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Spring16
vol15no2

# Washington State MAGAZINE

Spring16
vol15no2

## Features



## UPfront



**COVER:** "GOLDEN LIGHT PALOUSE," PHOTO BY CHIP PHILLIPS **LEFT:** FOGGY SUNRISE OVER THE SKAGIT VALLEY TULIP FIELDS NEAR THE WSU–MOUNT VERNON RESEARCH CENTER, PHOTO BY ALAN MAJCHROWICZ

ARCHITECTURAL RENDERING COURTESY WASHINGTON GRAIN COMMISSION

## *thematics*



## Departments



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Memories of light. Our brains are structured so smells conjure vivid memories. For me, though, a change in light evokes recollections as much as a scent. The clear and soft sunlight waking up the daffodils in spring. The doomsday orange haze over the Okanogan valley during last summer's wildfires. The pearlescent moonlight and stars over Priest Lake on a camping trip. My anxiety when I saw police car lights behind me after I drove a little too fast near Tacoma. The red glow of the Bryan Hall clock as I walked past it a hundred times with friends.

These memories come into even greater contrast when considering how one in 20 people over age 65 lose their own valued memories to Alzheimer's disease. As a *Daily Telegraph* columnist wrote about Iris Murdoch, whose impressive mental capacity fractured in a battle with Alzheimer's: "Like all other sufferers, the intellectual light of the Dublin-born novelist and philosopher was extinguished bit by bit, until she became bewildered and unable to think, reason or even remember her literary triumphs." It's heartening to know a young biochemist and startup CEO, Leen Kawas '11 PhD, strives to bring to market an astounding drug developed at WSU that could treat the neurodegenerative disease.

Light itself could even transform how neurosurgeons perform a brain procedure for not just Alzheimer's, but also Parkinson's disease, depression, and the treatment of pain. Thanks to research by WSU physicist Mark Kuzyk, an almost-unbelievable miniscule fiber, shaped and bent by light pulses, can target problems with less chance of damaging healthy areas of the brain. Kuzyk's contribution in improving deep brain stimulation could potentially help thousands of patients undergoing the procedure.

Kuzyk and Kawas certainly offer some hope that people with Alzheimer's disease might have a brighter future and retain their memories of spring.


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# TALKback

## Traditions

Thank you for the article in your Fall 2015 issue about Stevens Hall and their tea cups. I lived there from 1968–1972. It was a great place to live and an interesting time of old traditions (passing an engagement ring around a circle of residents until it stopped at the engaged) to moving on to more modern ones (like allowing men to visit up on the floors and rooms). Through it all were the beautiful teacups and wonderful friends, some of which I still keep in touch with after 43 years!

**GAYLE HUNT '72**

## Serving with distinction

As a WSU alumnus, I enjoyed the reference to the Foley Institute titled "The Lasting Impact of Tom Foley" in the Winter 15 Edition. Sen. Mark Schoesler and I spoke to WSU students at the Institute in connection with the Washington Policy Center Young Professionals event held there on November 17, 2015. Former Speaker Foley was a fine man who served Eastern Washington with distinction. He leaves a lasting legacy through the Institute that WSU students will enjoy for many years.

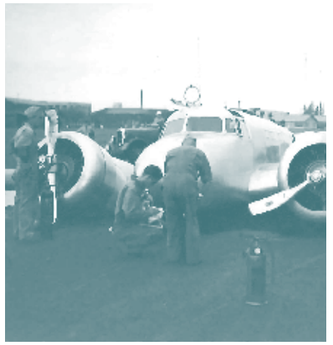
**GEORGE R. NETHERCUTT, JR '67**
Chairman, the George Nethercutt Foundation

## Thank you, thank you

Thank you for the article "Still Searching for Amelia." It was very special for me and my family, as we lived in Pearl City next to Ford Island. Father worked as an airplane mechanic on Luke Field starting in 1931. He helped service Amelia's plane on Luke Field and after her crash [on the first circumnavigation attempt], he was charged with the packing and crating of the plane. He received a thank you letter from Amelia on April 28, 1937, for his work.

I believe your account is the truly correct adventure of her. Mili Atoll and captivity with the Japanese military was sad! I do remember that possible ending suggested years ago but without any facts like you have printed.

**BOB SNIDER '56, '63 MA**
Spokane



*Stanley Snider (middle), airplane mechanic foreman at Hawaii's Luke Field in 1937, worked on Earhart's plane.*

## "No tea with Jackie" continued

In your last issue Owen Johnson wrote about his father meeting JFK at the [Pullman-Moscow] airport. I would like to continue the story.

My mother, Kathleen Irwin, picked up JFK and Pierre Salinger at Bryan Hall to drive them back to the airport. My father was scheduled to drive but was called to be in court that day. JFK offered her a tour of the airplane. There is a picture of her Cadillac with Kennedy in the Pullman online archives.

Kathleen will be 101 in January. She is doing well at the Rockwood Retirement Home in Spokane.

**KAY IRWIN ROWLEY**
daughter of Claude & Kathleen Irwin

*We'd love to hear from you! Send us your letters or class notes, sign up for our monthly email newsletter, and connect with us on social media:* magazine.wsu.edu/connect



# DEARreader

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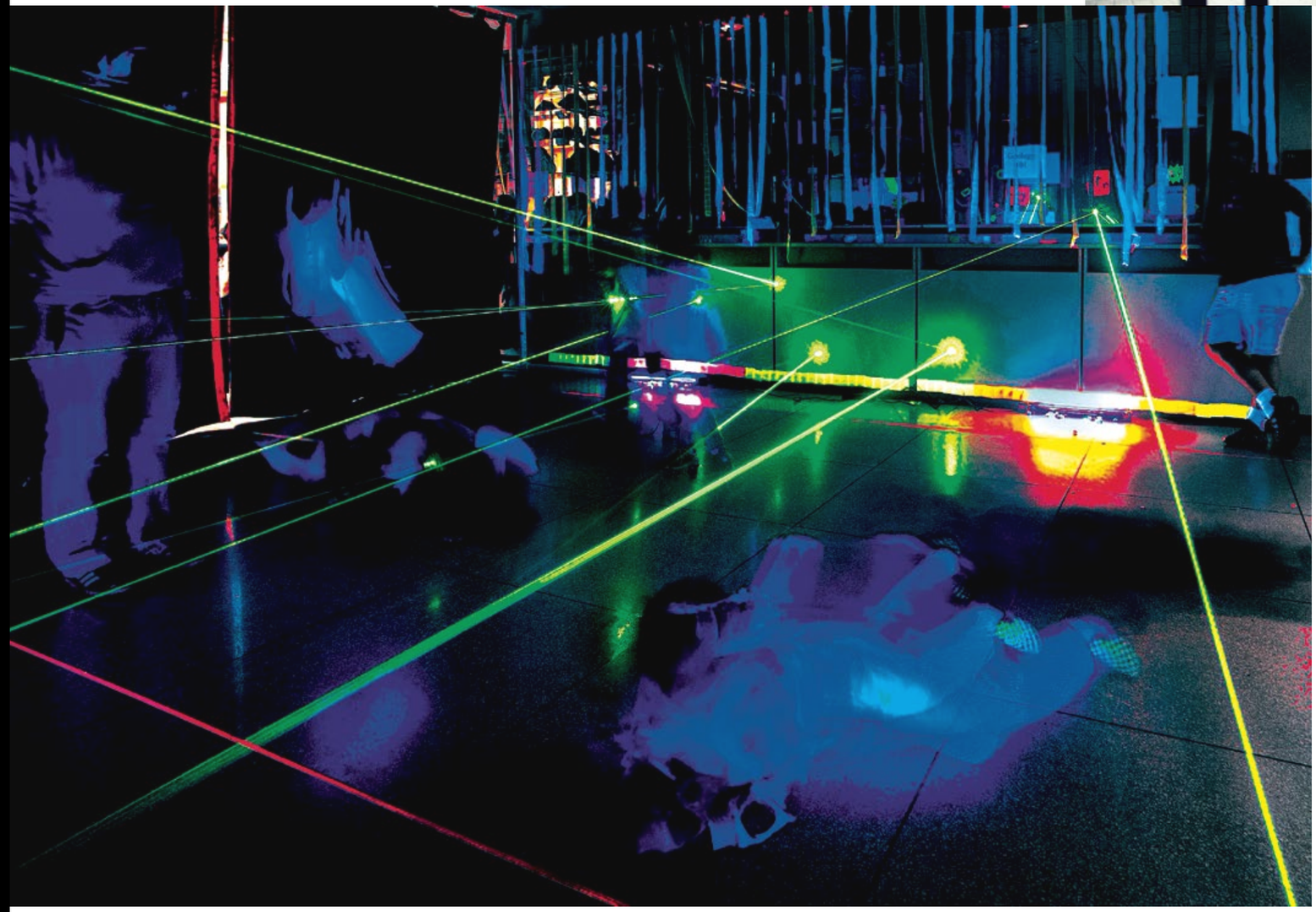
BY REBECCA PHILLIPS

# Trip the light fantastic

Serious science—serious fun

view the art of physics: magazine.wsu.edu/extra/physics-art



**Opposite:** Students navigate a laser maze. (Photo Shelly Hanks) **Left:** Kuzyk leads an optics experiment. (Photo Robert Hubner)

When physicist Mark Kuzyk throws a science soiree he doesn't mess around. Out come the lasers, high-tech origami, ornate wire sculptures, and sticky-stretchy gel that's fun to throw at the wall. But it's all for a greater purpose.

The Washington State University Regents professor is developing a shape-changing, laser-guided electrode for the treatment of pain, Parkinson's disease, Alzheimer's, and depression.

The ultra-thin electrode is designed for use in deep brain stimulation (DBS) and relies on optics and photomechanical materials to improve the precision and delicacy of the procedure. Sometimes known as the "brain pacemaker," DBS holds promise for a wide range of conditions and may also speed recovery from brain injury, says Kuzyk.

Most surgically implantable electrodes are metal rods 1-2 mm thick, large enough to damage the brain during placement. They are also difficult to reposition. Kuzyk's prototype electrode is a flexible polymer fiber only 100–200 microns wide with tiny embedded wires.

It will also contain photomechanical material capable of changing shape and direction in response to light signals. The slender fiber is gentle on brain tissue and its insertion can be monitored for real-time viewing by the surgeon. If the electrode veers off course during the procedure, a laser can be turned on causing the fiber to bend back to the desired location.

"There's nothing in medicine quite like this," says Kuzyk. "It's a simple idea but very complex to implement."

Andres Lozano of the University of Toronto Division of Neurosurgery is also taking part in the study and has been active in deep brain stimulation research for over 20 years.

In a letter to project funder National Science Foundation (NSF), Lozano writes that the ability to adjust an implanted electrode, without requiring a second surgery, would greatly enhance the benefits and decrease the side effects of DBS, potentially helping thousands of patients.

Kuzyk says introducing even one photomechanical filament to allow sideways motion of the electrode could make a major contribution to the field of brain research and therapy.

Kuzyk and his colleagues are now half way through the four-year project and—per NSF public outreach requirements—recently demonstrated their science to high school students and teachers from the Los Angeles County High School for the Arts.

The three-day workshop, organized by postdoctoral researcher Zuli Kurji, dazzled with laser demonstrations and hands-on experiments. Visitors donned safety glasses and sent red light shooting through polymer filaments. They moved photomechanical material with green light. They tried their hand at pulling liquid crystal gels and elastomers into long fibers the consistency of the 1980s kids' toy Tacky Stretchoid Warriors.

The group also explored the connection between physics and art in a front-row session with origami master Robert Lang who demonstrated light-activated and mathematical origami techniques. The visitors later had a chance to create ethereal 3D sculptures under the direction of California wire artist Elizabeth Berrien. Both Lang and Berrien are WSU adjunct professors.

A natural showman, Kuzyk knows how to make science fun. But it's his day-to-day work in the laboratory that advances the field of optics and provides practical applications for his discoveries. Those stretchy filaments, for example, could one day find use in such non-medical applications as stretchable electronics, shape-changing fabrics, and adaptive antennas.

COMMONreading

# Just Mercy

## A Story of Justice and Redemption

**DOZENS OF WITNESSES, INCLUDING A POLICE OFFICER, SAW WALTER MCMILLIAN AT A CHURCH FISH FRY WHEN A YOUNG WOMAN WAS KILLED IN NEARBY MONROEVILLE, ALABAMA IN 1986.**

Police later arrested the self-employed African-American tree trimmer anyway. A nearly all-white jury convicted him and a judge sent him to death row. That's where Bryan Stevenson, a Harvard-educated lawyer, met McMillian.

Stevenson, founder of the Equal Justice Initiative, battled a hostile criminal justice system to uncover improperly concealed evidence that led to McMillian's exoneration in 1993.

But the frightening way McMillian was so quickly condemned raises broader questions about America's criminal justice system, which incarcerates more people than any other country in the world. The population of U.S. jails and prisons has climbed from about 300,000 in 1972 to 2.3 million today. Racial minorities and the poor are disproportionately represented among the mass incarcerated.

Stevenson examines many of those troubling issues in his 2014 *New York Times* bestseller, *Just Mercy: A Story of Justice and Redemption*.

The book, required reading for first-year WSU students and incorporated into various course curricula as this year's common reading program selection, has sparked numerous discussions among students, faculty, and staff about the troubling incongruities.

"I think this book has had a real impact on students," says WSU history instructor Ken Faunce, who uses *Just Mercy* in his Roots of Contemporary Issues course. "We discuss a chapter every Friday."

BRYAN STEVENSON BY JOHN EARLE

The story of McMillian's eventual exoneration stretches through the book as Stevenson also introduces readers to other convicts, mostly African-American men on death row in the Deep South. And not all of those cases are about just guilt or innocence. Stevenson uses them to illustrate how the criminal justice often fails the poor, contributing to lopsided punishments and unequal treatment.

In one, the Supreme Court's ban on executing the intellectually challenged was ignored because the public defender failed to introduce evidence of the mental disability at trial. In others, judges overruled jury determinations that the death penalty was unwarranted.

> "We have a system of justice in this country that treats you much better if you're rich and guilty than if you're poor and innocent." —*Author and civil rights lawyer Bryan Stevenson, during a December 1, 2015 lecture in Pullman*

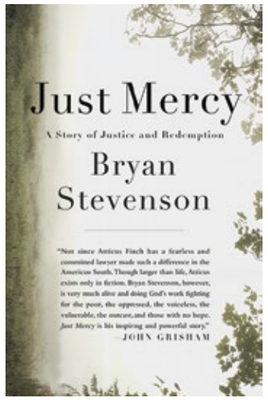
Some of the most spirited classroom discussions have been about those cases other than McMillian's, Faunce notes. Students generally agreed that prison terms of some sort were appropriate, he explains, but many questioned whether the circumstances of the cases supported execution.

"One of the things you'd hear is, 'If this person was wealthy and had a good lawyer (at the initial trial), this would have been handled differently,'" Faunce says.

That dichotomy, in fact, has been one of the more troubling realizations for students.

"What they've also really been struck by is the reluctance of the criminal justice system to make things right," Faunce says. "Even when they're presented, like in Walter McMillian's case, with overwhelming evidence."

**Just Mercy: A Story of Justice and Redemption**
BRYAN STEVENSON
SPIEGEL & GRAU: 2014



BY REBECCA PHILLIPS

# Sweet solution to toxic waste

**A jar of foul-smelling clay sits on the cluttered workbench. "I'd better not open it," says environmental engineer Richard Watts. He grabs a smaller jar filled with liquid the color of a dirty mud puddle. "These are soil and groundwater samples from an industrial waste site in North Carolina."**

The repugnant samples arrived in comparatively pristine Pullman to be analyzed by Watts, who then advises the best ways to remedy the mess. In a twist, one of those methods involves the use of sugar.

Watts, a pioneer in oxidizing systems for the detoxification of polluted soil and groundwater and a professor of civil and environmental engineering at Washington State University, has recently begun using glucose to help break down the worst of chemical pollutants.

World renowned for his 1990 development of a technology called in-situ chemical oxidation (ISCO), Watts' latest version of ISCO uses glucose-activated persulfate to help make environmental cleanup safer, more reliable, and a little bit greener to boot.

"It usually gets 90 percent of the contamination and we rely on natural processes, like bacteria, to break down the rest," he says. "Activated persulfate can degrade almost all toxic organic chemicals including DDT, gasoline, dry-cleaning solvent, degreasing solvents, and the carbon tetrachloride found under the Hanford site."

Watts says tens of thousands of old hazardous waste sites remain hidden away behind small businesses and rundown service stations throughout the United States. "Dry cleaners dumped solvents out on the ground behind their shops," he says. "And in the 1930s and '40s people built underground gasoline tanks they thought would last forever, but have now corroded and leak into the groundwater.

"We also have the big industrial properties with huge waste landfills plus spillage and exotic chemicals," Watts says. "Our military bases are some of the biggest polluters."

The consequences of industrial pollution first hit home for America during the 1970s, says Watts. A series of environmental disasters—from the deadly dioxin spill at Times Beach, Missouri, to the toxic chemical dump in Love Canal, New York—shocked the nation. The media covered the events widely, and prompted the creation of the Superfund act in 1980, which gave the U.S. Environmental Protection Agency (EPA) the authority to clean up hazardous waste sites.

