Features
From one ancient event to the relationship of our crops to microbes, a WSU scientist explores the possibilities of symbiosis. 24

Despite the hurdles, a new crop of Washington small farmers are finding their way into the field. 30

Upfront
Virtually going where you have never gone before 8

A viral response revisited: The 1918 pandemic at WSC and a modern-day plague journal 10–11

Inspiring students to dream beyond the limits of cultural stereotypes 14

An orchestra conductor’s concerted effort to give voice to unsung composers 16

Home—whether here or across the Pacific—is in her heart. 17
Chasing glacier “mice” in the world’s coldest locations

LAST WORDS

52

Departments

5 Symbiosis

FIRST WORDS

20 Kyle Smith—guiding a transition game

21 Butch and the Butchmen

SIDELINES

22 A new apple star comes to market

IN SEASON

37 The ultimate physical exam

Taryn your radio ON

39 Five questions with Jennifer Adair

Building on new directions

ALUMNI PROFILES

40 by ’20

41 Do No Harm, Saving the Oregon Trail

NEW MEDIA

42

A PARtNERSHIP BUILT ON COMMUNITY

Like WSU, we believe in helping the community.
As a not-for-profit credit union, we’re here to improve the financial wellbeing of our members.

We’re BECU – proud sponsors of the
Washington State community.

BECU membership required. Restrictions apply. Federally insured by NCUA
People who are homeless struggle with health issues and stigma. Now, the challenge of keeping the most vulnerable healthy is more complicated due to the pandemic.

Sorosh Kherghehpoush, a research fellow at the WSU College of Pharmacy and Pharmaceutical Sciences, is making a positive impact in the midst of COVID-19. He and a team from the Elson S. Floyd College of Medicine perform health checks and deliver socks and sack lunches where homeless individuals congregate in Spokane.

Connections happen at the smallest levels, even smaller than microbes, although those interactions get pretty strange. WSU researchers are digging into quantum mechanics, where many known rules become unpredictable. It’s hard to wrap one’s mind around concepts like entanglement, where two particles are inextricably linked and affect each other no matter the distance. However, the results of quantum research will have a profound effect on our technology and understanding of the universe.

This magazine is also deeply linked to you, our readers. We provide stories and insight into WSU to keep you connected. Unfortunately, the COVID-19 pandemic’s economic fallout has hit the University hard, with consequences for the magazine. We will not be printing a spring issue next February due to budget cuts. We’re still producing an issue, available digitally around February 1. If you would like to read the Spring 2021 magazine, visit magazinelinkwsu.edu/connect to sign up for our email newsletter or to follow us on social media. We’ll have print-on-demand and other options, too.

The summer issue in May will also have reduced distribution, but we will have print and digital versions. The print magazine will be sent to WSU Alumni Association members and paid subscribers, so join WSUAA if you haven’t already. We also welcome any support you can provide to the magazine.

EDITOR: Larry Clark ’94
ASSOCIATE EDITOR: Adriana Janovich
ART DIRECTOR: John Paxson
STAFF WRITERS: Rebecca L. Phillips ’76, ’81 DVM, Brian Charles Clark
CONTRIBUTING WRITERS: Josh Babcock ’15, Vanda Reed ’76, Rachel Webber ’11, RJ Wolcott
PHOTOGRAPHERS: Timothy Bartholomaus, Emma Fox ’71, Shelly Hanks, Mark Hunter, Akhila Jan servam, Carin Kogan, Young Kwon, Frederick R. Sears, Aaron Theisen, Crystal Toreson, Gregg Zimmerman
ILLUSTRATOR: Pete Lentoff
WSU PRESIDENT: Kirk H. Schulz
VICE PRESIDENT, UNIVERSITY MARKETING AND COMMUNICATIONS: Phil Weiler
ADVERTISING: Contact Lowell Ganin, 206-717-5808 or lowell@everedify.com Advertising guide is online at magazine.wsu.edu/advertising.

Washington State Magazine is printed at a facility (FSC® C006571 [Forest Stewardship Council®]) and on paper that is FSC® certified, using soy-blended inks on 100% post-consumer-waste-recycled paper. It is processed chlorine free. The paper is rolled at a facility using 93% recycled biogas (renewable hydroelectricity)—using approximately 60% less water than the North American average. It has the lowest carbon footprint per metric ton in North America (no offsets used), and is LEED certified for reduced environmental impact.
It pays to know who pays

I was happy to see Alysen Boston’s article (“An epidemic of misinformation,” Fall 2020). She is correct to point out motives of political or sales agendas. When we investigate sources, it is not enough to know the source; we must know who is paying the source. Follow the money! It is a few dollars of support from an individual or billions from an industry. Once we know that answer, motives become very apparent.

Using coronavirus as the obvious example: Research for yourself who is paying billions of dollars to politicians, universities, mainstream media, WHO, CDC, NIH, certain doctors in the limelight and funding scientific and unscientific studies for and against certain treatments/cures. It is easy to find public unscientific studies for and against certain treatments/cures. It is easy to find public unscientific studies for and against certain treatments/cures. It is easy to find public.

Another point not mentioned in the article, is what information are we not receiving at all due to censorship? When an entity or group is in a position to gain big money profit from pushing one side of an agenda, any information they pay for is suspect.

WESEL WIKELSON ’85 BUSI.

Proud of the pride

“Cougar confidential” (Fall 2020) brought back fond memories of my own experience as Butch and made me realize there is likely a whole cadre of other Butch alumni that go unheralded, those brought into service for events at the then newly-developing Tri-Cities campuses. When I was brought in as director of development for the Tri-Cities campus, there were so many requests for Butch to appear at events in the area that it was impossible to fulfill the demand from the Pullman campus.

GLENN WILLIAMS ’89 BUSI.

Proud of the pride

When I was brought in as director of development for the Tri-Cities campus, there were so many requests for Butch to appear at events in the area that it was impossible to fulfill the demand from the Pullman campus. So, WSU Tri-Cities was given its own costume.
BEING THERE

going virtually where you’ve never gone before

BY REBECCA PHILLIPS

Humans come fully equipped with curiosity and an irresistible urge to explore the next horizon. In 2018, that wanderlust added nearly $9 trillion to the global economy according to the World Travel and Tourism Council. It’s been a different story for 2020 as pandemic travel restrictions crippled airlines, cruise ships, hotels, and Airbnbs with up to 90 percent fewer bookings overall. While it may take years for the industry to recover, the shutdown is proving to be an unexpected boon for the virtual reality market, which reports a big spike in interest.

Once the domain of video gamers, virtual experiences are increasingly popular with educators, ecotourism operators, retirement and care facilities, as well as would-be tourists who are bored and stuck at home.

VR technology and 360-degree video were already in use by a few airlines and travel agents as a vacation destination “try-before-you-buy” experience. Today, companies like Visualise and National Geographic give consumers a chance to virtually immerse themselves in the wonders of Machu Picchu, Cuba, the Great Barrier Reef, or even the horrors of war-torn Syria.

It’s all an educational goldmine for Andrew Perkins (’95, ’98 MBA), director of the Washington State University Center for Behavioral Business Research. The associate professor in the Carson College of Business runs a virtual reality laboratory where he studies the physiological and emotional responses that occur while someone is experiencing a virtual space.

One of his goals is to compare how people behave in real versus virtual retail environments.

Perkins has partnered with several companies, such as a vacation rental business called Wanderlust, to virtually immerse travelers in the next horizon. In 2018, THAT WANDERLUST ADDED NEARLY $9 TRILLION TO THE GLOBAL ECONOMY. ACCORDING TO THE WORLD TRAVEL & TOURISM COUNCIL, IN 2018, THAT WANDERLUST ADDED NEARLY $9 TRILLION TO THE GLOBAL ECONOMY.

Using an Oculus Rift VR headset and a specially-designed computer, Perkins has participants don goggles and walk through a virtual art gallery, for example, while measuring their responses to changes in the layout and ambiance.

“We invented a way to collect data in the virtual space,” he says. “For the experiment in the art gallery, they can walk into another room and use their controllers to answer survey questions in 3D right in front of them—just point and click.”

“Figuring out how to get that to work was a tough nut to crack,” Perkins says. “Once you take someone out of the virtual space and hand them a clipboard and pen, the VR effects may vanish. So, we had to find a way to collect data while they are still in VR.”

Perkins says the virtual experience can activate the same emotional responses that, at least on some level, happen in the real world. He personally tries out each virtual environment before enrolling study participants and says the experience can be shockingly intense.

“I’ve done roller coasters, dinosaurs, and standing on a platform a thousand feet in the air,” he says.

An especially intense program was experiencing rock climbing. Alex Honnold free soloed the 1,500-foot El Captain wall.

“When you put on the headset, you are sort of floating in space so you watch him climb from bottoms to top,” says Perkins. “I rock climbed for 20 years and I can’t even watch the entire thing. It’s that emotionally difficult and scary to watch him climb this incredibly difficult route.”

Perkins also had a graduate student try a virtual astronaut training program. “The kicker is that if something goes wrong, you go spinning off into space. You can be crawling along carefully fixing the space station when suddenly your rope breaks and you’re head over heels out of control,” he says.

“When the student tried the program, he’d sweated through his shirt, and the goggles and controllers were soaked—he was so viscerally a part of that experience.”

But while virtual reality can be incredibly immersive, Perkins says the technology has a long way to go before it can become an authentic travel alternative.

“The goggles are still heavy and large, and we use little hand controllers. It can be disorienting if the space is not well designed because, when you disconnect what you’re seeing and hearing from what your body is feeling, it’s like being on a roller coaster and can cause motion sickness. So, we have to be very careful how we design these virtual spaces.

“As good as VR looks now, it will look a million times better five or ten years down the road,” he says. “Some argue it will be indistinguishable from reality—with technology we can’t yet imagine.”

“I could be that we have the ability to increase the physiological response so that if you’re visiting a virtual beach, we can make you feel the warmth of the sun or feel like you’re actually skiing down the Swiss Alps.”

Perkins says although sensory haptic suits could provide some of these experiences, many futurists predict we will soon have computer technologies that interface directly with the brain.

“Virtual experiences around the world: magazimwsu.edu/extra/VR-travel
Pandemic parallels

BY ADRIANA JANOVICH

When the first cases appeared October 1, the gymnasium was quickly converted into a temporary hospital. Three weeks later, classes were canceled for a month. The state epidemiologist ordered the State College under “complete quarantine.” All social activities were suspended.

By November 2, the Students’ Army Training Corps (SATC) saw 634 sickened cadets, over half of their number. Just five days earlier, there were 98. By the end of the ordeal, 42 would die.

During the final months of World War I, an influenza pandemic swept through WSU, dramatically affecting the campus community. Buildings were transformed into infirmaries with as many as 300 bedridden cadets. Faculty and female students from the College of Home Economics came together to prepare meals for the sick.

“The real challenge was the SATC,” says H. Craig, “with over 1,000 men, associated dean for Digital Initiatives and Special Collections at Washington State University. “That’s where all the deaths happened.”

Cadets came to campus, a designated training camp, beginning that June. A second cohort arrived in August. “As far as I understand it, we somehow ended up with fifty percent more trainees than anticipated,” says University archivist Mark O’English. “They didn’t have enough space.”

