At Boise State, the Office of Technology Transfer manages intellectual property commercialization for the university, from assessment and protection to development, licensing and marketing.

That can involve filing a patent to protect new ideas created during research, as new grants are being sought for further technological development or while kinks are being worked out. It also often involves partnering novel technology, skills and methods with private or public industry, where it can then be developed further and, if applicable, commercialized into a product or spin-off company.

“The transfer of technology out of a university requires a vigorous, committed tactic that includes involving researchers, advocating for the technology and locating industry partners who will use that technology and bring it to market,” said Katy Ritter, director of the Office of Technology Transfer. “We hope that the result of our activities includes the introduction of new products into the marketplace, an increase in high-quality jobs in Boise and the state of Idaho, and general economic benefit.”

Read on for a look at the Road to Technology Transfer, as experienced by researchers in disciplines across campus.
Discovering the latest and greatest widget, software application or cancer treatment can do wonders to boost a researcher’s academic reputation and attract future grants.

It won’t, however, begin changing lives until it gets into the hands of the people who need it.

That process, called technology transfer, is key to strengthening university and community ties and contributing to economic development.
Imagine a device that uses magnetism to transfer electrical energy into motion, without the use of any rotating parts.

Peter Müllner did and is now working to market the incredibly small Motionless Magnetic Shape Memory (MSM) Micropump.

In MSM technology, a magnetic field is applied to a material, causing it to respond with a shape change that remains when the field is removed. Apply a different magnetic field and the material forms into a new shape. Repeat this quickly and with purpose and you have a small motor or pump.

Built by Müllner’s students, the device already has been used in research aimed at delivering minute volumes of drugs in the lab of Martin Vreugdenhil at the University of Birmingham in England. Müllner expects the novel pump to find many other applications as well.

“Anthracyclines are used to fight a whole variety of cancer types,” Warner said. “The trouble is that the dose is limited. You can take a certain amount for a certain period of time, and then you are done. Beyond that it can cause life-threatening congestive heart failure.”

But reducing that risk also reduces the drug’s potency. Warner’s team is working to restore its effectiveness without the harmful side effects.

“We are synthesizing the drug and conducting preliminary pre-clinical trials,” Warner said. “We’re testing it against a wide variety of cancer cell types to see how effective it is. Then we will test it in living systems.”

Their research to date has been supported by a grant from the Idaho Global Entrepreneurial Mission (I GEM). Warner hopes that success in these early stages could lead to a technology transfer grant from the National Institutes of Health aimed at helping small businesses engage in research and development with a strong potential for commercialization.
Cows are big business in Idaho, where a nasty case of mastitis can spell disaster for large and small dairy farms alike.

Research by Dr. Juliette Tinker, associate professor of biological sciences, could help.

Tinker is developing a vaccine for *Staphylococcus aureus*, a bacterium that is a significant source of mastitis in dairy cows. Her work received a patent in September, and two more patents are pending.

Infections often can be treated with antibiotics, but the medication taints the milk, making it illegal to sell and undermining the bottom line.

“Vaccines are really big right now because they can reduce the demand for antibiotics,” Tinker said.

Tinker currently is experimenting with the best way to deliver the vaccine. Original plans called for nasal delivery, but she now is looking at the udder or vagina as possible options. To find out which method works best, she’ll have to set up trials with real dairy cows.

To make that happen Tinker turned to her industry partner, Dr. Brian Mitchell of DairyTeam. A veterinarian with a master’s degree in immunology, Mitchell was able to connect her with a local commercial dairy. Four trials currently are set up over the next year and Tinker hopes for positive results.

“We couldn’t do large-scale research to move ahead without collaboration with industry,” Tinker said. “U.S. Department of Agriculture grants are not large enough for larger-scale studies. And a lot of good interaction can also come from these collaborations.”

Benefits include an exchange of ideas and also a few economic advantages. For instance, licensing the vaccine following testing can help support further research.

“If we get positive results, we expect more interest from industry,” she said.
Water is the lifeblood of Idaho, and the best predictor of whether we’ll have enough to get us through the dry summer season is the winter snowpack. But those life-giving crystals often spark a love-hate relationship. Although we desperately need snow, we know we can’t always trust it to remain stable.

That is often the case with larger dogs, who are prone to hip dysplasia, a congenital deformity of the hip joint. But total hip replacement surgery generally runs between $4,000 and $5,000, making it out of reach for many pet owners.

Working with MWI Veterinary Supply and WestVet, engineering assistant professor Trevor Lujan is hoping to support the development of a viable alternative treatment at a fraction of the price — a canine implant that only replaces the articulating surfaces on the hip joint.

MWI developed the product, based on collaborations with local surgeons at WestVet. Lujan is creating a way to test its effectiveness and durability. A new testing apparatus created in his lab will simulate a year of canine activity in just a week’s time.

While dog has long been recognized as man’s best friend, there’s no doubt that bond has deepened in recent years, at least as measured by the proliferation of pet-related services and products. And that means we’re more likely than ever to do whatever we can to improve our pet’s quality of life, even if it means expensive surgery.

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In 1977, a group of Boise State alumni joined other local actors to put on a show. Finding that licensing fees, or royalties, for producing a modern script were beyond their means, they decided to tackle a royalty-free Shakespeare play instead.

That production launched what today is the highly successful Idaho Shakespeare Festival, which stages five plays each summer at its outdoor amphitheater along the Boise River near Barber Pool and offers educational outreach programs across the state. A dedicated core of Boise State faculty, students and alumni continue to be key contributors to the program.

“From the founding of the Idaho Shakespeare Festival in 1977, Boise State faculty, students and alumni have played a critical role in the extraordinary growth and success of the company,” said Charles Fee, producing artistic director of the Festival.

“In the past year alone, six faculty from the Department of Theatre Arts were employed as professional members of the Festival company: acting, designing, coaching and serving in technical capacities, both in Boise and with the Lake Tahoe Shakespeare Festival in Nevada.”

In addition to faculty, the 2014 company included 22 current Boise State students and alumni working in every aspect of the company — from leading roles onstage to administrative and technical positions.

“Boise State also plays a role in developing and deepening the professional staff of the Festival through a generous sponsorship that provides continuing education opportunities at both the undergraduate and graduate levels.” Fee said.

Dr. Gordon Reinhart, head of the acting and directing emphases in Boise State’s Department of Theatre Arts, said: “When I work out there, I’m struck by the powerful feeling of community and by the seeming health of our community.”

Reinhart also noted the importance of art to a region’s economic well-being: “It seems to me that there is no economy to develop without such a thing.”