Environmental engineers faced the daunting realization that our nation's soil and groundwater were extensively contaminated, Watts says. "Since bacteria were already being used in wastewater treatment plants and could metabolize almost anything, they decided to try them for breaking down industrial pollution. They called it bioremediation."

Though successful to a point, many chemicals, like DDT, resisted bacterial breakdown and could persist in the soil for decades or centuries.

As a young researcher in the mid-1980s, Watts was determined to find a faster method. Using his background in oxidative chemistry, he discovered that pumping concentrated hydrogen peroxide into the soil—along with iron to activate it—could release super oxidizing molecules called free radicals.

"Oxidation is basically a destructive process," he explains. "When you bleach your hair, you are destroying color molecules. Using Oxiclean® in your laundry releases the dirt in your clothes."

As it turned out, the powerful oxidizers in hydrogen peroxide could break down toxic waste faster and more completely than bacteria could. In short order, the EPA began funding Watts's work.

Fast-forward 24 years, and ISCO has become one of the world's standard methods for remediating industrial waste—used to clean up everything from small spills to massive federal Superfund sites. Today, Watts routinely provides chemical analyses and recommendations for engineers in the field.

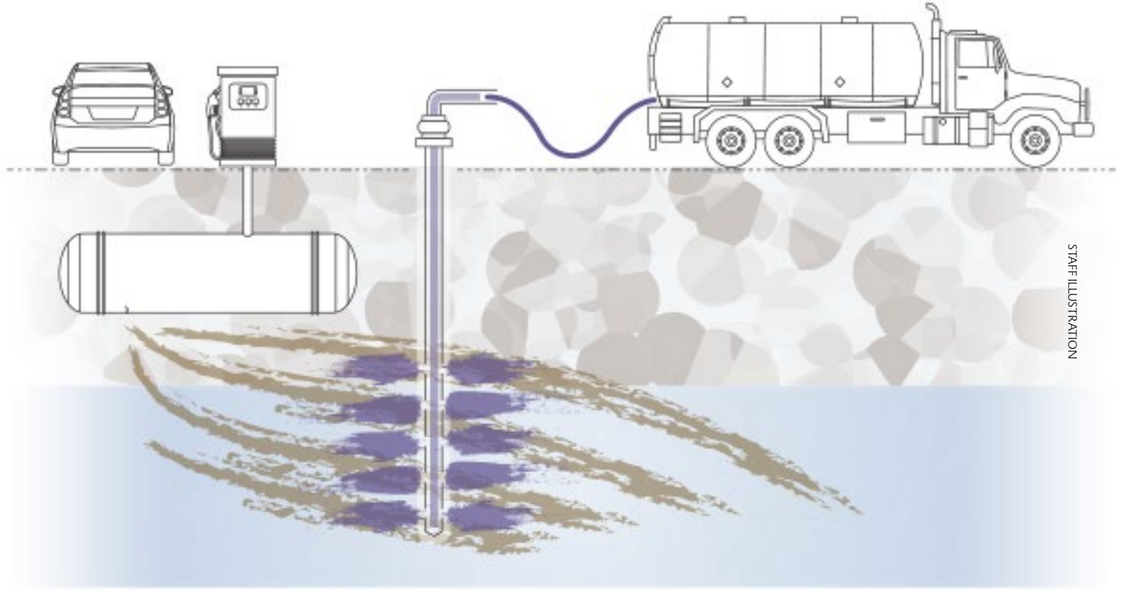
But despite ISCO's success, there were still a few kinks in the technology. Problems with the common oxidizing agents stymied Watts. Hydrogen peroxide, though cheap, is unstable, explosive, and disappears quickly when injected into the ground. Persulfate, on the other hand, can last weeks or months in the soil, but is difficult to activate and by itself is powerless.

One day puttering in the lab, he made a surprising discovery. "I can't remember why I put glucose in with persulfate," Watts says, "but when I added it, it started bubbling and doing all kinds of crazy stuff. I thought, 'Wow! Maybe this is a good way to activate it!'"

Further experiments proved it out and today sugar-activated persulfate holds promise as an enhanced tool for the disposal of toxic waste. "Glucose keeps the process working longer and more reliably, so it will give engineers a higher degree of control over the system," he says.

Not a moment too soon. While many of the "easy" Superfund sites have been successfully cleared, Watts says the roughly thousand still scattered throughout the nation are some of the most difficult to remedy. Fifty-three are in Washington state alone where bygone smelters, lumber mills, agriculture, and manufacturing left a legacy of hazardous waste.

Today, those sites are being restored under the guidelines of Washington's Model Toxics Control Act, enacted in 1989. Watts's improved ISCO technology is a natural fit and could eventually aid cleanup efforts at locations such as Fairchild Air Force Base and Kaiser Aluminum Mead Works in Spokane, Commencement Bay in Tacoma, Wyckoff-Eagle Harbor on Bainbridge Island, and Bangor Naval Submarine Base in Silverdale.




**DIRECT PUSH TECHNOLOGY FOR ISCO**

Contaminated soil and groundwater samples are analyzed in the laboratory to determine the most effective concentrations of glucose and persulfate. The reagents are then trucked to the site and mixed in a large tank. Hollow perforated rods are driven into the ground and connected to the tank with hoses—the solution is injected with a high-pressure pump. The rods are then moved 5–10 feet away and the process is repeated until the affected area is saturated with solution. If necessary, the procedure will be repeated in 6-12 weeks.

BY DAVID WASSON

# Simple summer living

Vision and teamwork transformed a primitive Priest Lake resort into an unconventional academic retreat following WWII.

**NO ROADS. NO ELECTRICITY.** Just long summer days filled with fishing, huckleberry picking, and exploring the northern shores of remote Priest Lake in Idaho with family and friends.

It was 1948 and plans to develop a private retreat for Washington State College faculty and staff were taking shape at Beaver Creek, a primitive 54-acre resort accessible only by boat. The site, purchased by former WSC President Wilson Compton (1944–1951) and his wife Helen, already had eight small cabins. It was eventually subdivided into about 40 private lots selling for as little as $300 each.

"There'd be potlucks and children's activities," recalls Lois Castleberry, whose late husband, Paul, had accepted a faculty position in 1951 and bought a Beaver Creek lot a few years later. "My husband was fresh out of graduate school and we didn't have any money … but we took the leap."

They, like dozens of other faculty and staff members over the years, were glad they did. Summers became an experiment in self-reliance and communal cooperation. Each family had its own private lot but the isolated community would band together to help with everything from site improvements to supply runs.

"What most of us did, to begin with, was work on our cabins," recalls retired Graduate School Dean and sociology professor Jim Short. "We had to float lumber in. We worked our tails off."

It was the kids who did much of the exploring, fishing, and marking the huckleberry patches. "They know more about those mountains than we do," Short says with a laugh.

That was the idea.

Enrollment had boomed at Washington State following the end of World War II. The campus expanded rapidly and was in the midst of an ambitious reorganization.

Beaver Creek was envisioned as a place where faculty and staff could escape the rigor while reconnecting with their families and fellow academics in a rustic, communal camping experience.

The Comptons paid $25,000 for the former Shady Rest resort at the head of Priest Lake. The Beaver Creek Camp Association was created to manage the site and the Comptons recovered their initial investment from the sale of the subdivided lots.

Compton initially looked at institutional options but was unsuccessful in his bid to get at least a portion of the surplus Farragut Naval Training Station at nearby Lake Pend Oreille. He then turned his attention to the unconventional Beaver Creek plan.

The endeavor got off to a rocky start. Faculty and staff were slow to buy in, even with buyers able to pay in installments. Perhaps more significantly, differing ideas emerged over just how "communal" the camping experience should be.

"All of those tensions were playing out," explains Kris Runberg Smith '85 MA, a history professor at Lindenwood University in Saint Charles, Missouri, and co-author of a new book about Priest Lake's history. "It came pretty close to falling apart."

*Wild Place: A History of Priest Lake, Idaho* (Washington State University Press, 2015), examines nearly a century of efforts to develop the remote region known for its rugged beauty and brutal winters.

The retreat at Beaver Creek represents a unique part of that growth, says Smith, who wrote *Wild Place* with Tom Weitz '70. Although it struggled at times to find its identity, and eventually allowed buyers with minimal connections to WSU, the development grew to 30 cabins or more and continues to thrive as a summer destination.

"What's unique about it, in terms of Priest Lake, is the notion of owning your land privately but making decisions as a group," Smith says.

Indeed, little of Priest Lake's waterfront is privately owned. Most belongs either to the U.S. Forest Service or the state of Idaho. That's partly why the former Shady Rest resort was so appealing to the Comptons, who turned the original founder's cabin into their summer home.

The remote location, however, posed logistical issues. It took nearly a full day to get there from Pullman, particularly in the early days when the final stretch had to be traversed by boat.

Helen Compton had secured two surplus ship-to-shore Navy boats known as "launches," which ferried people and supplies to the isolated site.

"We only went up for a couple weeks at a time because it was strenuous," recalls Susan Castleberry, whose father is Jim Short. "It was an all-day affair just to get there. I remember the boats were so noisy, just kind of a chug-chug-chug."

Meanwhile, the lack of refrigeration meant families relied on canned foods and supplemented their meals with whatever they could forage from the nearby woods or fish from the lake. They had to learn to cook on wood stoves.

Helen Compton organized huckleberry-picking excursions and families shared reference books to help identify other edible vegetation native to the area. At night, they gathered around bonfires on the beach.

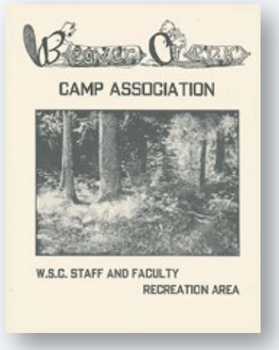
"There was this solitude there," Susan Castleberry, currently serving as president of the Beaver Creek Camp Association, says. "I remember taking up boxes of books. We hiked a lot … and we also read a lot."

These days, Beaver Creek has grown well beyond its origins as a primitive hunting and fishing camp but has retained the rustic feeling of an isolated academic retreat.

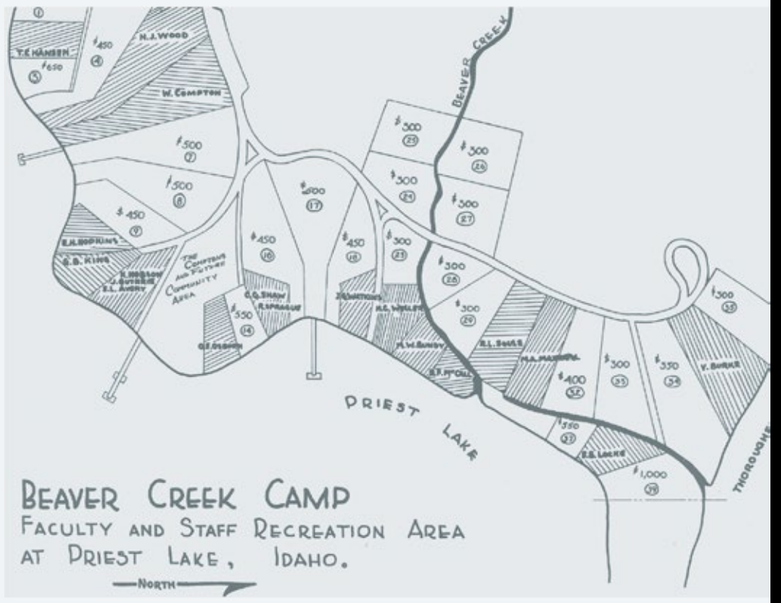
Although there's electricity and running water, the cabins generally are still the small, practical structures built by families with limited choices of material.

Also, while it's now possible to reach Beaver Creek on a Forest Service road, it's maintained only in the fair-weather months. Signs warn visitors about bears.

Susan Castleberry says very little has changed. "We stand at our cabins and look across the lake and that's when you realize it."




**Opposite and this page:** Beaver Creek promotional brochure and brochure illustrations. Courtesy WSU Manuscripts, Archives, and Special Collections. **Above:** President Compton's cabin. Courtesy Priest Lake Museum. **Below:** Map of Beaver Creek lots. Courtesy WSU MASC



BY STEVE NAKATA '86

Top-shelf local beef for WSU: magazine.wsu.edu/extra/wagyu-beef

# Cuisine du campus

Tasteless, flavorless, spiceless? Not any more.

**SAUTÉED SWISS CHARD,** tender braised short rib, and Cougar Gold polenta. Tuscan grilled chicken with seasonal heirloom tomatoes, artichoke hearts, lentils, capers, and fresh herbs. Bacon seared Caesar salad with tomato jam toast and avocado Caesar dressing. These are dishes one would expect to find at a fine-dining restaurant, not a dining center at Washington State University.

Your memories of eating campus food, wherever you went to college, might consist of standing in long cafeteria lines where servers plopped their latest mystery food creation on your plate. It's a totally different and much better experience than many of us remember.

Not only do the dining centers look different with modern designs where you can watch your food being freshly prepared, but the food is of much better quality. In fact about 20 percent is locally grown. The availability of fresh ingredients grown by local farmers, most of them alumni, has inspired Dining Services' team of chefs to unleash their creative talents.

WSU junior Maxx Waring expected an ordinary daily lunch visit to the Hillside Dining Center last spring when something new caught his attention. At the first serving counter, a dining center employee sliced a thick and juicy chunk of roasted pork. Waring couldn't pass it up. Finding a table with his friend Julia Carter, they both savored their first bite of the pork.

"This is really good!" exclaimed Waring and Carter. The students not only raved about the taste; they were also impressed the pork and vegetables they were eating came from farms near Pullman.

As part of a new Dining Services program called Farm to Fork, students like Waring and Carter in all three of the WSU Pullman's dining centers sample specialty dishes made with local ingredients, as well as meet the farmers who produced them.

Pat Allan '78 from Allan Family Farm invited students to hold baby chicks. His farm is located just four miles east of campus.

"Seeing farmers in their dining center isn't something students expect when they arrive," Allan says. "I thought bringing these chicks would help break the ice and encourage them to ask questions."

Joining Allan were Keri Wilson '96 from Wilson Banner Ranch in Clarkston and Jason Parsley '14 from Omache Farm, located south of Pullman. Dining Services purchases various items by season, including pork, pork sausage, and green onions from Omache Farms; eggs, strawberries, huckleberries, and buckwheat honey from Wilson Banner Ranch; and eggs, chicken, and apricot jam from the Allan Family Farm.

Offering students local fare is a national trend at colleges and universities, according to Sarah Larson '87, associate director of Dining Services. "We know from surveying students that they strongly value sustainability and local food sourcing," says Larson. "Students are the ones driving this trend across the nation, and here as well."

Dining Services defines local food as items that are manufactured, processed, or grown within 350 miles of Pullman. While that encompasses a relatively large area, much of WSU's locally sourced food currently comes from nearby farms owned by alumni.

"As an alum myself, I'm very pleased we've been able to develop a good relationship with these farmers," says Larson.

Wilson Banner Ranch has been in business for 125 years and has a long history of providing food to WSU and the Palouse region. Wilson remembers stories of her great-grandfather picking crops such as peaches and tomatoes, often shipping boxes of them to Pullman from the Clarkston Valley by train. But as Washington State College grew, it became easier and more economical for Dining Services to purchase food from large wholesale companies, instead of individual farms. The same thing was happening at colleges and universities all over the country.

"It was a big change for our farm and it changed the way we did business," says Wilson, whose farm is known for its apple cider and sweet corn. For family-owned farms, farmers markets helped fill the void.

It was at the Moscow Farmers Market a couple of summers ago when Dining Services Chef Corey King met Parsley, Wilson, and Allan selling their crops. He told the farmers Dining Services wanted to strengthen its relationship with them and purchase more of their crops.

While Dining Services has been forging connections with farmers around the Palouse, one only has to walk 20 minutes from the center of campus to find freshly grown produce. On a warm and windy June day, Brad Jaeckel and his crew were busy harvesting carrots, radishes, and garlic scapes on the WSU Eggert Family Organic Farm, on 30 acres of land east of the main campus.

Inside one of the hoop houses, he knelt down to take a close look at the lush tomato plants bursting with yellow blooms. He recounted how those same plants got off to a rough start just a couple of months earlier.

After April's last killing frost, Jaeckel sensed the growing season would arrive early last year. Rolling the dice, he and his team planted tomatoes in the hoop houses several weeks ahead of schedule. "They almost died," he says with a grin. "Now we're taking bets on how quick we'll get ripe tomatoes."

The Eggert Farm has provided food for Dining Services off and on for the past 12 years. With the farm located less than a mile away from central campus, Dining Services wants to increase the amount and variety of fresh produce it can purchase there.

Jaeckel says providing food to Dining Services fits well with the farm's mission. "Not only are we offering quality food for students to enjoy, we are providing them with educational and research opportunities."