Camps were formed, and sentries were posted around places were closed, churches were transformed into sick wards, and on the top floor of the Administration building, the infirmary, which was responsible for cadet deaths, including that of his son, Roger P. Sanborn. The state launched an investigation. Both the College and War Department with mishandling the pandemic, alleging both the College and War Department with mishandling the pandemic, alleging both wounding.

When the first cases appeared October 1, the gymnasium was quickly converted into a temporary hospital. Three weeks later, classes were canceled for a month. The state epidemiologist ordered the State College under “complete quarantine.” All social activities were suspended.

OFFICIAL NOTICE

This order is made to give all persons notice that an outbreak of a disease in a specific region or community requires actions by individuals to prevent further spread of the disease.

Due to the current outbreak, the following actions are necessary to prevent further spread:

1. Avoid public gatherings of more than 50 people.
2. Wear face masks in public places where social distancing is not possible.
3. Wash hands frequently with soap and water for at least 20 seconds.
4. Stay home if feeling ill.
5. Monitor your health for signs of illness.

Failure to comply with these measures may result in legal action.

Dr. J. L. Gilleland
City Health Officials

When Washingtonians were told to “stay home” to “stay healthy,” ethnic studies associate professor John Streamas began seeing a dramatic uptick in online discussions of plague literature. Intrigued, he decided to write a plague journal himself but, instead of looking back, he wrote from the middle of the pandemic, embracing the flux of facts, theories, false claims, and shifting ethical ground.

Titled “It’s Not Racist if It’s Accurate: A Plague Journal on the Tag Teams of Plague,” Streamas’s journal is part-turn-of-the-century reporting, part-personal observation together with a large measure of academic scholarship. “I wanted to capture things as they were happening,” Streamas says, but to also compare remarkably similar stigmatizations across many centuries of pandemics. At the turn of the twentieth century in San Francisco, Chinatown was cordoned off and Chinese blamed for bringing disease by way of food choices and “unclean” practices. “It’s amazing how,” Streamas says, “that at times that we learn more and more, the accusations are the same!”

Indeed, Streamas says that efforts to address the root causes of discrimination, whether personal or institutional, are not helping. Books like White Fragility and other tomes coming out of the diversity-workshop industry all locate racism in White culture and White individuals, he says, stripping disaster capitalists of culpability and putting the onus of change on the employees they send to diversity workshops.

This line of argument is interspersed with many moving and thoughtful passages about day-to-day life during lockdown. Many of Streamas’s students are Black and Brown, and many have been in the South area—where the early months of the pandemic hit hardest. In online classes and follow-up emails, he heard of coworkers too the toll the pandemic takes on his students.

Streamas recalls a professor who once said the most affecting line in the entire King James Version of the Bible was also the shortest: “Jesus wept.” He says the passage in the journal that most affects him is also the shortest entry. On April 26, Streamas writes, “In the past week I have received emails from two students who have close relatives suffering the virus, and another told me his father has just died of the disease.”

BRIAN CHARLES CLARK


talitarian Doctrine and Public Health,

When Washingtonians were told to “stay home” to “stay healthy,” ethnic studies associate professor John Streamas began seeing a dramatic uptick in online discussions of plague literature. Intrigued, he decided to write a plague journal himself but, instead of looking back, he wrote from the middle of the pandemic, embracing the flux of facts, theories, false claims, and shifting ethical ground.

Titled “It’s Not Racist if It’s Accurate: A Plague Journal on the Tag Teams of Plague,” Streamas’s journal is part-turn-of-the-century reporting, part-personal observation together with a large measure of academic scholarship. “I wanted to capture things as they were happening,” Streamas says, but to also compare remarkably similar stigmatizations across many centuries of pandemics. At the turn of the twentieth century in San Francisco, Chinatown was cordoned off and Chinese blamed for bringing disease by way of food choices and “unclean” practices. “It’s amazing how,” Streamas says, “that at times that we learn more and more, the accusations are the same!”

Indeed, Streamas says that efforts to address the root causes of discrimination, whether personal or institutional, are not helping. Books like White Fragility and other tomes coming out of the diversity-workshop industry all locate racism in White culture and White individuals, he says, stripping disaster capitalists of culpability and putting the onus of change on the employees they send to diversity workshops.

This line of argument is interspersed with many moving and thoughtful passages about day-to-day life during lockdown. Many of Streamas’s students are Black and Brown, and many have been in the South area—where the early months of the pandemic hit hardest. In online classes and follow-up emails, he heard of coworkers too the toll the pandemic takes on his students.

Streamas recalls a professor who once said the most affecting line in the entire King James Version of the Bible was also the shortest: “Jesus wept.” He says the passage in the journal that most affects him is also the shortest entry. On April 26, Streamas writes, “In the past week I have received emails from two students who have close relatives suffering the virus, and another told me his father has just died of the disease.”

BRIAN CHARLES CLARK

Plague and Capitalism: The World’s Billionth Death in 1890

During the final months of World War I, an influenza pandemic swept through WSU, dramatically affecting the campus community. Buildings were transformed into infirmaries with as many as 300 bedridden cadets. Faculty and female students from the College of Home Economics came together to prepare meals for the sick.

“The real challenge was the SATC,” says H. Craig, “with over 1,000 men, associated dean for Digital Initiatives and Special Collections at Washington State University. “That’s where all the deaths happened.”

Camps were formed, and sentries were posted around places where closed, churches were transformed into sick wards, and on the top floor of the Administration building, the infirmary, which was responsible for cadet deaths, including that of his son, Roger P. Sanborn. The state launched an investigation. Both the College and War Department with mishandling the pandemic, alleging both wounding.

When Washingtonians were told to “stay home” to “stay healthy,” ethnic studies associate professor John Streamas began seeing a dramatic uptick in online discussions of plague literature. Intrigued, he decided to write a plague journal himself but, instead of looking back, he wrote from the middle of the pandemic, embracing the flux of facts, theories, false claims, and shifting ethical ground.

Titled “It’s Not Racist if It’s Accurate: A Plague Journal on the Tag Teams of Plague,” Streamas’s journal is part-turn-of-the-century reporting, part-personal observation together with a large measure of academic scholarship. “I wanted to capture things as they were happening,” Streamas says, but to also compare remarkably similar stigmatizations across many centuries of pandemics. At the turn of the twentieth century in San Francisco, Chinatown was cordoned off and Chinese blamed for bringing disease by way of food choices and “unclean” practices. “It’s amazing how,” Streamas says, “that at times that we learn more and more, the accusations are the same!”

Indeed, Streamas says that efforts to address the root causes of discrimination, whether personal or institutional, are not helping. Books like White Fragility and other tomes coming out of the diversity-workshop industry all locate racism in White culture and White individuals, he says, stripping disaster capitalists of culpability and putting the onus of change on the employees they send to diversity workshops.

This line of argument is interspersed with many moving and thoughtful passages about day-to-day life during lockdown. Many of Streamas’s students are Black and Brown, and many have been in the South area—where the early months of the pandemic hit hardest. In online classes and follow-up emails, he heard of coworkers too the toll the pandemic takes on his students.

Streamas recalls a professor who once said the most affecting line in the entire King James Version of the Bible was also the shortest: “Jesus wept.” He says the passage in the journal that most affects him is also the shortest entry. On April 26, Streamas writes, “In the past week I have received emails from two students who have close relatives suffering the virus, and another told me his father has just died of the disease.”

BRIAN CHARLES CLARK

Plague and Capitalism: The World’s Billionth Death in 1890

When Washingtonians were told to “stay home” to “stay healthy,” ethnic studies associate professor John Streamas began seeing a dramatic uptick in online discussions of plague literature. Intrigued, he decided to write a plague journal himself but, instead of looking back, he wrote from the middle of the pandemic, embracing the flux of facts, theories, false claims, and shifting ethical ground.

Titled “It’s Not Racist if It’s Accurate: A Plague Journal on the Tag Teams of Plague,” Streamas’s journal is part-turn-of-the-century reporting, part-personal observation together with a large measure of academic scholarship. “I wanted to capture things as they were happening,” Streamas says, but to also compare remarkably similar stigmatizations across many centuries of pandemics. At the turn of the twentieth century in San Francisco, Chinatown was cordoned off and Chinese blamed for bringing disease by way of food choices and “unclean” practices. “It’s amazing how,” Streamas says, “that at times that we learn more and more, the accusations are the same!”

Indeed, Streamas says that efforts to address the root causes of discrimination, whether personal or institutional, are not helping. Books like White Fragility and other tomes coming out of the diversity-workshop industry all locate racism in White culture and White individuals, he says, stripping disaster capitalists of culpability and putting the onus of change on the employees they send to diversity workshops.

This line of argument is interspersed with many moving and thoughtful passages about day-to-day life during lockdown. Many of Streamas’s students are Black and Brown, and many have been in the South area—where the early months of the pandemic hit hardest. In online classes and follow-up emails, he heard of coworkers too the toll the pandemic takes on his students.

Streamas recalls a professor who once said the most affecting line in the entire King James Version of the Bible was also the shortest: “Jesus wept.” He says the passage in the journal that most affects him is also the shortest entry. On April 26, Streamas writes, “In the past week I have received emails from two students who have close relatives suffering the virus, and another told me his father has just died of the disease.”

BRIAN CHARLES CLARK

Plague and Capitalism: The World’s Billionth Death in 1890
We put them through

Cora Harrison keeps it right up there on the wall, hanging in her husband’s shop just below his bachelor’s degree. When she received the certificate at the end of May, right around the time Michael Harrington (’67 Mech Eng) received his diploma, “it meant a lot to me,” she says. “It was an honor to be recognized.”

And it remains an important keepsake: “I’ve had it framed ever since I received it,” she says. “In 53 years, it’s been on the wall in almost every room of the house.”

Washington State University was one of many institutions of higher learning across the country to recognize wives’ contributions to their husbands’ education with “Putting Husband Through,” or “PHT,” degrees, in appreciation of “Putting Husband Through” diplomas, which had been awarded at potlucks or informal ceremonies during social gatherings, says University archivist Mark O’English. “But the group doesn’t seem to have donated their records to the WSU Archives. If any former members or others held records, photos, or documents associated with the organization, we’d love to have them,” O’English says. Members held monthly meetings and social activities, such as dances that included both husbands and wives.

“I can remember some picnics, Christmas parties, and a flag football game out in Palouse,” says Reuben (“Red”) Aitken, whose late wife Tamara was a member of the group.

The last mention of the Kappa Chapter in the University’s archives appears to be 1971, O’English says. The New York Times on April 9, 1974, referred to the honorary degree as a “quaint relic.” Nadine Breza wrote: “It was called the ‘Putting Hubby Through’ diploma, and it was once awarded in clubs as the ‘Put-in-a-pocket’ award for paying for whom and how has taken on new complexities.”

The highest numbers of PHTs were awarded just after World War II, when veterans enrolled in unprecedented numbers. Marriage rates, which had remained low during the war, soared after its end.

We were the generation after the G.I.s,” Breza says. “We were at the beginning of a time of transition to women working after marriage as an accepted social thing. The PHT degree was a symbol. It represented a club, a partnership, one partner helping another.”
also discovering that they can make a positive difference in the health of their communities. Na-ha-shnee, quite literally, unshades strong medicine for the body and the soul.

