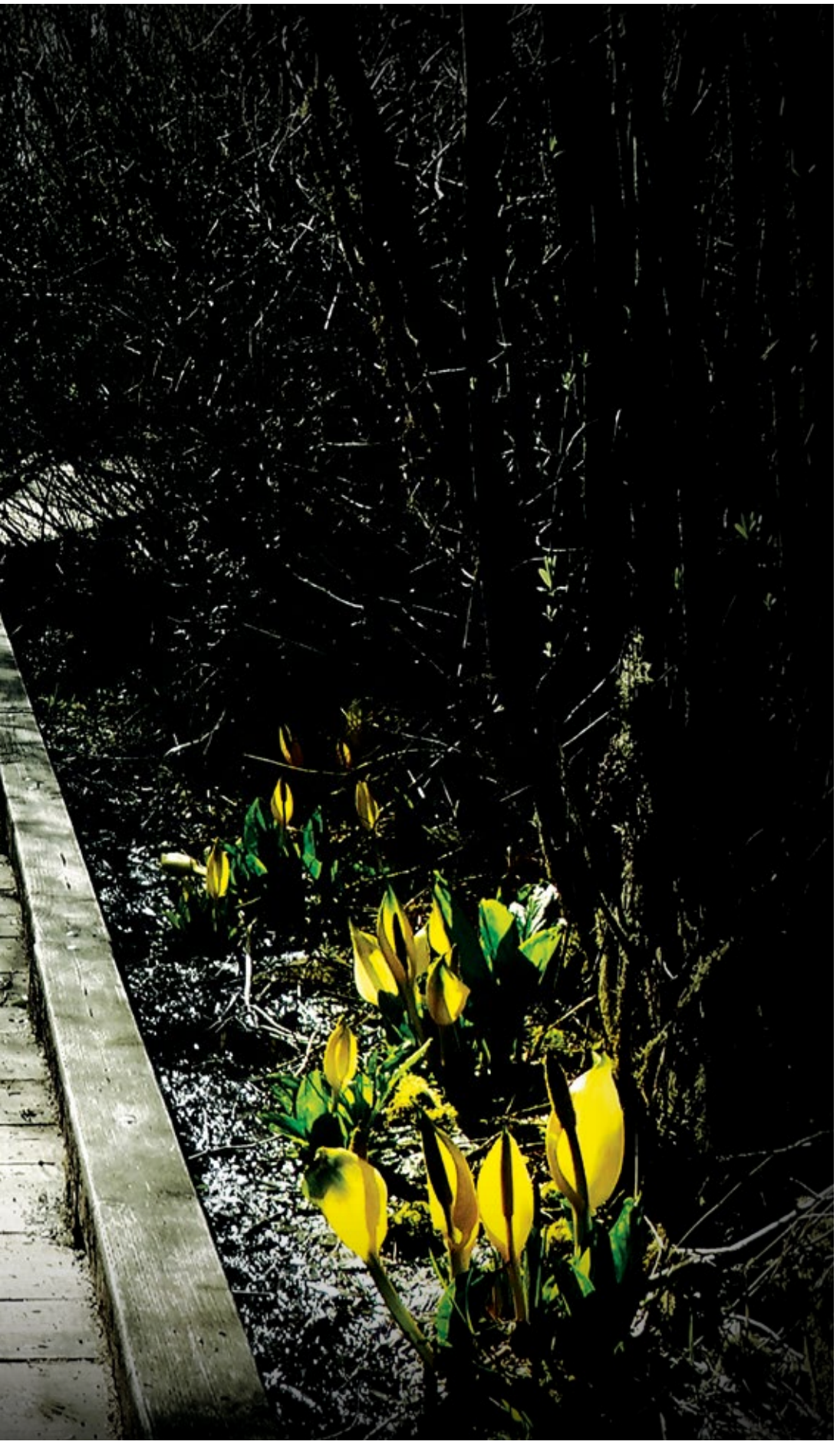
Spring19
vol18no2

Washington State MAGAZINE

8
Inside outside

22
Soil man

30
Medical big data



Spring19
vol18no2

Features

He researched myriad root diseases and a jungle of soil life—all with two feet planted firmly in the soil. **22**

Big data is sending everyone back to school—and that's a good thing for our healthcare industry. **30**

Essay

Chronicling the Arctic's loss and its future with science—*and* art. **28**

Upfront

The National Park Service solved the unsolvable with just a phone call. **11**

He did not want the rest of his life to be like his past. Enter education. **12**

"Come in Houston. And cue the Cougar fight song." **16**

It's up to storytellers, not machines, to decide how to act on data. **17**

COVER: SURE SIGN OF SPRING—SKUNK CABBAGE RETURN TO LUMMI ISLAND. (PHOTO EDMUND LOWE)
LEFT: SKUNK CABBAGE EMERGE ALONG MERCER SLOUGH NATURE PARK TRAIL. (PHOTO NATHAN HARRENSTEIN)

Inside outside Reconnecting our children to the natural world **UPFRONT**

8

COURTESY INTO THE FOREST OUTDOOR LEARNING CENTER AND PRESCHOOL

Thematics

A MIXED AG **13**

What's gone viral?

Giving rust a rest.

Stopping the blighters.

Departments

5 The world inside and out **FIRST WORDS**

18 Winning athlete—winning coach **SIDELINES**

20 The beloved French fry knows few bounds **IN SEASON**

37 Shaking hands with the past **38** Power of words **39** Taking the bull *not* by the horns **40** Making the difference **ALUMNI PROFILES**

42 *Stark Mad Abolitionists*; *Monumental Seattle*; *Spike, Benny, and Boone*; *Bound* **NEW MEDIA**

44 CLASS NOTES **46** A national hero

47 IN MEMORIAM

50 The Wine Club for Cougs **ALUMNI NEWS**

52 What's App? **LAST WORDS**

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The world inside and out. Spring carefully raises its leafy head each year, including the first emerald sprouts of wheat and other crops across the hills of eastern Washington. The serene greening of the Palouse hills belies the frantic activity in the soil beneath, though.

Microbes, both hostile and helpful, swarm around the roots of the growing plants. This is a world explored by plant pathologist and soil health expert Jim Cook, who spent 40 years at Washington State as both a faculty member and a USDA scientist, and recently received an honorary doctorate from WSU. Cook, fellow researchers, and farmers learned ways to manage the root diseases of wheat and the result is evident every year.

A struggle wages inside other key Northwest plants, too: grapes face leafroll viruses, fire blight antagonizes apple and pear trees, and rust affects wheat. As these diseases affect our top crops, WSU researchers and Extension specialists race to find new methods of resisting the diseases through knowledge, treatment, and genetics.

Human health benefits from the rapid expansion of genomic data as well. WSU's new doctors-in-training at the Elson S. Floyd College of Medicine, along with other health-care practitioners, are getting a personal introduction to the huge amounts of data gathered from inside individuals. That information can better inform care from medical teams and promote wellness in those individuals.

People can also use smartphone technology—sometimes developed by health-care professionals and WSU alumni—to improve their lives, whether that means learning new patterns of speech from moving x-rays or reducing daily stress for nurses with an efficient scheduling app.

However, I know that smartphones can push us to retreat inside ourselves too much. As we stare at our little screens, it becomes too easy to ignore the world outside of us. Biophilia, the joy of the natural world, offers an antidote. Increasing numbers of programs, like No Child Left Inside, promote the thrill of getting out in the woods and fields, and can build appreciation of our planet.

The Arctic, with its rapidly diminishing ice, certainly needs appreciation. WSU English professor Debbie Lee sailed on a tall ship with other artists in the high Arctic around Svalbard, documenting and archiving the stunning land- and ice-scapes of the region. Through Lee's writing, the artistry of others, and the work of scientists drilling in the ice, the secrets inside the dwindling Arctic become visible and undeniable.

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SOY INK

FRIENDS FROM STEPHENSON EAST SIXTH FLOOR MET IN 1969 AND HAVE REUNITED EVERY YEAR.
FROM BACK ROW LEFT: MARG MORI, DAWN BLANKENSHIP, TRUDI INSLEE, CAROLYN MAIN, VICKIE WIDMEYER.
FRONT ROW: COLLEEN SWESEY, BEV SHEELEY, KAY ACOSTA, CATHI SAGSTAD

COURTESY MARGARET MORI

Even Stephensons

Scoot over Stephenson South! Stephenson East opened in 1969 when a number of us met on the sixth floor and enjoyed similar activities and experiences as you. We too have shared life's milestones in similar fashion over the years in large groups, in small combinations, and throughout the years in several locations.

We will be twelve strong when we return to Pullman in August 2019 to celebrate the 50th anniversary of Stephenson East's opening and 50 years of friendship. We have already made arrangements to return to the Stephenson complex and the sixth floor for a tour.

We have you beat when it comes to the longest-running continuous alumni meetup!

BEV SHEELEY '73

A leg up on equality

It was the fall of 1967 at WSU, and I was in my first semester of classes. As I trudged up the famous Pullman hills to my Tuesday 8 a.m. class, I could feel the tightness in my right leg. When my Appaloosa Arab filly unceremoniously dumped me five weeks ago, it resulted in a walking cast until the day before I left for college, and even then the doctor was reluctant to remove the cast so soon. The doctor cautioned me to elevate the foot at night and keep it warm at all times.

Thus, I now climbed the hills in pants and knee-high boots—definitely not the required campus female wear which did not allow pants and usually consisted of a sweater set and skirt generally accompanied by nylons and flimsy pumps or ankle-height snow boots depending on the weather. I had been given a special *dispensation* that allowed me to wear pants all fall and winter.

At three o'clock, classes over for the day, I began my descent toward the dorm and two hours of study time before I would clean up and put on the required dress for dinner; my dispensation did not include dinner. I was always exhausted when I returned to the dorm on Tuesdays and so at first did not see the notice attached to my door—but others had already seen it, including my good friend across the hall, Sharon.

"Well, what have we here?" Sharon asked with a big grin as she sauntered into my open doorway. I was just emptying my bag to get it ready for Wednesday and so still did not see the notice.

"What is it?"

The gist of it: I was to be in detention for the next two weekends—never mind that one of those was homecoming and I would be having company—for my failure to adhere to the dress code.

"But…but…I have a dispensation letter from admin…and a doctor's note…" I spluttered.

Several people began to speak at once as the crowd in the doorway grew and oozed into my dorm room. I tried to sort out the plethora of comments but, in my state of anxiety, had trouble focusing.

A firm grip on my arm caught my attention. "Fight it!" stated the person who clasped my arm.

"Fight it…how?"

"Get a petition going and get everyone to sign it—which won't be hard as we all hate the no pants on campus rule. Then go before the dorm board and present the petition," said the resident advisor.

"The boys don't have a dress code just like they don't have curfew hours—it's unfair…"

"You got that right! We need to abolish both rules!"

"One step at time," stated the resident advisor.

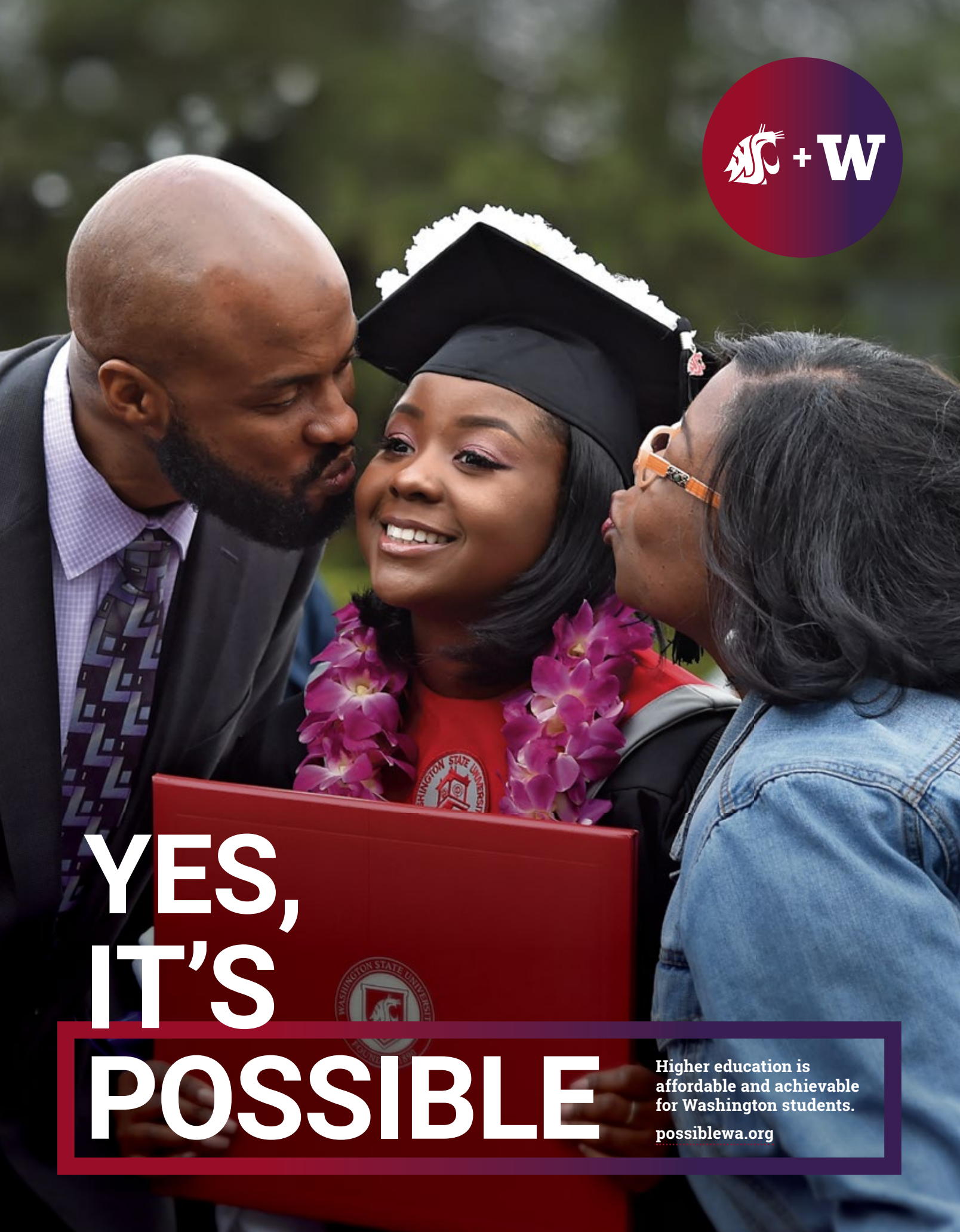
Three days later, I stood before the board with my petition in a trembling hand and looked out over the crowded audience. Many floor members plus more students from other floors were tightly packed into the meeting room. All of us waited expectantly while the regular business of the agenda was discussed.

Finally, it was our turn—and I say *our* as it had been a team effort all along, from the resident advisor who suggested it to the petition name-gatherers to the many students who helped formulate the wording for the petition and the board presentation.

And we won! The *no pants on campus rule* was abolished.

JEANNE BARTLETT '71 ENGLISH

Do you have any thoughts on magazine articles? Reunions, weddings, births, retirements, anniversaries, or other announcements you want to share? Let us know at **magazine.wsu.edu/contact** *or email* **wsm@wsu.edu**.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BY REBECCA PHILLIPS

J. PARSONS/GETTY

Inside outside

SOLSTOCK

LISTEN. THERE'S SOMETHING PADDING DOWN THE WOODED TRAILS, BUBBLING OVER WATERFALLS, AND RUSTLING IN THE PINES. NO, NOT YOUR MEDITATION APP. IT'S AN INTERNATIONAL MOVEMENT CALLED BIOPHILIA AND YOU CAN HEAR IT BLOOMING IN THE VOICE OF A BUSY LITTLE GIRL AT THE INTO THE FOREST OUTDOOR LEARNING CENTER AND PRESCHOOL IN SPOKANE VALLEY.

"I'm making peanut butter," she says as she wields a spatula in the aptly-named mud kitchen. A small boy beside her fills muffin cups with dirt while another adds water to the "batter."

The three are playing in a big fenced yard, complete with vegetable garden, where a dozen or so other children scamper on tree stumps, roll tiny pumpkins, and scavenger hunt for colors. There's not a cry or whimper among them.

"I've worked at a lot of daycares and I feel like kids are significantly calmer here and overall better behaved," says preschool teacher Jordan Hinegardner. "I feel that's because they get so much outside time—at least two hours in the morning and afternoon."

Co-owners Megan Benedict and Chelsey Converse opened the center—Spokane's first outdoor preschool—in August 2017 and within a year, classes were full with a waiting list. A second preschool will open this March.

Similar stories are unfolding all over the world, as children leave desks behind to spend days outdoors interacting with nature, running, playing, and studying science in the wild.

Biophilia, our innate affinity for and connection to nature, is not only for children—parents, too, are taking time from hectic schedules to unwind with meditative forest bathing, and many doctors now prescribe visits to the park instead of pills.

Much of the credit goes to Richard Louv, whose 2005 breakout book, *Last Child In The Woods: Saving Our Children from Nature-Deficit Disorder,* detailed the costs of alienating ourselves from the natural world, especially with today's pervasive use of technology.

Though nature deficit disorder is not a true medical diagnosis, restoring our connection to a living green biosphere has been shown to enhance health, well-being, mental acuity, and creativity, while also reducing stress, depression, and obesity.

"Nature is often overlooked as a healing balm for the emotional hardships in a child's life," Louv writes. "You'll likely never see a slick commercial for nature therapy as you do for the latest antidepressant pharmaceuticals. But parents, educators, and health workers need to know what a useful antidote to emotional and physical stress nature can be."

It's an idea that Washington State University 4-H adventure education director Scott VanderWey has embraced for years as part of his mission "to get as many kids outside as possible." Stationed at the Puyallup Research and Extension Center, VanderWey helps county 4-H leaders develop ropes courses as well as programs in rock climbing, boating, skiing, and rite of passage wilderness training.

He says it was Louv's work that led to the 2008 creation of Washington state's pioneering No Child Left Inside (NCLI) grant program, which is managed by the state recreation and conservation office.

As one of the founding NCLI board members, VanderWey reports that the program has already provided $5 million in funds to get kids outside for unstructured play. Organizations in every part of the state have benefitted from the grants including the Tiny Trees Preschool in Seattle, Waskowitz Environmental Leadership Service in Burien, and the Spokane Parks Rx Outdoor Adventure Camp.

VanderWey says NCLI has also inspired a tremendous growth in outdoor schools with at least half of Washington counties now offering some form of outdoor preschool.

GETTING KIDS OUTSIDE is nothing new to Jeff Sanders, WSU associate professor and environmental historian. He says the idea of a nature deficit goes back at least 150 years to the Industrial Revolution, when many Americans left rural areas for work in Chicago or New York along with a large influx of immigrants. If the children weren't helping in factories, they were often left to fend for themselves on the streets.