During Dining Service's Farm to Fork events and other times, Wilson and her fellow farmers conduct their own informal research on student attitudes towards locally grown food. What they are discovering is the majority of WSU students care about where their food comes from. Nearly all students surveyed said they prefer freshly grown fruits and vegetables over processed or canned goods. Many also want their meat and eggs to come from animals that have been humanely raised, some indicating they are willing to pay up to 20 percent more for it.

Wilson says there's no doubt in her mind the demand for fresher food will continue to rise among students, and she is convinced WSU is primed to make a big splash in the area of food sustainability.

"With its land-grant heritage, state-of-the art kitchens and great chefs, its food engineering lab, a dairy, an organic farm, and many brilliant people in place, WSU can become a shining star in the university system," Wilson says. "And the farmers are willing to do our part to help make that happen."

GARLIC SCAPES FROM EGGERT FAMILY FARM; SUSHI AT THE HILLSIDE CAFÉ. PHOTOS SARAH PAGE

**LOCAL. FRESH. SUSTAINABLE—A GROWING NEED ON COLLEGE CAMPUSES** American colleges and universities spend over $5 billion each year to feed their students.

However, college students don't eat enough fruits and vegetables. Many don't even eat one serving per day, far from the recommended five daily servings, according to a 2012 study from Oregon State University.

WSU Dining Services is working to change that. They earned third-party certification for commitment to serving nutritious and sustainable food and promoting customer well-being from Sanitas Per Escam (Health Through Food).

They also use local food sources near WSU Pullman:

- WSU Eggert Family Organic Farm
- Omache Farm
- Allan Family Farm
- Wilson Banner Ranch in Clarkston
- Bar R Cattle Co. (an hour from Pullman)

cold weather walking tips: magazine.wsu.edu/extra/briksteps

# Take a walk… and call me in the morning

BY REBECCA PHILLIPS

The U.S. Surgeon General wants YOU to get off the couch and start moving. In the new Step It Up! program, Dr. Vivek Murthy urges walking or wheelchair rolling for all Americans. He's not alone—the Centers for Disease Control touts walking as the closest thing to a wonder drug without any side effects, says April Davis '97, '09, '12 MS, clinical assistant professor in the WSU Spokane Program in Nutrition and Exercise Physiology. Like Panacea, the mythical Greek goddess of universal remedy, walking has something for everyone.

Since Kenneth Cooper first popularized aerobics in 1968, millions of Americans have taken up running, cycling, and other intensive exercises as the way to achieve cardiovascular fitness and overall health. Walking can seem counterintuitive.

Yet from ancient times physicians have praised, and prescribed, the healing powers of more moderate exercise. It was only in the early 1900s with the advent of germ theory, vaccinations, and antibiotics that medical exercise began to wane. Davis and others are calling for a revival.

Davis oversees the annual Health and Fitness Clinic held in Spokane each October through May. Free to the public and staffed by student clinicians, the program offers one-on-one lifestyle coaching, detailed diet plans, and exercise routines that promote moderate activity like walking.

Doctoral student Alissa Underhill says walking is often underrated. "People think it can't do much for you but I firmly believe walking gives the same benefits as more strenuous activity; it just takes a little longer." She's seen the results: weight loss, lowered blood pressure, balanced lipid levels, and more.

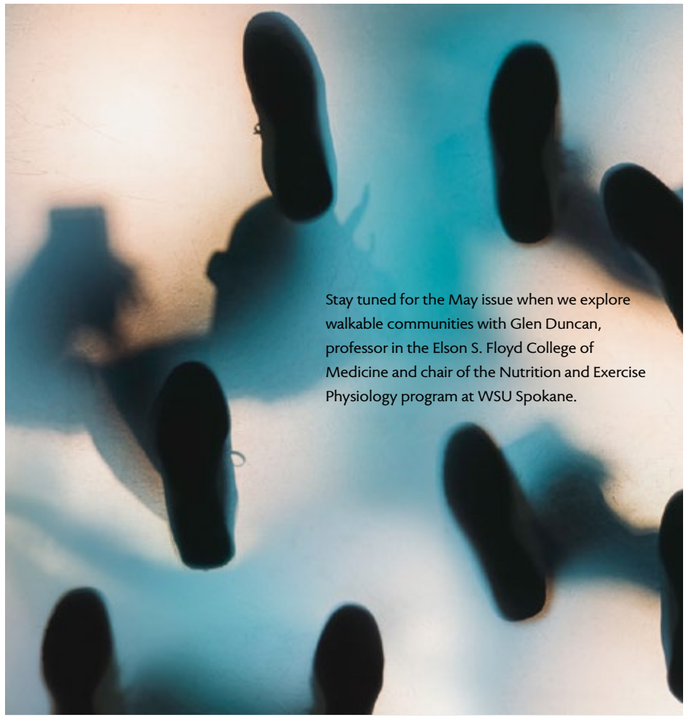
Davis says studies show walking just two and a half hours per week leads to a 30 percent reduction in heart disease risk—that's only 21 minutes each day or 30 minutes a day for 5 days.

Physical therapist Ed Robertson agrees. A manager of the Summit Therapy satellite clinic at WSU Pullman, Robertson says, "Walking is sustainable till the end of your days. The risk of injury is low and almost anyone can do it even following an accident or illness. Some studies suggest that 60 percent of all runners will be injured in any given year. So, if people dialed down that activity a little bit, they could likely do it forever."

A 15- to 20-minute walk can also provide emotional, psychological, and spiritual benefits, similar to meditation or prayer. "For many people, the best ideas come to them either in the shower or on a solitary walk," says Robertson. "Those are often the only opportunities during the day for free association—making subconscious links and connections that might not occur while staring at a spreadsheet or computer monitor. And lunchtime walks with co-workers offer a chance to decompress and vent that helps preserve our sanity," he adds.

Walking, especially in nature, is known to alleviate depression by raising endorphin levels, which leads to better sleep patterns and improved mood, Davis says. Studies show that exposure to natural light and terrain allows the brain to recuperate in preparation for renewed mental effort later.

She says the effects are so tangible that many doctors have come full circle, once again picking up the pad and prescribing that age-old remedy: "Take a long walk and if you still need to … call me in the morning."



Stay tuned for the May issue when we explore walkable communities with Glen Duncan, professor in the Elson S. Floyd College of Medicine and chair of the Nutrition and Exercise Physiology program at WSU Spokane.

PHOTO BEATRIX BOROS



stories of Hanford's people and relics: magazine.wsu.edu/extra/hanford-collection

# Hanford's past

## A VISION FROM THE FUTURE

BY LARRY CLARK

Floating, glowing letters greet a group of high school seniors as the doors slide open: "Welcome to the Hanford History Museum, Class of 2035!" Inside, some students check out relics from 95 years back, such as a long radiation detector nicknamed "Snoopy," lead-lined glove boxes for handling radioactive material, a soundproofed phone booth with numbers still scrawled in pencil. Others read posters telling stories of people who worked on the Hanford site in World War II or the Cold War.

The entire back wall flickers to life in a giant video, beginning with a wide view of the building at the entrance to the Manhattan Project National Historical Park in central Washington, with the Washington State University Tri-Cities campus in the background.

"In 2015 and 2016, decades of Hanford's formerly secret history—in documents, photographs, and objects—were moved to WSU Tri-Cities to be curated, archived, and preserved in collaboration with several partners," says a narrator as images from Hanford's past cover the screen. "This museum uses those artifacts to tell the story of the Manhattan Project, the creation of the atomic bomb, the Hanford site, the Cold War, the ongoing environmental cleanup of toxic waste, and lingering health effects. Hanford represents one-third of the national historical park established in 2015, along with Los Alamos, New Mexico, and Oak Ridge, Tennessee."

The video switches to a man standing by the nearby Columbia River, a crucial reason the government chose Hanford in 1943 for part of the atomic bomb's assembly. A caption reads, "Michael Mays, director of the Hanford History Project, vice chancellor of academic affairs and English professor, WSU Tri-Cities."

"The story of the building of the B Reactor itself is fascinating," says Mays. "The culture of secrecy was tremendous. People knew they were involved in the war effort but they didn't know what they were doing until the day the bomb was dropped."

As he speaks, the video swoops across sagebrush desert and through the Hanford site, past old reactor buildings, and into a warehouse with long rows of shelves holding boxes and a plethora of objects ranging from control panels and warning signs to Coke bottles and 1940s bicycles for shuttling between Hanford and homes.

A tall man with long hair and a beard leads the way down the rows. The narrator says, "Tom Marceau, an archaeologist and cultural resources specialist for the U.S. Department of Energy, gathered historical material from Hanford since the early 1990s."

"We collected objects from each period from 1943 to 1990," says Marceau, pointing to different objects. "Here you see different styles of hand and foot counters, another hallmark of working on the Hanford site to control radiation contamination on people. You had to go through the monitors to go into clean areas."

As the video concludes, the students of 2035 return to the stories, created from some of the Hanford history project's 3,000 photographs, 1,600 objects, videos, and oral histories from one of the most transformative periods in human history: the dawn of the nuclear age.

## Daughters of Hanford

**SUE OLSON, 94,** came to Richland in 1944 and worked throughout Hanford as an executive secretary. She also worked in the labs at Hanford, calculating the numbers from radioactive samples. Eventually, she landed a job working for the assistant general manager of Hanford, Wilfred "Bill" Johnson. She says back then, "It was all business to win World War II. And afterward, during the Cold War it was that way too." She had top-secret clearance and locked her filing cabinet each night before going home.

Olson's story is part of the "Daughters of Hanford" multimedia project, in which radio correspondent Anna King '00, photographer Kai-Huei Yau, and Washington State University artist Doug Gast tell the stories of women involved with the Hanford nuclear site. In twelve radio pieces, complementary portraits, website, and interactive exhibit, the project shows the perspectives of women in Hanford's past and into the future cleanup—including politicians such as U.S. Sen. Patty Murray '72, Hanford scientists, and environmental cleanup advocates.

King reports for Northwest Public Radio at WSU's Edward R. Murrow College of Communication. Assistance was also provided by WSU Tri-Cities Digital Technology and Culture student interns Joe Jensen, Monique Van Sant, and Pearl Kleppin. *Photo courtesy Daughters of Hanford*

listen to the stories and read more: daughtersofhanford.org

# No white flags

Steve Gleason made a name for himself on the football field but his most enduring contribution may be tackling ALS

BY DAVID WASSON

**THE STATUE BUILT IN HIS HONOR OUTSIDE THE NEW ORLEANS SUPERDOME DEPICTS STEVE GLEASON '00 ON THE GRIDIRON DOING WHAT HE DOES BEST: PUSHING HIMSELF HARDER AND, IN TURN, INSPIRING OTHERS.**

That personal drive didn't stop when Gleason left the National Football League in 2008. Nor when he was diagnosed in 2011 at the age of 34 with ALS, the terminal neuromuscular disease that has since left him immobile and reliant on eye-controlled technology to communicate.

Gleason, who helped take WSU to the Rose Bowl in 1997 and whose diving punt block for the New Orleans Saints in 2006 rallied the hurricane-ravaged city's down-but-not-out spirit, confronted the diagnosis the way he deals with any challenge. He tackled it head on.

His foundation, known as Team Gleason, has raised millions for research and advocacy. He's helped inspire technological innovations, including open-source research projects now underway at WSU into specialty tablet computers and wheelchairs controlled by eye movements.

And, last year he and his supporters managed to persuade a divided U.S. Congress to change Medicare rules to cover assistive communication technology for those battling degenerative neuromuscular diseases.

For a guy who's no longer able to move on his own, Gleason still can't be stopped.

"Steve has always set these high goals for himself," says his mother, Gail Gleason, who serves as a senior learning services specialist for WSU Athletics. "He doesn't expect others to do the same but he does invite them to follow along with him if they want. It's not that he sets out to be a leader, it's more that he's a friend."

Those friends have rallied around him.

Team Gleason chapters throughout the country are helping host fundraisers and ALS awareness programs. A golf tournament in Spokane, for example, has drawn pro athletes and others from across the nation.

But it's Gleason, who also played baseball at WSU, who tends to get the biggest results.

"He's always made everybody feel like his best friend," says Rian Rosa Emmerson '00, who attended WSU with Gleason and whose husband, Grady Emmerson '99, was on the Cougar football team with him.

"If anyone could have brought the kind of attention to ALS that's been needed, it's Steve," she adds. "You never wish anything on anyone but with Steve you know he'll find a way … because he always does."

The past year alone marked some major milestones in Gleason's advocacy.

The first came when President Barack Obama signed into law the Gleason Act, which covers assistive technology enabling those with neuromuscular diseases to communicate. The proposal won overwhelming support in both congressional chambers.

"Thousands of Americans living with degenerative diseases can have the peace-of-mind today that their voices will continue to be heard," said U.S. Rep. Cathy McMorris Rodgers, who represents Eastern Washington and was a cosponsor of the Gleason Act.

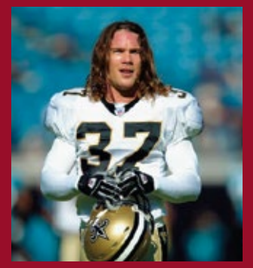
Another came in the fall, when Johns Hopkins University, Cedars-Sinai Hospital in Los Angeles, and Massachusetts General Hospital announced an unprecedented ALS research project. Funded largely with $20 million from private donors, including the NFL and PGA Tour, the effort was inspired by Gleason's Answer ALS Initiative.

His no-white-flags approach to ALS advocacy has, along the way, become an inspirational message for all to live life to the fullest.

That wasn't lost on pioneering grunge band Pearl Jam, which performed a sold-out 2013 concert in Gleason's hometown of Spokane. Lead man Eddie Vedder, a Team Gleason backer, introduced Gleason and his advocacy efforts to the crowd.

Gleason had chosen the concert set list but Pearl Jam had a surprise for him. As the audience chanted his name, Vedder described Gleason's resilience and refusal to give up even in the face of overwhelming odds, then announced one more song.

It was the 1989 Tom Petty classic, "I Won't Back Down."



**Opposite, from top:** Former WSU coach Mike Price embraces Gleason after a big play (courtesy WSU Athletics); Gleason as safety with the New Orleans Saints in 2003 (Jamie Squire/Getty); Gleason appeared in the 2014 Microsoft Super Bowl ad "Empowering" (courtesy NFL)

Steve tweets with his eyes: **twitter.com/@TeamGleason**

view some career highlights: **magazine.wsu.edu/video**

# Green for all seasons

BY LARRY CLARK

The quirks of Pullman weather can make gardening tough. It was only a few years ago that it snowed in June. But in the greenhouses scattered around campus, researchers and students can keep growing and studying plants in adverse weather. Even visitors to campus can enjoy vegetables, holiday poinsettias, and flowers long before they'll thrive on the Palouse.

The latest addition to the greenhouses on campus, a two-story building that resembles a glass apartment complex with glowing sodium lights, sits behind the Lewis Alumni Centre. The research facility allows scientists to raise up to three generations of wheat, barley, and other grains every year, says WSU plant growth facilities manager Dan Dreesmann.

"We can grow 365 days a year with these high-light crops," he says. "The goal is to make it a more efficient operation."

Even when winter snow or cold spring nights stress crops outdoors, the new Washington Grains Plant Growth Facility provides about 30 percent more space for grain breeding and experiments. The $15 million greenhouse—funded by the Washington Grain Commission, U.S. Department of Agriculture, and WSU—also adds a seed vault, a threshing room, lab space, spray chamber, storage for soil and other necessities, and vernalization chambers to simulate cooler temperatures for the plants.

All of this is controlled by high-tech, wireless systems. The variable-speed fans muffle Dreesmann's voice as he shows wheat variants from WSU breeder Arron Carter and barley experiments from Kevin Murphy. Green and gold plants cover tables throughout the 12 new growth chambers.

"We're full and people always want more space. It's my job to get everyone in here," says Dreesmann. He has over 15 years of experience at WSU's greenhouses, and the new grain facility is just one of his seven charges. Adjoining the newer building is an older facility, 20 years in service but still packed to capacity not only with wheat, but with chickpeas, camelina, peas, and lentils.

Spread across the east side of campus are other greenhouses under Dreesmann's care, which house experiments from the entomology department's insects to berry bushes and full-sized fruit trees for horticulture professor Amit Dhingra and his graduate students' work.

In total, the facilities have over 49,000 square feet of growing space. Low and long, these greenhouses resemble traditional facilities more than the newer grain buildings.

Greenhouses are nothing new, playing a part in WSU's agricultural research mission since the 1890s. The concept itself stretches to ancient times, from "hanging gardens" in Mesopotamia to Chinese walled gardens. The ancient Greeks cultivated plants in their homes, and the Romans wrote about using rolling hotbeds to grow vegetables, sometimes behind glass made of mica.

The concept of heated glasshouses emerged from hothouses of medieval times and the Renaissance. French, English, and Dutch horticulturists of the 1500s designed glass greenhouses to grow coveted exotic fruits and better vegetables. An orangery or glasshouse signified luxury and year-round gustatory sophistication.

Like the orangeries of France, the teaching greenhouses at WSU grow a cornucopia of vegetables and flowers for people to enjoy no matter the season—but with a larger mission of educating horticulture students.

