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COVER: “PATTERNS OF WINTER” AT BASIL LAKE, NORTH BONNEVILLE. PHOTO DARRELL WYATT
LEFT: OVERWINTERING SNOW GEESE ON FIR ISLAND, SKAGIT COUNTY. PHOTO JON MICHAEL
Fabric of Washington

The Center for Digital Scholarship and Curation promotes ethical curation and collaborative scholarship within the wider WSU community.

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Healing for our Native American vets—in body, mind, and spirit.

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WASHINGTON STATE MAGAZINE WINTER 2018

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CDSC co-director and MASC head Trevor James Bond knotting his Cougar tartan tie (Courtesy The Daily Evergreen)
Mom always said it’s not polite to talk about money

Now that you’re a grown up, you want to talk to someone about how to take care of the people you love and the causes you believe in well into the future. Through your estate plan, you can become part of building a brighter future at Washington State University. Make a tax-smart decision that also makes a positive and lasting impact on the people and programs you love.

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TALKback

Instrumental journey

The article written by Wenda Reed on the life of Gladys Jennings was excellent. I graduated in '92, and had Gladys as an advisor in the Food Science & Human Nutrition Department. I transferred to WSU from the University of Alaska, Anchorage in the fall of '99, and Gladys was instrumental in that process. After phone conversations and mailings, the transition from U of A to WSU was seamless. She would guide me in my course choices while in Alaska, and told me that these courses would directly transfer. She was instrumental in the success I had as a student at WSU.

ALLAN BORCHARDT R.D. ’92
FOOD SCI. & HUMAN NUTR.

Back in the saddles

(Equestrian Team coach Lauren Bagby Moore ’08 received this message about “Back in the saddles,” Fall 2018)

Several years ago, I was disappointed to learn that the Equestrian Team had disbanded, because I had such a great time being on the team when I was in school.

After college, I moved away for several years, but then moved back to Pullman in 2013 where I’ve been working for WSU ever since. I recently read the article in the Washington State Magazine and was thrilled to see that the team was brought back!

Seeing your name and reading the article was a blast from the past, so I wanted to write and say “Thank You” for your help in bringing the team back and providing this opportunity to students. Your hard work and dedication has obviously paid off and you are such an asset to the team!

CHELSEA (CIUFO) JENDRO ’09 COMM.

WSU hit man

So glad I took a look at the Fall ’18 edition. Amazing all these “hits” in the one edition that related and surprised me:

On page six was a letter from Earl Otis in Puyallup. We worked together for several years in the WSU Extension Service Communications office.

Page 1: A flying item. I owned a plane for 25 years in Georgia and so found it interesting:

Page 20: A terrific story on the Columbia River. In 1978 I took a special three-day course on the river that included being on the river.

Page 27: Article on education. I earned an MEd at WSU. Used it to start and manage a professional distance learning education service for a state hospital association.

Page 37: Article on Merfeld and WSU wine studies. Back in the 70s I was fortunate to have been on Charles Nagle’s wine panel and played a very small part in a very big thing for WSU and Washington.

Page 40: Nathan Myhrvold and the science of cooking. Several years ago at a science conference I heard him present a terrific report on his kitchen.

Page 44: Dr. Ghasarfar is in Atlanta where I am! He may help me find a missing friend from Pakistan who studied agronomy at WSU and roomed next door to me in graduate housing.

ROBERT SEARFOSS ’73 MED
Atlanta

Going footballnuts

Earl J. Otis ’51 (Journalism) came up with this gem of Cougar Football History while going through a 60-year collection at his home in Puyallup. It was the passenger list for a College of Pacific football game trip, November 14–16, 1956. Historic? “Yes; pls!” as we used to ask at the old United Press.

Well, for all you Football Fiberts out there, this ’58 team was the last football team to play for Washington State College! (The state legislature changed the name to Washington State University in the spring of 1959.) So this game—a 34–0 Cougars win—also, then, was the last football win for Washington State College on the road!

These ’58 Cougs gave Coach Jim Sutherland his best season, 7–3, by beating the Huskies 18–14 in Spokane’s Joe Albi Stadium.

If you’re over 65, I’ll bet you’d remember almost all the team members! Seven of them—Bill Berry, Gail Cogdill, Don Ellingson, Jack Fanning, Keith Lincoln, Bob Newman, and Bill Steiger, are in the Cougars’ Hall of Fame.

(Otis was assistant manager of the WSC News Bureau when he made this trip. He later served many years as information specialist at WSU’s Puyallup Research Station.)

RICHARD B. FRY
Former WSU Sports Information Director and News Director

Leading the way to a better world

Jordan Frost rose from poverty to become a civic leader: The newest member of the WSU Board of Regents.

His inspiration: His teachers. Now he’s studying to become an educator.

His goal: To help others overcome adversity and realize their full potential.

Across 200+ majors statewide, WSU nurtures a commitment to serving the greater good.

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Any good strategist knows that an accurate map can win a battle. If your enemy is cancer, a chaotic and elusive foe that changes its environment, finding a new dimension to examine a tumor can make all the difference when developing treatments.

Like all scientists and doctors looking for ways to defeat cancer, Weimin Li wants to better understand how cancers grow and adapt. His innovative technology using 3-D tissue culture “scaffolds” delivers a far more relevant environment to research the deadly disease.

“It’s a fight that Li has fought on many fronts. He spent seven years practicing oncology in China and witnessed the inconsistencies of cancer treatments. “It was hard. So many patients were dying,” he says.

He was inspired to begin researching the deadly disease. When cancer cells are in human tissues, they interact with other cells and their environment in every direction, secreting enzymes that help the cancer to survive and spread, and even change the environment within the tissue. That can’t be truly replicated in only two dimensions.

The concept of 3-D scaffolds to grow tissue cultures is not a new one, but other 3-D culture models mostly use plastic or synthetic polymers, or they use a single component of the extracellular matrix (ECM) and model tumor development in a way that doesn’t naturally show how they behave and resist drugs.

“Tissue cells are organized by a protein meshwork—the extracellular matrix (ECM)—which is an essential part of the microenvironment for the cells. ECM not only acts as scaffolding support, but also provides many mechanical and signaling functions. Cancer cells can have pronounced effects on these ECM functions. Therefore, Li is pioneering vivo-mimicking tissue culture systems based on native versus synthetic materials to better understand these deleterious effects."

“My research tools can help us understand fundamental questions of cancer and develop more effective therapeutics to treat human cancer.”

Now an assistant professor in the WSU Elson S. Floyd College of Medicine, Li says that many anticancer drugs fail in clinical trials in part because they’re studied and tested in inappropriate tissue cultures or animal models.

The traditional petri dish method sets up tissue cultures in 2-D plastic systems, an artificial model that can’t represent the complex tissue environment, nor show how cells spatially interact at all levels. By creating a 3-D tissue-like scaffold, tumors can form in ways that allow scientists to screen drugs in a setting that’s a lot closer to how native cancer cells grow and invade normal human bodies.

When cancer cells are in human tissues, they interact with other cells and their environment in every direction, secreting enzymes that help the cancer to survive and spread, and even change the environment within the tissue. That can’t be truly replicated in only two dimensions.

The concept of 3-D scaffolds to grow tissue cultures is not a new one, but other 3-D culture models mostly use plastic or synthetic polymers, or they use a single component of the extracellular matrix (ECM) of disease-irrelevant animal tissues. Since tumors interact with their environment in order to survive and grow, a scaffold made from synthetic or non-tissue-specific materials won’t necessarily show researchers how tumors will express biomarkers and react to drugs as they would in patients.

To overcome that problem, Li and his team built scaffolds from the ECM of normal, native tissues that preserve the tissue’s properties and match the type of cancer they want to study.

For example, they use breast tissue scaffolds for growing tumors from breast cancer cells. As tumors grow in that 3-D space, Li says the tissue matrix scaffold (TMS) creates a far more accurate replica. That optimizes research and drug development, in part because cancer cells will naturally show how they behave and resist drugs.

“There are complex interactions between cancer cells and other cells within tumors,” says Li. “We can isolate the cells and model tumor development in a way that recapitulates native conditions.”

Li’s innovation has won national awards for its novelty in modeling tissues for drug screening, but the TMS technology he’s brought to the world could be even more useful.

“One potential outcome is tissue regeneration. Another is personalized medical treatment,” he says.

For now, Li and his team, including postdoctoral colleague Girdhari Rijal, are keeping their research focused on cancer modeling and treatment. He hopes to commercialize the technology, so it can help doctors and other medical researchers to find new strategies in the ongoing fight against cancer.
Centering on supplements’ safety


When choosing whether or not to use dietary supplements or other natural products, there are a lot of questions about the value of these products and their benefits. They often claim to be “all natural,” but that doesn’t necessarily make them safe for you. Natural products are not required to go through the same rigorous research and clinical trials as pharmaceuticals prior to marketing, so many potential health dangers are simply unknown.

Researcher Mary Paine, associate professor at Washington State University’s College of Pharmacy and Pharmaceutical Sciences in Spokane and a registered pharmacist, wants to uncover potential interactions between natural products and conventional drugs.

Sciences in Spokane and a registered professor at Washington State University’s Pharmaceutical Sciences in Spokane and a registered pharmacist, wants to uncover potential interactions between natural products and conventional drugs.

The NaPDI Center will also recommend detailed steps for studying pharmacokinetic interactions between natural products and drugs—how a natural product can alter the absorption, distribution, metabolism, or excretion of a drug. Their work, already published in a number of journals, could help develop policy, regulations, best practices, and the individual adoption and integration of natural products into the medication therapy of patients. In the future the NaPDI Center hopes to extend its online database to healthcare practitioners to both proliferate quality science and offer useful data for the healthcare community.

Paine and the center is also preparing for the next, and perhaps most challenging, natural product on its research list: cannabis. “The legal and regulatory hoops are substantial, but this is when we need the scientific information to be reliable,” says Paine.

To explore the potential impacts, Paine helped create the Center of Excellence for Natural Product Drug Interaction Research (NaPDI Center) at WSU Spokane. Through a $4.4 million, five-year grant from the National Institutes of Health National Center for Complementary and Integrative Health, experts in clinical pharmacology, natural products chemistry, health informatics, and health communications will study the interactions between natural products and conventional drugs.

Her own research and other studies continue to back the narrative she’s been hearing from women frustrated with comfort, fit, and lack of sizing options. “It’s part of the reason she began thinking about starting a business.