Fearing for the youth's health as well as the future of our nation, social reformers advocated for changes that led to the playground movement of the late 1800s. Around the same time, summer camps reached their heyday, and the Boy Scouts of America was established. The first "streetcar suburbs" also took root, where people with means could escape grimy cities for more leafy areas like Brookline, Massachusetts.

Sanders says people today are still trying to escape cities for an idyllic respite in nature. "But, if we always focus on nature as being someplace else, we'll keep befouling the places we live in," he says. "Many historians are looking at it more like a garden—we should be tending to the places we actually live in, our backyard, cities, and streets—that's all a part of nature."

The contented little fellow playing in the vegetable garden at Into the Forest Preschool would certainly agree. Though a single frost-blackened sunflower now remains, the children had grown and eaten potatoes, carrots, tomatoes, and squash throughout the summer. For them, nature has become an integral part of their daily lives whether they're digging in the sand box or rolling a big wooden spool under the open sky.

Unfortunately for many children, carefree days playing outside are a thing of the past, says WSU clinical assistant professor of human development Robby Cooper. Today, a child seen walking to the park alone might well trigger a call to police and a warning to parents.

Cooper says Richard Louv blames this phenomenon on an increasingly fear-based society. Although statistics show crimes

against children have dropped to their lowest rates ever, social media and 24-hour news cycles can make it feel like every abduction is happening in our backyards.

So now, instead of exploring, making up games, or riding bikes to local parks, kids spend much of their freetime indoors using tech devices and staring at screens.

Cooper says all this screen time may affect attention span and leaves little room for imagination and creativity, things research suggests are important for brain development and learning.

"As a teacher, it's a challenge now to get people to slow down and notice things," he says. "To be ok with uncertainty and flexible in their thinking."

GETTING THEM OUTDOORS is a good place to start. "Studies show that just being out in nature can provide benefits for ADD, mood, and well-being," Cooper says. "I've taken college students on backpacking trips where, without access to phones or internet, they can be mindful and less distracted. You see barriers break down more quickly and social connections happen faster."

He also notices the effect on his toddler who, says "Ohhhh!" when he goes outside and sees the moon or rustling leaves. "He doesn't do that with the TV," says Cooper. "I don't see that wonder in his face when he looks at a screen."

Today, children worldwide are more likely to experience that sense of wonder as urban planners bring natural elements and green spaces into modern designs for cities, schools, and playgrounds. The biophilic spaces they create provide access to nature through green streets, wildlife refuges, parks, trails, bike paths, and more. Some architects take playground design a step further by incorporating hills, valleys, mountains, and hideouts.

"Once kids get outside, there's a way in which nature calms the body," says VanderWey, who struggled with dyslexia in high school. It was through a WSU-sponsored challenge course that he developed self confidence and found his professional calling. Now, his efforts with 4-H and No Child Left Inside enrich the lives of thousands of other Washington children, many of whom are low income and would never otherwise experience outdoor adventure.

VanderWey also credits Washington Governor Jay Inslee, who says, "Getting kids outdoors can nourish the mind, body, and soul. I've fought hard for budgets that have increased funding for state parks, outdoor recreation, conservation, and earth science education."

VanderWey says Inslee's strong commitment to NCLI not only makes Washington a national trailblazer, but ensures that our young stewards of the future will continue to enjoy Northwest deserts, ancient forests, and the salty spray of the Sound.

Children explore the woods during a camping trip. *Courtesy Into the Forest Outdoor Learning Center and Preschool*

BY REBECCA PHILLIPS

Who goes there?

Secret weapons come in surprising shapes and sizes. For the National Park Service, it's Washington State University's Public Opinion Laboratory where, by simply asking questions, the agency wins battles over landfills, pipelines, diversity issues, and more.

Guided by director Lena Le, the laboratory employs more than 100 survey takers who make up the heart of the Social and Economic Sciences Research Center (SESRC). By phone, mail, and internet, the workers patiently collect data that adds up to very big impacts for a range of universities, businesses, and government agencies, including the National Park Service (NPS). Over the years, they've demonstrated that a well-designed survey can be a powerful tool for change.

Le, who joined WSU in 2014, was formerly director of the now shuttered Park Studies Unit at the University of Idaho. Along with her expertise, she endowed WSU with the database of all social science surveys done for NPS sites since 1982, the largest collection in the nation.

Many of those surveys consist of visitor profiles such as the Badlands National Park study from the early 2000s, which disclosed complaints about urban light pollution and a desire to see the stars. In response, the Park Service suggested offering an astronomy program where rangers could discuss constellations and other topics. The idea went on to become the very successful and popular NPS Night Skies program.

Other surveys involve economic analyses like the 2010 study at Joshua Tree National Park. Le says the local California county was considering building a landfill next to the vast arid terrain, which is home to two unique desert ecosystems.

"We did an economic impact study for the park and were able to prove that it generates income from tourism to the wilderness area, and that preserving it would be a better economic alternative than the landfill. In the end, the county decided against the landfill," she says.

From top: Park ranger leads tour at George Washington Carver National Monument. Traditional costumed Chinelos dancers at GWCNM Hispanic Heritage event in 2018. *Courtesy NPS*

Today, Le and her team are engaged in two long-term NPS studies, one of which is the George Washington Carver National Monument in Diamond, Missouri.

"The monument honors the life and legacy of Dr. Carver, a former slave," she says. "Most people only remember that he had something to do with peanuts or else they confuse him with President George Washington. But Carver was a lot more than that—he was an advocate of environmentally-friendly farming practices."

Le says the problem is that park visitors do not reflect the diversity of the local population, which includes African-Americans, Latinos, Pacific Islanders, and Vietnamese Catholics. Since it was the last stop on the Trail of Tears, the government's forced relocation of Native Americans, there are also many tribes living in the area.

"Surveys showed that the majority of visitors are white," Le says. "So, our study asked why are people not going to the park, and what might motivate them to visit?"

With the help of local liaisons, Le and the NPS are reaching out to community groups such as churches and colleges to develop ideas. The liaisons then create programs designed to promote cultural exchange and draw people to the monument. Last September, for example, they hosted a very successful Hispanic Heritage event that included traditional dancers, musicians, historical reenactments, and plays. They also offer special Junior Ranger programs meant to ease the children's fear of park ranger uniforms.

Le says that with ongoing federal funding cuts, the survival of a national park could well depend upon the details in economic studies and visitor profiles. As SESRC continues its quest to develop the best possible survey methods, those parks can rest assured—their secret weapon remains just a phone call away. ✳

BY YASMEEN WAFAI '18

No holds barred education

Halfway through his prison sentence, Noel Vest realized he did not want the rest of his life to be like his past.

Inhumane conditions, windowless cells, and violence. For many people, movies and television shows portray an overwhelming sense of hopelessness in prisons. However, through programs that offer college courses on the inside, hope can be found.

Vest ('13, '16 MS Psych.), now a psychology doctoral student at Washington State University, knows this first hand. He was a habitual criminal in Nevada with 21 different charges ranging from drug convictions to identify theft. A little over three years into his seven-year sentence, he knew he needed a change.

In addition to attending Alcoholics Anonymous meetings, Vest started taking courses through the College of Southern Nevada and found a thirst for knowledge.

Vest later had the opportunity to teach at Coyote Ridge Correctional Facility in Connell through Walla Walla Community College. He says seeing people like him, eager to learn, inspired him.

"My life just isn't complete unless I'm giving back to the community," he says.

Despite the complexities and underlying issues of the prison industrial complex, education programs are a factor in reducing recidivism, as well as violence within the prison, says Faith Lutze, a professor in the Department of Criminal Justice and Criminology at WSU.

"The more mindful we are about creating environments and opportunities for people to advance their own well-being," Lutze says, "we'll reduce recidivism and have positive outcomes for our communities."

Anna Plemons ('99 Speech & Hearing Sci., '14 PhD English), an English faculty member at WSU, has also taught in prisons and still teaches courses, such as narrative nonfiction and introductory English courses, through the Lake Tahoe Community College incarcerated student program.

COURTESY CIVIL SURVIVAL

Plemons says she works with highly motivated and serious students who volunteer to take classes. However, as much as she thinks the programs are valuable, Plemons says she does not forget the context of why prisons grow so fast.

"There absolutely are issues of equity and justice that need to be addressed in the prison system, and I'm not confused about that at all," she says.

There are also issues with the environment and architecture of the classrooms, says Plemons.

She recalls when she was teaching in a relatively nice room with moving chairs, no echoes, and a small observation window. Then, at one point during the class, they had to move to a room that felt more confined.

"It was the same students, same curriculum, and we just moved mid-class," Plemons says, "and it just died."

Taking courses can offer more than an education. It also helps with prisoners' understanding of society and can reduce their biases, says Wesley Maier ('12 MA, '18 PhD Crim. Jus.), criminal justice instructor at Walla Walla Community College.

Maier has taught several criminal law and criminology classes at Coyote Ridge. He says it was compelling to see the students learn about and reflect on the criminal justice system.

Maier says his wife, who also taught at Coyote Ridge, led a class where social issues were discussed. After the class, an inmate who was a white supremacist thanked her for the class and said his perspective of race had changed. The student said prior to the class, he did not see how biased and blind he was, and he realized his views were wrong.

A study from *The Prison Journal* found that 47 out of 50 states have at least one institution that offers a postsecondary education program for credit to incarcerated individuals. Vest believes education is one of the only definite resources people have after they are released.

"They can take away your right to live where you want to live. They can take away your right to get jobs. They can take away your right to volunteer at your kids' school," Vest says. "But they cannot take [your education] away from you. It is a tangible asset that you can use to better yourself when you get out."

What's gone viral?

BY BRIAN CHARLES CLARK

Grapevines dressed in fall colors once graced the covers of phone books and promotional posters for wine country. But grape leaves aren't supposed to turn color in the fall. These were sick plants, infected with a debilitating disease that reduced fruit yield and quality.

Grapevine leafroll-associated viruses—there are at least six of them—trigger a biosynthesis pathway in grapes that makes them produce red pigments, called anthocyanins, in their leaves. Those are the same pigments that make red grapes red. White grapes lack anthocyanin, so they don't show the same symptoms but they, too, suffer from the infection.

None of this was known when Washington State University plant pathologist Naidu Rayapati arrived in Prosser in 2004. Americans had fallen in love with fine wines and eastern Washington had the perfect climate to cash in by planting thousands of acres of new vines.

But leafroll viruses were throwing a wrench into the works. With most plant virus diseases, Rayapati says, "you'll see symptoms of infection in a matter of days or, at most, weeks." But with leafroll, symptoms don't appear until veraison, the onset of berry ripening.

What appears to be going on, he continues, is that "there is some kind of linkage" between the seasonal stage of the plant and the expression of symptoms. As berries begin to mature, a profound change occurs inside the plant.

Most plants have two sets of plumbing. With grapes, the xylem moves water and metabolites through the plant for most of the season. But once ripening starts, the other set of pipes, the phloem, comes into play as sugars are moved from leaves to ripening berries.

Leafroll viruses appear to hide out in phloem cells. Just at the time when the phloem tissues are supposed to be transferring sugar to berries, they aren't.

Grapevine leafroll disease eventually causes yields to get smaller and reduces the grape quality over a period of years. *Staff photo*

"It's like a clog in your drainage," explains Rayapati.

Over a period of years, yields get smaller and grape quality is reduced. "It's a kind of cascading effect," he says. As WSU researchers have shown, the economic impact, measured over time, is dramatic.

Having tracked the spread of leafroll infections over many years, Rayapati knows that some of the viruses are vectored by mealybugs. If a grower plants a new block of vines next to one that is already infected, they see a gradient pattern as bugs fan out into the new block, carrying the infection with them.

Unfortunately, there is no cure—yet. While Rayapati and his colleagues are working on that, they offer growers practical management advice. First and foremost, know where your planting material comes from. Make sure it is tested virus-free—and then work with your neighboring growers to keep plants healthy. This sometimes means the admittedly expensive act of pulling out infected vines and planting new ones.

WSU runs a Clean Plant Center to help the nursery industry produce virus-free planting material for growers. But, says Rayapati, plant health is a community effort. One sloppy neighbor can ruin things for those around them. We are all, the virologist emphasizes, "equal partners."

Giving rust a rest

BY DALLEN ROSE

Arron Carter and his breeding program provide the first line of defense in the high-stakes battle against stripe rust—the number one threat to wheat.

The fungal pathogen that causes stripe rust is ubiquitous in wheat-growing regions. Its airborne spores can ride the wind for miles upon miles. When conditions are right, it grows quickly, sucking water and nutrients out of the leaves and crippling a plant's ability to produce healthy seeds.

Stripe rust takes a heavy economic toll. Treating infected crops with fungicide is expensive—but if not treated in time, it can cause up to 80 percent crop loss for the world's third largest crop.

To make matters worse, it frequently mutates. There's no way to tell how long any wheat variety will maintain its disease resistance.

That uncertainty is what keeps Carter's winter wheat breeding program hopping. There are about 80 known stripe-rust resis-

tance genes, and WSU's plant breeders and crop scientists are constantly looking for new genetic combinations to keep ahead of the evolving threat.

"Disease resistance could only last one year, or it could last fifteen or twenty years," says Carter '09. "We're always looking to breed new varieties that have multiple resistant traits. When we can pyramid resistance genes on top of each other, we have better results."

In the University's plant growth facility in Pullman, wheat breeding runs on an accelerated cycle of up to three generations of wheat every year. The brightly lit greenhouses atop the building are its most obvious feature—but the process really picks up speed in the lower levels.

Genetic analysis ensures that the breeders are cross-pollinating varieties that have specific desirable genes. Vernalization chambers put winter wheat through the cold period necessary for reproductive growth to begin. Humidification chambers provide perfect conditions for stripe rust to grow, so a wheat variety's resistance (or lack thereof) can reliably be observed.

"We don't yet have the ability to predict how a hybrid will perform," says Carter, "but we can speed up the testing process so we don't waste a lot of time on a variety that isn't fit."

Where it once took over a decade to identify and fully test an improved variety of wheat, it now takes only seven years on average.

Right now, WSU has three winter wheat varieties and one spring wheat variety awaiting approval by the University's Variety Release Committee. If approved for release, they'll be available to growers in spring 2019. And there's a steady stream of new varieties in the works.

In the longer term, the University's wheat breeders are working to breed resistance genes for several different diseases into future varieties.

"It's all about stacking the deck in our favor," says Carter. "We want to maximize economic sustainability for growers over the long term and minimize vulnerability to the surprises nature throws at us."

Arron Carter and WSU graduate students at the Spillman Agronomy Farm.
Photo Robert Hubner

Stopping the blighters

BY LARRY CLARK

A voracious predator has stormed over Northwest apple and pear orchards over the last few years, leaving crooked and oozing branches that require orchardists to sever limbs and sometimes whole trees. Fire blight has plagued fruit trees for years, but the combination of weather conditions has worsened the severity of infestations from the bacteria since 2015.

Sarah Kostick, a horticulture doctoral student at Washington State University, is tackling the disease that costs apple growers millions of dollars every year.

Working in WSU apple breeder Kate Evan's program at the Wenatchee-based Tree Fruit Research and Extension Center, Kostick is experimenting with hundreds of apple cultivars in the search for genetic resistance to the bacterial disease.

Kostick says fire blight strikes younger trees harder than older trees. Many newer varieties are also more susceptible than older varieties like Red Delicious. "We need new apple cultivars that resist fire blight but keep that high fruit quality," she says.

She spent the last two years inoculating more than 1,600 trees with the bacteria. Dipping scissors in a suspension of fire blight pathogen, she cut the tips of shoots on young trees, then measured the resulting infection. Kostick is now analyzing the results to find areas of the genome that are associated with resistance to the disease.

"Once we find them, we can develop DNA tests so that breeders can test for resistance with a simple tissue sample," she says. "If we're successful, breeders will know years earlier if a promising new apple variety will be tolerant of fire blight, or susceptible to it."

Meanwhile, WSU Extension specialists have worked with orchardists for years to manage fire blight.

Extension regional specialist Tianna DuPont notes that fire blight is a very real economic threat, even when managing the disease. "It can cost $800 an acre to cut out the blight, not counting removing trees or cost of spraying to prevent the infections," she says. "And the number of acres having to be removed is higher than it's ever been."

One key fire blight management tool developed over the last 20 years by Extension specialist emeritus Tim Smith is "CougarBlight," which incorporates temperature and moisture data from WSU's AgWeatherNet to predict infection risk during bloom.

Growers use the WSU Decision Aid website to find information on their risks at any given time, as well as projections for the following week, says DuPont.

She also does a number of direct consultations, with over 205 farm visits or phone calls this last year with orchardists and field staff. And, says DuPont, "It goes both ways. We're also learning from them what research needs to be done."

Many growers use the CougarBlight model to determine when, where, and how to spray most efficiently. There are also tools for organic orchardists.

In concert with Oregon State University over the last 15 years, Extension developed integrated non-antibiotic management strategies. Growers can use a yeast to guard the flowers in early bloom, followed with either biological controls or a soluble copper. "Every year we test 20–40 new products and we hope to find more tools to make fire blight management easier for growers," DuPont says.

All of the fruit tree industry, and WSU researchers and specialists, hope for a cool, dry spring to reduce the fire blight risk. But the race to find resistant cultivars and products to manage the disease is just gaining speed.

WSU horticulture doctoral student Sarah Kostick is racing to find fruit tree genes resistant to fire blight. *Photo Robert Hubner*

fight song in space and old recordings: magazine.wsu.edu/extra/fight-song

BY MARK O'ENGLISH

"Fight, fight, fight..." still flying high

The students of Washington State College eagerly gathered in Bryan Hall on February 20, 1919, to hear the debut of a new college song. The *Evergreen* claimed it "at once scored a hit," and declared that both the words and music "possessed a swing that might well be described as fully equal if not surpassing any college song written." A century later, the "Washington State Fight Song" music and lyrics live on virtually unchanged.

Popular music gained prominence at the start of the century, as a greater variety of musical instruments became available and affordable to the general public, and as the first mass-market recorded music on wax cylinders allowed the public to hear songs from original performers. Before television or even radio, community singing blossomed, including college glee clubs and student organizations performing known and original songs.

The 1919 tune wasn't the first attempt at creating new Washington State songs. While State College songs had been written for many years to the tunes of popular music, a 1914 competition for a new football song was won by Emory Alvord (1915) for "Washington Football War Song." However, this "winner" failed to gain the hearts of the students.

After World War I, *Evergreen* issues in January 1919 decried the lack of student enthusiasm in singing the college songs. Some people attributed the attitude to the songs themselves; during World War I energetic and patriotic songs had showcased a community's support of their soldiers' efforts, but pre-war Washington State songs lacked that energy.

