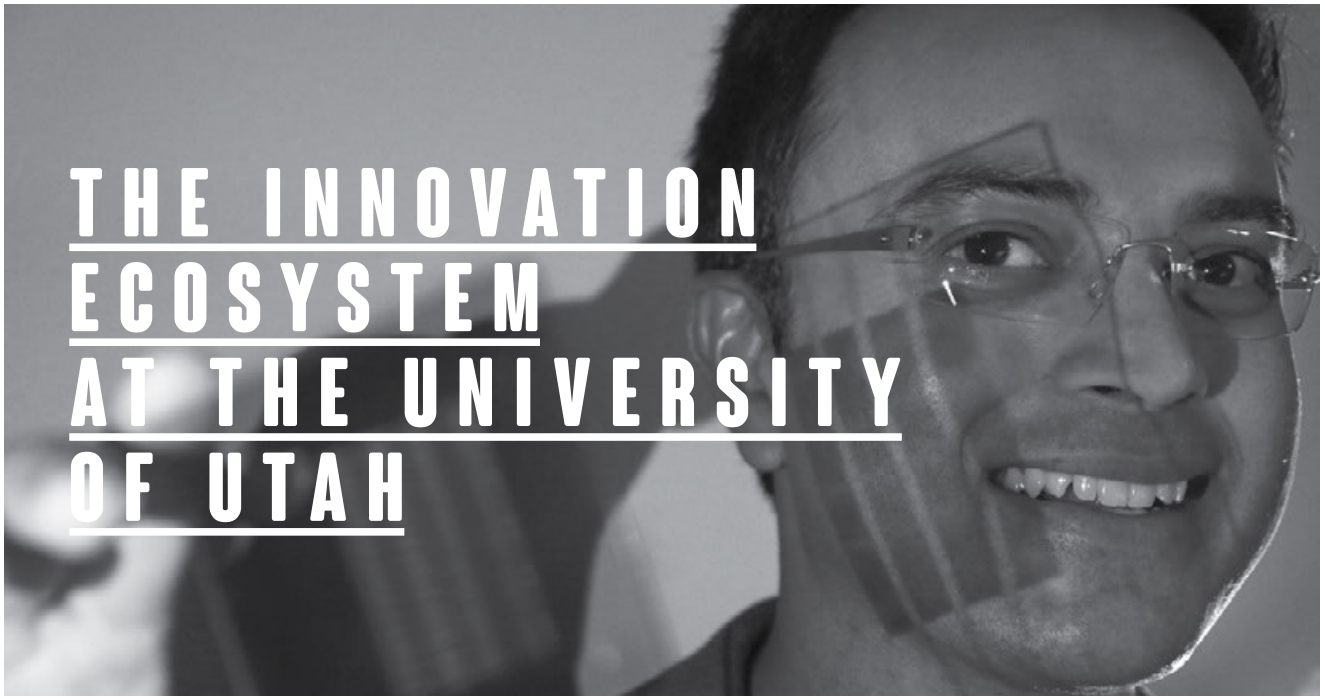
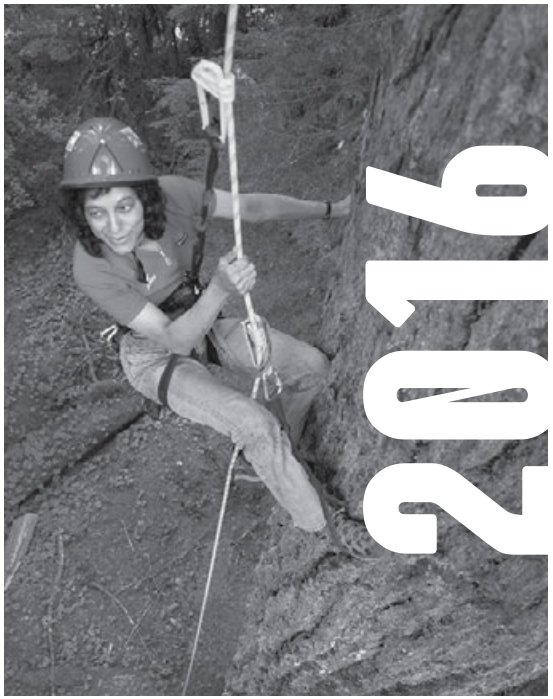
{INNOVATE}



THE INNOVATION ECOSYSTEM AT THE UNIVERSITY OF UTAH



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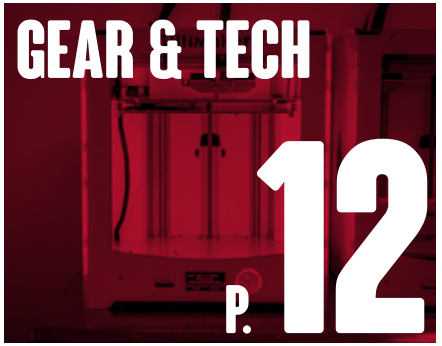


Want to learn about more ways to get involved? Browse our resource directory for centers and institutes across the University of Utah.

WELCOME TO THE INNOVATION ECOSYSTEM

The University of Utah has a rich and highly integrated ecosystem driving innovation in many forms. Faculty, students and community members are encouraged to participate by contacting one of the ecosystem members or taking advantage of one of their programs or services. Get involved at **utah.edu/innovate**.

V.P. RESEARCH

The Vice President for Research office at the U oversees many aspects of research and related activities across campus, including commercialization, compliance and education. The office also manages many related institutes, centers and initiatives.

research.utah.edu

ENTREPRENEURIAL FACULTY SCHOLARS

The Entrepreneurial Faculty Scholars program brings together innovative faculty at the U who share the common dedication to motivating and enriching the translational experience for faculty and student entrepreneurs.

efs.utah.edu

CAMPUS & COMMUNITY

Innovation, commercialization and entrepreneurship require countless partners across campus and the community. New partners are constantly joining the network.

utah.edu

CORPORATE CONCEIRGE

The Corporate Concierge Program helps community partners leverage the entire set of capabilities at the U. The program helps coordinate everything from scholarships and internships to sponsored research and entrepreneurship.

greg.jones@hsc.utah.edu

CENTER FOR ENGINEERING INNOVATION

The College of Engineering, with the Utah Nanofabrication Laboratory, established the Center for Engineering Innovation. It bridges the gap between basic science and engineering innovation and commercial product development.

cei.utah.edu

CENTER FOR MEDICAL INNOVATION

Medical doctors and students interested in innovation have a one-stop-shop for resources at the Center for Medical Innovation. It serves as an information and gathering hub for all in the health sciences.

bit.ly/uucmi

TECHNOLOGY & VENTURE COMMERCIALIZATION

Technology and Venture Commercialization manages the U's intellectual property and works with new and established companies to develop technologies.

tvc.utah.edu

LASSONDE ENTREPRENEUR INSTITUTE

The Lassonde Entrepreneur Institute is the home base for student entrepreneur programs at the U. Programs include student business plan competitions, innovation courses, internships and commercialization opportunities.

lassonde.utah.edu

OFFICE OF SPONSORED PROJECTS

The Office of Sponsored Projects (OSP) was established in 1967. Its mission is to enhance research by providing service and support to administration, faculty and staff in their efforts to secure and manage external funding for university activities.