Since she had a limited background in business, she found support through the WISE Innovation Cooop, a National Science Foundation-funded program that helps University staff, students, and faculty more research into the marketplace. They provided the guidance she needed and helped her build a business plan. One of the first things they suggested was finding a business partner.

Enter Kade and Vos co-founder Ashley Scott. “While Christel had both volunteered to make costumes at the Regional Theatre of the Palouse, and Scott was a student in Christel’s class for three years. She had worked for seven years in her family’s cherry orchards in Yakima and had a deep understanding of supply chains and small business management. Scott says in the back of her mind she always wanted to make sure curious women had better clothing options.

Fashion is looked at as something kind of silly, but it’s not silly because everyone wears clothes every day. What you see people wear affects society and how people are viewed,” Scott says. “It’s really important as a fashion designer to be able to dress all people.”

Kade and Vos not only has a different approach to designing for their customers, but also the supply chain.

So much in the fashion industry is dehumanized,” Scott says. “It’s designed on a mannequin, not even a person. That’s one part of it. You don’t see the thousands of people behind any garment you buy and that is important for us; to humanize the fashion industry.”

Kade and Vos source supima cotton for their clothes from a family farm in the Southwest. The cotton biodegrades in two weeks, as opposed to synthetics that can take up to 40 years to decompose in a landfill. The company’s knitter lives in North Carolina, and they work with a veteran-run manufacturing company in Georgia when they go into full production.

Kade and Scott are looking forward to their upcoming pajama line and it all started with soft, breathable cotton underwear. If the underwear isn’t comfortable or fits the body, says Christel, then somehow you put it on top of it isn’t going to look and feel right.

“We don’t want to further segregate women by size,” Christel says, noting that they offer sizes small to 6XL. “If we don’t offer your size, we will make it for you.”

Christel’s mission to improve clothing fit for curvy women began in graduate school. While working on her thesis project with Nike, she noticed they offered more clothing sizes for men than they did for women. The sizing was even more limited for plus-size women.

“Our culture says everyone needs to be healthy, but the equipment we’re provided for women like it is for men,” she says.

She researched movement and clothing fit, with one study revealing how clothing can deter women from doing something as seemingly simple as taking their kids to the park. She also started to explore the weight bias engrained in U.S. culture—not just in fashion, but other industries that portray larger people in a negative light.

Before launching the start-up, Christel was an assistant professor in Washington State University’s Department of Apparel Design, Merchandising, and Textiles, where she incorporated weight-bias education into her courses. She linked teaching students how to design for different body types—and how to design with compassion.
Days of future past

Rapid global cooling 13,000 years ago challenged early occupants of Alaska to adapt. People used to hunting mammoths and other megafauna with big stone tools suddenly found their weapons shattering in the cold. Access to the stone they used to make them got buried under snow.

As with any climatic change, the cold resulted in a shift in fauna, requiring new tools. Early Alaskans turned to smaller technology, a technique they’d kept alive for hundreds of years along with their dominating hunting tools. Microblades made efficient use of now-scarce toothbone and met the needs of a changing climate.

Throughout the Holocene, the importance of microblade technology varies, "writes Washington State University archaeologist Colin Grier, but it never disappears; it "is everywhere when needed to address new and changing ecological circumstance." Grier and colleagues from the University of Idaho’s Center for Resilient Communities note that archaeology has a lot to say about how cultures adapt to global climate change, shifting populations and ecosystems, and transforming food systems.

"The way to ensure that we have some capacity to adapt is by having a diversity of options," says Grier. "Adaptation is not just technology, a technique they’d kept alive for hundreds of years along with their dominating hunting tools. Microblades made efficient use of now-scarce toothbone and met the needs of a changing climate."

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At Rosario’s Place, food on the shelves comes and goes like a tide. When staff at the Women’s Center at Washington State University, which manages Rosario’s, puts out a call for donations, stock rises and then falls again as students take what they need to get by.

Rosario’s Place has a private entrance on the Pullman campus, and that simple fact, says Women’s Center director Amy Sharp, reduces stigma; no one asks who you are or what you are doing. You just come in, take what you need (or leave what you can). In addition to food, Rosario’s also stocks baby and toddler supplies and menstrual hygiene products.

Sharp’s colleague at the center, Jennifer Murray, recalls one woman from this past summer. The woman in the hijab, she says, was certainly grateful to be able to take a few things so that her family would have food that night. What really touched Murray, though, is when the woman said that having a place to come, a place where people cared regardless of where you are from, meant nearly as much as the provisions.

Murray says that over the summer many international students come to Rosario’s. “Their student visas prevent them from working,” she explains, and with graduate student stipends on hold during the summer, things can get dire.

Whether it’s through Rosario’s Place in Vail-Short Hall, or the Campus Pantry on the WSU Spokane campus, or one of the many other pantries located at WSU campuses across the state, Cougs are feeding Cougs, and finding innovative local solutions to gather and distribute food.

While donating food looks like a simple act of kindness, it is, in fact, just the tip of an iceberg, as Sharp explains. “Food insecurity has no easy solutions and no one-size-fits-all definitions. It often means missing meals, or eating food that is high in calories but low in nutrition. Food insecurity means having to prioritize, for example, paying rent or buying gas over purchasing food — because low-income families, contrary to a popular misconception, are not rich in time while poor in money. Many low-income families have adults working multiple jobs, with little time to cook and barely enough money to cover basic expenses. Eating fresh food requires both income and time to prepare. When time is scarce, fast food, with its high caloric content and convenience, is a logical but risky stopgap.”

Pablo Monsivais, a public health nutrition expert and associate professor in WSU’s Elson S. Floyd College of Medicine, points out that food insecurity is a public health problem. Thinking of food banks as charity not only stigmatizes recipients but obfuscates the fact that we all pay, in the long run, for one another’s ill health. Whether it’s through increased healthcare costs or loss of economic productivity, not having enough to eat—or not enough nutrition-dense foods—is a cost we all share.

As food insecurity is often greatest in rural settings, where people may know each other, the cost of that stigma may outweigh health concerns. “If someone sees me in here,” says WSU sociologist Sarah Whitley (’07 MS, ’12 PhD Socio.), “is how is that going to make me look? If there is a job opportunity, am I going to be deemed unworthy because I took a handout from a food bank?”

She taught for a few years at Cal State University in Fresno, in the heart of one of the planet’s biggest food producing regions, the Central Valley. “That really opened my eyes, the scale of ‘ag,’” says Whitley.

And yet, much of the area surrounding the city was a food desert. “A lot of rural communities don’t have any retail anymore, so folks drive many miles to get food, and that transportation cost cuts into their already constrained food budget.”

Monsivais and Whitley say that people have the knowledge to eat healthfully, and will if given the opportunity. Both the sociologist and the public health expert point out that the growing obesity epidemic is connected to food insecurity, as are a host of other health issues.

“There are all sorts of research that talks not only about how food insecurity affects physiological development, including brain development, but about emotional and mental development as well,” Whitley says. As Monsivais points out, the nutrients in food — such as calcium, potassium, magnesium, as well as fats — are all essential components of our nervous system, including our brains, which are predominantly made of fat.

“Health takes input,” Monsivais adds. “You’ve got to have the energy, the time, the skills, the money to engage in the behaviors that lead to health. And a lot of that is diet.”

Ryan Lazo, the community partnerships coordinator at the WSU Center for Civic Engagement, works with food activists throughout Whitman County and beyond. With Joe Antonino (’15 PhD Socio.), the director of Pullman’s Community Action Center, Lazo runs a food recovery program in collaboration with WSU Dining Services. They take food from dining halls that would otherwise go to waste to a commercial kitchen at the CAC, which is then distributed to the county’s many food pantries.

The food recovery program, Lazo says, “started small, but it’s growing.” At a 2015 Pac-12 cross country meet, Lazo and his partners “recovered leftover fruit and granola bars, and took them to the food bank.” Since then, the program has grown and stabilized. The recovery team even takes leftover chilli left over from Pullman’s annual Lentil Festival, packages it in family-sized portions, and freezes and distributes it to those in need.

“No, on campus, things are fairly standardized,” says Lazo. “Recoverable food is gathered at the Student Dining Hall and once a week it is delivered to the CAC for repackaging.” From there, Antonino says, it is distributed around the county.

But distances are great. Antonino says that a full circuit of Whitman County food pantries takes a couple of days. Keeping perishable food fresh is a problem.

Indeed, the logistics of food distribution inspired Nils Johnson, a WSU Extension educator in Stevens County in the remote northeast of the state, to a cool solution.

Johnson, a former high-tech engineer turned food activist, designed a mobile refrigerated trailer so, instead of having to take a refrigerated semi-truck into remote areas with a commercial driver at the wheel, the CoolPup — as Johnson calls the built-to-purpose rig — can be towed behind any six-cylinder vehicle. Changing the way food is distributed is one way we’ll beat food insecurity, Johnson says. And it’s provide a double bang. Johnson describes a loop through Ferry, Pend Oreille, and Stevens Counties, a 250-mile round trip, that encompasses food pantries, as well as rural schools and hospitals—all hungry for fresh food. It also crosses paths with dozens of small farmers hungry for a market.

The CoolPup trailer means volunteers can take cash, from either donations or grants, to the farmers, buy their fresh produce, and then distribute it to clients. It’s a neat trick, an economic development and alleviating a public health problem with a single tool.
And, at about $7,000 or $8,000 each, CoolPups are not out of reach to organizations dealing with rural food distribution. Johnson says that his colleagues on the Olympic Peninsula are also eager to bring the CoolPup to their region.

At first glance, efforts to combat food insecurity appear haphazard. A closer look, though, reveals that there is a patchwork of hyperlocal volunteers and activists all pushing to remove stigma, increase access, and empower small farms.

Brown notes that there’s been an expansion of the number of small farms on the Palouse. Statistics also show more women and people of color are getting into farming. That changes the complexion of the region in multiple ways: vast fields of wheat grown for a global market are now interspersed with smallholder row crops and animal agriculture.

And, Johnson says, selling that small-farm-grown produce to food pantries and rural schools, hospitals, and markets creates a virtuous cycle that means everyone eats better.

Lazo says that students engaged in the food recovery and other programs gain tools “to be change makers. Whenever they go in the world.” WSU students who have participated will be able “to face these issues with a sense of efficacy, sensitivity, and caring.”