Two female students, Zella Melcher and Phyllis Sayles, composed a fight song that did bring some energy. Melcher appears to have been quite the socialite, active in class leadership, Pi Beta Phi sorority, the *Evergreen* and *Chinook*, several musical groups, and more. She was elected May Queen as a senior. Among her many social activities, Melcher was a charter member of Mu Phi Epsilon, the campus music honorary.

Fellow MPE member Sayles was a talented pianist who had previously attended Northwestern University, where she compiled a book of that campus's fight songs and wrote various songs for her sorority, Alpha Chi Omega. Sayles's father had worked as a clerk within Indian agencies, and when he moved to Lapwai, Phyllis left Northwestern and came along. She enrolled at WSC in the fall of 1919 to complete her senior year.

In their fight song collaboration, Sayles wrote the music and Melcher penned the words. The original sheet music, printed in the February 26, 1919, *Evergreen* in Melcher's handwriting, bears a block-printed title of "New Washington State Fight Song."

Melcher graduated as planned in 1919; Sayles completed her coursework but would not receive her degree for another three years. Both women married in 1922, and Melcher, now McMicken, spent the rest of her life in Chehalis, while Sayles, now Davis, moved to Los Angeles. Both taught music throughout their lives. Zella fell ill while relatively young and died in 1938; Phyllis lived until 1971, passing at the age of 74.

Their legacy, the fight song, remains known not just to Cougs but around the world. The song apparently first aired nationally via NBC radio on May 15, 1934, in a live broadcast of a WSC band and glee club performance at the Davenport Ballroom in Spokane. That performance is the oldest existing "Fight Song" recording, as pressed LPs of the performance were later sold on campus.

The tune became even more widely known when actor John Candy sang the fight song defiantly as "Tom Tuttle from Tacoma" in the 1985 movie *Volunteers*. Earlier—on June 22, 1983—the fight song had reached new heights as it was played to start the day for the crew of the Space Shuttle *Challenger*, in honor of Cougar astronaut John Fabian '62, on board for his first space mission.

Back on earth, the familiar spirited strains of "fight, fight, fight for Washington State" still ring across campus, just as they did in that 1919 debut.

PHOTO COMPOSITE OF STS-7 (COURTESY NASA) AND MARTIN STADIUM (ROBERT HUBNER)

BY BRIAN CHARLES CLARK

Arts and science

English major Matthew Jockers wasn't always a computer whiz. The new dean of the Washington State University College of Arts and Sciences recalls a class in high school in which he struggled to program a mainframe to print out his name. "It was that tricky," he says.

A love of reading, writing, and literature led him to become a very good coder indeed. Jockers is an expert in R, a programming language he uses to write the pattern-detecting algorithms at the heart of his research. Jockers uses it to analyze texts—lots and lots of text. One wag wrote that Jockers may be the only literature professor to assign 1,200 novels in a single class.

A powerful tool, text mining is used by pharmaceutical companies to analyze patents and journal articles to accelerate drug discovery. Public health researchers, including some at WSU, mine social media text to detect disease outbreaks. Businesses use it to improve competitiveness by analyzing customer and consumer data. Scientists, daunted by a global scholarly output of two million papers a year, use text mining to make their work more efficient. And text mining helps us understand that most human of acts, storytelling.

So important is storytelling that Jockers, not one to go too far out on a limb, is willing to make a prediction. "If you look at the historical data, English majors have declined. My prediction is that the dip is going to reverse. There is constant new evidence coming in of the value of storytelling to every industry out there."

When Jockers was a computer engineer at Apple, he says they needed people who could translate technical innovations into something the company could use and sell. "The mantra has been 'STEM, that's where the jobs are.' But the jobs are changing" as tech industries mature, "and now we need leadership, communications, and those are developed in the arts, humanities, and social sciences."

The Bestseller Code, a book Jockers and a colleague published in 2016, is a perfect example. The book provides empirical evidence of the features that authors, literary agents, and publishers have long sought after intuitively. By digitizing and analyzing thousands of works of fiction—some bestsellers, many not—*The Bestseller Code* reveals "patterns at a scale and level of granularity that no human could ever manage."

A lot of that analysis is done with surprisingly mundane words. The most common words in English—forms of the verb "to be," prepositions, articles—reveal all sorts of things, Jockers says, including the gender of an author, and whether he or she is, say, British or American. An analysis of nineteenth-century novels revealed that "character agency is very gendered. The results confirm certain stereotypes about gender roles."

Despite dire warning of machines storming the castle of narrative and robbing us of our creativity, Jockers demurs.

"All the tech is doing is letting us see things that we wouldn't see otherwise." It's up to storytellers, not machines, to decide how to act upon the patterns that emerge from the data.

Matthew Jockers has a doctorate in literature and is an expert in the computer programming language R. He became dean of WSU College of Arts and Sciences in 2018. *Courtesy University of Nebraska-Lincoln*

top athletes coached by Chaplin: magazine.wsu.edu/extra/Chaplin-athletes

Athlete, coach, winner

BY DYLAN GREENE '19

Former WSU track coach John Chaplin advises runner and hurdler Gary Minor in the mid-1970s. *Courtesy WSU Manuscripts, Archives, and Special Collections*

JOHN CHAPLIN GAVE WASHINGTON STATE UNIVERSITY its most dominant athletic program ever: four Pac-10 cross country and track and field championships, a 202–15 record in dual outdoor track and field meets, and a NCAA Championship in 1977.

All this was accomplished under the watchful eye of Chaplin '63, head track and field coach for 21 years at WSU, from 1973 to 1994.

Despite all the accolades and glory that came to the track team under Chaplin, he is only enamored with one record on his career résumé.

"I had one good statistic," he says. "Ninety-seven percent of the kids who got a letter [of intent] graduated and all the rest of it is irrelevant."

Most people wouldn't call the University's sole NCAA championship irrelevant, but for Chaplin it was about more than just sports. He cared about his athletes' academics.

"In the end, you're not going to make a living at a track," he says.

Chaplin was so invested in the student side of his athletes that he served as a university officer for athletic eligibility for 13 years and as an admissions officer for three years during his time at WSU.

He even sacrificed a meet victory once in favor of one athlete's academic career. The athlete was Josephat Kapkory '95, a two-time NCAA indoor champion in the 3,000 meters.

Kapkory was a chemical engineering major and had to take a test that interfered with a track meet. If he didn't complete the test, he would have to wait an entire year to have a chance to do it again.

So Chaplin held true to his word and put academics before athletics. The result: a one-point loss to University of California, Berkeley.

Chris Whitlock '86, who was a 1981 All-American in the mile relay and competed in the 1984 U.S. Olympic trials in Los Angeles, says Chaplin cared deeply about him and his teammates. Whitlock says Chaplin would even give suggestions to athletes about what classes they should take.

Whitlock recalls one time when he skipped a class and immediately received a call from Chaplin. After receiving a tongue lashing from his coach, Whitlock soon realized how much Chaplin stayed on top of his athletes.

"You think you can do anything without anyone noticing," he says, "but with Chaplin that wasn't true…he had his fingers and nose in everything we did."

During his time at WSU, Chaplin was recognized as a leader in helping to bring international athletes to the United States to compete in track and field.

He recruited athletes from 31 different countries to Pullman, including ones from Greece, Kenya, Argentina, and Norway.

At that time, track coaches mostly recruited locally but Chaplin saw untapped potential and talent internationally.

"Chaplin opened the door for athletes and the world to come to the United States and run

track," says Ron Jenkins '86, who walked onto the track team in 1983.

Jenkins, who went by the nickname "Beaver" in college, says people questioned what Chaplin did, but he brought in a lot of talented athletes and took WSU track and field to the next level. Jenkins remembers one season where 18 future Olympians were on the team with him.

Jenkins says Chaplin used to tell him, "Beaver, you can't eat medals," and helped him focus on graduating in order to succeed after his track career was over.

"Even though he wasn't my counselor, he became my counselor," Jenkins says. "I will never forget that experience. I cherish it to this day."

Before Chaplin began coaching in Pullman, he was an athlete at WSU. He came to the Palouse after three years in the service and one year at Pasadena City College in California. He transferred from Pasadena to WSU and ran on the track team from 1961 to 1963. All three years he competed, Chaplin scored the most points on the team.

Ed Jacoby is very familiar with Chaplin's success on the track. Jacoby competed against Chaplin as a sprinter at the University of Idaho and coached opposite of him at Boise State University.

Jacoby says Chaplin was one of the best sprinters around during his time as an athlete.

"I chased him around, but I don't think I ever beat him," he says. "The guy was pretty good."

After Chaplin graduated, he wanted to become a lawyer but, after coaching track at Wapato High School, he joined the staff at Oregon State University as an assistant.

In 1968, Chaplin was planning on ending his coaching career to fulfill his goal of becoming a lawyer when a phone call from Jack Mooberry '31, his WSU coach, changed all of that.

Mooberry hired Chaplin as the head cross country coach and the rest is history.

Jacoby says he and Chaplin have been friends for over 60 years and go fishing together. He says Chaplin's directness and dedication to doing things his own way may have rubbed some people wrong over the years, but that doesn't take away from his legacy.

"There's probably a lot of people that don't agree with him and that makes no difference to him," Jacoby says.

Dylan Greene, a WSU senior, was sports editor and editor-in-chief of The Daily Evergreen *in 2018.*

read the full Ol' Crimson story: **wsu.edu/125/ol-crimson**

Ol' Crimson flies over Pullman

The crimson flag finally arrived home.

After 15 years of faithfully waving the Cougar flag on ESPN's *College GameDay*, the whole nation saw the symbol of Cougar pride at the first airing of the popular football pregame TV show in Pullman on October 20, 2018.

It was a long time coming. On October 4, 2003, when Tom Pounds '81 headed from Albuquerque to Austin, Texas, well before sunrise, he wanted to arrive early at the set of *College GameDay* to get a good spot in the crowd. That was the first waving of the flag that would eventually be named "Ol' Crimson."

Pounds's motivation for displaying the hand-sewn flag was simple: to display his school spirit.

His infectious joy was picked up by other WSU alumni and friends who kept displaying the flag week after week. The streak became a tradition and an integral part of the show.

Now the Ol' Crimson Booster Club and flag manager CJ McCoy '98 keep up that tradition, ensuring that a Cougar flag makes it to every airing of *College GameDay*.

That included WSU's home debut on the show last October, as the football team had cracked the top ten and faced the University of Oregon Ducks at a sold-out Martin Stadium. Behind the leadership of Gardner Minshew II, the "Mississippi Mustache," the Cougs took the win, on their way to a school record 11-win season.

Some may think the Ol' Crimson tradition is a little crazy. But any Coug fan will tell you it's no surprise that alumni and fans across the country picked up Pounds's idea and ran with it.

"There's a deep sense of joy in being a Coug," explains Pounds.

TOM POUNDS FLYING OL' CRIMSON (PHOTO ROBERT HUBNER)

French fries

BY RACHEL WEBBER

Hot, golden, and lightly salted, fries have appeared on the menu at White House state dinners, they are a staple at diners and drive-ins, and a former first lady even ordered some on a visit to Buckingham Palace. From the palace to Pullman, the beloved French fry knows few bounds.

Each fall, truckloads of harvested potatoes make their way to Pullman and Washington State University where they are washed, peeled, sliced, and fried. A sweet, yet savory, aroma drifts down the hallway from a room where volunteers, like myself, have come for the culinary trials—an annual French fry taste test.

On a long table, ten piles of golden fries sit glowing beneath heat lamps that shine down like spotlights on the contenders. Each pile features a fresh potato variety that was trucked in from Idaho, Oregon, and Washington. WSU plant scientist Rick Knowles and researchers in the Tri-State Potato Breeding program selected the potato varieties for the trial the previous winter.

"We put them through a number of field and storage trials and assess the quality characteristics that will give us the next best French fry," says Knowles.

One volunteer mentions she's been coming to the culinary trials for the last 14 years, adding that she now associates fall with French fry season. We note the fry color, rigidity, texture, and overall flavor. There's no salt or sauce. For now, it's all about the fried potato and how it tastes.

In the WSU Potato Research Lab, these culinary trials are just one of many evaluations that go into producing a new potato variety for French fries. From the initial crossing of parents with desirable traits, to selection of progeny, to evaluation of performance, developing a new potato can span up to 15 years.

In the last decade, the Tri-State Potato Breeding program has produced 21 new potato varieties. Ranger Russet, Umatilla Russet, Blazer Russet, and Clearwater Russet are the Tri-State varieties used by McDonald's to make their signature French fry. For Knowles and team, patience pays off when the new varieties reach consumers and are sold in grocery stores or served up at global chains and local restaurants.

Fries can take on many forms—shoestring, steak cut, curly—and Americans eat a lot of them. In the United States, the average person consumes 34 pounds of fries a year, according to a 2017 study, says Del Krumm '89, plant manager at Lamb Weston in Connell. He estimates Lamb Weston will produce 2 billion pounds of fries in Washington state this year.

Assuming a 4-ounce serving size, that's about 8 billion servings of fries produced in the state by one of the biggest frozen potato suppliers in the world. Krumm enjoys being part of an industry that brings so much joy to people, where he can meet the always changing consumer needs and also work with Washington's potato growers.

recipes for fry sauces from WSU executive chef Jamie Callison and others: magazine.wsu.edu/extra/fry-sauce

Washington produces 23 percent of the nation's potatoes, according to the Washington State Potato Commission—87 percent of those potatoes are made into mashed potatoes, crunchy potato chips, and other products, like fries.

While the origin of fries remains uncertain, some have argued they had their beginnings in Belgium or France. Whether or not fries actually came from France, some French cookbooks offer different ways to slice up the potatoes before frying.

For *pommes frites allumettes*, cut the potato into thick pieces like matchsticks. Use the fluted blade of a mandoline for waffle-cut fries, or *pommes gaufrettes*. Then there are *pommes frites pont-neuf*, small wedged potatoes, that some say were served in the oldest Parisian fry shops.

Of course, where there are fries or frites, we often find sauce. On a trip to Brussels last summer, a friend and I ate thick, golden fries served up in a paper cone. While fries don't often require utensils, these came with a small, wooden two-pronged fork for easy dipping into a side of spicy mayo.

There is perhaps nothing more tempting to this fry lover than a side of crinkle fries and fry sauce from Cougar Country Drive-In in Pullman. Whether it's fry sauce, ketchup, aioli, chili cheese, mustard, brown gravy and cheese curds, or maybe even a milkshake, the variety of ways to dress up fries might be almost as versatile as the French fried potato itself.

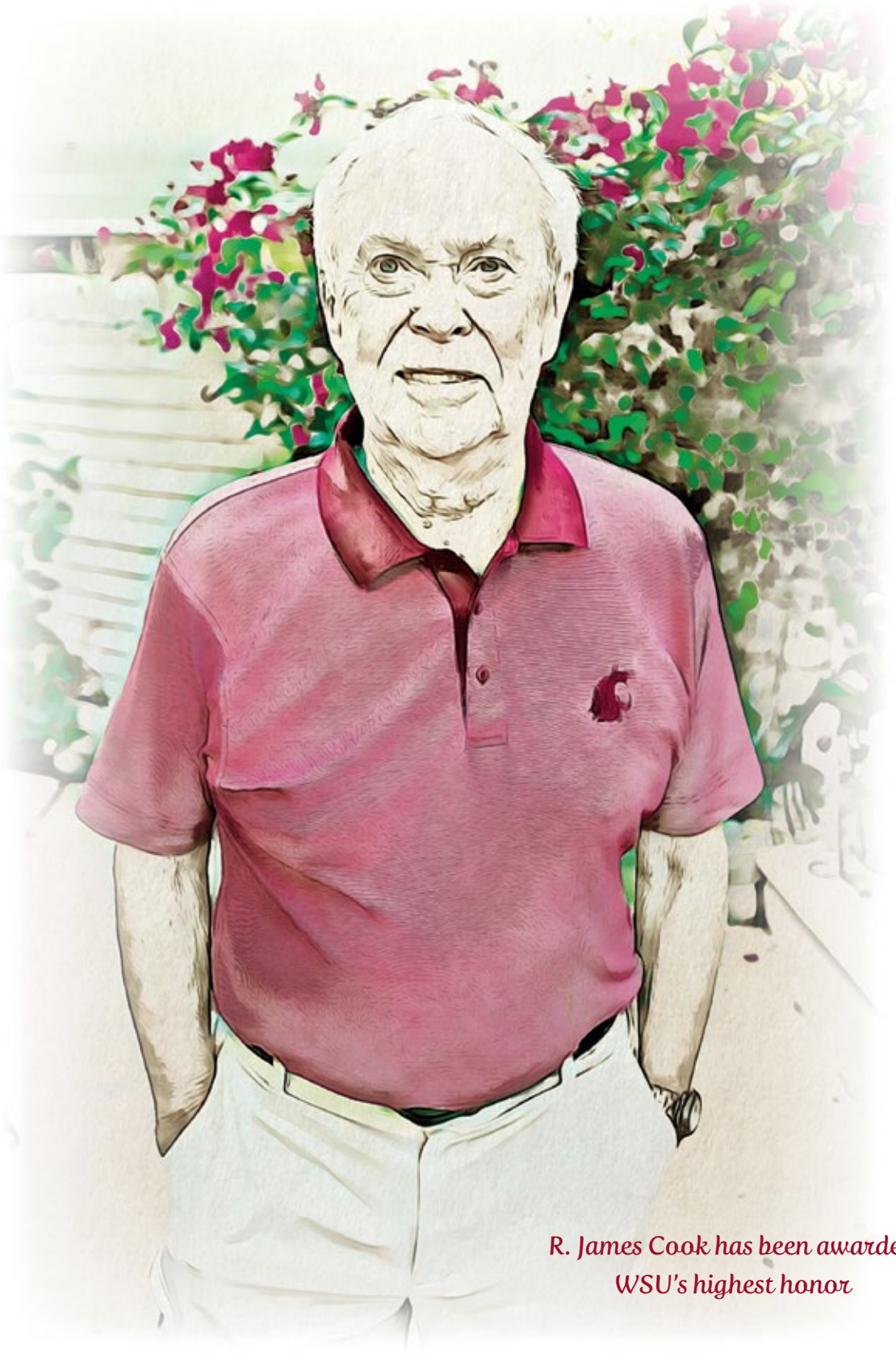
BACKGROUND IMAGE GILLY/UNSPLASH; INSET STAFF PHOTO

SOIL MAN

R. JAMES COOK AND SOIL HEALTH

BY LARRY CLARK

STOCK PHOTO



R. James Cook has been awarded WSU's highest honor

STAFF ILLUSTRATION FROM PHOTO BY SARAH NATHAN

Soil teems with microorganisms, both harmful and beneficial, waiting for a host. "It's a jungle in there," says R. James Cook about the soil around roots. That jungle, crawling with pathogens, can cause any number of diseases that will affect wheat.

