages but have some very outstanding levels of expertise," said Fred Fraikor, acting director of the office of technology transfer at the School of Mines. "We don't have a medical school or pharmacy school, where you're going to have the breakthroughs that get you huge amounts of royalties."

Allen said biotechnology developments make up 50 percent to 60 percent of licenses and companies coming from CU's tech-transfer office. Other inventions come from physics, engineering, and computer science departments.

Terrance Boulton, a University of Colorado at Colorado Springs professor, founded Securics Inc. with help from the tech-transfer program.

"This idea that it's a partnership (at CU), that they want to help us succeed, that's truly what they've been doing and what I think is so valuable," Boulton said.

Securics is developing biometric technology - fingerprints and hand and face geometry - that won't be compromised if a hacker penetrates a credit-card company's computer system. Boulton started the company in 2004 after working on the concept for more than three years.

CU splits its profits equally between the inventing professor, the research laboratory, the chancellor's office and the technology-transfer office.

Last year, the tech-transfer office received \$21.7 million in revenue, a significant jump from the \$5.8 million in the 2003-04 academic year. The office no longer relies on funding from the university system to sustain its \$4.1 million annual budget.

The huge jump in revenues resulted from what Allen calls luck and a number of factors falling into place at the right time, including the purchase of CU's tech-transfer spinoff CDM Optics by Sunnyvale, Calif.- based OmniVision for \$30 million in cash and stock in March.

Part of the money generated by tech transfer goes to fueling additional research.

Boulder-based Windom Peak Pharmaceuticals, one of the nine newly formed companies this past year, received \$100,000 this summer to advance its work on new antibiotics.

"Tech transfer has worked well for me. It's a critical piece for getting senior management in touch with entrepreneurs and professors," said Scott Rudge, chief executive for Windom Peak.

All of these companies have the potential to add jobs to Colorado's economy in the future. But, Allen said, right now, many of the startup companies are so small that they employ only one or two full-time workers.

Seefeldt, the research scientist for BaroFold, is reaping the economic benefits of technology transfer.

The 28-year-old graduated from CU with a doctorate in chemical engineering. The bulk of his research while at school was assisting in developing the pressurization technology that led to BaroFold.

"You're doing research for four years, and now you have to entertain a variety of different hats, from researcher, businessman to janitor," he said. "It's very versatile; you're not a cog in the wheel."

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Startup central

In the 2004-05 academic year alone, the University of Colorado has spun off nine new companies, mostly in the biotechnology field.

ARCA Discovery: Aurora-based developer of heart-failure drugs

BioTech Cures: Utah-based developer of therapeutics for life-threatening bacterial infections

CLP MicroTechnologies: Boulder-based microfabricator of polymeric devices with chemical, electrical and mechanical properties

GleeCo.: Denver- and Tucson-based developer of speech- and voice-therapy treatment for patients with Parkinson's disease

OncoLight: Boulder-based developer of an instant bio-analytic device using light to detect cancer

Proteome Resources: Aurora-based developer of drugs that inhibit cancer-cell growth

Securics: Colorado Springs-based provider of biometric security devices

Serendipity Pharmaceutical: Boulder-based developer of an anti-cancer therapeutic compound

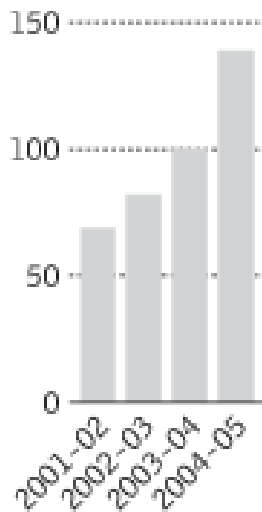
Windom Peak Pharmaceuticals: Denver-based developer of new antibiotics to treat infectious diseases

*Source: David Allen of the CU-Boulder Technology Transfer Office, www.cusys.edu/techtransfer/
Research: John Wenzel*

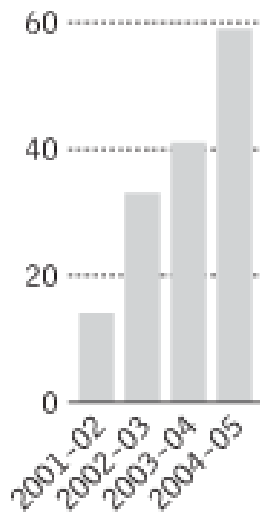
From research lab to commercialization

The University of Colorado has the state's most aggressive technology-transfer program, by far, with smaller programs in place at Colorado State University and the Colorado School of Mines. A look at the University of Colorado's success rate for the past four years:

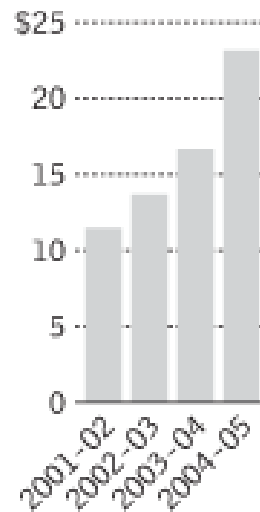
U.S. patent applications filed



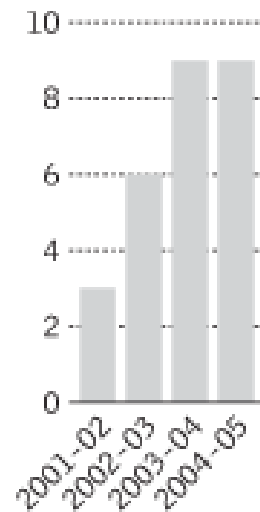
Options and licenses



Revenue received* In millions



Startup companies



*Does not include \$28.1 million in 2003-04 and \$6.7 million in 2004-05 from legal settlements.

Source: University of Colorado

Thomas McKay | The Denver Post