Montana State University has been included in a BusinessWeek.com article about 10 schools making their mark with innovative tech transfer programs.

The article, “Small Schools' Big Tech Dreams,” is based on a report sponsored by the National Science Foundation highlighting a number of smaller university programs that are developing new technologies through academic research, licensing the inventions and helping launch businesses that use them.

The report was prepared by Innovations Associates of Reston, Va., with the help of a grant from the NSF’s Partnerships to find institutions of higher learning “punching above their weight” in technology transfer. Selected schools are among those that fall below the top 50 when ranked by innovation and design budgets, and met several other criteria, such as a high ranking in some area of tech transfer — say, patents filed, licenses executed, or startups launched.

Becky Mahurin, director of MSU’s Technology Transfer Office, is particularly pleased that the report found that MSU consistently ranks in the top ten for licensing activity on a weighted basis for research funding.

“It reflects the great work the researchers do,” Mahurin said. “That work has commercial potential, and we have licensed and built companies around those technologies.”

Diane Palmintera, president of Innovation Associates, said that schools with fewer resources than schools such as Harvard and MIT have to think creatively to contribute to the greater economic development of their state or region.

“Technology transfer, the process of turning scholarly work into a marketable and practical product or service, spans a broad range of possibilities,” Palmintera said. “Innovation and new technology businesses can be based on advancement in different fields.”

The report can be found at BusinessWeek.com’s B-School (business school) section: http://www.businessweek.com/bschools. For more about MSU, click on the slideshow “10 Schools Making Their Mark in Tech Development.”

Although Katie Hoyt, ChBE, earned a degree in fall 2007 that commands a high salary, she is headed to El Salvador to teach English.

“It’s just one of many surprises about Hoyt, one of the few female Native American students in MSU’s College of Engineering. Hoyt is a member of the Tlingit Tribe of Alaska and is concerned about issues facing Native Americans.

This past summer, she was one of 11 students nationwide to win a Morris K. Udall Native American Congressional Internship to Washington, D.C.

With her engineering background, Hoyt hopes to advocate for tribes of Alaska and the Northwest coast, possibly with a graduate degree in public health, law or policy.

“Even though I’m not thinking about a graduate degree purely in engineering, I really enjoy the advantages that an engineering background provides,” she said.

Hoyt also values her undergraduate research experience and support from mentors Sarah Codd, assistant professor in mechanical and industrial engineering, and Sheree Watson, director of the COE’s Designing Our Community program.

With funding from the MSU Idea Network for Biomedical Research Excellence, Hoyt worked on a project to tag microscopic biofilms with compounds that make the biofilms easy to see with imaging technology.

“Lab work is very distinct from classroom work and a great experience,” Hoyt said. “Those research experiences make a graduate degree feel more in reach.”

“A big part of what made my time here great were mentors like Sarah and Sheree,” Hoyt said. “They were often telling me ‘You can do it Katie!’ or ‘Good job!’”

“It really helped to hear that,” she said.

Doug Cairns, professor of mechanical and industrial engineering, has been named the inaugural Lysle A. Wood Distinguished Professor of Mechanical and Industrial Engineering at MSU. Wood was an MSU graduate who became vice president and general manager of the Aero-Space Division of Boeing.

The professorship was established with a $1 million gift from Wood’s estate. The Wood endowment will fund aerospace research, provide support to aerospace faculty, and pay for students to explore aerospace careers.

Cairns received his doctorate in aeronautics and astronautics from the Massachusetts Institute of Technology in 1987. He joined MSU’s faculty in 1995 from Hercules Materials Company in Salt Lake City, where he was manager of composite materials technology. Cairns’ research focuses on developing, analyzing, and testing advanced composite materials used in aerospace, civil, and marine applications. He recently began testing new materials and manufacturing techniques for wind turbine blades. Cairns works with industry to transfer his research findings to advanced structures and recently developed an aircraft structures course at MSU with engineers from Boeing.