"Root diseases were a big part of what we needed to deal with in order to achieve the full production capability of wheat," says Cook, a former researcher with the U.S. Department of Agriculture Agricultural Research Service (USDA-ARS) at Washington State University.

Beginning in 1965 and over the course of four decades with WSU and the USDA-ARS, Cook not only tackled his mission to control those root diseases with fervor, but he established one of the best research units in the world concentrating on soil health.

"We didn't call it soil," says Cook, looking back on his childhood. "We called it dirt."

Cook grew up on a 400-acre farm in northwestern Minnesota. Born in 1937, he was the oldest of eight kids, and helped out with the chickens, dairy cattle, and crops from the time he was five years old. Cook remembers how they harvested grain with a binder and tied it in bundles, and then put it into a threshing machine, with the threshed straw used as bedding in the barn. One of the happiest days of his life, he says, "was when I graduated to drive the tractor and didn't have to ride the binder anymore."

Cook went on to North Dakota Agricultural College (now North Dakota State University) to study agronomy and animal science, planning to become a farmer. He was dating Beverly Ann Miller at the time and took her out to the family farm. "I'd show her around and she thought the farm was very interesting, but then she announced to me, as we were getting engaged, 'Well I really like to visit the farm, but I'm not gonna live on a farm,'" says Cook. "And with that, my career took an about face."

Cook's interests led to graduate studies at North Dakota State, where he became the first student to get a graduate plant pathology degree there. Masters in hand, Cook went to the University of California, Berkeley for his doctorate, and it was there that soil really captured his curiosity.

Berkeley in the early 1960s held a hub of scientists working on root diseases and biological control. Since soil-borne pathogens don't have a cost-effective chemical solution, researchers began using the pathogens' own microbial enemies to manage them on plant roots. Those helpful organisms then live on the roots where they make natural antibiotics or have other processes to provide a defense system against root diseases.

Cook joined that research effort in its infancy and learned from top plant pathologists. That led to a postdoctoral fellowship in Adelaide, Australia, where the Cooks and their two young children lived for 14 months before receiving a USDA-ARS job offer in Pullman. Since the Palouse is prime wheat country, Cook recognized the potential for research collaboration on soil health and root diseases, and took the job at Washington State.

In 1965, when Cook joined about 25 other USDA-ARS scientists at WSU, C. Clement French was president and WSU only had around 15,000 students. Cook moved into Johnson Hall and set right to work on his mission.

Cook consciously uses the word "mission" to describe the work of USDA-ARS scientists. They hold appointments with the University, but their work has a defined focus.

"A new faculty member arriving at the University is usually allowed to take off in any direction they want, pursuing their interests and doing curiosity-driven research," he explains. "I was hired to do a very specific job, which was to understand and control the root diseases of wheat. The man who hired me said, 'You can study them if you want, but your job is to control them.'"

That didn't faze Cook. "It might seem like I was put into a box, doing so-called mission-linked research, but it's not like I didn't have any curiosity going about my job. I'm curious about so many different aspects of the root disease problem on wheat."

Those root diseases and soil-borne pathogens, and their control with beneficial organisms, weren't very well-known when Cook began his work at Washington State on maladies such as Fusarium root and crown rot, and take-all.

"Take-all is caused by a fungus that lives in the roots of the crop just harvested, and grows from those decaying roots onto the fresh roots of the new crop to rot them off and cause wheat to die in big patches," says Cook.

In 1971, a number of bags of diseased wheat roots from the Puyallup research station, blackened from take-all, sat on the table in Cook's lab. Except Cook immediately noticed four bags with healthy white roots.

Cook knew of a European study that showed soil would become suppressive to take-all if you just kept growing wheat. "Just the opposite of what we would normally do," notes Cook.

He and his colleagues had raised wheat with take-all in Puyallup, but included some soil from a field near Quincy that had wheat grow-

Opposite: Jim Cook spent decades in wheat fields to understand and manage root diseases. *Courtesy Jim Cook*. ***Below, from left:*** Cook was an early advocate of no-till, which uses a drill to plant seeds and place fertilizer with minimal disturbance from tillage, thus reducing the risk of soil erosion. *Video frame Pond5*. Cook with WSU graduate students. *Courtesy CAHNRS*

ing consistently for 12 years. That was the wheat with healthy white roots, confirming the soil was in take-all decline.

The take-all decline finding "changed the direction of my program completely. That one experiment, done in the field."

Cook also busted a few myths. For 30 years, there was a belief that straw from wheat was toxic to wheat. "I had to deal with that diagnosis and it was well established in the scientific literature, but it was wrong," he says. He proved through a series of experiments that the problem came from root diseases thriving under the wet blanket of straw on the soil surface.

"I showed that I could fumigate the soil and then bring fresh straw back that had not been fumigated," says Cook. "There was absolutely no evidence of toxicity once the soil was rendered free of pathogens with fumigation."

Still, fumigation is not a sustainable solution for root diseases, Cook explains. "We have an array of chemicals that we can use to protect the crop above ground. Soil fumigation is really the only chemical means by which to truly control root diseases, and that's not going to be economical except for high value horticultural crops like strawberries."

Cook's research didn't just stay in the lab. He cultivated strong relationships with wheat growers all across the region. "I got to know some really great farm families doing research in their backyard, where the problems were, rather than just bringing the problems to the lab at WSU," he says.

The farmers, in turn, respected Cook and his efforts.

"I avoided telling farmers what to do, but rather, set about providing them with enough understanding so they would know what to do," wrote Cook in his 2017 memoir, *Untold Stories: Forty Years of Research on Root Diseases of Wheat*.

"Growers really appreciate good science, especially when it's happening on their own farm," he adds.

John Aeschliman, who has a farm outside of Colfax, was one of those growers who developed a strong rapport with Cook.

"He grew up as a farm kid and he spoke farm language," says Aeschliman. "Jim's ability to communicate was really high, so growers would go to him. Root diseases—*Rhizoctonia*, *Cercosporella*, foot rot, take-all—all these diseases were very prevalent during his time at the University and he went after them with vengeance."

Cook also connected with legendary Washington State wheat breeder Orville Vogel, who developed respect for Cook's research on root diseases and soil-borne pathogens. Early in his time at WSU, Cook demonstrated to Vogel that soil pathogens were limiting the yields on semi-dwarf varieties like the famous variety Gaines. Vogel's response to the fumigated plots: "That's how my wheat is supposed to look!"

"Orville was a great mentor and friend," says Cook. "He used to come to my office and say, 'Come on, let's go out and look at some wheat.' He carried a little trowel with him, and he'd dig up some plants and ask, 'Now, what's this?'"

Cook himself served as a guide for many researchers and graduate students who came to both WSU and the USDA-ARS. David Weller and Linda Thomashow were two scientists who joined Cook in the late 1970s to research root diseases like take-all and take-all suppressive soils at the University.

"Jim was an incredible mentor to us, and his work on biological control was groundbreaking," says Weller.

Weller, who now works in Cook's old Johnson Hall office, reaches up and pulls two well-used hardbound books from the shelf. "I still use these two books that Jim cowrote on biological control. He has such an encyclopedic mind and taught so much to us."

Deb Inglis ('78 MS, '82 PhD) also benefited from Cook's guidance as a graduate student. Inglis was a farm girl herself near Spokane. "My grandfathers needed answers to real-life problems, since they both grew cereal crops. Jim, of course, worked on root diseases of cereals and he worked very closely with farmers. I really wanted to work with someone who could relate to farmers and who could help answer real-life issues and problems," she says.

***Below, left*:** Cook researched numerous root diseases of wheat, with an emphasis on biological controls. ***Below, right*:** The WSU Cook Agronomy Farm was named after Jim Cook in 2006. Former WSU President Sam Smith joined Cook at the dedication. (Smith and Cook were plant pathology graduate students together at UC Berkeley in the 1960s.) *Courtesy CAHNRS*

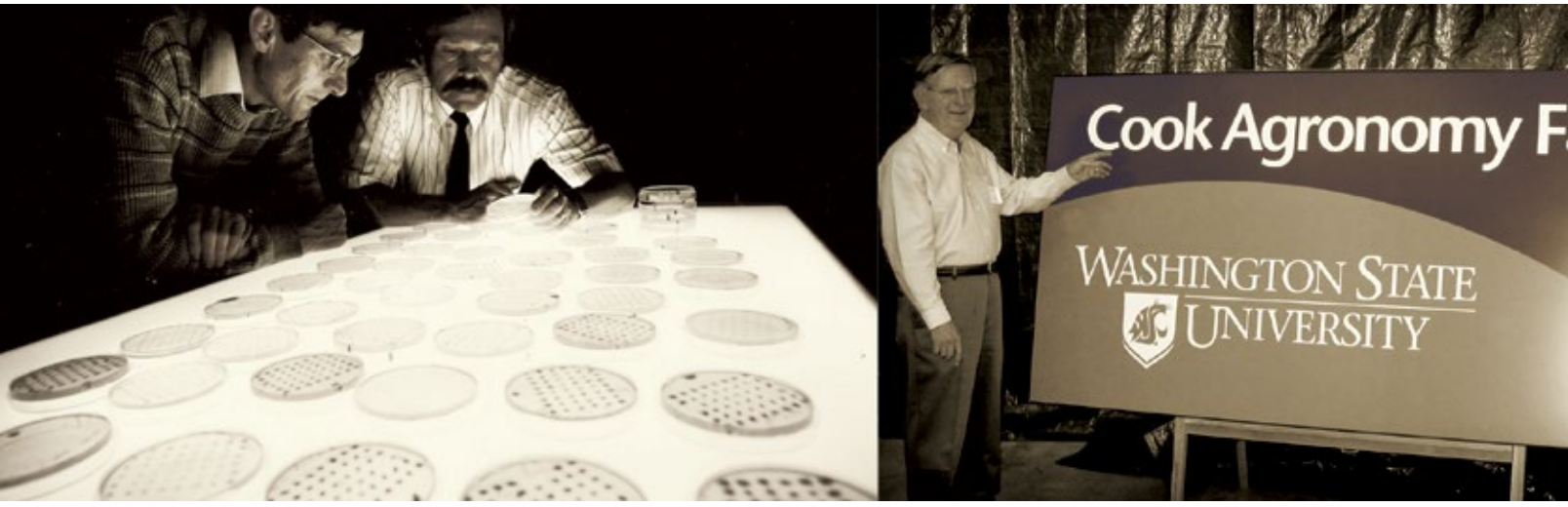
Cook's ability to be theoretical and practical at the same time came through to his graduate students, says Inglis. She later became director of the WSU Mount Vernon Research and Extension Center where she applied Cook's teaching. "Hypothesis-driven research that is field based, observations that one sees in the field, and then solutions that are attempted to be found through laboratory, greenhouse, and sometimes field research, that's a winning combination," she says.

East of the WSU Pullman campus, 160 acres of farmland continues Cook's soil research. Renamed the R.J. Cook Agronomy Farm in 2006, it had begun six years prior as a place for Cook and his colleagues to test in a realistic setting.

with a $1.5 million endowment to establish the R. James Cook Endowed Chair in Wheat Research. Cook served in his namesake endowed chair until 2003, which is now held by plant pathologist Scot Hulbert '79.

Cook became interim dean of the College of Agricultural, Human, and Natural Resource Sciences in 2003, until his retirement in 2005. Jim and Bev Cook now split their time between the Northwest and Palm Springs, California, as snowbirds.

One is more likely to find a grapefruit than a stalk of wheat in Palm Springs, but Cook remains connected to WSU and his research interests. In his retirement, Cook presents at conferences, assists with National Academy of Sciences outreach, and, along with Bev, helps lead the "Cougars of the Desert" group in nearby Palm Desert, which raises money for WSU scholarships.



"Growers knew I did field research, but they said, 'We want you to do research on a scale we can relate to, no more of those little plots,'" says Cook.

That farm featured another area of Cook's interest since the 1980s: direct seed, also called no-till farming. Direct seed methods use a drill to plant seeds and place fertilizer with minimal disturbance from tillage, thus reducing the risk of soil erosion.

In addition to the research farm named after him, Cook garnered numerous prestigious honors—including the 2011 Wolf Prize for outstanding scientific contributions to agriculture, election to the National Academy of Sciences in 1993, president of both the American Phytopathological Society and the International Society for Plant Pathology, a founding member and past president of the Washington State Academy of Sciences, among others.

Cook received WSU's highest award, an honorary doctoral degree, last December, in recognition for his long service to the University and to the cause of healthier plants and soil.

Cook's direct impacts on crop productivity and disease management were recognized in 1998 by Washington wheat growers

Inglis says it's hard to imagine the WSU soil program without Cook's contributions. "Root diseases, water relations, biological control, tillage practices, fertility and water management practices, breeding for resistance, he's had his hand in all of those areas," she says. "And the contributions he has made have really changed how wheat and other cereal grains are growing in our state and our region."

She also notes how Cook connected so well with farmers and the entire agricultural community. "He has a wonderful way of explaining fairly complex phenomena in ways that people can understand," says Inglis. "I remember him talking about the jungle of roots beneath the soil, just using metaphors and explanations that people could easily relate to and really acquire his enthusiasm."

Through it all, Cook was most proud that research colleagues and farmers saw him as having "two feet in the furrow," which allowed him to accomplish his mission, communicate his work, and still satisfy his deep curiosity about root diseases and the jungle of soil life. ✳

soil health research at WSU: magazine.wsu.edu/extra/soil-health

STAFF ILLUSTRATION FROM PHOTOS BY ZACH MAZUR

Arctic chronicles

BY DEBBIE LEE

"I love this one, it's so clear and beautiful," Caroline says, holding a football-sized piece of ice that looks like a chunk of glass. Her hands are bright red, and I'm surprised that she isn't wearing gloves. Behind us, Lilliehöökbreen, a large tidewater glacier, glows in stripes of pink, amber, and turquoise under the late October sky. "But this one"—Caroline grabs another piece—"has amazing textures. Look at those ripples." I squint at the corrugated surface. It's as if the water has carved its subtle movements onto the ice. She places the ice in a plastic bucket and fills it with blue goo—alginate mold-making material.

Caroline and I are on board the *Antigua*, a traditionally rigged tall ship specially outfitted for sailing in the high Arctic, including a modern diesel engine. We're part of the Arctic Circle Artist Residency—thirty artists from every part of the world sailing the west coast of Svalbard toward the North Pole while working on individual and collaborative projects. Caroline, a glass sculptor, and I, a writer, have teamed up. I've been keeping track of her throughout the voyage, asking questions, making notes.

A few days later, we're moored in front of another glacier, Fjortende Julibukta, in a fjord choked with ice. Caroline and I stand on deck under the foremast, a sharp breeze blowing against our cheeks. By this time, the blue goo has hardened and the ice has melted, leaving a void into which Caroline pours hot wax. When I ask her to explain her process, she says she'll take these molds back to her glassblowing studio in San Francisco and use them to create replicas. "I'm making archives of the ice," she says, "because it's disappearing."

Archive. The word catches my attention. I've spent a good deal of my professional life in archives, and when Caroline says the word, suddenly I'm twenty years younger and sitting in the Bodleian Library in Oxford under stained glass windows, sifting through the original manuscript of Mary Shelley's 1818 novel *Frankenstein*. Most people associate that novel with the mad scientist Victor Frankenstein and his monster, whom Victor pieces together from random body parts. But I was more interested in how Shelley warns readers about the dangers of unchecked science and technology. Frankenstein is a classic egomaniac, his thirst for knowledge rapacious, his sense of responsibility all but absent. As soon as he sees the creature he has made, he turns away in horror, a metaphor for what happens when our arrogance and greed replaces our care for one another. Frankenstein rejects his creature, and the creature in turn sets off on a murderous rampage.

Over the next few days, Caroline undertakes another archival process: painting wax directly onto other ice pieces to create shell-like structures that she'll also use as molds.

One morning at six, we're anchored at Farmbukta near the top of the Svalbard archipelago. I'm on deck marveling at the haystack-like rocks, dusted in snow, rising from the sea. I slip into the galley to fill my tea mug and find Caroline sitting at a table. She comes outside with me. "Our life right now!" she says, gesturing toward the full moon.

"I know." I shake my head. This time of year, there is only six hours of daylight, but morning twilight purpling the horizon is so soft and dreamy it makes light seem unnecessary.

"To think I almost didn't come on this trip," she says.

When I ask what she means, she tells me that ten months earlier, she had a terrible accident. She'd been training to do big mountain competitions in Lake Tahoe, and one day while skiing she hit a crevasse, flipped skyward, cartwheeled a couple of times, and then hit the ground, shattering her leg and ankle. Multiple surgeries, months of casts and heavy plastic boots, and endless checkups and physical therapy followed. "But the hardest part," she says, hands wrapped around her mug, "was learning I was never going to get anywhere by racing my way through life. I had to slow down. I had to ask for help. I had to let go of ego and let people see me as broken."

Frankenstein's monster starts with a broken body, but his spirit is broken over time as he desperately cries out for human connection and finds no one willing to help him. In the end, Mary Shelley sends him to what must have been to her the most hostile and yet sublime place imaginable, the North Pole, where he sets himself on fire in despair. One reason I was so drawn to *Frankenstein* twenty years ago, is that the book begins and ends on board a ship sailing toward the icy north. In the late eighteenth century, as I learned in those Oxford archives, Britain sent dozens of expeditions to locate the Northwest Passage and study terrestrial magnetism, and many believe Shelley used Constantine Phipps's 1773 journey along the coast of Svalbard as a source text. I couldn't have known then that one day I'd be traveling the same route. But throughout the voyage, the coincidence has me wondering about the power of archives to suggest a destiny.

Caroline isn't the only one making archives of ice. Before embarking on the *Antigua*, I learned about the climate archives scientists are creating from ice in Svalbard. Drilling hundreds of meters into glaciers in the north, glaciologists from the Norwegian Polar Institute have extracted ice cores. By analyzing the air bubbles in those cores, they can "read" historical atmospheres. They can, for example, see the eruptions of Iceland's Laki volcano in 1783, the Siberian nuclear tests in the 1950s, and the Chernobyl disaster in 1986. They can sift through climates from a thousand years ago, since before the Vikings, although no one knows if the Vikings landed on Svalbard. Ice archives, in fact, are some of the most important tools we have for figuring out climate trends. These archives can tell us that Svalbard is much warmer today than it was when Shelley wrote *Frankenstein*.

A few weeks later, the *Antigua* lands in Longyearbyen, Svalbard's major city—although it is only one block long—where our journey began. I run into Caroline at the post office mailing large crates full of her wax molds along with jars of meltwater from each glacier where she collected ice.

Back home in the United States, Caroline and I are in constant communication. I'm in Washington, and she's in San Francisco, but she lets me watch via Skype as she flashes a pipe laced with molten glass in the fire, rolls it along a table, folds it between the molds she'd made from the ice, until I see the life of the glacier manifest in the very act of sculpting.