NA-HA-SHNEE TURNS 25

The story of Na-ha-shnee begins with the hiring in 1995 of Robbie Paul, a Nez Perce woman who worked tirelessly to recruit and encourage Native students to pursue careers in nursing. Infitatigable, Paul has been retained from her position as director of WSU’s Native American Health Sciences program for a few years but she still mentors students. “The original idea for Na-ha-shnee was based on Native input,” Paul recalls recently. She had a Native American advisory board to help guide her, as well as rich collaborations with Barbara Ashton, former tribal liaison for WSU, and the late Sharon John, a nurse and Yakama-Umatilla tribal member.

Hand-on experiential learning is “a proven model,” Paul says, that opens doors for young people who might not have otherwise considered a career in health care. The impact is amplified when Native professionals serve as camp counselors and share stories of their own journeys.

Janet Katz, one of Paul’s longtime collaborators and a professor in WSU’s College of Nursing, is a staunch supporter of Na-ha-shnee, as much for what the program does to bring Natives into health professions as for inspiring young people to go to college, whatever career they choose. “People with more education are healthier, they have higher incomes,” she says. “There is so much inequity in our society and usually the ones who get to go to college happen to be born into situations where they also have opportunities.” Katz and others have shown that diversity in health care has a positive impact on quality of care and on health outcomes.

A college campus could be stressful for students who’d grown up on a reservation. Paul, Katz, and their colleagues found ways to help these students express their fears, doubts, and hopes. One way was by taking a photo that represented something that concerned them, or that they hoped for. Katz recalls, “One student took a picture of a ladybug on a tree trunk, saying ‘I am small, but college and a career are big!’”

JACKSON SMALL—WE ARE GREAT

From the very beginning, Paul, a passionate storyteller drawing on the wisdom of many generations, grounded students in traditional cultural knowledge. One of the stories she tells is that of the creation of her own people, the Nez Perce.

In the story, Coyote kills a monster that’s been killing animals. Coyote and Fox cut the animal in four directions, and thus people the world. Coyote tells is that of the creation of her own people, the Nez Perce.

“Society deserves to teach the next generation of healers, storytellers, scientists, engineers, “and we need to strive to find ways to reach people so they can be taught the things they need to be taught. And our responsibility as teachers is to find those ways. “We need the audacity to dream, to see our own self worth,” James exclaims. “Dream big—and start with yourself!”
Maestro of many voicings

A HUSH FALLS over the crowd as symphony orchestra conductor Danh Pham takes the podium and slowly lifts his button. With the downstroke, he leads the performers through a seemingly effortless musical journey that enchants the audience and clearly brings Pham happiness.

A native of Honolulu’s “ethnic mixing pot,” Pham delights in sharing music with all people, whether that’s conducting the score of The Force Awakens at Spokane’s Fox Theater or teaching a master class at China’s prestigious Wuhan Conservatory of Music.

The associate professor at Washington State University is known for musical selections which embrace not only classical music, but contemporary composers and musicians who were marginalized or undiscovered during their lifetimes.

“In my discipline, it’s really important that we focus on the classics, but we have a sense of duty as artists to promote living composers who will become the Beethoven’s of the future,” he says.

“We also have composers who never got a chance to see the limelight because they’re women or of an ethnic minority and lacked the opportunities that would get them to the stage to mature and become part of the mainstream. Today, many organizations are trying to right that wrong and shine a light on these composers.”

Last winter, Pham put that pledge to the test while conducting the Washington Idaho Symphony in a concert called Explorations! that introduced the public to compositions most had never heard before.

“I was extremely fearful beforehand,” he says. “I didn’t know what the reaction would be. Many conservative concertgoers want to hear their Beethoven's and Mozart's—the music they’re familiar with.

“Explorations! instead highlighted Black composer, conductor, and English political activist Samuel Coleridge-Taylor (1875–1912); Ellen Taaffe Zwilich, the first woman to win the Pulitzer Prize in composition; and Florence Price (1887–1953), the first Black woman to have a composition performed by a major American symphony orchestra.

“So and behold, it turned out the audience loved it,” says Pham. “Oh, give me more of this!” they said. “It was fantastic!” From that point on, for all of my music groups, we committed ourselves to performing more underrepresented composers.

“That includes the chance to spotlight composers who without question are writing about Black Lives Matter and tensions in society,” he says. “Artists reflect upon the times they are going through and it will be important to program these pieces that are still being written. At WSU, we’re committed to performing the works of leading African American composers such as Kevin Day and Oscar and Thomas.”

This year, unfortunately, many of Pham’s plans for student orchestra, wind band, and bands have been disrupted or postponed due to the coronavirus pandemic.

Performing is the lifeblood of what music groups do,” he says. “Our top concert band was supposed to tour South Korea last spring when it was just becoming a hot zone. It was also the Saturday when Washington was declared the site of the first COVID death in the country. I thought about it all weekend and on Monday, I was on the phone with our travel companies which graciously agreed to cancel the trip and refund us almost entirely.

“Now, it’s all waiting game. We’re trying to figure out how to safely perform with singers and instruments in the same room. We’ll be working on this until we have a vaccine available.”

The isolation required during COVID times has been particularly tough on Pham, who has long seen music as a vehicle to socialize and collaborate with other people.

“It’s really difficult to do music online and alone,” he says. “You see many virtual groups performing on YouTube and Zoom. But people don’t realize the incredible amount of editing time it requires for a short 4-to-6 minute video.

“Even though I’m a private person, my craft relies on being with other people. That’s where the joy comes out. I love working with students. I’m of the ilk that if there are no students, there are no musicians, and no me. Performing is about sharing not only with the audience but with the talented musicians on stage.”

A heart for service

ON A SPONTANEOUS TRIP to the Yakima Valley Museum, Tabitha Espina (“20 PhD English”) pursued the history exhibits and wondered: “Where are all the Filipinos?”

A WSU Pullman graduate student at the time, she had read about the experiences of Yakima’s Filipino Americans in Carlos Bulosan’s classic 1943 memoir, America Is in the Heart.

Espina’s question led her to a roundtable with the museum, Arts Washington, and Humanities Washington where she served as a graduate fellow, exploring ways to amplify Filipino-American narratives in the Pacific Northwest.

They came up with an idea to promote take-out, including adobo, rice noodles, and lumpia, from the Filipino-American Community Center in Wapato. Another idea was inviting a Filipino children’s author to share her books with museum visitors. Espina is fascinated with language and the power of words, with all their ability to shape identity and sense of belonging, and grew up on the tiny island of Guam and moved an ocean away to earn her doctoral degree at WSU.

Now an assistant professor of rhetoric and composition at Eastern Oregon University, she reflects on her experiences and draws parallels between rural life and island life.

“You may not be separated by oceans. But there are other borders,” she says. “How do you transcend those borders? Not just geographically, but also ideologically.”

In isolated spaces, finding a supportive and welcoming community is essential. When Espina visited the WSU Pullman campus for the first time, she flew into the Spokane airport. “Guam is only 30 miles long, so sitting in the car with a stranger for an hour and half was new to me,” she recalls.

The stranger was Amir Gilmore, who would become her friend. He was a graduate assistant for the Research Assistantship for Diverse Scholars initiative, a recruitment effort to increase access to doctoral education for U.S. students from underrepresented or underserved communities, while increasing WSU graduate student diversity.

For her doctoral degree, Espina investigated identity politics among Filipinos who have been colonial settlers of Guam for generations, a subject that’s both academic and personal.

“When I was seven, I came out with an album entitled Island Girl,” she says. “But I’m Filipino, so throughout my life people have always wondered, ‘How can you claim to be an island girl when you are not Chamorro, one of Guam’s indigenous people?’

“At the time, I wasn’t having very critical ideas about positionality or intersectionality. I just thought, well, ‘Where do I belong?’”

As she learned about the struggles of Chamorro people, she asked how she could help. She is now a founding member of “Filipinos for Guam,” a group dedicated to decolonization and justice for Guam’s Indigenous people.

Espina’s work in the classroom and communities requires curiosity, like a moment in a museum. It also requires imagination and envisioning how communities can engage with different perspectives. In addition to teaching and research, she has a heart for service.

“I just want to continue to serve,” Espina says. “Serve the communities wherever I am and the community I call home in the Pacific.”

Serve... wherever I am... and the community I call home in the Pacific.
At first glance, the forces of the universe appear to be predictable. Throw a pebble into a pool, ripples will form. Toss a stick in the air, it falls back to the ground. The past is behind us and today precedes tomorrow.

For millennia, humans have relied on that premise to unlock the secrets governing our natural world. It’s been a determined pursuit from the first stone tool devised by a prehistoric craftsman to the rise of ancient Greek astronomy, and later, the field of physics, one of civilization’s oldest academic disciplines.

Physicists like Newton and Einstein posited our understanding of matter, motion, energy, force, space, and time—which, in turn, opened the way to harness nuclear energy and create marvels like combustion engines, computers, and cell phones.

Today, that quest has entered the quantum realm, where things don’t always behave with predictability. In quantum’s microcosmic domain, the physical world seems to move in random and mysterious ways unlike anything described by Newton or Einstein. This unpredictability gives scientists the chance to produce previously unimaginable technologies.

Over the next decade or so, tremendous breakthroughs in quantum theory and engineering are expected to deliver products that will boggle the mind. The revolution includes the work of visionary researchers at Washington State University, like theoretical physicist Michael Forbes.

Forbes, whose voice carries traces of his Canadian roots, studies the extreme properties of neutron stars. When prodded, he good-naturedly admits his student days at MIT were much like the television series The Big Bang Theory. “I was partly like Sheldon, who is also a theorist,” he says. “And, I lived with an experimentalist who was pretty similar to the Leonard Hofstadter.”

In fact, Forbes’s advisor was awarded a Nobel prize for a famous equation that appeared on Sheldon’s whiteboard in one of the show’s episodes. It takes that Sheldon-type intensity to unravel the confounding complexities of quantum mechanics. If you’re not a physicist, concepts like superposition, entanglement, or tunneling can be confusing.

“Well, that’s because of our human size,” says Forbes, an associate professor of physics and spokesman for the WSU Quantum Initiative. “In our world, Newton’s laws like F=ma, or even F=ma (times square mass times acceleration) apply to the things we casually observe, such as watching an apple drop from a tree.”

But Newton’s laws have problems when you start pushing the boundaries of our human-sized existence.

At extremely high speeds, for example, it takes Einstein’s theory of relativity to perform accurate calculations. And, when you want to observe things at exceedingly cold temperatures or very tiny scales, quantum mechanics is the right tool.

Those things are outside of our typical day-to-day experience, Forbes says. “It seems weird to us because we’ll never run at the speed of light or see down to quantum level to interact with material there.”

Physicists, however, have suspected there could be a quantum world since 1900, when Max Planck theorized that radiation comes in discrete packets or quanta. Researchers like Einstein, Niels Bohr, and Erwin Schrödinger expanded that idea until it finally took off during the 1940s and 1950s as what is now called the first quantum revolution.

“During this period, quantum mechanics became very concrete and gave rise to the invention of transistors and lasers,” says Forbes. “Out of this came classical computers.”

In the second quantum revolution, physicists learned to precisely control and measure atoms, which enabled the development of atomic clocks, global positioning systems, magnetic resonance imaging, and an array of quantum sensing devices.

Forbes says many WSU researchers are actively engaged in quantum’s third revolution, which is focused on new quantum technologies, building ultra-precise sensors, and solving complex problems beyond the capabilities of current computers.