osp.utah.edu

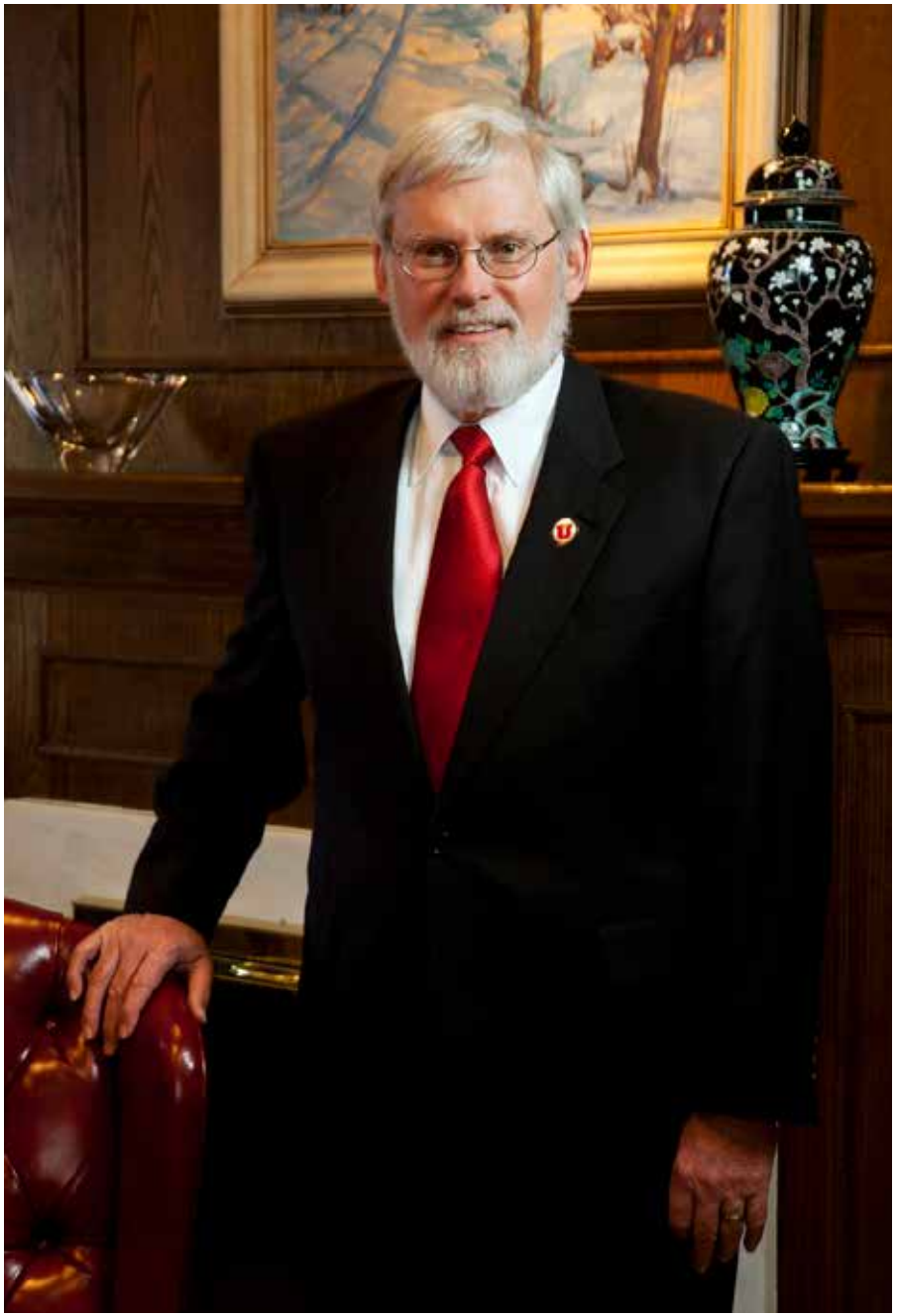
PRESIDENT'S MESSAGE

It's been another incredible year at the U. I am continually amazed by the breadth and quality of the work produced by our students, faculty, researchers and staff. The University of Utah is consistently improving, as we learn new skills, challenge assumptions and create new knowledge. Collectively, we have many goals, but one important measure of success is how well we collaborate across disciplines to innovate and make a real impact on the world. In this report we explore a variety of exciting innovations all developed by members of our campus community.

In these pages you will learn about an award-winning faculty member developing drugs from snail toxins, a medical doctor helping paralyzed people enjoy the outdoors, and the impressive new facilities that enable students to live where they create products and ideas, and launch businesses.

We hope that *Innovate* gives you a new understanding for the awesome breadth of research, development and entrepreneurship at the University of Utah, and that it inspires you to engage with us. We hope you will use these stories to find your place at the University of Utah, and help us do more, be better, and strive for greatness. In short, we hope you will embrace our motto, "Imagine. Then do."

— **David Pershing**, *president, University of Utah*

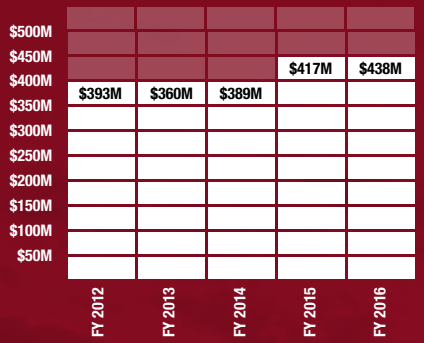


ABOUT THIS PUBLICATION

Innovate is an annual publication dedicated to celebrating the innovation ecosystem at the University of Utah. It is produced with oversight from the U's Internal Commercialization Coordination Council. Find an electronic edition and more information at **utah.edu/innovate**.

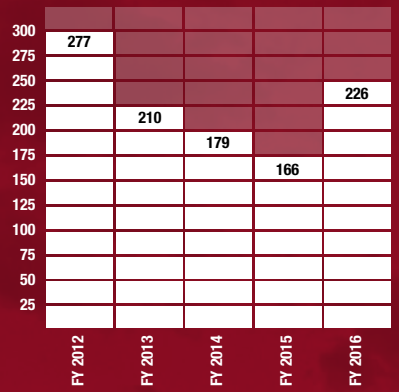
UTAH INNOVATION BY THE NUMBERS

RESEARCH FUNDING



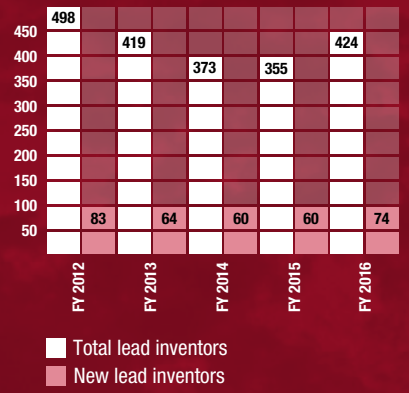
The U is the leading research institution in the state, receiving $438 million in research awards in FY 2016. ***SOURCE:*** *Office of Sponsored Projects.*

INVENTION DISCLOSURES



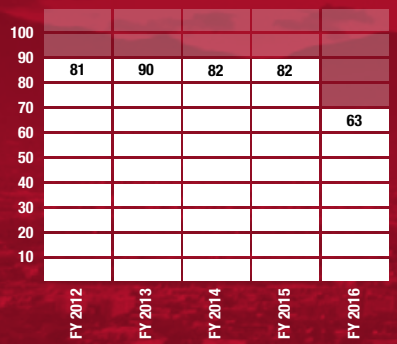
Invention disclosures occur when a faculty member informs Technology and Venture Commercialization of a discovery. ***SOURCE:*** *Technology and Venture Commercialization.*

TOTAL & NEW LEAD INVENTORS



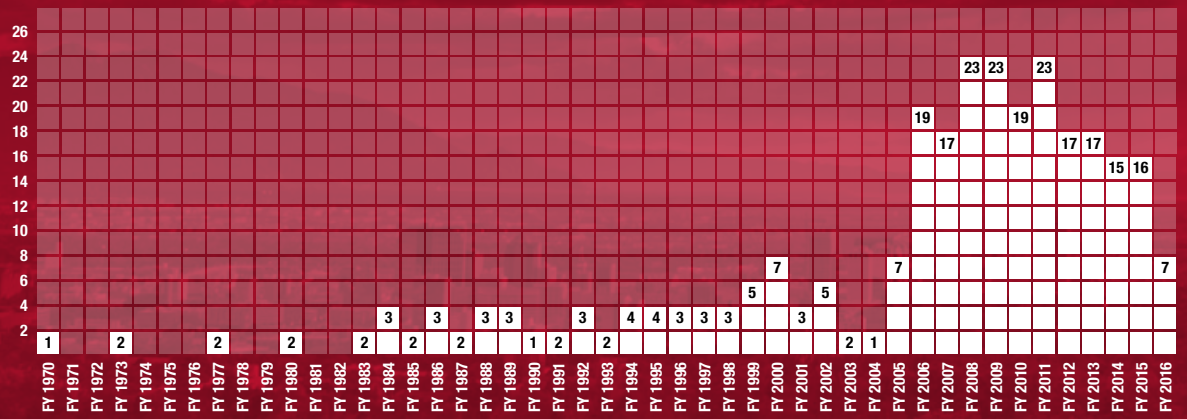
Inventors come from all colleges and departments. ***SOURCE:*** *Technology and Venture Commercialization.*