"You wouldn't know it," she says during one of our phone conversations, "but glass is the most reasonable material. It follows gravity. You can elongate it, swing it out, and condense it. Every tool that you use can leave a mark on the glass, and in that way, glass records history."

I ask her what kind of history she's recording.

She tells me that she's chronicling the history of loss but also a possible future. "The empty glass," she says, "represents the egoless self, transparent and vulnerable."

Debbie Lee is a Regents professor of English at Washington State University.

PHOTOS DEBBIE LEE

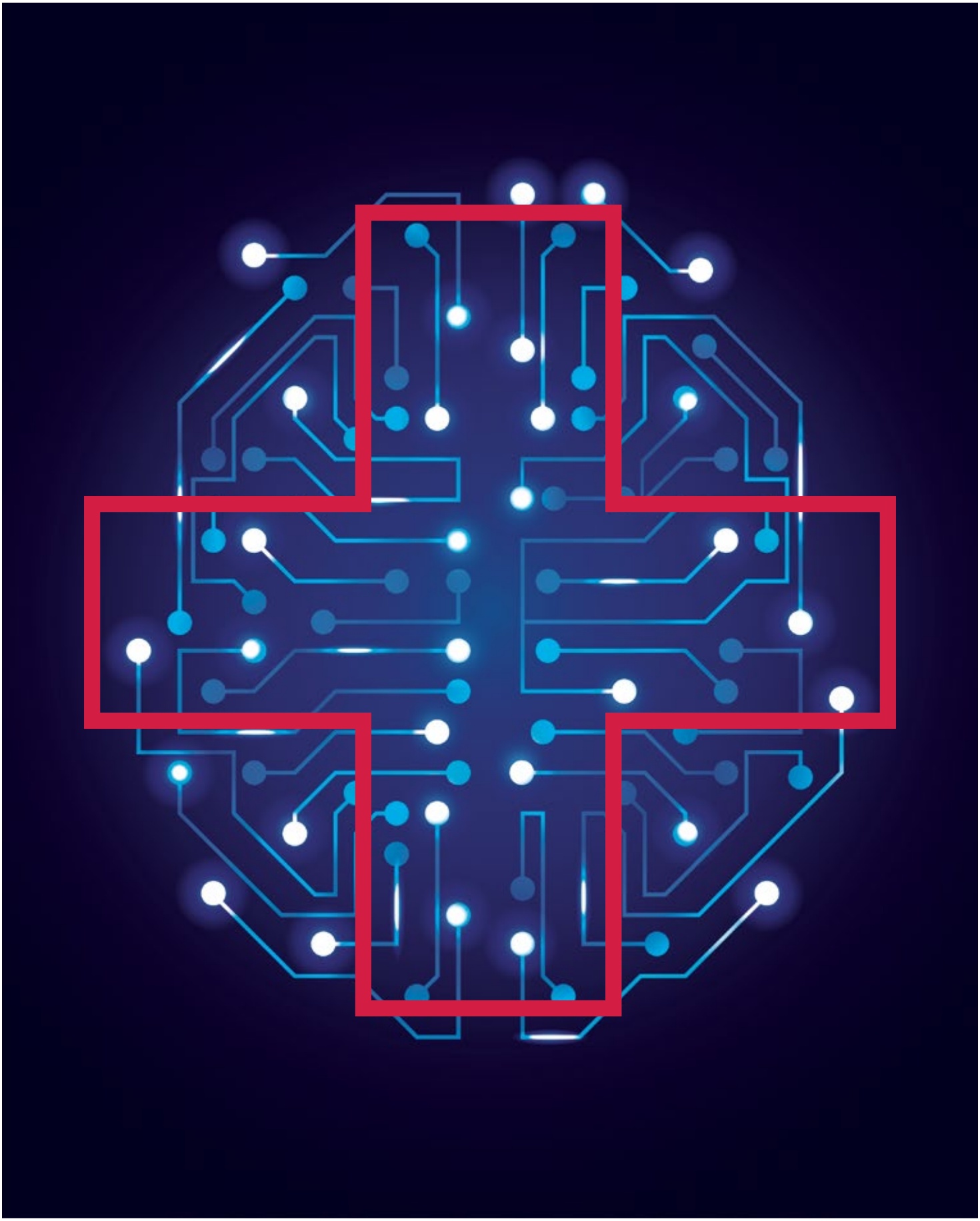


ILLUSTRATION KOHb; OPPOSITE: ILLUSTRATION SHUTTERSTOCK

BY BRIAN CHARLES CLARK

Medical Big Data

Big data is a powerful new tool in the medical bag, and one that can put patients in charge of their own health.

The virtual aura hovering around Kiah Sullivan glows with information, all of it precisely empirical, if not all exactly welcome. The athlete from Port Angeles, who delights in eating a healthy, plant-rich diet, figured her cholesterol would be pitch perfect for a 24-year-old woman. But when she got her labs back, she was shocked to see a number far higher than she expected.

"We assume young equals healthy," Sullivan says. She's on a break between classes at Washington State University Spokane, where she's a second-year medical student in the Elson S. Floyd College of Medicine. She's also a participant in a scientific wellness program, the product of a partnership between the medical college and Arivale, an innovative healthcare startup that may change the way we think of medicine, what it means to be well, and how we access healthcare.

It all has to do with Sullivan's cloud—a billion or more data points derived from her sequenced genome; numerous lab tests of blood, saliva, and stool samples; and a seemingly endless supply of personal questions, from her family's health history to what she eats. That clarifying cloud of data, collected by Arivale and interpreted for her by an ever-inquisitive health coach, "made me think twice," Sullivan says, about her assumptions of youth, health, and, more importantly for a doctor-to-be, how a genome gets expressed in an actual living, breathing person.

You can't assume much of anything on just a few data points, such as age and diet, says College of Medicine dean John Tomkowiak, but that's what doctors have had to do since pretty much forever. It's not their fault: "We just didn't have the technology," Tomkowiak verbally shrugs.

But now we do, and a booming business in big data is driving change. Already, retail and advertising empires—Amazon and Alphabet, Google's parent company—have been built on data collection nets beyond the dreams of even the most avaricious fisherman. That's low-hanging fruit, though, compared to deploying massive data sets in healthcare. Far-seeing researchers are bringing together the technologies of data collection, the people who know how to wrangle and make sense of big data sets, and the practitioners of healthcare.

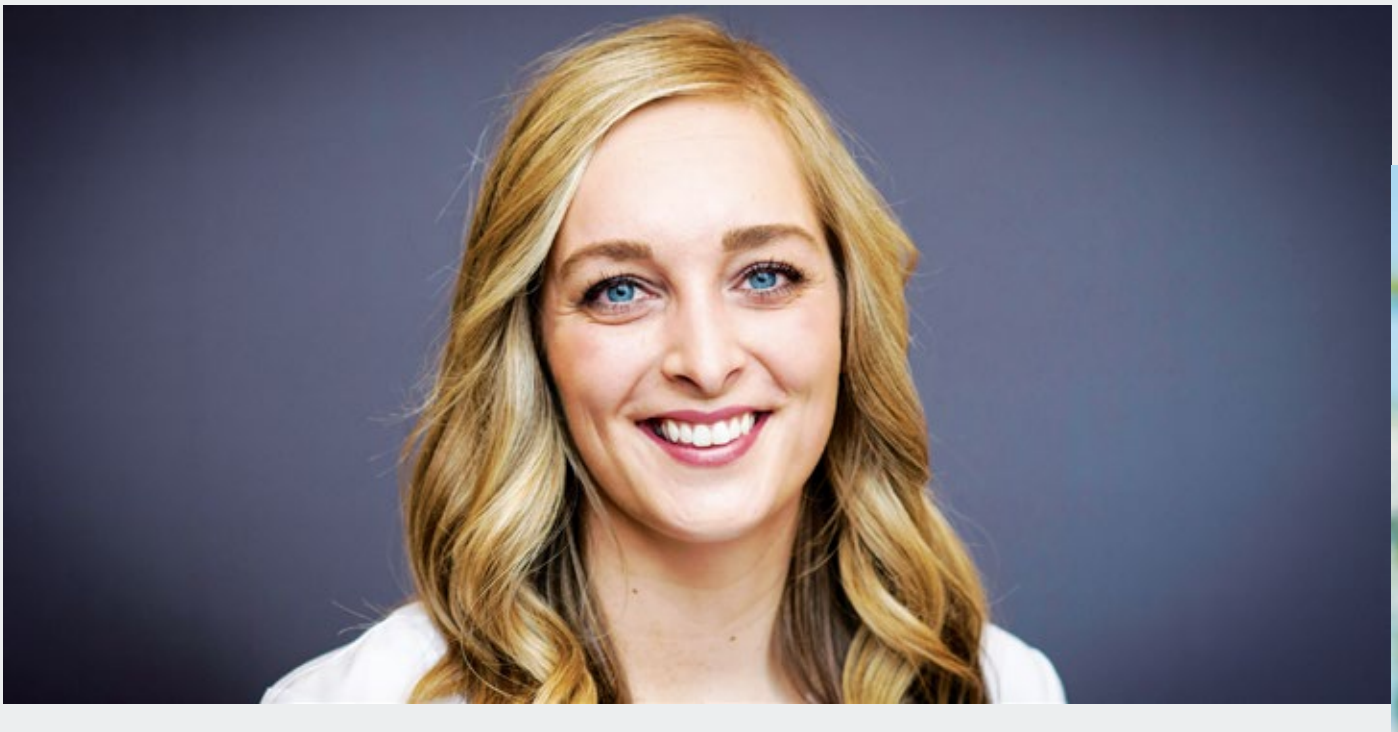
Currently, there is a shortage of data wranglers and analysts. Just in time to meet the needs of what could be a revolution in healthcare, WSU is bringing up to speed one of the few data analytics programs in the country. Under the direction of entrepreneur-scientist Nella Ludlow, the new program is training the bioinformaticists who will be the genetic counselors and consultants at Sullivan's side when she graduates with her medical degree and enters the world of practicing health-care professionals.

DATA UP

In one sense, data has always played an important role in medical research. As Tomkowiak points out, healthcare has long been premised on the collection of a handful of data points from one person at a time. They're statistically compared with data collected from other individuals. From there, all sorts of conclusions are derived.

"When you interview a patient, you collect information about their history. We often say that history counts for about 90 percent of diagnosis," says Tomkowiak. "Your physical exam might offer a few other data points. And that pretty much completes maybe the next five percent. You can order some different tests which might confirm or deny your diagnosis. So you're dealing with literally a handful of data points on which you're making diagnostic and treatment decisions.

"Contrast that with the vision of billions of data points" collected from each individual and being used to not just cure disease, but to prevent the transition from wellness to disease in the first place.



Researchers across the sciences struggle with data storage and management on unprecedented scales, with issues of data ownership, transparency, privacy and security, as well as how to actually turn all that information into actionable knowledge.

Most of that, Tomkowiak says, is not the problem of future MDs. "We've come to the conclusion that we want our physicians of tomorrow to have some of the qualities that are going to persist and be needed. Qualities such as compassion, the ability to communicate clearly with their patients, to be patient-centered and to be great listeners. To appreciate the whole person and understand how factors such as their environment and their socioeconomic status and their education all play into their health and wellness. At the end of the day, we don't think they can be data analysts."

WSU's future docs do get some training in how data is collected and analyzed, but they get a lot more training in teamwork. As Sullivan says, after watching a clinic full of professionals go through their day providing care, "they flow as a unit." That unit cohesion is critical to the core mission of doctors. Data analysis isn't—but that's where Arivale comes in.

THE PRECISION FACTOR

The shift from basing diagnostic decisions on a few dozen to billions of data points was made possible by bringing intense computing power and rapid sequencing of genomes to biology. Lee Hood, a pioneer of what is now called systems biology, in which the interactions of complex biological systems are modeled mathematically, was once told he could have the use of a dinky desktop computer for his project. "You'll never exceed the capabilities of this machine," he was told.

So Hood went his own way. He gathered a team and founded the Institute for Systems Biology (ISB) in Seattle, a multidisciplinary group of researchers bent on overturning the biomedical status quo by discovering how all the parts of an organism interact to make a living being. And you can bet ISB has some major computing horsepower.

One of the most exciting aspects of ISB's research program is in detecting changes in an individual's state of wellness and catching disease onset in the act. That requires what Hood calls "dense phenotyping." Your phenotype is, well, you: the expression of your genetic inheritance in the environment in which you've developed and grown.

Hood is emphatic that we've spent way too much time and money on studying diseases and searching for cures when what we should be doing is figuring out an individual's state of wellness. If you know what makes you well, then any deviation from that state can be eyed as a possible "transition to a disease state," Hood says, and preventive action can be taken to halt that progression.

"That's the preventive medicine of the twenty-first century," he says. By stopping the progression from wellness to disease, Hood argues, we'll save lots of money on healthcare. And we'll save lots of lives, too.

Hood mentions Alzheimer's, a disease that costs Americans about half a billion dollars a year. He says that out of 400 clinical trials that tested treatments for Alzheimer's in the last dozen years, there have been zero drugs developed. The fundamental flaw, he argues, is that statistics-based trials assume that all individuals are identical—an obviously false assumption that we only now have the tools to correct.

That's the paradigm shift: from statistical studies that take a few data points and extrapolate from them to an entire population, to empirical data collection that gathers lots of data from individuals.

Arivale, the consumer extension of ISB, is also teaching WSU medical students that behavior is the biggest challenge to maintaining wellness. It's easy enough for your doctor to tell you that you need more exercise, or to eat more vegetables, or to get more and better sleep. But, on our own, it's hard to implement those instructions.

***Opposite*:** Medical student Kiah Sullivan. *Photo Cori Kogan*
***Below*:** John Tomkowiak, dean of the Elson S. Floyd College of Medicine. *Photo Cori Kogan*. ***Right*:** Nella Ludlow, director of WSU's data analytics program. *Photo Shelly Hanks*

That's why Arivale advocates for the use of health coaches as the main patient-facing member of a health-care team. Jennifer Lovejoy, Arivale's chief translational science officer, says, "The physician knows what they want their patient to do—lower cholesterol, lose weight—but they don't have time to be meeting with the patients as regularly to provide the support and information they need, but the Arivale coaches do. The physician continues to do the follow-ups. So it can really be a brilliant collaboration between the physician, the coach, and their patient."

While adding personnel to a health-care team at first seems like it would add to the cost of care, it's more likely to improve efficacy through better communication and outcomes. As Lovejoy says, "Shockingly, systems thinking is still new to biology and medicine. Today, if a patient has Type 2 diabetes and cardiovascular disease, which is an extremely common pairing, they've probably got at least three doctors. And there may not be great communication between those three doctors in managing this condition because that's the way training, historically, has been siloed."

Lovejoy is passionate about transforming the current health-care system. "I think it's pretty obvious to everybody that we have a broken system," she says. The United States spends far more on healthcare per person than any other country in the world, and with far fewer positive outcomes. Patients, currently, are passive recipients of cures; a computational and team-based approach to medicine makes the patient a participant who takes an active role in the promotion of their own well-being.

There's just one hitch: most of us don't do big data, and wouldn't know an allele if it reared up and bit us. But it's in the genome, with its themes and allelic variations, where the risk factors for long-term disease conditions get their start. What we need, along with a crop of fresh-thinking health-care practitioners, is an influx of big data analysts.

THE PATTERN GAME

Nella Ludlow's been a fighter pilot, an artificial intelligence researcher, an entrepreneur—and now she's the director of WSU's new data analytics program. Just in its second year—paralleling the new MD program in Spokane—Ludlow's students are getting jobs as fast as they can get their degrees. She mentions a couple of juniors who got internships with a company that analyzes low-altitude aerial photography for insurance companies wanting to make sure they're not being defrauded. Post-internship, the students were offered part-time jobs for their senior years in college—and full-time gigs as soon as they graduate.

Part of that success is down to Ludlow herself: she's got a long track record of partnering with industry. But, she says, it's also due to a huge demand in every industry sector. "Almost any process that you can collect data on, you can analyze to see how to optimize it, make it safer, cheaper," she says. "It can literally save companies millions, so they're willing to invest—which is one of the reasons we are short of data scientists."

The basic idea is pretty simple: you train a computer to look for patterns in data that might signal something interesting. For instance, you might analyze genomic data to see if people with schizophrenia have an allele, a variant of a gene, in common, one that nonschizophrenics don't share.

"The first part is to find the needle in the haystack, and once we see the correlation, that could be a clue as to where to search next," Ludlow says.

Such studies are taking place every day, Ludlow says. Called genome-wide association studies, which look for correlations between a disease and a genetic factor, they produce massive amounts of data. Such studies are only one way of collecting health-related data, though. WSU researchers are pioneering ways of using social media to monitor disease outbreaks, and developing wearable electronic devices that monitor blood pressure, glucose levels, and many other factors that, when they change, signal a possible health problem.

It takes a certain kind of person, Ludlow says, to train a computer to spot potentially significant patterns. Women seem more drawn to data analytics than to computer science, possibly because the job does not begin and end with coding.

"What we're hearing from students who are drawn to data analytics," Ludlow explains, "is that I like a little computer science, a little bit of math, a little business, a little machine learning, but it's all glued together *and* I get to be the translator and work with people. That's really what it is: 'Look at this cool pattern I found! And here's how you can use it.' You have to communicate; you're not just writing code."

The field is also dramatically interdisciplinary. Sixty-two faculty members currently have appointments in the data analytics program, Ludlow says, drawing on fields as disparate as soil science, economics, health sciences, biology, physics, computer science, math, business, and "all the AI people who do things with machine learning."

But with all this data floating around, what about security? What about privacy? Tech companies like Google and Facebook commodify and sell user information, so one wonders if we have private lives anymore. That extends to our health and genetic information.

THAT'S PRIVATE!

Tom May, a medical ethicist who works with the health-care faculty at WSU Spokane, recently wrote a *New England Journal of Medicine* paper about the "Wild West" of direct-to-consumer genetic testing. Notoriously, genomic data uploaded to public sites was used to track down the Golden State Killer, a serial murderer and rapist in California. By comparing crime-scene DNA, investigators were able to obtain close matches to the killer's relatives. From there, it was a matter of working through the family tree. That's a big win for criminal justice, but it's also a chilling reminder of just how easy it is for strangers to access data. Even if you haven't shared your data, a relative may have shared theirs. So you are, in a sense, sharing yourself without ever intending to.

Tomkowiak likes to counter that thought with another idea of medical ethicist May. What if data sharing is in fact the way to go? What if we didn't keep our health secret and simply shared everything? It's a provocative idea that's alien to our culture.

But consider the case of Flint, Michigan, where a cover-up of lethal water quality killed at least 10 people and made many more dangerously ill. If health status had been shared and communicated, that cover-up never could have occurred. "We could make inferences about our environment because it might be easy to see that everyone who lives in a certain geographic area all had the same health-care issue," Tomkowiak says.

