winter 14-15

Continuum

THE MAGAZINE OF THE UNIVERSITY OF UTAH VOL. 24 NO. 3

Clearing the Air

A U INTERDISCIPLINARY PROGRAM AIMS TO BECOME A NATIONAL RESOURCE ON IMPROVING AIR QUALITY.

- **PTC'S PLANS:** A NEW DIRECTOR STRIVES FOR ECLECTIC THEATER
- **MARKETING INNOVATION:** FROM INVENTIONS TO COMMERCE
- **'REMEMBER ME':** TWO U ALUMS' WORK IN GHANA
- **CLEAN AIR'S CRUSADER:** A MEDICAL ADVOCATE

Continuum

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contents

University of Utah researcher Krista Carlson tests her SolaPur invention at Salt Lake City's Liberty Park.

Photo by Keith Johnson

FEATURES

Cover photo: Air pollution hovers along the foothills of the Wasatch Mountains near the University of Utah's J. Willard Marriott Library. (Photo by Sebastian Hoch)

Visit continuum.utah.edu *for additional photos, videos, and more.*

Your Comments

RAISING UTE AWARENESS

I would like to thank the University of Utah and the Ute tribe for their efforts in educating the public on this issue ["The Heartbeat of the People," Fall 2012; "University Renews Agreement with Ute Indian Tribe," Summer 2014]. I am currently taking a college course through another university on Native American history. This is not your typical history class that we have all been through. This is history from the Native Americans' viewpoint that dispels the myths and untruths we are accustomed to. I have read the webpage [*uteproud.utah.edu*] developed by the University [of Utah] and watched the videos. I now have a deeper understanding of the meaning of the logo, and it brings an even deeper sense of pride when I affectionately say "Go Utes." I look forward to further educating myself on the cultures and meanings of the logo and the history behind the Ute tribes. Being in the military, I travel a lot and am one of those that proudly wear the Utah Ute apparel….

Again, thank you, Mr. [Forrest] Cuch for your information and educational efforts. I look forward to more.

Douglas Taylor
Comment submitted via continuum.utah.edu

The Ute logo is one of the most unique logos out there…. If it is a circle or a drum, it is clearly being honored by the [University of Utah] staff and most of the Ute fans. Everyone has been heard. The final say is with the Ute Tribe, and they have spoken. They love the logo and have no desire to change to the block U. I am very proud of how the U has taken full responsibility and made the necessary changes to accommodate the tribe's MOU [Memorandum of Understanding]. For those who lost the battle, please find something more important to protest that would really make a difference to the indigenous people here in Utah. Like maybe quit ignoring or hiding the facts of history and the visibility that they were here first.

Shauna Engen
Roosevelt, Utah

REFLECTIONS ON THE PARK BUILDING

Oh, how excited and inspired I was, standing in front of the Park Building in 1948-49 as the new, four-year Nursing Program began ["An Icon's Centennial," Fall 2014]. We were assigned to movable metal, hot, half-dome shaped classrooms, a crowded campus due to soldiers enrolled after the war. Being one of three [nursing] graduates in 1951, I was most fortunate as I had a year at BYU filling all my science credits, thus graduating ahead of most of the class.

My B.S degree in nursing has made all the difference in my life.

Marilyn Lambert Higgins Ball BS'51
St. George, Utah

APPRECIATION FOR OPTICS

I look forward to Stephen Wilk's column every month in *Optics and Photonics News*. I had no idea that he is my U co-alum ["Stories in the Study of Light," Fall 2014]. We both received our PhDs in 1983.

Akhlesh Lakhtakia MS'81 PhD'83
State College, Pennsylvania

BIONICS' POSSIBILITIES

Thank you, Dr. [Richard] Normann—this is remarkable and offers such hope to so many people ["The Bionics Man," Summer 2014]. Thanks also to those who work with you and invest time and mental energy into each tiny step in the process of acquiring adequate information to make this a workable solution. AMAZING!

Rebecka Page
Comment submitted via continuum.utah.edu

We're eager to hear from you. Please go to continuum.utah.edu/contact-us/ *for our contact information.*

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University Begins 'Ute Proud' Campaign With Tribe

As part of the 2014 Memorandum of Understanding between the Ute Indian Tribe and the University of Utah, a scholarship fund for eligible tribal members has been established through the University's Scholarship Office. The U Athletics Department and the Ute Tribe also began a "Ute Proud" campaign in late August to raise awareness at sports events about what it means to be a Ute. And the University launched a website, *uteproud.utah.edu*, to educate the U community and fans about the tribe's culture and history.

The University and the tribe signed the new agreement in April, allowing the U to continue using the name "Utes" for its sports teams. The five-year agreement will be reviewed annually.

University departments have long offered a variety of scholarships for Native American students. The scholarships created in September are the first specifically for Ute students and in part recognize the tribe's permission to use the "Utes" name for the U's athletics teams. "The University community is proud of its ongoing relationship with the Ute Indian Tribe, and the scholarship fund is one step in our efforts to promote educational benefits for tribal youth," says Mary Parker, the U's associate vice president of enrollment management.

Franci Taylor, director of the University's American Indian Resource Center, says that according to student surveys and comments, lack of funding is what a majority of American Indian students list as the most significant barrier to completion of a college degree. "Many people have a misconception that Native American students are fully funded by the U.S. government, the state, or their tribes. Unfortunately, this is untrue," she says. "Through these scholarships, it is the University's aim to make college as affordable and accessible to as many bright and motivated students as we can."

Scholarships will be awarded by the Scholarship Selection Committee, composed of two members of the Ute Indian Tribe and three members of University administration—the associate vice president for enrollment, the scholarship director, and the director of the American Indian Resource Center. The number of scholarships available each year will depend on the number of eligible applicants and the amounts available. Applicants for the scholarships, which will amount to $8,000 for the year ($4,000 per semester), will be evaluated on academic merit, leadership, commitment to citizenship, school activities, and community engagement, in addition to tribal affiliation.

"We welcome all positive educational opportunities for Ute and other American Indian youth," says Forrest Cuch, a member of the Ute Indian Tribe and the scholarship committee. "Scholarships will be a strong encouragement to our kids to continue their educations."

Cuch is featured in an educational video that the U Athletics Department launched in August. The video has been played on the video board at all Utah home sports events. U Athletics also created Ute Proud T-shirts, bearing a design that incorporates a graphic by a Ute artist, the circle and feather logo, and the Ute Tribe's official seal. All proceeds from the T-shirt sales will benefit Ute Indian scholarships and youth programs. Utah Athletics also has been distributing Ute Proud information cards at all athletics events, to encourage fans to learn more about the Ute Indian Tribe.

The Ute Proud campaign included Native American heritage awareness promotion at a Utah football game and a U men's basketball game in November. For the football game, the U team wore helmets with the Ute tribal seal, and the game ball was given to a representative of the tribe. At both the football and basketball games, the Ute Honor Guard presented the U.S. flag, and a special halftime performance was arranged by the Ute Tribe's Pow Wow Committee. "We feel honored to represent the Ute Tribe," says U Athletics Director Chris Hill MEd'74 PhD'82. "Our teams, coaches, staff, and the entire University community hope our fans will join us in representing the Utes with dignity and respect at all times, and proudly saying 'Go Utes!' "

Visit continuum.utah.edu *to watch two videos from the Ute Proud campaign.*

U Initiative Aims to Help More Women Graduate

The University of Utah began an initiative in October to recruit, retain, and graduate more women students. Debra Daniels MSW'84, director of the U's Women's Resource Center since 2003, was named to an additional role as assistant vice president of the Women's Enrollment Initiative and will lead the new efforts.

"In her expanded role, we will establish more connections across campus, in schools, and with business leaders in our community to help remove obstacles that prevent women from going to school and achieving," says Barbara Snyder, the U's vice president for student affairs. "The entire community will be richer for it."

Currently, although the percentage of women graduates from the U is about equal to that of men, women's enrollment lags behind men's by 20 percent. In 2014, 54 percent of women applicants were accepted, but just 47 percent enrolled. Meanwhile, Utah has the fourth largest wage gap in the country, with women earning 30 percent less than men. The U initiative aims to meet the needs of girls and women from high school through college and to provide the information, services, and support to help them realize their academic goals. "Graduate degrees that lead to professional careers increase a woman's opportunities for advancement and higher earning power," Daniels says. "All lead to a more prosperous and just community for everyone."

Debra Daniels

University Community Remembers Chase Peterson

Chase Peterson

Chase N. Peterson, who served as the University of Utah's president from 1983 to 1991, died September 14 in Salt Lake City. He was 84.

"Chase Peterson loved the University of Utah," current U President David W. Pershing wrote in a tribute. "His efforts to enhance the U's teaching and research mission will be his legacy, evident always in the careers and contributions of thousands of students whose lives were made better by his service,"

Peterson was born in Logan, Utah, to E.G. and Phebe Peterson. His father was president of what is now Utah State University. Chase Peterson received a bachelor's degree in 1952 and a medical doctorate in 1956, both from Harvard University. He and his wife, Grethe, returned in 1961 to Salt Lake City, where he accepted a position as an endocrinologist at the Salt Lake Clinic. In 1967, he and his family returned to Harvard, where Peterson was dean of admissions. Five years later, he became Harvard's vice president for alumni affairs and development. In 1977, Peterson was tapped to be the U's vice president of health sciences, and in 1983, he became the U's 14th president.

After his retirement in 1991, he stayed involved with the University and medical school and ended his career as a physician working at Salt Lake City's Fourth Street Clinic for the homeless.

Visit continuum.utah.edu *to view two videos about Peterson.*

U Professor's Book Explores Secrets of Utah Snow

Utah and its ski industry have long claimed to have the greatest snow on Earth—the state has even trademarked the phrase. In *Secrets of the Greatest Snow on Earth*, University of Utah professor Jim Steenburgh investigates weather in Utah's Wasatch Mountains and shows how and why Utah's powder lives up to its reputation. The book, published in November by Utah State University Press, also examines ski and snowboard regions beyond Utah, providing a meteorological guide to mountain weather and snow climates around the world. "*Secrets of the Greatest Snow on Earth* covers all of the essential topics for Utah powder lovers of every stripe," wrote Nathan Rafferty, president of Ski Utah, in reviewing the book for the publisher.

Steenburgh, a U professor of atmospheric sciences, is an avid backcountry and resort skier. He also created a popular blog, *Wasatch Weather Weenies*. Chapters in his new book explore mountain weather, avalanches and snow safety, historical accounts of weather events and snow conditions, and the basics of climate and weather forecasting. The book also features 150 color photographs.

Visit continuum.utah.edu *to watch a video of Steenburgh talking about his new book.*

U Health Care Wins Fifth Straight Top Award

University of Utah Health Care has won the University HealthSystem Consortium's Quality Leadership Award for the fifth year in a row.

The U placed among the top 10 in the prestigious quality and safety rankings, which compare teaching hospitals based on quality measures, patient safety and satisfaction indictors, mortality rates, and readmissions. This year, the University ranked sixth out of 104 participating medical centers.

"Being in the top 10 in quality means our community has access to some of the best health care in the country," says Vivian S. Lee, the U's senior vice president for Health Sciences, dean of the School of Medicine, and CEO of U Health Care.

The centers ranked among the top five were New York University's Langone Medical Center; the Mayo Clinic Hospital, Rochester; Ohio State University's Wexner Medical Center; Beaumont Hospital, Royal Oak; and Rush University Medical Center.

Red Butte Garden Ranked Second Most Stunning in World

The University of Utah's Red Butte Garden has been ranked by Best Masters Programs as No. 2 among 50 of the most stunning university arboretums and gardens. Best Masters is an independent online guide to master's degree programs. The list includes universities that emphasize conservation, sustainability, and education within their greenhouses, landscapes, and nature preserves. The gardens in the list are located around the world.

Gardens and arboretums considered for the list were identified using information from the Morton Register of Arboreta, Botanic Gardens Conservation International, the American Horticultural Society, and other public data sources. Evaluations were made based on garden size, variety of plant species, special accreditations, and unique attributes that contribute to the garden's atmosphere.

University Solar Plaza Provides Sustainable Gathering Space

The University of Utah in September completed construction on an environmentally friendly community gathering space for students living on campus. Located near the Peterson Heritage Center and between the Shoreline Ridge apartments, the Student Solar Plaza includes solar panel canopies with built-in tables and chairs, gas barbecue, fire pit, and electrical outlets.

"Students spearheaded this project because we were lacking an outdoor common area where we can comfortably study, hold activities, and visit with friends," says Jenna Matsumura, a student leader working with the project. "This space will not only help create a more cohesive community among the apartment residents, but it will also be a visual representation of our commitment to sustainability efforts."

Constructed into eight canopies, the 32 bifacial solar panels, which provide up to 35 percent more kWh than their standard module counterparts, will offset the electricity used by the residence halls.

Tiny Asteroid Now Bears University of Utah Name

An asteroid has been named "Univofutah" after the University of Utah. Discovered in September 2008 by longtime Utah astronomy educator Patrick Wiggins, the asteroid also known as 391795 (2008 RV77) this past September was renamed Univofutah by the International Astronomical Union's Minor Planet Center in Cambridge, Massachusetts. Wiggins says names must be limited to 16 characters, ruling out the U's full name. "There aren't too many other universities on the whole planet with asteroids named after them," says Wiggins, who works as a part-time public education assistant in the U's Department of Physics and Astronomy. "So that puts the U in rather rarefied company."

The asteroid "is no more than 2 kilometers (1.2 miles) across," he says. Because of its small size and distance, it is "too far away for even the Hubble Space Telescope to determine the shape."

American West Center Celebrates 50 Years at the U

The University of Utah's American West Center marked its 50th anniversary in 2014. The center, the oldest regional studies center in the West, focuses on preserving the region's history through oral histories, documentary archives, historical and policy analyses, textbooks, and a statewide curriculum.

"Regional studies illustrate both the unique aspects of a place as well as the different ways national and global changes are felt in communities," says the center's director, Gregory Smoak PhD'99, a U associate professor of history. The center's work has included collecting and archiving more

than 7,000 oral histories, many from Native Americans, Japanese Americans, and Utah's Latino and Latina residents; creating an extensive digital archive of documents pertaining to Utah's American Indian tribes; and providing educational support to the tribes and to school districts.