Cairns is a former chairman of the Materials Technical Committee of the American Institute of Aeronautics and Astronautics and MSU’s representative for the Montana Aerospace Development Association. Cairns teaches undergraduate- and graduate-level courses and chairs the Mechanical Engineering Graduate Studies Committee.
Dear Friends of the COE,

My writing to you today reminds me that I have just completed my seventh year of service as dean of the College. It's truly hard to believe how these years have flown by, but it's equally satisfying to have witnessed and helped support many positive changes in recent years. We recently concluded the official 5-year horizon of the College's first comprehensive strategic plan and there are many positive outcomes to report. We continue to attract outstanding young faculty, having out-competed other top universities in the process. These faculty are helping set new standards of excellence with their national and international achievements. In FY07, energetic work by our faculty, staff and students resulted in an all-time high mark for expenditures from external research grants and contracts at nearly $15.5 million.

Our graduating seniors in engineering continue to outpace the nation in their FE exam pass rate. Computer Science students are now required to sit for a corollary exam (Major Field Test in CS), and after just two test cycles, have established MSU among the nation's very few top performing schools. MSU student teams have entered a record number of national and international competitions, which has resulted in high placements and even a few first place awards. I'm particularly pleased to report that the multi-disciplinary design initiative has culminated in a new course required of all juniors in the College as spring semester 2008. This initiative has been in the planning-and-analysis stage for several years and now represents the most significant curricular update in our College in over a generation. Many of our industrial partners have also closely followed this project and join our faculty in their excitement about objectives tied to this new course.

Please enjoy this Honor Roll of Donors newsletter and look for updates in future publications or 24/7 on the COE Web site.

Sincerely,

Robert Marley, Dean

COE students help company find energy solutions

adapted from an article by Tracy Ellig, MSU News Service

Engineering students Kylan Engelke, Scott Dent and Jeffrey Larsen spent a year working on a fuel delivery system for a device that breaks vegetable oil or diesel fuel into hydrogen gas and carbon monoxide.

The Bozeman research lab owned by Leonardo Technologies, Inc. asked for help in getting more energy out of diesel fuel and Montana-grown vegetable oils.

Although Engelke was determined to not attend graduate school before starting the project, he liked working with Joel Lindstrom of LTI.

When LTI offered Engelke a job and funding for a graduate degree, he accepted both.

According to Stephen Sofie, the students' faculty advisor, chemically combusting hydrocarbon fuel, such as burning gasoline in a car, harnesses only 10 to 15 percent of that energy to run the engine. However, “reformed” vegetable oil or diesel can be used in fuel cells or other technologies, where energy efficiencies can exceed 40 percent. Learn more about COE's Research Focus Areas online at www.coe.montana/research.html.

MSU mechanical engineering graduates Jeffrey Larsen (left) and Kylan Engelke (right) helped Joel Lindstrom (center) of Leonardo Technologies Inc., build part of a system to get more energy out of oils from Montana-grown seed crops. Lindstrom holds oil pressed from camelina grown on Ted Turner’s Flying D Ranch near Gallatin Gateway and from the farms of Bill O’Connell and Brian Goldhahn near Springhill. (MSU photo by Kelly Gorham.)
We would like to thank all those alumni, friends and corporations who generously donated to the College of Engineering during this fiscal year (July 1, 2006–June 30, 2007). Your support is vitally important to the college and enables us to provide scholarships, state-of-the-art equipment and excellent facilities for our students. Donors listed in italics contributed $1,000 or more to the college, including matching gifts. The * denotes deceased. The ** denotes annual gifts.

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Honorary Gifts FY ’06 - ’07
The following people have been honored by gifts made in their names to the COE. We appreciate these tributes made by friends and loved ones to recognize highly esteemed individuals.

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Ron Wilkerson

Meet new COE department heads

Computer Science
John Paxton is the new department head of Computer Science. His interests include artificial intelligence with an emphasis on machine learning and computer science education. Paxton’s international experience includes serving as a short-term guest professor at universities in El Salvador, New Zealand, Ireland and Morocco.

In 2006 he was a Fulbright Professor at The University of Leipzig in Germany. He joined MSU’s CS faculty in 1990. Paxton earned his Ph.D. from The University of Michigan in computer science. He replaces Michael Oudshoorn, who is now Dean of the College of Science, Mathematics and Technology at The University of Texas at Brownsville and Texas Southmost College.