The fact that the Flint disaster occurred at the interface of the environment and human health is significant because environmental scientists are pack leaders when it comes to thinking seriously about how data can and should be shared. And so closely intertwined are the health of the environment and that of humans (and all life) that researchers, at WSU and elsewhere, have adopted the term "one health" to describe their efforts to systematically understand how the one interacts with the other.

GENOMICS FILLS A GAP FOR ADOPTEES

If you have gene variants such as BRCA or Lynch Syndrome, both of which may lead to difficult-to-treat cancers, "you've noticed it," says Thomas May, an endowed professor of bioethics in Washington State University's College of Medicine. "Noticed" is May's measured way of saying that "multiple people in your family have died" of breast or colon cancer.

"Unless you don't have access to family health history," May adds.

One of the primary diagnostic tools available to doctors is family medical history. Breast cancer, cardiovascular disease, and other conditions are often genetic. Knowing that a parent had a disease is important information in preventing it in the child.

But adoptees often lack access to that history. That, says May, puts them at a disadvantage that is both systemic and unjust.

Together with an interdisciplinary team of experts, May argues that genetic testing is a way to bridge health history gap.

The adoptee community is keenly interested in filling that gap, May says, as demonstrated through surveys, focus groups, published narratives, and utilization of direct-to-consumer genetic testing services.

But there are concerns. Consider Angelina Jolie, May says. After a screening test indicated the actress had the BRCA variant that carries a very high risk of breast cancer, she had a double mastectomy. But what if someone acted on a test for a disease that had a less than one percent chance of actually manifesting?

"The prophylactic intervention may actually be more dangerous than the risk of actually manifesting the disease," he cautions. That's one reason why he and the genomic family history project team, which includes members of the adoptee community, argue that filling the informational gap should be limited to genetic testing of only very high-risk, highly pathological diseases.

+ read more about genetic testing for adoptees: **magazine.wsu.edu/extra/adoptee-genetics**

Like a lot of medical research, environmental scientists contend with nonreproducibility. That is, they observe something happen—the effects of, say, phosphorus moving off farmland into the water system—and measure and accumulate considerable data. It's not an "experiment" in the sense that it can be reproduced.

Conclusions drawn from data collected in nonreproducible contexts are often challenged, as they should be. The solution, write WSU environmental scientists Stephanie Hampton and Stephen Powers, is to make the raw data, and the software used to analyze the data, public as part of the publication process.

Hampton, the director of the Center for Environmental Research, Education, and Outreach at WSU, along with researcher Powers, point out that there are concerns with total transparency. If, for instance, the location of an endangered species were revealed, ecotourism might compromise that species' environment. Or revealing the presence of a valuable resource in a fragile environment might likewise cause irreversible damage.

So, too, with medical information. A malefactor with access to sensitive genomic information might concoct phishing scams to sell snake-oil cures to vulnerable people at risk for any number of diseases.

Hampton, Powers, and May all agree that data stewardship, a field undergoing tumultuous change, needs lots of conversation and scenario modeling to answer tough questions about privacy, security, and who owns what data.

PREVENTION IS PRICELESS

Tomkowiak is adamant that patients need to be the owners of their medical data.

"Right now, our health-care system is set up so patients don't own their data. It's the providers, the health-care systems, sometimes the insurance companies, that own the data." The current health-care system is designed to sell us cures, so that ownership arrangement makes a kind of sense.

But, Tomkowiak continues, "I think that's going to change. As we move into computational medicine, the only way it's going to work is if patients own their own data. And if they own their own data, it provides the opportunity for those patients to say, 'I want to share my data.'

"I think the more patients who share their data, they're going to see benefits and that could change the way we think about how and why we share data. And it may allow us to build in protections so we can do more of that.

"But until we address the fundamental issue of who owns data, I don't think any of this other stuff will change. That's one of the things we've been talking about as a medical school: how do we advocate for patients to own their own data?"

A shakeup of data ownership and the current emphasis on selling cures could fulfil the promise of computational medicine, so we'll be able to better prevent the transition from health to disease.

While a few American universities are busily retooling their medical school curricula to train future practitioners in computational medicine and deep prevention, WSU's new medical school was founded on the idea that teamwork and an appreciation of complexity at both the individual and the public health level are essential to the future of medicine.

Sullivan and the other WSU medical students enrolled in the Arivale program, Hood says, "will learn what scientific wellness is and will learn how to analyze their own data in really interesting ways."

Having big data, Tomkowiak agrees, "means we can focus way more on prevention, on scientific wellness, than we ever have before in the history of medicine. Partnering with Arivale and the Institute for System Biology is leading us to the future of healthcare—the question is, just how fast do we get there?"

Clockwise, from top: Bioethicist Thomas May is a Floyd and Judy Rogers Endowed Professor. *Photo Cori Kogan*. Environmental scientists Stephanie Hampton and colleague Stephen Powers. *Photos Stephen Katz and courtesy Stephen Powers, respectively*

ALUMNIpedia

37 alumni *profiles*
42 new *media*
44 class *notes*
47 in *memoriam*
50 alumni *news*

"UP THE DOWN STAIRCASE" IN REGENTS RESIDENCE HALL, PULLMAN CAMPUS (PHOTO MARY LETTERMAN)

BY CLAIRE SYKES

see Nathan Orosco's current work: magazine.wsu.edu/extra/Orosco

Shaking hands with the past

PHOTO VICTOR BLOOMFIELD

Whether he's out searching for vinyl records, at school teaching drawing, or in his living room playing guitar, "I get infatuated by the process of it," says artist Nathan Orosco '02 MFA of Gresham, Oregon. For him, the process of making art is an art in itself. From sculpting clays to melting bronze, "you're collaborating with raw materials. You're shaking hands with the past and the historic ways humans have traditionally dealt with those materials. And then I add in the content of my own personal identity."

Cast bronze, fused glass, ceramics, textiles, wood, and other media take shape in Orosco's art that speaks of his social, political, and cultural "anxieties," as he calls them. He often addresses issues of ethnicity, economic disparity, social conflict, political protest, and cultural displacement, in an eclectic mix of genres. Now mainly a sculptor and installation artist, he also explores the idea of cultural borders—crossing, shifting, and blurring them.

As a Mexican-American with Aztec, Mayan, and Native American in his bloodline, Orosco knows borders. Born and raised in Odessa, Texas, he saw early on how the human body here was viewed merely as a tool for oil industry profit. As a teen, he worked in his father's diesel mechanic shop repairing oil trucks and cleaning field equipment. He built lowriders and drove around listening to grunge and hip hop. And he drew a lot, and not just to impress friends.

When Orosco won a local poster design contest for a Hispanic heritage event, "it created a spark," he says. By age 16, he knew art was it. A high school art course kept him from dropping out. And an art contest best of show award got him into college—the first in his family to earn a degree. He enrolled at the University of Texas of the Permian Basin (UTPB), thanks to encouragement from one

of the judges, an art professor there. Chris Stanley '91 MFA teaches at UTPB and he pointed Orosco northwestward.

A full scholarship and teaching assistant post at WSU gave him the space "to be nurtured and grow, and have complete creative freedom," says Orosco. Jack Dollhausen, now professor emeritus of sculpture, influenced his work politically. And Ann Christenson, emeritus professor in ceramics, "urged this brown-skinned kid to say something about his identity and culture," he says. She also let Orosco choose WSU's 2001 visiting artist: James Luna, an internationally known performance and installation artist of Mexican and Native American descent, who "showed that I could make a career with my art."

When Orosco graduated, he took Dollhausen's place during the professor's year-long sabbatical. Then, after three years teaching at Eastern Washington University, he resigned in 2006. "I didn't want to get stuck. I wanted to live my life." He returned to Odessa for the next two years, doing dirt construction. He also did land art, photography, and video art, while traveling abroad and throughout the West.

He heard about a full-time job teaching sculpture at Mt. Hood Community College. By then, he had had several exhibits of his work, from Texas to Washington. In recent years, he has shown at Blackfish Gallery and Ford Gallery in Portland.

He teaches his students, mostly working-class nonartists, that "every human is made to create something that's never existed before, and how important that is," he says. "Our bodies haven't changed in thousands of years; our wrists still pivot and our knees still bend. So we're designed to pick up bronze or clay and play with it and think about it."

Orosco learns from his students, too. "For them, sculpture class is like an experimental laboratory. When they accidentally drip or break something, or forget to do some part of the process, the unexpected often happens. I've learned so many tricks and interesting effects from my students. I firmly believe that teaching art is a very important part of the art-making process."

Like working with clay or playing guitar, for Orosco it's also an art.

DAN PELLE/*THE SPOKESMAN-REVIEW*

Power of words

BY YASMEEN WAFAI '18

When Sandy Williams ('83 Psych.) was in the eighth grade, she discovered that only boys were allowed to take shop class, while girls had to take home economics. To Williams, this was unfair.

Instead of standing idly by, she wrote a persuasive essay calling for a change. Thanks to Williams, girls like her who had no interest in home economics could take shop if they wanted to.

"From the time I was young I didn't like things that were not fair," Williams says.

She had discovered the power of words and, with the help of one of her teachers, learned how to speak up for herself. Today, Williams speaks up for a whole community in Spokane.

In 2014, Williams's dad became very sick and she would spend a lot of time with him by his bedside. She says they spent a lot of time in silence, so she started bringing her computer to write happy stories about people in her African-American community and distract herself from the sadness she felt due to her father's illness.

This turned into Williams's creation of *Black Lens*, a newspaper that features stories and information about the African-American community both locally and nationally.

"My passion was always working with disenfranchised people in the community," she says.

Williams prints 1,300 copies of *Black Lens* for her 250 subscribers and distributes them to businesses, churches, libraries, and other places throughout Spokane. She publishes and edits the newspaper herself but sometimes gets help from contributors and wire services.

One of the main goals of the newspaper, she says, is to uplift and empower the black community. Williams also says she tries to educate people on historical information they may not have known about.

Williams says the response to the paper has been great. However, when she first started, she was nervous and remembers the first time she picked up the printed copies of the newspaper. She says she sat in her car with them in her backseat and almost had a panic attack. She called her daughter and asked,

"What do I do now?" and her daughter said, "Hand them out!"

At the time, Williams asked herself, "How dare I be so arrogant to print a Black paper and represent the Black community?"

She has received an outpouring of support and thinks the newspaper has raised the profile of the Black community in Spokane and empowered people to speak up.

As for the future of the newspaper, Williams says she would like to see the younger generation get more involved. ✳

Taking the bull *not* by the horns

BY REBECCA PHILLIPS

Professional rodeo clown JJ Harrison '98 is one courageous guy. When not defusing Brahma bulls in the arena, he's disarming preteen bullies in the classroom.

It's not the role he envisioned for himself while earning his degree in elementary education at Washington State University, but one he seems uniquely born to play.

"I love kids and I've always been a class clown, even at WSU where I highly considered being Butch," says Harrison. "My friends were absolutely convinced I was Butch, and I just let them think that."

After graduation, Harrison taught middle school in Walla Walla before trying some rodeo clowning on the side in 2005. "It was fun and took me back to my roots," he says. "Pretty soon I had rodeos calling and it just exploded—my career progressed really fast."

He made the transition to full-time clowning in 2008 and has since performed at rodeos in Florida, Hawaii, and everywhere in between. As one of the nation's top rodeo clowns, Harrison's act is booked nearly year-round. Not only does he entertain the audience during lulls in the program, he also protects injured cowboys during bull riding and other events. It's his job to distract the bull while the fallen contestant limps out of the arena.

"I've definitely been hurt a lot," Harrison says. "I've cracked my skull, broke my back twice, had a hip surgery, and three knee surgeries. I also had stem cells put in my back. To be honest, the worst is wear-and-tear just running on uneven dirt in the arena—you roll your ankles 30 times a night, despite wearing cleats."

His athletic high-energy antics have made him a five-time nominee for the Professional Rodeo Cowboys Association (PRCA) Clown of the Year award, which is presented at the National Finals Rodeo in Las Vegas.

In 2012, Harrison was selected to perform at the National Finals as the barrelman—a clown who hides inside a barrel to divert charging bulls. "The Nationals are like our Super Bowl," he says. "It's a huge feather in any cowboy's hat, and a big highlight of my career."

Harrison, who says he doesn't drink but loves to party, also hosts the MGM Grand Gold Buckle Zone show during National Finals, where he often brings cowboy superstars on stage to meet and interact with the audience.

It all adds up to living a boyhood dream. "Being a rodeo clown is a high—you've got 9,000 people screaming and laughing with you, but not everyone there is rodeo savvy," he says. "As an entertainer, I try to connect them to our sport. Put together that puzzle piece for the fan. I enjoy that."

Harrison says his act is mostly impromptu, off the cuff, and an extension of his goofy personality. It includes things like riding horses, throwing footballs to the crowd, and showing off impressive dance moves while wearing giant inflatable air suits.

"A lot of what I do was learned in classes at WSU on how to manage a classroom," he says. "Good teachers like Tariq Akmal in the College of Education instilled that ability to adapt to my environment. I attribute a lot of my success to WSU."

Harrison carries that positive energy into every community he visits. From rodeo skits honoring police officers and first responders to promotion of 811 farm and ranch safety, he uses his time on stage not just for a laugh but to uplift and inspire.

That includes taking his Don't be a Bull-y! Be a Champion! campaign to school assemblies around the country. The lighthearted but serious program teaches the difference between simple teasing and bullying.

"With teasing, there's a balance of power," he says. "When it comes to bullying, there's no balance; only one person holds the power. We need to teach kids how to report it and buck those bullies out of their lives." ✳

PHOTO BAILEY HARRISON

COURTESY SAINT GEORGE'S SCHOOL

Making the difference

BY REBECCA PHILLIPS

"The fact that I'm a teacher now is just the greatest turn of events—my old high school teachers would be shocked," says Kerry Clark ('11 Hum., '14 MA English). He's sharing his improbable story as we tour Saint George's School, a private K–12 preparatory institute nestled in the woods along the Little Spokane River.

Clark teaches English and history classes for the International Baccalaureate Diploma program at Saint George's and is also a college counselor. On top of that, he coaches soccer, basketball, and baseball. The notable achievement is made more impressive when you learn that he never graduated from high school.

An only child, Clark grew up in Centralia, raised by a single mother with a minimum wage job. Regina Clark also served as a Navy reservist, spending two weeks in training every year plus one weekend each month.

Life went fairly smoothly for the two of them, he says, until the September 11, 2001, attack on the United States. "Within six months, my mom left for her first military tour aboard the *U.S.S. Nimitz*. I was 14 at the time and pretty much left on my own. Understandably, I made some bad choices and hung out with seniors who encouraged me to throw parties."

He also struggled during her 2003 tour to Kuwait during Operation Desert Storm but felt he had matured when she was called up again in 2005.

"She had a choice whether to go or not," he says. "I was supportive, but we didn't know she was going to Fallujah, which was the most dangerous place in Iraq at the time."

The deadly ambush came on June 23 as Clark and her fellow soldiers were returning home in a cargo truck after a long day of inspections at a dangerous checkpoint. The suicide bomber had waited along the road for the vehicle carrying the women to pass and then rammed into them with deadly precision, according to the *New York Times*.

"It was the turning point of my life—the before and after my mother died," says Clark.

"At only 18, having to make decisions about the funeral, finances, and everything else—it was really tough.

"Within a couple months, I moved to Las Vegas with friends," he says. "I had received a sizeable chunk of money from the military and I basically spent it all on partying, drugs, and alcohol.

"My attitude was that this was blood money and I can't keep it. The money was a terrible reminder of what had happened, so the sooner I got rid of it, the better."

Clark says he lived on the edge for a couple years before waking up one morning to a sudden moment of clarity.

"I looked around and saw all these people passed out and bottles all over the floor," he says. "There were dirty stinking dishes piled high and no food in the house. Everyone was strung out and making bad choices.

"I realized this is not what I want—this is not what my mom died for. I could be full of hatred toward terrorists and the Iraqi people or I could honor my mother's memory by doing good to others and sharing something positive."

Though the transition was rocky, Clark eventually earned his GED, an AA degree, and a bachelor's degree from WSU Global Campus. Beyond his wildest dreams, he was then accepted into the WSU master's in English program.

"The committee gave someone without the standard credentials a chance and it changed my life," he says. "At first, I stood out like a sore thumb, but by the second year, I'd found my way thanks to some very supportive faculty.

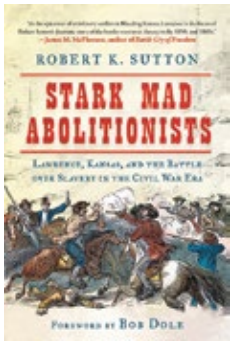
"Today, my goal is to make a difference in someone's life every day. Being a teacher gives me the most agency possible. I have the ability to shape youthful minds in a way that hopefully encourages them to be open, respectful, and value the ideas of other cultures as much as they value their own."

40,000 MEMBERS BY 2020

BOLD, YES. COUGS ACHIEVE.*

ALUMNI ASSOCIATION

*Well, Cougs overachieve, but you get what we're saying.



Stark Mad Abolitionists

ROBERT K. SUTTON '84 PHD
SKYHORSE PUBLISHING: 2017

Anthony Burns was an escaped slave. He was captured in Boston in 1854 and, per the Fugitive Slave Act of 1850, shackled and marched through town to the bay, accompanied by 2,000 federal soldiers. President Franklin Pierce, eager to prove he could make nice with the pro-slave South, defied the popular will of the radical abolitionists of Boston, and forced Burns's return to slavery. Abolitionists were understandably incensed at an act they saw as inhumane, vile, and villainous.

Amos Adams Lawrence was one of the 50,000 observers who lined the streets of Boston as Burns was escorted to the bay. Lawrence later wrote that he and his kin went to bed as law and order conservatives but the next morning "waked up stark mad abolitionists."

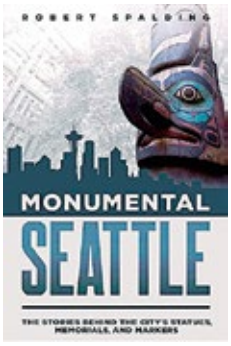
Lawrence put his newfound passion to work, and "combined his fortune and his energy with others in the New England Emigrant Aid Company to encourage abolitionists to emigrate to Kansas." Newly a territory in 1854, Kansas was hotly contested by abolitionists and pro-slavers.

Stark Mad Abolitionists is the story of Kansas from the time it became a territory through the Civil War. It was a place of blood atrocities, including a massacre of 200 boys and men by a gang led by William Clarke Quantrill. Quantrill had also been working with anti-slavery groups to help slaves escape, just so he could turn around and capture them, and collect rewards from their "owners."

