

# STUDENT INNOVATION @ THE U



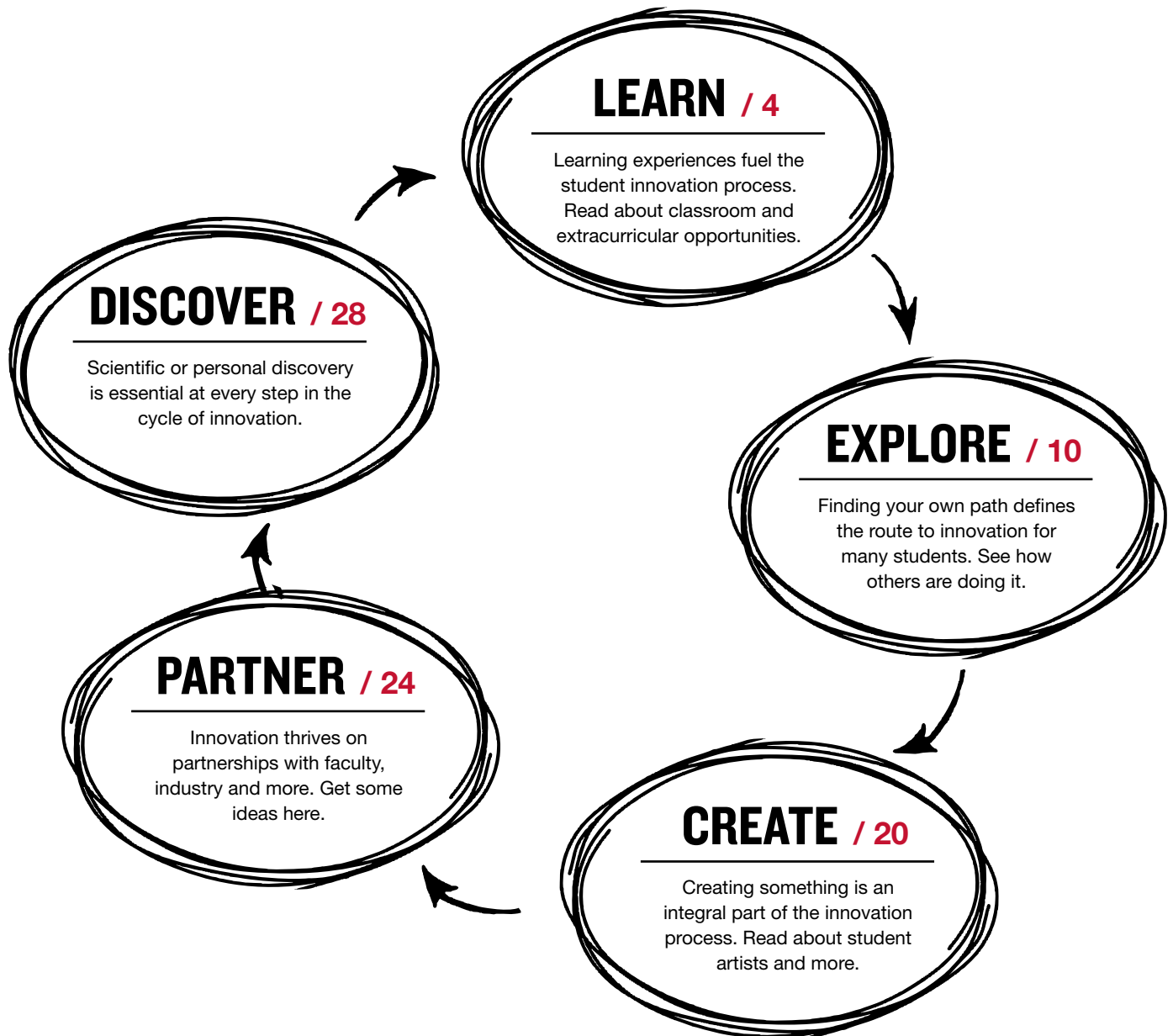
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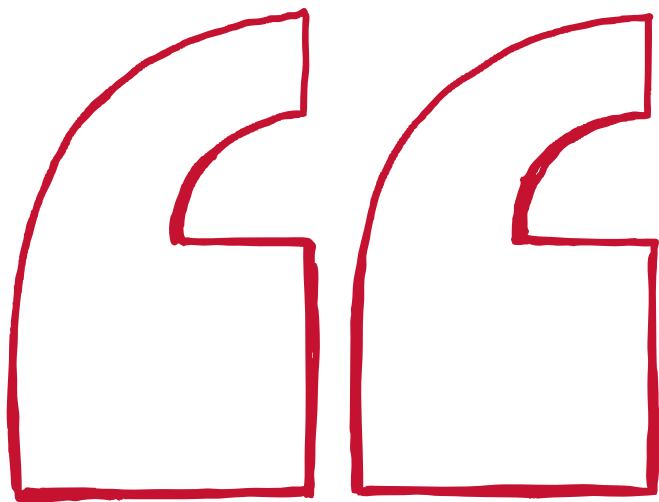
# STUDENT INNOVATION @ THE U



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I'm in medical device innovation, and I feel I have the job I do because of this project.

— Tab Robbins, bioengineering student / [PAGE 10](#)

It's amazing to see entrepreneurship on a student level exploding like this.

— Matt Behrend, MBA student / [PAGE 19](#)

Doing research allows me to be an adventurer in my own way. I do not back country ski, sky dive or race cars — but I can still be an adventurer, exploring the never-before-traveled areas of science.

— Joseph Peterson, computer science and chemistry graduate / [PAGE 30](#)

Part of the educational experience is being comfortable outside your comfort zone.

— Marc Porter, professor of chemistry and chemical engineering / [PAGE 27](#)

It was then, on my long hike down the mountain, I decided I had to make it my mission to create ski poles that had screwdrivers in the handles.

— Alex Carr, sports science and Persian student / [PAGE 6](#)

Being involved with “real” people ... brought an element to the class that made you feel like it wasn't just another college course.

— Tyler Jepsen, civil engineering student / [PAGE 5](#)



“Creativity and discovery coupled with an independent research environment often leads to student innovation. This unconventional classroom provides those ‘ah ha!’ moments.”

— David Grainger, professor of bioengineering



“Providing students opportunities to be involved in innovation and entrepreneurship through competitions, the Foundry or working with faculty ideas has energized the campus.”

— Troy D'Ambrosio, director of Lassonde Entrepreneur Center

This is what makes the MBA worth it. If you just want to go to class, read a book.

— Stuart Wooley, MBA student / PAGE 25

Games can act like a drug without the side effects.

— Jonathan Deesing, MBA student / PAGE 13

It was pretty amazing for a team of students that didn't really know what we were doing. We definitely exceeded all of our expectations.

— Colter Haycock, computer science graduate / PAGE 22

”



“If we want to prepare our students to move into the world as artists, thinkers and creators, we have to teach them to develop new approaches to solving problems and finding solutions.”

— Katharine Coles, professor of English



“The high quality of students is one of the main driving forces of innovation at the U and a catalyst for commercialization and entrepreneurial activities.”

— Michael Bartl, professor of chemistry

# INTRO



## STUDENT INNOVATION HELPS MAKE THE U GO 'ROUND

Welcome to the world of student innovation at the University of Utah. Yes, students are innovators, and in a big way. Across campus, students from all majors are inventing new devices, launching companies and changing perceptions.

This publication is a celebration of these student innovators and the programs and people that make their success possible. It takes the entire campus and many partnerships to create the rich environment we have that helps students get their hands dirty well before they start their careers.

The educational importance of these

opportunities is critical, but the benefits don't stop there. Faculty researchers from bioengineering to art benefit from brilliant, eager students working at their sides. Add community and global impacts and you get an even better picture.

**CONTACT US:**  
Contact us to share your innovation story or for details at [techventures@utah.edu](mailto:techventures@utah.edu) or 801-587-3836.

We could write an entire publication featuring people, programs and examples. That's why we did. Our focus is to create a community of innovators, and we are excited to share a few of their stories.

## ABOUT TECH VENTURES

The office of Technology Venture Development (“Tech Ventures”) at the University of Utah is dedicated to innovation of all types. We believe the success of innovation at the U is based on close alignment with the campus academic mission.

We are dedicated to engaging students in the commercialization

process and innovation of all varieties. We do this through programs of our own, but also by collaborating across campus and helping connect the dots between students, faculty and incredible opportunities.

We invite you to help drive the culture of innovation and join the community.

# LEARN

Start the innovation process in a classroom or program.



Jeff Huber and Tyler Jepsen were student project managers on a civil engineering project for the Jordan River Commission.

“The focus of the class isn’t necessarily to save the world but to impact the local community.”

# DOUBLE IMPACT

## CIVIL ENGINEERING STUDENTS LEARN WHILE IMPROVING COMMUNITY

Seniors across campus have great opportunities to test their skills in capstone courses. One course that stands out for its rich experience and real-world impact is in civil engineering. Year after year, students in this course get to work on real, local projects, and since launching in 2002, most of them have been implemented in one form or another.

"The focus of the class isn't necessarily to save the world but to impact the local community," says Steven Burian, associate professor in the Civil and Environmental Engineering Department.