“We could use quantum computers to solve a lot of problems we can’t solve with classical computers,” he says. “But you can also build extremely fast analog computers that work with electrical signals and circuits.”

Quantum computing in the form of analog quantum simulations is already being used for research at WSU and forms the backbone of the University’s Quantum Initiative. The effort is aided through regional partnerships with Pacific Northwest National Laboratories, the University of Washington, and the Northwest Quantum Nexus.

“We use these techniques to try to solve problems and discover new quantum phenomena that can be engineered into practical applications,” Forbes says. “For example, we can use Peter Engels’s ultra-cold lab as an analog quantum computer.”

Engels, a WSU physics professor known for creating the first Bose-Einstein condensate in the Pacific Northwest, traps and cools atoms to the point where quantum effects become apparent, which then allows researchers to conduct experiments.

“It turns out that what we think of as particles at room temperature are actually waves with very short wavelengths,” says Forbes. “When you cool atoms by cooling them to nano Kelvin temperatures just above absolute zero where there is no movement at all, the wavelength increases, and quantum mechanics applies.

“And, the atoms in Peter’s lab get colder than any naturally occurring system in the universe. Creating a nano-Kelvin environment only has become possible by exploiting some of the most modern atomic physics tricks.”

Essentially, it’s the perfect environment for Forbes to study neutron stars—incredibly dense remnants of a supernova explosion. He says that matter in a neutron star is governed by quantum mechanics because it has been crushed to such a small scale. One teaspoon of a neutron star weighs as much as a mountain.

“The remarkable thing is that the extremely hot neutrons in these stars behave almost identically to the ultra-cold atoms trapped in Engels’s lab.” Forbes says. “Once we understand how neutron stars behave, we can start applying it to nuclear physics and eventually use those discoveries for applications in nuclear energy.”

Forbes’s work is just one snapshot in the catalog of brilliant projects currently underway in WSU’s Quantum Initiative. Other researchers are exploring aspects of quantum chaos, optics, hyperpolarized noble gases, exotic matter, chemistry, and engineering. Their efforts not only help advance quantum computing but usher in the wider quantum technology revolution as well.
Butch and the Butchmen
BY ADRIANA JANDOVICH

The Butchmen were students with a big responsibility: getting Butch to the field for home football games back when Washington State University’s mascot was a live cougar.

“They helped select the cougar from its cage to the stadium and watched over the animal as students and their parents, fans, and alum came for a closer look, often posing with Butcher for photos. And, when WSU scored, they took a nap, carting the cougar past the stands and bringing the crowd to its feet.”

“Their role was not so much selling a guide, ushering student athlete in—is key,” he says. “It’s not so much saying, ‘Here’s a young adult,’ Smith says. “It’s more similar to that of a guide, ushering student athletes to the summit of self-esteem.”

Guiding a transition game
BY R J WOLCOTT

For more than three decades, KYLE SMITH has helped young men make the transition from adolescence to adulthood through the game of basketball.

He doesn’t see himself as a parental figure or a big brother. His role is more similar to that of a guide, ushering student athletes to the summit of self-esteem.

“Being around 18 to 22-year-olds for 33 years helps you get a good idea of what it’s like being a young adult,” Smith says.

Smith sees tremendous value in transparency.

“My mindset has always been that opting out of the game, whether it’s someone waking up in the morning and saying, ‘I don’t want to do this anymore,’ or someone feeling like they’re not contributing to the team,” Smith says.

Butch. Butch III and IV were twin cubs given in 1987, when it was disassembled. But the roll of the Butchmen, decided Butch would take on the role of the Butchmen.

The last one, Butch VI, was gifted by Governor Albert Rosellini in 1966. Following the animal’s death, a survey of about 400 students conducted by the ASWSU Environmental Task Force Committee found more than 60 percent opposed another live cougar mascot. Then- President. Alzheimer’s, but they were quite a group. They weren’t responsible for Butch’s care and feeding or cleaning his cage. That was done by his keepers and not left to a bunch of college boys, but these guys were already highly spirited athletes, and they were also considered leaders.”

The Butchmen were out of a job when an aging and infirm Butch II died in 1978. WSU’s cougar mascot tradition dates to November 10, 1919 when Washington State College played its first football game as the Cougars. According to University archivist Mark English, the Cougar Guard formed after University of Washington fans stole one of WSU’s two stuffed cougar mascots.

The wave
BY MARIA CRONIN

“People say ‘I think we may have invented The Wave,’” jokes retired Collux dentist Art Kirkpatrick (’72 Zoology), a member of the Butchmen’s sophomore team.

“The Butchmen formed in 1965 and disbanded after the last live cougar mascot died in 1978. Before them, there were only ‘probably six or eight’ in the stadium at any one time,” says Kirkpatrick, who also remembers helping out at alumni and donor events.

By the time he was involved, though, there were only “probably six or eight” in the group. And, three years after he graduated, the Butchmen were out of a job when an aging and infirm Butch II was euthanized in late summer 1978.

The Butchmen formed in 1965 and disbanded after the last live cougar mascot died in 1978. Before them, there were only “probably six or eight” in the stadium at any one time,” says Kirkpatrick, who also remembers helping out at alumni and donor events.

By the time he was involved, though, there were only “probably six or eight” in the group. And, three years after he graduated, the Butchmen were out of a job when an aging and infirm Butch II was euthanized in late summer 1978.

WSU’s cougar mascot tradition dates to 1919 when Washington State College played its first football game as the Cougars. According to University archivist Mark English, the Cougar Guard formed after University of Washington fans stole one of WSU’s two stuffed cougar mascots. The Cougar Guard became a fixture in the WSU spirit program.

The innovative “Cougars” were a popular mascot at the college’s first football game as the Cougars.

The Butchmen were out of a job when an aging and infirm Butch II died in 1978. Before them, there were only “probably six or eight” in the stadium at any one time,” says Kirkpatrick, who also remembers helping out at alumni and donor events.

By the time he was involved, though, there were only “probably six or eight” in the group. And, three years after he graduated, the Butchmen were out of a job when an aging and infirm Butch II was euthanized in late summer 1978.

The Butchmen formed in 1965 and disbanded after the last live cougar mascot died in 1978. Before them, there were only “probably six or eight” in the stadium at any one time,” says Kirkpatrick, who also remembers helping out at alumni and donor events.

By the time he was involved, though, there were only “probably six or eight” in the group. And, three years after he graduated, the Butchmen were out of a job when an aging and infirm Butch II was euthanized in late summer 1978.
Good Housekeeping awarded the Cosmic Crisp, a WSU registered trademark, its “Nutritionist Approved” emblem. America’s Test Kitchen tasters scored it “significantly higher than the other apples,” noting the variety sports a thick skin that “snaps when you bite into it.” That satisfying crunch was also noted by GeekWire, which declared, “The high crunch and firmness of the flesh are deceptive since the overall impression is light rather than dense, and there is very little softness or grittiness.”

Not only is the new apple exceptionally good for eating fresh, it stands up to high temperatures in the oven or on the stovetop. “Cosmic Crisp is truly the most versatile apple on the market,” says Kathryn Grandy, chief marketing officer for Proprietary Variety Management, which helps get new fruits to the global marketplace. “I’m totally hooked on Cosmic Crisp. It’s amazing to bake with. It holds its texture and shape. But when you put your fork through it, it doesn’t fight back.”

It is, says Jamie Callison, executive chef of WSU’s School of Hospitality Business Management at Carver College, “a beautiful apple.” He would regularly buy different apples for particular purposes—Granny Smiths for baking, Honeycrisps for salads and cheeseboards. The Cosmic Crisp’s versatility, he says, is “why it’s going to be successful. It’s durable and ships well and stores well. So it’s a win-win for producers and consumers,” particularly during the current novel coronavirus pandemic, which has some shoppers limiting trips to the supermarket.

Flavor-wise, Callison says, the Cosmic Crisp is “a perfect balance of sweet and tart. It’s a hardy apple, too, so it holds up in galettes and pies. I love cooking with apples. But, sometimes, you just get apples that fall apart when you bake them. Not these.” And, because of their inherent sweetness, Grandy says, “you don’t need to mix them with other apples, and you can significantly reduce the amount of sugar.”

Use the Cosmic Crisp in sweet or savory dishes, such as tarts, streusels, cobblers, upside-down cakes, salads, and salads. The apple also pairs well with chicken, pork, and Callison says, “of course, Cougar Gold cheese.” The sharpness of WSU’s signature canned rich white cheddar complements the apple’s sweetness. “They balance each other out,” Callison says, also noting, “Brie is always good with apples.”

Callison featured Cosmic Crisp in a slave with crispy pan-fried Northwest oysters from his 2013 cookbook The Crimson Spoon, published by WSU Press, during one of the WSU Alumni Association’s Feast of the Arts events last year. “I was able to showcase the Cosmic Crisp the weekend it was going to market, which was an amazing opportunity,” says Callison, who’s also featured the apples in class. “I gave them to students and challenged them to be creative and come up with their own dish.”

Chalk up the apple’s appealing attributes to good breeding. Premium-priced and non-GMO, the Cosmic Crisp is the product of 20 years of extensive research and development by WSU’s pome fruit breeding program, with support from faculty and staff throughout WSU Tree Fruit Research and Extension as well as the Department of Horticulture in the College of Agricultural, Human, and Natural Resource Sciences. “We have all of these different people who are helping to develop protocols for the best ways to grow them, the best time to harvest them, and how to store them,” says Kate Evans, leader of WSU’s pome fruit breeding program since 2008, when she succeeded Bruce Barritt.

The retired WSU horticulturalist started lobbying for funding from the University and industry partners in the early 1980s to launch an apple breeding program. Red Delicious had dominated production for decades, and Barritt cautioned against depending too much on a single variety. In 1994, after funding came through, Barritt and his team began producing thousands of hybrid seeds and sampling the results, including WA 38, the 1997 cross that produced the Cosmic Crisp. Two years later, the first Cosmic Crisp seedling was planted. The first commercial plantings didn’t go into the ground until 20 years after hybridization.

Washington is America’s top apple producer, growing nearly 60 percent of the country’s crop of about 135 million boxes that rake in about $3 billion. In all, about 1,300 growers cultivate apples on some 175,000 acres, largely in Central Washington.

Cosmic Crisp finally hit supermarkets nationwide in late 2019 with a five-year, $37 million marketing campaign. Unless you were living on another planet, you couldn’t miss its release. The apple has its own Instagram, Twitter, and Facebook accounts, plus a Pinterest page, YouTube channel, and website. And it’s made headlines in the Los Angeles Times, New York Times, Seattle Times, Wall Street Journal, USA Today, Popular Science, Time, and more.

Some 1.55 million boxes are slated to ship this season, compared to 346,000 boxes in 2019. The volume will increase each year and by 2026 more than 21 million boxes are expected to ship.

“I call it the billion-dollar apple,” Grandy says. “I don’t know that that’s an accurate number, but to me it feels like our growers have spent hundreds of millions of dollars. They’ve made just an enormous investment.”