ISSUED U.S. PATENTS

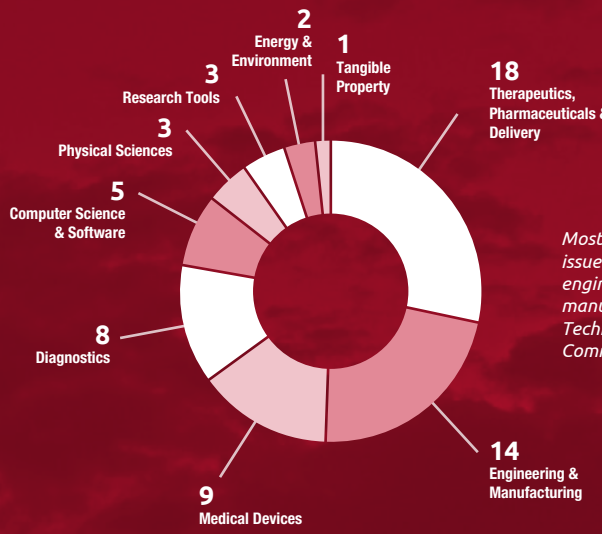


The U has received a steady stream of issued U.S. patents in the last five years. ***SOURCE:*** *Technology and Venture Commercialization.*

STARTUPS OVER TIME

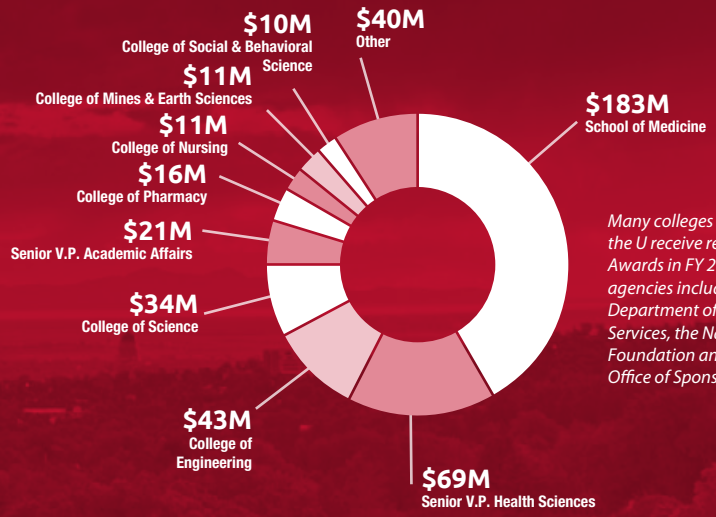


U.S. PATENTS BY TYPE



Most of the U.S. patents issued for FY 2016 were for engineering and manufacturing. ***SOURCE:*** *Technology and Venture Commercialization.*

RESEARCH FUNDING BY UNIT



Many colleges and departments at the U receive research awards. Awards in FY 2016 came from agencies including the U.S. Department of Health and Human Services, the National Science Foundation and others. ***SOURCE:*** *Office of Sponsored Projects.*

EDITORIAL BOARD & COMMERCIALIZATION COORDINATION COUNCIL

STUDENT CONTRIBUTORS

Sara Goodwin, assistant editor, (Strategic Communications and Entrepreneurship) works for the Lassonde Entrepreneur Institute as a copywriter and is a Lassonde student director of marketing.

J. Abubo, writer, (Entrepreneurship and Film & Media Arts with an Entertainment Arts & Engineering Emphasis) is a Community Engaged & Innovation Scholar who aims to build empathy through digital experiences.

Jai Hamid Bashir, writer, (Environmental Humanities) is dedicated to human rights, science and nature literacy, and poetics in both her professional and creative work.

Parker Gibbons, photographer, (Undergraduate Studies) is a sophomore building a degree in the passions he has been pursuing for seven years: film-making, multidisciplinary design, entrepreneurship and communications. parkergibbons.com

Alexandria Haslam, copyeditor, (Entrepreneurship) is a freelance writer and editor for the Lassonde Entrepreneur Institute. She is a music and film enthusiast who loves to travel and create.

Caroline Moreton, writer, (Strategic Communication) is a total ad-geek. Her friends hate her for not letting them skip through commercials. She is studying to be a copywriter at an advertising agency post-graduation.

Allie Shaw, writer, (Communications) is a freelance writer and editor for the Lassonde Institute. She spends the majority of her time working four other jobs, doing full-time school and finding dogs to pet. Upon graduation, she hopes to move to the coast and start her own event and public relations firm.

Abraham Tinklepaugh, writer, (Strategic Communication) is a writer and editor for the Lassonde Institute. His goal is to help others achieve great things, and to leave the world better than he found it one word, image or sound byte at a time.

Brent Uberty, photographer, (Parks, Recreation & Tourism, graduated 2016) is the creative director and founder of B.W. Productions, a Salt Lake City-based production company. As an entrepreneur himself, Brent's passion is working with startups and nonprofits. bwproductionsllc.com

CONTACT US

Do you want copies of this publication, have questions or want to nominate someone to be featured in the next edition? Contact editor **Thad Kelling**, an assistant to the U's Internal Commercialization Coordination Council and the marketing manager at the Lassonde Entrepreneur Institute, at **thad.kelling@utah.edu**.

{PEOPLE}

DISTINGUISHED INNOVATION & IMPACT AWARD

The University of Utah announced the winners of the sixth annual Distinguished Innovation and Impact Award in May 2016. The award recognizes faculty who create products and initiatives with potential to change the world and improve lives. The winners were: Jim Agutter, assistant professor of design; Dana Carroll, professor of biochemistry; and Baldomero (Toto) Olivera, professor of biology. They were honored at the U's commencement ceremony.

The Distinguished Innovation and Impact Award is one of the newest faculty awards at the U. The university created the award to recognize faculty entrepreneurial activities that have resulted in innovations with measurable and significant societal impact. The award is managed by the U's Academic Affairs office with support from the Entrepreneurial Faculty Scholars program, a network of faculty dedicated to maintaining a thriving culture of impact at the university.

"We are proud to present this year's Distinguished Innovation and Impact Awards to three of the most outstanding, innovative and creative faculty members at the University of Utah," said Glenn Prestwich, a presidential professor of medicinal chemistry and founding director of the Entrepreneurial Faculty Scholars. "The translational achievements by these awardees in design-thinking, in gene-editing biochemistry, and selective tools and drugs in neurobiology have both expanded our knowledge and made the world a better place."

BALDOMERO (TOTO) OLIVERA

Olivera is a distinguished professor in the Department of Biology. He researches ion channels and receptors, which mediate signaling in the nervous system. He and his colleagues have isolated neurotoxins from the venoms of the predatory cone snails.

His laboratory has characterized a set of unique toxins, the omega-conotoxins, which irreversibly bind (and block) calcium channels. The venom for a single Conus species contains more than 80 active peptides, which fall into over 15 classes. The long-range goal is to use these toxins for studying key molecules in the central nervous system. The fact that these toxins can be synthesized and radiolabeled will permit characterization of key central-nervous-system molecules that are the targets of these peptides.

Olivera is an inventor on 62 issued patents and 10 additional pending patents. His conotoxin research has had a large impact on several disciplines. For example, several conotoxins have therapeutic application, including ziconotide, which is an FDA-approved drug to treat chronic pain. Olivera and his lab also have more than 2,000 publications describing experimental work using conotoxins.

DANA CARROLL

Carroll is a distinguished professor in the Department of Biochemistry. He and his colleagues work on gene-targeting and gene-editing. Among his greatest accomplishments is the development of zinc-finger nucleases (ZFNs) as genome-editing tools. Based on the Nobel Prize-winning work of Mario Capecchi, it was possible to make targeted changes in the mouse genome, but the procedures were elaborate, inefficient and expensive, and they were not transferrable to other organisms. Carroll recognized that the key limitation was low efficiency that could be enhanced by making a specific double-strand break in the desired target gene. With his coworkers, Carroll patented the use of ZFNs for making targeted mutations. The use of ZFNs for genome editing has been picked up by laboratories around the world.

The impact of Carroll's contributions to the fields of genetics and biochemistry has already been recognized by the greater scientific community, as he received both the 2012 Edward Novitski Prize from the Genetics Society of America and the 2014 Herbert Sober Lectureship from the American Society of Biochemistry and Molecular Biology.

JIM AGUTTER

Agutter is the former director and the founder of the Multi-Disciplinary Design Program, assistant professor of design in the College of Architecture + Planning, and director of Spark Design Initiative.

His work has focused on using design and design-thinking principles to address challenges across a broad range of disciplines. In addition, he has researched the application of 2-D and 3-D visual design concepts to large-scale, real-time data environments.

He is the cofounder of two University of Utah spin-offs — Applied Medical Visualizations and Intellivis — and is an inventor on six patents. He was awarded the 2005 Creative Achievement Award with Julio Bermudez by the Association of College Schools of Architecture, 2009 University of Utah Honors Professorship, 2013 University of Utah Early Career Teaching Award and the 2014 University of Utah Beacon of Excellence Award.