Electrical & Computer Engineering
Robert C. (Rob) Maher is the new department head of Electrical and Computer Engineering. His interests include digital signal processing, digital audio, and acoustics. Prior to joining MSU’s ECE faculty in 2002, Maher was an entrepreneur and engineering manager in the private sector. In 1997 he became vice president of engineering for start-up EuPhonics, Inc., of Boulder, Colo., and served as Engineering Manager for Audio Product Development with 3Com/U.S. Robotics when EuPhonics was acquired in 1998. He was previously a tenured EE faculty member with the University of Nebraska-Lincoln from 1989 to 1996. He earned his Ph.D. from the University of Illinois-Urbana in electrical engineering. Maher replaces James Peterson, who retired.

Related Stories
See Retirements below and New Faculty on page 8

Retirements
Thank you and congratulations to Anne DeFrance, Computer Science; James Peterson, Electrical and Computer Engineering; and Paul Schillings, Mechanical and Industrial Engineering; who retired in fall 2007.

Memorial Gifts FY ‘06 - ‘07
The following people have been remembered through gifts made to the College of Engineering. We are grateful to those who pay tribute to their friends and loved ones in this meaningful way.

Dr. Lloyd Berg
Emil Matt Blazic
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* Denotes deceased.
** Denotes gifts to Air Force or Army ROTC.
Italicized text denotes gifts of $1,000 or more.

Thanks to all who contributed!

We want to ensure the accuracy of this list. If you feel we have made an error, please contact the office of the Dean of Engineering at 406-994-2272.
Abigail Richards has joined Chemical & Biological Engineering as an assistant professor. Richards’ research interests include biofilm growth in extreme environments and exploring ways to use microbes to clean soils contaminated by heavy metals or radio-nuclides. In fall 2007 Richards taught introduction to chemical and biological engineering and heat transfer operations. Richards earned a Ph.D. in chemical engineering from Washington State University in 2007.

Michael Berry has joined the Civil Engineering department. He earned a Ph.D. in structural engineering from the University of Washington in 2006. Much of Berry’s research is related to reinforced concrete. He also investigates how reinforced concrete columns behave under seismic loads, using recycled materials to replace cement and aggregate in reinforced concrete, and replacing steel rebar with glass fiber reinforced polymers in compression members.

David A. Miller has joined Mechanical & Industrial Engineering. Miller, an assistant professor in mechanical engineering, spent seven years with the Los Alamos National Laboratory after earning a Ph.D. in aerospace engineering from Texas A&M University in 1999. For over10 years, Miller has conducted research related to the mechanical behavior of materials under applied loads, especially shape memory alloys (SMA). Many industries, such as medicine and aerospace, use SMAs for their ability to return to an original shape after being deformed, and to create large forces in the process. Products as varied as eyeglass frames, medical stents, and pipe joints contain SMAs.

Make a tax-wise IRA gift

Thank you to those listed below for supporting MSU and/or the College of Engineering through the Pension Protection Act (PPA) in 2007. Many alumni and friends took advantage of terrific tax incentives to make gifts that transfer IRA assets directly to MSU through a Charitable IRA Rollover. This works very well for those 70½ and older — it is a direct transfer, tax-free up to $100,000 per year, constitutes an annual required distribution, and reduces potential estate tax.

Although Congress failed to extend the Charitable IRA Rollover by the end of 2007, our advisors tell us it is very likely that the extension will be included in 2008 legislation, allowing more alumni and friends to make tax-savvy gifts to support MSU. Even so, the Charitable IRA Rollover is just one of several tax-wise giving options that have worked well for COE alumni. Popular ways to support MSU include charitable gift annuities, charitable remainder trusts, and remembering MSU in your will and living trust.

To explore ways to include MSU in your plans, please contact the MSU Foundation Office of Planned Giving at (406) 994-2053.

— Linda Wyckoff, Sr. Director of Development, MSU COE (406) 994-2223