Starting in frigid early January, the three buildings across from Ferdinand's in Pullman get stuffed with tomatoes (including the WSU-bred Cougar Red), begonias, peppers, herbs, baskets of flowers, and a wide variety of other plants, all managed by members of the Horticulture Club under the watchful eyes of James Holden.

Holden has taught students and overseen the teaching greenhouses for 35 years. "It's hands-on learning. Anytime you deal with something living, it makes it a lot more meaningful if you can see and feel it," he says.

After ordering seeds and starts, the Horticulture Club monitors the plants, the greenhouse temperatures, and any pests for 13 weeks. In late spring, the club holds its huge annual Mom's Weekend plant sale in Beasley Coliseum, followed by community sales at the greenhouses through May.

Holiday poinsettias in November and December give another source of income for the Horticulture Club. Most of the proceeds fund scholarships.

Holden trains the students in the operation of the greenhouse and in the business side of the commercial plant industry, which gives the WSU graduates a leg up if they go to work in the field. "Instead of coming out with all book learning, they learn the scope of the industry, and have seen the crops from start to finish," he says.

Holden and the students take pride in their products, evident by the return customers to the plant sales each year. Many of them take the plants to the west side of the state, where they can be planted immediately and deliver a splash of color from the flowers.

"We grow quality," says Holden. "If someone buys a hanging basket of flowers from us, if they water and fertilize, I can guarantee it's going to perform better than almost anything else they buy."

## Garlic Scape Pesto

*1 cup garlic scapes, sliced crosswise (about 10 to 12 scapes)*
*¼ cup raw sunflower seeds*
*½ cup extra virgin olive oil*
*¼ cup Parmesan cheese*
*½ cup basil leaves*
*juice of one lemon*

**PREPARATION**

Place the garlic scapes in a food processor and pulse for 30 seconds. Add the sunflower seeds and pulse for 30 seconds. Scrape down the sides of the bowl. Add the olive oil and process on high for 15 seconds. Add the Parmesan cheese and pulse until the ingredients are combined. Add the basil and lemon juice, and process until reaching the desired consistency. Add salt to taste and serve immediately. *From NYT/Cooking*

defrost your menu: magazine.wsu.edu/extra/spring-recipes

STEVE CICERO

STOCK PHOTO

# police training in a new light

BY LARRY CLARK

The call came into 9-1-1 from a Spokane YMCA last October: A middle-aged man was threatening to break the kneecaps of an eight-year-old, because he said the boy could "ruin my NBA career."

Corporal Jordan Ferguson of the Spokane Police Department responded, fully aware of the suspect's antagonistic and unpredictable behavior. Ferguson's body camera footage shows what happened next.

In the lobby of the YMCA, an employee first describes the man's erratic statements. Ferguson tracks the man to the gym, who then walks away yelling. Rather than restraining the man immediately, Ferguson asks him questions and listens carefully and calmly, taking his time as the man vented and eventually admits to attacking several women on the local Centennial Trail earlier that month. The encounter resolved without hands-on force, in part because Ferguson had studied crisis intervention and motivational interviewing. Both are designed to help mitigate the aggressiveness of someone with mental illness.

"We were ready that this might be a violent struggle or we'd have to use some physical force," says Ferguson. "However, using the motivational interviewing not only calmed him down, but we had him agree to get psychological help and had him agree to let us put handcuffs on."

Following high profile, tragic shootings and assaults by police around the country, demand has grown for new training methods and better ways to handle tense encounters. Police require better tools—like crisis intervention training—to de-escalate confrontations in the communities they serve, especially when they interact with people with mental illnesses or when there's racial tension.

Ferguson and other Spokane police officers learned intervention skills from, among others, faculty at Washington State University Spokane, who in turn have begun to research the effectiveness of the training. Meanwhile at WSU Pullman, criminologist David Makin '12 PhD studies how body cam footage and realistic, relevant scenarios can help train police officers to more effectively handle interactions in communities of color and interactions with those experiencing mental health crises.

The stakes are high. Dash cams, body cams, and smartphones are spotlighting the use of force by police in ways society has never before seen. "We have to train officers that they have other tools," says Makin. "A service revolver is not a compliance device."

**INTERVENTION**

Outcomes don't always work out positively. The complexity of what officers face each day can easily devolve into deadly force. Crisis Intervention Team (CIT) training was born from just such an encounter in 1988, with the fatal shooting of a man with a history of mental illness and substance abuse by a Memphis, Tennessee police officer.

"You can't ensure a good outcome even when someone does everything right. You can do everything right and it still turns out as a tragedy. Other times you really screw it up and everything turns out well," says Bryan Vila, a criminal justice professor at WSU Spokane and a veteran police officer.

To improve the odds, criminal justice researchers Vila and Stephen James '15 PhD, along with Matthew Layton, a psychiatrist and clinical associate professor with the Elson S. Floyd College of Medicine, work with the Spokane Police Department (SPD) on intervention training. Vila and James examine the impact of such training on officer behavior in the WSU Spokane Simulated Hazardous Occupational Tasks lab, which measures performance by police officers in simulated operational tasks such as distracted driving and deadly force. Vila and James also examine the effects stressors, such as fatigue, have on officer performance.

The vivid—so realistic it makes an onlooker's heart race—deadly force simulator that Vila demonstrates, as he wields a laser-equipped pistol and faces down an armed criminal on video, punctuates the split-second decisions officers must make.

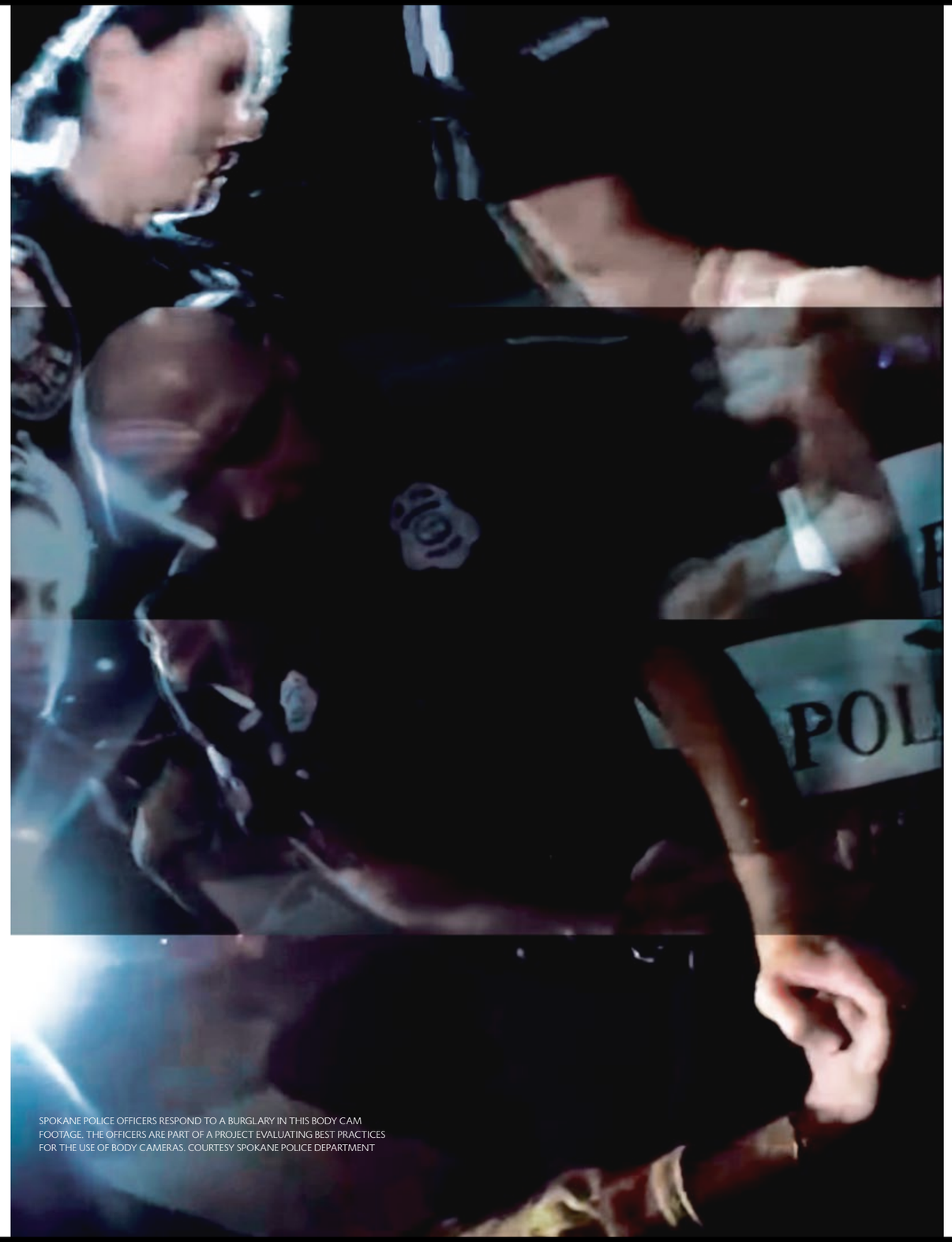
Fateful decisions in a very real situation brought CIT to the fore in Spokane. On March 18, 2006, police responded to an erroneous report that Otto Zehm, a 36-year-old mentally disabled janitor, had stolen money from an ATM. The officers beat Zehm with batons and shot him with Tasers, then bound his ankles to his wrists. Zehm lapsed into a coma and died two days later without ever regaining consciousness.

Following the death, which was eventually ruled a homicide, Layton was asked to do just four hours of mandatory mental health training for the SPD and the county sheriff's department. The officers were skeptical at first.

"I started at 8:15 and at 8 the officers had their weapons check. So I start this training and I have 50 officers with all their weapons on the table when I start," says Layton. "A big bald guy in the back says, 'All this mental health stuff is subjective. I could pump six rounds in your chest from back here and say the voices told me to do it, and get away with it.'

"I said, 'Why don't you tell me how you really feel about being here.' Everybody laughed and exhaled. It was so tension-packed. I had to establish rapport with every group, and have them understand I did not want to turn them into social workers, but try to figure out when their usual approaches are not working."

Full CIT came in 2012 as a result of a civil lawsuit by Zehm's family, requiring 40 hours of training for the whole force. It had never been done on such a large scale in the United States, and offered not just a new technique for officers, but a research opportunity on the effectiveness of CIT.




SPOKANE POLICE OFFICERS RESPOND TO A BURGLARY IN THIS BODY CAM FOOTAGE. THE OFFICERS ARE PART OF A PROJECT EVALUATING BEST PRACTICES FOR THE USE OF BODY CAMERAS. COURTESY SPOKANE POLICE DEPARTMENT

The course, taught by mental health professionals like Layton, showed officers how to identify key symptoms of mental illness and had them practice de-escalation techniques. The goal is to get mentally ill or addicted people the help they need instead of incarceration.

James took CIT to the next level, by analyzing what makes crisis situations difficult for first responders. While CIT has been proven to increase officer empathy and lower arrest rates of mentally ill people, little empirical validation has been made on *how* effective CIT can be. He and his wife Lois James '11 PhD, a criminologist with WSU's nursing college, used concept mapping focus groups to measure the totality of police encounters.

After winnowing down important factors with the help of law enforcement and mental health professionals, the couple sent a survey to hundreds of law enforcement and mental health professionals across the country. They could then prioritize key elements for CIT, such as knowing the history of a suspect or the ability to read nonverbal cues of a person in crisis.

"Lois and I conducted that research and handed the results to Frontier Behavioral Health, Matt Layton, and Captain Keith Cummings from SPD. They took the results of our study and turned it into learning objectives for the Enhanced CIT program," says James, who was aided in the analysis by a background in information technology. He did similar focus groups with minority members of the community.

James points out that measurable outcomes lead to better accountability as well as direct application. "We give law enforcement a tremendous amount of power. They're the only ones in our society who can legally use force to coerce someone to do what they want, without due process. We give them this power and rightfully hold them accountable, but we should only hold them accountable for what they can control."

The study led to Enhanced CIT, an intensive 65 hours of training, in addition to their 40 hours of basic CIT, for officers who volunteered. "ECIT is for the people who have the heart for this and want to go into these situations. We want them to have a special expertise, just like we have a SWAT team," says Layton.

The first group finished ECIT in April, after training at a methadone clinic with Layton, mental health clinics, Sacred Heart Medical Center's triage unit, and Excelsior Health for mentally ill kids.

Ferguson, Vila's graduate student and a 16-year veteran of SPD, certified through the ECIT training. He describes one of the approaches with a humorous counter-example. "In the movie *Airplane*, there's a lady that was screaming, and everyone kept shaking her and slapping her, telling her to calm down. That is so inherent, when somebody's upset, you want to grab them and say 'Calm down.' Yet it's the worst thing you can do. Using motivational interviewing makes them feel validated, and voice what's going on inside them, so they calm down themselves."

James helped organize a conference held at WSU Spokane last July with the researchers, SPD, Spokane Fire Department, Veteran's Administration, and mental health organizations to showcase the

coordinated efforts to serve people with mental illness. It drew police officers from all over the country and another conference is scheduled for July 2016.

Layton, who took part in the conference with James and Vila, says he has also learned from the experience. "I used to think in teaching I need to tell you what I know. Now I am much more collaborative. I can help officers understand that the bad guy might be acting bad for other reasons."

Ferguson and other police officers see CIT as a valuable tool in their daily work, helping suicidal individuals and others in distress. He describes another encounter with a woman whose delusions caused her to believe she ruled Spokane and her father was John Lennon. Ferguson spent 15 minutes with her, not agreeing with her but not arguing either. Eventually she calmed down enough to let him get her to help.

"If we could do this whole job without using force on anybody, that would be ideal," he says. "I just don't think that's ever going to happen, but the amount of times we can reduce the use of force and get cooperation from people, not hurting them, makes a safer community."

## BODY CAMS

When officers do have to use force, body cams and other videos show it to the world. But accountability for police is just one way law enforcement and society can use this expanding technology. The footage can help shape officer training.

"We often think the key thing with body cams is to hold the officer accountable," says Makin, an assistant professor in WSU criminology and criminal justice department and Research Fellow at the Washington State Institute for Criminal Justice who has researched body cams and training. "But in many ways this is a phenomenal training device."

Makin studies problem-based learning for cadets at police academies, a method to introduce realistic scenarios in training and build confidence in recruits as problem-solvers. Body cam footage would let trainers introduce real-world scenarios that reflect both good and bad ways to handle policing situations.

"Much of what an officer does is invisible policing. It never gets captured," says Makin. "Body cams are going to be so beneficial. It's going to give us glimpses into the officer's world in a way we've never been able to obtain."

Problem-based learning attempts to bring critical thinking skills to new officers, while also conveying the legal, defensive, and administrative knowledge they need to be cops. Makin writes that, while traditional training is adequate, it focuses on making police compliant soldier-bureaucrats. Problem-based learning, with its emphasis on analyzing situations, could help officers become competent practitioners.

Body cam footage potentially could increase competency. A recent example from a training session by Makin shows how it might work.

After an interaction, the officer could see "it wasn't misconduct by any means. But he goes back to the footage and says 'You know, I really handled that inappropriately. I was maybe a little bit rude in dealing with these two young men.' He corrects his own behavior."

Makin has worked with the Washington state police academy and several other agencies to improve training and help instill better techniques in new police officers. He also acts as a research partner in Idaho on mental health and criminal justice issues.

He says body cams can also give communities a better total view of how police work with minority communities. "Baltimore, Atlanta, and Ferguson, Missouri are going for body cams. These are both large and small agencies, and it can show the antagonistic nature of some encounters when we interact with certain groups. Before it was just from the officer's perspective or the community's perspective."

Makin says even though bystanders with smartphone cameras can capture selectively, body cams that turn on when an officer responds to a call can show full interactions and results, negative and positive.

"We had dash cams but those were just for traffic stops," says Makin. "Now we see what it means to be an officer. We have so many great officers and we haven't been able to highlight that."

Makin has a large study expected to be released this spring exploring the officer perspective and organizational factors contributing to a successful implementation of the device, which could lead to more training opportunities with that footage. However, he says body cams are not without problems.

"If officers know they are in a research study and have body cameras, they change their behavior. We haven't been able to control for that," says Makin.

He continues: "We do worry about unintended consequences as witnesses might not be so willing to talk. It takes the police interaction out of an informal to a formal relationship because of the camera."

## THE NEW TRAINING

Vila says the work at WSU can lead to more valid, empirically based training, but it's not always understood by law enforcement.

"There are over 18,000 police agencies in the United States, each with their own standards for police training. They think 'valid' means we all agree. They don't understand validity the way we do, which follows rules of evidence and science. We need to change that mindset," he says.

The work is beginning to get some traction. James recently spoke to the International Association of Chiefs of Police (IACP) about the CIT studies. He, Lois James, and Vila give about one or two presentations a month throughout North America, including Canada.

Stephen and Lois James are the successors to Vila's lab. Vila says they are uniquely qualified to continue the work: "People who came up through the WSU criminal justice and criminology program get neuroscience, public health, and physiology. They're not observers, but participants in the research."