Q&A: TOM PARKS, VP FOR RESEARCH 2008-16

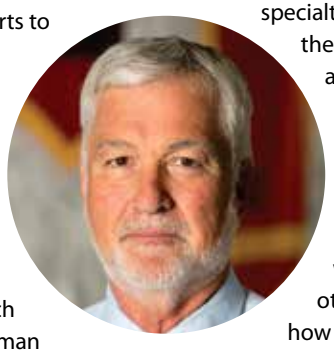
Tom Parks served as the vice president for research (VPR) at the U from January 2008 until he retired in June 2016. He came to the U in 1978 as an assistant professor of neurobiology and anatomy in the School of Medicine. He taught neuroscience to medical and graduate students and had a National Institutes of Health-funded research program on development of the auditory nervous system for 27 years. He was also the founding director of the interdepartmental graduate program in neuroscience (1985-1993), chair of his department (from 1992-2007, founding executive director of the Brain Institute (which transitioned into the current Neuroscience Initiative) from 2003-2008, and cofounder and director of NPS Pharmaceuticals Inc. from 1986-2006.

HOW DID YOU BECOME THE VP FOR RESEARCH?

I was the interim VP for research while a national search was conducted, decided to apply for the position and was selected. I thought the VPR job would be an interesting opportunity for me to help faculty members achieve their research goals, learn more about the research going on across the campus and help the institutional leadership tackle some of the challenges facing public research universities.

WHAT DOES THE VP FOR RESEARCH DO AT THE U?

The VPR is the university's senior research officer, the institutional official responsible to federal funding agencies for protection of human and animal research subjects and compliance with a range of financial management, research integrity and safety requirements applicable to sponsored research. The VPR manages many of the U's internal grant programs and the Office of Sponsored Research, which handles external grants and contracts. The VPR is the president of the university's research foundation, which manages the Research Park and the university's intellectual property via the Technology & Venture Commercialization office, which reports to the VPR. The VPR and the senior vice presidents manage the expenditure of approximately $83 million per year in research overhead that supports much of the university's research infrastructure. The office of the VPR manages several research facilities, such as the Bonderman Rio Mesa Center and the David M. Grant NMR Center. The VPR also provides advice on research-related matters to the president, other senior leaders of the university and the university's trustees.



HOW WOULD YOU DESCRIBE THE SCOPE OF RESEARCH AT THE U?

The university is one of the 50 largest and best research universities in the United State and has more than 1,500 faculty members with responsibilities for research and scholarship. At any one time, the U has about 900 principal investigators managing about 2,500 research projects supported by more than a hundred sponsoring organizations. Since the U has more than 60 academic programs offering graduate degrees, the range of research projects is extensive, including most areas of academic research.

WHAT DO YOU THINK IS UNIQUE ABOUT RESEARCH AT THE U?

There is a significant number of faculty members at the U who are the world's leading expert in their particular research specialty so it is accurate to say that the U has those unique scholarly resources. We also have some research facilities (e.g, the Telescope Array used to study cosmic rays) that are unique in the world. Many faculty researchers who have moved here from other institutions remark on how much they value the highly collegial and collaborative environment for research at the U, something that is not found at some other large research universities. I think that, along with faculty leadership of the research enterprise, creates a special environment that helps us attract and retain the best faculty researchers.

WHAT ARE YOU MOST PROUD ABOUT FROM YOUR TIME AS VP FOR RESEARCH?

I believe we have instituted a number of new programs and services that have made it easier for faculty researchers to compete for extramural funding and manage their research awards efficiently. Between 2008 and 2016, research funding at the U increased from $305 million to $438 million per year, a real increase (i.e., when adjusted for inflation) of 28 percent during a period when federal research funding declined by 21 percent in real dollars. In recent years, the U has been recognized annually as one of the six best universities in commercializing life-science inventions.

WHAT ARE THE GREATEST CHALLENGES FOR UNIVERSITY RESEARCHERS?

Research opportunities and funding agencies increasingly encourage more multi-investigator collaborative research. Under these new working arrangements, it will be a challenge for faculty researchers to maintain, or find acceptable substitutes for, the traditional autonomy and sense of mastery that have been a central appeal of faculty careers.

WHERE DO YOU THINK UNIVERSITY RESEARCH IS HEADED?

From an institutional administrative perspective, research is not very exciting because, in contrast to education, there isn't much reason to expect any major change in the basic business model that has existed for more than 50 years. A greater emphasis on reliability and replicability of research results by funding agencies and journals is the main change I see in the next five years.

WHAT WILL YOU BE DOING IN RETIREMENT?

Learning some new skills, reading more books, attending more arts events, doing more community service and traveling.

NALINI NADKARNI

"It started when I was a child. I loved being outdoors and climbing trees. I felt like when I climbed them, it was my world. No one else was up in those trees," said Nalini Nadkarni, a forest ecologist at the University of Utah. "In a way, I felt like I needed to repay them."

As a graduate student, Nadkarni was passionate about exploring the unknown world of plants that lived in the forest canopy, high above ground level. She realized that scientists needed to study trees in the same way marine biologists were able to study the ocean when scuba diving was invented — by observing the biota in the environment where they actually lived, rather than merely sampling them and bringing them to the lab. So, using mountain climbing gear, she learned to scale large trees to be a part of the tree-top ecosystem.

Since this time, she has continued to find innovative ways to relay what she learns through her hands-on research. Whether it is her delivery of sermons that relate the sacredness of trees to the holy scriptures from the pulpits of churches and temples, or advising modern dance choreographers on the intricacies of tree biology to enhance the compelling nature of a dance about rainforests, Nadkarni is constantly working to bring the wonder and importance of nature and science to people from all walks of life.

Her most recent ventures include organizing a lecture series at the state prison and Salt Lake County jail and then entrusting those incarcerated to raise and study endangered species as well as developing a line of tailored clothing with fabric printed with actual photographs of rare plants and animals. Her intent is to have those wearing the clothing be the vector for raising awareness as they move through their day.

Nadkarni was raised in a Hindu-Jewish home with a father from India and a Russian mother from Brooklyn. This mix of culture in her home is what ultimately inspired her to weave seemingly uncommon things together to get unique results.

"Although science and religion are considered to be opposites," Nadkarni said, "when you approach them by not violating others' values, but teaching your own values, you can make progress about helping people to understand. You yourself can then understand and honor the more holistic importance of trees and nature to human beings in this world."

P. 12

{GEAR & TECH}

MOBILE TELEPRESENCE

Aaron Fischer, an assistant professor in the School of Psychology, found a way to coach teachers and paraprofessionals around Utah, without any transportation involved. With two different kinds of robots, the Double and the Kubi, Fischer and his graduate students are able to participate in classrooms as though they were there in person. "Mobile telepresence allows us to get people connected across great distances and lets teachers and psychologists interact in a way they can't with traditional videoconferencing" Fischer said.

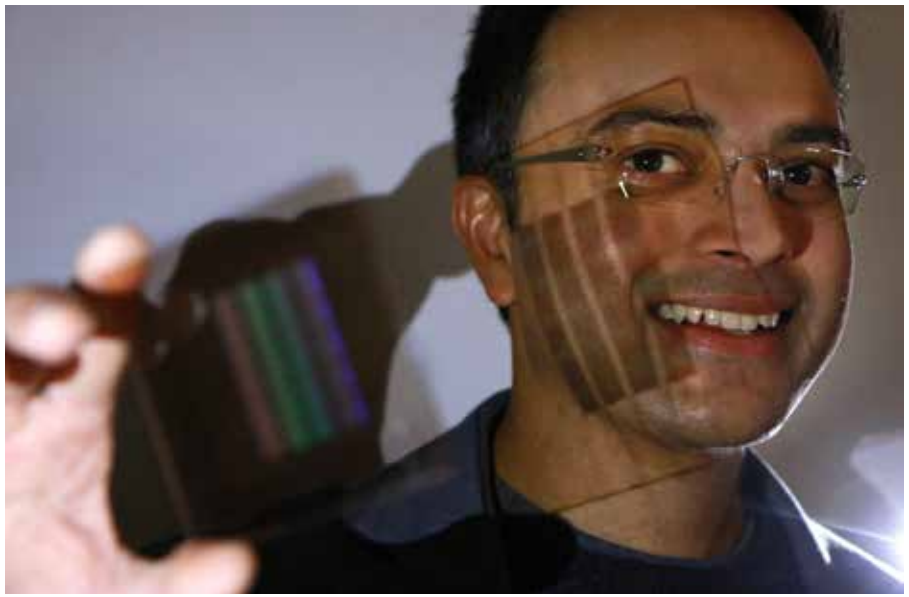


Photo: College of Engineering

UTRA-THIN CAMERA LENSES

Rajesh Menon, an associate professor of electrical and computer engineering, has developed paper-thin lenses for cameras. Menon and his researchers, graduate students Peng Wang and Nabil Mohammad, call the lens a "super-achromatic lens" that can be made of any transparent material, such as glass or plastic. This lens could be used for everything from medical devices, such as endoscopes that peer into the human body, to drones and satellites.