**Palouse Fresh Food Project** — Connects students, resources to those fighting food insecurity: cce.wsu.edu/programs/palouse-food-project

**A Guide to Food Recovery Programs** — Things to consider when starting a food-recovery program: magazine.wsu.edu/extra/food-security

**Center for Civic Engagement** — Fosters campus-community partnerships: cce.wsu.edu

**Food Atlas for Puget Sound Region** — How to eat local in the Puget Sound region: eatlocalfirst.org/food-atlas

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**Pork futures**

Pig 135 snuffles and groans inside his pen. Jon Oatley reaches through the bars to pet the more than 500-pound genetically modified animal.

“People have this image in their head of a pig with deformities, but they’re just normal animals,” says molecular biologist Oatley ’01 MS, ’04 PhD as he rubs the pig’s ears.

The enormous, three-year-old pig is one of a handful bred by Oatley, director of WSU’s Center for Reproductive Biology, and his team to be surrogate fathers. Through genetic tinkering, Pig 135 is able to produce sperm that contains the genetic material of another pig rather than his own. This modification makes it faster and easier to breed pigs with desirable traits.

To modify a pig like Pig 135, it all starts with a single cell.

Using a gene editing process called CRISPR-Cas9, Oatley and his team of researchers are able to introduce a change to the DNA in a male pig embryo before it is implanted into a surrogate sow. Cas9, an enzyme that acts like a pair of scissors, is used to cut the DNA at a location of Oatley’s choice.

The cell then tries to repair the strand of damaged DNA, either by adding a new sequence or deleting a sequence. In this instance, the change causes the pig to be sterile when it reaches adulthood.

“It’s a mutation that could’ve occurred in nature,” Oatley says. “Nothing foreign was added.”

Mutations like red hair, blue eyes, and freckles in humans, and coat color and stature in dogs were created in a similar fashion, except the genetic changes were driven by environmental pressure and selective breeding rather than the hand of a scientist.

With CRISPR-Cas9, Oatley and his team can speed up these processes to eventually breed food-producing animals that are bigger, more resistant to disease, and require less food and water.

“We can do it in a single generation instead of over thousands,” Oatley says.

Once the modified pig reaches adulthood, Oatley’s team can inject it with stem cells from another pig with more desirable traits, allowing the modified pig to produce sperm with the elite pig’s genetic material rather than its own, making it a surrogate father.

Samantha Noll, a bioethicist on Oatley’s team, says animal welfare is the first thing the team focuses on.

“During all stages of the research process,” says Noll, “the researchers are discussing ethical and animal welfare implications. They’re working to address these big problems like hunger, security, disease resistance, and they’re also taking the time to ensure that they don’t create other problems during the research process.”

When the research team eventually breeds new animals, Pig 135 and his brethren will be euthanized to make room. But instead of their bodies being used to feed the hungry, they will be incinerated—as is fitting for an animal labeled as a biohazard under current regulations.

“He can’t even be composted,” Oatley says. “It’s the fear factor.”

Noll says the label is just a precaution.

“We’re following the most stringent requirements now, just in case, that way we don’t have an environmental impact that was unforeseen,” Noll says.

Oatley says there’s no experimental evidence it would be unsafe for humans to eat Pig 135 or others modified like him, but the process still raises ethical issues.

“We’re doing things that Mother Nature never intended us to do, but it has to happen at some point or we won’t be able to persist with the rate that human populations are expanding,” Oatley says. “It’s a trade-off.”

As food insecurity continues to be a problem in both developed and undeveloped nations alike, Oatley says he and his team hope that by modifying pigs and other livestock, they can improve access to food for people today and in future generations.

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PHOTOS BY ALEYSN BOSTON ’18

**Center for Civic Engagement**

**Food Atlas for Puget Sound Region**

**Washington State Magazine Winter 2018**
POLES PLANTED AND READY, SEAN HALSTED ’92 WAITS AT THE STARTING GATE FOR THE 15-KILOMETER CROSS-COUNTRY SKIING RACE. "It was March 2018 at the PyeongChang Winter Games and I’m wearing the signature red cap and striped jersey of the U.S. Paralympic team.

Behind sunglasses, Halsted glances at the grandstand filled with thousands of cheering fans, colorful flags, and jangling cowbells. Cameras point in every direction and he catches a glimpse of himself on the jumbotron. Cameras point in every direction and he catches a glimpse of himself on the jumbotron. The year was 1998 and Halsted was enlisted in the Air Force. He’d come to compete in the biathlon.

"I fell 40 feet and fractured a vertebra. It tore me up," he says. "You’re supposed to stay because of the angle and the prop wash. My foot got stuck in the door and I couldn’t hang on. The next memory was me on the ground. They said I was paralyzed." His first memories of sports were racing in a wheelchair as a child, but he’d never considered himself a Para athlete until after he was injured in the Air Force.

"The accident happened during regular training to keep up our skills," he recalls. "We were just practicing a search and rescue exercise. The insertion we used was fast roping, a technique where troops descend from the helicopter on a thick rope. I remember reaching for the rope and the next memory was me on the ground. They said my foot got stuck in the door and I couldn’t hang on because of the angle and the prop wash. I fell 40 feet and fractured a vertebra."

"I was in the hospital for two months. I was in a wheelchair for a year and a half. I knew I’d never be able to ski again."

"I had done a bit of community skiing in the past, so half-heartedly gave the sport another go. With surprise, I discovered a knack for it and the arm motion gave me the exercise burn I was looking for."

"We had done a bit of community skiing in the past, so half-heartedly gave the sport another go. With surprise, I discovered a knack for it and the arm motion gave me the exercise burn I was looking for."

"But it was the worst thing to rehash what happened. Lying paralyzed on the ground, my first thought was of failure. For a while, it was the worst thing to relive it. Not being able to ski again was the worst thing to think about."

"I want to help promote the sport. There’s a lot of challenges ahead," says the veteran warrior. "I have to keep pushing and I have to stay focused."

THE 15-KILOMETER CROSS-COUNTRY SKIING RACE — The 15-kilometer cross-country skiing race in PyeongChang, Halsted says, "I loved my efforts, felt great about the energy put into it, but like always for me, you can immediately see the results as you cross the finish line, and start comparing it to your times at Vancouver, Sochi, and world cups." "Yes, it’s not first, but first is not the be all, end all."

"Halsted, husband and father of three, says his primary goal today is to create awareness and community for wheelchair athletes. "Over the years, so many civilians have come up to me and said they didn’t know these sports existed, and they wish they’d known about them before," he says.

"In Spokane, we have the Paralympic Spokane. It’s a great pipeline for kids to get into sports especially wheelchair basketball and track and field."

"There are so many civilians who want to help promote the sport."
The two species are the smaller plains bison and the larger buffalo. The bulls — whether you call them bison or buffalo — helped the entire resilient species survive. Although bison are now the national mammal of the United States, they once balanced on the cliff of extinction with fewer than 300 wild animals in the late nineteenth century.

Critical to Plains, Rocky Mountain, and Plateau Native American tribes, bison have powerful spiritual as well as practical purpose. Bison herds continue to grow thanks to the Intertribal Buffalo Cooperative and others, and remain a valuable food source and cultural touchpoint for many tribes such as the Kalispel. The Blackfeet even have a specific word for bison meat: natapi, meaning “real food.”

The animals themselves strike an impressive profile. The immense bulls can weigh a ton or more and stand five to six feet high. The cows are not as massive but still imposing. They’re quite agile, with sprint speeds of up to 30 miles per hour.

Overhunting and construction of the railroads across the plains decimated the bison populations by the 1880s. Train passengers would shoot the bison by the thousands as they ran beside the rails.

The bison were rescued thanks to the tireless efforts of mainly five groups, according to Ken Zontek, an environmental historian teaching at WSU Tri-Cities and Yakima Valley Community College. Zontek is the author of the 2007 book Buffalo Nation: American Indian Efforts to Restore Bison, which tells the stories of the frontline environmentalists who rescued bison. President Theodore Roosevelt and others later helped by establishing the National Bison Range and mandating protections, but it was really the efforts of both Native Americans like Sabine Walking Coyote, who physically captured and bred bison, and other westerners who ensured survival.

RAISING BISON CERTAINLY STILL TAKES SOME MOXIE.

“There’s never any end to the fun with managing a bunch of wild beasts,” says Entz. “We’ve only really ever had one incident in the 25 years I’ve been here. Nobody’s ever been trampled. I’ve been missed a few times really closely.”

“Standard fences don’t do much to contain the animals, either. “They treat it like a piece of really light fishing line,” laughs Entz. Entz’s predecessor who brought in the buffalo in the 1970s, says people behind fences thought it was a good idea. They were wrong. The bison keep trying to break the fences, and all escape and make it to the university’s land. “You’ve got to be a little bit bigger. I started running next to him, doing the whole, ‘Yah, yah, you gotta go that way.’ And he didn’t want to have anything to do with it. So, I kind of gave up because I was looking at about 2,200 pounds of buffalo at that point, and he wasn’t happy.”

During breeding season in mid- to late summer, the herds become restless. The bulls start bellowing and quarreling as they compete for females. The cows give birth usually to one calf a year. Buffalo can live about 20 years.

People who keep bison herds can work with the Washington Animal Disease Diagnostic Laboratory at Washington State University on pregnancy tests and tests for malignant catarrhal fever.

In 2003, that malady killed 825 bison in Idaho. Led by Naomi Taus, veterinary medical officer for the Pullman unit of the USDA’s Agricultural Research Service and a WSU faculty member, the WSU scientists realized the bison were exposed because they were close to a flock of sheep. The scientists used the sheep as a way of culturing the virus, with hopes of developing a vaccine.

While a vaccine has not yet been developed for malignant catarrhal fever, the AKS and WSU efforts have advanced the effort against a tough disease.

BISON PROVIDED MEAT AND HIDES for thousands of years to Native American tribes, and it still remains a great alternative to beef.

The majority of bison are raised for human consumption. The meat is generally considered very similar to beef in taste, but lower in fat and cholesterol and higher in protein. There’s even koshar buffalo meat available nationwide.

At the Kalispel Tribe, Francis Cullough, a tribal elder and Entz’s predecessor who brought in the buffalo in the 1970s, says the annual August powwow and buffalo barbecue give the Kalispel people a chance to enjoy the meat, along with huckleberries and other traditional foods.

“We usually butcher two animals and do a big traditional pit barbecue with roasts,” adds Entz. “Whether you cook up some bison roasts at home or you seek out a bison burger at a restaurant, you’re sure to enjoy it. Just remember to thank the early conservationists and Native Americans who saved an iconic animal over a century ago, and gave us the chance to relish and respect a truly original food of the continent.”

Of course, the question about the name inevitably arises: Is it bison or buffalo?