The latest crop of students demonstrates the impact the course is having — both on the community and the students involved. In fall 2012, the class worked

with the Jordan River Commission to develop a comprehensive stormwater management plan. It will be used to guide all development along the 1-mile-wide corridor where the river flows from Utah Lake to the Great Salt Lake.

"Being involved with 'real' people, like the Jordan River Commission and other engineers involved with the Jordan River, brought an element to the class that made you feel like it wasn't just another college course," says Tyler Jepsen, a senior in civil engineering who served as a project manager.

All other students in the class had similar experiences, producing not only a hefty 78-page guidance document but also elaborate, sample site plans to illustrate

how county officials, developers and engineers can use the document. Working on a real project makes the course more stressful, but the students say it's worth it.

Hundreds of other students have had a similar experience in this capstone course, designing roads, bridges, landfills and everything in between. Professor Larry Reaveley has taught the vast majority of these classes. In the process, the students are making a major impact on the local community, while also furthering their education and careers.

**GET INVOLVED:**  
Learn about the Civil Engineering Department at [www.civil.utah.edu](http://www.civil.utah.edu).

## HONORS THINK TANKS

A group of Honors students at the U are working to educate their peers about the dangers of over sharing online.

**GET INVOLVED:**  
Learn about Honors Think Tanks at <http://bit.ly/W8m9I9>.

Isabelle Ghabash, a junior in architectural studies, is one of

those students. As part of the Honors Think Tanks course, Ghabash and her classmates started a blog to help disseminate information about the importance of keeping information private.

"We wanted to show how to use your internet presence for good and how to avoid the pitfalls of over-sharing online," she says.

Even though the group had fun planning and executing the long-term project, they learned many important things, including the real world practice of project management, public relations and how to present your material to a broader audience.

"The representation of yourself or your business is largely online, and you want to know how to represent yourself and keep business safe," she says.

Tianna Tu, a junior in political science and international studies, is hoping to run for public office someday, and she recognizes the importance of government transparency. Working with the *Salt Lake Tribune*,

the group administered a poll to find out how the public feels about our government's transparency practices.

"The Sutherland Institute did research on which counties and governments were transparent with its citizens," Tu says. "Utah averaged a D grade."

Not satisfied with that score, Tu and her classmates partnered with Salt Lake City Mayor Ralph Becker, the Sutherland Institute, the League of Utah Women Voters and the Utah Foundation for Open Government among others to create a list of best practices for government. The project, called the Utah Transparency Project, kicked off in spring 2012 with



Isabelle Ghabash and Tianna Tu participated in Honors Think Tanks.

endorsements from Mayor Becker and others, symbolizing bipartisan support for the initiative.

“The Innovation Scholar program is a necessity to any young entrepreneur.”



# SKI REVOLUTION

## INNOVATION SCHOLAR STUDENT REINVENTS THE SKI POLE

Alex Carr, an undergrad studying sports science and Persian, will never forget the disappointment he felt when abandoning his skiing plans after spending an hour and a half hiking up to a peak in the Utah back country.

“It was when I reached the summit that I realized the bindings on my skis had been adjusted by a friend who had borrowed them,” Carr says. “I spent the next hour trying to find a tool I could use to adjust my bindings to the correct size, but with no luck.”

### GET INVOLVED:

Learn about Innovation Scholar program at [www.innovation.utah.edu](http://www.innovation.utah.edu).

Desperate, Carr tried everything that he thought might work as a screwdriver: pocket change, a small rock and twigs; all to no avail. With no other choice, he began the hike back down the mountain as his friends skied by on two feet of fresh powder.

“It was then, on my long hike down the mountain, I decided I had to make it my mission to create ski poles that had screwdrivers in the handles,” Carr says.

After learning organizational and problem solving skills in the Innovation Scholar program, Carr knew he could turn his idea into a real, marketable product. Moreover, he gained the confidence to expand his idea into a much bigger goal — to completely change the way ski poles were designed, engineered, manufactured and used.

“The Innovation Scholar program is a necessity to any young entrepreneur,” Carr says. “The tools and resources offered by this program have the ability to make a world of difference for any innovator.”

Carr then applied for and was accepted into the U’s Foundry and participated in the techTITANS competition — both of which he credits as being experiences fundamental to his success.

Since that day on the slopes, Carr has created much more than just ski poles equipped with screwdrivers. His company, Char Poles, is now a leading innovator in ski poles with various patents pending for design and utility. Featuring a product line that offers unprecedented interchangeability and customization, Char Poles’ many-colored ski poles can work as monopods, feature bottle openers in their baskets and, paying homage to the idea that started it all, have tools in each of the handles.

Recently, Char Poles officially launched its product lines at the SnowSports Industry America (SIA) trade show where they were named one of the top 10 innovative and creative products by *Skiing Magazine* and made it on the SIA trade show “Wish List.”

“It is a big opportunity for me to make my new dreams come true,” Carr says.



“The Innovation Scholar program has shaped my understanding of what it takes to become successful after graduation and in life.”

— Jessica Lee, Innovation Scholar



“The resources that this program provided were invaluable in helping me accomplish my goals of getting into product design. Since I graduated from the program, I have been developing an idea for a reusable shopping bag.”

— Tara Roark, Innovation Scholar



A U student launched Char Poles, which is producing customizable ski poles that can carry tools, transform into a camera monopod and more.

## BECOME AN INNOVATION SCHOLAR

Innovation is a key part of the culture at the U, and students can get involved through the Innovation Scholar program. The program allows students to explore big questions and problems that inspire them. The goal is to match a student's passion with a purpose so they can invent their own future. Innovation Scholar students complete the Innovation Road Map course (UGS 3050), develop and complete personal road maps and create a personal portfolio. Students receive recognition at graduation as an "Innovation Scholar." Learn more at [www.innovation.utah.edu](http://www.innovation.utah.edu).



"The Innovation Scholar experience is a springboard into the world of opportunities at the U. I have learned that I enjoy innovating, never settling for the status quo and always looking for ways to be better."

— Brandon Bacon, Honors Innovation Scholar



"It wasn't until I was finishing up the innovation portfolio class that I finally faced my fears and made the decision to pursue medical school."

— Samantha Jackson, Innovation Scholar

Olaotan "Ola" Elenitoba-Johnson invented Sculptene, which can repair body tissue without the need for surgery. He developed his idea in the INVENT! class.

## BEYOND SURGERY

Olaotan "Ola" Elenitoba-Johnson, a pre-biomedical engineering student with a focus on biodesign, is on a mission to treat deviated septae, and other cartilage abnormalities, without surgery. He calls it Sculptene, and it is a human-enzyme-based therapy that can be injected into a patient to enhance remodeling of the body's own tissue.

For people with a deviated septum, Sculptene would be used instead of surgical correction of the nasal passage. They would receive injections with Sculptene, which would help remodel and correct the structural defect.

**"The single largest benefit of this technology is in cost," Elenitoba-Johnson says. "It eliminates the need for general anesthesia, scalpels and antibiotics.** Post-operational recovery time is greatly reduced. Addition-

ally, there is no risk of reopening surgical sites when the wound dressings are removed."

The hope of Sculptene is to eliminate surgery. It is derived from human cells and can be antigenically typed to be used in the same manner as blood products. The application of Sculptene is not limited to the face. It could be used for treating cervical bone spurs, ossified tendons and cartilage anywhere in the body.

Elenitoba-Johnson developed his idea in a class called INVENT!, where students spend 10 hours a week inventing a biomedical device, design or therapeutic.

"This technology could revolutionize surgeries in developing countries and reduce overhead costs in developed countries," says Holly Holman, a bioengineer who taught the INVENT! class.

## BIO PROGRAMS

BioInnovate, bioWorld and bioDesign are related programs that create collaboration opportunities between

### GET INVOLVED:

Go to [www.bioworld.utah.edu](http://www.bioworld.utah.edu), [www.biodesign.utah.edu](http://www.biodesign.utah.edu), [www.bioinnovate.utah.edu](http://www.bioinnovate.utah.edu) or [cmi.uofuhealth-sciences.org](http://cmi.uofuhealth-sciences.org).

the health sciences and student engineers.

Projects include developing and produc-

ing biomedical devices, new technologies to treat medical conditions and creating solutions to problems in poor and underdeveloped countries.

# BREATHE EASY

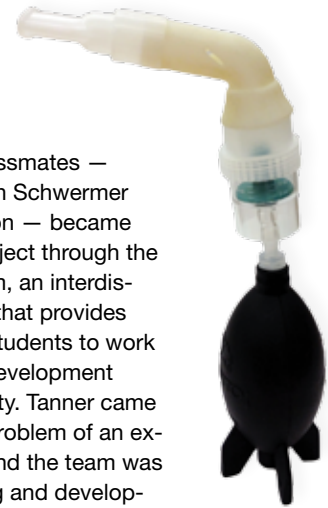
Any person who relies on medication to stay healthy knows the stress of buying prescriptions and equipment — especially if they make it possible to breathe. John Hoang and his classmates are working to make that stress easier to bear.

Hoang is working with Kristine Tanner, a rehabilitation therapist at the University Hospital, to develop a portable nebulizer that is both inexpensive and disposable.