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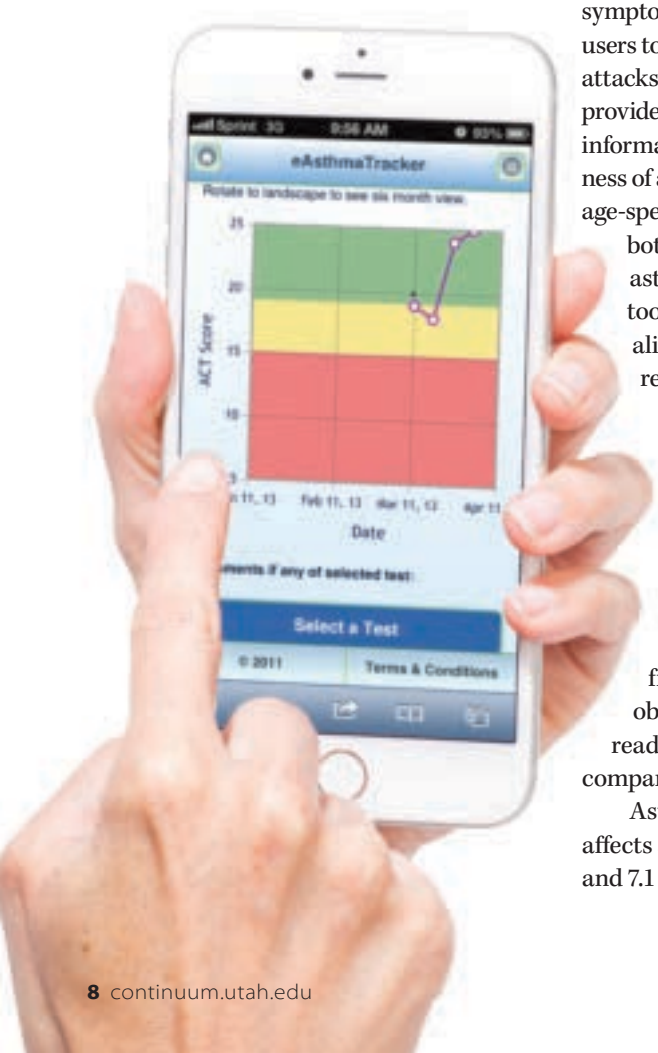
eAsthmaTracker Helps Children and Caregivers

A new online asthma tracking tool developed by researchers at the University of Utah focuses on preventing rather than managing exacerbations and has been shown to reduce emergency-room readmissions for patients who have used it.

The tracker, which has a responsive design that adapts to any size computer screen, including phones, is currently being tested by children, their parents, and their health care providers in the Salt Lake Valley in a study exploring how better monitoring of the disease could improve quality of life.

The eAsthma Tracker (e-AT) is designed to aid medical decision-making through regular gauging of asthma control, early identification of deteriorating symptoms, and ongoing communication between parents and their child's primary care providers. The tracker creates an "asthma control score" that illustrates if patients are doing well, or when an action is needed, such as use of an inhaler or even a visit to the doctor.



"The e-AT changes current ambulatory asthma care delivery to a new model that is continuous and proactive, focusing on prevention and control, rather than reactive and focusing on management of asthma attacks," says Dr. Flory Nkoy, research director for the U's Division of Pediatric Inpatient Medicine and associate research professor in the Department of Pediatrics, who is leading the research project. As of the end of 2014, Nkoy and his colleagues are closing the first year of a three-year, $1.9 million research award from the Patient-Centered Outcomes Research Institute to conduct the study.

The eAsthma Tracker helps parents monitor their child's chronic asthma symptoms on a weekly basis and guides users to recognize warning signs of asthma attacks. The tool also provides primary care providers with real-time, objective patient information to monitor the effectiveness of asthma therapy. The e-AT offers age-specific educational resources for both parents and patients, including asthma-related games and interactive tools, and allows patients to personalize their profile in order to receive reminders and alerts.

An early version of the tracker, developed by Nkoy's team in collaboration with Primary Children's Medical Center, was found to result in a significant reduction in emergency-room readmissions within six months of discharge. In a study of its use from 2008 to 2010, the researchers observed that users of the tracker had readmission rates of only 2 percent, compared with 15 percent for non-users.

Asthma is a chronic lung disease that affects an estimated 18.9 million adults and 7.1 million children in the United States. In Utah, 6.9 percent of children and 9.1 percent of adults suffer from it. According to the Centers for Disease Control, the exact cause is unknown, but asthma triggers include tobacco smoke, pet dander, mold, pesticides, wood smoke, and overall poor air quality.

As of October, the eAsthma tracker was being used by about 200 pediatric patients in the Salt Lake area. Nkoy and colleagues will compare the e-AT study's results with those in an existing care model, with the hope that the e-AT will produce better outcomes, such as a reduced number of missed school days and fewer acute care visits. "Our research enables and empowers families and their providers to take charge of a difficult to control condition and creates a model for sustainable, cost-effective patient care and smart utilization of information technology in a health care setting," says Nkoy. "This model is replicable across the country and has the potential to shape the future of asthma care delivery in the nation."

Asthma Facts

18.9 million adults and 7.1 million children in the United States suffer from the chronic lung disease

6.9 percent of children and 9.1 percent of adults in Utah have asthma

29 percent more people in Utah have asthma now than a decade ago, compared with 28 percent more nationally

60 percent of children with asthma visit emergency rooms because of the disease, at a cost of about $8,500 per visit

2 percent of patients using the eAsthma Tracker were found to have been readmitted to emergency rooms, compared with 15 percent for those who didn't use the online tool

—From the U.S. Centers for Disease Control and Prevention, the Asthma in Utah Burden Report 2012, *and the eAsthma Tracker team*

A Universal Tool in the Fight Against Ebola?

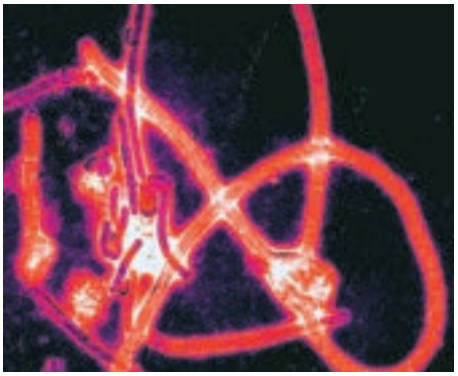
University of Utah biochemists have discovered a potential new tool to combat the Ebola virus. The U researchers have produced a molecule related to a critical region of the virus that is found in all known strains. The molecule, known as a peptide mimic, could be used in the development of anti-Ebola agents that are effective against both current strains and likely future strains.

The U research, funded by the National Institutes of Health, was conducted by a large collaborative team led by Debra Eckert, research assistant professor of biochemistry, and Dr. Michael S. Kay, professor of biochemistry, with contributions from other laboratories and the pharmaceutical discovery and development company Navigen. The researchers have been working on the discovery for years and published their findings in October in *Protein Science*.

"Although the current push of clinical trials will hopefully lead to an effective treatment for the Zaire species causing the present epidemic, the same treatments are unlikely to be effective against future outbreaks of a different or new Ebola species," Eckert says. "Development of a broadly acting therapy is an important long-term goal that would allow cost-effective stockpiling of a universal Ebola treatment."

Christopher Basler, a scientist with the Mount Sinai Global Health and Emerging Pathogens Institute who was not involved in the U study, notes that the U researchers are taking a different approach than others looking for Ebola treatments. "It's more likely to broadly block multiple Ebola viruses," he told *The Salt Lake Tribune*.

Ebola is a lethal virus that causes severe hemorrhagic fever with a 50 percent to 90 percent mortality rate. There are five known species of the virus, and outbreaks have been occurring with increasing frequency in recent years. The development of an effective anti-Ebola



agent to protect against natural outbreaks and potential bioterror exposures is an urgent global health need. No anti-Ebola agents have yet been approved by the U.S. Food and Drug Administration, but a number of promising experimental drugs are being aggressively advanced to clinical trials to address the current crisis.

The newly produced peptide mimic has shown promise in leading to new D-peptide inhibitor drug candidates. D-peptides are much simpler and less expensive to produce than the other currently most promising approach, antibodies. The Utah group has previously developed highly potent and broadly acting D-peptide inhibitors of HIV entry, currently in preclinical studies, and is adapting this approach to Ebola. The U and Navigen are now seeking additional funding to optimize these inhibitors and advance them into clinical trials in humans.

New Material Could Be Key to Superfast Computers

Quantum computers could revolutionize the electronics industry, offering processing speeds many times faster than today's technology, but until now, no design has been able to overcome one serious drawback: overheating. University of Utah engineers have found a way to create a special material that could lead to cost-effective, superfast computers that perform lightning-fast calculations but don't overheat.

This new "topological insulator"—a metal layer on top of a silicon semiconductor—behaves like an insulator on the inside but conducts electricity on the outside and may pave the way for quantum computers and fast spintronic devices. The research was led by Feng Liu, professor and chair of the U's Department of Materials Science and Engineering.

Since the discovery of topological insulators almost a decade ago as a class of material designed to speed up computers, scientists have been trying to create a topological insulator that creates a large energy gap. An energy gap is the amount of energy it takes for electrons to conduct electricity in a given material. A larger gap allows electricity to be conducted on a material's surface so a computer can operate at room temperature while remaining stable.

Liu and his team found that bismuth metal deposited on the silicon can result in a more stable large-gap topological insulator. The process also can be cost-effective and readily integrated with current widespread silicon semiconductor manufacturing techniques.

A FINE Line

Karen Azenberg is crafting a careful path to bring more cutting-edge works to Pioneer Theatre Company.

Story by Elaine Jarvik
Photos by Brian Nicholson

If you run a regional theater in America, you can sometimes find yourself in trouble. Not trouble with a capital T that rhymes with P and stands for pool, because that would be *The Music Man*, which is always a safe bet. No, we're talking about trouble that can make you lose season subscribers.

Which brings us to the stage of Pioneer Theatre Company at the University of Utah, where one afternoon this past fall artistic director Karen Azenberg sat fielding questions from a talkback audience that had just seen *The 25th Annual Putnam County Spelling Bee*, which Azenberg also directed. The funny, softhearted musical includes a song in which a middle-school speller bemoans his "unfortunate erection" as he waits his turn at the microphone. At PTC, though, a milder version of the song, this one called "My Unfortunate Distraction," was used for all but two shows of the two-week run. "Why?" wondered an audience member in row D.

Azenberg smiled and jumped right in with a little lesson on the politics of theater. The musical's lyricist, she explained, provided two versions of the script. So at PTC, where many season-ticket holders expect a tame theater experience, she mostly opted for the "distraction" version. Still, she pointed out, there were many audience members who felt just as strongly that Pioneer should have used the "less mild" version. Just the week before, in fact, a subscriber had called to say he was giving back all his future tickets in protest.

Now in her third season as artistic director of PTC, Azenberg knows that if you run a big theater in a place like Salt Lake City, sometimes you're caught in the middle, trying to please everyone.

****

Azenberg is a New Yorker to her core but is no stranger to American regional theater, having worked as a freelance choreographer and director for three decades in 28 states. When she heard that Pioneer Theatre Company's artistic director Charles Morey would be retiring after a 25-year career, she put her name in the running, along with nearly 100 other applicants.

Azenberg was chosen in 2011 and officially took the reins the next summer. She was the unanimous choice, says Chris Lino, PTC's managing director, who sat on the selection committee. Azenberg was well known to the PTC staff because she had been guest director and choreographer of

Rent, *Next to Normal*, and *Miss Saigon*, and choreographer of the sell-out *Les Miz* in 2007.

"We knew how smart she was," says Lino. "Plus she knew every director in the country, including the up-and-coming directors, and that was very attractive to us." At the time, Azenberg was president of the board of the Stage Directors and Choreographers Society, the national union for her crafts. She currently serves on the advisory board and is also a board member of the New York Musical Theatre Festival, a launching pad for new musicals.

"A lot of the applicants, on paper you'd think this is your dream candidate," Lino says. (Some, in fact, had worked as artistic directors at well-known theaters, and Azenberg had never run a theater of any size.) "But none of them matched what Karen brought to the table."

David Ivers, artistic director of the Utah Shakespeare Festival, who directed *One Man, Two Guvnors* at PTC this year, describes Azenberg this way: "The thing that sets her apart is she has theater in her DNA. She has in her bones an innate understanding of how the theater world works"—including years of tagging along with her father.

Emanuel "Manny" Azenberg began his career as company manager for touring and Broadway shows, and later

Karen Azenberg works with performers in a Pioneer Theatre Company rehearsal for The Rocky Horror Show.

was producer of most of Neil Simon's plays, as well as producer or general manager for blockbusters including *Rent*, *George M!*, and *Sunday in the Park with George*. Ten of the plays he has either produced or managed have won Tony Awards, and in 2012 Azenberg himself won a "Lifetime Achievement in Theatre" Tony.

Long before there were take-your-daughter-to-work days, Manny took little Karen to the theater (and also sometimes to watch him play softball with Robert Redford in the Broadway Show League). "You sit there," her dad would instruct her, and so from a chair backstage she would watch the show behind the show.

Pioneer Memorial Theatre is affiliated with the U's College of Fine Arts.

"How I work here," she says about her life now at PTC, "is how I perceive he worked; it's my model." That means dropping in every day to chat with scenic carpenters and the costume shop, and wanting to know all the details about lighting and sound boards and props.

But Manny Azenberg told his daughter over and over: "Don't go into theater."

"As a kid," she says, "this is how I translated 'Don't go into theater': Don't be an actor. So I said, 'Okay, I'll be a dancer!' " Of course she meant dancing in musical theater, and the showdown came when it was time to go to college.

"There were lots of tears, and me saying 'I can't just dance three times a week! I have to dance all day every day!' " She ended up majoring in dance at New York University, and she wonders now if her father's opposition was a kind of test, to see if she had the drive to make it in a business that can be brutal.

****

You might think that the daughter of a Broadway producer would have an easy entrée to Broadway. "Oh, no," she says. "He hates nepotism… Dad's theory is, anything you achieve, you achieve on your own."

So he gave her a job answering phones in his office, which helped pay the bills as she auditioned for dance roles. In her early 20s, she got her first choreography job, in a summer stock theater in Connecticut. Then her work was noticed at a community theater in Manhattan, and from that came a chance to choreograph a revue at the Smithsonian, and that led to a gig choreographing *Sweeney Todd* at Michigan Opera Theatre, and the next year, at age 24, choreographing *West Side Story*.

But there were also plenty of dry periods. And this is where being Manny Azenberg's daughter did get her a foot in the door. When one of his shows moved

to Broadway and in a pinch they needed an assistant stage manager, they hired her because they knew she was adept at coordinating sound, lighting, and scene-change cues for performances. And from there came other offers, including *Brighton Beach Memoirs* and *Master Harold and the Boys*.

"Pay her minimum," Manny insisted.

Her next big break came in 1989 when she was choreographing *Guys and Dolls* at Indiana Repertory Theatre. "You think like a director," the artistic director told her, and the next year he offered her a job directing. "Like many things, I thought, 'Oh, I can do that,' and so I did," Azenberg remembers. "I was winging it." Later, that same self-confidence led her to apply for the artistic director job at Pioneer Theatre Company.

The Utah job felt like a once-in-a-lifetime chance. But it also meant that her husband, Augie Mericola, would have to give up his job as head of props for the Broadway company of *Wicked*. And it meant uprooting their son and daughter, then 12 and 15. On the other hand, their home was an hour commute into Manhattan for Augie, and her job as a freelance choreographer and director meant being gone for long stretches of time. On the *other* other hand, her daughter hated the idea of moving so much that she offered to live in their car in the garage of their house. In the end, though, Utah won out.

"There are a lot of theaters in the U.S., but not of this size, with this kind of facility, with this kind of financial stability," Azenberg explains.

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Like her favorite musicals, Azenberg is high-voltage and straightforward. "You always know where you stand with her, which is a rarity in the theater," says the Shakespeare Festival's Ivers. Adds PTC resident scenic designer George Maxwell: "She's very precise, and she doesn't give up until she gets what she wants."

A person driven like that can sometimes get stressed out, of course. "I have a barometer of how stressed she is by her hair," says PTC managing director Lino. "It has its own emotional life."