“The answer’s a little surprising: the European name ‘bison’ precedes ‘buffalo’ French fur trappers and some explorers referred to the animals as bœufs, which became buffalo in English, around the early 1600s. The name “bison,” meaning ox-like animal in Greek, was first applied in 1774. Whatever you call them, they’re certainly one of the most important North American animals. Bison originally spread as far south as Mexico and east to the Atlantic, and were seen in North Carolina as late as 1750.

We might not know just how many bison once roamed North America, but estimates range from 20 to 75 million. “The moving multitude . . . darkened the whole plains,” wrote Lewis and Clark, who encountered a plains herd in 1806.

The meat is generally considered very similar to beef in taste, and to beef.

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Is it bison or buffalo?
For thousands of years, humans have relied on the European honey bee to pollinate agricultural crops. Now, wild North American bees are getting a second look.

For thousands of years, humans have relied on the European honey bee to pollinate agricultural crops. Now, wild North American bees are getting a second look.
On a hot, mid-June afternoon, I follow a caravan of vehicles as they pull over to the side of a dusty road in Walla Walla County. Opening my car door, I notice a hum like distant traffic yet the fields surrounding us are quiet and sweet with blooming alfalfa. The drone grows louder as farmer Mike Ingham leads us toward a gray patch of ground on a nearby hillside. Within a few steps, we are engulfed by swarms of alkali bees—hundreds of thousands of iridescent-striped bees, crawling out of holes in the soil, taking flight, and buzzing our ears. I fight an urge to run but he calmly reassures us they’re not aggressive.

Doug Walsh sweeps an alfalfa field for insects.

Ingham ‘78, third generation alfalfa seed grower and one of only 30 percent of the nation’s alfalfa bee species did evolve unique tactics for pollinating native plants like blueberries, tomatoes, squash, and pumpkins. In the United States, there are more than 4,000 wild bee species, which, along with honey bees, play an important role in pollinating agricultural crops. Unlike honey bees, however, most wild species are solitary and don’t live in communal hives. Seventy percent of these are ground-nesters like the alkali bee, while the other 30 percent prefer cavities such as hollow twigs or holes in wood. As ancient residents of the Pacific Northwest, alkali bees naturally grow in arid areas with damp, salty soil such as stream banks or salt flats. Once established, the bees will maintain their “neighborhood” for years as long as there is a ready supply of pollen and nectar. And, come each June, the young bees emerge from their holes in pursuit of mates. Once bred, the females only have six weeks to build a new nest, procure pollen, and raise a brood before they die. As it turns out, that six weeks coincides perfectly with the Walla Walla alfalfa bloom.

Doug Walsh sweeps an alkali bee field for insects.

It wasn’t always this convenient, says Ingham. “The farmland, which receives minimal rainfall, was originally ditch-irrigated for wheat and hay production, and provided only a small alfalfa seed crop on the side. The turning point came with the legendary research efforts of Washington State University entomologists Herman Menke and Carl Johansen.” It was Menke who, in 1949, discovered that alkali bees could be of economic value.

“The ditch banks were moist and bees were digging nest holes in them. Menke realized they were pollinating the alfalfa and helped us begin to commercialize it,” says Ingham.

Menke’s first step was to build an artificial nesting site. Initial attempts were hit and miss—man-made ditches placed at the top of salty slopes to allow water to seep down, or trenches filled with rocks, soil, and water.

Around 1970, Johannsen came up with a different approach that more closely mimics the natural groundwater upwelling and alkaline environment the bees prefer. That system helped put the Walla Walla alfalfa seed industry on the map and is still in use today.

“In April, we put four to six tons of rock salt out per acre,” Ingham says. “It seals the soil surface and draws up moisture to make an attractive surface for bees to nest in. Then, we have a sub-irrigation system set up with white PVC pipes buried about 20 inches deep. We pump water into the pipes till around July fourth when runoff from the Blue Mountains dries out.”

Doug Walsh, professor of entomology at WSU Prosser Irrigated Agriculture Research & Extension Center, estimates there are about 40 million alkali bees at work in the Touchet-Lowden-Gardena area each summer. At the area’s fifth successive WSU bee researcher, Walsh proudly carries on the relationship first established with the alfalfa seed growers by Menke nearly 70 years ago.

Over time, he says the farmers have adapted their culture and depend on WSU leadership to help determine the best ways to control pests while also preserving bees during their critical six-week lifecycle.

Working with members of the Washington Alfalfa Seed Commission, for example, Walsh has developed an integrated pest management program for controlling the lygus bug, a harmful insect that infests alfalfa fields at the same time bees are gathering pollen.

Instead of resorting to daytime spraying, growers now apply pesticides only at night when the bees are deep in their holes. And the pesticides they choose are some of the least toxic available. Walsh and graduate student Gerta Dupuis are also developing soil temperature sensors to better predict when bees will emerge in the spring, giving farmers a head start on spray reduction.

Studies conducted by Walsh and his predecessors have even influenced state and local laws aimed at protecting the county’s insect partners—especially when the tiny creatures cross roadways. Alkali bees fly low to the ground and can travel up to five miles in search of pollen and nectar, so they are often hit by cars. The faster the speed, the more bees killed.

As a result, Walla Walla County claims to have the only government- created speed limit for an insect, says Walsh. The back roads are adorned with orange traffic signs warning: Speed limit 20 MPH, 8 a.m. till 8 p.m., alkali bee area.

They also have ordinances for pesticide use and one that limits the number of honey bees allowed on property between June and September. “Honey bees steal nectar and food from the alkali bees,” says farmer Mark Wagner Jr. “They’re a detriment to alfalfa seed production. They also sting our workers!”

Though honey bees can pollinate alfalfa, they aren’t very good at it, explains Walsh. Alfalfa bloomer have a trip mechanism that stops the bee on the head with pollen. The bee then carries the pollen into the next flower.

“Honey bees don’t like that, so they learn to chew a hole under the blossom to suck out the nectar,” he says. “It only takes a honey bee worker one day to learn not to get gobbled.”

To help ensure a fully-pollinated crop, Wagner instead relies on imported Canadian alfalfa leafcutter bees (Megachile rotundata). A bit smaller than alkali bees, the leafcutters are cavity-nesters and live in a series of white bee hives set on stilts throughout the alfalfa fields. These miniature high-rise hotels are stacked with bee boards filled with hundreds of holes. Swarms of leafcutter bees hover around the “downstairs,” their rapidly-beating wings filling the air with the loud drone we first heard from the car.

The “bee bed” we’re observing is something absolutely unique to this little corner of southeast Washington—the only place in the world where farmers cultivate native alkali bees, Nomia melanderi, known for use as crop pollinators, specifically for producing alfalfa seed.

In return for building attractive nesting grounds for the bees, growers in the Touchet-Lowden-Gardena area are rewarded with 50 percent higher yields of alfalfa seed per acre than other producers. In fact, 27 percent of the nation’s alfalfa seed crop is grown here, which is then sold to raise alfalfa hay, the fourth largest agricultural crop in the United States. Hay, in turn, feeds cattle who produce beef and is then sold to raise alfalfa hay, the fourth largest agricultural crop in the United States. Hay, in turn, feeds cattle who produce beef and is then sold to raise alfalfa hay, the fourth largest agricultural crop in the United States.

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West of the Cascades, WSU entomologist Dave Crowder and doctoral student Elias Bloom are investigating the role of native pollinators in Seattle’s urban environment. Their Citizen Science Initiative for Bees (CSI Bees) includes the first comprehensive survey of wild bee diversity in the Puget Sound region. In fact, across the Pacific Northwest, WSU researchers lead the way in pollination ecology and efforts to conserve threatened populations.

By some estimates, pollinators like bees and butterflies produce two thirds of the world’s food supply. Recent studies, however, have shown dramatic declines in many of these species, with some nearing extinction. Once common and widespread, the western bumble bee (Bombus occidentalis) has disappeared from large parts of its former range and other species are following suit.

“Wild bees are affected by the same pesticides, fertilizers, and herbicides that harm honey bees,” says associate professor Crowder. “But most important, they are impacted by the loss of habitat. “As we convert natural landscapes into agriculture or housing developments, we destroy some of the normal nesting sites,” he says. “Homing up ground and planting huge monocultures may deplete nesting options for ground-dwelling bees. Clearing forests and other vegetation decreases options for cavity nesters.”

And, although there is scientific value to preserving species, Crowder says on a practical level, we need them to pollinate our food crops and native plants. In fact, for certain crops, wild bees are more effective pollinators than commercial honey bees.

“Take the fuzzy bumble bee which has developed the clever trick of ‘buzz pollination’ to release tightly-held pollen grains in cramberrys and blueberries. They do this by vibrating their wings from the wing muscles, grabbing onto the pollen filled anthers, and rapidly vibrating their bodies, something honey bees can’t do.

Studies also suggest that crop yields are improved when both wild and honey bees are present in the same field. Like an insurance policy, the biodiversity provides farmers with more reliable pollination.

Tim Lawrence, associate professor and Island County Extension director in Coupeville, has been keeping bees for 56 years, including a stint as a professional bee wrangler. He shares an inside look at the natural abilities of wild pollinators, which are facing threats to their survival. Lawrence says he is currently watching a patch of flowers on the other side of the road to see if wild bees have developed the same trick.

“Some, you’ll see a bee hovering over a flower and then land on one that indicates it hasn’t recently been visited by other bees and is more likely to offer a pollen or nectar reward.” Bees also have the help of a lethal ultraviolet guidance system. “If you look at a flower under a black light, it shows ultraviolet radiation coming off like landing strips at an airport,” he says. “These lines guide the bee to the nectar and pollen.”

Despite their natural abilities, wild pollinators face an uphill battle against the challenges of climate change, widespread chemical use, and ongoing habitat destruction.

Crowder says the American public is stepping up to help. Citizen scientists across the nation have joined forces with federal and academic researchers to gather data and help restore pollinator habitat.

On a local level, he and Bloom launched the Northwest Pollinator Initiative in 2015 to study habitat conservation on small farms in western Washington. The initiative includes CSI Bees, a community information-sharing network where volunteers learn to observe, monitor, and catalog wild bee diversity throughout the region.

“The level of enthusiasm has been through the roof,” Crowder says. “Well over 100 citizen scientists are participating in some of our different projects.”

Crowder and Bloom began their efforts in 2013 when they reached out to Bob Redmond, founder of Seattle non-profit The Common Acre, who helped locate urban gardens for study and introduced them to local farmers.

Unlike the east side, western Washington farms are typically under the same trees, which in turn, helps keep wild bee communities healthy year round.