A nebulizer is a personal medical device that sends isotonic saline into the lungs to hydrate naturally occurring mucus. The hydrated mucus is then able to work its way up to the larynx and hydrate the throat, easing respiratory distress caused by asthma and sore throat.

The cost of a nebulizer can range from \$50 to more than \$300 depending on the needs of the patient.

Hoang and his classmates — Alex Williams, Josh Schwermer and Whitney Horton — became involved in the project through the bioDesign program, an interdisciplinary program that provides opportunities for students to work on research and development projects with faculty. Tanner came to them with the problem of an expensive product and the team was tasked with finding and developing a solution.



Student-designed nebulizer

LEARN

## MONGOLIA OR BUST

In early 2012, Christopher Pagels, a bioengineering student, was looking for an extracurricular activity to supplement his studies and a mentor to help guide his projects and research. He found out about the bioWorld program after reaching out to Bob Hitchcock, a professor in bioengineering. The rest is history.

During the summer of 2012, Pagels traveled to Mongolia to research the state-run health care system. He had heard of problems less developed countries have during medical treatment and surgery, such as light fixtures falling on people during open cavity surgery and power going out in the middle of procedures.

“What better way to find out what people need than to go there and see for yourself?” he says.

He says the people of Mongolia were able to do extraordinary things with limited resources. He focused on developing a portable light source that would be inexpensive and use mature technology available anywhere. The light he developed with other students used 9-volt car batteries and LED light bulbs. The battery charged while the power was on and when the power failed, the light was still operational.

“It was the most engaged learning experi-



BioWorld allowed Christopher Pagels to have a global impact.

ence I have had on campus and subsequently the most rewarding,” he says.

## MORE THAN A MASTER'S

Earning a master's degree is not enough for bioengineering students in the new bioInnovate program at the U. They also develop medical devices with real commercial potential, and they learn how to get FDA approval and start selling it.

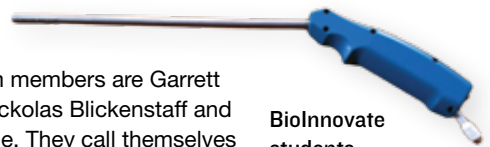
“The program provided me with the tools to identify an unmet clinical need, validate this need through clinical immersion, and develop design controls as a

medical device road map,” says Zac Peeler, a graduate of the program.

Peeler was on a team of students that developed medical doctor John Langell's concept for a low-cost laparoscope. “It consolidates \$500,000 of existing medical equipment into a handheld device to enable global access to the benefits of laparoscopic surgery,” Peeler says.

Other team members are Garrett Coman, Nickolas Blickenstaff and Sourav Kole. They call themselves MedInno and haven't slowed down since graduating from the bioInnovate program in spring 2012. They have competed in competitions across the country, won thousands of dollars in grants and are pitching their product to investors.

BioInnovate students are helping commercialize a low-cost laparoscope and other medical devices.



**Get your hands dirty by going beyond assignments.**



## U STUDENTS DEVELOP LOW-COST SURGICAL LIGHT

**GET INVOLVED:**  
Learn about Bench  
to Bedside at [cmi.  
uofuhealthscien-  
ces.org](http://cmi.uofuhealthsciences.org).

Other students on the project include: medical students Bob Chestnut, Joseph Strunk, Aabid Farukhi and Elisabeth Leeflang; Timothy Hunzeker, a bioengineering graduate; Kyler McCarty, a graduate in philosophy and communications who is now an MBA and law student at Brigham Young University; and Christopher Pagels, a bioengineering undergrad.

Since the Bench to Bedside competition, the IlluMed team has continued developing their product. They have also taken every opportunity to turn their project into a learning opportunity — for them and others at the U. While they have learned



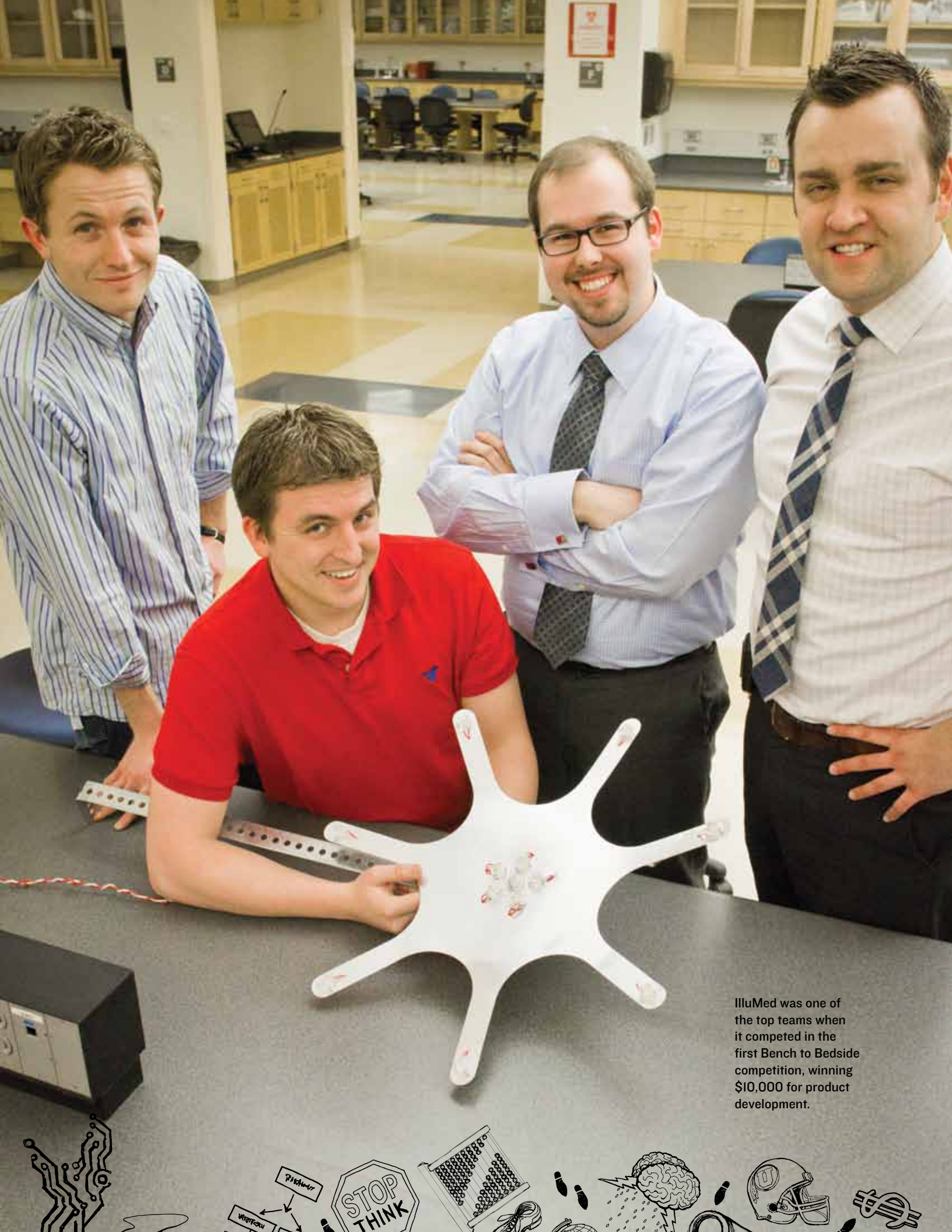
about entrepreneurship and product development, they also partnered with the U's bioWorld program to send students to Mongolia to do field research. The result is a win for all those who have touched this project.

"The experience has furthered my career," Robbins says. "I'm in medical device innovation, and I feel I have the job I do because of this project."

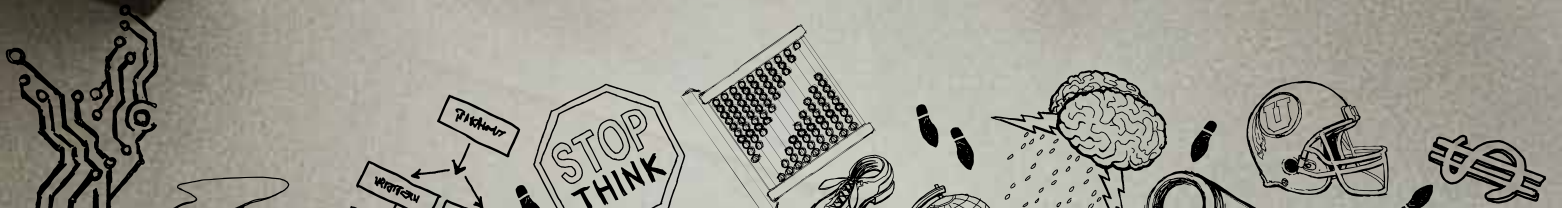
startup companies and are given the task of identifying an unmet clinical need. Teams are connected to over 100 university physicians from many specialties to serve as their consultants, key opinion leaders and stakeholders.



Students in any program at the U can compete in Bench to Bedside.



IlluMed was one of the top teams when it competed in the first Bench to Bedside competition, winning \$10,000 for product development.





Whitney Williams and Marian Bonar are two of the first students in the new Lassonde Social Entrepreneurship program.

## LASSONDE ENTREPRENEUR CENTER

The Lassonde Entrepreneur Center is home base for student entrepreneur programs.