PTC runs a "very lean ship," says Lino. "Our peers—large middle-America theaters with at least a $4 million budget—all have larger budgets but don't produce work as big as ours. A greater percentage of our operating budget goes into what you see on stage." (The 932-seat theater is affiliated with the University of Utah's College of Fine Arts but gets no direct funding from the U.) "Karen knows how to stick to a budget," Lino adds, "because she instinctively prioritizes. Not every artistic director can also think like a producer."

Azenberg travels back to New York seven or eight times a year, to do auditions for PTC shows (most hires are New York actors, although she also auditions in Salt Lake and hires a fair number of

locals), and to see what's new on Broadway and off—a requirement since she's a Tony Awards voter. That also puts her in the loop for what new plays and musicals might be a good fit for PTC.

In sheer volume of potential audience members, Pioneer's biggest rival is Broadway Across America and the "Broadway-style" 2,500-seat mega-theater now under construction three miles away in downtown Salt Lake City. Here's how Azenberg and Lino explain the difference between the two venues: The caliber of the actors is equal, but PTC's stage design, costuming, and other crews are Utahns who pay Utah taxes; the tickets are less than half the price; and, says Azenberg, "our productions are staged for this theater and this cast, so everything is fresh for this production." Of course, convincing Utahns to pick PTC over the tour is a hard sell, especially when the tour is *Wicked* or *The Book of Mormon*.

Would Pioneer Theatre Company ever stage the irreverent, award-winning *Book of Mormon*? The theater chose not to stage Tony Kushner's *Angels in America* two decades ago. "There was no way we could do that in this theater, named after the pioneers, and not have a large part of our audience think we were attacking them," Lino recalls. Azenberg says she figures that by the time the rights to *The Book of Mormon* become available for regional theaters, she'll "be sitting in an old-age home somewhere."

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Theater audiences in general are a graying lot. But the average age of season-ticket holders at PTC has dropped from 65 to 55 in the past 10 years, and from 55 to 45 for single-ticket sales—perhaps because, over the years, the shows have incrementally included newer works, not just the old chestnuts.

"I like doing fun and good and eclectic theater... I'm trying to cover as wide a range of content as possible."

Karen Azenberg recently started a new play-development reading series at PTC, called Play-by-Play.

Azenberg strives for a balance in each theater season: mysteries and musicals, comedies and drama, familiar and surprising. "I like doing fun and good and eclectic theater," she says. But she knows "not everyone is going to like everything." Sometimes there are nasty letters and phone calls.

During her second season, some audience members called and wrote to say they had blanched at the interracial casting of *Elf: The Musical*. And there was a flap over a three-second gay kiss in the murder mystery *Deathtrap*. (Twenty years ago, PTC became one of the first big regional theaters to institute a "content advisory," but to have warned the audience about this kiss would have been a plot spoiler, Azenberg says.) "I'm not producing these plays and musicals to offend people," she adds. "I'm trying to cover as wide a range of content as possible."

To reach newer audiences, Azenberg has also instituted "concert" performances (including the recent scaled-down version of the camp musical *The Rocky Horror Show*) and a new-play-development reading series, Play-by-Play—no sets, no costumes, just actors reading from scripts she has culled from the hundreds sent to her from playwrights across the United States.

She hopes Play-by-Play will draw a new Utah audience. But she also knows that new play development can boost Pioneer's standing among actors, directors, and writers nationwide, as PTC launches world premieres that might have a chance of making their way to New York because of Azenberg's connections. "When I arrived, Pioneer Theatre Company had a wonderful but quiet reputation—which is starting to change," she says. "Now we are still wonderful, but a little more raucous."

—Elaine Jarvik is a Salt Lake City-based freelance journalist and playwright and a frequent contributor to Continuum.

Visit continuum.utah.edu *to view a gallery with more photos.*

U researchers Krista Carlson and Swomitra Mohanty run water samples taken from the pond at Salt Lake City's Liberty Park through their SolaPur water purification device.

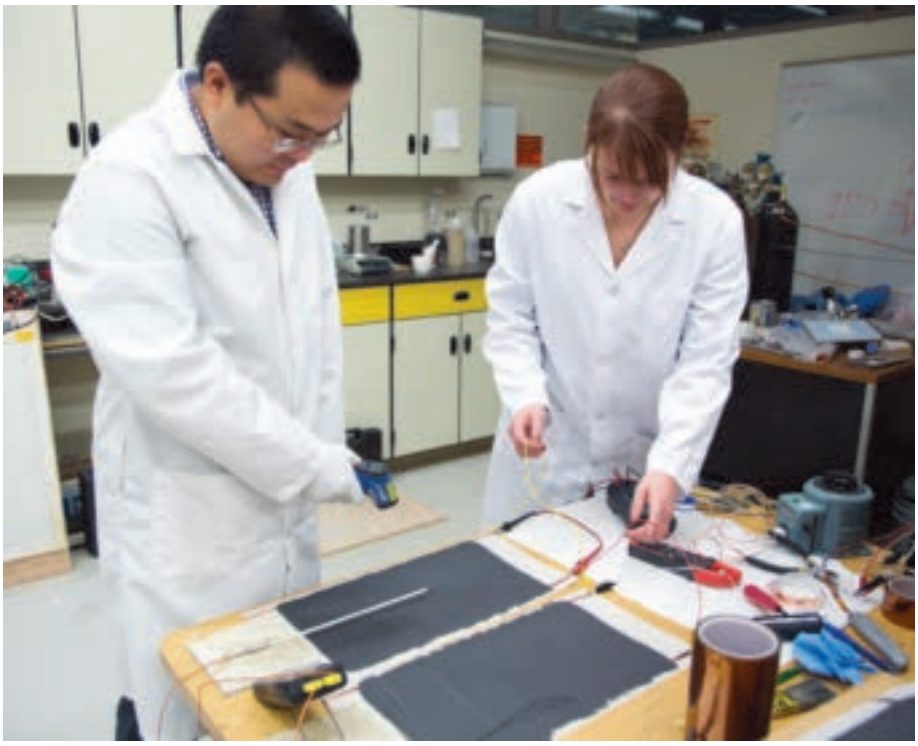
MARKETING INNOVATION

The U's Technology and Venture Commercialization office is moving ideas from discovery to practical application.

Story by Kim M. Horiuchi *Photos by Keith Johnson*

The canning jar containing a quart of murky, brownish-yellow water sits at the front of the room. The water has been disinfected with iodine and is unquestionably unappealing. "If anyone wants to try it, we've got cups," Jason Young calls out to the 50 or so investors, inventors, entrepreneurs, and industry executives gathered to hear about some of the latest technologies discovered and developed at the University of Utah.

No one grabs a paper cup from the stack for a drink of the cloudy water. But there is plenty of interest in an invention that will make iodine-treated drinking water unnecessary. Young BS'01 MD'10, a business development manager with the University of Utah's Technology and Venture Commercialization (TVC) office, passes around a prototype of the solar-powered water purification device. No bigger than a cell phone, the white plastic rectangle contains a maze-like



Ninghai Su, left, a University of Utah postdoctoral researcher, and Megan Bulte, an undergraduate student, run tests on Nanoxene, a nanocomposite that may change the way homes are heated.

framework holding a coiled metal wire arrayed with microscopic titanium dioxide nanotubes. Using ultraviolet light to produce free radicals, the device can decontaminate a liter of water in five minutes. It weighs about one ounce and is expected to retail for around $40.

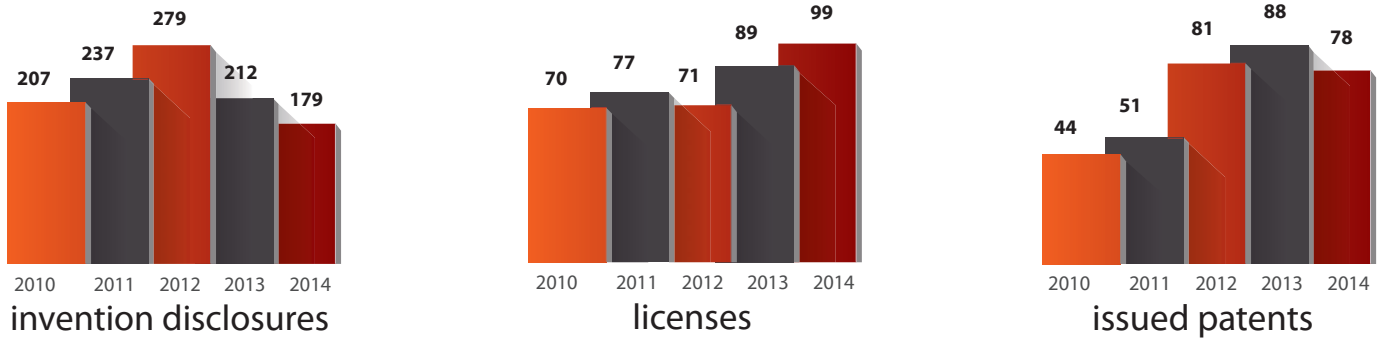
The water purifier was invented a year ago by Krista Carlson, a research associate with the U's Metallurgical Engineering Department, and Swomitra Mohanty, a research assistant professor in the Department of Chemical Engineering, and they are looking for help to get it to market through their company SolaPur. More than a hundred inventions such as their water purifier are disclosed each year at the University, and more than a dozen start-up companies are formed annually to market them. Assisting them is the U's Technology and Venture Commercialization office. Since 1967, that office and its precursors have been responsible for managing all of the University's intellectual assets, as well as those of its medical centers and hospitals, the Huntsman Cancer Institute, and ARUP Laboratories. The technology commercialization office has helped launch leading companies such as Myriad Genetics, BioFire Diagnostics, and Anesta, as well as hundreds of lesser-known, smaller start-ups.

Each year, the U office manages dozens of new patents and licenses, invests hundreds of thousands of dollars in technology development, and brings to the mainstream inventions that range from a compound that could prove to be the next major class of antibiotic to a new type of radiant floor heating. In the last 45 years, 5,500 inventions have been disclosed by researchers and faculty at the University of Utah, and 230 spin-off companies have been launched from those technologies.

"If you think about a modern university, there are traditionally two really big legs of a stool: teaching and research; and those are really important," says Bryan Ritchie, who has led the University's TVC office since 2011 as the U's associate vice president for research commercialization. "What the U has done is legitimize a third leg of the stool, which is commercialization."

Like its counterparts at most universities across the country, the U office has historically handled "technology transfer" and been responsible for licensing inventions to existing companies and start-ups. At that point, it was the licensees' job to develop and ultimately commercialize the technology. During the past three years, however, the U office has been focusing on building value for inventors and the University through not only licensing and patenting intellectual property but building sustainable ventures and finding viable markets for those inventions. Since the office's incep-

U Technology Commercialization Numbers



Source: U Technology and Venture Commercialization Office

tion in 1967, 21 faculty members have become millionaires by commercializing their inventions, including 15 or 16 in the last decade, and revenue back to the U from the companies and technologies totals tens of millions of dollars each year. "We're not just transferring but also commercializing and creating ventures," Ritchie says. "I think we're really leading the country in how this happens."

Bryan Ritchie, whose office is in Research Park at the University of Utah, has been the University's associate vice president for research commercialization since 2011.

Because the University owns all intellectual property at the U, faculty and researchers must disclose their inventions to the U Technology and Venture Commercialization office. The University does not own the intellectual property of student inventors, so their work with the TVC office is optional. The office currently assists about five to 10 student-led companies. It also works closely with the U's David Eccles School of Business, which just this fall was ranked by *Princeton Review* as a top-25 school for entrepreneurship for the fourth straight year. The U tech commercialization office collaborates, too, with the Lassonde Entrepreneur Institute, which broke ground in October on the new Lassonde Studios student center. Each year, about 40 students also work with the TVC office as interns who assist in the commercialization process.

Darrel M. West, founding director of the Center for Technology Innovation at the Brookings Institution, a Washington, D.C.-based nonprofit public policy organization, applauds the U's focus on giving faculty the tools they need to create a successful business around their inventions. "That's where faculty members need help," he says. "Professors are great coming up with ideas, but it's hard for them to develop a business and find capital and bring their ideas to market."

Like the U, universities across the country are recognizing that successfully commercializing technologies goes beyond tracking the number of patents filed and start-ups launched each year, he says. "Universities are putting much more effort into commercialization. They know there is value in what is being created by faculty and students." Commercializing technologies also brings money. "Almost every university is looking for new revenue sources," West says. "Research and development is a big growth area."

> "We want to start a lot of good companies. We want to create the foundation for those companies to succeed."

The U has consistently ranked near the top among universities in the United States for the number of spin-off companies it has created, according to the Association of University Technology Managers. In 2010, the U ranked first in the country, along with the Massachusetts Institute of Technology, in creating new start-up companies around research-based inventions, and it was first again in 2011. But the recognition also came with questions about whether the University was starting companies that would last, and Ritchie notes that only 3.4 percent of inventions at the U have produced revenue and just .7 percent have returned more than $1 million to the University.

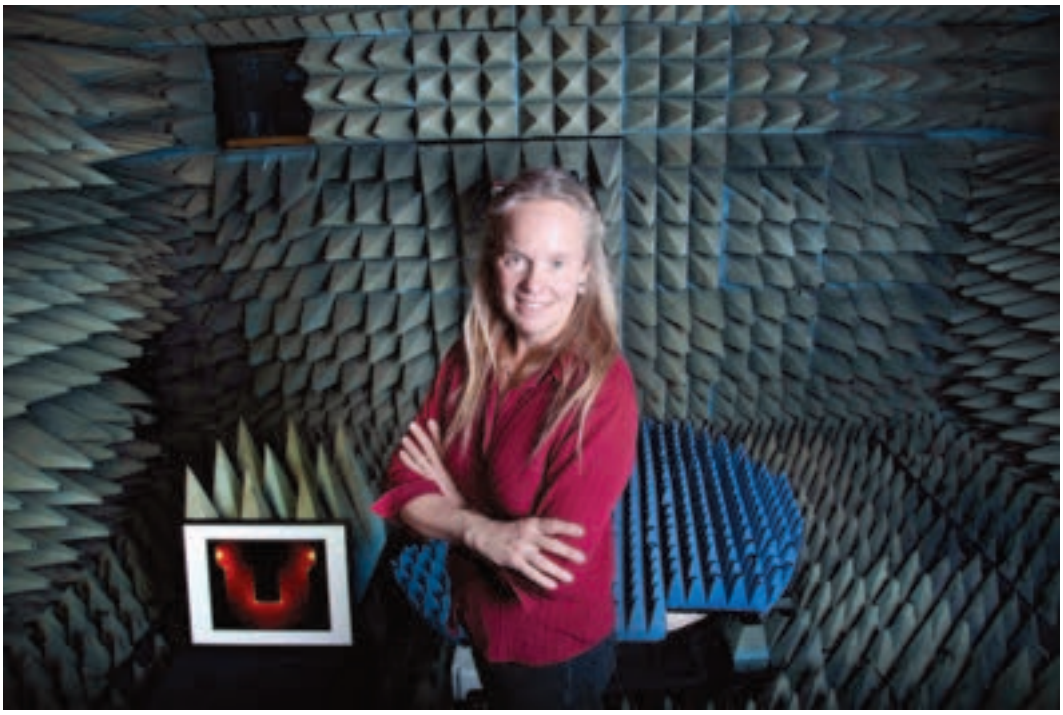
"At some level, I do think it is important that we are a leader in start-ups, but we don't have to be No. 1," Ritchie says. "If we're in the top five, I'm really pretty happy. It's only one metric; it's only one measurement. It's an important one, but by itself, it doesn't mean all that much because we could start a hundred companies that weren't worth anything, and who cares, right? So we do want to start a lot of companies, but we want to start a lot of good companies. We want to create the foundation for these companies to succeed."