Crowder and Bloom have since established a network of about 36 sites for sampling bees—everywhere from downtown Seattle, Tacoma, and Olympia to outlying rural areas.

As a result, they’ve made significant progress in documenting the types of pollinators living around Puget Sound, and are now using the data to help develop long-term conservation plans.

Their first step was to team up with F-Patch, a group of Seattle community gardeners, where they recently installed a number of “habitat augmentation treatments.”

Each treatment area consists of a patch of bare soil for ground-nesting bees, a section of lavender, lupine, or other flowers, and a bee hotel for cavity-nesters—often, incidentally, painted in bee-attracting bright blue.

CSI Bees volunteers observe these treatments and meticulously record the types of bees, wasps, flies, spiders, butterflies, and other insects that visit. In time, Crowder and Bloom will compare their results to observations made on farms without augmentation. The goal is to try to increase pollination and crop production.

They also hope to verify that the bees will continue flying out to the crops.

“Ultimately, we want bees to increase our food supply. If we provide too nice a habitat for them, there is the risk that they will have no need to search for pollen and nectar in the fields,” Crowder says. “These enhancements take time, labor, and money, so we have to know if the effort pays off for farmers to invest in it.”

If nothing else, Crowder and Bloom’s efforts have paid off in motivating people.

“ел is probably asked to give up to 20 presentations per year to everyone from 4-H groups, schools, Master Gardeners, and Boy Scout troops, to farmers and home gardeners,” says Crowder.

“Every year, we put on multiple field days and workshops where we teach people to monitor and provide them the tools to augment habitat in their own gardens.”

“We’re now starting similar pollinator surveys in the Palouse area of eastern Washington.”

There, among the vast monocultures of wheat, peas, and lentils—which don’t require insects for pollination—Crowder and Bloom have discovered an unexpected flurry of diversity in the canola fields.

“Theenroach has seen bee species in the area that benefits from the service of bees, but you expected most to be honey bees from local beekeepers.

Instead, net samples revealed over 100 different pollinator species flying through the canola fields. Only 20 species, including bumble bees, sweat bees, honey bees, mining bees, butterflies, flies and even a variety of leafcutter bees.

“I was surprised at the diversity,” he says. “There are very few patches of natural Palouse prairie habitat left to support bees, and those that are there must often travel long distances to find a canola field.”

CSI Bees’ volunteers keep a close watch on the canola fields, recording pollinator diversity, and educating farmers about the importance of pollinators.

“Putting them in a cold, perfectly dark room appears to cause the queens to stop laying eggs and workers to stop raising the brood,” he says. “So, we resurrected this subspecies with frozen semen and have now used it to colonize every other subspecies in the country.

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Honey bees are already being used to pollinate crops in other parts of the world, but the Western honey bee project is the first of its kind in the United States.

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Opposite: The honey bee can become a more efficient pollinator when wild bees are present.
A woman lies dying in a hospital bed in an acute care facility in Nevada. She has a common infection induced by a common bacterium, *Klebsiella pneumoniae*. But she’s untreatable: her infection is resistant to all 26 of the antibacterial drugs available in the United States capable of treating the bacterium. The infection spreads further, which causes her blood pressure to drop precipitously until she finally succumbs to septic shock.

While death by “superbugs” is still fairly rare, the World Health Organization warns that, if bacteria keep evolving drug resistance at the rate they have been, such bugs will globally cause 10 million deaths per year by 2050. Not all resistant bugs are “super,” as microbes vary in their acquisition of the genetic tools needed to resist the effects of drugs.

These more common drug-resistant microbes already infect over 2 million Americans annually, resulting in 23,000 deaths, as conying to the Centers for Disease Control and Prevention. Microbes resistant to healthcare’s armamentarium of antibiotics and other antimicrobials are rapidly pushing up the costs and risks of treatment, as doctors must prescribe last-resort drugs that are both expensive and that, when used, risk inducing further resistance.

And while pharmaceutical researchers may be able to develop new antibiotics, bacteria are going to keep evolving, at the rate of one generation every 30 minutes or so, and winning the resistance war. But new research at Washington State University and elsewhere suggests that broad-spectrum antibiotics might be at least partially replaced with a multifold strategy: a variety of more narrowly targeted drugs, including one strategy that exploits the power of the cell being attacked to fight off infection.

Additionally, experts at WSU, along with their colleagues at the Washington State Department of Health, say that one of the main strategies for combating antimicrobial resistance is through stewardship of the current suite of antimicrobials, meaning they must be used much more judiciously. Another is deceptively simple: to improve our personal hygiene and food handling practices and thus block the transmission of infectious bacteria.
WSU pathologist Guy Palmer compares antimicrobial resistance—AMR—to a car wreck. We sit up and notice when a plane crashes, no matter how rare that is, just as we do when a scary disease outbreak, like the 2014-15 Ebola epidemic, grabs Americans into awareness about our vulnerability to the spread of infectious diseases. Car crashes, though, while taking far more lives than do planes, barely register on our public health radar.

As WSU epidemiologist Margaret Davis (’85 DVM, ’92 PhD Vet. Sc.) points out, “I think most of us feel distant from that scenario because most of us don’t have infections in the hospital.” But if you are talking about hospitalized people, or people with immune systems that are suppressed for whatever reason—there are a lot of people in that situation.”

Doug Call, a ’97 PhD Zoologist, a microbiologist and a colleague of Palmer’s at WSU’s Paul G. Allen School for Global Animal Health, worries that we don’t do enough public education regarding microbes and their health consequences. Where, he asks, is there room in the public school curriculum to teach kids how to prevent the spread of microbes through such basics as good hand washing and safe food handling?

Call, Palmer, Davis, and their public-health colleagues in the Washington State Department of Health, all agree that blocking transmission is the essential frontline defense that must be reinforced. And while the CDC funds surveillance and infection prevention programs for public health agencies, the “last mile” problem—how you and I fit into the face of spreading AMR—is much harder to deal with.

And then there’s the fact that we are, like it or not, a global community. What happens in Scotland or Tanzania affects us here—and no borders will ever keep microbes out. They arrive on humans, sure, but also on food and any remotely hospitable-to-microbes surface.

It is, as Call asks, and others confirming AMR, say, the very definition of a “wicked” problem: deeply complex and with no simple solution.

AMR is as ancient as microbial life itself. Although humans began consciously using antibiotics to combat infections and diseases less than 100 years ago, microbes have been doing it for billions of years. Fifteen-million-year-old microbes with resistance genes have been found in ancient permafrost. In water, soil, and everywhere microbes are found, they are competing for resources and do so with what some scientists have called “chemical warfare.”

The first antibiotic was in fact a chemical extracted in 1928 from Penicillium notatum, a fungus. By the end of the second world war, resistance to penicillin was already resulting in untreatable infections. That’s because whenever bacteria (and, for that matter, viruses, fungi, and other microbes) encounter antimicrobial chemicals, whether human-made or otherwise, they either die or evolve. The ones that survive pass on their resistance genes to their kin.

A WICKED PROBLEM

Bacteria have a distinct evolutionary advantage over humans, inasmuch as they reproduce, and thus adapt to changes in their environment, very quickly. Bacteria also exchange genes via plasmids—tiny bundles of genetic material that can be shared with neighboring bacteria—in a process called horizontal gene transfer. Bacteria have evolved methods of resisting the chemicals designed to kill them. They build protective walls around the sites where antibacterial drugs are designed to latch on to the organism and disrupt reproduction or metabolism. Or they have pumps that sense the presence of a toxic compound, and pump it right back out again.

The reality is that modern healthcare is dependent on antimicrobials. Before 1950, infection and pneumonia were the primary killers of humans, but since then antimicrobials and other antimicrobials have saved millions of lives. As Palmer recently told a room full of health-care professionals, “Transplantation and chemotherapy are not effective without antibiotics. Childbirth is much more dangerous. Pretty much every aspect of modern healthcare relies on the availability of effective antibiotics.”

While AMR is naturally occurring, it has spread rapidly in recent decades due to the widespread use of antibiotics in humans and animal health. Indeed, as researchers from both the WSU College of Veterinary Medicine and Washington Department of Health say, there is much finer pointing. Is it the use of antibiotics in dairies and other livestock production situations that is responsible for the spread, or is the lack of stewardship and infection prevention in health-care facilities the cause? The “wicked” answer is that AMR is a result of both, and much more. AMR is, say experts, a “one health” problem that involves humans, animals, and the environment.

While use of antibiotics in the livestock industry varies, consumer demand has resulted in several companies, such as Pizza Hut, Costco, and Walmart, to stop selling chicken that’s been exposed to antibiotics.

Even so, just because you buy something at the store, stress both Call and Davis, don’t assume it is perfectly safe. Davis recalls a story she heard in the 1990s when she worked in public health; around the time of an E. coli outbreak. “A toddler pulled the fridge door open, saw some raw hamburger on the shelf, pulled it out, and started eating it,” she says. “Even if you handle food perfectly, that kind of stuff happens.”

As Call says, foodborne illness is not a matter of if, but of when. That’s why restaurant workers must be specially trained to handle and prepare food safely—a training that would no doubt benefit everyone who handles and prepares food. “Attention to bacterial transmission is probably orders-of-magnitude more important in hospitals where the most vulnerable patients are at risk,” he says.

CAR WRECKS IN SLOW MOTION

For most people, AMR is the car wreck that happens to whoever else. Bad, but no reason to change our personal behaviors. Jon Yoder, an economist at WSU, studies exactly that kind of situation as he looks for ways to motivate people to change.

Economics, as Yoder points out, is a social science focused on the reasons people do what we do. One of the reasons most of us don’t do much about AMR is because the costs associated with AMR are “external.” If you don’t personally pay the direct cost of antibiotic use, you’re not likely to reconsider the way you use them. It’s somebody else’s problem.

For example, if I use antibiotics to treat a cold, I’ve done something that promotes the spread of resistance genes—and that’s completely ineffective because of course the common cold is caused by a virus. But I may not have to pay the price; rather, the person in the next hospital bed over may be the one to contract an untreatable infection. Likewise, the use of personal care products containing triclosan, an antibacterial in thousands of products, externalizes the cost of resistance by polluting the commons, the shared resources we all depend on for life.

Yoder is looking for ways to create incentives that will result in people recalculating the way they use antibiotics. Regulation and taxes are two common solutions. As with carbon emissions that contribute to global warming, it might be possible to tax antibiotic use—in essence raising the price of treatment—so they are used less frequently. But Yoder points out, taxation and regulation are fairly blunt instruments with ethical challenges, especially where access to healthcare is limited. The world is much more complicated.