Vila notes that Lois is doing much of the same investigative work in nursing, and recently was chosen to serve on the research advisory committee of the IACP because of her studies on race bias, sleep, and performance. It's a high honor for a young academic.





+ Former King County sheriff and policing expert Sue Rahr '79 talks about new ways of police training: magazine.wsu.edu/extra/police-training

Stephen James says the research work in criminal justice makes sense in WSU Spokane's health sciences programs. "Criminal justice and public health go hand in hand. As one fails, the other one picks it up."

The Jameses are also joined by Jacqueline van Wormer '90, '92 MA, '10 PhD, an assistant professor who analyzes the efficacy of community courts versus traditional justice models. Together they hope to place policing and police training within the total response of the community to people with mental illness.

All of the researchers point out that the most important aspect of training for police is how it applies on the street, and measuring whether or not it actually reduces shootings and assaults.

"The big secret is no one has ever measured the impact of deadly force training, the biggest chunk of training an officer gets in the academy," says Vila. "No one knows if there's a connection between doing well in training and doing well in the real world."

Makin agrees that law enforcement officers must feel that training—whether it's crisis intervention or problem-based learning—can work on the street.

"We send officers to diversity training. But if you think of an area that's 30 percent Russian, and they've gone through this training that only talks about how you interact with a population that's black or Latino, they say, 'This doesn't apply to me.'

"Ultimately, they have to see how it's effective, how they will become more efficient," says Makin.

James would like to see new training come to basic law enforcement academies as well as continuing training for veteran officers. "Someone needs to sit down, take a deep breath, and look at all the changes in policing in the past 20 years. Look at everything that's worked, if we can measure it. Look at the core skills of policing and what society wants out of police now," he says.

Through crisis intervention techniques, realistic training scenarios based on body cam footage, and scientific analysis of training effectiveness, police officers can become even more competent and successful, especially working with diverse communities and people with mental illness.

It could help change perceptions of police as well. Sometimes, says Vila, "The general public believes what they see on television, police shooting guns out of people's hands and other magical things that don't work in the real world. That's not how policing happens."

Anecdotal evidence, like Ferguson's YMCA encounter, are showing the way. In the lab, Layton turns around his laptop and shows a news report from KXLY Spokane, aired on a Saturday during the Enhanced CIT training.

An onlooker's cellphone video shows police responding to a naked man on a residential street, rolling around and yelling incoherently. The officers didn't restrain him or draw weapons. Instead they kept him contained as he calmed down until an ambulance arrived. The people watching applauded as the man was loaded onto a gurney and taken to get the medical help he required, and not into the back of a police cruiser to be booked into jail.

+ Read a longer conversation with Nancy Rodriguez: magazine.wsu.edu/extra/rodriguez-policing

## BEYOND JUST TRAINING

Police training is just one piece of the complex scientific puzzle to measure law enforcement effectiveness, says Nancy Rodriguez PhD '98, the director of the National Institute of Justice (NIJ). The NIJ is the research arm of the U.S. Department of Justice, and Rodriguez was appointed in October 2014 by President Barack Obama.

"This goes beyond just training," she says. "In the past there was a focus on behavioral research, or on technology. We need to understand the connections between different areas."

Rodriguez's deep expertise—from her doctoral research at WSU with Professor Nicholas Lovrich and later her professional career at Arizona State University—gives her both practical and academic insight. As an ASU criminal justice professor, she wrote prolifically about issues such as the intersection of race, ethnicity, crime, and justice.

Just as importantly, she worked directly in courts and police agencies. Based on these experiences, Rodriguez says we need to use scientifically proven methods to identify which reforms can truly reduce crime and keep both communities and police officers safe.

"When I took this position, Ferguson and Baltimore were just hitting the national spotlight," she says. "Then we had the president's task force on twenty-first century policing, which to me is the blueprint for how we can improve police practices by using science to identify what works."

As the Justice Department's chief scientist, Rodriguez says she applies rigorous research methods to broad questions of crime and justice, bridge gaps between disciplines, and finally translate the ideas into practice.

NANCY RODRIGUEZ COURTESY NIJ

PHOTO MATT HAGEN

# Leen Kawas is on a mission to cure the disease that took her grandmother's life.

BY ALYSSA PATRICK '13

A scientific discovery that could lead to treatments for Alzheimer's and cancer drives biochemist and executive Leen Kawas. For her, it's a personal and professional quest to develop that discovery into innovative, affordable drugs for the millions of people facing those diseases—a quest that started at seven years old, when her grandmother got cancer.

At 30, Kawas '11 PhD is one of the youngest biotech CEOs in Seattle and, as a woman from Jordan, one of the most diverse. In her first year at the helm of M3 Biotechnology, her small but rapidly growing company, Kawas has been featured on a number of panels as an expert in topics ranging from the technicalities of drug development to how women can succeed as entrepreneurs.

For Kawas, these distinctions are just bonus side effects to the real inspiration that keeps her working 16-hour days: The success of her company could reverse the effects of neurodegenerative diseases like Alzheimer's.

"I have a passion to solve a problem that is facing millions," says Kawas. "I could have a job that makes more money, has normal hours, but this is where I should be right now."

M3 Biotechnology was launched at Washington State University in 2011 by researchers Joe Harding and Jay Wright with support from WSU's Office of Commercialization. The discoveries that led to M3's lead drug candidate, MM-201, also have the potential to treat cancer. This is what brought Kawas from her Jordanian city of one million to small college town Pullman. Curing cancer has been her mission since she watched the disease take her grandmother's life.

"She deteriorated quickly and stayed with us while she was in her terminal stage," says Kawas. "As a child, seeing that leaves a significant message that someone needs to do something."

Twenty-three years later, Kawas is well on her way to being that someone.

## From pharmacist to researcher

The development of MM-201 began with basic research to better understand some of the most fundamental building blocks of life: growth factor proteins. For more than 20 years, Harding and Wright have been studying the biochemicals that control much of our human development, immune systems, personalities, and ability to learn. Since these proteins are involved in so many processes, irregularities in how they behave also result in some of our most devastating diseases, including cancer and neurodegenerative diseases.

"Effectively and selectively controlling growth factor function is one of the holy grails of medicine," says Harding.

After three years as a pharmacist in her home country of Jordan, Kawas was itching to dig into that kind of challenge. While she valued the experience gained in the patient interaction and drug approval side of disease treatment, she wanted to take a more active role in research and development. She started applying to doctoral programs related to oncology drug development at prestigious universities in the United States.

Applying to a west coast school did not cross her mind until Abdelrahim Al-Hunaiti '83 PhD, a former president and biochemistry professor at the University of Jordan, suggested the university that he had attended in a great Washington community. Upon looking into WSU herself, she found the kind of research she was looking for in Harding's lab, and with just two hours before the deadline, submitted her application.

Seven months later, she traveled over 6,000 miles to Pullman to begin what she thought would be a lifelong career in academia.

## Hidden business skills

When Kawas arrived at WSU in 2008, Harding and Wright had uncovered some of the mechanisms that make growth factor proteins function, allowing them to build small molecules that can either activate or inhibit the proteins. Activating a growth factor can halt degenerative processes in the brain, and inhibiting growth factors could stop the cell division and loss of cell adhesiveness that leads to cancer.

The drug candidate developed in Harding and Wright's lab, MM-201, overcomes many of the barriers that have kept other treatments from becoming viable options. Most existing attempts to inhibit specific growth factor systems have a high likelihood of drug resistance, and cannot make it past the blood-brain barrier, resulting in costly or invasive treatment options. Existing attempts also lack specificity, meaning they are not as accurate in targeting the proteins they need to alter. The ability to activate growth factors with pharmaceuticals has been even less successful, and no Federal Drug Administration-approved drugs are available.

Harding and Wright's discoveries led to a candidate that is inexpensive to manufacture, highly specific, and can reach the brain. The treatment will be offered in a pill form, as opposed to an injection or other more costly, invasive options. When Kawas joined the lab, MM-201 was showing promising results in animal testing. Recognizing the potential of this work, Harding and Wright collaborated with the WSU Office of Commercialization to protect the intellectual property, secure patents, and launch the startup that could take the treatment to the marketplace.

Kawas began helping with that process, making some of the final validations and conducting tests needed to fully develop MM-201. In addition to her impressive science and research skills—she completed her doctorate in a breathtaking three years with numerous publications—Harding be-

PHOTO DANIEL MORRIS/COURTESY WBBA

> **I SAW A TALENT IN HER I HAVEN'T SEEN IN ANYONE ELSE. SHE MADE THE COMPANY A COMPANY.**
>
> *— JOE HARDING*

PHOTO DANIEL MORRIS/COURTESY WBBA

gan recognizing a natural business savvy and leadership ability in Kawas.

"Joe was the first person to tell me he saw me as an executive in pharma, and encouraged me towards leadership, rather than taking the traditional research path," says Kawas.

Harding encouraged her to stay in Pullman and start developing those skills by continuing work on building M3. Inspired by the discoveries they were making, a strong friendship with Harding, and a new challenge, Kawas decided to stay even amid countless job and post-doctoral offers.

"Working with Joe made neuroscience fascinating," she says. "He motivates a lot of people."

In 2011, she became vice president of research for M3. While the drug development was going well, she became more interested in the business development side. She started teaching herself about the world of biotech and entrepreneurship, a trait she learned from her mother.

With degrees in literature, philosophy, and logic, and with no formal business training, Kawas's mom ran the biggest hospital in Jordan—which Kawas calls the "Mayo Clinic" of the Middle East—and held many managerial positions at the University of Jordan.

"She was a very influential lady in Jordan and influenced my siblings and me a lot," says Kawas. "I never felt limited, that there was anything I couldn't do."

Harding witnessed that mentality after months of watching Kawas teach herself anything the business needed to move forward. So he nominated her as CEO.

"I received quite a bit of pushback on the idea of placing a 27-year-old postdoc at the helm of the company," Harding says. "But I saw a talent in her I haven't seen in anyone else. She took over a year and a half ago, and she made the company a company."

## The Scientist CEO

Kawas's first big decision as CEO was to move M3 to Seattle, increasing access to the capital and business consultants needed to move to the next stage. The process of getting a promising research discovery from the lab to the local pharmacist is long and arduous—especially for biotech companies. Investment is risky because clinical trials and Food and Drug Administration approvals take time, and failure rates are high. But despite being a newcomer to Seattle's predominately white, male biotech community, Kawas quickly started making an impact.

"A scientist-CEO is unusual," says one of M3's consultants and Kawas's mentor Mike Flynn. "Most CEOs are only as convincing as the science they memorize, and it is obvious Leen knows the science behind what she is talking about."

Kawas's colleagues also frequently credit her success as CEO to a confident and fiery spirit, which began popping up as a middle school student. Kawas attended an Amman school where girls were required to wear skirts, a rule she did not understand since she was allowed to wear pants outside of school.

"I told my mom one day I wanted to buy pants to wear instead, and she supported me," says Kawas.

The principal quickly noticed Kawas's new style, and told her she needed to wear a skirt. In response, she cut off all her hair and went unnoticed by the school's leadership for a while. Other middle school girls started wearing pants as well, and then even high school students. By the end of the year, the principal relented, giving girls an option between pants or a skirt.

"I respect and listen to experience," says Kawas. "But sometimes you need to trust your own perspective to make change."

That mindset is evident in the way Kawas navigates through a notoriously risky industry. In just a year and a half, she achieved investment and drug development milestones for M3 that can often take years. She secured significant partnerships with the Michael J. Fox Foundation and Alzheimer's Drug Discovery Foundation. Pharmaceutical companies are already showing interest in licensing the drug once it gets through the approval process. Kawas and the M3 team are pursuing an FDA fast-track designation, which would allow them to design initial clinical trials that would expedite the whole approval process. Clinical trials could start as early as 2016.

On the business side, Kawas has kept M3's expenses in check and is hitting milestones outlined for investors ahead of schedule, something that almost never happens.

"We call it the 'Leen R&D' model," says Flynn.

Today, M3 is expanding, moving from a few offices at the University of Washington's incubator to lab space recently acquired in the Amgen auction. The company has also grown to 15 full- and part-time employees, meeting one of their goals to create job opportunities in Washington. According to a recent article in *Seattle Business* magazine, success of M3 could mean even bigger economic impacts for Washington, as analysts predict the market for neurological disease treatments to be in the multi-billion dollar range.

As the M3 team moves MM-201 toward clinical trials, they also have eight issued and sixteen pending national and international patents for different families of compounds in the pipeline. Partnering with a pharmaceutical company on MM-201 will free up resources to begin working on other compounds.

Through the process, Kawas continues to work long days, dedicated to getting this life-changing treatment—and hopefully others—into the hands of the people who need them.

# Successful startups from WSU

Launching startup companies like M3 is one key way that public research universities contribute to economic development. In addition to introducing a product or service to the market that solves global challenges or meets consumer needs, these companies create new jobs. Graduate students in the lab of entrepreneurial professors are also often heavily involved in startups, giving them business and leadership experience that expands their job opportunities. WSU's Office of Commercialization works with researchers to navigate through every part of the startup process, from initially disclosing information about the invention, to securing patents, to developing a business plan and finding funding.

A *sample* of successful startups:

## HEALTH SUM

**Researcher:** John Wenz, DVM, MS

**Launched:** 2014

**Problem:** Veterinarians do not have a reliable way to track outcomes of the health management techniques used on dairy cows.

**Solution:** A health record database that imports and evaluates health data from existing dairy management software to determine outcomes of health management. This gives the veterinarian more information about the effectiveness of treatments and the impact of disease on cow productivity.

**Impact:** Veterinarians can use the evaluations to ensure consistent, effective health management.

## Microwave Assisted Thermal Sterilization (MATS) System and 915 Labs

**Researcher:** Juming Tang, PhD, biological systems engineer

**Launched:** 2014

**Problem:** Traditional food processing reduces the nutritional value and quality of food

**Solution:** A new sterilization method that eliminates pathogens faster while maintaining nutritional value and taste.

**Impact:** The technology has the potential to revolutionize the food processing industry, which has not changed in nearly 100 years. It is exclusively licensed to startup company 915 Labs, which has both pilot- and full-scale MATS systems running at a major consumer packaged goods company and two co-packers. 915 Labs and WSU have organized boot camps in Pullman for food processing companies that have interest in the MATS B and MATS-150 systems.

## MYM LLC. Incorporated

**Researcher:** Matt Whiting, PhD, horticulturist

**Launched:** 2014

**Problem:** Fruit orchardists do not have a precise way to measure how many cherries are picked, and no fluid process of getting that information accurately to payroll.

**Solution:** The FairWeigh system allows fruit pickers to easily weigh fruit in the orchard. Data from the system is sent directly to people who are managing harvest and payroll, streamlining and improving accuracy of payroll, while also keeping better track of the harvest process.

**Impact:** The process can save farmers money, allow more flexibility in picking, and guarantee fair pay for pickers.

**By the Numbers:** 2010–2014

**21** startups formed

**367** patents filed

**353** new inventions disclosed

+ Other successful WSU startups: magazine.wsu.edu/extra/startups



# FDA Drug Approval Process

**Prescription Drug User Fee Act (PDUFA)** has enabled the Food and Drug Administration to bring access to new drugs faster if the drug companies agree to pay fees that boost FDA resources and for the faster time frames for its review of new drug applications.

## PRE-CLINICAL

**Drug Developed**

Drug sponsor develops a new drug compound and seeks to have it approved by FDA for sale in the United States.

**Animals Tested**

1 Sponsor must test new drug on animals for toxicity. Multiple species are used to gather basic information on the safety and efficacy of the compound being investigated/researched.

**IND Application**

2 The sponsor submits an **Investigational New Drug (IND) application** to FDA based on the results from intial testing that include the drug's composition and manufacturing, and develops a plan for testing the drug on humans.

## CLINICAL

**IND Review Phase I**

3 **20–80** is the typical number of healthy volunteers used in this phase which emphasizes safety. The goal here is to determine what the drug's most frequent side effects are and, often, how the drug is metabolized and excreted.

**IND Review Phase II**

4 The typical number of patients used in this phase is in the **100s**, which emphasizes effectiveness. The goal is to obtain preliminary data on whether the drug works in people who have a certain disease or condition. For controlled trials, patients receiving the drug are compared with similar patients receiving a different treatment—usually a placebo, or a different drug. Safety continues to be evaluated, and short-term side effects are studied.

**IND Review Phase III**

5 **1000s** of patients are used in this phase. These studies gather more information about safety and effectiveness, different populations and different dosages, and uses of the drug in combination with other drugs.

## NDA REVIEW

**NDA Application**

6 After a pre-meeting, the drug sponsor formally asks FDA to approve a drug for marketing in the United States by submitting a **New Drug Application (NDA)**. An NDA includes all animal and human data and analyses of the data, as well as information about how the drug behaves in the body and how it is manufactured.

**Application Review**

7 After an NDA is received, FDA has 60 days to decide whether to file it so it can be reviewed. If FDA files the NDA, the FDA review team is assigned to evaluate the sponsor's research on the drug's safety and effectiveness.