The focus is now less on the number of start-ups and more on the quality of management, investment, and structure of the start-up, he says. The University's new vision also came with a new name. Formerly the Technology Commercialization Office, TCO became TVC last year to emphasize its dedication to building ventures.

Past practice too often shelved inventions after they were disclosed, and that was the end, Ritchie says. Now, after an invention is disclosed, his office makes contact with the inventor within two weeks and begins assessing the technology, its possible applications, and options for commercializing it. The office then helps protect the intellectual property by completing patent filings. Next, staff members gather feedback from experts and define milestones to help bring the invention to market.

Ritchie also has started an "engine process" at the U. Every eight weeks, the Technology and Venture Commercialization office brings in about 100 industry executives, entrepreneurs, and private investors from across the country to attend "engine meetings." There, researchers and inventors present their latest inventions and technologies. The company executives sometimes decide one of the inventions is worth their investment, but mostly they advise TVC staff on how to assess the potential of the technology, and they aid with networking and identifying markets. The business leaders even advise on whether an invention is worth continued investment from the TVC office. Last year, the office put more than $500,000 into University of Utah technologies for development.

Bradley Collings, a businessman who has launched several of his own information technology and records storage companies, is a regular at the engine meet-



Cynthia Furse, the U's associate vice president for research, stands in an electromagnetic anechoic chamber for measuring antennas, at the U's College of Engineering, where she is a professor of electrical and computer engineering.

ings. Collings, who lives in South Jordan, Utah, began attending after TVC leaders invited him, because he thought it would be a good networking outlet. He now volunteers tens of hours each week as a business mentor to faculty members and TVC staff. The thrill of starting up a company and moving inventions from lab to market keeps him coming back, he says. "Don't kid yourself: There are some amazing technologies coming out of the University, and I think people are recognizing that."

The "engine process" also is used to identify inventions and technologies that have no chance at commercialization, Ritchie says. "Some people see us as a gardener over here, and maybe that's true to some degree, but we're also an executioner. We want to make sure we're not putting resources and time into things that don't have an opportunity, and we want to learn that as fast as we can."

Ritchie knows firsthand the intricacies of creating a company. He began his career in the computer industry, developing products for companies including Iomega, Megahertz, and Novell. Fluent in Thai and Laotian, he spent a year in Asia working under a Fulbright-Hays fellowship. He also owned and sold two of his own companies, both in the computer industry. "My first company was wildly successful and took off, just exploded. I remember thinking, 'Wow, this entrepreneurship thing is pretty easy.' My second company was a slog," says Ritchie, who holds an MBA from Brigham Young University and a doctorate in political economy from Emory University. "It was so hard, and we ended up exiting and selling, but not in a way that made us very much money. I learned far more from the second venture than I did from the first."

After launching his companies, Ritchie worked as an economics professor at Michigan State University for a decade before coming to the U. He has a patent pending at Michigan State for technology he invented to convert biomass into alternative energy and is currently going through that institution's technology transfer process. "Michigan State is like most universities. They're almost waiting for a lucky bounce of the ball to have someone come in and pick it up."

Cynthia Furse BS'86 MS'88 PhD'94, associate vice president for research at the U and a professor of electrical and computer engineering, agrees that the TVC office's work is much different than what other universities are doing. "I originally had this delusion, and it is a delusion, that the scientist takes their idea and tosses it over the

Economic Impact

16,000 jobs created

$300M in investment funding that U spin-offs have secured since 2011

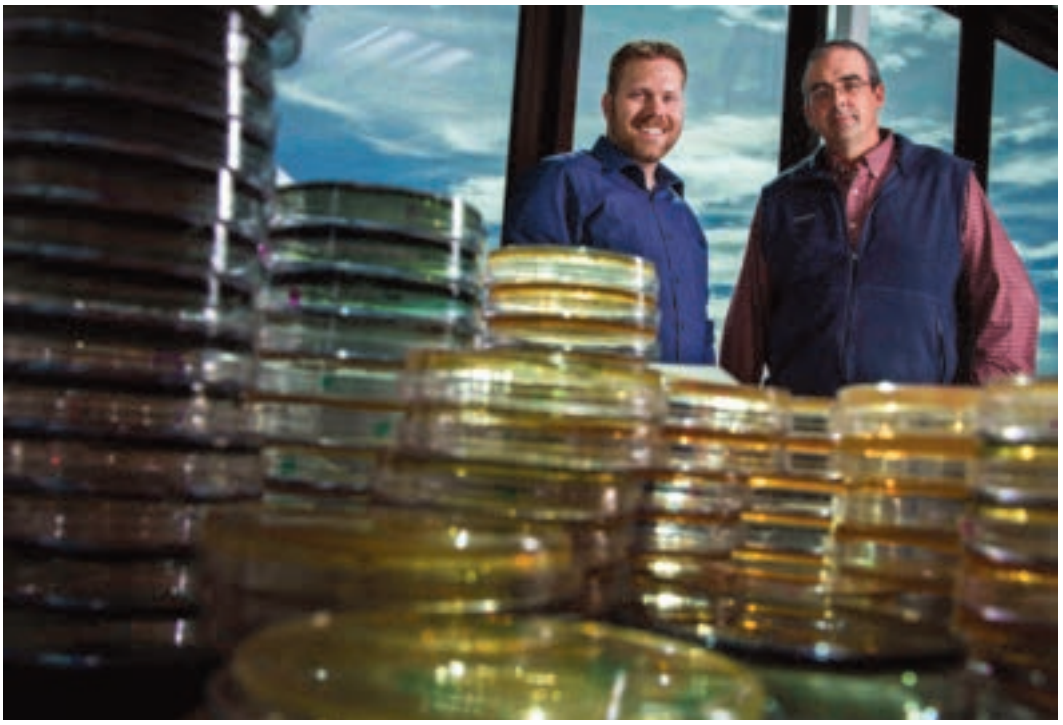
234 spin-offs created since 1970

59% higher average salaries at U spin-off companies than the statewide average

Sources: U Bureau of Economic and Business Research and U Technology and Venture Commercialization Office

fence to the business community, who then markets it," says Furse, who started her own company, LiveWire Innovation, in 2002. "That's a brilliant idea, but it doesn't work. So you have to do a combination of teaching the technologists about business and teaching the business side about technology, and that's when you see how it starts fitting together."

Furse is working with TVC to find markets for LiveWire, which produces handheld devices that detect faults in electrical wires. The technology is replacing outdated, cumbersome, and sometimes dangerous equipment in mines and could be used by the airline industry to find faulty wiring in planes.



Dustin Williams, left, a U professor of orthopedics, and Ryan Looper, an associate professor of chemistry, worked with the Technology and Venture Commercialization office to create a company to market their antimicrobial compounds.

Another start-up company the TVC office is assisting, Curza, was created last year to commercialize antimicrobial research by Dustin Williams PhD'12, a U research professor of orthopedics, and Ryan Looper, U associate professor of chemistry. Curza is in the process of commercializing more than 130 classes of the chemical compounds that kill, disperse, and inhibit growth of bacterial biofilms, including those that have developed antibiotic resistance. The researchers have secured two patents and 12 provisional patents and are working with the U.S. Food and Drug Administration to prepare for clinical trials. The hope is that the compounds can be used in an ointment to treat serious wounds, such as diabetic foot ulcers or military injuries. The compounds could also be used in industrial settings to disperse bacteria buildup.

Feng Liu, chair of the U's Department of Materials Science and Engineering, is working with the TVC office to commercialize Nanoxene, a multi-component nanocomposite he discovered that may change the way homes are heated. The substance graphene is a key ingredient of the material, which Liu paints onto plastic sheets that have electrodes on each end to conduct heat. The sheets can be laid under flooring to provide radiant heating. Liu has received a provisional patent and hopes to market his technology in the next two years to the high-end home market through his new company, Life-E.

SolaPur's Carlson and Mohanty expect to begin taking orders for their water purification device next July, and plan to market it to backpackers and other outdoor enthusiasts. The purifier was a huge hit at last year's Outdoor Retailer show in Salt Lake City, where they showed a prototype. The solar device also may eventually be used on a larger scale to help in developing nations that lack ready sources of clean drinking water.

At the recent U meeting where the device was presented to investors and industry leaders, Young, from the U's Technology and Venture Commercialization office, noted that it could be very appealing to the 8.7 million backpackers in the United States who make up an estimated $435 million market, or to anyone for that matter who doesn't like the taste of iodine. At the end of his pitch, he pointed once again to the jar of discolored liquid. "Anyone thirsty? We still have this water up here."

> "You have to do a combination of teaching the technologists about business and teaching the business side about technology."

—Kim M. Horiuchi is an associate editor of Continuum.

Visit continuum.utah.edu *to view a gallery with more photos of the researchers and their work.*

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Storms can wreak havoc on power lines causing unexpected outages. We work as quickly as we can to restore power. In the meantime, it's important to be storm ready with an outage kit that includes flashlights, extra batteries, bottled water, ready-to-eat foods and warm blankets. Get outage updates at **rockymountainpower.net/outage**, or on your phone at **rockymountainpower.net/mobile**. Follow us on Twitter **@RMP_Utah**.

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Clearing THE Air

Photo by Sebastian Hoch

A haze of air pollution due to a winter weather inversion hangs over the University of Utah's J. Willard Marriott Library and other nearby campus buildings.

A U interdisciplinary program aims to become a national resource on improving air quality.

By Jennifer Dobner

Every day, Ron Fessenden clicks open the in-box for his email account and looks for the daily air quality indicator messages distributed by the Utah Division of Air Quality. Depending on the reading—red, yellow, or green—the retired local television sales executive and onetime University of Utah sports information director decides how he'll spend his day. "When the air quality starts to get bad, I just don't go outside," the Midvale, Utah, resident says.

Fessenden suffers from idiopathic pulmonary fibrosis (IPF), a little-known, progressive disease that is slowly scarring and hardening his lungs. His disease has progressed more rapidly over the last year, and eventually, IPF will kill him, just as it does roughly 40,000 people annually in the United States. Diagnosed seven years ago after seeking a doctor's care for a persistent dry cough, Fessenden uses supplemental oxygen round the clock and has had to give up many of the things he loves. That includes

Dr. Robert Paine, professor and chief of pulmonary medicine in the University of Utah School of Medicine, co-founded the U's Program for Air Quality, Health, and Society and serves as its director. The program brings together University researchers from diverse disciplines to study the various impacts of air pollution.

his beloved golf game, just when he "was finally getting good," he jokes. "I can't take a deep breath," he says, and he also must pause at the halfway mark when coming up the stairs from his basement. "It really limits the things you would like to be able to do and hampers your quality of life."

Fessenden has been a willing participant in five different University of Utah-based drug trials that sought to cure his disease. None provided any relief, but Fessenden says he's encouraged by news that U researchers across a wide range of fields—from biology and bioinformatics to engineering, epidemiology, medicine, meteorology, and more—are now working together on projects aimed at understanding the connections between pollution and health. The research is part of the University's Program for Air Quality, Health, and Society, a two-year-old initiative designed to foster cross-disciplinary, collaborative study of all facets of air quality in hopes of identifying pathways for reducing pollution and improving quality of life for those in Utah and beyond. University leaders hope the program will establish the U as the national leader in research and information on air pollution and health, as well as innovative ways to help solve the problems.

"As a major research institution, we at the University of Utah are uniquely positioned to bring together the expertise from health and epidemiology to engineering, atmospheric science, urban planning, and more to tackle the challenge of improving our air quality," says Vivian S. Lee, senior vice president of University of Utah Health Sciences, dean of the U Medical School, and chief executive officer of U Health Care. "We view this as both an opportunity and an obligation."

Winter weather inversions are common along Utah's Wasatch Front and occur when a layer of warm air traps cold air, and pollution, in the valleys.

"As a public research university, it is imperative that we lead in efforts to address societal challenges."

Ruth Watkins, senior vice president of academic affairs, shares Lee's view on the importance of interdisciplinary collaboration in the endeavor. "Air quality is a significant issue for the people of this region, the state of Utah, and beyond," Watkins says. "As a public research university, it is imperative that we lead in efforts to address societal challenges. The quality of our air and environment is closely linked to quality of life, and this is core business for the University of Utah."

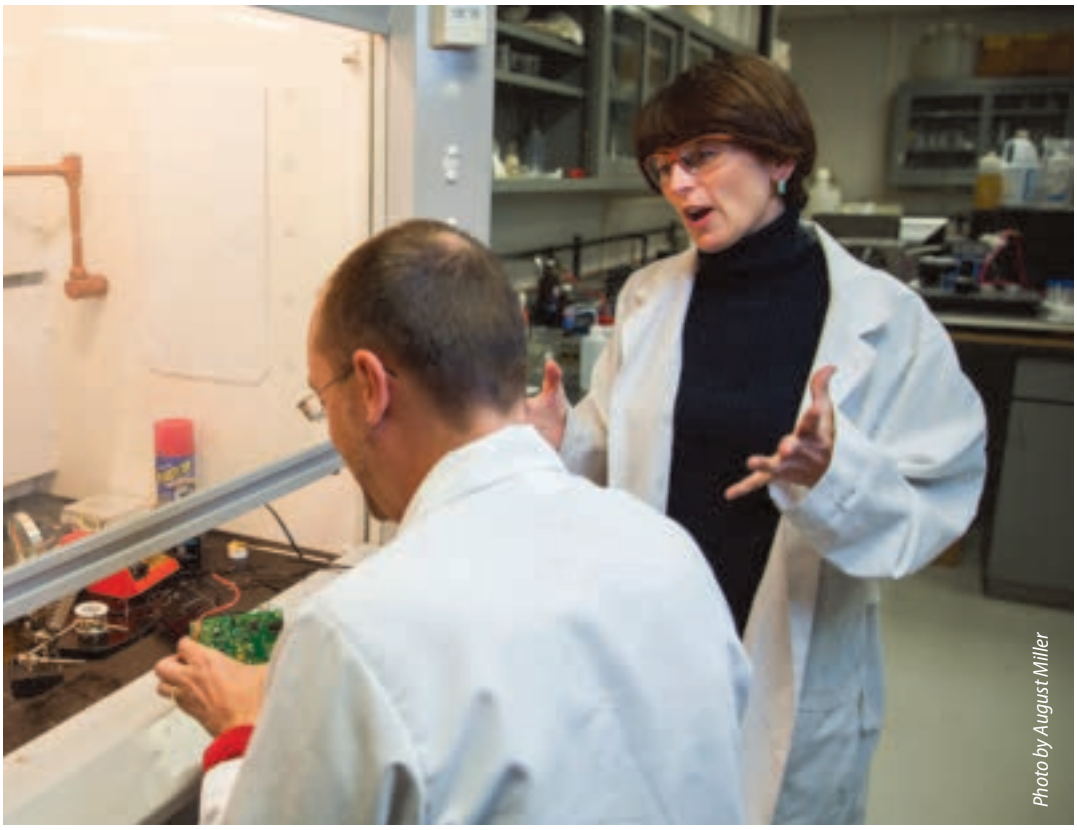
Utah has attracted national attention in recent years for its air quality problems. Winter inversions trap pollutants in the Cache and Salt Lake valleys, and ozone levels leave a haze over much of the Wasatch Front, primarily in the summer but also across the Uintah Basin in winter months. At times, pollution levels have been so high during a single 24-hour period that the U.S. Environmental Protection Agency has placed some Utah communities at the top of its list for cities with the nation's worst air. In 2013, daily EPA monitoring in 10 Utah counties found air pollution levels exceeded national healthy air standards a combined 99 times.