### GET INVOLVED:

Go to [www.lassonde.utah.edu](http://www.lassonde.utah.edu).

It offers business plan competitions, internships, startup support and an ongoing list of unique initiatives. Among the newest offerings are social entrepreneurship and health video game programs. Eligibility and the application process vary by program.

# COMPUTER IN A BOX

Marian Bonar and Whitney Williams are MBA students who want to bring computers and the knowledge to use them to all children across the world — and that's a huge challenge. **Many classrooms in developing countries are lucky to have floors, bathrooms and textbooks — let alone computers.**

The students are working on this problem through the new Lassonde Social Entrepreneurship Program, which is part of the Lassonde Entrepreneur Center. The program, started in fall 2011, pairs students with big social problems. The goal is to help address these issues while training the next generation of social entrepreneurs.

Students in the program spend a school year addressing a problem, and the result is usually a comprehensive plan prepared for a client company. Bonar and Williams are working with Opportunity International, an organization that provides access to savings, small business loans, insurance and training to more than four million

people working their way out of poverty in the developing world.

Bonar and Williams began with an in-depth needs assessment and market analysis. They quickly discovered the problem was bigger than they anticipated. Early on, they saw pictures of schoolrooms in Ghana, one of their target locations. "It was eye-opening," Bonar says. "They didn't have floors, maybe a bathroom, and they didn't have textbooks."

The women determined they would need to take a holistic approach to the problem — they would need to come up with a solution that would not only provide computers but also training and the most basic requirements, like consistent electricity. They call the solution a "computer in a box."

"I'm used to working on a big problem with very few people," Williams says. Bonar echoes that enthusiasm: "It's been fun for us to not have too many constraints."



Sam Wood wants to track campus recycling.

## RECYCLING THERMOMETER

Sam Wood wants to create a recycling thermometer that will measure, in pounds, how much waste the U has diverted. Much like a fund-raising thermometer, it will include milestones that will be used as opportunities to reward the student body. Rewards for recycling — including free coffee (if you bring your own mug) and free breakfast (if you bring your own plate and eating utensils) — are designed to inform the student body about reducing waste.

Wood presented this idea to Spark, a new initiative that ignites change across the U campus where students can generate and share ideas on how to actually change things for

the better.

Jim Agutter, an assistant professor in the School of Architecture who developed Spark in conjunction with Undergraduate Studies, thinks Wood's idea will "be a great tool to make sustainability efforts more visible on campus." Agutter urges students to get involved, explaining, "Spark is a way to allow students to contribute their ideas on university issues. They should check the Spark website often as we will continue to add challenges."

**GET INVOLVED:**  
Learn more at [www.spark.utah.edu](http://www.spark.utah.edu).

EXPLORE

## SUSTAINABLE CAMPUS INNOVATION FUND

Students can achieve their green ideas with the Sustainability Campus Initiative Fund (SCIF). Its mission is to

**GET INVOLVED:**  
Learn more at [www.sustainability.utah.edu](http://www.sustainability.utah.edu).

integrate sustainability throughout all operations, research and education at the U, and incorporating sustainability into all aspects of university life. Every

student is eligible to apply for funding to engage in a sustainability project on campus.

Projects should incorporate economic, social and scientific means to create environmental solutions. Students will collaborate with a faculty or staff member to complete their project.



## BUSINESS OF VIDEO GAMES

The University of Utah hopes to be a center for health-video-game development, and business-minded students are getting into the action through the Lassonde Entrepreneur Center, which has partnered with programs across campus. The students are helping create the business model to make the process sustainable. "There is limitless potential for health gaming at the U," says Roger Altizer, an assistant professor in the U's Entertainment Arts and Engineering program.

The U has already achieved momentum in the growing

health-gaming arena, where games are developed to improve patient health. "Games can act like a drug without the side effects," says Jonathan Deeing, an MBA candidate. He and Spencer Buchanan, a game developer and graduate student in the Entertainment Arts and Engineering program, are the students working on the project through the Lassonde Entrepreneur Center.

Deeing and Buchanan signed up to spend an entire school year focusing on the business side of games. Their initial goal was to create a business plan



Spencer Buchanan and Jonathan Deeing are creating a business plan for health games at the U.

for one promising game developed at the U, one that helps kids manage cancer. But they quickly changed their focus to something bigger — helping create a pipeline of ideas

from medical doctors to game developers and establish a private company to license the games.



Scott Paul launched Armor Active while pursuing an MBA. The company makes commercial iPad enclosures.

# ARMOR ACTIVE

## MBA GRAD LAUNCHES MULTI-MILLION DOLLAR COMPANY

For many, getting an MBA is a big deal. But for Scott Paul — the 32-year-old founder and CEO of Armor Active — getting an MBA while launching a multi-million-dollar tech company is even better. That's what he did when attending the University of Utah. He hasn't looked back since graduating in 2011.

"It's going to be what you make of it," says Paul of his MBA. "You really need to go out and expose yourself." And Paul practices what he preaches.

While taking graduate classes, he sold ads to hotels for Utah.com. While making rounds to his clients, he noticed all the travel brochures cluttering their lobbies. This was about the same time that Apple launched the iPad, and Paul asked himself, "What if all of that stuff was on a

tablet computer instead?"

Paul first thought his business would be in software, a "digital concierge" or something like that. But while implementing his idea, he realized no one made commercial-grade iPad cases — the type that could keep the device secure in a public space. So Paul got a friend, an engineering student, to help create a metal enclosure.

Thus, the "Full Metal Jacket" was born. It was Paul's first of a line of tablet-computer enclosures. **In 2011, his first year in business, he had about \$700,000 in sales. Then, in his second year, he had \$3.3 million.** And, this year, he projects sales of \$10 million. Customers include universities across the country — including the U — and a who's who in the retail world. To

name a few: Nike, GAP and Nordstroms.

"I had no idea I was going to be a hardware company, now with 30 employees," Paul says, noting the strength of their online marketing, which began with him securing the domain [www.ipadenclosures.com](http://www.ipadenclosures.com). "When you hit the Google, you hit us."

Part of what made his success possible was support from the David Eccles School of Business and programs like the Foundry, a business incubator for student startups. Paul calls the Foundry "the most altruistic incubator in the Salt Lake Valley." Also important were his entrepreneurship classes and the students he met along the way — many of them are now his corporate executives.

The Power Pot team has a device for turning fire and water into electricity. They used the Foundry to help launch their company.



## THE FOUNDRY

**GET INVOLVED:**  
Learn more at [www.foundry.utah.edu](http://www.foundry.utah.edu).

The Foundry is a business incubator for students sponsored by the David Eccles School of Business. Students who enroll in the Foundry collaborate with a “cohort” of classmates. They learn and grow together, often serving critical roles on each other’s companies. The program already has a number of success stories since launching only a few years ago. Among them are Armor Active and Power Pot. Many other students have benefited by either launching companies or honing their business skills.



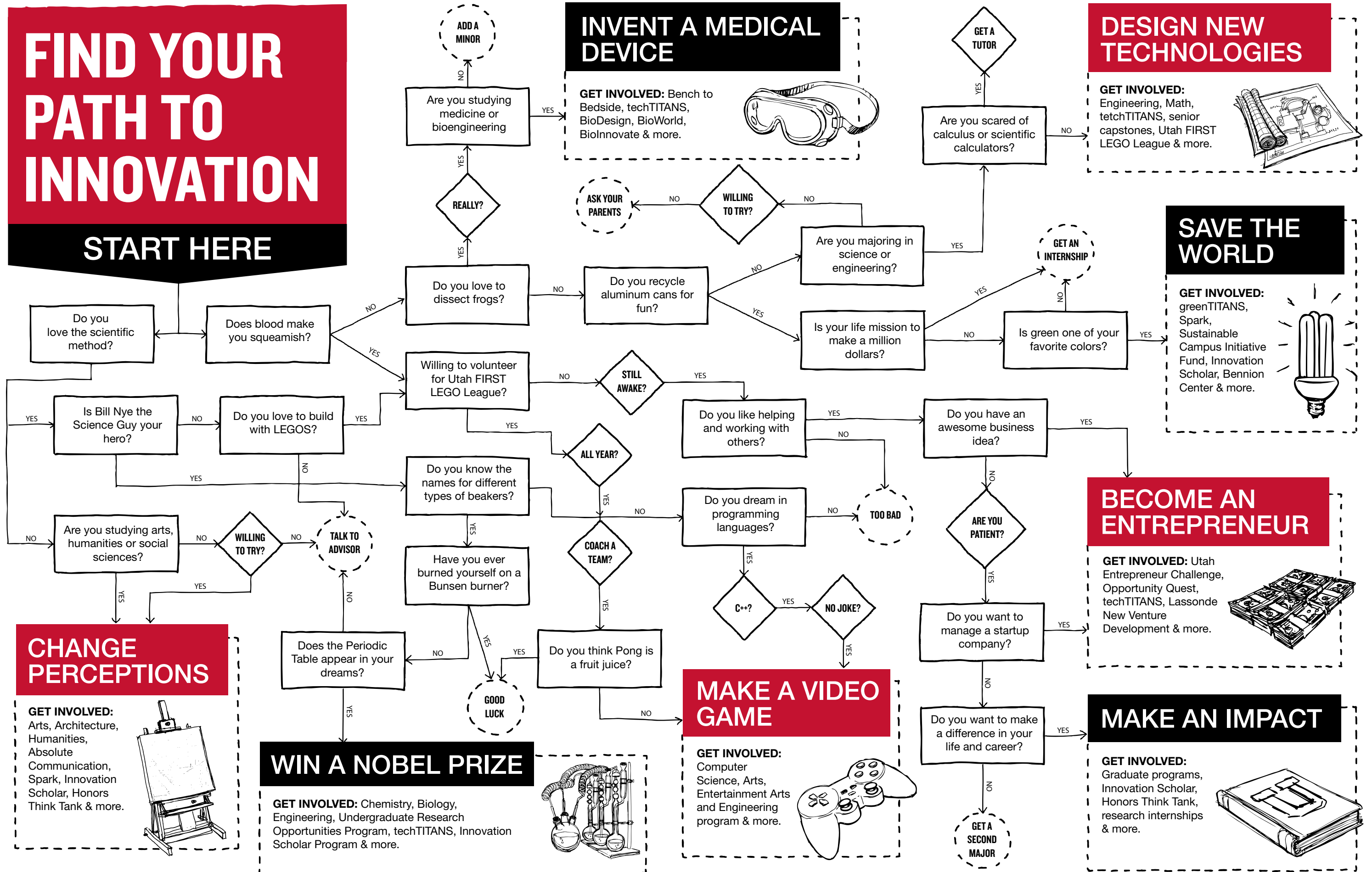
Students in the Foundry launch companies and hone business skills.