PURIFYING WATER

SolaPur is a water purifier designed to operate where resources are short. It was developed by Swomitra Mohanty, a chemical engineering professor, as well as Krista Carlson and Mano Misra, professors in metallurgical engineering. What makes this purifier unique is its ability to degrade pathogens in a rapid manner. "The idea was inspired by addressing a critical need in potable water in low-resource settings," Mohanty said. They are focusing on water issues in India, but expanding to rural communities in the United States.

HEALTH-DATA VISUALIZED

Imagine a world created entirely from your medical records. Roger Altizer, an associate director in the Entertainment Arts and Engineering program, and his team of students created just that. Through virtual reality, they found a way to bring embodiment to health data with virtual medical records. "We believe that the combination of play and virtual reality is going to allow folks to have deeper experiences with their health care. It's time to get serious about being playful with our health," Altizer said.

SPEEDY BRIDGE REPAIR

After severe earthquakes, it can take weeks to repair bridge structures. If the columns on bridges are too badly damaged, it may even be unsalvageable. Chris Pantelides, a civil and environmental engineering professor, and his team of researchers found a way to fix bridge structures in a matter of days. The donut repair is comprised of carbon fiber composites, headed steel bars and concrete, and gives bridges a second life. "No matter how severe the damage, it can be fixed," Pantelides said.

{PLACES}

P. 15

ECCLES LIBRARY

Jean Shipman, executive director of knowledge management at the Eccles Health Sciences Library (EHSL), wanted to partner with medical innovation. With print materials being underutilized, her goal was to capitalize on the emerging digital library and to transform the physical library space into a collaboration center to be used by many.

"To do so, the EHSL spent nine months clearing out its print books and journals to make way for a collaboration and discovery space," Shipman said. "It allowed us to transform the basement level into the Synapse — a space to encourage creators and innovators to collide with library faculty and staff and apply information to innovation." She hired an innovation librarian to work in context with innovators from the Center for Medical Innovation and gaming students located within the space.

Shipman also saw the need to gather the information that was being produced by gaming students and innovators, so she and the EHSL team created e-channel (**library.med.utah.edu/e-channel**), a multi-media platform showcasing various innovation competitions, conferences, educational materials, videos, etc.

The three libraries at the University of Utah — the Marriott, Eccles and James E. Faust Law Library — formed the Libraries Innovation Team, based on Shipman's recommendation. Its main focus is to encourage faculty and students to apply information resources and services for innovative purposes. To fulfill this goal, representatives attend competition events, offer consultative expertise, search for prior art and sponsor an award for Bench-to-Bedside student participants. A book is being written and edited by Shipman and many Synapse residents that highlights the successful ways innovation and information have united at the University of Utah to make a strategic difference.

LASSONDE STUDIOS

The Lassonde Entrepreneur Institute at the University of Utah opened the doors in August 2016 to the $45 million Lassonde Studios, a one-of-a-kind facility where students can live, create new products and launch companies.

A nationally-ranked division of the David Eccles School of Business, the Lassonde Institute announced the building project in April 2014 and broke ground in October the same year. During construction, Lassonde Studios received worldwide attention, featured in publications such as *The New York Times*, *Fast Company* and *Bloomberg*.

Lassonde Studios is about 160,000 square feet on five floors. The first floor is a 20,000-square-foot innovation space, workshop and cafe open to all students at the U. That floor has many spaces and tools for students, including workbenches, group coworking areas, 3-D printers, a laser cutter, power tools and more. The first floor is similar to a student union for those interested in entrepreneurship and innovation. Above are four floors of student housing where 400 students live, collaborate and launch new ideas.

Learn more at **lassonde.utah.edu/studios**.

DIGITS

- 6,000 square feet of study areas and conference rooms
- Center for Cell and Genome Science will encompass 50,000 square feet
- 40,000 square feet of teaching labs
- New tutoring center and student advising offices will serve the entire College of Science
- Classrooms for 25 to 150 students with flexible seating for multiple teaching styles

CROCKER SCIENCE CENTER

There's a matchstick for discovery at the entrance to President's Circle. After breaking ground March 31, 2016, the new Gary and Ann Crocker Science Center opens spring 2018.

The Crocker Science Center will include 126,000 square feet of ultra-modern facilities focused on scientific research, education and commerce. It will include centers for Cell and Genome Science and Science and Math Education, classrooms, interdisciplinary research laboratories and a biomedical imaging facility.

"60 percent of new students will take science and math classes in this building," said College of Science Dean Henry White. "This will have a profound impact on undergraduate education for the entire university, not just science students."

Eight years ago, former Dean Pierre Sokolsky and life science entrepreneur Gary Crocker developed the idea to renovate the George Thomas Building. Constructed in 1935, it served as the university library until 1968, Utah Natural History Museum through 2011 and home to the Virginia Tanner Dance program until early 2014.

"It's critically needed space, especially the undergraduate research labs," White said. "The Crocker Science Center is all about innovation; it's about new ways of looking at things and improving the world."

Learn more at **csc.utah.edu** or **science.utah.edu/giving/crocker-center.php.**

FIELD STATIONS

In 2009, the University of Utah took action in organizing all field stations in Utah under the Utah Field Station Network, or UFSN. A field station is an outdoor laboratory that inspires scholars, teachers and students to ask questions about natural systems. The UFSN is a consortium of research stations, which are variously administered by universities and state and federal agencies in Utah. The network facilitates economically and socially relevant research. It also provides long-term data to help land managers understand environmental conditions.

"Utah is home to a stunning and broad diversity of ecosystems, geologies, flora and fauna," said Sylvia Torti, who developed the UFSN. "When scientists, scholars and artists catalogue the organisms and processes in these systems, they create living libraries, providing 'editions' or 'texts' from our period of time for future generations. Without protected field stations, these 'editions' run the risk of being lost to development, global change and natural processes." Utah currently has the opportunity to preserve these systems in a coordinated network much like the visionary and lasting efforts undertaken by the California in its Natural Reserve System created in the late 1960s.

The development of UFSN coincides with the U's development of two new field stations, namely Bonderman Field Station at Rio Mesa and Range Creek. "We'd never had off-campus field stations associated with the U, but most large universities did, so creating the U's field stations was really exciting," Torti said. "If we didn't create these field stations, many of the spaces had the potential to be developed for other purposes." Currently, Torti is writing a book with four other university faculty members about the University of Utah's field stations.

The field stations are dedicated to promoting a deeper understanding of Utah's diverse ecosystems and contributing to the sustainable, economic use of Utah's natural resources. There are five field stations run by the University of Utah. Read on to learn about each one.

For more information, go to **utahfieldstations.org**.

BONDERMAN FIELD STATION AT RIO MESA

The Bonderman Field Station at Rio Mesa provides opportunities for field-based studies focusing on the Colorado Plateau. It's located on the Dolores River in southeast Utah and welcomes students interested in a variety of disciplines, from writers and artists to scientists. Recent research conducted at this field station includes studying the impact of the saltcedar beetle on tamarisk transpiration, long-term monitoring of regional atmospheric carbon dioxide and restoration of river systems.

RANGE CREEK

Located behind the Book Cliffs on the Tavaputs Plateau, the Range Creek Field Station is protected by its remote location and the fact that it's surrounded by wilderness study areas administered by the U.S. Department of the Interior. Range Creek Canyon used to be home to a large Fremont population, who hunted and gathered wild resources. The sites, structures and artifacts left by these people have been well-preserved due to Range Creek's isolation. The station is administered by the Utah Museum of Natural History and hosts researchers and teachers from the departments of anthropology, geography, geology and geophysics.

RED BUTTE CANYON

Red Butte Canyon is considered a research natural area. Because of this, it has two primary purposes: (1) to preserve a representative array of all significant natural ecosystems and their inherent processes as baseline areas, and (2) to obtain, through scientific education and research, information about natural systems, components and inherent processes. Red Butte Canyon is located directly east of the university's campus and consists of over seven miles of watershed. As a protected watershed, Red Butte Canyon allows for addressing the important issues relating to human society and the preservation of the environment.

TAFT-NICOLSON CENTER

Housed in Lakeview, Montana, the Taft-Nicholson Center is an educational center focusing on tying together studies of humanities and of the environment. The center was made possible by John and Melody Taft and Bill and Sandy Nicholson, who invested their time and money into restoring the historic buildings that make up the center. Accommodations now include charming guest cabins, a student dormitory, a dining hall and a large conference room.