The problem has raised the ire of Utahns worried about the impact of breathing bad air, which has been linked to a range of health problems, including increased incidence of asthma, cardiovascular disease, and dementia, as well as adverse outcomes for babies in utero, including low birth weight and high infant mortality. In January 2014, more than 4,000 concerned Utah residents, many wearing gas or surgical masks, rallied at the Utah Capitol, demanding more aggressive state action on the issue. State lawmakers responded by proposing a record number of legislative solutions, although only a handful passed and none include regulatory standards that are tougher than those already imposed by the EPA.

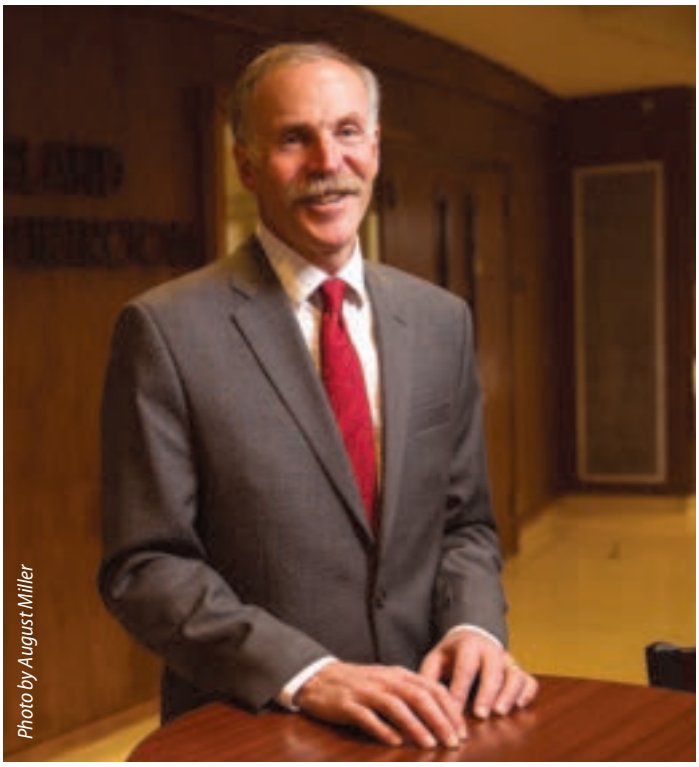
Beyond its impact on health, the pollution has economic costs, including lost work days due to illness and increased health care costs. The air pollution also has an impact on employee recruiting for Utah businesses. And it can present costly regulatory challenges for industries large and small.

It's a problem Lee knows about firsthand. When she was hired at the University of Utah in 2011, she had planned to bring three New York University faculty members with her as members of her research team. To her dismay, however, one declined, citing significant concerns about air quality. "I know I'm not alone: Many other Utah business leaders frequently report about the challenges they face in convincing companies to relocate to our wonderful state," Lee says. "And as a health care institution, we are particularly concerned about the impact of air pollution on the health of our patients and on the broader community, including our employees."

The U's Program for Air Quality, Health, and Society is the brainchild of Dr. Robert Paine, chief of pulmonary medicine at University Hospital, and Kerry Kelly, a College of Engineering researcher. The pair met by chance in 1999, when both were appointed to the state's Air Quality Board and were assigned to sit next to each other at a meeting. The appointments launched a friendship and a conversation about the need for University



Kerry Kelly, a University of Utah chemical engineering researcher who helped co-found the University's Program for Air Quality, Health, and Society, works with U student Timothy Carter on some sensor equipment in a campus laboratory.



Robert Adler, dean of the U College of Law, says scientific advances from the U air quality research may help lead to better environmental law and policy.

collaboration between academic disciplines, many of which were already, albeit separately, engaged in cutting-edge air quality science. "We needed an umbrella, and we needed a catalyst to greatly enhance what we do," says Paine. "One of the key things about air pollution is that it's easy to do pieces of research. It's much harder to come up with opportunities where we bring all these pieces together and say, 'How do we go from what's emitted to what the health consequences are?' "

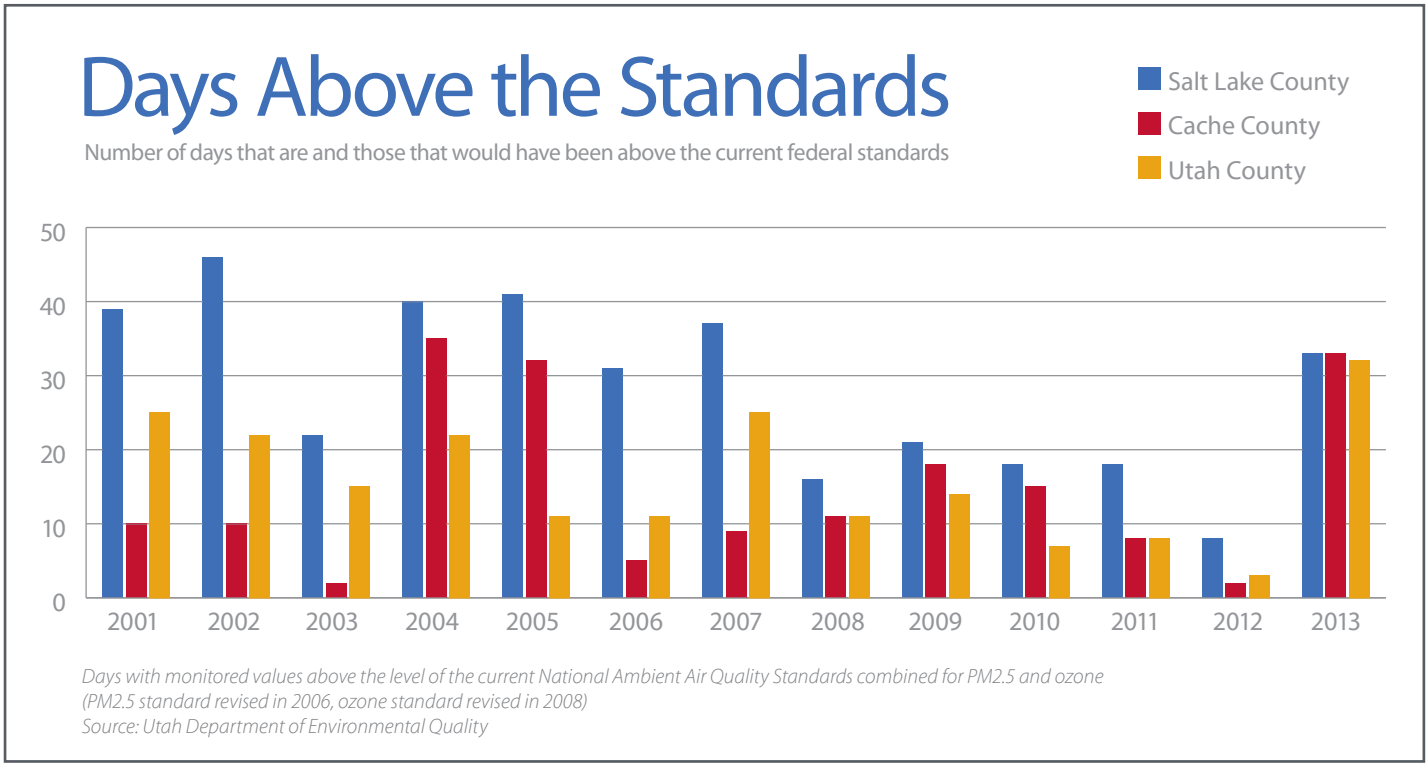
The pair believed that the U's academic experts and researchers were well suited to the challenge. So after six years of conversation, Paine and Kelly in 2011 crafted a proposal for the Program for Air Quality, Health, and Society and began a conversation with University leaders.

"The idea was that we're much stronger together," says Kelly. "It's not just a health problem and also an engineering problem, it's an atmospheric science problem, and we're going to come up with better solutions if we all get together and take advantage of everyone's expertise."

University leaders agreed. By 2012, Paine and Kelly had secured enthusiastic support, as well as some funding, from Lee, Watkins, the office of the vice president for research, and the College of Engineering. Paine now serves as the program director, and Kelly is the associate director. The program's steering committee also includes representatives from atmospheric sciences, biology, chemical engineering, internal medicine, law, and pediatrics.

The program's first event, a spring 2013 retreat designed to stir up interest in cross-disciplinary projects, drew nearly 100 curious U investigators and spurred a number of grant requests. Research began in earnest in January 2014, when the program distributed $165,000 in grants from the University's Funding Incentive Seed Grant Program, which is administered by the office of the vice president for research. Kelly says the six projects were selected based on their potential to advance science and draw additional large grants from organizations such as the National Institutes of Health or the EPA.

The seed grants have supported both first-time research and ongoing work. One grant, to obstetrician and gynecologist



"Good decisions about complex issues are always informed by better science and related policy analysis."

Jeanette Carpenter-Chin, is allowing her to study a suspected link between in utero exposure to air pollution and children's health. The study focuses on children whose pregnant mothers were exposed to air pollution from Utah County's Geneva Steel Mill in the 1980s.

Another study, led by Russ Richardson PhD'92, a U professor with joint appointments in internal medicine and exercise and sport science, examines the effects of particulate air pollution on vascular function in chronic pulmonary disease. And Hanseup Kim, a USTAR professor of electrical and computer engineering, is using his grant to develop a wireless system for detecting volatile organic compounds that are part of air pollution.

The U program's grant funding has also furthered study of correlations between air quality data and the number of patients suffering from diseases with known connections to pollution

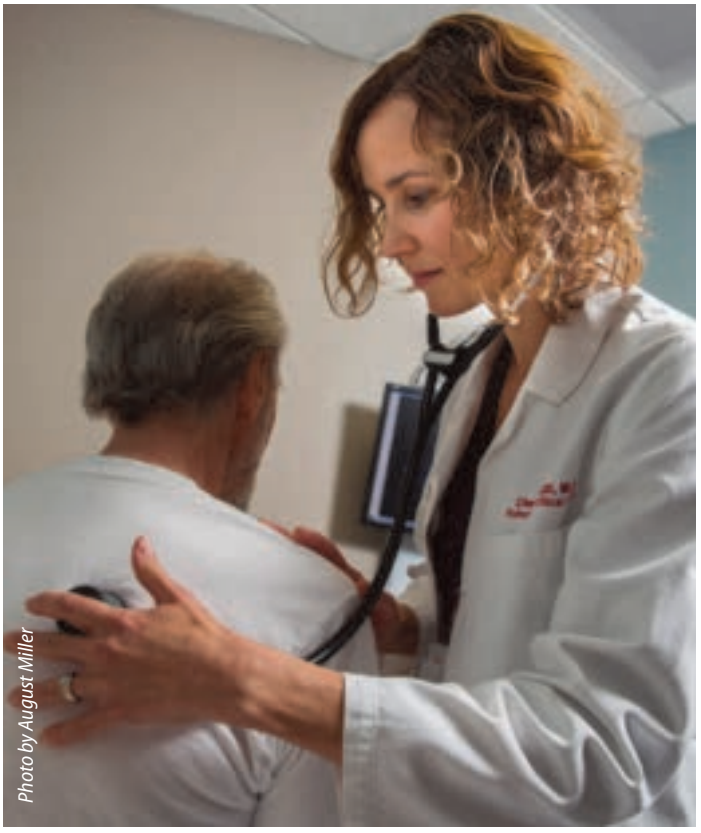


Photo by August Miller

Dr. Cheryl Pirozzi, a U pulmonologist, is leading a cross-disciplinary study of the effects of air pollution on patients with idiopathic pulmonary fibrosis.

Winter air pollution cloaks the University of Utah's Rice-Eccles Stadium and the rest of the Salt Lake Valley, while the mountains above the inversion remain clear and sunny. The U currently has six cross-disciplinary research projects that include installing more sensors across the valley to help the state's air monitoring.

exposure, such as some cancers and respiratory illnesses. Led by U bioinformatics professor Ramkiran Gouripeddi, a team that includes experts in meteorology, atmospheric science, chemical engineering, medicine, and informatics is working with combined data sets to analyze any possible links between disease occurrence and air pollution concentrations.

Amanda Bakian, a U research assistant professor of psychiatry, has used her grant to study links between air pollution and suicide. The project, believed to be the first study of its kind nationwide, combines the expertise of a diverse group of psychiatrists, suicidologists, environmental and genetic epidemiologists, psychologists, and biostatisticians. "Assembling a team composed of individuals with diverse expertise helps guarantee that the problem or question is approached from the best angles possible and ensures that the study design is maximized appropriately," says Bakian. "This is how science is moving forward in this day and age and how gains in scientific understanding are being made."

"The effort reflects shared commitment to advancing knowledge and helping the community."

Dr. Cheryl Pirozzi, a U pulmonologist, is another grantee, and she shares Bakian's enthusiasm for cross-disciplinary work. Pirozzi is studying the effects of air pollution on individuals with idiopathic pulmonary fibrosis, the disease from which Fessenden suffers. This winter, the pilot study will place 20 air quality sensors in patient homes across the Salt Lake Valley to gather data about indoor air pollution exposure, daily respiratory symptoms, and lung function during an eight-week period. To meet Pirozzi's data-gathering needs, Kelly is working with Tony Butterfield BS'96 PhD'07, an assistant professor of chemical engineering with an expertise in prototyping and data analysis. He and a team of students are retooling a commercially available sensor for Pirozzi's study. "There are people in all aspects of the University who are interested in air pollution and have expertise in areas I know nothing about, so I think getting people together to work on projects like this is a huge opportunity," Pirozzi says.

Butterfield also is working on a separate community outreach effort that would place the sensors in K-12 schools across the Salt Lake Valley, increasing the number of locations where air quality measurements are gathered for the state's monitoring. About 30 teachers have already expressed interest in using the sensors as curriculum tools in a wide range of subjects, from mathematics to biology. "People are really interested in doing citizen scientist work," says Butterfield. "They like being a part of the process that helps us in discovering how we can make the world a better a place."

Watkins says the University has also begun a hiring initiative to recruit faculty members—four over the next two academic years—for the colleges of Social and Behavioral Science, Mines and Earth Science, and Engineering to enhance the work of the U's

air quality program while also advancing scholarship and understanding of broader environmental issues. "That will accelerate our potential to address challenging problems, including water and air quality, and relationships with climate and weather," she says.