That support, she says, has helped the Cosmic Crisp exceed expectations “many times over. It sold out everywhere we sent it.”
Some two billion years ago, a dining experience went sideways. An early nucleated eukaryotic cell engulfed a cyanobacterium—but instead of digestion, co-housekeeping was the result of the union. This ancient endosymbiotic event brought together the mobility of eukaryotes with the photosynthetic ability of cyanobacteria, an evolutionary win-win that resulted in the creation of a new type of organelle—the chloroplast—precipitating the ascendance of plant life on Earth.
The Greek historian and travel writer Herodotus wrote 2,500 years ago of an altogether different sort of dining experience. A plower perches in the gaping mouth of a Nile crocodile, feasting on the leeches that, in turn, are feasting on the croc’s blood. Keen on extracting moral guidance from natural phenomena, Herodotus said that we should learn friendship from the cooperation between the unharrowed bird and the predatory reptile.

Symbiosis occurs when two or more species live together in close physical contact and, strictly speaking, need not be mutually beneficial. Mutualism, where species cooperate to their shared benefit, is a type of symbiosis. Some researchers argue that bees and flowers, as interdependent ecological niche mates, are symbionts. Similarly, humans and our food plants and animals are in symbiotic relationships we need to eat them, so we give them what they need to grow to an edible state.

As biologists realize that cooperation is as important as competition or predation in the evolution and maintenance of ecological roles and niches, they are also seeing that microbes are foundational partners in the success of a huge number of life forms.

### The Microbe Connection

For microbiologist Stephanie Porter, an assistant professor at Washington State University-Vancouver who studies the evolution of cooperation and plant-microbe symbiosis, “This microbe is the set of all microbes that live in or on plants and animals. Understanding the complex and often positive role the microbe plays in the health of plants and animals has precipitated a real renaissance in biology. There’s been a blossoming of ideas due to new genomic tools for understanding this microbe.”

But there’s also been a shift in thinking about microbes. “We’ve moved from microbes being viewed strictly as the cause of diseases or that they are at best harmless, to thinking they have a lot of positive effects on plants and animals. They can help plants and animals resist diseases or tolerate environmental stress and we didn’t previously recognize this. It’s an opening of our eyes to this whole world of complexity that didn’t exist before this paradigm shift in the field.”

Porter and her team of collaborators, which includes other scientists as well as WSU-Vancouver undergraduate research interns and graduate students, design experiments that tease out the genetics of cooperation experiments that at the same time shed light on big evolutionary questions. Her lab is itself an offshoot of symbiotic research. Individuals from varying backgrounds bring hypotheses and design solutions to the table as they all seek answers, Porter says, to “fundamental questions about why plants and microbes cooperate.” Among other things, Porter’s group is keenly interested in understanding how cooperation lasts when, as she says, “the temptation to cheat might turn partners into enemies.”

These questions are critical and the resiliency of the human food system threatened by a changing climate that drastically increases stresses. Problems that become more frequent under climate change, Porter says, include soil salination, drought events, extreme temperature, insect herbivores, and insect-borne pathogens. Researchers in Spain recently conducted experiments suggesting that a two-degree Celsius increase in temperature results in a tripling of soil pathogens. Maintaining a healthy food supply, while minimizing the environmental and economic costs of agriculture, are motivating forces in Porter’s lab.

“Fungi and bacteria that live in plant roots perform functions that we expect, like providing nutrients to the plant, or taking up space and therefore preventing pathogens from invading the plant. But they also manipulate the hormonal and metabolic profiles of plants to make them resist all kinds of different stresses,” Porter says.

And she and her team are also investigating symbiosis from the microbe’s point of view. As Porter points out, there has been lots of work on that relationship from the perspective of crop plants (including at WSU), but understanding why a microbe would go to work for a plant is a new frontier.

### Long-term Relationships

Even before humans had any clue that there were organisms they couldn’t see, we knew there was something in soil that made plants grow.

Take alfalfa, a legume grown in Greece for livestock fodder since at least the time of Herodotus. When Europeans colonized the Americas, they brought livestock and their fodder with them. But alfalfa wouldn’t grow here. Turns out, the plant was missing its ancient partner, a kind of bacteria called rhizobia.

Alfalfa, and other legumes in the pea family, depend on root-dwelling bacteria to convert nitrogen from the air into a form the plant can use. These bacteria essentially fertilize the plant. European colonists “had to bring soil from Europe to seed their fields,” to colonize the soil with compatible rhizobial bacteria and other microbes, Porter says. “They shipped trainloads of soil from their successful alfalfa fields to new areas of cultivation as colonization there proceeded. That’s an early example of manipulating the plant microbe to make agriculture successful.”

But why would the relationships between legumes and their nitrogen-fixing associates persist for such a long time?

“When you cooperate, you are giving valuable resources to someone else instead of your own offspring,” she says. “Darwin considered cooperation to be a mystery and a problem for the study of evolution. Natural selection should select for traits that benefit your own offspring. So how is it stable over the long term to give resources away? —why wouldn’t an unrelated partner just cheat you instead of reciprocating?”

As Porter and others have learned, cheating can be a winning strategy. But biologists have drawn on a theory from economics called partner choice to explain why cheats don’t prosper in most cooperative interactions. “In an economic market,” she explains, “partners can see who is going to benefit them and preferentially allocate resources to them.” In a symbiotic relationship, “if there is exploitation going on”—as when a non-nitrogen-fixing bacterium sneaks into a legume—one partner can “stop cooperating before it makes a bad investment.” Partner choice explains some forms of associations, but “cooperation has many forms. It is deep and challenging, and one hypothesis doesn’t work across all these different forms.”

“Understanding the complex and often positive role the microbiome has precipitated a real renaissance in biology.”

**Get Together**
Cooperation sometimes evolves when the costs outweigh the benefits. "As organisms get more and more interdependently aligned," Porter says. One example of a stable symbiotic relationship is between the Hawaiian bobtail squid and its bacterial light organ. A bacterium called Vibrio fischeri lives in the squid's light organ. In exchange for sugars and amino acids, V. fischeri gives light—a benefit for the squid with protection from predators as it nocturnally feeds close to the ocean surface. Without the bacteria's glow, the squid would present a dark silhouette against the moonlit surface, making it easy pickings for human predators. Studying from the depths below, Porter says "the squid is exquisitely poised to maintain cooperation in these bacteria because the same genetic capacity that makes these bacteria glow allows them to detoxify chemicals the squid fills its light organ with. So the key trait of the bacteria that helps the squid is also the same one that allows it to live in the squid's organ. It can't cheat, because if it didn't have the genetic capacity to make light, it wouldn't be able to live there anyway."

Another method symbioses use to ensure a good fit is called screening. Basically, the host organism sets up an entrance exam that a good fit is called screening. Porter points out, "We're far from understanding how to restore wild-type microbial communities to crop plants would help make agriculture more sustainable because we don't know what the costs might be. Maybe being better at managing symbionts now is a lot of energy that might otherwise go to producing a larger yield, or to having some other benefit."

Porter says, "We have to do the science first! We have to find which aspects of the microbiome changed during crop domestication and which did not." It's possible that some crops are better off not relying on their microbiomes. "There are lots of steps to figure out before providing products to farmers." These products, called inoculants, will be applied to seeds, or sprayed on fields after sowing.

"The Holy Grail," Porter continues, "is identifying the ways in which crops are deficient in their ability to control symbionts," and comparing the genetics of these plants with wild relatives that manage the relationship well by making sure cheaters don't prosper.

"We could then infer those traits back into crops and reduce our dependence on agrochemicals." In general, plants are often slow and require many generations of backcrossing to successfully move a trait from one species to another—but it is more acceptable to consumers than genetic engineering, where a gene is artificially introduced into the target plant's genome. The recipient of a prestigious National Science Foundation Early Career grant, Porter's group is seeking to answer the question, "How can we harness or exploit crops' ability to benefit from microbes through domestication?" In looking for the genetic controls of symbiosis, they hope to "select variants that allow the plant to have optimal symbiosis and optimal outcomes with its microbes."

Porter says, "It's possible that some crops are better off not relying on their microbiomes. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get

specifying SPECIES

Miles Roberts (’20 Biol.), an undergraduate working in Porter’s lab, submitted his recent gradation, investigated the heavy metal-tolerant mesorhizobia before heading off to graduate school in Michigan. For his honors thesis, he and his lab mates found that some of these bacteria were adapted to these soils while others were not. "The bacteria that are adapted to these soils have different traits than the ones that aren't."

Porter suggests that, rather than species, bacteria might be organized in terms of their ecological roles and niches. "Even in pathogenic organisms you may have chimeras that are highly infectious and deadly, or that doesn't infect anyone. In terms of the ecological impact of these two different strains of the same species, they're fundamentally different and yet they may only differ in small portions of their genome." Porter says, "We have domesticated many crop plants with wild relatives that manage the relationship well by making sure cheaters don't prosper."

Porter’s group is seeking to answer the question, "How can we harness or exploit crops' ability to benefit from microbes through domestication?" In looking for the genetic controls of symbiosis, they hope to "select variants that allow the plant to have optimal symbiosis and optimal outcomes with its microbes."

Porter says, "There are lots of steps to figure out before providing products to farmers." These products, called inoculants, will be applied to seeds, or sprayed on fields after sowing.

"The Holy Grail," Porter continues, "is identifying the ways in which crops are deficient in their ability to control symbionts," and comparing the genetics of these plants with wild relatives that manage the relationship well by making sure cheaters don't prosper.

"We could then infer those traits back into crops and reduce our dependence on agrochemicals." In general, plants are often slow and require many generations of backcrossing to successfully move a trait from one species to another—but it is more acceptable to consumers than genetic engineering, where a gene is artificially introduced into the target plant's genome. The recipient of a prestigious National Science Foundation Early Career grant, Porter's group is seeking to answer the question, "How can we harness or exploit crops' ability to benefit from microbes through domestication?" In looking for the genetic controls of symbiosis, they hope to "select variants that allow the plant to have optimal symbiosis and optimal outcomes with its microbes."

Porter says, "It's possible that some crops are better off not relying on their microbiomes. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get nutrients and critical to their health. But there appears to be a catch. Agricultural crops get..."
Although American farmers are historically White, male, and older, the faces of small farmers in Washington state are becoming more diverse. They include more women and people of color—particularly Latino—as well as young, military-veteran, and first-time farmers. Among their biggest challenges: coming up with capital and locating land.

Despite the hurdles, a new crop of Washington’s small farmers are finding their way to farming from varying backgrounds and employing different entry points into agriculture. They are farmworkers like Silva; Melony Edwards, a young Black woman who started in food service; and Jim Long, a first-time farmer after 30 years in the United States Air Force.

Silva was born in the village of Santa Cruz Yucucani in Guerrero, Mexico, and spent a lot of time growing up at his grandmother’s house outside of town. He raised animals and grew corn and beans before moving to the Skagit Valley. Silva picked strawberries in western Washington for about 15 years before making a transition most pickers never achieve: from farmworker to farm owner and operator.

While Latino people make up 83 percent of all farmworkers, according to the U.S. Department of Labor, they account for just 3 percent of farm owners. Language and other barriers keep many from making the move. Washington State University Food Systems’ Immigrants in Agriculture Program helps farmers like Silva write business and whole-farm plans, apply for grants and loans, explore value-added products, connect with markets and buyers, and more.

The Immigrants in Agriculture Program, jointly housed out of WSU Skagit County Extension and the School of the Environment, is just one way that WSU Food Systems helps Washington agriculture, particularly first-time and small farmers. Those farmers can take classes, tour farms, attend specialized farming conferences, and meet with and learn from successful farmers. The program also offers online farm finder tools that make it easier for consumers to connect with local food producers.