TELESCOPE ARRAY PROJECT

Unlike the other field stations, the Telescope Array Project is an international collaboration. It involves universities and institutions in the U.S., Japan, Korea, Russia and Belgium, but the University of Utah is the host institution. The project observes air showers induced by cosmic rays with extremely high energy using a combination of ground array and air-fluorescent techniques.

{HEALTH}

P. 20

A THOUSAND WORDS

As a doctorate student, Jaehee Yi was introduced to the Photovoice Methodology, developed by Carolyn Wang. Since then, Yi has taken Photovoice — the process of encouraging a similarly-afflicted group of people to document their lives by photographs and then share their stories with the group — to a new level. Yi is now an assistant professor in the College of Social Work and working on turning photographs into not just an outlet for storytelling, but an outlet for intervention.

Photovoice combines a group of six to seven people in similar situations and invites them to meet each week over a period of time, usually seven weeks. They come up with a theme for the week and then photograph their lives based loosely on the theme. Group facilitators will analyze the findings at the end of each week and record the data. "It's research methodology, but I was used to traditional research methods: surveys, paper, statistics," Yi said. "Photovoice is still research, but it's qualitative and innovative using visual images and narratives. You record, transcribe and learn from the ideas. Once I studied the process, I was hooked."

Yi spent 10 years perfecting that process. She worked with groups of people experiencing similar levels of trauma, such as refugees, cancer patients and social workers. After establishing that this method was an effective way to help trauma survivors express themselves, Yi thought to expand the program. "I concluded that the methodology was therapeutic and beneficial for the participants," she said. "I started to think about how I could make it an individual program so that people could get benefits from participating in it."

She studied the field of telemedicine, and how patients were receiving in-home care for their medical questions. She then dove into her new project, a telehealth storytelling project. Yi identified that cancer patients who had been discharged from their regular treatment regimes were quickly being placed back in their homes. "In some cases, these cancer patients live quite far from the medical center and are not likely to return to the hospital for support groups, or any other psychosocial interventions, due to lack of transportation, energy, money or a fear of returning to the hospital in which they were initially diagnosed," she said.

This project, known as the Telehealth Photo Storytelling Project, is in preparatory phases. It combines storytelling using visual images with the idea of support groups, so patients can document their lives and discuss their experiences week after week, all from their own homes. Yi is in the process of creating a manual for facilitators to lead the Telehealth Photo Storytelling groups, so that the idea may be far-reaching. "Telling stories to someone who knows what you're going through is validating," Yi said. "I want those who are facing traumatic events to receive the validation they need, have their stories heard and survive and thrive together."

RECREATION FOR ALL

When it comes to serving those with disabilities, Jeffrey Rosenbluth, M.D., has a lot of heart. An avid skier who provided adaptive-ski training in his youth, Rosenbluth now serves as a medical director of the Spinal Cord Injury (SCI) Acute Rehabilitation program at the U. He is committed to creating technologies that allow those with impaired movement to live life to the fullest.

To accomplish that goal, Rosenbluth and his team are developing recreation technologies for clients with tetraplegia — those whose legs and arms are paralyzed. Two recent projects include the Tetra Kayak and the E Tetra Ski. Each recreational craft they build is custom-designed to meet the user's specific needs. The development team is comprised of students from both the U's Entertainment Arts & Engineering and Mechanical Engineering departments.

One of Rosenbluth's motivations is a desire to provide an unmet need.

"Most of the innovative technologies coming to market were still not addressing the individual with limited function above the waist, folks that probably had ruled out the possibility of participating in certain sports," he said. "Just enabling individuals to return to their favorite sports and activities after spinal cord injury can be more powerful than anything we can accomplish in medicine and rehabilitation."

Rosenbluth is developing his inventions through TRAILS (Technology, Recreation, Access, Independence and Lifestyle Sports), an outpatient rehabilitation initiative he founded with early support from the Craig H. Neilsen Foundation. Beyond developing recreation technologies, TRAILS educates the SCI community about important health issues, promotes new technologies to enable independence and sponsors athletes to participate in competition, such as the 17 hand-cycle athletes supported by TRAILS in the 2016 Salt Lake City Marathon.

"We have physical therapists, occupational therapists, speech therapists, nurses, nurse practitioners, psychologists, social workers, engineers, designers, physicians and students throughout campus coming together to directly address the quality of life issues facing individuals living with catastrophic disability," Rosenbluth said. "That's a pretty powerful team, and a real testament to the U's unique commitment to creating a level playing field for all."

Learn more about TRAILS at **healthcare.utah.edu/rehab/support-services/trails.php**.

BETTER DNA TARGETING

What if you could easily identify the DNA in a patient's sample that doesn't belong? For starters, identifying what causes a patient's infection becomes infinitely easier, so treating the patient also becomes easier. A team of researchers at the University of Utah, ARUP Laboratories and IDbyDNA has developed such a tool, called Taxonomer.

Taxonomer analyzes the sequences of all nucleic acids in a DNA or RNA sample to detect pathogens. After a sample is sequenced, the data is uploaded onto Taxonomer's website, taxonomer.com. In a matter of seconds, the website displays a summary of all microorganisms in the sample, including viruses, bacteria and fungi. The summary is presented in real time and automatically updates as more information about the sample is received.

"Because Taxonomer is web-based, anyone can use it," said Robert Schlaberg, a medical doctor, director at ARUP Laboratories, assistant professor in the Department of Pathology and cofounder of IDbyDNA. "It works on a phone, a tablet or a computer. You stream the data, the way you would stream a song or movie, to the Taxonomer server and it will display the results. It's very intuitive. It's really a paradigm shift in terms of how we diagnose infections, but also how we study infections."

Schlaberg points out that current diagnostic testing still relies heavily on growing cultures of suspected pathogens in the laboratory, which is often time-consuming and inconclusive. Even with much faster tests, the number of pathogens that can be detected is limited.

Because Taxonomer-based tests can identify an infection without the physician having to decide what to test for, a doctor doesn't have to suspect the cause of a patient's infection. He or she can rely on the program to identify the pathogens.

Schlaberg was awarded a $100,000 grant from the Bill and Melinda Gates Foundation to apply Taxonomer toward decreasing high mortality rates of children with infectious diseases in resource-limited settings.

LAW & MEDICINE

A new Center for Law and Biomedical Sciences at the University of Utah S.J. Quinney College of Law is designed to advance the understanding of how law and biomedicine intersect.

The center is a resource for improving the law as it relates to the rapidly-evolving areas of health policy, the life sciences, biotechnology, bioethics and the medical and technological arts, in order to help overcome critical health care challenges. The center and its faculty and students are involved in applied, interdisciplinary research, innovative teaching and training and public service and programming.

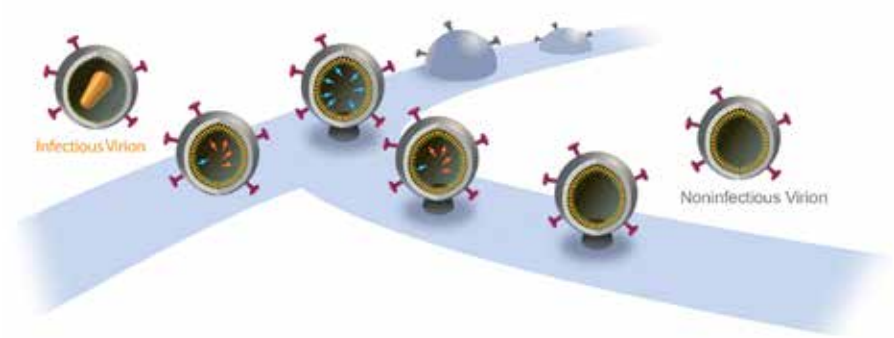
"Law schools generally don't think of faculty and their students as research groups," said Leslie Francis, the center's director. "We work with that model; our students are research collaborators."

The center's creation comes at a time when the Precision Medicine Initiative, announced by President Barack Obama in 2015, remains in the national spotlight. The initiative is designed to increase understanding of the genetic basis of disease and forge the way for new diagnostic and therapeutic innovations.

AIDS KILLER

What if the antagonist could become the hero? Through the research of University of Utah researchers Saveez Saffarian and Mourad Bendjennat, protease, the enzyme responsible for activating the AIDS virus, may actually be the key to more efficient drugs in the battle against HIV and AIDS. Through delaying new HIV particles, the protease itself can be used to destroy the virus, leading to more efficient drugs without secondary side effects such as liver toxicity, diabetes and other forms of pain.