The increased environmental focus the faculty members will bring, along with the work of the air quality program, will enhance the academic experiences and opportunities for students who work with those professors, says Robert Adler, dean of the U's S.J. Quinney College of Law and a member of the Program for Air Quality, Health, and Society's steering committee. "The program reflects the best of what universities can be," he says. "Rather than working in isolated disciplinary silos, the effort reflects shared commitment to advancing knowledge and helping the community through collaboration within the U and beyond." The law college's Wallace Stegner Center for Land, Resources, and the Environment recently has hosted events examining regulatory changes regarding air pollution, and the annual Stegner Symposium this coming March will examine air quality as it relates to health, energy, and economics.

Adler and Watkins also say the scientific advances expected from the U air quality research may ultimately help lead to innovations in industry practices and environmental regulation and law, as well as better public policy. "Good decisions about complex issues are always informed by better science and related policy analysis," Adler says.

For now, Paine and Kelly hope the program's initial research projects will result in promising findings to draw in large grant awards from national institutions and organizations. The Program for Air Quality, Health, and Society currently has no ongoing funding and needs those grants and private funding to further its goals. Years down the road, Paine says, "success would be a robust research enterprise here so that people around the nation and around the world think about Utah as the place that produces high-quality air pollution research."

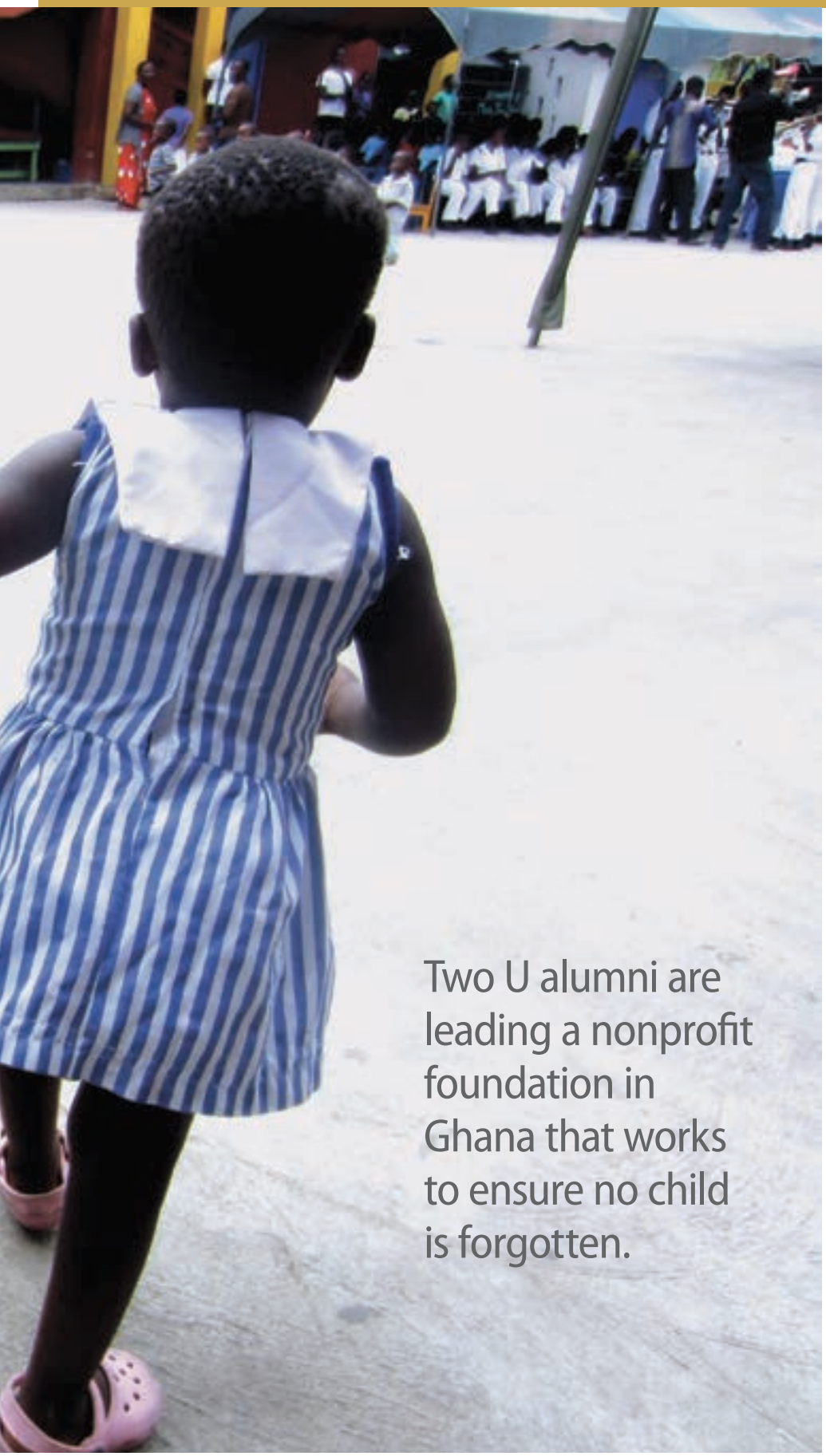
Fessenden says he'll be happy if researchers are finally able to answer the question that so many Utahns find themselves asking each time they wake up to another day of gray, mucky winter air or summer haze: What is breathing this stuff doing to my body? "I have thought about moving, but my life is here, my family and my doctors," says Fessenden. "When the pollution is bad, my breathing is just more labored, and if I do go outside, I find myself constantly coughing." In life, you "play the cards you are dealt," he says, but he welcomes any advances in science and medicine that will help cure or even ease the struggles of patients like him. "Anything that would buy some time would obviously be great."

—Jennifer Dobner is a Salt Lake City-based writer and a frequent contributor to Continuum.

Visit continuum.utah.edu *to view a gallery with more photos and watch videos on Utah's air pollution and its health impacts.*

All photos courtesy Kaeme Foundation

Two children rush to join a group play activity at an orphanage in the Greater Accra Region of Ghana in 2013.



REMEMBER Me

Two U alumni are leading a nonprofit foundation in Ghana that works to ensure no child is forgotten.

By Stephen Speckman

University of Utah alumni John and Marci Stevens were quite happy raising their four children in Palo Alto, California, in 2007 when they visited Ghana to research the possibility of financing construction of an orphanage there. They wanted to see examples of orphanages already up and running, and during their first visit to one, they walked into an open area filled with children. Some of them couldn't walk. Some were almost naked. The building was filthy, with babies sharing cribs lined up in rows, and some of the children didn't want to be picked up and held. Piles of donations were stacked nearby, going unused. "It was heartbreaking," John recalls. "Depressing."

Marci Kirk Stevens, left, and her husband, John, adopted their daughter Perpetua in Ghana in 2007.

Among the children was a girl who appeared to be about 6 years old. Her name was Perpetua, and no one at the orphanage had a record of her last name. "She had so much exuberance, so much enthusiasm," Marci says. "She seemed so different." Within the year, the Stevenses adopted her and brought her back to Palo Alto. The couple also resolved to try to help children like the others they had seen at the orphanage. In 2008, they became leaders of a nonprofit group, the Kaeme Foundation, which provides staff and logistical support to help the Ghana Department of Social Welfare survey orphanages countrywide and gather information about each child's history, health, and welfare. The department then uses that information to reunite children with their families or place them in other family-based care—and to help keep the children from falling prey to human traffickers. The word *kaeme* in the Twi dialect of Ghana means "remember me." "Kaeme is truly a labor of love for us" John Stevens says. "It never feels like real work."

The Stevenses' initial trip to Ghana traces back to a 2006 article that John read in *The New York Times Magazine*, about child trafficking. It was the photo of a little boy forced to work on a small leaky fishing boat on Lake Volta that caught his eye. In the article, "Africa's World of Forced Labor, in a 6-Year-Old's Eyes," Sharon LaFraniere wrote that the boy, Mark Kwadwo, was one of thousands of children in west and central Africa who are sold into servitude and forced to work in horrifying labor camps. "It was just moving to me," John Stevens recalls, and after he had Marci read the article, they both agreed they wanted to try to help. But their experience in assisting others then related mainly to donating time and money to local charities and fundraisers at their children's schools in the Palo Alto area.

John had met Marci Kirk when he was a student at East High School and she was attending Highland High in Salt Lake City. Their first date was attending a University of Utah football game. They both graduated from the U in 1982, he with a *magna cum laude* bachelor's degree in psychology, and she *cum laude* in university studies with a social and behavioral science emphasis. They married two days after graduation and moved to Palo Alto, where John began medical school at Stanford University and Marci had an internship with a commercial design company. She eventually became chief executive officer of an architectural design firm in the Bay Area for a decade while John finished his medical training and went on to work as an adult and pediatric cardiac surgeon at Stanford University Hospital and Lucile Packard Children's Hospital in Stanford, California. He also co-founded three technology-focused companies: Heartport, Amp Resources, and Sundrop Fuels. In 1998, the U Alumni Association's Young Alumni Board awarded him its Par Excellence Award, when he was working with Heartport in creating technology for minimally invasive cardiac surgery. He is currently chairman and chief executive officer of Silicon Valley-based HeartFlow, Inc., which provides physicians with a noninvasive test that produces functional and anatomical data to assist in the diagnosis of coronary artery disease.

Ghana has 1.1 million "orphans," and the government believes 80 percent could be reunited with families, with support.

Along came that article on child trafficking in Africa, and soon after the Stevenses read it, a friend told them about two Ghanaians, Stephen Abu and his son Stephen Abu, Jr., who had been working with Helena Obeng Asamoah, an official with the Ghana Department of Social Welfare, to reform the orphanage situation in their country. Ghana's government had been taking steps to reduce child trafficking, by making it easier for children to attend and stay in school and by giving small loans to poor women to reduce the incentive to "lease" out their children. The government also had created a system, through an endeavor called the Care Reform Initiative, to maintain a more accurate and complete paper trail of children's identities, in hopes that fewer of them

would become lost in the shadows of the slave trade. Asamoah had created a Ghanaian-based nongovernmental organization called Kaeme in 2007, with the aim of better record keeping on children and reuniting them with their families, if possible, or finding them good alternative homes with families in Ghana, but the group was still in the planning phase and hadn't yet begun any work. She had run a few government orphanages and helped formulate the Care Reform Initiative, and the Abus were helping her seek funding in the United States for a new orphanage.

John and Marci Stevens' friend told them the Abus would be in Salt Lake City, so the couple flew from California to meet with them. "If I hadn't read the article, I'm not sure we would have been drawn to the request," John says now. The Abus invited them to Ghana, and John and Marci made their first trip there in January 2007, and met Perpetua. Early in 2008, Asamoah and the Stevenses decided that rather than building a new orphanage, they would incorporate Kaeme as a U.S. nonprofit organization, with John and Marci as its new leaders, and begin a more complicated endeavor.

"The first time they came to Ghana, they fell in love with the people, especially the orphans and the vulnerable children in the country," says Stephen Abu, Jr., who is currently chairman of the Kaeme board in Ghana. "Their belief is that every child deserves and should be in a home with good, caring parents."

John and Marci visited more orphanages on that trip, and more trips followed. As they began to profile the children in these places, they found that hundreds of children had been abandoned or taken in by orphanages after their parents or caretakers had died, but not all of the children in orphanages were orphans. Some had been given up because they were disabled or had behavioral problems. Others had been abused and taken from families, and still more were placed in orphanages in hopes they would receive a better education.

By 2009, Kaeme and the Stevenses had begun working with the Ghanaian Department of Social Welfare on Ghana's Care Reform Initiative. They were immediately up against staggering odds that Kaeme would be able to make an impact, with 1.1 million children living in orphanages in Ghana, along with thousands of "vulnerable" children, according to UNICEF. But Ghana's Department of Social Welfare believed that 80 percent of those children, many handed over to orphanages ultimately because of poverty, could be reunited with families if support was available to help them. The consensus was that rather than building more orphanages, a database was needed that would have profiles on each child in every orphanage in the 10 regions of Ghana. Over the years, Kaeme has helped implement that work. "This has helped the government to identify—and shut down—many orphanages that abused children for their personal gains," Stephen Abu, Jr., says.

As Kaeme's involvement in Ghana grew, the Stevenses were trying to comprehend the problems there. John recalls finding an orphanage funded by sources in the United States and run by a Ghanaian, a pedophile who was using the facility to sell kids as "sex slaves." Other orphanages would "recruit" children from their families with the promise of a better home, but the

Children in an orphanage in Ghana's Greater Accra Region gather to meet Kaeme Foundation interns who will be working with them.

proprietors' only interest was to use the operating budgets from government and private sources to line their own pockets. And still more orphanages were selling children as "slaves" to work in the Lake Volta area and elsewhere for paltry sums that were collected by their families.

With the help of volunteers from the United States and paid staffers in Ghana, Kaeme has been visiting orphanages in all but one of Ghana's 10 districts to create and store records on each child. To help coordinate that work, John Stevens has been to Ghana 16 times, and Marci has made 10 visits. Nearly 60 student volunteers, mostly from Stanford University, have logged almost 13,000 hours to gather as much information as possible on the children.

One of those students, a Stanford freshman named Kava Abu, spent a summer in Ghana with Kaeme. A "major" issue in Ghana's orphanages, he says, is that they don't prepare children for life after institutionalization. "For the most part, orphanages are raising kids that have trouble finding jobs, living independently, and establishing long-term relationships," he says. "Most of the directors of orphanages in Ghana know this, but their financial interests are best served by perpetuating the existence of the orphanage system. Kaeme is helping the Ghanaian government to combat this type of child exploitation."

Kaeme's work has helped lead to the closure of seven of the most egregious orphanages in Ghana, and as of this past October, database records had been created for about 2,460 orphans. The government now knows who these children are and how they landed in orphanages, and can take the first steps toward possibly reuniting them with their families or getting them placed with other families in Ghana.

"Kaeme is a model for an NGO/governmental partnership that seems to be working, solving a problem that is very common in the developing world."

At home in Palo Alto, California, John Stevens, left, says his daughter Perpetua helped motivate him and his wife, Marci, to lead Kaeme. Perpetua, now a teenager, is an A student who enjoys playing volleyball.

"Kaeme is a model for an NGO/governmental partnership that seems to be working, solving a problem that is very common in the developing world," John Stevens says. "We have heard from several international experts that this model would be of great benefit in many, many countries."

The work of Kaeme also has become the subject of research by a Brigham Young University professor of social work, Jini Roby, who in recent years has been conducting a study to compare outcomes on several well-being indicators between the Ghanaian children who have been returned to a home and those who remain in orphanages. This past spring, Roby, along with colleagues and students from BYU, spent several weeks in Ghana, collecting data on children in orphanages and homes. "Kaeme is one of the few organizations that understand the importance of keeping children in their families, with support when necessary, rather than in an institutional setting," Roby says. "The evidence is overwhelming that family is the best environment for raising children who will be emotionally and socially healthy in the long run. Kaeme works to support the government's stated policy on care reform, which is very commendable. Many NGOs do their own thing, regardless of government policy or overall direction that has been laid out. Kaeme, in many ways, is coaching and mentoring government actors in carrying out their policies."