During the Civil War, there were guerrillas everywhere on the Kansas-Missouri border. The fighting was bloody, with Confederate sympathizers murdering men in front of their wives and children—and worse. Of course, from the pro-slavers' perspective, the abolitionists were villainous, inasmuch as they didn't respect the slave-owners' property. The abolitionists would sneak onto slave-owners' land, free the slaves, and then "conduct" them north to Canada.

Lawrence finally visited Kansas, and the town named after him, in 1884. *Stark Mad Abolitionists* is a highly readable account of a bloody period of U.S. history, and one that bears reflecting on in view of our current struggle over race, immigration, and states' rights.

—Brian Charles Clark



Monumental Seattle: The Stories behind the City's Statues, Memorials, and Markers

ROBERT SPALDING
WSU PRESS: 2018

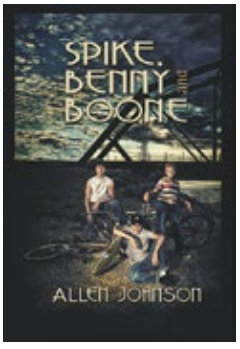
James Casey was a messenger boy in Seattle in the early twentieth century. He and a few of his fellow messengers, including Claude Ryan, gathered their resources—about $100—and started a small delivery company. Now headquartered in Atlanta, United Parcel Service's founding is commemorated by a small plaque in the sidewalk on the corner of Second Avenue and Main in Seattle.

This is just one of the many surprising stories to be found in Robert Spalding's delightful *Monumental Seattle*. While many people, having taken the underground Seattle tour, know that Seattle is a city on top of a city, there's yet another city buried in the fill under streets and piers. The *Idaho*, for instance, was a steamship built on the Columbia River that worked the cargo routes of Puget Sound for many years. Later, the ship was grounded and converted into a medical clinic that served the poor of Pioneer Square. Still later, the remains of the ship were buried as fill at the foot of Jackson Street.

Seattle is actually the site of many thousands of years' history. While little remains to remind us of the long history of Native presence, the Battle of Seattle of 1856 is memorialized by at least two markers—both of which recall the service of European Americans in beating back an attack by Indians. While the Duwamish and other Native communities are remembered in place-names, their presence has been largely erased in the long occupation of Seattle.

This is a thorough-going compendium of Seattle history through the hardware of markers, memorials, and statues. Walking tour guides and anyone interested in the history of the city would benefit from this finely researched book.

—Brian Charles Clark



Spike, Benny, and Boone

ALLEN JOHNSON '85 PHD
2018

The author of the memoir *Pardon My French* returns with a bildungsroman about three friends who face deaths and spiritual awakenings together. Allen Johnson has crafted a novel that spans 53 years, as three boys form a lifelong, unbreakable bond on the banks of the Columbia River.

The novel's first half takes place in 1958. The "Terrible Three" 12-year-olds are Spike, an athletic daredevil bad boy with an alcoholic father; Benny Devine, a compassionate redhead who can't kill a spider, instead letting it crawl onto his hand so he can transport it to safety outside his home; and Clarence Boone, the professor and word nerd who knows better than to introduce himself as Clarence: too wimpy.

Spike is prone to audacious adventures—but doesn't recognize the word when Boone sticks him with the epithet:

> "Ah-dishes? What the hell is ah-dishes?" Spike asked.
>
> Boone cleared his throat. "Recklessly venturesome, fearlessly daring."
>
> "Huh?"
>
> "He means scary," Benny explained.
>
> "Well, why the hell didn't he say so? You gotta stop reading them damn books, Boone. It'll turn your brain into a five-pound turd."
>
> "That's a rather unpleasant metaphor," Boone said.

Spike also mauls the language, managing to derange even the simplest of clichés. "You could have knocked me over with a fender," he says at one point.

When Spike's angry drunk of a father, "his lower lip curled down as if wrapped around the butt of a fat cigar," kills Junkyard the dog, Spike and his pals head for the mighty Columbia to console themselves. There, they meet David, a spiritual hobo steeped in Quakerism, Buddhism, and a touch of pantheism by way of Marcus Aurelius. After an initial confrontation in which we see Spike head down the path of bullying, David arrests that progress with a few whispered words: "Everything is interwoven, and the web is holy."

Just how interwoven becomes clear in the second half of the novel, set in 2001 and mostly taking place in France. Mysteriously, a just-published book echoes the words of the now-grown friends' long-dead spiritual mentor, David the Hobo.

How that came to be is why anyone interested in spiritual growth and "mindfulness" should dive into Johnson's novel. By turns touching, funny, and wise, *Spike, Benny, and Boone* is a satisfying read for those of us struggling to make it through interesting times.

—Brian Charles Clark

Bound

VIJAYA BODACH '87, '95 BIOCHEM.
BODACH BOOKS: 2018

Rebecca Joshi, like any average teenager, hangs out with her friends, has crushes on boys, and contemplates complex aspects of life like religion and abortion. However, something about Rebecca sets her apart from her peers and haunts her every day: her body is heavily scarred.

When Rebecca was 11, she was accidentally burned by sparklers on the Fourth of July. She had surgeries and physical therapy sessions, and deals with endless stares.

Unfortunately, Rebecca also lost her mother and must care for her developmentally delayed older sister, Joy. Rebecca loves her sister, but she often feels like her parents only adopted her from India as a baby so Joy would always have someone to take care of her.

All Rebecca wants to do is go to a school far away from her hometown of Pullman, Washington, and become a doctor. Her strict father is not supportive, but Rebecca applies to several medical programs and constantly dreams of her freedom.

Suddenly, her dreams come to a halt when her sister gets pregnant. The father wants nothing to do with the baby and Rebecca has to decide how to help her sister. Does she let her sister, who is still a child mentally, have a baby, or does she take her to have an abortion?

At first, Rebecca takes her sister to an abortion clinic. After almost going through with it, her sister decides she wants her baby. Rebecca then has to choose between taking care of her sister and niece or getting away.

Bound is a unique novel that gives the reader a look into the struggles of adoption, injuries, growing up, and complex family dynamics. Young readers from diverse cultures and nontraditional backgrounds may be able to relate to some of Rebecca's adversities and see a bit of themselves in her.

—Yasmeen Wafai '18

BRIEFLY NOTED

Governing the Evergreen State: Political Life in Washington

EDITED BY CORNELL W. CLAYTON, TODD DONOVAN, AND NICHOLAS P. LOVRICH
WSU PRESS: 2018

This update to the popular examination of Washington state politics covers interest groups, the constitution, environment, media coverage, courts, legislature, political parties, and more. The editors bring extensive expertise to the case studies: Clayton is director of the Thomas S. Foley Institute of Public Policy and Public Service at WSU, Donovan is a political scientist at Western Washington University, and Lovrich is a WSU Regents professor emeritus of political science.

Sponge Cake: A Mostly Made Up Story About A Completely Insane Town *and* What's in the Fridge?

CHRIS ARNESON '18 SPORT MGMT.
2017

Recent graduate Arneson offers two books: a young adult adventure novel, *Sponge Cake*, and a motivational and pop culture montage, *What's in the Fridge?* In the latter book, the author delivers a smorgasbord of thoughts and essays, including his rumination on what *A Few Good Men* would have been like if Nic Cage starred in it.

52 Seattle Adventures With Kids: A four-season guide

KALI SAKAI '97 COMM. AND OTHERS
PARENTMAP: 2018

This guide to affordable and fascinating outings around Seattle highlights fun and family-friendly indoor and outdoor pools, as well as intriguing "geektastic" outings.

70

After working as pharmacists for many years, **ROD STALLMAN** ('76 Pharm.) and his wife Kathy founded Mutiny Bay Distillery on Whidbey Island. The Stallmans use wheat from the Palouse region for their whiskeys and practice a manual distilling process. KGW news anchor **TRACY BARRY** ('77 Comm.) retired from the Portland, Oregon, NBC affiliate station in October. Barry worked for the station for 33 years.

80

The National Dairy Shrine awarded **RANDY KORTUS** ('80 Ani. Sci.) with the 2018 Distinguished Dairy Cattle Breeder Award. Kortus has served leadership roles on the All West-Select Sires Board and the Select Sires National Board for over 20 years each. Kortus has visited 27 different countries throughout his career judging national shows and speaking about dairy cattle breeding and management. GZA GeoEnvironmental, Inc. announced they have elected **MURIEL S. ROBINETTE** ('81 MS Eng.), a senior hydrogeologist in their New Hampshire office, to chair the New Hampshire Board of Professional Geologists for a two-year term. **SANDY JAMISON** ('85 Acc., '89 MBA) was elected to be Whitman County auditor. Jamison is a certified public accountant and notary and has been an accountant in both the public and private sectors for more than 30 years. **ALLISON MATTOCKS** ('86 MEd) is the new pastor at Longview Methodist church. Mattocks received her master of divinity at Fuller Theological Seminary in Pasadena, California. San Francisco State University President **LESLIE E. WONG** ('86 PhD Ed.) announced he will retire at the end of the 2018–2019 academic year. Wong is the thirteenth president of the university and held the position since 2012. Wong has had a career in higher education for 46 years. Montana State University professor **JOAN BRODERICK** ('87 Chem.) was selected by the American Chemical Society for the 2019 Alfred Bader Award in Bioinorganic or Bioorganic Chemistry. The award honors a scientist for outstanding research accomplishments in biology and organic or inorganic chemistry. Broderick's research is focused on radical SAM enzymes and biological metal cluster assembly in hydrogenases.

90

Governor Jay Inslee appointed **MARTY DICKINSON** ('91 Gen. St.) to the WSU Board of Regents. Dickinson is a Spokane marketing executive who helped with the creation of the Elson S. Floyd College of Medicine. **SANDY HOOD** ('92 Comm.), a Pullman native, was named one of *Idaho Business Review*'s Women of the Year. Hood is an executive director of Buy Idaho Inc. and was recognized for her professional achievements, leadership, mentorship to other women, community service work, and community leadership. A gallery of **HANNAH UENO**'s ('92 MFA) was displayed from August 23 to October 29 at the Gallery on Grant in Ocean Township, New Jersey. Ueno is a visual artist and the gallery displayed her *Metafisica* series in which the central theme was "a place of solace in one's mind's eye." **CHUCK ARNOLD** ('94 Sport Mgmt.) was named the president of the Seattle Seahawks. Arnold has worked with the Seahawks for 25 years. Arnold will manage all team business operations. **KIM KOY** ('95 Poli. Sci.) was promoted to chief operating officer with the Denver-based Employers Council. The Employers Council is the nation's largest employers association. **DO VAN NGUYEN** ('95 Elec. Eng.) was added by Elcon Associates Inc. as a senior electrical engineer. Nguyen has more than 15 years of electrical engineering and design experience. **JEREMY ANDERSON** ('96 Hotel & Rest. Admin.) was promoted to chief operating officer for E3 Co. Restaurant Group. The group is the parent company of several Seattle restaurants including Metropolitan Grill and Elliott's Oyster House. **MICHELE CRIM** ('98 MS Env. Sci.) was promoted to chief sustainability officer for the Portland, Oregon, Bureau of Planning and Sustainability. Crim oversees a staff of 40 and is in charge of all the sustainability projects within the bureau, such as green buildings and energy efficiency. **XIAOQI LIU** ('98 PhD Biochem.) was named chair of the University of Kentucky Department of Toxicology and Cancer Biology. Liu's work is primarily focused on an enzyme known as Polo-like kinase 1. Liu has five active grants from the National Institutes of Health and his lab will be moving to a new $265 million research building.

00

RYAN CALL ('01 Arch.) was promoted to principal by ELS Architecture and Urban Design. Call is an expert in the planning of mixed-use urban communities with a focus on retail districts and public spaces. **DEBRA STEWART** ('01 Human Dev.) has been accepted for a doctorate in creative writing at Swansea University in Wales. Stewart is expected to graduate in 2021. **BRANDON NS PERKINS** ('02 Chem.) received the Environmental Protection Agency National Honor Award Gold Medal for exceptional service, the EPA's highest award. Perkins has worked for the EPA for 15 years. Arizona State University professor **RIZAL HARIADI** ('03 Biochem., Physics) was announced as a recipient of the 2018 NIH New Innovator Award. The award is given to researchers who have completed their doctoral degree or postdoctoral training within the past 10 years. Winners receive a $2.3 million grant for a five-year project. Hariadi's proposal for the NIH addressed the functionality of biomolecular systems

Diamond, Golden, & Crimson REUNIONS

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April 24–25, 2019

Every year, WSU grads return to Pullman for their Reunion to reconnect with classmates and learn more about WSU's research, leadership, and present-day experience. Celebrate this important milestone with us as we add the inaugural Crimson Reunion this year!

alumni.wsu.edu/reunions

ALUMNI ASSOCIATION

COURTESY MONICA KING/U.S. ARMY

Former Special Forces combat medic **RON SHURER '01**, now serving as a member of the U.S. Secret Service, returned to his alma mater last November a national hero.

Shurer did two tours in Afghanistan with the U.S. Army, and his valor during the 2008 battle of Shok Valley earned him the Medal of Honor, bestowed last October during a White House ceremony where the gratitude of a nation was draped literally around his neck. Not a single U.S. soldier died in the six-hour battle, despite multiple casualties, as Shurer scrambled through heavy enemy fire to treat and evacuate the wounded while helping hold the attackers at bay and being wounded himself.

At the 2018 Apple Cup, he hoisted the Cougar flag and was recognized during the annual rivalry game. He also added another honor to his impressive list of accomplishments, the WSU Board of Regents Distinguished Alumnus Award.

He's humbled by the recognition but is still uncomfortable with the title hero. "I look at it as I was doing my job, doing what I was trained to do and was there to do," Shurer says. "The reason I wanted to be a medic is because I thought what better way to serve than looking out for my fellow soldiers."

Shurer had joined the Army in 2003 and, two years later, he was accepted for Special Forces training and donned the elite green beret as a medic. In the Special Forces, medics are part of the offensive fighting capability of their units. Their medical training is considered a secondary skill similar to how others in the unit might have demolitions expertise or are trained in radio operations. Because of that, they receive no special protections that are supposed to be afforded medical personnel in war zones.

Shurer left the Army a little over a year after the Shok Valley battle and was hired by the U.S. Secret Service, where he serves as part of the Counter Assault Team, which protects the president from possible attacks. He and his wife Miranda, along with their two sons, live in Virginia.

BY DAVID WASSON

read Shurer's full story: magazine.wsu.edu/extra/Ron-Shurer

10

when force is applied, specifically in a malaria parasite invasion. **ALEX GARZA** ('04 Spanish, Ed.) was hired as branch manager for the Numerica Credit Union Sylvester branch in Pasco. Garza has over seven years of loan servicing and branch management experience. Horenstein Law Group PLLC hired attorney **NATALYA BELONOZHKO** ('07 Psych.) to join the firm's business and commercial real estate practice. Belonozhko previously worked at the Papa Murphy's corporate headquarters in Vancouver and has a particular interest in working with emerging women-owned businesses. Bouten Construction Co. hired **JOSHUA GOUDGE** ('07, '08 MAR Arch.) as a project manager. Goudge previously worked at GYL Construction in Seattle as a project manager for 10 years. **KRISTIN LINCOLN** ('08 Busi.) was named the Washington Idaho Symphony's new director. Lincoln is also a board member of a Pullman theater and the Washington State Community Theatre Association. **CODY SCHUELER** ('09 Econ.) was selected as "Business Innovator of the Year" by the International Association of Top Professionals. Schueler was chosen for his outstanding leadership, entrepreneurship, dedication, and commitment to the sports recreation industry.

Lane Powell, a Pacific Northwest law firm, added **SATIVA RASMUSSEN** ('12 Crim. Jus.) to their cannabis team. Rasmussen advises cannabis businesses on corporate governance and contract law. The cannabis team monitors developments in the law, prepares for how changes will impact their clients' businesses, and provides legal services. **ZACH SEVERNS** ('12 Crop and Soil Sci.) was named the 2018 league turf manager of the year. Severns is the head groundskeeper for the Lansing Lugnuts in Michigan. This is Severn's second season with the team. **ASHLEY TUNISON** ('12 Hum.) was appointed to the role of operations supervisor at the Ketchum, Idaho, branch of D.L. Evans Bank. Tunison has four years of banking experience. Freiheit Architecture, a commercial architecture and interior design firm, hired **KELSEY JANCOLA** ('15 Arch.) as an architectural designer. Jancola is working on commercial projects. The Western Agriculture Research Center hired **RACHEL LEISSO** ('15 PhD Hort.) to work on small fruit research with an emphasis on apples. Leisso is an expert plant pathologist and has experience analyzing post-harvest apple qualities.

INmemoriam

30

AYLEEN ERICKSON ('38 Home Econ., Kappa Alpha Theta), 100, September 2, 2018, Yarrow Point.

40

BETTY MAE BERMAN ('40 Busi., '41 Ed.), 96, January 11, 2017, Mercer Island. **GEORGE F. FENTON SR.** (x'40 Eng., Acacia), 98, September 27, 2018, Apollo, Pennsylvania. **PHYLLIS CLARK SOAVE** ('42 Gen. St.), 98, October 5, 2018, Novato, California. **FRANCES "FRANKIE" GAY KNOX** ('43 Gen. St., Kappa Alpha Theta), 96, September 24, 2018, Richland. **JAMES L. LAFFERTY** ('44 Chem. Eng.), 95, April 24, 2017, Chino, California. **VIOLA K. LILJE** ('45 Home Econ., Kappa Kappa Gamma), 95, October 29, 2018, Davenport. **DORIS MAY NIEMANN** ('45 Home Econ.), 94, October 20, 2016, Vancouver. **MARY PAT SEBRING** ('45 Phys. Ed.), 94, September 27, 2018, Lake Stevens. **HOWARD D. SKELTON** ('45 Ag. Eng.), 98, August 31, 2018, Bellevue. **VERLA W. THOMAS** (x'45 Ed.), 97, July 30, 2018, Lodi, California. **MARY BETH GISKE** ('46 Home Econ.), 94, August 7, 2018, Chehalis. **JEAN R. SUNDERLAND** ('46 Home Econ.), 91, January 20, 2017, Vancouver. **SHIRLEY F. KALMEN** ('47, '49 MS Pharm.), 91, August 2, 2018, Soap Lake. **LILLIAN JUNE LEONARD** ('47 Comm.), 94, May 12, 2018, Kent. **HAROLD POOR JR.** ('47 Ani. Sci.), 96, November 26, 2018, Riverside, California. **EARL HOUSTON CROW JR.** ('48 Socio.), 93, November 2, 2018, Hartsville, South Carolina. **PHILIP WENDELL SMITH** ('48 Mech. Eng.), 92, June 29, 2018, Centennial, Colorado. **ARTHUR M. SUNDERLAND** ('48 Ani. Sci., Alpha Gamma Rho), 97, May 13, 2018, Vancouver. **SUEZ CHEN** ('49 MA Acc.), 96, September 16, 2018, Pompton Plain, New Jersey. **JAMES A. STANSFIELD** ('49 Pre-Med.), 94, November 1, 2018, Quincy. **EUGENE E. SWEDBERG** ('49 Ag. Eng.), 93, November 5, 2018, Milwaukie, Oregon. **ERNEST WILLIAMS** ('49 DVM), 95, September 19, 2018, Salem, Oregon.