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Take the use of antibiotics in Kibera, for instance. Kibera, on the outskirts of Nairobi, Kenya, is one of the world’s largest informal communities. “A slum, in other words,” Call says. “A toddler pulled the fridge door open, saw some raw hamburger on the shelf, pulled it out, and started eating it,” she says. “Even if you handle food perfectly, that kind of stuff happens.”

He and other WSU researchers have spent time there trying to get a handle on the microbial situation. With 77,000 people per square kilometer and sharing a very limited number of public toilets, there is often no choice except to dispose of waste in the alleys between buildings. Such conditions are ideal for promoting disease transmission and ramping up the demand for antibiotics.

In many parts of the world, including Kenya, access to antibiotics is restricted only by cost. But, as Call says, who’s to say that the use of such drugs is inappropriate when your health may depend on them? Taxing or regulating the use of antibiotics in such situations would be inhumane.

As Call stresses, the solution is blocking transmission, making the use of antibiotics unnecessary. Sara Podczervinski is an infection preventionist with the Washington State Department of Health, and blocking the transmission of disease-causing microbes is both her work and her passion.

“We’ve really expanded the number and types of health-care facilities we’re working with. You talk about hope,” she responds when asked about how she sees the future of our collective lamentancy of antimicrobial resistance, “that’s where I see a lot of hope.”

Where once infection prevention was largely the sole purview of hospitals, the practice is spreading to long-term care and ambulatory surgery facilities, dialysis centers, and indeed every aspect of healthcare.

“Then, when you think beyond the hospital walls,” she says. But you have to think about the walls, too, and that’s just what is happening in facility design. Facility planning now involves not just architects but their clients: the doctors, nurses, and support staff who need quick and efficient hygiene practices.

Before something even gets built, Podczervinski says, building designers sometimes “take us to a warehouse where they have a cardboard mockup of everything, so you could walk through to see if the spaces make sense.” Patient and caregiver flow are important considerations in blocking the transmission of infectious agents. Even in older buildings, infrastructure is being tweaked to make access to things like sanitizing hand gelis “closer to where the action actually is” instead of
down the hall—where the pressure of time may put it out of reach.

Stewardship of antibiotics and surveillance of where AMR-associated infections take place are the purview of Podczaski’s DOH colleagues Marisa D’Angeli and Kelly Kauber (‘08 ANI SCI., ‘11 BSL). Stewardship, Kauber says, is an effort to conserve the efficacy of antibiotics by making sure they are only used when really needed. This requires a “one health” approach because, says D’Angeli, “we don’t know whether the biggest problem is coming from antibiotic use in humans, in animals, from pollution, from people throwing their antibiotics down the toilet—but we really want to move the needle in the right direction everywhere antibiotics are used.” Everyone has a stake in better use of antibiotics, D’Angeli continues, “and everyone should play a role. Whether as a prescriber, a farmer, or a parent, or somebody who needs to get back to work and wants an antibiotic because they think it’s going to make them feel better. My experience is that often an antibiotic is prescribed as part of a whole package of things.”

D’Angeli’s prescription is to “take a step back and be more thoughtful about these things.” And, adds Kauber, “wash your hands.”

**Americas Most (not) Wanted Super Bugs**

**Hazard Level: Urgent**: These bacteria are an immediate public health threat requiring urgent and aggressive action. C. difficile causes 14,000 deaths a year, CRKP have become resistant to nearly all available antibiotics, and there are over 200,000 drug-resistant gonococcal infections a year.

**Hazard Level: Serious**: Less urgent though significant, these bacteria and fungi claim hundreds to thousands of deaths a year (MRSA 12,000+). Staph bacteria is one of the most common causes of healthcare-associated infections. MRSA is responsible for up to 70% of healthcare-associated bloodstream infections.

**Hazard Level: Concerning**: Although antibiotic resistance is either low or multiple therapeutic options exist, these bacterial pathogens can cause serious illnesses and demand rapid response. Resistance to florfenicol areas leaves few treatment options. Group A strep is the leading cause of “staph”-related disease, and Group B strep causes serious infections in newborns.

**Below**: Tom Kawała. Photo Henry More Jr.
The straight, long rows of tall and thin loblolly pine grow very fast in the South’s flat lands, especially compared to the slow-growing Douglas fir on steep Pacific Northwest slopes.

It’s just one of many differences that Travis Keatley (’99 Forest Mgmt.) has witnessed as he manages more than seven million acres of timber across 11 states for Weyerhaeuser.

As vice president of southern timberlands for the timber, land, and forest products company, Keatley works out of Hot Springs, Arkansas, and travels from Florida to Virginia to Louisiana, and all states in between, as he oversees Weyerhaeuser’s southeastern assets in one of the world’s most abundant source of timber.

Keatley, who grew up in Castle Rock about 50 miles from Mount St. Helens, was amazed at the rapid tree growth. “The growth rates in the South are really impressive,” he says. “You can almost see the trees grow. We can have five- and six-foot trees in some of our best conditions at year two. In the Pacific Northwest, it takes four or five years to do that.”

Keatley’s road to the South came as a surprise for him. After graduating from Washington State University, he had worked first on a research project in the Colville National Forest, then in silviculture for Weyerhaeuser in Longview. That led to management of tree farms and people near his hometown in southwestern Washington, where his family had lived for four generations.

In 2015, when his supervisor asked about his mobility and career path, Keatley didn’t expect an opportunity in Arkansas. Weyerhaeuser had merged with Plum Creek, and she asked Keatley about moving there to play a key role in the transition. “I told her, ‘I don’t know...”
stained blue because of the humidity and the temperature, so the logs have to be processed within three weeks of harvest. “In the middle of summer, if you sever a tree from the stump, in a matter of weeks it’ll get that blue stain color to it from fungus. Nobody wants that discoloration,” he says.

The hot, sticky summers aren’t the only weather obstacle for Keatley and foresters. Tornadoes, hurricanes, and thunderstorms can wreak havoc on the trees and harvest roads. Hurricane Katrina in 2005 killed about 200,000 acres of Weyerhaeuser forest.

“There was one period since I’ve been here where it rained 31 inches in 40 hours in Louisiana,” says Keatley, noting that the trees can drown without the berms to prevent water getting to them. The Southern forests are home to a lot of fauna unfamiliar to Keatley, too. Chiggers and snakes, feral pigs and gopher tortoises live among the trees. “I’m not kidding about the snakes,” says Keatley. He points out that they typically wear snake-leggings to avoid the bite of venomous rattlesnakes and cottonmouth during summer.

Due to generally oversupplied market, the lumber market tends to be more dynamic there, he says. Trees grow so fast, the number of logs exceeds demand. “As long as you put the roots down and the green side up, it’s going to grow,” says Keatley. With demand steadily growing and containing capital investments, the market’s improving.

Keatley says his WSU courses in silviculture and forestry economics from professors like Keith Blatner and Roger Chapman prepared him for directing such a wide expanse of growing and continuing capital investments.

“Tornadoes, hurricanes, and thunderstorms can wreak havoc on the trees and harvest roads.”

There are millions of scenarios and millions of contexts,” says Carolina Parada (’04, ’06 MS Elect. Eng.) from her home in Boulder, Colorado.

A senior manager for Nvidia, a company probably best known in the video gaming community for its top-shelf graphics cards but with a strong presence in the machine learning market, Parada and her team are working on machine perception, a key piece of getting self-driving cars safely on the road.

Parada is no stranger to the cutting edge of machine learning. When you say “OK, Google” to your Android device, you’re using a technology she helped develop. Now she’s got her sights set on teaching cars to see.

“Many of the things we take for granted, like being able to tell a leafless street tree from a skinny teen standing on the edge of the sidewalk, are not so easy for computers. And once it does learn the difference, a process that involves showing the computer “many, many examples” of both trees and standing people, says Parada, it has to learn that difference in a vast array of contexts, from rain and fog to night and day. And that’s before we even get into road signs and markings, which vary by region and country.”

“Most of the time you’re going to be surprised, because it’s going to work out and you’ll build your confidence over time.”

One of her engineering professors, Shira Brescat, is still a friend. Says Parada, “Shira was in Boulder a couple months ago, and she and her husband come over for dinner.”

Parada worked for Brescat for a couple years on computer simulations for bioengineering as well as electromagnetics.

“Making artificial intelligence smart”

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“It’s ‘deep learning’ that ‘enables a computer to learn from vast amounts of data,’ she says. “One of the ways that Parada and her team get voice recognition working was by ‘dogfooding.’ As in, eat your own dog food, because you’re then going to be incentivized to get it right before you teach it to millions of customers. She’d test the system at home, asking her two daughters to interact with it. “The system learns what you give it,” she says. “If the data is more male voices than female, then you’re fine-tuning the system to work better with male voices.”

Parada values diversity on her teams. “It can only help,” she says, to have multiple perspectives on a problem. “Which pretty much sums up her own perspective on engineering—intelligent machines: fast fail and then try something different.”

Parada certainly hasn’t been afraid to take risks. Originally from Venezuela, she was in engineering school in Caracas but dreamed of living in the United States. Her dream was realized when she met her husband, Jorge Bernate (’04, ’06 MS Chem. Eng.), got accepted to Washington State University and moved to Pullman.

Parada and her husband also had their two daughters while studying at WSU. “They were always offering to help. I think it’s worth a shot. That’s how you change the world, by trying things you haven’t tried before.”

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When an international archaeology team needed to understand how an ancient civilization cared for its horses, they turned to Scott Bender ’95, a veterinarian with the Navajo Nation in Arizona.

Bender will be the first to admit that his career didn’t turn out like he expected—in fact, unforeseen twists are among his favorite parts. This particular turn got him involved in a research project that has changed his understanding of a pivotal point in human history: the emergence of horse domestication for war and transportation.

It started with a surprise phone call. Archaeologist William Taylor was examining horses exhumed from ancient tombs in Mongolia. He needed help differentiating between natural dental conditions and human intervention, and Flint Taylor ’93, former director of the New Mexico veterinary diagnostic lab, had recommended Bender for the job.

He couldn’t visit Mongolia, but the project dovetailed nicely with his longtime interest in archaeology. He compared photos and samples of the skeletal remains against these specimens to differentiate natural dental conditions and postmortem damage from human intervention such as tooth extraction or bit wear. His work on the project helped show not only how the advent of equine dentistry helped make horseback riding possible, but also that both developments occurred earlier than previously believed—more than 3,000 years ago.