John and Marci Stevens now talk about closing that "last mile" in Kaeme's work, which is to gather better numbers on exactly how many children, as a result of creating accurate data, are transferring out of orphanages and into homes. Today, the government in Ghana is at least able to connect first and last names to the faces of many more children in orphanages, thanks to the efforts of Kaeme. "One child at a time, we're making a difference," John Stevens says.

—Stephen Speckman is a Salt Lake City-based writer and photographer and a frequent contributer to Continuum.

Visit continuum.utah.edu *to view a gallery with more photos.*

Six Alumni Receive Merit of Honor Awards


Jeffrey L. Anderson


Ronald G. Coleman


Ron Henriksen


Betsy Ross Young Newton


John C. Pingree


Heidi Sorensen Swinton

The University of Utah Emeritus Alumni Board chose six exemplary alumni to receive its 2014 Merit of Honor Awards. The annual awards recognize U alumni who graduated 40 or more years ago (or who have reached age 65) whose careers have been marked by outstanding service to the University, their professions, and their communities. This year's winners were **Jeffrey L. Anderson** BA'68, **Ronald G. Coleman** BS'66 PhD'80, **Ron Henriksen** BA'71, **Betsy Ross Young Newton** BS'46, **John C. Pingree** BS'64, and **Heidi Sorensen Swinton** BA'71.

To recognize them, the Emeritus Alumni Board hosted a Merit of Honor Awards Banquet in November at Rice-Eccles Stadium and Tower, with **Barbara Snyder**, the U's vice president for student affairs, as the featured speaker and **Spencer Kinard** BS'66, a former broadcast journalist and past president of the U Alumni Association's Board of Directors, as the evening's master of ceremonies.

Anderson graduated Phi Beta Kappa in chemistry, *magna cum laude*, as valedictorian of the U's class of 1968 and received the Bonner Award (for outstanding chemistry student). He went on to Harvard University's Medical School, where he graduated with honors in 1972. After two years as an assistant professor at the University of Michigan, he joined the U Medical School's faculty. He went on to become director of coronary care and later chief of cardiology at LDS Hospital, and then a professor and chief of cardiology at the University of Utah. He is past president or governor for the Utah chapters of the American College of Physicians, the American College of Cardiology, and the American Heart Association.

Coleman has been a faculty member in the U's History Department and the Ethnic Studies Program since 1973. He received his undergraduate degree in sociology and doctorate in history at the University of Utah. As an undergrad, he was a member of the U football team and was named the Outstanding Back in the 1964 Liberty Bowl. As a professor, his primary research focus is African American history. He has received the Salt Lake Chapter of the NAACP Albert Fritz Civil Rights Worker of the Year Award, the Utah Humanities Council's Governors Award, and the Days of '47 Pioneers of Progress Award for Historic and Creative Arts.

Henriksen received his bachelor's degree from the U in political science. He co-founded Henriksen/Butler Design, a contract furniture business, with **Steve Butler** BFA'70 in 1980, and the company went on to become one of the leading distributors in the Intermountain West. Henriksen helped initiate a lecture series for the U School of Architecture that brings in designers from across the United States to talk about architectural trends. His other U and community service has included being chair of the U President's Club.

Newton graduated with a degree in speech communication from the U. She went on to become the mother of six children, and she was a real estate property and finance manager for 20 years. Her community service has included working with her husband, **Joseph Newton** BA'44 MD'46, to campaign and raise funds for water fluoridation, which was approved by voters in 2000. She also has served on the Ronald McDonald House Board of Trustees, and she was a member of the Assistance League of Salt Lake City for more than 30 years.

Pingree received his undergraduate degree from the U in economics and went on to get his MBA from Harvard University in 1966. He was regional manager for sales planning for Xerox Corporation and then moved on to Memorex Corporation, where he was director of marketing. He served as general manager and chief executive officer of the Utah Transit Authority from 1977 to 1997. He later was executive director of the Semnani Foundation, from 2001 to 2004. He also is a former member of the Utah State Board of Education.

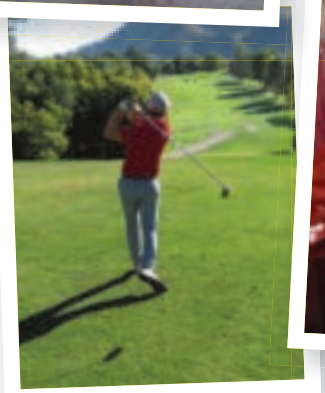
Swinton graduated with a bachelor's degree in journalism from the University of Utah. She has written several books that have been published by Deseret Book, and she has been a screenwriter for five documentaries about Mormon history, for PBS. In 2000, she won an Independent Book Publishers First Place Award for her book *Joseph Smith: American Prophet*. She also is the author of LDS Church President Thomas S. Monson's official biography *To the Rescue*.

Homecoming Events Net Record $82,000 for Scholarships

The University of Utah Alumni Association raised a record amount—about $82,000 —for U scholarships for deserving students through its events during Homecoming week. The Young Alumni 5K and KidsK on Saturday, September 27, raised a new high of about $52,000 for U scholarships. The day before, under the leadership of tournament chairman **David Allred** BA'84, the Homecoming Scholarship Scramble, a golf tourney at Bonneville Golf Course, netted about $30,000 for U scholarships.

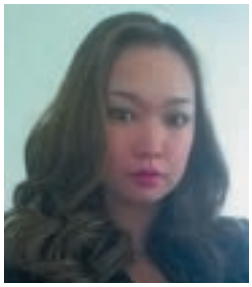
Homecoming began Friday, September 19, with Redfest, a fall concert on the Union Lawn featuring B.o.B, a.k.a. Bobby Ray Simmons, Jr. On Saturday, scores of volunteers participated in the Legacy of Lowell Community Service Day. The following Tuesday, campus groups decorated their areas to reflect this year's Homecoming theme, "Believe In U." The U's emeritus alumni—those who graduated 40 or more years ago or who are age 65 or older—gathered for a reunion on Wednesday evening, with dinner and then tours of the Beverley Taylor Sorenson Arts and Education Complex. Fraternity and sorority members competed in Songfest on Thursday. Students and alumni then gathered for a pep rally at the Union Building that night. Friday began with the golf tournament. Later, students celebrated at the Homecoming dance, held at The Gateway shopping center.

On Saturday, runners braved the rainy morning with the 5K and KidsK. The crowds headed to Rice-Eccles Stadium in the afternoon for the Alumni Association's pre-game tailgate party and then watched the Utes play Washington State in a one-point heartbreaker.



Photos by Anna Pocaro

U Graduates Form Mongolia Alumni Club



Onon Soninbayar

The University of Utah Alumni Association now has a Mongolia Alumni Club. U graduates in and from Mongolia formed the club in August, bringing the total number of U international alumni clubs to 10.

The U currently has 15 alumni from Mongolia, and 14 students from Mongolia are enrolled at the University this year. The president of the new Mongolia Alumni Club is **Onon Soninbayar** BS'11, who graduated from the U's David Eccles School of Business with a bachelor of arts degree in business administration with an international emphasis. Soninbayar lives in Salt Lake City and works for Goldman Sachs & Company as an analyst in private wealth management.

The Mongolia Alumni Club also has two board members: **Enkhjin Munkhjargal** BS'13 and **Tseveenbolor Davaa** PhD'11. Munkhjargal received a bachelor of science degree in mining engineering at the U and was recognized as the John E. Wilson Distinguished Student of the Year. He now lives in Mongolia and works as a mining engineer for the Oyu Tolgoi Copper Mine. Davaa received a doctorate in economics at the U. She works as a national consultant in Mongolia for the United Nations Population Fund.

The U currently has nine other international alumni clubs, in China, India, Europe, Hong Kong, South Korea, Thailand, Taiwan, Turkey, and Vietnam.

Mountain America Teams With Alumni Association

The University of Utah Alumni Association has partnered with Mountain America Credit Union to offer the U Rewards Credit Card.

Under the agreement, the credit union will pay the Alumni Association royalties based on the number of customers who use the credit card and how much they spend. The proceeds will help support student scholarships and association programs.

Two design options for the card are available, both with U logos, so that customers can show their U loyalty. The card, which has no annual fee, also offers customers rewards points that can be redeemed for cash, gift cards, rebates, or travel discounts. Learn more at *www.macu.com/ucard*.

Save the Date for Founders Day 2015

The University of Utah Alumni Association will hold a Founders Day Banquet on February 24 at the Little America Hotel to honor four outstanding graduates of the U and two honorary alumni who are receiving 2015 Founders Day Awards. A scholarship winner also will be recognized. The 2015 Distinguished Alumni Award recipients are **Greg Goff** BS'78 MBA'81, **Brent James** BS'74 BS'75 MD'78 MStat'84, **Gretchen McClain** BS'84, and **Clayton Parr** BS'60 MS'65 JD'68. **John** and **Melody Taft** will be recognized with the Honorary Alumni Award. The scholarship winner will be announced at a later date. (Read more about them in the upcoming Spring 2015 issue of *Continuum*.) If you'd like to attend the banquet, go online to *www.alumni.utah.edu/foundersday* to register.

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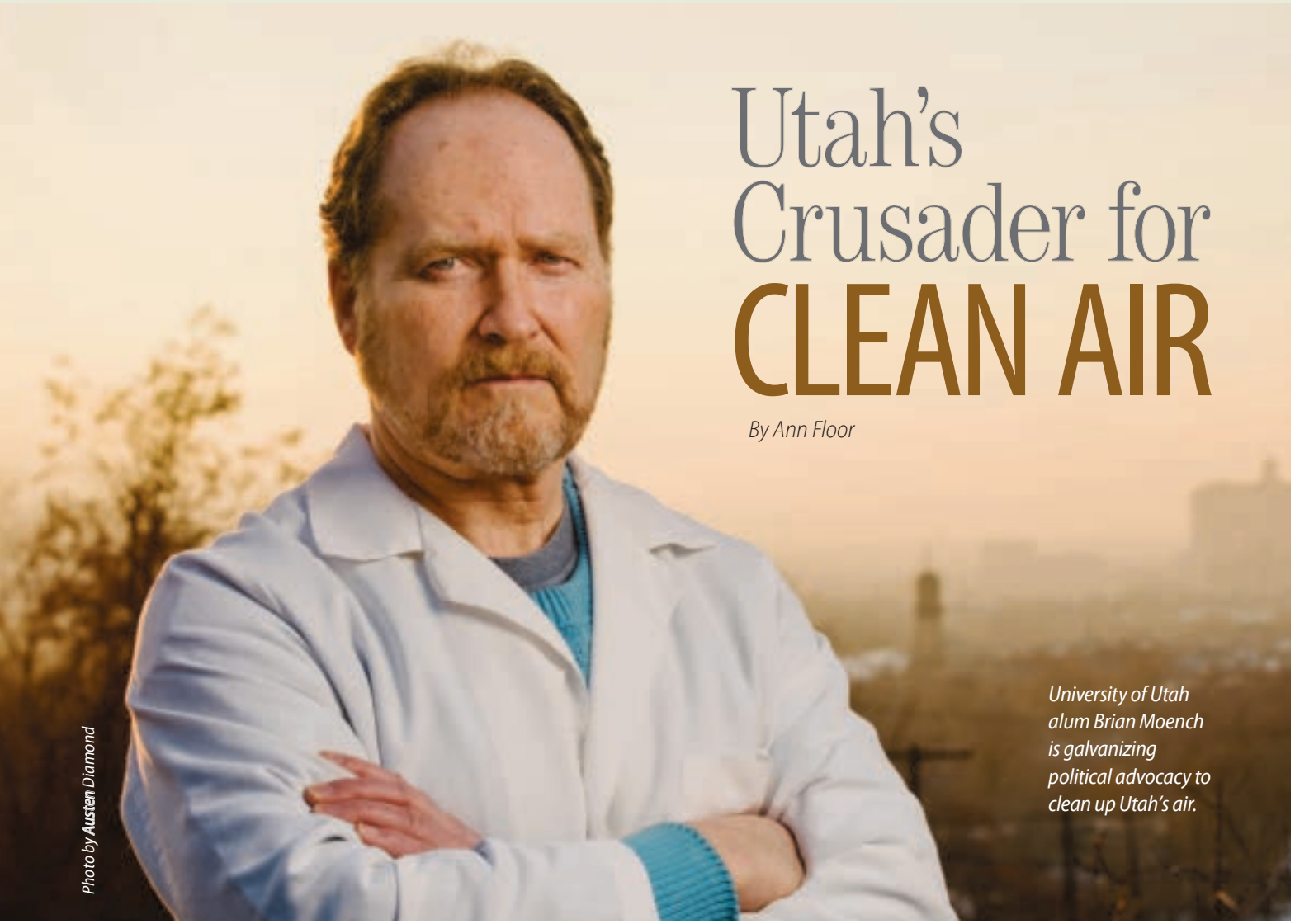

Utah's Crusader for CLEAN AIR

By Ann Floor

University of Utah alum Brian Moench is galvanizing political advocacy to clean up Utah's air.

Photo by Austen Diamond

One hazy afternoon in spring 2007, a group of community members concerned about the deteriorating air quality along Utah's Wasatch Front gathered in a meeting room at LDS Hospital in Salt Lake City. The meeting was organized by Dr. Brian Moench, an anesthesiologist and University of Utah alumnus who had recently founded the advocacy group Utah Physicians for a Healthy Environment. Consisting of eight doctors and a community organizer who were concerned about the negative health impacts of bad air, the new group was determined to do something about it.

After nearly two hours discussing ideas for how to get legislators to pay attention to bad air and how to inform the public of its devastating health impacts, one mother with a baby in her arms stood up and asked to speak. Her baby had asthma, she said, making it hard for the infant to breathe, and she asked what could be done. For those at the meeting, that example of the effects of poor air quality helped spur them to continue their advocacy.

Since then, Moench MD'77 and other members of Utah Physicians for a Healthy Environment have testified at hearings, spoken at rallies, and written opinion pieces in *The Salt Lake Tribune* and elsewhere. They have informed the public on a variety of air quality concerns, from the toxic emissions of a medical waste incinerator in North Salt Lake and the inevitable increase in air pollution sure to come from additional vehicles that will use a possible new freeway in west Davis County to newly discovered health risks of breathing wood smoke and California studies linking air pollution on freeways to autism in kids. The group's membership has reached close to 300 health care professionals, with growing support from the community. "It is the largest civic organization of health care professionals in the state of Utah," he says.

While Moench is not without critics who might call him an extremist, a pot-stirrer, and a little off the wall, he and his Utah Physicians for a Healthy Environment colleagues have been credited more than any other local organization for raising public awareness of the sources of air pollution and its disastrous effects on health. "Recent polls confirm that the Utah public is more concerned now about air pollution than ever before,

and I think that has been our most significant success," Moench says.

"People who challenge the status quo will always have detractors, specifically those who are heavily invested in the status quo—like politicians, and employees of government and industry," he says. "I've never had another doctor dispute any of the public statements that I or Utah Physicians have made. We coined the slogan 'Clean Air, Clean Energy, Clean Future.' Leaving a legacy to my granddaughter that protects all three is the most important thing I can do."