50

CHARLES ALLEN GROHS ('50 Socio., Alpha Tau Omega), 93, August 3, 2018, Spokane. **WILLIAM "BILL" G. HALLSTROM** ('50 Mech. Eng.), September 30, 2018, Eugene, Oregon. **GAYLE L. HARRIS** ('50 Pharm.), 89, July 30, 2018, Yakima. **JAMES THOMAS JOHNSON** ('50 History, '51 Ed.), 98, November 2, 2018, Kennewick. **FLOYD WESLEY LUHER** ('50 Mech. Eng.), 93, March 21, 2018, Los Alamitos, California. **SHIRLEY S. MALCOLM** ('50, '54 MA English), 90, July 14, 2018, Helvetia, Oregon. **ROBERT J. MCNAMARA** ('50, '54 MAT Music), 90, September 24, 2018, Puyallup. **JOHN WILLIAM "JACK" WHEALDON** ('50 Busi.), 88, September 29, 2015, Bainbridge Island. **MARJORIE H. BARNETTE** ('51 Home Econ., Human Dev.), 91, August 4, 2018, Seattle. **LESTER W. BRODERS** ('51 Busi.), 92, October 17, 2018, Vancouver. **ELEANOR JEAN TESLUK** ('51 Bacterio.), 88, August 12, 2018, Sacramento, California. **JAMES HERBERT YOUNG** ('51 Arch.), 95, March 14, 2018, Spokane. **JOANN MONICA MILLER** ('52 Ed.), 88, April 26, 2018, Langley. **RALPH HENRY NANSEN** ('53 Mech. Eng.), 87, August 31, 2018, Lopez Island. **WAYNE CHANDLER BERRY** (x'54), 86, October 5, 2018, Eagle, Idaho. **DANNY F. DIBBLE** ('54 Gen. St.), 92, August 6, 2018, Yakima. **ROBERT CARSON LOTT** ('54 DVM), 90, August 26, 2016, Twin Bridges, Montana. **JAMES "JIM" PEARCE RUCK** ('54 Chem.), 89, November 4, 2018, Everett. **HANS HEBERT GRUNBAUM** ('55 DVM), 86, September 23, 2018, Sherwood, Oregon. **ELIZABETH "LIZ" A. GRUNST** ('55 Music), 84, November 14, 2018, Oroville. **JANET ARLENE JOHN** (x'55, Sigma Kappa), 85, October 17, 2018, North Las Vegas, Nevada. **JASON IRL OTTER** ('55 DVM), 88, August 10, 2018, Springville, California. **DOROTHY LEE FRANKLIN** ('56 Hort.), 84, May 31, 2018, Hood River, Oregon. **PATRICIA ANN PELLERIN** ('56 Ed., '64 MEd Higher Ed. Admin.), 84, October 16, 2018, Ocean Park. **JOAN DORSETT BRICKA** (x'57), 89, August 31, 2018, Sedro Woolley. **DOROTHY M. DRAIN** ('57 History), 83, June 30, 2018, Port Angeles. **CAROL M. FISHER** ('57 Elem. Ed.), 83, October 16, 2018, Mercer Island. **RICHARD D. MCKINNON** ('57 Busi.), 83, November 24, 2016, Chelan. **CHARLES J. SEDGWICK** ('57 DVM), 86, May 26, 2018, Monterey, California. **LOUISE VANDERWILDE** ('57 Nursing), 84, October 15, 2018, Spokane Valley. **JEANNE DOROTHEA JOHNSON** ('58 MA Ed.), 93, September 5, 2018, Minneapolis, Minnesota. **ROBERT KING KIRK** ('58 Zool.), 82, September 20, 2018, Folsom, California. **CHARLAINE MACKECHNEY** (x'58), 81, August 22, 2018, Tulsa, Oklahoma. **ROBERT L. "BOB" MACKECHNEY** ('58 Hotel & Rest. Admin.), 83, June 2, 2018, Tulsa, Oklahoma. **YOLA LOUISA MILLS** ('58 English), 103, November 17, 2018, Baton Rouge, Louisiana. **LAURANCE GLENN HOWELL** ('59 Forest & Range Mgmt.), 87, October 30, 2018, Portland, Oregon. **ANNETTE S. MCGEE** ('59 Elem. Ed.), 82, August 6, 2018, Shelton.

60

BARBARA A. HOLBROOK ('60 MS Phys. Ed.), 73, October 15, 2018, Great Falls, Montana. **PATRICIA "PEGGY" A. LEE** ('60 Int. Des.), 80, October 16, 2018, Bremerton. **RICHARD M. BERTHOLF** ('61 Elec. Eng.), 80, March 24, 2017, Glendora, California. **ROBERT WILLIAM ZUPPE** ('61 Ani. Sci.), 79, July 9, 2018, Fallbrook, California. **GEORGE CATHEY** ('62 Ani. Sci.), 82, September 6, 2018, La Center. **DAVID R. MCMONIGLE** ('63 DVM), 84, November 6, 2018, Kent. **MARJORIE ANN WILLENBERG** ('64 Home Econ.), 78, November 12, 2018, Kelso. **KATHLEEN MAE DARGAN** ('65 French), 75, March 8, 2018, Manchester, Connecticut. **JOHN J. DORMAIER** ('65 Arch.), 77, October 24, 2018, Spokane. **PHILIP E. LAMONT** ('65 Chem. Eng.), 76, September 26, 2018, Kennewick. **JAMES D. LIEDTKE** ('65 PhD Chem.), 81, October 11, 2018, Monmouth, Oregon. **JERRY K. MCFARLANE** (x'65 Gen. St., Theta Chi), 79, September 13, 2018, Spokane. **JOHN M. MOFFITT** ('65 Zool., Sigma Nu), 75, September 17, 2018, Spokane. **BURTON BERRINGER** ('66, '71 PhD Physics), 76, October 13, 2018, Pittsburgh, Pennsylvania. **RICHARD DALE HOLBEN** ('66 Math., Physics), 74, September 18,

IN*memoriam*

2017, Seattle. **JANET LA VERNE DAUD** ('67 Elem. Ed.), 73, October 19, 2018, Pullman. **THEODORE JOHN FORSI JR.** ('68 Civ. Eng.), 71, November 1, 2016, Soldotna, Alaska. **FRANK HOWARD GARDNER** ('68 Mech. Eng.), 70, March 25, 2016, Touchet. **GLENIS ELAINE GORNIK** ('68 MAT Home Econ., Human Dev.), 76, September 22, 2018, Modesto, California. **JOHN WILLIAM HOUGH** ('68 Poli. Sci.), 72, August 6, 2018, Olympia. **THEODORE JUDD WILLIAMS**, ('68 PhD Chem.), 75, December 13, 2017, Missoula. **DONALD AMOS HOUCK** ('69 Phys. Ed.), 94, October 1, 2018, Bellevue.

70

SYDNE JEAN MACK ('70 Ed.), 72, October 16, 2018, Kirkland. **LINDA LEE MARSHALL** ('71 Poli. Sci., '73 Ed.), 66, December 10, 2017, Tacoma. **DALE FLOYD MARTIN** ('71 MBA), 76, June 17, 2018, Livonia, Michigan. **CURTIS EUGENE ROWE** ('71 Fin.), 69, September 6, 2018, Marysville. **SUSAN ELIZABETH STOREY** ('71 Nursing), 68, June 28, 2017, Mercer Island. **GORDON DALE BECK** ('72 Gen. St.), 68, August 22, 2018, Stanwood. **CHARLES THOMAS "TOM" FERRIS** ('72 Const. Mgmt.), 69, October 12, 2018, Spokane. **KATHERINE KIRKEMO-CLARK** ('72 Soc. Sci.), 68, September 19, 2018, Kirkland. **RUSSELL LOREN LARSEN** ('72 Ani. Sci.), 70, October 22, 2017, Colville. **JANA NORENE PETERSON** ('72 Hist.), 68, November 20, 2018, Kennewick. **CHRISTOPHER L. WILSON** ('72, '76 MS Mech. Eng.), 63, February 19, 2014, Republic. **JERRY P. REYNOLDS** ('73 Civ. Eng., Busi.), 64, March 14, 2014, Alameda, California. **FEDERICO M. V. TAMAYO** ('73 MA, '75 PhD Psych.), 70, November 11, 2018, Radcliff, Kentucky. **NANCY ROAINE WEISHAAR** ('73 Gen. St.), 65, December 24, 2015, Belfair. **KARL EDWIN WINTER** ('73 Zool.), 67, September 29, 2018, Lakewood. **PAUL GARDNER ALLEN** (x'74), 65, October 15, 2018, Seattle. **FRANKLIN G. HAZEN** ('74, '82 MA Ed.), 92, September 27, 2018, Goleta, California. **THOMAS RAY JERRELLS** ('74 MS, '76 PhD Bacterio.), 74, May 22, 2018, Pearland, Texas. **DAVID WILLIAM KENNEDY** ('74 Anthro.), 67, September 4, 2018, Spokane. **PAMELA J. NASH-PLUMMER** ('74 Vet. Sci., '77 DVM), 66, October 20, 2018, Hansville. **BRUCE RAY WILLIAMS** ('74 Nursing), 68, September 4, 2018, Yakima. **MATTHEW JOHN WANCHENA** ('74 Arch.), 66, January 18, 2018, Tacoma. **JOANNE HEYAMOTO** ('75 Nursing), 65, September 5, 2018, Spokane. **KAREN JENSEN** ('75 MA Math.), 66, August 26, 2018, Port Ludlow. **GEORGE H. LAFFIN JR.** ('75 Ag.), 71, November 17, 2017, Sun City, Arizona. **BRADLEY JAY WATERBURY** ('75 Mktg.), 65, November 5, 2018, Spokane. **KENNETH A. YATES** ('75 Music), 66, November 3, 2018, Seattle. **GARY ALLEN FLEMING** ('76 Busi.), 65, May 17, 2017, Centennial, Colorado. **ANN MARIE HALLSTROM** ('76 Socio.), 65, October 25, 2018, University Place. **SANDRA L. HINES** ('76 Comm.), 64, September 27, 2018, Everett. **BRUCE S.C. BUTTERWORTH** ('78 Int. Des.), 64, November 4, 2018, Spokane. **GREGG DWIGHT FAUST** ('78 Busi.), 63, October 29, 2018, University Place. **PAUL HENRY DANN** ('79 Ed.), 60, May 23, 2017, Richland. **CONSTANCE COOKE KINSEY** ('79 MEd, '85 PhD Ed.), 93, September 19, 2017, Millbrook, New York. **JOHN HERBERT LOEKEN** ('79 Acc.), 62, September 4, 2018, Tucson, Arizona.

80

BRUCE D. HALE ('81 Arch.), 63, September 22, 2018, Seattle. **KAY ADEN BURDINE** ('82 Comm.), 56, March 15, 2016, Seattle. **RONALD GARY PETERSON** ('82 Const. Mgmt.), 58, September 18, 2018, Bellingham. **RONALD P. RICHARD** ('85 MS Ani. Sci.), 63, October 13, 2018, Moscow, Idaho. **ROYAL "ROY" EUGENE EDGAR III** ('88 MFA), 72, July 26, 2018, Alice, Texas. **JASON DEREK MOORE** ('89 Comm.), 51, September 8, 2018, Anchorage, Alaska.

90

JUDITH S. WARNER ('93 MEd Ed.), 74, April 30, 2015, Kennewick. **CHRIS ELLIS MICHALSON** ('94 Arch.), 49, September 5, 2018, Des Moines. **DONNA JEAN ZOLLER** ('94 Psych.), 66, September 5, 2018, Austin, Arkansas. **PAUL THOMAS CARPENTER** ('95 Acc.), 46, September 30, 2018, Seattle. **MELODY DAWN FARANCE** ('97 Hum.), 63, October 18, 2018, Spokane. **RICHARD ALLAN PRICE** ('98 Busi.), 48, January 22, 2018, Buckley. **JESSICA LEE SORENSEN STOUT** ('98 Elem. Ed.), 42, September 17, 2018, Moreno Valley, California. **BOYD WERNER BENSON** ('99 Comm., '99, '01 MA English), 57, November 6, 2018, Everett.

00

CHRISTOPHER MAX LUCERO ('01 Fin.), 39, October 17, 2018, Normandy Park. **JAIME ABUNDIZ** ('03 Mech. Eng.), 41, August 25, 2018, Shoreline. **SHERRY L. LERSBAK** ('05 Soc. Sci.), 73, November 7, 2018, Lynden. **DIEGO MORENO** ('05 Dig. Tech. & Cult.), 35, July 22, 2018, Auburn. **CAROLINE HELEN HORSTMAN** ('07 Neurosci., '10 Nursing), 33, August 26, 2018, Richland. **JARED EDWARD SARE** ('08 DVM), 35, November 18, 2018, Cora, Wyoming.

10

VERNA SUE COUCHMAN ('11 MN Nursing), 67, October 9, 2018, Vancouver. **NICHOLAS JAY GAILEY** ('16 MS Psych.), 34, June 25, 2018, Stansbury Park, Utah.

FACULTY AND STAFF

JUDY CRAIG, 85, Dining Services, 1978–2000, October 21, 2018, Everett. **PAULINE "POLLY" GILKESON**, 95, Education, 1964–1982, October 8, 2018, Sequim. **E. LINCOLN JAMES**, 68, Communication, 1994–2016, December 1, 2018, Pullman. **THOMAS JERRELLS**, 74, Pharmacy, 1995–1999, May 22, 2018, Pearland, Texas. **LEONARD KAMMEYER**, 68, Facilities Services, 2001–2010, December 2, 2018, Moscow, Idaho. **RITA KOONTZ**, 71, Social & Economic Science Research Center, 1974–2016, September 15, 2018, Moscow, Idaho. **LEONARD MAIN**, 83, Compton Union, 1985–2000, September 4, 2018, Palouse. **YOLANDA "YOLA" E. MILLS**,

103, Business, 1961–1977, November 17, 2018, Baton Rouge, Louisiana. **ROBERT "BOB" J. REHWALDT**, 91, Public Safety Administration, 1979–1992, September 18, 2018, Pullman. **DAVID H. SCHRADER**, 92, Electrical Engineering, 1963–1995, November 7, 2017, Star, Idaho. **MARIA SCHWABE**, 92, Housing and Food Services, 1961–1980, October 27, 2018, Tacoma. **JANET M. SPUCK VAN RONK**, 83, WSU Vancouver Nursing, 1991–2018, July 14, 2018, Kalama. **ANNA STUTLER**, 81, WSU Puyallup, 1979–2007, June 29, 2018, Puyallup. **BETH TOERNE**, 67, Clark Hall Business Center, 1999–2017, September 11, 2018, Pullman. **JACK TRUITT**, 75, Accounting, 1978–1994, September 20, 2018, Forestburg, Texas.

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The Wine Club for Cougs

Twelve years ago, the Wine-By-Cougars Wine Club was created by the WSU Alumni Association (WSUAA) with several goals in mind: to raise the profile of Cougs in the wine industry, to engage alumni who are passionate about wine, and to help people learn more about WSU's efforts to educate future generations of wine-industry leaders.

Wine-By-Cougars (WBC) has featured hundreds of Cougar-connected wineries over the years, with quarterly shipments to over 600 members (and counting!). Ron Stanley '78, WBC member and WSUAA Platinum Life Member, has been a part of WBC since the beginning.

So what's special about the Wine-By-Cougars Wine Club? Ron says, "The concept of using wineries that are Cougar-connected is brilliant! The opportunity to taste unique hand-selected wines from Cougar wineries (many of which I had never heard of) was a big draw. In addition, it makes me so proud to know how many great wines are produced by WSU alumni. It feels like I'm always 'buying local' with each shipment, because everyone wins: the club member, the winery, the industry, and the University."

As a result of WBC's success and the success of the Cougar Collectors' Series (you can find Cougar V retailers near you at alumni.wsu.edu/cougarv), the WSU Alumni Association has been able to endow two scholarships at WSU; one in viticulture and enology and one in wine and beverage business management. In addition to enjoying great wines, WBC members are also helping the next generation of wine-industry leaders from WSU.

WBC is open to all Cougs over 21, who live in a state WBC can ship to, and who are members of the WSUAA. As Ron says, "Try it out!"

To learn more about the Wine-By-Cougars Wine Club, go to **winebycougars.com**.

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BY LARRY CLARK

WHAT'S APP?

Keri Jones spends her work days helping people rehabilitate their speaking abilities after strokes or other disorders, not coding smartphone apps.

But Jones ('98, '00 MA), a speech language pathologist at Pullman Regional Hospital (PRH), realized that the speech assistance apps out there were mostly for kids, with cartoonish graphics. She saw plenty of adults who could really benefit from a smartphone practice tool, especially one with moving x-ray images of mouth positions.

"We use this technology for diagnosing and treating swallowing disorders. One day, I thought, 'Why don't we use that technology to demonstrate how speech sounds are formed?'"

Using her expertise, the x-rays, recording and playback, and other features, Jones hired a developer to build the Speech Sounds Visualized app.

Jones accomplished the technology feat with assistance from PRH's Center for Learning and Innovation, which partners with WSU faculty, such as Marie Mayes ('87, '04 MBA) from the WSU Center for Entrepreneurial Studies. Influenced by the Mayo Clinic and other hospitals, PRH spokeswoman Megan Guido says, "The center was created to facilitate those ideas that our employees might come up with to help improve the patient experience."

Technology and apps made by nurses, therapists, doctors, and others tap into their knowledge, and enable self-monitoring and self-care for patients. They can also help health-care workers themselves, says Zach Smith '09.

As a nurse in Portland, Oregon, Smith says coordinating complicated schedules seemed hopelessly outdated and added to the stress of the occupation: "Hospitals just weren't fulfilling that need with the technology that they were rolling out."

Previously, he texted his wife Larissa '08, also a nurse, about shift changes rather than using scheduling programs, which was very inefficient, Smith explains.

Frustrated, he joined with fellow nurse Joe Novello to create a mobile tool called NurseGrid. The free app simplifies the process of scheduling shifts for nursing staff, and it's been a hit. It's the number one nurse app with almost a million downloads, used in every hospital in the country.

Smith tested the app as a nurse until joining NurseGrid full-time. He says health-care practitioners "can empathize and build tools that solve problems they identify," but they need to bring the ideas to fruition. "What distinguishes true entrepreneurs from people who have good ideas is taking that first step," he says.

check out health-care innovations by Cougs: magazine.wsu.edu/extra/health-innovation

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