**Drug Labeling**

8 FDA reviews the drug's professional labeling and assures appropriate information is communicated to health care professionals and consumers.

**Facility Inspection**

9 FDA inspects the facilities where the drug will be made.

**Drug Approval**

10 FDA reviewers will approve the application or issue a response.

The **Accelerated Approval program** allows earlier approval of drugs that treat serious diseases and that fill an unmet medical need. The FDA's **Fast Track program** reduces the time for FDA's review of products that treat serious or life-threatening diseases and unmet medical needs. For more information on these programs visit magazine.wsu.edu/extra/fdatracks.

## POST-MARKET

11 Once FDA approves a drug, the post-marketing monitoring stage begins. The sponsor (typically the manufacturer) is required to submit periodic safety updates to FDA.

FDA's **MedWatch** voluntary system makes it easier for physicians and consumers to report adverse events. When new risks are uncovered, the risks are added to the drug's labeling and the public is informed through letters, public health advisories, and other education. The use of the drug may be substantially limited. In rare cases, the drug will be withdrawn.

SOURCE: U.S. FOOD AND DRUG ADMINISTRATION

ALUMNIpedia



SPRINGTIME AT THE BRYAN HALL CLOCK TOWER, PHOTO SHELLY HANKS

a radio-style report on a Northwest Radio Hall of Fame: magazine.wsu.edu/extra/nw-radio

BY DAVID WASSON

# The Mott squad

*Before broadcaster Robert Mott founded NPR, he helped bring Washington State's communication education into the television era*

**NATIONAL PUBLIC RADIO COFOUNDER AND FORMER WASHINGTON STATE PROFESSOR ROBERT MOTT** briefly appeared on a large projection screen before the video image froze and then disappeared. Again.

Mott waited patiently in his San Diego home as some of his former broadcast students, now in their 60s and 70s, double-checked the video chat settings from the Yakima conference room where they'd gathered. He wasn't too worried.

Their bond, after all, had been forged in an era of technological innovation, though that was a half century earlier when many problems could be fixed by simply adjusting an antenna or verifying a connection. Wireless routers, IP addresses, and dynamic host configuration protocols had yet to be invented.

"We've decided ... that this technology of young people doesn't work as well as reel-to-reel tape," says Carl Highland '62, drawing a long-distance chuckle from Mott and from the roomful of fellow graduates of the speech, radio, and television program, which would later become the Murrow College of Communication.

Mott, now 95, still commands almost legendary respect among former students, many of whom went on to help shape the Pacific Northwest's television news industry as household names or network executives.

The former students—some call them "The Mott Squad"—were among the earliest graduates of one of the first communications programs to recognize the influence television would have on broadcast news. They use periodic gatherings like the one in Yakima to reconnect, reminisce, and promote their mentor's contributions.

"I worry that a lot of people don't realize how big of an impact he's had," says Bill Brubaker '61, who spent 25 years with KOMO TV in Seattle before serving as a Snohomish County council member and as the state's aviation chief. Mott's influence extended beyond journalistic training: "He taught us about leadership, citizenship and honor."

The college already was considered a broadcasting pioneer, having launched one of the nation's first campus radio stations, and became one of the first to develop its own TV station as well. Mott, who spent 12 years at Washington State, oversaw creation of the KWSC TV studio, which began broadcasting in 1962.

The hands-on educational opportunities put students at the forefront of what would become a major shift. Television news originally was considered a simple public service. But the influence and popularity of TV news grew so rapidly during the 1960s and 1970s it became a programming staple.

"We had a special opportunity ... to not only participate in the changes but to be leaders," says Gary Justice '65, who was a longtime reporter and anchor at KING TV in Seattle.

He and others point to Mott's insistence that while broadcasters should fully understand the technology they use, the greatest focus should remain on journalism's fundamentals.

A World War II paratrooper who survived Europe's bloody Battle of the Bulge, Mott turned to broadcasting and teaching when he returned home to the United States.

ROBERT MOTT AT KWSC. COURTESY WSU MANUSCRIPTS, ARCHIVES, AND SPECIAL COLLECTIONS

At Washington State, he primarily taught broadcast journalism courses and for nine years produced a weekly "Science in the News" radio program that was carried by more than 50 stations and the Voice of America radio network.

Following the war, Mott continued to serve as an Army Reserve officer and carried into the classroom an expectation of discipline and attention to detail that his students believe helped them build good work habits.

"He told me to clean my desk and keep it clean," recalls John Sandifer '61, whose broadcast journalism career included lengthy stints at KOMO and KING in Seattle. "I just said, 'Yes, colonel.' He insisted that the only thing you have on your desk is what you are working on right now."

Several of Sandifer's colleagues nod in agreement. The former students say they pushed themselves to live up to Mott's expectations. "The one thing you didn't want to do was disappoint 'the colonel,'" explains Bob Brunkow '68.

Mott left WSU in 1968 to become executive director of National Educational Radio in Washington, D.C., and it was during that time he helped develop NPR. He later joined the newly-formed Public Broadcasting Service and also served in various capacities with the Public Service Satellite Consortium.

Over the past few years, Mott's students have sought to spotlight his WSU accomplishments and bring greater attention to their mentor's influence in the Pacific Northwest.

Bob McConnell '62 created a scholarship in Mott's honor and several students gather periodically to reconnect and get updates on the program's progress.

That's why so many were in Yakima one weekend in October, lining up for a chance to visit again with "the colonel," even if only by video.

"You were the gold standard by all accounts," Tom Hunt '64 tells him, taking his turn at the front of the room to visit with Mott.

"I'm not so sure about that," Mott replies, turning the video conversation with the former students around by thanking them for taking their education into the emerging TV era and laying a solid foundation for its growth.

"The students are my legacy," Mott tells them. "You are my legacy."

BY DAVID WASSON

# A veterinarian to the corps

He was the old guy in airborne training at Fort Benning, Georgia, a U.S. Army veterinarian holding his own with soldiers half his age, preparing to leap from a plane.

**JOHN L. POPPE '86 DVM** had parachuted recreationally back in his Pullman days but was taking command of a special airborne veterinary unit in 2001 and wanted to be jump ready.

"I was determined to do it," recalls Poppe, now a brigadier general and chief of the U.S. Army's multifaceted Veterinary Corps.

He was a 42-year-old lieutenant colonel back in jump school and his commitment to readiness was no academic exercise. Two years later, his team of airborne veterinarians was deployed as part of Operation Iraqi Freedom.

"A lot of what we do is keep the military dogs healthy," explains Poppe. "But that's just part of it. There's food safety, working with livestock and procurement, and disease detection."

Poppe's knack for embracing challenges has served him well for nearly three decades as he climbed the military ranks, including a demanding year-and-a-half stint at the Pentagon. In addition to the Middle East and multiple postings throughout the United States, Poppe has been sent to Korea, Turkey, and the Caribbean island nation of Grenada.

His national leadership and global accomplishments also has earned him the 2015 Regents' Distinguished Alumnus Award, the highest alumni honor bestowed by Washington State University.

Poppe, who also served as the army's assistant surgeon general and is the first veterinarian to become the U.S. Army Medical Command's deputy chief of staff for public health, was honored last October during a reception on the Pullman campus.

Now nearing retirement, he still has a youthful demeanor, a quick wit, and the tempered resolve of a general with Pentagon experience and command of a crucial piece of the Defense Department's infrastructure.

Raised on a dairy farm near Mount Vernon, Poppe earned a bachelor's degree in animal sciences in 1981 from WSU before graduating *cum laude* from the College of Veterinary Medicine.

He worked in a small-animal practice in Seattle before joining the army in 1987 for what he figured would be a quick term. "I thought I'd do this for three years and then get my real job," Poppe says with a laugh.

Instead, he discovered the reach of the Army Veterinary Corps.

In addition to the health of all military animals, the Veterinary Corps is responsible for overall food safety, disease detection, and some Defense Department research. In fact, it serves as one of the world's largest food protection programs, overseeing about 2,000 approved procurement sources in more than 80 countries, and is widely credited with the U.S. military's low rate of food-borne illnesses.

His wife, Denise Richey Poppe '86, pushed him to stick with it as the end of his first three-year tour drew near. Despite the 18 relocations over a 28-year career, both are glad he did.

Veterinarians, after all, are considered key to the U.S. military's overall health and preparedness.

The Veterinary Corps was formed because of the nineteenth-century reliance on livestock for transportation. But their academic training in microbiology, epidemiology, and pathology gave the military a cadre of health science professionals whose roles could be adapted to evolving needs, including research into vaccines, antitoxins, and antidotes.

Today, the army is the largest provider of veterinary science scholarships nationwide and is the single-largest employer of WSU veterinary medicine graduates.

Although he now makes his home in San Antonio, Texas, Poppe hasn't forgotten his Pacific Northwest roots. He has returned to Pullman at least once a year over the past decade as a guest speaker on international veterinary science.

As he looks back over nearly three decades spent in the army, Poppe recalls fondly the varied demands of overseas deployments, in particular.

"There were times when I wished I'd been more attentive in school when we were learning about things like chickens," he says with a matter-of-fact chuckle. "I'd grown up on a dairy farm and in school thought that's what I'd be doing."

It reminds him of what he tells other aspiring veterinarians who seek his advice.

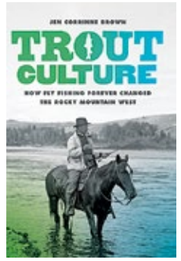
"Make sure you don't get too focused," Poppe says. "Do a lot of things because you don't know where life is going to take you."

**Brigadier General John L. Poppe '86 DVM**

The U.S. Army Veterinary Corps cares for more than 4,000 military working dogs as well as Navy marine animals, military mascots, ceremonial and working horses, installation wildlife, and the privately owned pets of service members.

WSU has a long history of supplying outstanding army veterinarians, including Capt. Clayton Mickelson '39, the most decorated military veterinarian; and Lt. Thais deTienne '38, the first female Veterinary Corps officer.

COURTESY FORT SAM HOUSTON, U.S. ARMY




## Trout Culture: How Fly Fishing Forever Changed the Rocky Mountain West

JEN CORRINNE BROWN '12 PHD

UNIVERSITY OF WASHINGTON PRESS: 2015

With help from Hollywood and even popular beer labels, the Rocky Mountain region of the American West enjoys an iconic reputation for wild and natural fishing. It's where rugged individualists reconnect with nature through timeless traditions.

Missing from the customary narrative are the generations of human intervention, environmental manipulation, and social transformation.

Brown, who earned a history doctorate from WSU in 2012, calls it the biggest fish story ever told.

"In reality, the exceptional (and oversold) trout fisheries of the West are neither wild nor natural, but now exist because of drastic and complicated environmental and social changes," Brown writes.

An avid fly fishing enthusiast herself, Brown has dug through American history to piece together the tale of how the Rocky Mountain West's prized trout fishery was cleverly engineered.

Popular species favored by sportsmen were introduced to the region's waterways, eradicating native fish populations. By the early twentieth century, western hatchery systems were churning out millions of rainbow, brown, and brook trout. The regional fishery quickly developed its own lucrative identity.

"This popular pastime and growing economy, however, rested on environmental change and massive amounts of trout stocking," notes Brown, who now is an associate professor at Texas A&M University. "These conceptions of place and region and their accompanying hatchery activities caused the devastation of western native fish."

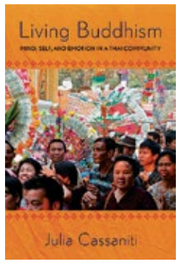
Brown traces fly fishing back to its European roots and how the emerging trout culture helped shape development of the western United States and the growing political influence of the region's sport fishing industry.

Now, some states are trying to restore native species, an issue Brown explores but steers clear of embracing, particularly because it often involves the use of toxicants.

"Their quests to preserve native fish are valiant, even if the means need to be reexamined," she writes. "And although anglers have ignored native concerns in their Rocky Mountains with the big trout, their continued romanticization of western fly fishing has been beneficial for other environmental issues."

Despite overturning the notion of a wild and natural Rocky Mountain fishery, Brown also examines the trout culture's activism and the durability of fishing as a pastime, as she remains optimistic overall about its future.

*—David Wasson*




## Living Buddhism—Mind, Self, and Emotion in a Thai Community

JULIA CASSANITI

CORNELL UNIVERSITY PRESS: 2015

A scholarly work woven with human drama, the book treats readers to an engaging account of Buddhism as it occurs in the everyday lives of two extended families in rural Northern Thailand.

WSU assistant professor of cultural anthropology Julia Cassaniti spent 10 years observing life in the small mountainous community of Mae Jaeng. She formed close relationships with the villagers while helping in their shops, taking part in religious festivals, and offering support during personal conflicts and medical problems. Her account gives new insight and a deeper look at the social psychology of Buddhism.

Much of the story plays out in the life of Sen, a young man battling emotional pain and alcoholism. Cassaniti shows how the ideas of letting go, acceptance, and karma underlie a Thai Buddhist's psychological and physical well-being, and help promote healing.

Previous studies suggested that laypeople in Thailand have difficulty grasping these tenets of Buddhism—leaving it to monks and academics to explain the deeper concepts. Through detailed conversations, however, Cassaniti reveals that ordinary Buddhists do make an effort to understand and incorporate the beliefs into their daily lives and struggles.

Cassaniti herself learns to assimilate some of these concepts. "Jai yen, Julia," the Thai women tell her during stressful incidents. "Be calm, keep your heart cool." Or they might say, "Tham jai, make your heart," which means acceptance and letting go.

For comparison, Cassaniti visits a nearby Christian Thai village where she sees cultural differences in the community's emotional responses. While people from Buddhist Mae Jaeng show little distress over stolen money, for example—relying on karma, making the heart, and letting go—the Christian villagers more often reported being angry or sad and took steps to track the thief down.

*—Rebecca Phillips*

## Lowell Liebermann: Complete Works for Two Pianos

88 SQUARED PIANO DUO

ALBANY RECORDS: 2015

WSU piano faculty members Jeffrey and Karen Savage are the formidable pianists of 88 Squared, a critically acclaimed piano duo. This remarkable recording of Liebermann's music for two pianos will only add to their international reputation. Liebermann's piano music requires keen attention to color, texture, balance, and lyricism. His ample use of counterpoint requires absolute precision between the four hands.

88 Squared seems entirely comfortable with the often virtuosic writing. It is impressive to hear such refined playing that also contains plenty of drama and drive. This is especially true in "Daydream and Nightmare for Two Pianos, Eight Hands, Op. 94" in which the Savages are joined by the pianist William Hobbs and the composer. The five-minute piece begins with a short lyrical section, but quickly moves to a near ecstatic, 40-fingered Bacchanalian celebration.

Liebermann acknowledges that "as a pianist composer, one can't escape being influenced by the tremendous legacy of the great pianist-composers." Listeners will hear echoes of Bartók, Barber, Ravel, Bach, jazz, and ragtime as well as a few nods to other composers. The playful side of Liebermann can be found in the quotations he incorporates into his music. Play an audio version of "Where's Waldo?" by finding quotes from such well-known melodies as "Tea for Two," "A Mighty Fortress is our God," "My Hat it has Three Corners," and other tunes.

The "Sonata for Two Pianos, Op. 117," written for the duo in 2012, features chorales, frenzied fugues requiring lightning speed and super-human coordination between the pianists, and Bartókian primitivism. In addition to the "Sonata" and the "Daydream and Nightmare," the recording features "Three Lullabies for Two Pianos" and "Variations on a theme by Mozart."

The recording is available at Albany Records, iTunes, and Amazon.

*—Kendall Feeney*


## The Long Place

LUIS MONTAÑO '76 MFA

OCOTE PRESS: 2015

Spokane artist Luis Montaño's book of poetry, 50 years in the making, dips deep into his childhood in New Mexico and tells autobiographical and allegorical stories of the wide landscape, grizzled veterans, and a favorite diner hangout with friends.

Montaño worked for many years as a ceramic artist and jewelry designer, as well as teaching at Eastern Washington University, after graduating from WSU. As he committed himself to his metal and ceramic art, poetry gave him another outlet for reminiscences of his hometown of Santa Rosa along Route 66, working the fields in California, and the New Mexican desert.

Those memories, captured in poetic details and crystal-sharp characters, show Montaño's love of the place and the people who shaped his life.

> When the *Sangre de Cristo* slows
> to a red meander,
> clotted to a domesticated pace,
> follow it out. Accept the mud of baptism;
> live with the accords of its delta, like
> the *chile verde*.
>
> —"Pecos"

While some of the poems, such as "Chavez" and "In America" make a strong statement for justice, many of the poems put New Mexico's landscape in relief: the *llano* where "birds spice the sky like a pinch of black pepper," the dusty roads, and most of all, Montaño's home. Even while he worked in Spokane, Montaño felt a connection to the Southwest.

"I always went back to Santa Rosa at least a couple of times a year," he told Dennis Held in a 2015 article for *Prime* magazine. "I missed the red earth."

Montaño's poems also draw compelling portraits of the people who populate the New Mexican towns. For example, he brings the reader right into his father's life as a World War II veteran, through military keepsakes, in "Things I Found in the Garage."

It may have taken 50 years to put together his book of poetry, but Montaño has shown his artistry in words as well as metal and ceramics.