Bender’s emergence as a veterinary researcher was a bit of a twist in itself. Although he did research with faculty while studying veterinary medicine at WSU, he wasn’t interested in a research career; he was focused on practicing in the field.

As part of his practice, Bender has curated a large library of horse skulls and teeth, many of them with unusual, but natural, dental pathology. He compared photos and samples of the skeletal remains against these specimens to differentiate natural dental conditions and postmortem damage from human intervention such as tooth extraction or bit wear. His work on the project helped show not only how the advent of equine dentistry helped make horseback riding possible, but also that both developments occurred earlier than previously believed—more than 3,000 years ago.

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“I thought I was going to be a cowboy, cow-vert like Baxter Black,” he says, “or else have a practice like the one in Dr. Alf Wight’s James Herriot stories.”

What he has been instead is a mixed-animal veterinarian, treating pets, livestock, working animals, zoo animals, and wildlife on the vast Navajo reservation in the southwest United States. However, his innumerable curiosity and love for exploration (and, he notes, the encouragement of WSU veterinary faculty) pulled him inevitably into research—most of it done on his own time.

He has made important contributions to vaccine development and disease detection and prevention. He’s also adjunct faculty in Navajo Technical University’s veterinary technology program. And as fate would have it, his penchant for research has also connected him to his veterinary ideals. A birth control and rabies vaccine project took him to the clinic in the Yorkshire-dales where Dr. Alf Wight’s pseudonymous James Herriot lived and practiced. And he frequently discusses feral horse issues with his good friend Baxter Black.

“Lugh at times thinking that the reason I avoided an academic veterinary path was the ‘publish or perish’ mantra,” Bender says. “Yet here I am with papers ranging from zoonotic disease to archaeology.”

“Art,” said the Roman philosopher Cicero, “is born of the observation and investigation of nature.”

He said this two millennia before the arrival of Robert Frost, the New England poet who struggled personal, subtle, and often dark themes into a vast, accessible, and popular world. As Virginia Smith notes in her fastidious A Scientific Companion to Robert Frost, the four-time Pulitzer Prize winner drew heavily from the scientific ideas and discoveries that burst forth in his lifetime.

At his birth in 1874, only half the known species of trees, thirty-five species of flowers, thirty species of birds, and hundreds of species of fish were known. By the time he died in 1963, the world seemed to have been “overstocked,” with thousands of species identified in the sciences.

For centuries the Modoc people prospered in the scrubland of Oregon’s Klamath Basin. However, a few enterprising settlers bent on running freight trains through the tribe’s ancestral lands spent their harmonious life in 1870, corralling the Natives into a cramped reservation shared by a rival tribe. Tension between the Indians and settlers grew quickly, stoked by salacious newspaper stories and eye-for-an-eye killings by both sides. Life on the reservation soon became unbearable and the Modoc, burned in peace talks, went to reclaim their homeland, leading them to battle with the U.S. Army.

What followed was the most expensive conflict between the United States and Natives in the country’s history. Compton’s blend of dogged fact-finding and storytelling prowess paint a portrait of that piece of American history that’s as beautiful as it is disturbing.

—Will DeMarco ’38

Descending a great bluff towering above an endless sea of black in early 1872, the militiamen climb their rifles tighter as they wade into a thick gray fog among southern Oregon’s lava beds. A deafening crack and the flash of gunpowder pierces the dense mist. The bewildered U.S. troops search frantically through the opaque hellscape for any sign of the enemy, and then flee to the hills with 10 percent of their force dead.

The humiliating defeat of more than 1,000 soldiers to 66 Native Modoc warriors fighting from their impenetrable fortress was but one of the Modoc War’s many brutal tales, each recounted in grisly detail through Spirit in the Rock: The Fierce Battle for Modoc Homeland.

—Jim Compton

Complexity in a Ditch: Bringing Water to the Idaho Desert

Growing up on a farm near Idaho, the young Hugh Lovin would engineer ways to divert water to the crops he produced for his livestock. Later in life, after years of writing
The seventy-second floor of the STEPHENSON SOUTH residence hall housed seven strangers. The stranger part didn’t last, as they soon became fast friends and poker buddies.

Today, those seven friends still meet and play cards, and have done so for the past thirty years.

“We just immediately bonded,” says Marc Anderson. 76.

Anderson was a sophomore when he lived in Stephenson while the rest of the group were freshmen. The friends hailed from all over Washington: Tacoma, Gig Harbor, East Bay Drive, Oak Harbor.

Most of the group still lives in the state while one is in Idaho and another in California. Despite the distance, the friends have stayed in touch and had their first gathering in 1982.

Within Facebook or text messages, at first the group would see each other at weddings or send Christmas cards. After a few years, they decided to formalize an annual get together.

During their five-day reunions, which are held in rotating locations, the group kicks off with a weenie roast and catch-up session, followed by outdoor activities like golf and hiking. They also play poker, a game Anderson says the group bonded over in college.

“I’m not sure that they started as strangers. ‘We’ve become so close it’s hard to believe it was a random pairing at Stephenson South.’”

Although the friends have fun every summer, they are also there for each other through life events. Anderson says they’ve supported each other through parent deaths, cancer, weddings, and funerals.

The group has had 100 percent attendance for about 30 years. Anderson says he had to miss the reunion a few times at first, but now it is the norm for everyone to show up every time.

“We’ve got a commitment to each other, so we make it work,” he says.

It is a lot easier to connect these days with social media, but the group believes they are the longest-running, continuous alumni meetup.

“You gotta keep that Cougar spirit going,” says Anderson.

YASMEN WAFAI 78

EYES WIDE OPEN

WASHINGTON STATE MAGAZINE WINTER 2018

STEPHENSON SOUTH RESIDENCE HALL

BRIEFLY NOTED

Freedom’s Racial Frontier: African Americans in the Twentieth-Century West

Edited by HERBERT G. KUPFEN AND DWAYNE A. MACC 9 PHD HISTORY UNIVERSITY OF OKLAHOMA PRESS 2018

Between 1940 and 2010, the black population of the American West grew from 710,400 to 7 million. With that explosive growth has come a burgeoning interest in the history of African American West—an interest reflected in the range and depth of the works collected in Freedom’s Racial Frontier that looks, current, and future generations of African American Western scholarship. The West is revealed as a place where black Americans have fought—and continue to fight—to make their idea of freedom live up to their expectations of equality. Mack is Carter G. Woodson Chair in African American history and associate professor of history at Berea College, author of numerous articles on African American history, and coeditor of Beginning a Career in Academia: A Guide for Graduate Students of Color.

Girls on Fire: Transformative Stories in Young Adult Literature

SARAH HENTGES ’06 PHD AMER.

STUDIES

MICHALAN SYLVESTER

2018

Hentges delves into the dystopian imagination portrayed in some 140 young adult novels. By focusing on the intersections of race, gender, class, sexuality, and power, Hentges “girls on fire” inspires transformative transformation and inspire hope for a better future.

Ludwig Richter: The Story Artist

MARK H. BROCKHAUS ’69 NURSING

2018

Nineteenth-century German artist and book illustrator Ludwig Richter’s illustrations were used in novels, children’s books, travel guides, calendars, brochures, and songbooks. In this biography, Richter’s work, and the art of his friends and colleagues, is featured in over 150 color images.

AL (56 Ch E) and SHARICE JONES (65 Speech & Hearing Sci.) received a Philanthropists of the Year award for their services to Clark County. The Kirkwood estate at WU’s head farmer and namesake when they were junior. The couple has worked with several organizations in Clark County, including the Boys and Girls Club of Southwest Washington and Clark County Food Bank.

GORDON DAVIS (68 Ag., 89 Ed.) received the Rudy L. McIsaac Outstanding Philanthropist Award from the National Agricultural Awareness Development Association. A longtime agricultural educator at the high school and university level, Davis coached collegiate and national jumping teams, including two national champions in team events in 1975 and 1985.

ARTHUR BOGAN (’72 Anthro) of the North Carolina Museum of Natural Sciences has received a Fulbright U.S. Scholar Program award to Portugal in entomology research. He will study invasive modules during his time at the University of Porto.

STEVE LARSON (’76 MA, ’78 PhD Entom.) , a research entomologist with USDA-ARS for the past 40 years and recently retired, was awarded the J. H. Comer Award for Entomology, the highest award given by the South Carolina Entomological Society. He was also honored for serving as editor of the journal of the Society, Entomologist from 2010-2017.

WILLIAM M. McCREDY (’76 Comm.) was selected as the new Rotary District 5300 governor for 2019-2020. McCredy has had 43 years of experience in the financial industry and is the founder and CEO of Guardian Fiduciary, an investment advisory firm.

DENNY WALLACE (’76 Ed., ’81 Human Dev.) , Washington state FFA advisor was chosen to serve on the FFA Board of Directors at the National Association of State Supervisors of Agricultural Education representative. Homebuilding company TRI Pointe Group appointed its board of director VICKI D. MCWILLIAMS (’76 MS, ’78 PhD) , executive vice president of stores for TRIPointe Group appointed to its board representative.

TRI Pointe Group appointed to its board representative.

WILLIAM K. HUNTER (’75 Psych.) is the highest honor for a professional in the line, uniform, and facility services industry. Larson worked for Alco since he was in high school in Tacoma.

REBECCA MCBRIE-WILSON (’75 Psych.) was named collector for Lincoln County, Oregon, Health and Human Services, after serving the previous seven years as director of the Lincoln County Federally Qualified Health Center. Before starting with the county, she spent 33 years with the Portland Veterans Administration, working in chemical dependency and mental health.

St. Michelle Wine Estates CEO TED BASERLLE (’76 Comm.) ‘ decided after 34 years with the Woodinville winery. During his time with the company, including the last 17 years as CEO and president, Bollee became renowned for his work with the Portland Veterans Administration, working in chemical dependency and mental health.

McElroy has had 41 years of experience in the financial industry and is the founder and CEO of Guardian Fiduciary, an investment advisory firm.

DENNY WALLACE (’76 Ed., ’81 Human Dev.) , Washington state FFA advisor was chosen to serve on the FFA Board of Directors at the National Association of State Supervisors of Agricultural Education representative. Homebuilding company TRI Pointe Group appointed its board of director VICKI D. MCWILLIAMS (’76 MS, ’78 PhD) , executive vice president of stores for TRIPointe. McElroy has had 43 years of experience in the financial industry and is the founder and CEO of Guardian Fiduciary, an investment advisory firm.
In 620 stores. Prior to joining Williams-Sonoma in 2008, McWilliams spent 29 years at Nordstrom, most recently serving as executive vice president.