“The small farmers of Washington state are really the backbone of the local food community,” says Nicole Witham, statewide coordinator for Food Systems, a program of WSU Extension within the College of Agricultural, Human, and Natural Resource Sciences. “If we don’t foster and support them, we’re not going to have a local food system.”

“We need a pipeline for new and beginning farmers. They are the farmers we’re going to rely on to provide us food within our local community,” she says. “We’ll rely on them more than ever in the future. With the world population expected to reach 9 billion by 2050, the United Nations Food and Agriculture Organization estimates that, in food everyone, sustainable food production will have to increase by 70 percent. However, there is an across-the-board decline in the numbers of farms, farmers, and farmland, as well as an aging group of farmers, in the United States.”

He took English as a second language classes at Skagit Valley College, a tractor-driving class through WSU Skagit County Extension, and Cultivating Success, which offers an overview of production and marketing options for modern small farms. “I learned how to start a farm business, write a business plan, and think about your goal and your mission,” Silva says. “I also learned how to create your own policies and how to comply with government regulations.”

In 2016, his employer, Bow Hill Blueberries, rented a quarter of an acre of certified organic land to Silva so he could cultivate his own berries. Silva expanded, renting an acre for organic strawberries at Viva Farms, a nonprofit farm business incubator and training program in King and Skagit Counties. Its mission is to empower aspiring and limited-resource farmers by providing bilingual training in holistic, organic farming practices as well as access to land, infrastructure, equipment, marketing, and capital.

“Owning a business was completely new to me,” Silva says. “I had never owned a business before. I had always worked for someone else in agriculture. In a way, that’s easier. You work and, yes, it’s really hard work. But at the end of the day you can go home and you don’t have to think about the business.”

Now as an owner and operator, “you go home and you have to think about it—from planting all the way to sales.”

Silva is no stranger to long hours. As a longtime farmworker, he would often leave for work around 4:00 in the morning and return around 10:00 p.m. or midnight, depending on harvest and additional duties. “I couldn’t see my kids,” he says. “I would leave while they were sleeping, and I would come home when they were sleeping.”

Most days, it’s still like that, leaving around 5:30 in the morning before his children wake up. But now he works during the day for a smaller organic berry farm with stable hours and returns home from his own agricultural enterprise at night.

Silva and his wife, Mauna, established Silva Family Farms in small steps with support from the Food Systems’ Immigrants in Agriculture Program. “In Mexico, I just finished third grade,” Silva says. “We lived so far from town. It was hard to get there, and the teacher was not there every day.”

Pablo Silva
Silva Family Farms, Burlington and Oak Harbor

“Owning a business was completely new to me,” Silva says. “I had never owned a business before. I had always worked for someone else in agriculture. In a way, that’s easier. You work and, yes, it’s really hard work. But at the end of the day you can go home and you don’t have to think about the business.”

Now as an owner and operator, “you go home and you have to think about it—from planting all the way to sales.”

Silva is no stranger to long hours. As a longtime farmworker, he would often leave for work around 4:00 in the morning and return around 10:00 p.m. or midnight, depending on harvest and additional duties. “I couldn’t see my kids,” he says. “I would leave while they were sleeping, and I would come home when they were sleeping.”

Most days, it’s still like that, leaving around 5:30 in the morning before his children wake up. But now he works during the day for a smaller organic berry farm with stable hours and returns home from his own agricultural enterprise at night.

Silva and his wife, Mauna, established Silva Family Farms in small steps with support from the Food Systems’ Immigrants in Agriculture Program. “In Mexico, I just finished third grade,” Silva says. “We lived so far from town. It was hard to get there, and the teacher was not there every day.”

Pablo Silva
Silva Family Farms, Burlington and Oak Harbor

“Owning a business was completely new to me,” Silva says. “I had never owned a business before. I had always worked for someone else in agriculture. In a way, that’s easier. You work and, yes, it’s really hard work. But at the end of the day you can go home and you don’t have to think about the business.”

Now as an owner and operator, “you go home and you have to think about it—from planting all the way to sales.”

Silva is no stranger to long hours. As a longtime farmworker, he would often leave for work around 4:00 in the morning and return around 10:00 p.m. or midnight, depending on harvest and additional duties. “I couldn’t see my kids,” he says. “I would leave while they were sleeping, and I would come home when they were sleeping.”

Most days, it’s still like that, leaving around 5:30 in the morning before his children wake up. But now he works during the day for a smaller organic berry farm with stable hours and returns home from his own agricultural enterprise at night.

Silva and his wife, Mauna, established Silva Family Farms in small steps with support from the Food Systems’ Immigrants in Agriculture Program. “In Mexico, I just finished third grade,” Silva says. “We lived so far from town. It was hard to get there, and the teacher was not there every day.”

Pablo Silva
Silva Family Farms, Burlington and Oak Harbor
Since its founding in 2009, Viva Farms has trained more than 1000 small farmers in sustainable organic farming. Today, Silva cultivates three and a half acres of organic strawberries and raspberries at the farm incubator. He also grows organic blueberries, raspberries, and blackberries on four acres at his own farm in Cig Harbor, which offers U-pick on weekends. “It’s a lot,” he says. “My wife helps me a lot. That’s why I can do it. Otherwise I won’t make it.”

Melony Edwards found her way to farming through food service. “I’m young and Black, and I’m a woman. There’s not a lot of farmers like me in Washington, especially in rural farming,” Edwards says. “I’ve learned my paternal great-grandmother followed her siblings to Detroit for a better life.” Some six million Blacks left the rural South for the urban West, Midwest, and Northeast to look for jobs, often as industrial laborers. The Great Migration lasted from 1916 to 1970. Now, Edwards says, “I want to acknowledge my ancestors and their struggle and the land.”

Since going through WSU’s Cultivating Success program, Edwards has become not only a farmer but an advocate and activist, sharing her story to encourage other aspiring farmers, particularly young people of color and especially women. She has become not only a farmer but an advocate and activist, sharing her story to encourage other aspiring farmers, particularly young people of color and especially women. It’s part of her mission of changing the narrative around people of color joining the farming community, specifically in rural areas.
for young farmers, including beginning farmer training, outreach to socially disadvantaged farmers, and mental health services for farmers. She was recently appointed to serve on the coalition’s board of directors. She’s also shared her story and perspective in essays and on panels, including, in 2018, the inaugural Scotia Food Tank Summit and the Triple Alliance Conference, where she gave a talk titled “The Unbearable Whiteness of Farming in the PNW.” Today, she’s working on building a network of Pacific Northwest Black farmers. She’s also working with the Oregon Seed Alliance to help build a network of Black seed growers.

She’s participating in the 2020 Heatlows Collard Green Variety Trial, hosted by Seed Savers Exchange and Southern Exposure Seed Exchange, and growing some 20 different varieties of heritage collard greens, including a few that were almost forgotten. She also continues stewarding the land dyed fiber as well as seeds. She also continues stewarding the land in South Dakota and were interested in scaling up. “We saw that we could make an income and not have to punch a clock,” says Jim, who grew up in Mead and was stationed around the country and overseas. He and his wife had been planning to move to Montana in retirement until they stumbled upon property outside of Spokane—

Jim and Connie Long
Fresh Cut Farms, Deer Park

Jim and Connie Long founded Fresh Cut Farms in 2016, planting berries, starting a garden, and taking the name from the road where they live, Cross Cut. “We’re Fresh Cut on Cross Cut,” says Jim, who retired with the rank of chief master sergeant in April 2019. In 2017, just one year into their farming operation, he was stationed overseas for a 12-month assignment, leaving Connie to manage their new venture on her own. Before he left they sold off the cows and goats to help lighten her load. She brought berries to the farmers market for the first time that year. When Jim returned, the couple sold berries and other produce at two farmers markets instead of one. They also planted 120 cherry, apple, peach, nectarine, and apricot trees on about a half-acre. They’re hoping to increase their orchard to an acre and a half during the next several years.

The Longs also hope to expand their garden, which now stretches about a third of an acre, to an acre and a quarter, but not much more. “We’re both hands-on,” says Connie, who worked in management for a hospitality company before retiring a couple of years before her husband. “That’s enough for the two of us,” Jim says. “We can’t do much more than that.”

Last winter, with the help of a USDA grant, they installed two high-tunnel greenhouses to expand their offerings. “We want to make it like a grocery store experience, so we have variety and you can get all your vegetables at one stop,” Jim says, noting, “We won’t sell anything we don’t grow ourselves.”

While their farm isn’t certified organic, the Longs use organic practices. Among their crops—kale, Kohlrabi, Bibb and other lettuces, spinach, peppers, raspberries, strawberries, squash, tomatoes, potatoes, corn, cabbage, and more. Now they’re regulars at three farmers markets: Clayton on Sundays, Fairwood on Tuesdays, and Enumclaw-Garfield on Fridays. Twice a week, they also offer online ordering with pick-up on Thursdays and Saturdays. Their plan is to grow slowly—and that’s something they learned through WSU. They went through Cultivating Success as well as five or six other classes through Extension and Spokane Neighborhood Partners. Lessons learned include, Connie says, “Don’t try to do everything at one time. Start small, then move on to the next step. Master that and keep going.”

The classes “gave us ideas and contacts,” Connie says. “They laid the foundation.”

Long-term plans include turning two small grain silos into campsites, and maybe adding U-pick opportunities. The Longs are also thinking about adding flowers and Christmas trees. And, when the historical farmhouse is renovated, “We want to get into agritourism,” Jim says. “We’d like to be self-sustaining, like the farms of old. We would like to grow and take care of ourselves.”

33,000 are small farms

The U.S. Department of Agriculture’s latest Census of Agriculture shows an across-the-board decline in the numbers of farms, farmers, and farmland, with serious implications for food production, the environment, and the next generation of farmers.

Small farms make up 90 percent of farms nationwide but account for just over half of America’s farmland. It’s a similar landscape in Washington state, where there are nearly 35,800 farms—down from over 40,100 farms 20 years ago. Of those, about 33,300 are considered small farms.

American farmers average 58 years of age—more than a third are 65 and older, and more than another third are between the ages of 55 and 64. Of this country’s 11.4 million farmers, 79 percent are potentially slated to retire within the next 20 years. Most—95 percent—are White. And most—64 percent—are men.
The ultimate physical exam

BY ADRIANA JANOVICH

SALLY AIKEN became president of the National Association of Medical Examiners at the start of 2020. The first calls about the novel coronavirus came in early March. Since then, she’s talked about the pandemic with reporters from Politico, Vice, Chicago Tribune, Miami Herald, Washington Post, Wall Street Journal, USA Today, Rolling Stone, Daily Mail, Associated Press, CNN, CBS, NBC, ABC, and more.

“Y ou name it,” says Aiken (’78 Bacterio. & Public Health), who’s become a go-to expert source for the media and the main spokesperson for the association while maintaining her demanding day job. “It’s been crazy.”

Aiken, a board-certified forensic pathologist, serves as Spokane County medical examiner, overseeing an annual budget of about $1.4 million and an office that performs more than 575 autopsies each year. She’s held the position for 20 years, performing more than 9,000 autopsies in all and testifying in court so many times she’s lost count. “I stopped counting after 400 times and that was a long time ago,” she says, noting her role has become more challenging in the face of COVID-19, which she says is one of the most unusual experiences of her career.