**FIND YOUR  
PATH TO  
INNOVATION**

**START HERE**

# START HERE




 A man with a beard and mustache, wearing a dark suit, white shirt, and blue patterned tie, is holding a thin, flexible catheter with both hands. He is standing in front of a brick wall with a wooden railing to the left.
 

Ryan O'Callaghan and his team are creating a new type of catheter and won \$5,000 in techTITANS to pursue their idea.

## A BETTER CATHETER

Ryan O'Callaghan — a master's student in business and engineering at the U — and his team, AdvanceCath, won \$5,000 at the techTITANS innovation competition by creating a new type of “indwelling” urinary catheter which addresses two common medical problems associated with Foley catheters.

O'Callaghan gives ample mental imagery when explaining his device. It is easy, he says, to imagine the horror of regaining consciousness after prolonged surgery, warding off the general anesthetic, only to

realize that there is a plastic tube protruding from your urethra, and then impulsively yanking it out. **The thing about urinary catheters is that they tend to have a fastening mechanism within the bladder to prevent removal. Pulling hard enough can inflict serious damage on the patient.**

He cites the US Centers for Disease Control and Prevention who say urinary catheters increase one's chances of developing a urinary tract infection (UTI), due to the growth of bacterial “biofilm” on the surface of the tubing. UTIs also have

the potential to greatly harm patients, if not cause severe discomfort.

AdvanceCath, the name of their prototype, resolves the major issues. It allows urine to pass around the exterior of the catheter, thereby utilizing the body's natural bacterial flushing mechanism and leaving the interior of the tubing as a conduit for medicine into a patient's body. Additionally, instead of a balloon, the bladder retention mechanism on the end of the catheter is in the form of a safe-release Malecot tip.

## UTAH ENTREPRENEUR SERIES

The Utah Entrepreneur Series is a set of three business and idea competitions hosted by the Lassonde Entrepreneur Center. Sponsored by Zions Bank, they start with techTITANS, an idea competition, and lead to Opportunity Quest, a business summary competition and Utah Entrepreneur Challenge, a full business plan competition. Students across the state can enter for a piece of more than \$100,000 in prizes. Students can also participate as program directors, serving roles from event chair to marketing and sponsorship manager.

**GET INVOLVED:**  
Go to [www.ues.  
utah.edu](http://www.ues.utah.edu)

# GET SEEDED

Need cash to test your business idea? Are you a student at the U? If so, pitch your idea to the Entrepreneur Club (E-

## GET INVOLVED:

Go to [www.stac.utah.edu](http://www.stac.utah.edu).

Students, to award seed funds and resources. Money is available and waiting.

"I think this is something that can grow like wildfire," says Taylor Bench, the director of StaC, which is providing the grant money through a donation from Zions Bank and other community members.

Two dozen student teams participated in the first round of applications in early 2013. Of those, 10 advanced to the second round of judging, where they pitched their ideas directly to E-Club members who voted what team should get funded.

Selection criteria include potential, clarity and milestones. Funding amounts depend on the project. Reasonable expectations of award amounts are based solely on the next critical milestone. A maximum is not set, but it is important to ask, "What is the one, next and most critical question to answer that will tell me if this business will be successful or not?"



Students can pitch their business idea to the E-Club for cash.

Teams first apply on the StaC website. E-Club members then do an initial screening before finalists present in person. Eventually, the E-Club plans to host pitches and award cash and resources every month.

"It's amazing to see entrepreneurship on a student level exploding like this," says Matt Behrend, an MBA student and president of the E-Club.

EXPLORE

## EVENT ESPRESSO

Two years ago, Garth Koyle, a graduate of the business administration and health care administration master's programs, and his crew at **Event Espresso competed at the Utah Entrepreneur Challenge (UEC), winning the grand prize of \$40,000.** Their software, an event management plug-in for WordPress (an online content management system for websites), wowed competition judges for its scalability. The judges were right to laud Event Espresso's model, as the company is now enjoying rapid growth — hiring new staff and doubling their user base

each year, according to Koyle.

He says the product's features sell themselves. With Event Espresso, users can customize their event designs, create a calendar, manage staff, manage event venues and create custom post types along with many other event payment options and on-the-go applications.

"The program forces you to consider concrete strategy and business decisions early on," Koyle says of the UEC. "Many companies don't survive big directional

pivots, so it's good to get them done early."

Working with UEC mentors helped team Event Espresso understand their competitive advantages and clarify their objectives. Winning the competition also imparted a new confidence.

"The grand prize was just a big affirmation that we're headed in the right direction, and we still use much of the instruction we received at the competition," Koyle says.

## MOBILE HEALTH TESTING

Christopher and Andrew Pagels, team iTest, won \$5,000 and the grand prize at the U branch of Opportunity Quest, a state-wide business plan executive summary competition. **The Pagels' product functions through the charging dock of a smartphone and allows users to take control of their own health care. The first application for the device is a test for a protein that is shed from the heart before and during heart attacks.** If a user is feeling chest pain, they can simply swab their cheek and use iTest to quickly determine if the protein is present and if they are experiencing a heart attack or just heartburn. The team plans to use their winnings to develop a new prototype.



Team iTest won the U's Opportunity Quest business plan summary competition.

# CREATE

Design or build something new to test your ability.



U architecture students and the Girl Scouts are working together to build sustainable cabins.

## BEETLEWOOD CABINS

An alliance between U architecture students and the Girl Scouts is attempting to salvage wood damaged by pine beetles and use it to build cabins for the Girl Scout's camp — while raising awareness of career opportunities for women in architecture and design.

"Currently, only 14 percent of practicing architects in Utah are women and only about 20 percent of licensed architects nationally are women," says Erin Carraher, assistant professor in the U's College of Architecture and director of the project.

"We hope that through this project we will provide positive mentoring relationships for the Girl Scouts as well as current female architecture students here at the U."

The collaboration, Project: ARCHITECTURE, consists of two different components: the design and construction of the cabins, using the salvaged wood, and a day-long outreach event hosted by the School of Architecture for Girl Scouts to participate in architecture and design projects.

The kickoff project is the design and construction of three new cabins for the Circle K site at the Girl Scouts' Trefoil Ranch in Provo Canyon. Over the 2012-13 academic year, a group of architects, architecture student mentors and a core group of Girl Scouts are developing the designs and overseeing the construction of the cabins, which will be finished during summer 2013.

**GET INVOLVED:**  
Learn more at [itac.utah.edu/ITAC/ICLT.html](http://itac.utah.edu/ITAC/ICLT.html).

## MUSIC REVIVAL

Dexter Drysdale, a senior in music composition, spent four months reconstructing composer Vincent Persichetti's (1915-1987) unpublished manuscript of the "Violin Sonata No. 1." "The process was tricky," Drysdale says. "The original manuscript was hard to read and had many scribbles and markings indicating other ideas, or changes that the composer wished to make in the piece." Hasse Borup, an as-

sociate professor in violin in the School of Music at the U, stumbled upon the unpublished manuscript of the "Violin Sonata No. 1" in the basement of the New York Library and contacted Drysdale about putting Persichetti's piece together. The project was funded by UROP, the Undergraduate Research Opportunities Program.



Dexter Drysdale



Andrus Sales and Service after the remodel.

## STUDENT REMODEL

When Robert Tranter and Jeffrey Baird, both graduate students in architecture, received an assignment to design a remodel for a local business, they never imagined it would come to life. Instead, what should have been a three-week project turned into an almost year-long collaboration with NeighborWorks, a local nonprofit dedicated to rebuilding neighborhoods, and Steve Andrus, owner of Andrus Sales and Service, the business chosen for the remodel. The new design combines the building's old brick facade, steel elements and graffiti to portray the building's history, the business and the spirit of the neighborhood. The students worked with a graffiti artist to add the unique design. "We learned that architecture isn't as easy as just drawing a design," Tranter says.