Moench's decision to establish Utah Physicians had two catalysts. "The first for me personally was the day in 2000 that I found out my 27-year-old daughter had breast cancer. The two of us studied everything we could about cancer in general and hers in particular. That's when I learned that 80 to 90 percent of cancer is environmentally caused." The second was a prolonged winter inversion in 2007 that lasted almost the entire month of January. Pollution levels in Salt Lake City and Logan, Utah, were worse that month than in any other U.S. city. "I was shocked and frustrated that no one in government or the medical community was speaking out about what a health crisis this was, so I started talking to some of my colleagues," he says. A small group of them joined together and researched the medical literature on air pollution. "After a couple of months, we were stunned at what we found," he says: Air pollution has a systemic effect on the entire body, qualitatively and quantitatively similar to what is experienced with chronic exposure to secondhand cigarette smoke. "All organ systems are affected, and the diseases provoked can cause sudden death or silently shorten life spans by accelerating the aging process."

The doctors developed a presentation based on the results of their research and briefed then Utah Governor Jon M. Huntsman, Jr., on their findings. After the meeting, Moench says, Huntsman made improving air quality one of his administration's top three priorities. A few days later, the doctors held a news conference to share the results of their research with the public. Shortly after that, Utah Physicians for a Healthy Environment was formalized. "UPHE has been stuck in overdrive ever since," he says.

Moench grew up in Salt Lake City, graduated from Olympus High School, and then studied chemistry for a year at Stanford University. He left to serve a mission for the Church of Jesus Christ of Latter-day Saints. Afterward, he resumed his education at the University of Utah and went on to the U's School of Medicine. He completed an internship and residency at Massachusetts General Hospital and spent a year on the faculty at Harvard Medical School. He returned to Salt Lake City in 1981 and has been in private practice as an anesthesiologist ever since. Along the way, he and his wife, Shauna, had four children, and his concern about environmental problems grew.

Moench says he learned from his mother at a very early age that injustice should be vigorously opposed. "I have always been concerned about environmental issues, hated air pollution for as long as I can remember, but when I started seeing it through the lens of injustice, I felt compelled to try and intervene," he says. "I often say in my lectures that 'I see the human consequences of our environmental degradation in the faces of the patients I take care of,' and that personifies the injustice of our inadequate public policies."

This past January, in what was the largest demonstration for clean air ever in Utah, more than 4,000 people united at the front steps of the Utah State Capitol to urge lawmakers to take action. The board members of Utah Physicians had organized the rally, and Moench welcomed the crowd. "Clean air is an inherent right of all Utah residents, and everyone shares in being stewards to protect it," he said. "Air pollution tarnishes our community reputation; it erodes our quality of life and stifles our economy as much as it does our lungs." The crowd—some carrying signs, some wearing gas masks—responded with a roaring chant of "clean air, no excuses!"

"If we are ever to have clean air in Utah," says Moench, "it will be because the people, showing moral courage, demand it."

—Ann Floor is an associate editor of Continuum.

Photo by Tim Brown

Dr. Brian Moench speaks about air pollution at a rally at the Utah State Capitol.

From Starbucks to Service

By Ann Floor

University of Utah alum Larry Gluth was a busy Starbucks executive in 2001 when he volunteered to bring coffee to volunteers at the site of a 20-house building project for the East King County Habitat for Humanity in Washington. After serving lattes, coffee, and tea to the volunteers, and even arranging for about 80 Starbucks employees to sponsor a home and help with the construction, he decided to become a volunteer himself at his local Habitat affiliate in Seattle. He went on to serve as a board member for five years, including two as chair. "There was something magical about having the opportunity to provide a hand up and not a hand out to deserving families," he says.

In 2005, Hurricane Katrina struck the Gulf Coast, and Gluth took a one-year sabbatical from Starbucks to serve with Habitat's Operation Home Delivery, which ultimately built more than 2,000 homes throughout the Gulf region. During that year, he read *Halftime: Moving from Success to Significance*, a book by Bob Buford that explores life transitions. "The book challenged me to assess my priorities and asked the question, 'What will you do in the second half of your life?' " says Gluth. The question stayed with him.

Larry Gluth

After a brief return to Starbucks, he talked to his wife, Gailynn, and their son Connor about the possibility of leaving Starbucks to work for Habitat for Humanity. Gailynn laughed and asked, "What took you so long?" So Gluth left Starbucks and moved with his family in January 2007 to Atlanta, Georgia, to serve as Habitat for Humanity International's senior vice president for the United States and Canada.

"Having been so fortunate to work at a company like Starbucks at the time that I did allowed me the flexibility to make the decision to give back, possibly a bit earlier in life than many others are able to do," says Gluth. "The opportunity to serve others through Habitat's ministry has made me a better person in more ways than I could have ever imagined."

Photos courtesy Larry Gluth

Larry Gluth now works as a senior vice president for Habitat for Humanity.

Gluth BS'83 grew up in New Ulm, Minnesota. After attending St. Cloud State University in Minnesota for a couple of years, he transferred to the University of Utah. "I chose the U because of its close proximity to multiple ski areas and the opportunity to take classes and ski in the same day!" he says. He played on the rugby team and received a bachelor's degree from the U in physical education.

As a new graduate, he went to work for Peter Piper Pizza, starting as an assistant manager and moving up to store manager, district manager, and then director of franchised operations. In 1991, he began what would become a 15-year stint at Starbucks. He worked in managerial positions in California and Colorado, negotiated the first licensed agreement to develop Starbucks stores within North American airports, and expanded Starbucks' licensed store presence into venues such as bookstores, college campuses, and hotels.

Beginning in those years with Starbucks, Gluth became a member of the University of Utah's National Advisory Council in 2002 and served as council president from 2010 to 2012. He received a Distinguished Alumnus Award from the University of Utah Alumni Association during Founders Day in 2010.

At Habitat for Humanity International, Gluth's responsibilities include overseeing the efforts of more than 1,500 affiliated organizations throughout the United States and Canada that help coordinate the efforts of volunteers who build simple, decent housing for people in need. His division provides consulting services and technical assistance on construction technology, family support services, board development, mergers, and advocacy. "I'm not sure if any one day at Habitat is like the next for me," says Gluth. "With more than 200 staff providing such varied support to an incredibly diverse group of affiliates, each day is a new adventure."

—Ann Floor is an associate editor of Continuum.

'60s

Manny Fernandez ex'68 has been selected to be inducted as the 27th member of the Miami Dolphins Honor Roll in late December. Fernandez spent all eight of his National Football League seasons (1968-75) with the Dolphins and was named the team's Most Outstanding Defensive Lineman his first six years in Miami. He was selected to the Dolphins' Silver Anniversary team in 1990 and was named to the team's Walk of Fame in 2012. He joined the Dolphins in 1968 as an undrafted rookie free agent from the University of Utah. Fernandez played in three Super Bowls for the Dolphins. His career highlights included his performance in Super Bowl VII, when he recorded 17

tackles. The 14-7 victory that day against the Washington Redskins capped the Dolphins' perfect 17-0 season.

'70s

Gregory L. Crawford MBA'78 has received a Lifetime Achievement in Recycling Award from the National Recycling Coalition. The award, recognizing his decades of leadership in the field of recycling, was presented at a ceremony in New Orleans in September. Crawford is executive director of the Steel Recycling Institute of the American Iron and Steel Institute, which advocates for the North American steel industry in the public policy arena and advances the case for steel in the marketplace as the preferred material of choice. Crawford has spent much of his career leading

national efforts to maximize the recycling of post-consumer materials. He received a master's degree in business administration from the U.

Elizabeth Searles BA'79 BS'82 was the producer of a KUED documentary, *The Candy Bomber*, which recently won an Outstanding Documentary Award from the Utah Society of Professional Journalists. Searles received the award on behalf of the production team this past summer at the group's annual awards event. *The Candy Bomber* tells the story of Utah's Gail Halvorsen, a retired colonel and command pilot in the U.S. Air Force during World War II, and how his simple gesture of dropping candy from his plane to children waiting below during

the Berlin Airlift made him an international hero. Searles was also the producer of the four-part series *Utah World War II Stories* for KUED. Each episode of the series received a Rocky Mountain Emmy Award for best historical documentary. She received a bachelor of arts degree in history and a bachelor's of science in communication, both from the University of Utah.

'80s

Deneece Huftalin BS'84 PhD'06 has been selected to serve as the eighth president of Salt Lake Community College. Huftalin has worked for the college for more than two decades and most recently served as interim president. Joining the college in 1992 as the director of academic and career advising, she was named dean of students in 1994. She became vice president of student services in 2004 and served in that capacity until 2014. Huftalin also is a faculty member for Leadershape, Inc., an international nonprofit organization focused on student leadership development. And she teaches in the education, leadership, and policy program at the University of Utah. Huftalin received a bachelor's degree in humanities from the University of Utah, a master's degree in education from the University of California, Los Angeles, and a doctorate in education, leadership, and policy from the University of Utah.

'90s

Daniel W. Campbell BA'93 MEd'06 has been elected chair of the Utah State Board of Regents. He has been a board member since 2010 and is a longtime advocate for higher

education in Utah. Campbell is a managing general partner at EsNet Group, a privately held investment company. He chaired the regents' Resource and Review Committee for the University of Utah and has served as a member of the Governor's Commission on Education Excellence. As the regents' chair, he plans to work with college presidents on the governor's initiative to have 66 percent of the adult population in Utah earn a post-secondary degree or certification by the year 2020. Campbell received bachelor's degrees in fine arts and humanities in 1993 and a master's degree in education in 2006, all from the University of Utah.

Andrew J. Leavitt PhD'94 has been named chancellor of the University of Wisconsin-Oshkosh. He had been vice president for university advancement at the University of North Georgia and chief executive officer of the University of North Georgia Foundation Inc. In Georgia, he led a fundraising campaign that concluded in 2012 after raising $44 million toward a $40 million goal. He also chaired a committee that spearheaded an initiative to increase access, retention, progression, and completion of college for students in the north Georgia region. Leavitt received a bachelor's degree in chemistry from the University of Arizona and a doctorate in chemistry from the University of Utah.

Brad C. Smith BS'90 JD'93 has been selected by the Utah State Board of Education as the next State Superintendent of Public Instruction. Smith, who worked as an attorney for nearly 20 years, had served as superintendent of the Ogden School District since 2011. When he began, Ogden was the lowest-performing district in Utah by nearly every measure. Under his leadership, the district saw significant improvements in math and English language arts proficiency rates, in addition to graduation rates. Smith received a bachelor's degree in social and behavioral science from the University of Utah and a juris doctorate from the U's S.J. Quinney College of Law.

'00s

Helen Hu PhD'03, a computer science professor at Westminster College in Salt Lake City, has received the Women Tech Council's Education Excellence Award. The award recognizes technology-focused women who are driving innovation, leading technology companies, and are key contributors to the community. Through a three-year, $800,000 grant to improve computer science education in Utah high schools from the National Science Foundation, Hu introduced a new course titled Exploring Computer Science to more than 50 Utah schools. The program already has better gender equity than any other Utah high school computer science course. Through another grant she received this year, a Teaching to Increase Diversity and Equity in STEM (science, technology, engineering, and math) education grant from the Association

of American Colleges and Universities, she will create new course combinations designed to interest first-year college students in the versatility of technology. Hu received a bachelor's degree from Princeton University and a doctorate from the University of Utah, both in computer science.

Miriah Meyer PhD'08, assistant professor of computer science and a Utah Science Technology and Research initiative researcher, has been awarded a National Science Foundation CAREER Award for her proposal Design Decision Patterns for Visualizing Multivariate

Graphs, a series of visual data displays that involve more than one variable. The $400,000 award supports junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education, and the integration of education and research within the context of the mission of their organizations. Meyer is a faculty member in the Scientific Computing and Imaging Institute at the U and was previously named a 2013 TED Fellow and a PopTech Science Fellow for 2013. She received a doctorate in computer science from the U.

We want to hear from you! Please submit entries to Ann Floor, ann.floor@utah.edu.

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Fussing Over the Fight Song

By Marcia C. Dibble

Its authorship is unclear. Its date of origin is murky. Its lyrics have been modified several times. Yet many of those who currently belt out "Utah Man" are fiercely loyal to "how it's always been." Turns out "always" isn't necessarily such a long time.

"Utah Man" became the University of Utah athletics "fight song" in the early 1900s. With only minor changes, the song lyrics very closely resemble an 1885 fraternity song, "My Name is Sigma Chi," likewise sung to the tune of the old folk song "Solomon Levi."

Exactly how and when "Utah Man" became the U's fight song is unknown. In a 1978 *Daily Utah Chronicle* article, U professor emeritus Mary Webster asserted that the 1904 U football team composed "Utah Man" during improvisational sing-alongs on Head Coach Joe Maddock's porch. Others insisted the song originated with his predecessor, Coach Harvey Holmes (1900-1903). The first currently known mentions in print are a May 1907 *Chronicle* item noting that "A Utah Man" was sung during an outing of the U's Normal (public school teaching) Department, and a page in the U's 1907 *Utonian* yearbook that included the song's lyrics.

Like the Sigma Chi song, the original version of "Utah Man" included the line "We drink our stein of lager and we smoke our big cigar." By 1942, that had been changed in the U fight song to "our coeds are the fairest and each one's a shining star." Those lyrics became the new standard until this past summer, when the first part of the phrase was modified to "our students are the finest." The official 2014 version includes "fan" as an alternative anywhere "man" was originally used in the lyrics, and "no other gang of college men" became "no other band of college fans."

Several other universities nationwide also have updated their fight songs over the years to reflect modern sensibilities. The University of Mississippi in 2009 trimmed one of its fight songs to discourage fans from chanting "the South will rise again." In 2007, the University of Hawaii at Manoa changed "Here's to each valiant son" to "Here's to each valiant one." And Michigan State University, originally known as Michigan Agricultural College, modified "its specialty is farming" to "its specialty is winning," among other changes.

At the U, alternatives to "Utah Man" have been proposed in the past but didn't prevail. In May 1934, *The Utah Alumnus* announced that "the students of the University have become tired of singing 'Utah Man'… [and] they are after a new Alma Mater song." A contest offered awards for both words and music, and by 1937, the song "Fair Utah" was on offer, but by popular sentiment, it was decided the song wouldn't replace "Utah Man" and would merely supplement it. In 2000—the year sportswriter Rick Reilly famously mocked the "jolly" references and tone of "Utah Man" in *Sports Illustrated*—the University of Utah debuted a new "Utah Fight Song," with music by Mormon Tabernacle organist emeritus Robert Cundick BA'49 MFA'50 PhD'55. But again, Cundick and others emphasized that the song "was not a threat to the status quo—it was just an addition."

Photo courtesy Special Collections, J. Willard Marriott Library, University of Utah

University of Utah fans sing and cheer at a football game during the 1950s. The song "Utah Man" has undergone several evolutions since it first came into use.

The latest evolution in the lyrics to "Utah Man" was approved this year after faculty members and student leaders spearheaded efforts to modernize the lyrics and address concerns expressed in recent decades that certain words and phrases were sexist or racist. The new lyrics will be printed in all current versions of the song, but U President David Pershing has said fans can sing whichever version they prefer.

So sing it loud, sing it proud, and realize that "traditions" do change. Perhaps one day, "jolly" Utah fans will even decide it's time to toughen up that line.

—Marcia Dibble is managing editor of Continuum.

Visit continuum.utah.edu *to view a gallery with more photos and read the complete lyrics to the "Utah Man" and Sigma Chi songs.*

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