But, long before the pandemic began, her field experienced another challenge: a shortage of board-certified forensic pathologists during the ongoing national opioid crisis. The country’s premier professional organization for medical examiners that Aiken heads is working on a number of initiatives to increase numbers. Aiken, the sixth woman president in the association’s history, was elected to the top post in fall 2019 while serving as its vice president. Her one-year term ends in December.

Meantime, she represents more than 1,300 members, including nearly 600 board-certified forensic pathologists with specialized training in investigating deaths and performing autopsies in unnatural deaths, such as homicides. In Washington state, a medical examiner must be a board-certified forensic pathologist by law. This differs from coroners, elected officials who are responsible for investigating unnatural deaths but don’t perform autopsies.

The role, Aiken notes, is often misrepresented on screen. “You’ll see women in leather and full makeup,” she says. “In real life, it’s not as glamorous. We’re wearing full PPE, especially now. You’re wearing three pairs of gloves, and your hair is covered—the whole thing.”

“We’ve always been at risk for infectious diseases, from COVID-19 to AIDS and more,” she says. “One of the changes because of the pandemic is we have to wear PPE when we go out to scenes. Also, we now screen everyone for COVID-19. If any of those 12 symptoms we use for screening are positive, then we need to test. We’ve been very fortunate in Washington because the state has been very proactive in dealing with people who die of COVID-19. We’ve had test kits available the entire time and can get results in a day or two.”

Other tests take longer than portrayed on TV. “It takes a long time to get DNA back,” Aiken says. And, “We don’t always get the answer. In TV shows, there’s always an answer. But, sometimes, a death remains a mystery, something medical you haven’t seen before, something unusual. You’re always learning.”
This year, the number of deaths is up "and most have been COVID-19." The TV path- 
tick started in January before we really believed COVID-19 was circulating that much. Suicides have been up 15 percent nationally for the last three years, and the state has seen an increase here. We’re also worried about opioid deaths. And, people are staying home a lot more these days, so a lot of usual home accidents are happening. It seems that people are driv- ing faster and taking more risks in general."

Some of the high-profile cases she’s worked include one of the victims of "Yosemite Killer" Cary Stayner, who was con- victed of four counts of first-degree murder in 1999. Chasin Starbuck, a mother of five who was strangled in her home in 2001; and Summer Phelps, a 4-year-old who died in 2007 as a result of child abuse. But Aiken notes, high-profile cases are not any kind of a burden in her practice. After they find answers for grieving family members is more important to her, regardless of whether the case is mentioned in the media.

Aiken comes from a big Coug family. Her sisters Kathy Aiken ('80 PhD Hist.) and Carol Aiken ('82 Bacterio.) and Jerry Aiken ('81 Hist.) are all WSU alumni. Her father, William David Aiken (x'47), at tended then-Washington State College before working until his retirement. He is a State University Cougars. "My four years at WSU were four of the best years of my life, and I wouldn’t trade that for anything," Aiken says. "I love being a West Side Coug.

When she was in fifth grade, TARYN DALY convinced her parents to take her to a local Circuit City store, where KUBE 93.3 was hosting an event with longtime Seattle DJ Eric Powers. Daly wanted to meet him.

"He was the first radio DJ that I felt I could connect to," she says. Nearly 20 years later, Powers is a weekday afternoon host at today's KUBE 107.7 Seattle, and "when they told me he was going to be on air on one of our sister stations, I fanned so hard.

"Those days waited in line at promotional events and music festivals like Pain in the Grass to meet Daly (’07 Comm.), who was the weekend DJ at 99.1 KISSW "The Rock of Seattle." Her signature tagline, "Taryn It Up." "I think radio keeps you young," Daly says.

She’s known for her on-air energy and enthusiasm as well as love of Rush, local India music station; KSWD 94.1 The Sound and its soothing contemporary favorites; and KISW 99.9 FM, which is really apparent right now during COVID-19.

"I’ve never regretted this line of work," Aiken says. "It’s a privilege. You speak for the dead. But you do this work to benefit the living, and for adjudication and also for public health, which is really apparent right now during COVID-19."
about to embark on a graduate degree? Why did I choose to do the basic research well, and my job at Fred Hutchinson. I loved the basic drug, experience that was crucial in landing me how to do the basic research well, and career?

A longtime motorcycle enthusiast, Castro enjoys planning long rides. He recently rode from Tijuana through Baja California with his sons, Lucas and Pete, a videographer who documented the adventure in a YouTube series. Castro’s latest motorcycle trip—from Rio de Janeiro through Patagonia—was thwarted due to the pandemic. But, in 2008, he rode some 6,000 miles roundtrip from Redmond to Alaska and, in 2013, he rode from Redmond to Rio.

That same year, Magellan was named one of the fastest-growing minority-owned businesses in Washington by the Puget Sound Business Journal. The firm opened an office in California in 2011, another in Dallas, Texas, in 2017, and another in Rio De Janeiro in 2019. Castro is actively looking for more. When architects join what he calls “the Magellan family,” the office handles billing and other chores “architects hate.” They share personnel and marketing to minimize the “hire and fire” cycle that can happen with market fluctuations. Castro co-owns of the new offices, and principal shares so that they can eventually become full owners.

“Transitioning to the role of coach and consultant,” says Castro, noting he’d like open as many new offices as he can. “If good people have good mentorship, it minimizes failures.”

The son of an architect in Rio de Janeiro, Pedrito’s work starts in his own office, where architects and support staff come from a variety of backgrounds, and about half of the 27 employees are women. Part of the reason is that the company was “flexible from the beginning, being a true start-up” when he opened it in 2000. Castro says. His role was a part-time worker while raising their three chil-
dren, and so he was open to hiring women who were doing the same thing. He has continued with flexible scheduling for any worker who needs it—a bonus when it came to working around the novel coronavirus pandemic.

Now he calls himself “Chief Explorer Officer,” rather than the traditional CEO, and is concentrating on starting new offices and coaching new owners in the western United States and Brazil.

Architectural and engineering companies headed by minority owners are, well, a minority. They are mostly small and don’t have the networking base that larger, more-established companies do. PEDRO CASTRO (’92, MS Arch.), owner of Magellan Architects in Redmond and an immigrant from Brazil, has taken a lead in mentoring minority-owners of Puget Sound-area architecture and engineering companies.

“I want my personal goal, to run a successful business, as they were there to help the WSUAA reach 40,000 members, why not try to triple it? In 2018, the WSUAA launched its “40 By ’20” membership drive. Once again, the Cougar family joined in the effort. Along the way, member support propelled the WSUAA to be ranked among the top alumni associations in the world.

As the WSU system grew, so did its need for alumni support. If the WSUAA was able to double membership, why not try to triple it? With the unwavering support of its members, the WSUAA has achieved its goal of reaching 40,000 members of the WSU Alumni Association by 2020.

Back in 2003, the WSUAA had only 13,000 members. WSU needed more Cougs to be engaged with the University, so the WSUAA set its sights on doubling its number of members. This was an enormous undertaking, one that some people thought was crazy. However, the WSUAA knew that the Cougs would respond. And, they did. In 2012, the WSUAA exceeded 26,000 members.

As the WSU system grew, so did its need for alumni support. If the WSUAA was able to double membership, why not try to triple it? In 2018, the WSUAA launched its “40 By ’20” membership drive. Once again, the Cougar family joined in the effort. Along the way, member support propelled the WSUAA to be ranked among the top alumni associations in the world.

40 by ’20

With the unwavering support of its members, the WSUAA has achieved its goal of reaching 40,000 members of the WSU Alumni Association by 2020.

Back in 2003, the WSUAA had only 13,000 members. WSU needed more Cougs to be engaged with the University, so the WSUAA set its sights on doubling its number of members. This was an enormous undertaking, one that some people thought was crazy. However, the WSUAA knew that the Cougs would respond. And, they did. In 2012, the WSUAA exceeded 26,000 members.

As the WSU system grew, so did its need for alumni support. If the WSUAA was able to double membership, why not try to triple it? In 2018, the WSUAA launched its “40 By ’20” membership drive. Once again, the Cougar family joined in the effort. Along the way, member support propelled the WSUAA to be ranked among the top alumni associations in the world.

40 by ’20

With the unwavering support of its members, the WSUAA has achieved its goal of reaching 40,000 members of the WSU Alumni Association by 2020.
Do No Harm

JAMES S. COHOON ’76 BILJ
TOUCHPOINT PRESS: 2020

Matthew Preston is just a kid when his father is shot and killed while contemplating a burglary in their home in the trendy Los Angeles enclave of Pacific Palisades. The culprit, Ted Nath, is the twenty-something uneo-wo-man of do-no-well neighborhoods: a distant, workaholic father and doting, clueless mother. He’s sentenced to life in San Quentin State Prison. But that’s not enough for Matthew, who obsesses over avenging his father’s murder.

Matthew is a straight-A student and standout athlete who attends the Stanford University Medical School with the nefarious plan of becoming a prison doc- tor in order to gain access to Nash. While Matthew’s hitting the books in medical school, the killer’s family files a petition to get him released, and Matthew hastens his scheme to exact revenge.

By now, he’s fallen for his study part- ner, the plucky and whip-smart Torrey Jamison, who did not enjoy the same kind of affluent upbringing. She’s at Stanford on a full scholarship—and fighting her own troubled past.

Both take the Hippocratic Oath in a White Coat Ceremony at the beginning of medical school. And the big question throughout this suspense-filled story: who is one of them break it before they graduate?

James Cohoon’s fast-paced, tension- filled novel combines law and medicine with themes of privilege and power, corruption, socioeconomic inequality, entitlement, misogyny, and more. Despite those heavy subjects, though, the book reads quickly. It won the 2020 American Fiction Award for best medical thriller.

Cohoon spent more than thirty years as a civil litigation lawyer and served as president of an ABA-based firm until his retirement in 2014. He and his wife Rozanne Cohoon (’76 BIS) have two children: a track-star daughter who went to Stanford and worked as a lawyer, and a son who practices medicine in southern California.

—Adriana Janovich

BRIEFLY NOTED

The ISDS Reader: Milestone Texts of the Islamic State Movement
HABIBO J. JACOBS, CHARLIE WINTER, AND CHERYL PEMBERTON ’14 PHD POLI. SCI.
OXFORD UNIVERSITY PRESS: 2020

This scholarly compendium examines key milestones and messages of the Islamic State without sensationalizing or merely recounting them. It’s a timely and thorough guide for those seeking to better understand the development and dynamics of IS. Coauthors Craig Whitwer, associate professor of national security affairs at the U.S. Naval War College in Newport, Mont., and David Cook, a busy risk-taker who was hardly at home and made national headlines during the last quarter-century of his extraordinary life.

Meeker plotted Puypullas, dubbed in motion picture-making, drew crowds as he drove his covered wagon down Broadway, met President Theodore Roosevelt, and joined the cast of a Wild West show in 1925 when he was 94. So, in 1906 at age 75, he embarked on a two-and-a-half-year route like he did in 1852. So, in 1906 at age 75, he embarked on a two-and-a-half-year route like he did in 1852.

King of the World” wanted to mark the first mayor of Puyallup, and one-time “Hop

in 1925 when he was 94. At 96, he sold operations, and maps in the book.

Francis for Kids

The ISIS Reader: Milestone Texts of the Islamic State Movement

FRITZ BARNES '89 MS SOIL SCI.