CREATE



Natalie Kirk draws eyes to women's health through her photography.

## EYE OF THE BEHOLDER

Natalie Kirk, a senior majoring in fine art with an emphasis in photography, wants people to know that a miscarriage is not a crime. She is communicating her message through a graphic photograph — too graphic to print.

The image displays a naked woman's legs, her handcuffed hands conceal her genitals, and blood runs down her legs. Kirk wanted the image to get an instant reaction to women's reproduction freedom, and it succeeds.

The striking photo, which hangs in the

dean's office in the fine arts building, raises a lot of controversy. The reaction is exactly what Kirk hoped for. "I was careful that my image was powerful and provocative enough to serve my intention," she says.

"As a student artist, it can be hard to take risks and put your work out for public display — it can leave one feeling very exposed and vulnerable," says Edward Bateman, assistant professor in the Department of Art & Art History. "This is especially true of Natalie's piece, which challenges many people's preconcep-

tions about what a work of art should and can look like."

Kirk explains her image is large because she wanted viewers to create an intimacy with it.

"I didn't want my viewers separating themselves," she says. "I wanted to force their engagement. I didn't want it framed and recessed from the audience. I wanted the piece to come off the wall with its own presence. I didn't want it behind glass. I didn't want people to have that barrier from it."



Dan Priestly was the technical director for "Minions!." The game has grossed \$25,500 on Xbox Indie games.

## EAE PROGRAM

The Entertainment Arts and Engineering (EAE) Program is an interdisciplinary undergrad and master's program jointly developed with the Department of Film

**GET INVOLVED:**  
Go to [www.eae.utah.edu](http://www.eae.utah.edu).

and Media Arts and the School of

Computing. The aim is to produce graduates ready for every aspect of video game production.

# MINIONS!

## VIDEO GAMES ARE SERIOUS BUSINESS AT THE U

Video games are serious business, students in the U's new Entertainment Arts and Engineering (EAE) program are proving. **The undergrad program culminates in a capstone course where students work in teams to develop, launch and sell an original video game. One example is "Minions!," which has been purchased 25,500 times since launching in May 2011 on Xbox Indie Games.**

"I think it was pretty amazing for a team of students that didn't really know what we were doing," says Colter Haycock, who was the project manager on "Minions!" and is now a game developer at Smart Bomb. "We definitely exceeded all of our expectations."

Haycock was one of 10 students on the project. The game costs one dollar, and the team receives 70 cents every time it's downloaded, making their profit \$17,850.

The team was so grateful for the experience they donated \$1,000 back to the U.

"Minions!" is a mission-based, shooting game for the Xbox 360. It's playable from either a top-down or third-person viewpoint; the optional viewpoints are one of the game's innovations. Players lead their minions through levels, find hidden items and gain experience to customize their minions and weapons.

The team's experience was similar to the many other students in the EAE program. Students from varied backgrounds spent the entire school year drafting, programming and modifying the game. Students come from varied backgrounds and are given substantial freedom to simulate a real game-development experience. The results — games like "Minions!" — speak for themselves.



Professor Kim Martinez helps students make art a community affair through murals.

CREATE

## COMMUNITY IMPACT

Community art has been making a name for itself in Salt Lake City, beautifying and celebrating a sense

**GET INVOLVED:**  
Learn more at [art.utah.edu/murals](http://art.utah.edu/murals)

of place all over the city. Over the past 10 years, Kim Martinez, associate

professor of art and art history, has been working to get students involved in the projects.

During one such project, Martinez's students designed and completed

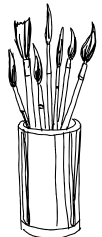
murals near the Millcreek TRAX station at 2100 S. 3300 South. Each project helps illustrate the community in a visually beautiful way.

Since 2003, Martinez teaches a class on murals where students design and paint one or two murals during the course of a semester, or four months.

While most of the planning and scheduling is completed by Martinez before the semester starts, students

work with the community to develop scale models of the prospective mural. The community members vote on the version they feel best represents their community.

"I'm teaching them about image making, community building and the actual application of the paint all in one semester," she says. "I couldn't do it if they weren't dedicated."



## PHYSICAL THERAPY GAME

Research has shown that after a person has the mechanics down, the process of learning how to walk becomes easier when their mind is distracted and they are concentrating on something other than the task at hand. Or, rather, the task at foot. A.J. Dimick, a master's student in film and media arts, and his classmates are using this idea

to build a ground breaking video game. Working with their client Neuroworx, a spinal cord rehabilitation center in Salt Lake City, they are building an alternate reality to help people recovering from spinal injury to learn to walk again. "We created a game where someone is submerged in an environment and not thinking about walking," Dimick

says. "We're gonna teach them how to walk without thinking about walking." During the rapid prototyping class, each team received the "problem" and had 48 hours to come up with an idea and four weeks to develop a prototype for the client to see the impact their game could have.



A screen shot of a video game for people with spinal cord injuries.

# PARTNER

Find faculty, classmates and professionals to help.

MBA students are helping professor Jim Martin (far left) develop his exercise workstation through the Lassonde New Venture Development Center.

## LASSONDE NEW VENTURE DEVELOPMENT

The U's Lassonde New Venture Development Center pairs faculty inventors with graduate students, who write business plans for their technologies. Students must apply for the program, and applications are accepted every spring. Students admitted receive a scholarship and may receive course credit. They spend an entire school year researching their assigned technology.

**GET INVOLVED:**  
Go to [www.lassonde.utah.edu](http://www.lassonde.utah.edu).



# LASSONDE EFFECT

## MBA STUDENTS HELP LAUNCH FACULTY INVENTIONS

While business schools across the country teach case studies from a book, students at the University of Utah are getting a completely different experience through the Lassonde New Venture Development Center — they are developing their own case studies.

Graduate students in the Lassonde New Venture Development Center are paired with faculty inventors. The students, who come from departments across campus, receive scholarships to spend a school year researching the invention and writing a business plan.

"This is what makes the MBA worth it," Stuart Wooley says. "If you just want to go to class, read a book."

Wooley is an MBA student working with classmates Josh Dunford and Dane Timmons to help launch a new exercise technol-

ogy developed by Jim Martin, a professor of exercise and sport science. Martin is the inventor of ActiveDesk, a workstation that combines a custom desk with a stationary recumbent bicycle.

Martin's goal is simple: "I want to save the world from obesity," he says. "Thirty-five percent of the U.S. is obese." But he can't do it alone. "I can't do everything," he says. "There's not enough of me. Not only that but I don't know business."

Students in the Lassonde New Venture Development Center fill this gap. They help inventors like Martin do market research and create financial models necessary to run a successful company. Along the way, they gain one of the most meaningful experiences of their educations.

"Working on a real business, there is so much more you can learn than in a classroom," Dunford says.

## ALSO IN THE WORKS

### Preventing test contamination

Dylan Harnsberger (MBA), Nathan Whitaker (JD, MBA) and Smitty Oakes (bioengineering Ph.D.) are developing a business model for Frederick Strathmann, a professor of pathology. His technology, called HotSpot, analyzes mass spectrometry test output data and identifies contamination resulting from the testing process.

### Better cancer testing

Sourav Kole (bioengineering Ph.D.), Naziol Nazarinia (JD) and Trent Mortensen (MBA) are working with inventors Leigh Neumayer, a professor of surgery at the U, and Timothy Doyle, a professor of physics at Utah Valley University. They are advancing SonoMargin, a high frequency ultrasound microanalyzer. It allows a surgeon to accurately remove enough tissue to ensure no cancer remains, while preserving as much healthy tissue as possible.

### Tracking asthma

John Carpenter (JD), Rohit Sharma (MBA) and Brandon Welch (biomedical informatics Ph.D.) are paired with inventors from Intermountain Healthcare's Primary Children's Medical Center. They are working on eAsthma Tracker, a technology for monitoring asthma management between hospital visits. The test allows for real-time feedback both to the physicians and to the patients.



"New Venture gives students the opportunity to step into the real-world. Especially in this economy, it is important to show an employer that you know how to conduct market research and evaluate a technology."

— Naziol Nazarinia, Lassonde associate



"The New Venture experience is meaningful for any young researcher. It allows you to learn business development, market analysis and intellectual property assessment."

— Smitty Oakes, Lassonde associate



Nick Traeden is one of many U students, faculty and staff who volunteer for Utah FIRST LEGO League.



## TOMORROW'S WORKFORCE

The Utah state Prosperity 2020 plan calls for more attention to STEM education. Programs like Utah FIRST LEGO League are critical for success because they inspire a love for science and technology in our children. Other programs at the U that promote STEM include the state science fair and Science Olympiad.

## LEGOS, ROBOTS, SERVICE

Donning striped pants and infectious charisma, Nick Traeden pulled a few dance moves before announcing the end of the competition — the crowd went wild. No, Traeden wasn't announc-

### GET INVOLVED:

Learn more at [www.utfill.utah.edu](http://www.utfill.utah.edu).

ing for a football or soccer game, and his striped pants were orange, not black.