By interfering with ESCRT proteins (endosomal sorting complexes required for transport) — specifically proteins named ALIX and Tsg101 — the researchers found that there is a production of virus-like particles that are noninfectious. "We found HIV still releases even when early ESCRT interactions are intentionally compromised, however, with a delay," Saffarian said. "They are stuck for a while and then they are released. And by being stuck for a while, they lose their internal enzymes, due to early protease activation, and lose their infectivity."



Bendjennat said other researchers already are looking for drugs to block ESCRT proteins in a way that would prevent the "neck" of the budding HIV particle from pinching off or closing, thus keeping it connected to the infected cell. But he said the same ESCRTs are needed for cell survival, so such drugs would be toxic. Instead, the new study suggests that the right approach is to use low-potency ESCRT-inhibiting drugs that delay HIV release instead of blocking it, rendering it noninfectious with fewer toxic side effects.

SMART BREATHING TUBE

When it's a matter of life or death, it's important to constantly improve the industry. Which is why, when University of Utah faculty member and anesthesiologist Sean Runnels had an idea for a safer upgrade to breathing tubes and the process of inserting them, it wasn't difficult to recruit students for his team. He reached out to the Lassonde New Venture Development Center to grab talented graduate students, and formed Through the Cords, LLC.

Runnels first had the idea for this system while taking a three-year leave of absence to work on a makeshift western-grade hospital on a ship in Guinea. He found that patients who weren't used to such extensive care were afraid of the process. "This became an issue when we had to insert breathing tubes for surgeries — it was taking 20 to 40 minutes just to insert the tube into terrified patients," Runnels said.

He looked for a temporary fix to this issue by combining tools he had available to him and developed a method of using two devices — an introducer and the tubes themselves — to create a quicker, more efficient system. He has since found a way to develop a new technology that combines those tools in a cost-effective way, and for today's marketplace.

The technique and technology are two separate elements of Runnel's creation, and while the technology is not yet FDA approved, the technique of combining pre-existing tools has proved to be efficient and helpful. "I still use this technique every day in the operating room," he said. "I teach it to my residents who would otherwise not be able to use the outdated methods because they take precision and training."

Not only does Runnels believe that Through the Chords is safer, less expensive and easier to use, but it also shows that creating innovative solutions to problems we face every day can improve the quality of the lives around us.

Follow the journey at **throughthecords.com**.

P. 26

{DISCOVERY}

ANIMATING MOLECULAR BIOLOGY

Weaving together the worlds of art and science, Janet Iwasa, a research assistant professor in biochemistry, is reimagining the way scientists visualize their hypotheses and findings as a "molecular animator." A cell biologist by training, Iwasa saw the limits of scientists using two-dimensional figures to communicate their research.

After taking a crash course in 3-D animation in Hollywood, she began to create compelling molecular visualizations. Using animation software from the entertainment industry, Iwasa seeks to create molecular visualizations that have the capability to convey information accurately and compellingly to broad audiences. Further, the animations provide a powerful way for scientists to visualize their work and share ideas with their peers. These molecular and cellular visualizations convey complex processes that are not directly observable by experimentation.

Iwasa's award-winning illustrations and animations have appeared in scientific journals including *Nature*, *Science and Cell*, as well as *The New York Times*.

LIFE-SAVING CHEMISTRY

Most people agree that teachers make a large impact in their students' lives. Ryan Looper, an associate professor in the Department of Chemistry, is not only making a difference in his students' lives, but also in the world of medicine — not solely changing lives, but saving them.

Looper works closely with fellow faculty from the Medicinal Chemistry Department in the College of Pharmacy, and with researchers at the VA Salt Lake City Health Care System to develop new antibiotics. "Historically, most antibiotics have been derived from natural products," he said. "Which makes it difficult to find and develop them. There are, in existence, only about 12 classes of antibiotics."

The problem with these antibiotics, he says, is that many of them are intended to hit the same target, which is why bacteria are becoming increasingly more resistant to antibiotics. His new antibiotics are designed to stop bacterial protein from forming by hitting a new, undrugged site on the bacterial ribosome.

"So, why are there only 12 classes of antibiotics?" Looper said. "Because most pharmaceutical firms have dropped their antimicrobial research — the chance of finding something new is very small and the drugs we had worked great — until now. Economically, it was a hard pitch to risky research since they don't make much money."

"Despite their weak profitability, antibiotics can still save lives and should be treated as any other medicine in the field of research," Looper added, especially because this ribosomal-targeted antibiotic will help with diseases that are otherwise resistant to antibiotics, such as tuberculosis, MSRA and infections arising from cystic fibrosis.

Looper is a cofounder of a startup, Curza, which has licensed this antibacterial technology from the U. The team is currently connecting with pharmaceutical firms to complete optimizations. Follow along at **curza.com**.

TRANSFORMATIVE EXCELLENCE PROGRAM

Consider the most urgent problems of our time. Issues such as climate change, health policy and economics, air quality, education for the 21st century, analyzing and applying big data, supporting families and health, and sustaining biodiversity come to mind.

Addressing such grand challenges is a fundamental aim of University of Utah scholars. Solutions require the integration of experts from many departments and colleges across the campus. This is why the U created the Transformative Excellence Program (TEP), a cluster hiring program designed to identify areas of importance to Utah and the world where U scholars have an established foundation of success. The aim is to connect expertise that already exists on campus, strategically recruit a small number of additional national leaders to the U and empower this new team to have a significant impact on an urgent societal problem. Through these clusters and the discoveries they advance, the U's visibility as a national university can be enhanced.

To date, there have been three cycles of applications for Transformative Excellence Program clusters, with several clusters emerging from each annual cycle. Faculty recruitment is in progress in the majority of the cluster areas. Some of the TEP clusters, such as Society, Water and Climate, have already recruited faculty to join the U and are now connecting scholars in departments such as Biology, Geography, Atmospheric Science and Civil and Environmental Engineering to develop large-scale research proposals and conduct research of importance to Utah and the world.

"It is rewarding to see our excellent scholars achieve even more success in partnership with strategic faculty hires. It is also the case that the proposal process itself is an intervention. When scholars come together around an important problem — one that they identify — they often work together after they submit the proposal, even when we are not able to fund the proposal," said Ruth Watkins, senior vice president of academic affairs, who played a key part in starting TEP. "Both the proposal process and the resources for strategic faculty recruitment have had a positive impact on the campus in bringing people together and helping them work in new ways."

For more information, visit **academic-affairs.utah.edu/about/transformative-excellence-program**

INSPIRED BY NATURE

Combining genetic engineering, medicinal organic chemistry and neuroscience, U professor of medicinal chemistry Eric Schmidt is the embodiment of bold creativity in science. In 2005, his lab was the first to unravel chemical interactions in natural animal microbiomes, piecing how evolution creates chemical diversity. Further, his research includes traditional, natural products in drug discovery, and reports of enzymes that, when combined with synthetic biology and designed synthesis approaches, have led to peptide derivatives with unique properties.

Inspired by nature, he created methods that allow the synthesis of millions of complex chemical compounds using simple genetic engineering techniques. With field research throughout the tropical Pacific Ocean, Schmidt tracked the genomic changes that parallel chemical changes. Using an early application of metagenome sequencing to chemistry, he proved that uncultivated symbiotic bacteria produce bioactive, small molecules in animals. This innovation in understanding animal-symbiotic biosynthetic pathways has paved the way for approaches that are now seeing functions in humans and other organisms.

The application of Schmidt's discoveries spans departments at the U, and numerous world-class laboratories off campus. Recently, his laboratory made a series of discoveries of neuroactive compounds that have been patented for their potential in treating pain, and for other medical purposes.

ISOTOPE ANALYSIS

What if cracking cases as different as identifying bodies, verifying "fair trade" chocolate and tracing illegal ivory had a shared solution? Isotopes may be the solution. They are the organic world's chemical lie detector.

Isotopes refer to atoms of the same element with different molecular weights. Geologic dating techniques, such as carbon decay, use unstable isotopes that decay at predictable rates to create records of time and geography. However, this type of isotope analysis left a void in creating portraits of stable isotopes.

One person addressing this problem is Jim Ehrlinger, a U professor, ecologist and recently elected member of the prestigious National Academy of Sciences. He is a pioneer in stable isotope ecology, which uses ratios of non-radioactive isotopes to answer questions about climate, physiology and relationships in ecosystems. This is making non-radioactive isotopes applicable to materials as diverse as hair, teeth and bone, fast food and Ehleringer's case: counterfeit money.