*—Larry Clark*

BRIEFLY NOTED

### American Indian Health and Nursing

By MARGARET MOSS '81

SPRINGER PUBLISHING COMPANY: 2016

A nursing faculty member and assistant dean of diversity and inclusion in the State University of New York at Buffalo School of Nursing, Moss published this work because American Indians have the highest suicide rate for teens, the highest prevalence of diabetes, and one of the lowest life expectancies in the United States. It is the nation's first nursing textbook tailored to Native Americans.

### My Years in the Information Technology Trenches, From Data Processing to Information Technology

By BRUCE JOHNSON '59, '62 MS

TRAFFORD PUBLISHING: 2015

Involved in computers since 1956, Johnson tells his often humorous and intriguing adventures over decades in information technology. Johnson retired from teaching at Xavier University in 1998.

### Raising Kids with Love, Honor, and Respect: Recipes for Success

By EDIE JONES '60

INK WATER PRESS: 2015

A helpful guide for parents and educators in the very difficult job of making sure kids thrive as they grow. Jones received a gold medal from the national "Living Now Book Awards" in September for the book.

## 70

Retired public school secondary language arts teacher **SUZANNE COFER** ('71 English) published a book in 2013 about her maternal grandmother, Ruth A. Haworth, and early pioneer life in the state. She donated a copy of the book to the WSU Manuscripts, Archives, and Special Collections. Recently, she was informed that her book will be online at the Legacy Washington website. **GENE ESTABROOK** ('76 Police Sci., '77 Poli. Sci, '79 MA Crim. Jus.) retired in December after more than 35 years of public service as a juvenile probation officer and counselor in Oregon. During his career he served youth and families affected by abuse, unsafe living conditions, crime, addiction, mental illness, and poverty. Estabrook plans to continue his studies while hiking and going on other carefree travels, and after that he has arranged to leave his house and his library to a WSU scholarship in his name. The YMCA of Greater Seattle recognized **JEFF** and **TRICIA** ('78 Comm.) **RAIKES** with the A.K. Guy Award in November for their dedication to community service and volunteerism. Proud to hold the distinction of being the first Microsoft couple, Jeff and Tricia met there as colleagues in the early 1980s. The Raikes's were involved with organizations including United Way of King County, Boys and Girls Clubs of King County, the Washington State University Foundation, University of Nebraska Foundation, and Stanford University. They launched the Raikes Foundation in 2002 in the areas of education, out-of-school time, and youth homelessness.

## 80

The University of California Los Angeles appointed **JAYATHI MURTHY** ('81 MS Mech. Eng.) as dean of UCLA's Henry Samueli School of Engineering and Applied Science. She was previously chair and professor of mechanical engineering at the University of Texas, Austin. Prior to that, she held faculty positions in mechanical engineering at both Purdue University and Carnegie Mellon University. Murthy is a member of the American Society of Mechanical Engineers and the author of more than 280 technical publications. Hyatt Vacation Ownership appointed **JIM HANSEN** ('84 HBM) as senior vice president of sales and local marketing. An industry veteran with more than 25 years of experience, Hansen is responsible for all sales activities, as well as local marketing at Hyatt Residence Club's six current sales centers in the continental United States. Starbucks picked top Adobe executive **GERRI MARTIN-FLICKINGER** ('85 Comp. Sci.) to become its first chief technology officer. Martin-Flickinger served as Adobe's senior vice president and chief technology officer, and she helped migrate that company's business to the cloud. A Silicon Valley veteran, Martin-Flickinger was also CIO at VeriSign, Network Associates and McAfee Associates. At Starbucks, Martin-Flickinger will mind the infrastructure underpinning the company's digital forays. The Northwest Golf Media Association recognized longtime golf course superintendent **STEVE KEALY** ('87 Agro.) of Seattle with the association's "Local Legend" award. Kealy began his career in golf as a caddie at Seattle's Broadmoor Golf Club in 1972. He has been the golf course superintendent at Glendale Country Club in Bellevue for over 25 years. He currently serves on several golf industry boards including the Northwest Turfgrass Association, Western Washington Golf Course Superintendents Association, and The First Green Foundation. Since 2000, he has hosted over 100 field trips to his golf course to teach schoolkids hands-on environmental education through the First Green program, and serves as a mentor to golf course superintendents and clubs in setting up their First Green field trips. Kealy is a past recipient of two national awards from the Golf Course Superintendents Association of America, the Excellence in Government Relations Award, and the President's Award for Environmental Stewardship.





# Still Cougs after all these years

## Golden and Diamond grads back in Pullman

WSU may have transformed a lot since 1955, or even 1965, but the camaraderie of graduates from those years hadn't changed a bit.

One of the largest groups of golden and diamond alumni in years gathered late last October at the Lewis Alumni Centre, where they joined their old friends from 50 or more years ago. Gerry Danquist '65 thought it was great to see so many fellow pharmacy students.

"We have about half the class of 26 pharmacy graduates here," says Danquist. He traveled from Indianapolis, where he retired after getting his MBA from Harvard Business School and working 34 years at Eli Lilly. "I saw several pharmacy students I hadn't seen since graduation. We all spread out and went our own way."

Danquist was joined by fellow 1965 pharmacy grads Jim Els, Jim Fulton, Bob Redmond, John Oftebro, and others. They toured the pharmacy school at WSU Spokane, one of their highlights before the Pullman events.

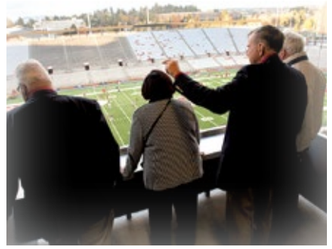
Graduates of all colleges kept a packed schedule for their three days on campus. In addition to the Friday night reception, they took a campus tour, attended a presentation by ROTC to honor veterans, listened to a concert by a WSU music student, received an update on the medical school, and met with Interim President Dan Bernardo for a state of the University address.

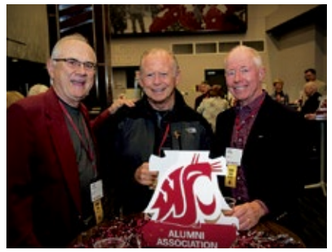
The alumni capped off the weekend with a tailgate party and a WSU football game on Saturday night.

For several of the events, including a tour of the new football building, the '55 and '65 grads mingled with younger alumni. The graduates at the reception were unanimous in their praise of the reunion.

"From the welcoming event, to the caravans to get us around, to the accommodations, everything has been first class—which is what you'd expect from WSU," says Oftebro.

*Each year the Alumni Association hosts reunions, not only for 50- and 60-year graduates, but for all alumni. To learn more about campus gatherings organized by the Alumni Association, visit alumni.wsu.edu or call 800-258-6978. You can also learn about joining the more than 30,000 other Cougs in the WSU Alumni Association.*





PHOTOS: ROBERT HUBNER

PHOTO SCOTT A. HARDER

Before she became a bank executive, philanthropist, and civic leader, **PHYLLIS CAMPBELL '73** felt the powerful impact of a benevolent act.

Former WSU Regent Campbell was trying to raise money to attend Washington State University, when a check for $2,500 arrived from a WSU scholarship fund aimed at low-income students. "The thing that left the impression was this person who gave back, who paid it forward," she recalls. "I know the power of a check, the power of somebody's message, somebody paying attention," she once told a reporter.

Now Campbell is receiving recognition for giving back to others with the **SEATTLE-KING COUNTY FIRST CITIZEN AWARD** for 2016. She is only the fifth woman to be singled out for the prestigious award, which has been presented annually since 1939.

Campbell began her banking career in 1973 upon graduation from WSU when Old National Bank in Spokane hired her as a management trainee. She became the first woman to lead one of Washington's larger banks when she was named president and CEO of US Bank of Washington in the early 1990s. Campbell now heads up the Pacific Northwest division for JPMorgan Chase & Co.

She served as a WSU regent from 1991-2003. Campbell has also sat on many boards of both for-profit and not-for-profit organizations, and eventually headed up The Seattle Foundation where, under her leadership as president and CEO for six years, the state's largest community foundation doubled its charitable assets, to $600 million.

In addition to numerous other honors, Campbell received WSU's highest honor, the Regents' Distinguished Alumnus Award, in 2006.

Campbell succeeds current WSU Regent and CEO of Chateau St. Michelle Wine Estates Ted Baseler '76, who was honored with the First Citizen award in 2015.

*Read more about Campbell's philanthropic work at magazine.wsu.edu/extra/Phyllis-Campbell*

## 90

**KATHLEEN PRITCHETT-CORNING** ('90 Vet. Sci., DVM '93) was chosen as the 2015 Pravin N. Bhatt Investigator from the American Association for Laboratory Animal Science, which honors an outstanding scientist who has made significant contributions to laboratory animal science and medicine. This award highlights Pritchett-Corning's work in improving the care and well-being of animals, particularly by informing the lab animal community how to properly select, house, evaluate, care for, and use laboratory rodents. She has held positions at the University of Washington, the Jackson Laboratory, and Charles River, and is currently senior clinical veterinarian at Harvard University Faculty of Arts and Sciences and an affiliate assistant professor in the Department of Comparative Medicine at the University of Washington. The WSU Carson College of Business announced **SUZI BILLINGTON** ('91 Busi.) as the new director of the Carson Center for Student Success. She will oversee the center's operations, which serve more than 2,000 students per semester, including academic advising, career and professional development, student involvement, international experience, and scholarships. Billington held leadership roles at the University of Idaho, where she earned her master's degree in business education in 1995. She also received the 2015 Leadership in Career Development Award from the Idaho Career Development Association. **ROB PHILLIPS** ('91 MED) has been named as principal for Elementary School #15 located at the Sagecrest development in Kennewick. Phillips had served as the principal at Washington Elementary since 2008. Prior to Washington Elementary, he was the principal at Park Middle School and Amistad Elementary. He started his career in education as a fourth grade teacher at Southgate Elementary and began his administrative career as an assistant principal and principal in the Othello School District. **MICHAEL ZARO** ('93 Crim. Jus.) became police chief for the city of Lakewood last October. Zaro's career includes 21 years in law enforcement, the last 11 with the Lakewood Police Department. He is also a graduate of the FBI National Academy in Quantico, Virginia, and the FBI's Law Enforcement Executive Development Seminar. **WILL HOENIKE** ('97 Comm.) joined United Dairymen of Idaho as a consumer confidence manager. In addition to promoting the state's dairy industry through events and publicity, Hoenike will manage the organization's website and social media presence. **IAN MINIELLY** ('97 Psych.) quit the Defense Intelligence Agency and planted Catalyst Baptist Church in Ironwood, Michigan. In addition to starting the new church, he accepted a position at the *Lakeland Times* as area reporter. Ruppert Landscape has hired **BRIAN SHADRICK** ('97 Land. Arch.) as project manager in the company's Maryland landscape construction branch. He has more than 15 years of landscape industry experience and is a certified professional landscape architect. Accounting company Moss Adams named **RYAN STURGIS** ('97 Busi.) as a partner in the firm's Portland office. Sturgis provides financial and operational audit services to clients in the financial services industry, specializing in credit unions.

## 00

**JEFF EVANS** ('00 Comm.), who has been in athletic communications at the professional and collegiate levels for over fifteen years, including the last nine with the Seattle Mariners, has been named sports information director at Western Washington University. The Society of Women Engineers (SWE) presented **JOCELYNE GRAY** ('00 Civ. Eng.), director of operations for water at Mason County Public Utility District No. 1, with their Emerging Leader award in October for her impact on the society and the engineering community. Garment finishing equipment manufacturer Colmac Industries recently welcomed **REG DAVENPORT** ('01 Mech. Eng.) to their engineering department. He has a professional engineering license for Washington state and brings work experience in design, quality engineering, combustion research and development, control integration, and structural engineering. The Louisville, Kentucky Convention & Visitors Bureau promoted **PROSCOVIA MATTAS** ('02 HBM) to senior sales manager in the convention development department. Mattas has 21 years of hotel management experience, with nearly 10 of those in European hotels. She is a graduate from Washington State University at the University Center Cesar Ritz in Brig, Switzerland. **MARCUS L. MICHELSON** ('02 Comm.) has been named associate news editor of the *Yakima Herald-Republic*. He will focus on design coaching and systems management. He has worked for the *Herald-Republic* since 2003 as a sports copy editor and page designer. **BRIAN DOTTER** ('03 DPH) joined the St. Luke's Boise, Idaho, inpatient pharmacy as director of pharmacy operations. Dotter has more than 12 years of experience in hospital pharmacy. **TAMMY THUERINGER** ('05 Comm.) joined C-SPAN in May as a politics producer and video journalist covering the 2016 presidential campaign. She continues to work as a weekend White House reporter for Bloomberg News. **SEAN TREASURE** ('05 Agribusiness) published his first book *The Farmer's Guide to Grain Marketing*. The book is written to assist grain and oilseed producers successfully market their crops. Treasure has worked as a grain merchandiser in Washington and Montana. **WILL HUGHES** ('07 Music) and his father are featured in *Finding Noah*, a documentary about finding the final resting place of Noah's Ark. **MATTHEW VISSOTZKY** ('08 Fin.) joined Wyse Real Estate Advisors as director of corporate services. Vissotzky brings more than seven years experience managing lease transactions and providing leasing advisory services to local and national companies in the office, medical, and industrial sectors.

## 10

**THOMAS LEE ELHART** ('11 Communication) and **MICHELLE ANNE CARROUGHER** ('14 Nursing) were married August 22, 2015, in Tamarack, Idaho. The couple met fall 2008 while attending WSU. Elhart currently works at an engineering firm managing the company's engineer development program. Carrougher is an emergency room RN in a local hospital. They live in Pullman. **MICHELE DONOHUE** ('12 Zool.) participated in Miami University's Earth Expeditions global field course in Baja this summer. **KATIE STEPHENS** ('12 Hist., Women's St.) is the new Pacific Northwest regional sales manager at The McGowan Companies. She is a certified insurance counselor and a certified programs leader.

## CLASS*notes*


COURTESY NATIONAL 4-H COUNCIL

**MARY JEAN CRAIG '68** couldn't wait to join 4-H. Her mother and a friend started a pre-4-H club that got her interested, and Craig squeaked into the local fair with a sewing project. After 60 years of involvement in the organization, she knows it was worth it.

Craig, who lives in Moscow, Idaho, was inducted into the **NATIONAL 4-H HALL OF FAME** last October for her lifetime achievements and contributions.

After 11 years in the club, Craig continued as a member of the "Crimson Clovers" collegiate 4-H chapter at WSU and then as a volunteer leader. She became an extension professional in Idaho in 1980, and eventually joined the state 4-H staff at the University of Idaho. She developed a statewide "Know Your Government" conference in 1988 for eighth- and ninth-grade students.

Craig says that conference was one of her proudest achievements, taking kids to Boise to see the legislature in action, hold mock committee meetings, and build leadership skills. "It was so heartwarming to see how these kids developed confidence, and then become 4-H leaders and student body officers."

On the national level, Craig served on the planning committees for National 4-H Congress, National 4-H Conference, and Citizenship Washington Focus. To help preserve the history of the organization, she created an electronic database of Idaho participants in state, regional, and national events.

She was instrumental in the creation of the National 4-H Hall of Fame and is still an active member on that committee. Recognizing the success of the national version, Craig also helped start the Idaho 4-H Hall of Fame.

Craig retired in 2010, but continues volunteering. Her family was recognized as one of the 4-H Centennial Families with 138 years of service to the program.

## IN*memoriam*

### 30

**FRED ERNEST KASLINE** ('33 Eng., Alpha Tau Omega), 104, October 4, 2015, Fair Oaks, California. **FAE BOWERS** ('x34 Busi., Zeta Tau Alpha), 101, September 12, 2015, Spokane. **GRANT ARTHUR GRABER** ('35 Econ.), 98, December 23, 2010, Wapato. **AIMEE M. FRAZIER** ('39 Theatre, Pi Beta Phi), 99, October 13, 2014, Spokane. **FRANCIS M. ROBERTS** ('39 Ag. Eng.), 99, August 26, 2015, Spokane.

### 40

**BRUCE V. ARNOLD** ('40 Gen. St.), 99, October 20, 2015, Walla Walla. **MARIE MARGARET BLEY** ('40 Pharm.), 96, April 8, 2015, Spokane. **NORMAN C. DONALDSON** ('40 Agron.), 98, October 29, 2015, Colville. **BERNADINE FULFS SEABRANDT** ('41, '54 Microbio.), 97, October 21, 2015, Pullman. **MARY ELLEN JONES** ('x42 Lib. Arts, Sigma Kappa), 93, November 3, 2015, Wilton, California. **MEYER LEWIS** ('42 Eng.), 96, June 4, 2015, Walla Walla. **HERMAN HENRY ROCK** ('42 Ag.), 93, May 15, 2014, Reno, Nevada. **ILENE L. HOLMGREN** ('43 Ed.), 95, November 17, 2015, Orinda, California. **CHARLOTTE CENTRELLA** ('44 Phys. Ed.), 93, August 24, 2015, Monterey, California. **MARY BETH MORRIS** ('45 Music), 93, September 8, 2015, Shelton. **ROSEMARY HENRICKSON** ('46 Home Econ.), 91, November 14, 2015, Oakesdale. **FRANK EDWARD MILLER** ('46 DVM), 91, May 12, 2015, Carmel, California. **JOSEPH ERAK** ('47 Busi.), 90, November 11, 2015, Seattle. **GEORGE W. HARRUFF JR** ('47 Mech. Eng.), 91, March 22, 2015, Redmond. **OLIVER D. JEFFORDS** ('48 Ag. Eng.), 97, October 22, 2015, Olympia. **MARGARET L. SWANSON** ('48 Home Ec.), 91, May 11, 2015, Pullman.