Rather, the junior in mechanical engineering, along with more than 1,000 spectators, cheered on 480 contestants, ages 9-14, at the third annual Utah FIRST LEGO League (FLL) Championship at the U.

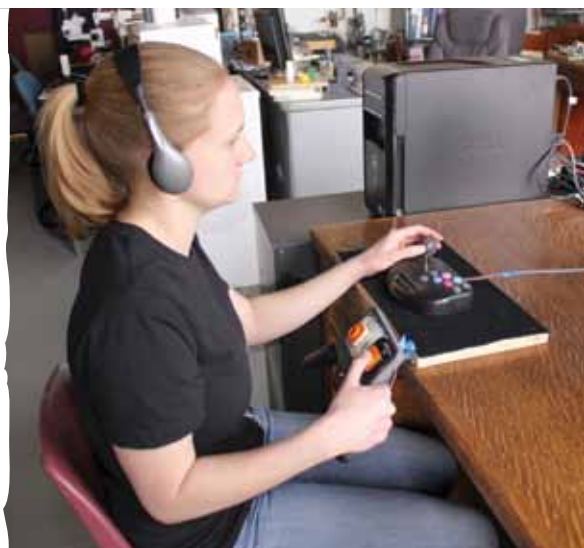
FIRST LEGO League, a global robotics and innovation program, involves kids forming teams that build and program LEGO robots to compete on thematic playing fields. They also prepare innovation projects that let them taste what it's like to be an inventor.

Traeden, the emcee at the state cham-

pionship and recipient of the 2012 FLL Outstanding Volunteer Award, has been volunteering with the FLL program for over three years. He is also involved with RoboUtes and a summer program that teaches kids how to use the LEGO MINDSTORMS technology.

"FLL is a really important program," Traeden says. "It gets kids interested in science and engineering in a fun and creative way, but there is really no way that this program could exist without the volunteers."

More than 900 volunteers join forces to bring the program to communities across the state. Many of the volunteers are U undergraduate and graduate students, faculty, staff and administrators. The program has also established great community partnerships. What the volunteers and partners have in common is a passion for making science and technology fun and exciting for kids.



A student tests a new game controller developed at the U.

## GAME CONTROLLERS OF THE FUTURE

A team of U engineers and students hopes to revolutionize the video game industry with a new game controller that delivers directional cues by stretching the skin of the thumb tips in different directions.

The controller can provide a more realistic gaming experience by simulating the tug of a fishing line or the recoil of a gun using "tactors," eraser-head-shaped nubs in the center of each thumb joystick.

The new controller has a similar layout to Microsoft's Xbox controller.

The U team includes William Provancher, associate professor of mechanical engineering, computer science doctoral student Ashley Guinan, computer science master's degree student Rebecca Koslover and mechanical engineering master's student Nathaniel Caswell.

## NANOFAB EXCHANGE

Students interested in nanoscience and nanotechnology at the University of Utah have a new way of learning science while seeing the world. The U's Nano Institute launched a student exchange with the Graduate School of Environmental Science at Hokkaido University in Japan.

Marc Porter — a professor of chemistry and chemical engineering and the director of the U's Nano Institute — is leading the effort. The exchange emerged from his personal ties to the Japanese school, and he hopes the experience will transform those who participate.

"Part of the educational experience is being comfortable outside your comfort zone," Porter says, and what better way than to

drop them in a foreign country and laboratories. "They come from different educational and research backgrounds, and they approach problems differently."

The first student from the U scheduled to participate is China Lim, a Ph.D. student in chemical engineering who works in Porter's lab, helping him discover new methods for detecting diseases at a very early stage. She can't wait to get on the plane.

"I'm really excited to not only do research but to do research in someone else's lab outside the country," Lim says.

Porter — one of the first faculty members hired through the Utah Science Technol-



U and Japanese students pose during a recent signing ceremony.

ogy and Research initiative — hopes the exchange will help his lab and the Nano Institute further its research and educational mission as the two universities share experience and expertise. But the real goal is education. "The biggest thing is the students mature and realize a passion for what they do," he says.

## STUDENTS DRIVE STARTUP ACTIVITY

University commercialization efforts would not be as successful without the help of graduate and post-doctoral students, according to a recent study by the Ewing Marion Kauffman Foundation.

The study, which found that the success of university spinoffs rely on an overall

university environment, used case studies from eight major universities, including the University of Utah, to examine students' roles in university startups and compared the functions and responsibilities of faculty, entrepreneurs and students in successfully moving university innovations to market.

Highlighting the critical role that student entrepreneurs play in spinoff development, the authors analyzed case studies from four primary pathways that lead to spinoff development. While the study found that most faculty consider a partnership with a qualified entrepreneur to be ideal, they have a hard time

convincing the entrepreneur to join their venture when it is in its initial stages. To solve this problem, faculty members collaborate with Ph.D. students, post-doctoral students and business school students to grow the startup and attract more experienced assistance. The study also analyzed student-only ventures.

# DISCOVER

Join a lab or travel to uncover something unique.

## CLIMATE RESEARCH

### STUDENTS STUDYING ELECTRICAL CONDUCTIVITY OF SEA ICE

In an effort to better understand global climate change, U students and researchers are traveling to Earth's poles and applying their knowledge of electricity to develop mathematical models of melting sea ice.

#### GET INVOLVED:

Learn more at:  
[www.math.utah.edu/~golden](http://www.math.utah.edu/~golden) or  
[redthread.utah.edu/author/david-lubbers](http://redthread.utah.edu/author/david-lubbers).

"Our results are being incorporated into the next generation of global climate models," says Ken Golden, a professor of mathematics. "We conduct field experiments in

the Arctic, as well as Antarctica, to help develop and tune these models and to investigate new phenomena that impact our understanding of the polar climate system."

Students who have travelled with the team include David Lubbers, a master's

student in electrical engineering, and Christian Sampson, a doctoral student in mathematics.

"Students have made significant contributions to developing our experimental methods of measuring sea ice properties," Golden says. "For example, having a brilliant young electrical engineering student like David Lubbers so involved in this research has led to major advances in how we measure the fluid permeability and electrical transport properties of sea ice."

"Current mathematical models underestimate the loss of ice pack that is currently observed," says Cindy Furse, professor of electrical and computer engineering. The researchers believe their work will provide data to combine with current models and improve accuracy. Their work is also shedding light on the impact of ice melt

on climate change.

Their research methods revolve around how electrical properties of ice can indicate its permeability. High electric conductivity indicates high permeability. Permeability is important because it directly influences rates of ice melt.

When ice melts in the spring, pools of water called "melt ponds" form on top of the ice. The color of the melt ponds is darker and less reflective than the surrounding ice and absorbs more of the sun's heat than the reflective ice. This causes the ice to melt faster. If the ice is permeable, the water in the melt pond will flow through and empty into the ocean. If it is not permeable, the water will continue to pool on top of the ice and cause melting at a faster rate because of the absorbed heat.

“Current mathematical models underestimate the loss of ice pack that is currently observed.”





Electrical engineering student David Lubbers is helping study the impact of melting ice.

# EXPLOSION MODELS

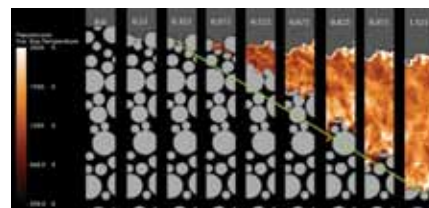
As the U.S.'s stockpile of rocket propellant and warheads ages, the highly energetic materials that they are made of undergo chemical changes. These chemical changes affect the sensitivity of the explosive devices, rendering them unpredictable and dangerous.

A model created by former chemistry and computer science student Joseph Peterson may allow scientists to understand the complex chemical and mechanical processes that allow the explosives to transition from their non-lethal, steady state to a lethal, unstable state when subjected to external stimuli such as heat or impact.

"Ultimately, the models may be used to understand how accidents involving explosives occur, providing insight into better ways of handling explosives that lessens their potential danger," Peterson says.

Even though he has recently graduated and has begun graduate work at the University of Illinois at Urbana-Champaign, the lab he was working in decided to continue the research he started so that it can be applied to real-life applications.

Peterson has not stopped his work on the project, either. He is currently researching ways to develop more detailed and



Explosion models can help reduce danger of explosives.

accurate models.

"Doing research allows me to be an adventurer in my own way," Peterson says. "I do not back country ski, sky dive or race cars—but I can still be an adventurer, exploring the never-before-traveled areas of science."



Undergrad Abhijit Boppana is helping develop smart insoles.

## SMART INSOLES

Stacy Bamberg, a professor of mechanical engineering at the U, is one of the world's leading experts on insole technology. Many students have worked side-by-side with her to develop the insoles, mostly graduate students in mechanical engineering. But there is one who is still completing his undergraduate education.

Abhijit Boppana, a junior in mechanical engineering, has been working with Bamberg for the past year.

The insole developed by Bam-

berg is able to sense a person's gait, walking speed, limp, weight distribution and other abnormalities using special sensors suspended in a core of gel.

When someone using the insole knocks against a table or wall, trips or falls, the sensors lose accuracy and need to be recalibrated. Boppana is developing a system to recalibrate those sensors.