Ehleringer's work was used to investigate "supernotes" — high-quality counterfeit dollar bills. To build on this work, and to aid law enforcement and external industries, Ehleringer and geology professor Thure Cerling formed IsoForensics. Since 2004 the company has offered a wide range of objective tools for making the world a more honest and just place. After all, isotopes don't lie.

RESOURCES

Arts Technology	Advances in digital and communication technologies have forged an entirely new area for artists and practitioners to create, display and disseminate their work. Future success in many careers involves fluency with these digital communication and expression techniques. Courses in fine arts technology were conceived to create an academic environment that promotes an interdisciplinary ideal in arts computing.	art.utah.edu/artstechnology
Asia Center	The Asia Center, a Title VI National Resource Center for Asian and Pacific Studies, serves as a hub for Asia-related activities at the U involving teaching, research and outreach to K-12 schools and the broader community. The center supports Asian studies in its broadest sense, incorporating the languages and countries of the core regions of East, South, Southeast and Central Asia as well as Russia, the Pacific and West Asia.	asia-center.utah.edu/about.php
Bennion Center	The Lowell Bennion Community Service Center was dedicated in 1987 by Chase Peterson, president of the U. He said, "No university can rest merely with the transmission of old or the generation of new knowledge. It must also help students reach out to larger opportunities and responsibilities." That is what the Bennion Center is all about.	bennioncenter.org
Bonderman Field Station at Rio Mesa	The Bonderman Field Station at Rio Mesa provides opportunities for field-based interdisciplinary research, education and other academic pursuits that emphasize ecology and the environment, human-environment interaction or sustainable living on the Colorado Plateau.	riomesa.utah.edu
Center for Alzheimer's Care, Imaging and Research	At the U's Center for Alzheimer's Care, Imaging and Research (CACIR), patients, caregivers and physicians will find the Intermountain West's most comprehensive treatment, research and education resource for Alzheimer's disease and dementia.	uuhsc.utah.edu/cacir
Center for Clinical and Transnational Science	The CCTS is the home for clinical and translational science in our institution, the state of Utah and within the Mountain West Region. It builds on the U Health Sciences' strengths in genetics and bioinformatics to translate promising bench science into practices that improve human health.	medicine.utah.edu/ccts
Center for Law and Biomedical Sciences	The Center for Law and Biomedical Sciences focuses on improving the law as it relates to the rapidly evolving areas of health policy, the life sciences, biotechnology, bioethics and the medical and technological arts, in order to help overcome the most critical health-care challenges of our times. They do so through applied, interdisciplinary research, innovative teaching and training and public service and programming.	law.utah.edu/research/center-for-law-and-biomedical-sciences
Center for Science and Mathematics Education	The Center for Science and Mathematics Education (CSME) was provisionally established in 2009 to provide a bridge between the College of Science and College of Education at the U, primarily to amplify institutional efforts to develop a more sustainable Math and Science teacher education program.	csme.utah.edu
Center for Teaching and Learning Excellence	The Center for Teaching & Learning Excellence provides a myriad of services to all U instructors with an emphasis on best pedagogical practices and strategies for teaching in higher education.	ctle.utah.edu
Ecological Planning Center	The Ecological Planning Center works closely with academic and community partners to shorten the pipeline between research and application. It applies principles of urban ecology, environmental planning and design and engineering to generate sustainable solutions in planning for equitable, vibrant and healthy human habitats.	epc.cap.utah.edu
Energy and Geoscience Institute	The Energy and Geoscience institute is uniquely positioned to engage high-caliber, innovative and creative geoscience and engineering professionals to expand the body of scientific research and knowledge in the hydrocarbon and geothermal fields for both industry and government projects.	egi.utah.edu/about
Entertainment Arts & Engineering	Entertainment Arts & Engineering (EAE) supports interdisciplinary work between the School of Computing and the Department of Film and Media Arts in the areas of video games, computer animation, special effects, etc. Students from both departments work closely together throughout their academic careers.	eae.utah.edu
Find a Researcher database	The Find a Researcher database contains listings of U faculty and graduate students who are research-topic experts and potential research collaborators. You may search for people by entering names, research keywords, departments, international experience keywords and equipment.	faculty.utah.edu/findaresearcher
Genetic Science Learning Center	The Genetic Science Learning Center is a nationally- and internationally-recognized education program that translates science and health for non-experts. In addition to genetics, it addresses all areas of life science and health as well as other scientific fields.	gslcutah.org

Global Change and Sustainability Center	Its vision is to provide an interdisciplinary nexus for addressing challenges in global environment and sustainability issues at the U. It seeks to develop the links between research, education and outreach to unite faculty across university departments, facilitate communication, foster interdisciplinary education and create opportunities for campus and community engagement in sustainability.	environment.utah.edu
Health Sciences Research	The U Health Sciences Center faculty and staff conduct, collaborate and initiate research — advancing knowledge through innovative, basic and clinical research, and translating discoveries into applications that help people. Research in the health sciences spans many fields of study.	healthsciences.utah.edu/research
Hinkley Institute of Politics	The Hinckley Institute of Politics' mission is to promote political and civic involvement, and to engage university students in the political process. It is engaging students in governmental, civic and political processes; promoting a better understanding and appreciation of politics; and training ethical and visionary students for careers in public service.	hinckley.utah.edu
Kem C. Gardner Policy Institute	Kem C. Gardner Policy Institute is devoted to developing and sharing economic, demographic and public policy data and research that help individuals and the community make informed decisions.	gardner.utah.edu
Library Innovation Team	The Library Innovation Team (LIT) is comprised of librarians from the Eccles Health Sciences Library, the Marriott Library and the Faust Law Library. They provide resources to those seeking to become successful innovators and entrepreneurs.	campusguides.lib.utah.edu/innovate
Metropolitan Research Center	The Metropolitan Research Center conducts quantitative research and data-driven services for communities and regions in cooperation with public and private partners. They engage in pioneering research on urban and regional economies, quality of life, and the physical environment by utilizing extensive data and broad expertise.	mrc.cap.utah.edu
Middle East Center	The Middle East Center provides students with language and cultural competence in the region of the Middle East that can become the foundation for careers in public affairs, public service, business and many other fields.	mec.utah.edu/about/aboutmes.php
Nano Insititute	The Nano Institute of Utah provides an organization where scientists, engineers and clinicians from across the university, the state and elsewhere work together to attain global recognition by overcoming interdisciplinary challenges in nanoscience and nanotechnology.	nanoinstitute.utah.edu
Nanofab	The Utah Nanofab encompasses a class 100/1,000/10,000 cleanroom, packaging and test areas. Commissioned in 2012, the new 18,000-squarefoot facility provides the specialized custom-built infrastructure, equipment, processes and expertise necessary for researchers and companies to design, build and package revolutionary micro and nanoscale devices.	nanofab.utah.edu
Scientific Computing and Imaging Institute	Over the past decade, the Scientific Computing and Imaging Institute has established itself as an internationally-recognized leader in visualization, scientific computing and image analysis applied to a broad range of application domains. The research objective is to conduct application-driven research in the creation of new scientific computing techniques, tools and systems.	sci.utah.edu
Sorenson Center for Discovery & Innovation	The Sorenson Center support businesses, students and faculty to discover, design and develop novel digital solutions to wicked problems that generate new sources of value.	bit.ly/sorensoninnovation
Sorenson Impact Center	The Sorenson Impact Center is an applied academic institution at the U's David Eccles School of Business dedicated to catalyzing high-impact programs, policies and investments. The center works across sectors to develop and implement innovative and data-driven strategies to address difficult social problems.	eccles.utah.edu/sorenson-impact-center
Taft-Nicholson Center	Taft-Nicholson Center works to bridge the arts and humanities with the sciences. They are devoted to increasing environmental literacy, boosting environmental awareness and inspiring personal connection to nature and the Greater Yellowstone Ecosystem. Students, teachers, artists, scientists and community members participate in the center's diverse educational programming — sharing their perspectives on the natural world and preparing themselves to create change in positive and meaningful ways.	taft-nicholson.utah.edu
Utah Science, Technology & Research Initiative	The Utah Science, Technology and Research initiative (USTAR) is a long-term, state-funded investment to strengthen Utah's "knowledge economy." This initiative invests in world-class innovation teams and research facilities at the U and Utah State University to create novel technologies that are subsequently commercialized through new business ventures	ustar.utah.edu
Wallace Stegner Center	The Wallace Stegner Center, named after the Pulitzer Prize-winning author and conservationist, is dedicated to understanding critical environmental challenges and to increasing public understanding and promoting dialogue about how to live more sustainably.	law.utah.edu/research/stegner

UTAH.EDU/INNOVATE