FLORIDA INTERNATIONAL UNIVERSITY PROFESSOR Michael Sukop aims to make the concepts and mathematics of fractals easily understood by children, using the simplest terms and examples. This is a significant departure from his earlier works on computational fluid dynamics, including Lattice Boltzmann Modeling: An Introduction for Geoscientists and Engineers (Springer, 2001) and Multiscale Lattice Boltzmann Methods: Theory and Application (Wiley, 2015).

Poaching Spree

TODD A. VANDERVET ‘79 FOREST AND RANGE MGMT.

2019

Baffled by a long-running poaching threat that leaves dozens of big-game animals dead, two game wardens work to apprehend the perpetrators. Vandervet, a retired detective with Washington Department of Fish and Wildlife, series about the dark world of wildlife trafficking in this novel using his own experience.

Listen to WSU stories

WASHINGTON STATE MAGAZINE WINTER 2020

VIEWSCAPES—Podcasts from Washington State Magazine

| APPLE PODCASTS | GOOGLE PODCASTS | HEART RADIO | SPOTIFY | STITCHER | AMAZON MUSIC/RODCAST |

FRACtals for Kids

MAGAZINE WINTER 2020

WASHINGTON STATE MAGAZINE WINTER 2020

WASHINGTON STATE MAGAZINE WINTER 2020
DON WELLER (’60 Fine Arts) won the Western Heritage Award for literature for Don Welles: A Visual Memoir. The book includes paintings, short stories, and essays of Welles’ early career in illustration and design in Los Angeles as well as paintings of cutting-horse and ranch adventures in Texas and Utah.

JOHN THORESEN (’72 Bus.), CEO of the Barbara Sears Children’s Center Foundation, was honored by UDO Today Magazine as one of the global healthcare leaders in its 2020 Healthcare Leaders issue.

JAMES “JIM” ANDERSON (’77 Env. Sc.), was recently appointed to the Washington State Fish and Wildlife Commission. He received from the Northwest Indian Fisheries Commission in 2010, where he served as executive director for 20 years. He lives in Buckley with his wife Dianne Meserve (’77 Env. Sc.).

LINDA ADAMSON BARTA (’76 Comm.) retired from the Wenatchee World after 42 years as an editorial assistant, local history columnist, and editor of the Douglas County Empire Press.

JO ANNE WAGSTAFF (’77 Phys. Ed.) received the Distinguished Service Award from the athletic Northwest Conference. Wagstaff started at Whitworth University in 1984 as the women’s tennis coach. She stepped down in 2015 after taking the Pirates to three national championships. She was named Northwest Conference coach of the year in 1984 as the women’s tennis coach. She was later elected to the board of directors, and served as president of the board and chairman of the expansion committee.

MARK LED (’83 Pharm.) is the new dean of the WSU College of Pharmacy and Pharmaceutical Sciences. EDWARD CHVALAT (’94 Agri. Mech.) has joined the Walla Walla Catholic School board of directors.

GARY BALLEW (’94 Educ. Eng.) retired after 36 years at the Grays Harbor Public Utility District. During his career, Ballew served in numerous roles, including district engineer, senior district engineer, substation engineer, and substations engineering supervisor.

JO ANN WAGSTAFF (’77 Phys. Ed.) retired after 36 years at the Grays Harbor Public Utility District. During his career, Ballew served in numerous roles, including district engineer, senior district engineer, substation engineer, and substations engineering supervisor.

KIM MILLER (’95 Pharm.) is the new director of research and development and marketing at the Port of Pasco.

GREG LANDIS (’90 MBA) has joined the board of directors at technology company Rambus. MOHETSI MAJORO (’90 PhD Ag. Econ.) is prime minister of Lesotho. He served as the minister of finance from 2017 to 2020 and minister of development planning from 2015 to 2013. Majoro joined the finance ministry as an analyst in 2000 and was promoted to principal secretary in 2004. From 1991 to 2000, he was a lecturer in economics at the National University of Lesotho.

CHRIS EIDE (’94 Educ. Eng.) retired after 36 years at the Grays Harbor Public Utility District. During his career, Ballew served in numerous roles, including district engineer, senior district engineer, substation engineer, and substations engineering supervisor.

JAMES MULL (’94 Educ. Eng.) retired after 37 years at the Grays Harbor Public Utility District. During his career, Ballew served in numerous roles, including district engineer, senior district engineer, substation engineer, and substations engineering supervisor.

DANIEL Y. HABUKI (’94 PhD Ag. Econ.), has retired after 27 years of leadership. He oversees the opening of the school’s Altos Vego campus in 2001 and construction of a performing arts center, academic building, additional residence halls, and recent completion of a state-of-the-art life sciences building.

ANNA MARIE DUFAULT (’86 Ed.) is interim principal at Yakima Discovery Lab School.

LAURA HENNIUS (’87 Comm.) is the chief executive officer of Good Samaritan Regional Medical Center in Corvallis, Oregon. Hennius had served as regional CEO for a string of midsize hospitals in northern Nevada, seeding the time between Nevada and Washington to develop and operate health facilities in the Puget Sound region for MultiCare.

STEPHANIE ROHMAN (’91 Bus. Admin. and Finance) is head of innovation at Catalyst Housing.
CLASSNOTES

The office that prepares bid-build design packages and builds procurement packages, Bellesbrook, Virginia, region in construction administration, project controls and reporting, preparation of environmental statements and general transportation design at Wood, he’s managing the I-405 expansion design from Renton to Bellevue, among other infrastructure projects in Washington. He and his wife, THERESA (WEST) BELL (’96 Arts, Sci.), reside in Zillah. CARLIE BEEBE (’98 Kinез.) is the athletic director for Chersian High School. LIS PANNI (’99 Eng.) is the new director of library and information services at Southern Illinois University. EveryMatrix has appointed KENDRA WIDGER (’94 Comm.) as project engineer to its team for medical providers treating organ operations at Donor Network West. She has been promoted to senior accountant at the Rosauers Open as an amateur. Both times, he declined the first-place prize monies in order to maintain his amateur status. KERIE BARANTES (’13 PhD Nuring Practice) is a doctor of nursing practice at Grays Harbor Community Hospital’s Massage Therapy Clinic. ALEK A. HOLLINGSWORTH (’19 DVM) is a veterinarian at the Humane Society of Weld County in Evans, Colorado. JOE POLIN (’20 Acc.) has joined OMC as an associate after interning with the firm last tax season. OldePointe Communities has hired JACK SPARKS (’20 Chem. Eng.) as project engineer to help develop Ten Ten, a smarter planned community located in Black Diamond. KENNETH STANTON (’20 Acc.) has joined JiffyBlack. Johnson & Johnson account.

WASHINGTO снов州 MAGAZINE WINTER 2020

31 HOSPEX

The Russell and Sheri Crawford Legacy Scholarship in Pharmacy was established with a major gift from Rusty, class of 1987, and Sheri, class of 1988, who felt compelled to honor their ties to WSU and their careers in pharmacy. They hope their investment in our student pharmacists encourages others to consider giving to the College of Pharmacy and Pharmaceutical Sciences.

YOU THANKED US!

GIVING MAKES A DIFFERENCE!

The Russell and Sheri Crawford Legacy Scholarship in Pharmacy was established with a major gift from Rusty, class of 1987, and Sheri, class of 1988, who felt compelled to honor their ties to WSU and their careers in pharmacy. They hope their investment in our student pharmacists encourages others to consider giving to the College of Pharmacy and Pharmaceutical Sciences.

YOU THANKED US!

GIVING MAKES A DIFFERENCE!

The Russell and Sheri Crawford Legacy Scholarship in Pharmacy was established with a major gift from Rusty, class of 1987, and Sheri, class of 1988, who felt compelled to honor their ties to WSU and their careers in pharmacy. They hope their investment in our student pharmacists encourages others to consider giving to the College of Pharmacy and Pharmaceutical Sciences.

YOU THANKED US!
THE COX FAMILY LEGACY

SINCE 1890, WASHINGTON STATE UNIVERSITY has been committed to providing students from all walks of life the opportunity to become more aware, engaged, creative, and socially mobile.

More than 50 years ago, Roscoe and Frances Cox recognized the impact that a land-grant college education could have on the next generation, and included the WSU Foundation as a beneficiary of their wills.

Today, the Roscoe and Frances Cox Scholarship is ensuring that each year more than 25 Cougs are able to continue their education, and follow their dreams of making the world a better place.

Use the attached form, or call 509-335-7883 to learn how you, like Roscoe and Frances, can make an impact.
The mice will play

Glacier mice could be something from a fairy tale—mossy little puffballs filled with tiny fanciful creatures.

“They are adorable—they really do look like little rodents,” says glacier biologist Scott Hotaling, a postdoctoral research associate at Washington State University. Hotaling studies organisms that live in the world’s coldest locations such as the ice sheets in Alaska and Iceland where these glacier moss balls are found.

Last April, his research with University of Idaho scientists Tim Bartholomaus and Sophie Gilbert was highlighted in the journal Polar Biology. Hotaling says studying moss balls helps scientists better understand the fragile glacier ecosystems that are disappearing due to climate change.

Glacier mice—squishy clumps of moss that form around a pebble or other glacial debris—were first reported by an Icelandic scientist in 1951. They appeared to live in colonies that mysteriously migrate around the glacier.

Hotaling says they now know glacier mice move by insulating the ice below them, which melts during summer except for a little pedestal under the moss ball. Once that pedestal gets too thin, the ball falls off and rolls.

“For this study, we wanted to determine how fast they move and in what direction,” he says.

Tracking moss balls on an Alaskan glacier, the researchers discovered the small pillows can move up to several centimeters per day—sometimes south, sometimes west but always as a choreographed herd. Hotaling says they don’t yet know why their movements are so synchronous.

They do know the moss balls provide homes and transportation for a thriving invertebrate community which includes shrimp-like springtails and chubby tardigrades, also known as water bears or moss piglets.

“The moss balls create islands on the glacier that buffer the environment and protect these organisms from the extreme effects of cold and UV light,” Hotaling says. “We’ve shown that since these islands mature, they can live about six years. That’s a long time for a little puff of moss.”

The doldrums of the pandemic have impacted our ability to produce the quality print magazines that you so enjoy. You can help us:

1. Give to Washington State Magazine | magazine.wsu.edu/friend |
2. Become a paid subscriber* (even if you receive now for free) | magazine.wsu.edu/subscribe |
3. Purchase a 2021 calendar (with beautiful images from the magazine) | magazine.wsu.edu/calendar |

With your help we can return to full sail. Thank you.
Our next issue is **digital only** but it’s still **easy to read...**

Due to budget cuts, the Spring 2021 issue of Washington State Magazine will be online only. The issue will launch on February 1, 2021. To read the magazine:
- All stories, videos, photo galleries, and more available at [magazine.wsu.edu](http://magazine.wsu.edu)
- Print-on-demand and PDF versions of the magazine on the website
- Connect with us on social media and sign up for our monthly email newsletter: [magazine.wsu.edu/connect](http://magazine.wsu.edu/connect)

The Summer 2021 issue will also have limited distribution. To receive your copy, join the WSU Alumni Association, if you haven’t already. You can also pay for a subscription.

Contact us: [magazine.wsu.edu/contact](http://magazine.wsu.edu/contact)

**You can help.** See the inside back cover for ways to keep WSU stories coming to your mailbox.