### 50

**NANCY TALBOT DOTY** ('50 Socio.), 87, November 19, 2015, Lacey. **ROY L. GOSS** ('50 Ag., '51 Ed., '60 PhD Ag.), 89, October 10, 2015, Okanogan. **JANE HALLSTROM** ('50 Phys. Ed.), 87, August 15, 2015, Eugene, Oregon. **RICHARD D. KNUTSEN** ('50 HBM), 88, November 7, 2015, Spokane. **WILLIAM WARREN LIEN** ('50 DVM), 92, August 13, 2015, Redmond. **DONALD JAMES MURRAY** ('50 Ed., '53 MED), 91, September 22, 2015, Burien. **MARVIN F. SUNDQUIST** ('50 Hort.), 89, August 29, 2015, Yakima. **RICHARD W. CALHOUN** ('51 Acc.), 88, September 9, 2015, Boise, Idaho. **JOHN A. LAVIGNE** ('51 Psych., '54 Ed.), 89, November 15, 2015, Montclair, New Jersey. **WAYNE LELAND SLEMP** ('51 Hist.), 87, October 21, 2015, Marin County, California. **GENE THOMAS THOMPSON** ('51, '61 MS, '74 PhD Eng.), 86, March 28, 2015, Clarkston. **JOHN CHARLES BIGELOW** ('52 Gen. St.), 85, September 14, 2015, Woodinville. **JAMES N. BROGGER** ('53 Bio., '54 DVM), 85, June 12, 2015, Missoula, Montana. **NANCY LOU BURRIS** ('54 Spanish), 82, October 7, 2015, Spokane. **JOHN C. JACKSON** ('54 Fine Arts), 84, August 15, 2015, Tualatin, Oregon. **MILTON SKOV** ('55 DVM), 88, September 28, 2015, The Dalles, Oregon. **DUANE CARL SOMMERS** ('55 Microbio.), 83, August 26, 2015, Spokane. **SHIRLEY J. CAMPBELL** ('56 MS Ed.), 85, September 5, 2015, Palo Alto, California. **ROBERT CHARLES CRABB** ('56 Busi.), 82, September 2015, Puyallup. **NORRIS M. HOLSTAD** ('56, '67 MS Hort.), 81, November 9, 2015, Pullman. **MERTON V. PURNELL** ('56 Elec. Eng.), 83, November 15, 2015, Ellensburg. **GORDON D. WOODWARD** ('56 Comm.), 85, March 25, 2015, Merced, California. **RICHARD W. BRUCE** ('57, '58 MA, '68 PhD Ag. Econ.), 84, September 25, 2015, Brazil. **SCHUYLER RYAN ENOCHS** ('57 DVM), 81, September 19, 2015, Caldwell, Idaho. **ALFRED J. FLECHSIG** ('57, '59 MS Elec. Eng.), 79, August 28, 2015, Pullman. **RICK LANE JOHNSON** ('57 Zool., Lambda Chi Alpha ), 80, October 7, 2015, Seattle. **JIRI VANOUREK** ('57 Ag. Econ.), 84, September 18, 2015, Othello. **GARY BARTON BAILEY** ('58 Pharm.), 84, October 2, 2015, Irvine, California. **CLAY BURNUM** ('58 DVM), 89, October 28, 2015, Boise, Idaho. **JIM W. CORLISS** ('58 Hort.), 80, October 31, 2015, Grandview. **WILLIAM H. RADTKE** ('58 Chem. Eng.), 80, October 20, 2015, Jerome, Idaho. **RICHARD R. RAPPUHN** ('58 Ani. Sci.), 81, August 26, 2015, Oak Harbor. **BARBARA L. CLAMPETT** ('59 English, '83 Human Dev.), 78, April 29, 2015, Port Angeles. **ARNOLD RUPERT KEGEL** ('59 Ag. Eng.), 80, August 25, 2015, Everett. **HARVEY ALBERT RAGAN** ('59 DVM), 86, September 13, 2015, Kennewick.

### 60

**ALVIN DALE PECKA** ('60, '65 MS Phys. Ed.), 87, June 25, 2015, Beaverton, Oregon. **JOHN RICHARD TONNES** ('60 Phys. Ed.), 74, April 16, 2012, Everett. **WALTER KARLSON** ('62 Gen. St.), 85, August 11, 2015, Yucaipa, California. **ROBERT HOLMES LAMP** ('62 Econ.), 75, November 18, 2015, Spokane. **CHARLES STANDEN III** ('62 Gen. St.), 76, October 25, 2015, Deer Park. **GARY MONROE COSTNER** ('63 Pharm.), 76, June 4, 2015, Issaquah. **OLIVER W. DAVIS SR** ('63 Poli. Sci.), 73, April 8, 2015, Lacey. **FRANCES LANCASTER** ('63 Ed.), 77, October 13, 2015, Beaverton. **VERNON E. COINER** ('64 DVM), 82, September 30, 2015, Boise, Idaho. **DOMINIC E. FRUCCI** ('64 Gen. St.), 73, October 16, 2015, Spokane. **HARLEY LEWISTON JR** ('65 MA Biol.), 87, November 8, 2015, Fairfield, Iowa. **JOHN RICHARD STIPE** ('65 Ag., Alpha Tau Omega), 72, August 8, 2015, Sequim. **HAROLD GEORGE HEINER** ('66 MS Psych.), 76, October 17, 2015, Bellingham. **RICHARD OWEN ADAMS** ('67 Physics), 80, December 5, 2013, Boulder, Colorado. **ALVIN GARFIELD FOSTER** ('67 MS, '69 PhD Vet. Sci.), 79, June 22, 2013, Shrewsbury, New Jersey.

# INmemoriam

MICHAEL C. KINYON ('67 Civ. Eng., Sigma Tau), 74, December 22, 2014, Bremerton. GORDON R. GRAY ('68 Math.), 70, August 9, 2015, Kenmore. SAMUEL HOUSTON ADAMS ('69 EDD), 87, November 13, 2015, Pullman. TONY DAWSON ('69, '73 DVM), 64, November 16, 2012, Alaska. JAMES A. KOORENY ('69 Physics), 77, October 29, 2015, Walla Walla.

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CARLTON CRAWFORD BAKER ('70 Music), 67, October 27, 2015, Olympia. GREGORY GEORGE COWEN ('70 Comm.), 68, October 13, 2015, Half Moon Bay, California. EUGENE CHESTER DOLPHIN ('70 Gen. St.), 67, June 3, 2015, San Diego, California. WILLIAM G. HIRSCHFELD JR ('71 MA Poli. Sci.), 81, August 25, 2015, Seattle. TIMOTHY SCOTT JONES ('71, '73 MA Comm.), 66, September 28, 2015, Reno, Nevada. ROBERT S. MARSHALL ('72 Ed.), 72, August 3, 2015, Washtucna. GERALD WALLACE BANNON ('74 Env. Sci.), 69, April 29, 2015, Reardan. CONSTANCE M. BECKLEY ('74 Gen. St.), 65, August 24, 2015, Eugene, Oregon. CHARLES ALLEN DEVIER ('74 Geol.), 64, April 25, 2015, Houston, Texas. THEODORE RUSSELL HILL ('74 Poli. Sci.), 63, September 30, 2015, Wenatchee. MARIAN E. PETERSON ('74 Gen. St.), 89, May 30, 2015, Pullman. STEPHEN P. UHLER ('74 DVM), 67, November 15, 2015, Puyallup. DIANE CUTHILL THOREN ('75 Acc., Delta Delta Delta), 62, September 9, 2015, Spokane. PAUL NELSON FENNER ('76, '79 DVM), 61, September 5, 2015, Poway, California. JEFFREY C. PEILA ('76 DVM), 64, April 29, 2015, Mizpah, Montana. JOHN LESLIE BUTLER ('77 Psych.), 74, September 21, 2015, Fort Worth, Texas. ARTHUR B. FINKE ('77 MED), 85, August 31, 2015, Pasco. BARBARA HAWKINS MCBRIDE ('77 MA, '84 PhD Socio.), 63, September 29, 2015, University Place. SUSAN MANLEY MECHAM ('79 Mktg., Kappa Alpha Theta), 58, November 15, 2015, Seattle. CURTIS GLENN SEDGLEY ('79 Mktg.), 59, November 21, 2015, Urbandale, Iowa.

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MARVIN LYLE STONE ('82 PhD Eng.), 65, October 24, 2015, Stillwater, Oklahoma. JEFFREY M. DENNIS ('83 Poli. Sci.), 55, March 25, 2015, Dallas, Texas. TERRY KERSHAW ('85 PhD Socio.), 63, October 28, 2015, Cincinnati, Ohio. MICHAEL BRUCE AGY ('86 PhD Microbio.), 69, September 25, 2015, Lynnwood. JEFFREY WINSTON BROOKS ('86 MS, '94 PhD Geol.), 61, August 31, 2015, Acapulco, Mexico. MEHRDAD KARIMI ('86 PhD Econ.), 66, February 17, 2011, Kirkland. SCOTT EDWARD SOPER ('89 Mktg.), 49, August 24, 2015, Sedona, Arizona.

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ART DAVID ETTLINGER ('90 PhD Geol.), 54, February 27, 2011, North Vancouver, British Columbia, Canada. RICHARD DOUGLAS HULME ('91 PhD Busi.), 66, February 28, 2011, Missoula, Montana. JOHN LEONARD MILBERT ('91 Fine Arts), 75, September 25, 2015, Potlatch, Idaho. TIM ALDRICH ('92 Comm.), 46, October 25, 2015, Fairfield, California. KATHY R. BAKER ('93 Busi.), 49, September 22, 2015, Livermore, California. KATHLEEN LOUISE BURRAGE ('95 PhD Amer. St.), 54, May 19, 2013, Tacoma. TODD WILLIAM MONTGOMERY ('98 MIS, '11 Eng.), 43, September 27, 2015, Greenacres. ANTHONY JOHN WOLDRICH ('98 Busi.), 42, October 20, 2015, Vancouver.

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JAMES K. LARSEN ('01 Bio.), 43, October 30, 2015, Richland. JOSHUA DAVID SARNO ('08 Comm.), 29, October 3, 2015, Tacoma.

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SARAH MARIE WEEDA ('10 PhD Ag.), 33, August 25, 2015, Richmond, Virginia.



### FACULTY AND STAFF

**SAMUEL H. ADAMS**, 87, Education, 1966-1993, November 13, 2015, Pullman. **DONALD L. BENDER**, 84, Civil and Environmental Engineering, 1956-1982, November 13, 2015, Spokane. **ARDELLA BERGER**, 89, Libraries, 1978-1993, September 6, 2015, Nampa, Idaho. **RICHARD W. BRUCE**, 84, Forestry, 1957-1977, September 25, 2015, Brazil. **JANICE BURNHAM**, 79, Facilities Services, 1979-1996, December 5, 2015, Palouse. **MARGARETTA EMERSON**, 93, Housing & Dining, 1962-1982, September 30, 2015, Spokane. **J. WALTER HENDRIX**, 99, Plant Pathology, 1952-1982, August 29, 2015, Spokane. **MARY HINMAN**, 86, Libraries, 1974-1989, October 25, 2015, Pullman. **NORRIS HOLSTAD**, 81, Horticulture, 1957-1987, November 9, 2015, Pullman. **DAVID JOSEPH**, 58, Information Systems, 2004-2008, December 3, 2015, Tumtum. **FREDERICK LANGE**, 88, Kinesiology, 1973-1990, September 3, 2015, Pullman. **GERALD MARING**, 72, Teaching and Learning, 1997-2008, November 22, 2015, Woodland. **JOANN MCKINDREE**, 87, Educational and Public Media, 1988-1998, November 28, 2015, Spokane. **JOHN L. MILBERT**, 75, Network Systems, 1985-2001, September 25, 2015, Potlatch. **G. GALE MILLION**, 89, Facilities Services, 1973-1988, November 11, 2015, Garfield. **FENOI R. MURDOCK**, 98, WSU Puyallup, 1949-1982, September 13, 2015, Phoenix, Arizona. **ROBERT NILAN**, 91, Molecular Biosciences, October 7, 2015, Pullman. **DAVID OPHARDT**, 63, WSU Prosser, 1990-2010, September 16, 2015, Pasco. **G. A. PERRY**, 89, Compton Union Building, 1978-1987, November 19, 2015, Palouse. **BERNICE REIBER**, 91, Dining Services, 1974-1986, November 10, 2015, Palouse. **WAYNE SMITH**, 83, Facilities Services, 1960-1998, October 19, 2015, Lewiston, Idaho. **DONALD SWANSON**, 90, Facilities Services, 1977-1987, September 28, 2015, Moscow, Idaho. **MYRON WIRTH**, 87, Economic Sciences, 1965-1994, November 11, 2015, Spokane.

COURTESY LAND EXPRESSIONS

Cougar-owned landscape architecture and design firm Land Expressions in Spokane won a top national award in December for work on Spokane's Huntington Park and the Spokane Tribal Gathering Place.

This project won over much larger design build projects from all over the country. The Grand Award from the National Association of Landscape Professionals (NALP) "is the biggest award we can receive in our industry," says **DAVE NELSON '83**, president and owner of the company.

The Land Expressions team—which includes senior landscape architect Clayton Varick '00 and landscape architects Nicholas Hamad '10 and Fernando Camargo '10—had a very good year in 2015.

They won the Merit Award for Pyrotek Headquarters in downtown Spokane, also from the NALP. They received three local awards: the Spokane Mayor's Award for urban design for Spokane's Tribal Gathering Place, and "Best of" awards from both *Spokane CdA Living* magazine and *Inland Business Catalyst Magazine*.

Early in the year Land Expressions won the commission to design and build a new Veterans Memorial, "Illuminating Courage," which was publicly dedicated this past Veterans Day.

Opened by Nelson in 1987, Land Expressions designs and builds outdoor living and entertainment spaces for homeowners, commercial building owners, developers, and for public spaces like parks.

Nelson has worked in the industry for over 30 years throughout the United States and Japan. Outside of his landscape work, Nelson loves to play basketball, and has played in Spokane's Hoopfest since its first year in 1989.

ILLUSTRATION ROB MCCLURKAN

## HOW DO LEAVES MAKE THEMSELVES?

*–Francesco R.*

Dear Francesco,

Last fall, my friend Lee Kalcsits and I went exploring in the apple orchards of Wenatchee. The apples were ripe and the leaves were changing from green to gold. We plucked a few leaves and took them back to his lab.

"You know, if you take a stem, pull away all the mature leaves, and slice it from the top down, you can look at it under the microscope," said Kalcsits, a scientist at Washington State University in Wenatchee who studies all kinds of trees.

He slid a tiny piece of the stem under his microscope and took a closer look.

"What it looks like is these tiny, moon-shaped leaves," he said. "They get smaller and smaller until you get this dome-shaped structure and that's the meristem."

The meristem is the part of a plant where leaves begin to form, he explained.

It contains a bunch of building blocks, or cells. In a way, these cells are a lot like the ones animals have. Some of our cells will form into parts like our liver and muscles. Others will form into nerves and blood.

The meristem is a growing point for other plant parts like buds and flowers, as well as leaves, Kalcsits said.

While the meristem tells leaves to grow, sometimes trees get a signal to stop growing, too.

As the days get shorter and colder, some trees' cells will start to act like scissors. They start "snipping" the leaves. The leaves fall and the tree gets ready to hibernate to survive the cold winters.

The meristem will also send a signal to the tree to form a small bumpy bud. A layer of scales will form around the bud to help protect it from the cold.

"Within that bud will be all the leaves and flowers ready for the next year," Kalcsits explained.

In spring, as the weather warms up, new life emerges. Tiny green leaves start to sprout from the buds.

While the answer to your question can most often be traced back to the meristem, some leaves form in more unusual ways.

Some plants can use their leaves to clone themselves. If just one leaf drops, a whole new plant will grow from it.

In another example, leaves of pea plants can form into tendrils: curly leaves that start climbing and grabbing onto things. Other plants will grow thorns and stickers in place of their leaves to protect them from animals. Some leaves will even grow their own leaves. These are called leaflets.

Leaves are important because they help plants turn sunlight into their own food. The process helps the plants survive, which is good for other living things, too.

For one, plants give us food, like the apples I picked after I left Kalcsits' lab. Of course, leaves also help give us the air we need to breathe. Without them, life on Earth wouldn't exist as we know it.

Sincerely,
**DR. UNIVERSE**

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