The sensors are able to track not only how many steps a person is taking, but also how high they lift their foot off the

ground and how fast it is moving, Bamberg says.

Starting from scratch, Boppana has learned how to use equipment, build a model, test the sensors, analyze the data and make adjustments. Throughout the process, he has been able to determine the angular velocity and acceleration of the sensors mounted on a robot.

"What this project has provided me with the most is experience," he says. "It will be useful in future projects and career pursuits."

## BACTERIA BREAKTHROUGH

Two Ph.D. students are using a newly discovered bacterium to learn how bacteria come to live in symbiotic relationships with some insects. Adam Clayton and Kelly Oakeson, both biology students and first authors of the study, hope their research can help find ways to genetically alter a bacterium that could be put back into insects and combat diseases they transmit.

"While new bacteria are discovered all the time, and we knew that bacteria existed in the environment that form

symbiotic relationships with insects, this is the first time such a bacterium has been found and studied," Oakeson says.

Colin Dale, the study's senior author and an associate professor of biology, said the findings provide a missing link in our understanding of how beneficial insect-bacteria relationships originate. "Our work shows specifically that these relationships arise independently in each insect. This is a surprising conclusion," Dale says.



Colin Dale swabs a petri dish.

David DaCosta is working with a faculty member to develop a solar dishwasher.

# SOLAR DISHWASHER

The Undergraduate Research Opportunities Program (UROP) provides countless opportunities for undergraduate students to get a start on research and exploring application of concepts learned in class. For many this experience is the tipping point between being accepted into a graduate program and being rejected.

David DaCosta is one such student. Where the average student only logs 70-80 hours of research over their college career, he will have logged 180 research hours — and he's only a sophomore. "I went to Dr. Chen with no experience in doing research and a love for solar energy," he says. "I wanted to be involved and see how we can use solar energy for the benefit of man."

**Kuan Chen, an associate professor in mechanical engineering, is working with DaCosta to develop a system that uses solar power to heat and operate a dishwasher, potentially providing cleaning and sanitation**

devices to parts of the world that do not have access to electricity. The research also encourages the use of renewable energy sources.

"I think how much better off people would be if they didn't have so much sickness, disease or infections to prohibit them from progressing or inhibit them as a culture," DaCosta says. "Being able to sanitize and wash gives them that opportunity."

DaCosta started working on his solar dishwasher at the beginning of the fall 2012 semester and in just four months built a system that can oscillate water and remove cooking oil from a ceramic surface.

"The idea of being able to harness energy and use it for good and to be able to improve the quality of life is something that has always fascinated me," he says.

## UNDERGRAD RESEARCH OPPORTUNITIES

Undergraduate Research Opportunities Program (UROP) provides undergrads and faculty the

**GET INVOLVED:**  
Go to [www.urop.utah.edu](http://www.urop.utah.edu).

chance to work together. UROP

provides assistantships up to \$1,200 for any first-time UROP student who assists with a faculty member's research or creative project, or who carries out an original project under the supervision of a faculty member.

# PROGRAM DIRECTORY

Get involved. Here are programs featured in this publication, plus more. **Ready, set, innovate.**

NAME	DESCRIPTION	CONTACT INFO	PAGE
ArtsBridge	An interdisciplinary arts education outreach program.	<a href="http://www.artsbridge.utah.edu">www.artsbridge.utah.edu</a>	
Bench to Bedside (B2B)	A competitive opportunity for medical students, engineering students and business students to collaborate to develop or improve a medical device.	<a href="http://www.cmi.uofuhealthsciences.org">www.cmi.uofuhealthsciences.org</a>	10
bioDesign	Teams of engineering students work with clinicians to develop prototypes and conduct testing of medical devices.	<a href="http://www.biodesign.utah.edu">www.biodesign.utah.edu</a>	9
bioInnovate	Graduate program providing a comprehensive biomedical device design training program.	<a href="http://www.bioinnovate.utah.edu">www.bioinnovate.utah.edu</a>	9
bioWorld	A two-semester course enabling students to develop a business plan for a medical-device venture within a third world country.	<a href="http://www.bioworld.utah.edu">www.bioworld.utah.edu</a>	9
Entertainment Arts & Engineering (EAE)	An interdisciplinary program where students design and develop video games while learning about all facets of game development.	<a href="http://www.eae.utah.edu">www.eae.utah.edu</a>	13, 22
Foundry	An experience-based educational community where entrepreneurs can start acting on their business ideas and access resources to help them along the way.	<a href="http://www.foundry.utah.edu">www.foundry.utah.edu</a>	14, 15
Global Health Scholars	Students will be exposed to a variety of perspectives on global health practices.	<a href="http://bit.ly/ZptZ6O">http://bit.ly/ZptZ6O</a>	
greenTITANS	Part of techTITANS that rewards students for developing environmentally-conscious ideas.	<a href="http://www.ues.utah.edu/techtitans">www.ues.utah.edu/techtitans</a>	
Hinckley Internship Programs	Internship opportunities are available to students interested in politics.	<a href="http://www.hinckley.utah.edu">www.hinckley.utah.edu</a>	
Honors Think Tanks	Students work together to find original solutions to problems our society faces, while a faculty mentor guides the work of each group.	<a href="http://www.honors.utah.edu">www.honors.utah.edu</a>	5
Innovation Scholar	Students learn how to solve problems that inspire them by engaging in interesting classes, volunteering, personal passions and other related opportunities.	<a href="http://www.innovation.utah.edu">www.innovation.utah.edu</a>	6
International Exchange/Study Abroad	Students participate in hundreds of programs all over the world based on their interests and career goals.	<a href="http://www.learningabroad.utah.edu">www.learningabroad.utah.edu</a> , 801-581-5849	
Lassonde New Venture Development	A graduate business program for all majors. Students are paired with a faculty inventor and spend the year preparing a business plan.	<a href="http://www.lassonde.utah.edu">www.lassonde.utah.edu</a>	24
Legal Scholars	Students interested in law school learn about current legal issues and how to prepare for law school.	<a href="http://bit.ly/W8pCXp">http://bit.ly/W8pCXp</a>	
MURE: My University Research Experience	Find research opportunities offered by faculty from different departments across campus.	<a href="http://www.mure.utah.edu/opportunities/index.htm">www.mure.utah.edu/opportunities/index.htm</a>	
MUSE: My U Signature Experience	A database of research, leadership, community engagement, scholarships and internship opportunities across campus	<a href="http://www.muse.utah.edu">www.muse.utah.edu</a>	
Nutrition Laboratories	Students can be involved in lab research in several areas including nutrition biochemistry, experimental foods and nutrition physical assessment.	<a href="http://www.health.utah.edu/nutrition/laboratories">www.health.utah.edu/nutrition/laboratories</a>	
Opportunity Quest	Addresses the executive summary stage in business development.	<a href="http://www.ues.utah.edu/oq">www.ues.utah.edu/oq</a>	18, 19
RoboUtes	Students interested in robotics participate in competitions.	<a href="http://www.roboutes.utah.edu">www.roboutes.utah.edu</a>	
SPARK	An online community all about ideas — inspiring them, collecting, sorting and finally implementing them.	<a href="http://www.spark.utah.edu">www.spark.utah.edu</a>	13
StaC	A startup center for students that helps to turn ideas into reality by executing student business plans and connecting students with resources.	<a href="http://www.stac.utah.edu">www.stac.utah.edu</a>	19
Sustainability Scholars	Students work across disciplines to research, imagine, create and implement strategies that will positively affect sustainability practices at the U.	<a href="http://www.honors.utah.edu">www.honors.utah.edu</a> ,	
Sustainable Campus Initiative Fund Program (SCIF)	Innovative and motivated students are awarded grants to team up with a faculty or staff member to bring about sustainable changes to the campus.	<a href="http://bit.ly/OF5Mna">http://bit.ly/OF5Mna</a>	13
techTITANS	Students receive instruction in the idea-to-development process and compete with their peers for the best idea submission.	<a href="http://www.ues.utah.edu/techtitans">www.ues.utah.edu/techtitans</a>	18
The Global Health Initiative	Promotes health and medical development leading to measurable improvements.	<a href="http://www.globalhealth.utah.edu">www.globalhealth.utah.edu</a>	
Undergraduate Research Opportunities Program (UROP)	Students are paired with faculty members and work closely with them in direct, one-on-one research experiences.	<a href="http://www.urop.utah.edu">www.urop.utah.edu</a>	30, 31
University Venture Fund	Students work with entrepreneurs and investors to learn about investments and have the opportunity to see how successful companies are managed.	<a href="http://www.uventurefund.com">www.uventurefund.com</a> , 801-326-3590	
Utah Entrepreneur Challenge	One of the largest business plan competitions in the nation. Students across Utah develop full, comprehensive business plans.	<a href="http://www.ues.utah.edu/uec">www.ues.utah.edu/uec</a>	18, 19
Utah FIRST Lego League	Kids solve real-world challenges by building LEGO-based robots to complete tasks on a thematic playing surface. Many volunteer opportunities available.	<a href="http://www.utfl.utah.edu">www.utfl.utah.edu</a>	26

**SOMETHING MISSING?:** Contact us to list a program so we can include it next time. Email [techventures@utah.edu](mailto:techventures@utah.edu).