JANET KUSLER ’80 (Pham) was inducted into the Snohomish County Sports Hall of Fame. Kusler is one of four female athletes who were inducted. She was a four-year starter for the WSU women’s basketball team, and later joined the AAU Seabirds and helped lead them to an AAU national championship. The Ecosa Institute welcomed landscape architect CHARLES ANDERSON ’81 (Landscape Arch.) as a new faculty member. Anderson will facilitate a semester-long immersion program that focuses on ecological design as a problem-solving tool. Anderson has been a professor and lecturer at universities across the Northwest and Southwest and has been featured in several design and architecture magazines. The Daily Herald in Everett promoted ERIC STEVICK ’81 (Comm.) and RIKKI KING ’10 (Pol. Sci.) to local editor and assistant local editor respectively. Stevick has been a part of The Herald’s staff for 28 years and King for 8.

SHARRI HALLIDORSEN FREDRICHSEN ’82 (Busi.) received a 2019 Trailblazer Award for the California Society of CPAs. CalCPA also awarded her the 2018 Women in Tax Award for Experienced Leaders. LORA KNOWLTON ’82 (Forest Mgmt.) is owner of Current Forests LLC in Littleton, Colorado. She also serves as one of the founding board members of the Columbine Memorial Foundation.

NOBERT CHRIASE ’83 (MS Arch.) received a U.S. presidential award for his work on expanding exports. Chriase, originally from Ghana, has been at the forefront of research on fulvic and humic mineral complexes. KELLY SUSWIND ’84 (Geo. Eng.) was chosen to be the Washington Fish and Wildlife Commission chief. Suswind was previously in the Department of Ecology and worked to prevent water contamination. Oregon Governor Kate Brown appointed SHANNON CALEY CARDFOOT ’96 (Nursing) to the Nursing Staffing Advisory Board for WSU since we launched our drive in 2003. While other alumni associations across the country are decreasing in membership, we are excited at the momentum and support from our alumni. Which, in all honesty, does not surprise me because Cougs are the best!

Larry: How can Cougs help?

Ashley: WSU is currently number three in the Pac-12 for the percent of alumni who are members, behind Stanford and Cal. That’s pretty good, but I know we can do better. So, if you are not a member, please join. If you are a member, ask your friends to join the WSUAA. The more alumni and friends we get to join the WSUAA, the closer we get to number one in the Pac-12.

Larry: Is there anything about this membership drive that you’re particularly excited about?

Ashley: Reaching 40,000 members will be beyond exciting! One of our motivations behind this drive is to bring together students, faculty, staff, alumni, and friends in support of WSU. We want to thank them and showcase the impact they have on our University. One thing that I am very excited about, we have created an online mosaic for all members to upload their favorite WSU photographic memories and tell us about their love for our great University as a way for Cougs to share their pride! To upload photos, Cougs can go to www.wsuaa40by20.com to get started.

Larry: Is there anything you want to add?

Ashley: Go Cougs!
the state of Oregon. The term will last two years. T.E.N., a technology and information security executive networking and relationship-marketing firm, presented CHUCK MARKARIAN (’86 Math., Ed.), chief information security officer for PACCAR, with the Information Security Executive of the Year Award for the region. Key Technology appointed BRENT LAUREAU (’87 Ag. Ed.) as its new police chief. Laureau not only manages sales in these regions, but also maintains Key Technology’s relationship with PepsiCo’s global business as their major account manager. The Auburn Police Department hired WILLIAM PIERSON (’89 Socio.) as their new police chief. Pierson’s career has spanned 28 years.

In addition to her experience in several administrative roles, Riggs was also a language arts and writing teacher. WARD FLEISCHMANN (’70 Washington) is the new general manager at the Chevrolet of Everett. Fleischmann has more than 25 years of experience in the car business and was previously the general sales manager at the dealership.

TERRI TRICK (’89 Marketing) became president of Alpha Phi Foundation announced REBECCA ANDREW ZANA TT A (’97 Comm.) and three others to their board of directors. Zanatta, from the Beta Rho chapter of Alpha Phi sorority at WSU, was appointed to a 2018-2020 term on the board.

KARA KAELBER (’98 Hus.) joined the Washington Agriculture and Forestry Foundation as a program manager. Kaeliber is a 2016 alumna of the foundation’s AgLeadership Program.

PETRA, Inc. promoted BRETT MYKRON (’99 Civ. Eng.) to president. Myron has managed both private and public sector multimillion dollar projects for the construction company since 2005.

JEREMY BORDNER (’89 Arch.) is back at JRJ Architects in Beaverton, Oregon, as senior project manager. Rogers has been in the design and project management field for 19 years.

BEN FERNEY (’07 Sport Mgmt.), as a new assistant superintendent for the Gresham-Barlow School District. In addition to her experience in several administrative roles, Riggs was also a language arts and writing teacher.

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I N M E M O R I A M


A S A C R I F I C E , F O R G O T T E N , n o t o u r s t o r y

World War I ended 100 years ago this November 11, when 116,516 Americans gave their lives. Forty-three of them had attended Washington State College and their names grace a plaque on the Veterans Memorial at the heart of the Pullman campus.

Ian Price was one of the fallen.

Price graduated from Pullman High School in 1916. He played football, basketball, and track, and helped Pullman High to the state football and basketball championships his senior year.

That fall he entered WSC and played on the freshman basketball team. The following season, Price started as forward in all 26 games for a Crimson and Gray varsity team (they wouldn’t be known as Cougars until 1919) that put together one of the greatest seasons in Washington State basketball history.

Depth was a luxury that Coach J. Fred “Doc” Bower did not enjoy, so Roy Bower (captain and brother of the coach), Ed Copeland, Bob Moss, and Al Sorenson also played every game.

Starting the 1916–17 season with an 8–0 record, the Crimson and Gray went into a key stretch of back-to-back games at the beginning of the year.

WSC entered the Washington series with a 25–1 record and 8–1 in Pac-10 Conference play.

The January 8, 1919, edition of the Evergreen reported that Price was seen hobbling around campus on a cane.

However, injuries did not deter the team. The Crimson and Gray defeated Washington 31–24 and followed that up with a 26–14 triumph.

After improving to 15–0, WSC fell for the only time of the season at California, but quickly avenged the loss with a 22–19 victory over Cal the following day.

WSC completed the 1916–17 campaign 25–1 and 8–1 in Pac-10 Conference play. It was even more remarkable considering the team played 18 of its 26 games on the road.

WSC claimed its first Pac-10 Conference championship, in addition to defending its Northwest Conference title. Nearly four decades later, the Helms Athletic Foundation named the team as national champions.

Today, Washington State is listed as the 1917 men’s basketball national champion by the NCAA.

The United States’ entry into World War I altered the lives of millions of Americans, including Price and Copeland of the WSC basketball team. Price enlisted with the Marine Corps and trained in California and Virginia before sailing overseas in August 1918. He fought in the Meuse-Argonne offensive in France, the biggest operation of the American Expeditionary Force (AEF) during the war. The battle ran from September 26 through the signing of the armistice that ended the war on November 11, and 26,777 AEF soldiers were killed. Price was one of the fallen.

He was killed in action on November 3, 1918. His final resting place is at Plot A, Row 21, Grave 23 at the Meuse-Argonne American Cemetery in Romagne, France.

The January 8, 1919, edition of the Evergreen delivered the sad news to Pullman. The Tribune stated Price was one of the greatest all-around athletes from the school who had “reached the zenith of his remarkable basketball career, and was a potent factor in the winning of both the Northwest and Pacific Coast Conference titles for his college.”

It also described Price as “a class of man who would ungrudgingly give his last penny to his friend... and as a result of his unselfish disposition and his spirit of wholeheartedness his circle of friends included the entire community.”

Below: 1917 National Champion Basketball Team. Ian Price is at the upper right.

By Jason Krump ’93

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THEY SAY DOGS ARE MAN’S BEST FRIEND. WSU’S KATRINA MEALEY MAY BE DOG’S BEST FRIEND. AS THE RICHARD L. OTT ENDOWED CHAIR IN SMALL ANIMAL MEDICINE AND RESEARCH, KATRINA INVENTED AN INEXPENSIVE TEST TO FIND OUT WHETHER DOGS HAVE THE MDR1 GENE MUTATION, WHICH MAKES THEM SUSCEPTIBLE TO A VIOLENT OR FATAL REACTION TO CERTAIN ANTIPARASITIC DRUGS.

Learn more at foundation.wsu.edu/katrina

Your generous support helps fund research that saves countless dogs’ lives every day.

Watch Dr. Universe explain about earwax, plant sunburns, beehive shapes, and more on local PBS stations across Washington. Thanks to a partnership with Northwest Public Broadcasting and the Edward R. Murrow College of Communication, short animated Dr. Universe videos will answer compelling science questions from kids.

You can find the videos—and help kids submit their own questions—at askdruniverse.wsu.edu.

IN MEMORIAM


MARTYN WATERS (’97 DVM), 57, October 26, 2016, Eugene, Oregon.


Call the WSU Foundation Gift Planning Office at 800-448-2978 or visit foundation.wsu.edu/ira to learn more.

At 70 1/2, you're required to withdraw from your IRA.

Did you know you can transfer those funds directly to the WSU Foundation, avoid paying income tax, and continue to support the next generation of Cougs?

STORIES, PHOTOS, PAINTINGS, AND BELONGINGS

Like baskets and tools tell the rich history of Plateau tribes of the inland Pacific Northwest, a history now shared online.

The Plateau Peoples’ Web Portal, a gateway to those cultural materials, is maintained by Washington State University’s Center for Digital Scholarship and Curation (CDSC) in partnership with WSU’s Native American Programs.

The materials have been chosen and curated by tribal representatives from the Spokane Tribe of Indians, the Confederated Tribes of the Colville Reservation, the Confederated Tribes of the Umatilla Indian Reservation, the Coeur d’Alene Tribe of Indians, the Confederated Tribes of Warm Springs, the Nez Perce Tribe, and the Confederated Bands and Tribes of the Yakama Nation.

The CDSC also sponsors other innovative digital research projects at WSU, such as a public history of the Spokane River, digitized profiles of Washington State College students and alumni who served and died in World War II, and documentation of pivotal incidents in Hanford’s history of secrecy and safety.

CDSC and Plateau Peoples’ Web Portal: cdsc.libraries.wsu.edu

Photos courtesy CDSC and Wikimedia Commons.