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Utah State Magazine, Spring 2019

Utah State University

Utah State

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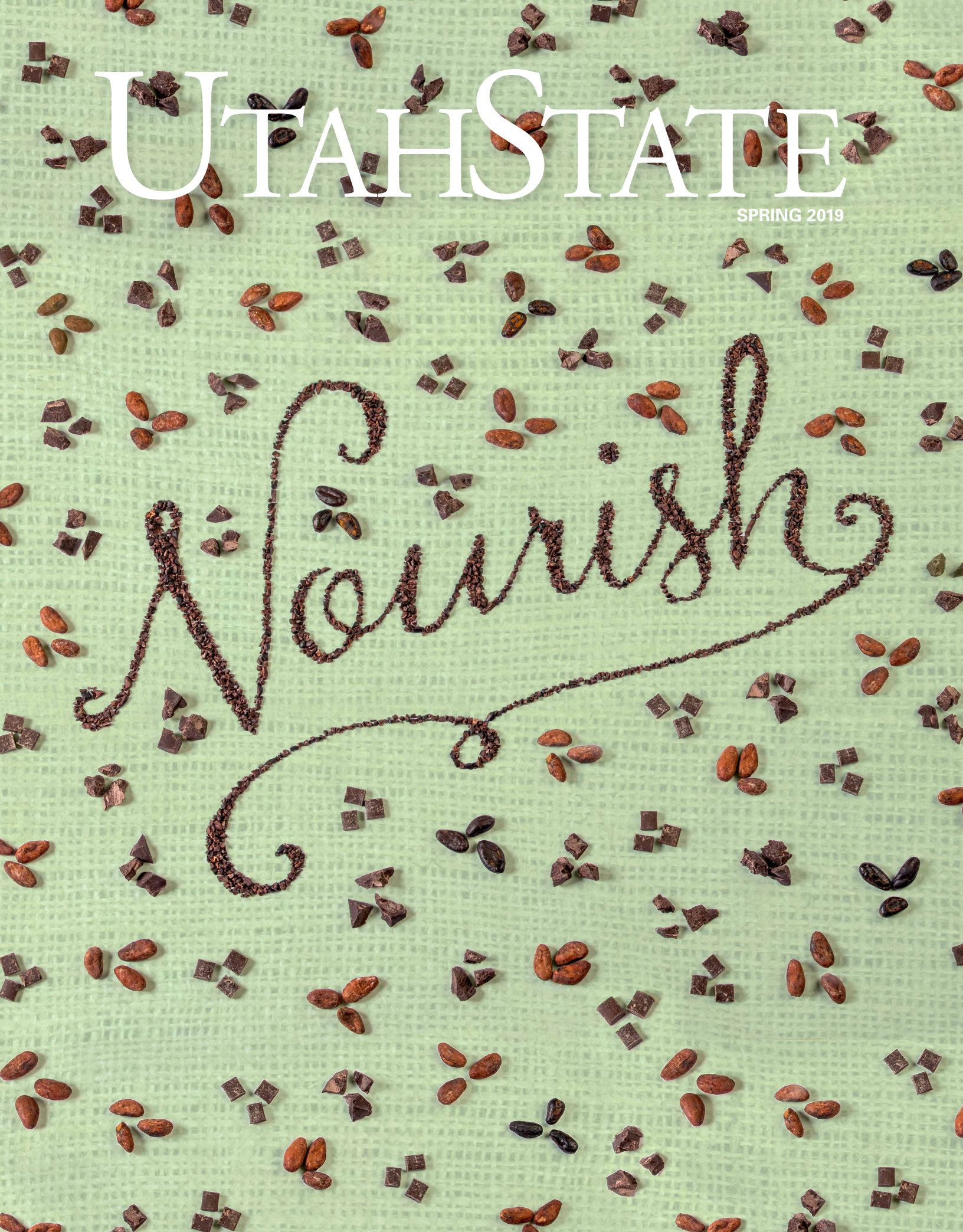

GIVING IS PERSONAL

GIFTS TO UTAH STATE UNIVERSITY COME IN ALL SHAPES AND SIZES, BUT EACH CONNECTS A PASSIONATE DONOR WITH AN APPRECIATIVE BENEFICIARY.

Betty Miller

understood, as very few can, the wonders of plant life.

A master gardener, she propagated prize-winning tea roses, chrysanthemums, and irises; and she shared a lifetime of wisdom with backyard amateurs and seasoned horticulturalists alike.

Though Betty passed away recently, her legacy lives on. Her children established the Betty Miller Family Endowment to provide scholarships for future master gardeners and to sustain the community demonstration gardens at USU Extension in Cedar City.

Betty cared for plants and continues to care for people through her gift. Because she believed, giving and gardening are personal.

Pictured: Betty Miller's daughters, Kathy Anderson and Donna Stratton.

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I grew up spending summers on my uncle's ranch in Montana with my two older brothers.

I baled hay, branded cattle, and plowed fields. The ranch was where I was first exposed to animal breeding and genetics, which I pursued as a master's and doctoral student at Oregon State University. That part of my history has been well publicized since I became president of Utah State University, but I've another part of my story that is not so well known and that involves gardening.

My father was a farmer by trade, and he also loved to garden. He planted a half-acre vegetable garden as well as annual and perennial flowers every year. My father died when I was in the third grade, but my best memories of him were working alongside him in the garden. I loved being out there with him.

I still love being outside in the garden especially when the sun is out and the birds are chirping. It's a meditative experience. It's my free time. The best part is working and improving the soil. (I have been known to rototill other people's gardens for fun.) I really enjoy planting seeds and starts and then watching them grow and flourish.

Gardening has been a lifelong learning project for me. I have a binder of information downloaded from USU Extension's website, and I reference the information whenever I need to troubleshoot a garden pest or learn more about a particular variety of vegetable I'm growing. Every year I plant something new—last year it was Brussels sprouts and this year it's artichokes—and I keep a journal of what I plant, when I plant, and how it worked out. It's a little like performing research.

Within my extended family, a college education was not something we were encouraged to pursue. But my father had other plans for his children. Before he died, he had my mother promise him that all six of their children would go to college. I attended Montana State University as an undergraduate and OSU as a graduate student—both land-grant institutions like USU.

Land-grant universities open the door for students to new professional opportunities. At USU I have focused on genetics in sheep, such as mapping the sheep genome and studying economically important traits like callipyge, a mutation that boosts muscle development in the sheep's hind quarters. Introducing this trait into other species like goats through genetic editing could address food shortage in third-world countries where meat is scarce or unaffordable.

Agricultural research like this happens across our university every day. USU was founded under the Morrill Land-Grant Agricultural and Mechanical College Act of 1862, which was designed to promote the agricultural and mechanical arts. Until 1957, USU was known as the Utah State Agricultural College—and still is to some alumni. While our focus has broadened over the decades, USU still engages in areas critical to work-force development in agriculture, food production, and human health and wellbeing.

USU has people investigating the health properties of functional foods in the nutrition science program, researchers developing new strains of wheat for dryland farming, and individuals studying native plants for water efficiency properties in the horticulture program. As a gardener, I frequently shop at greenhouses—many actually know me by name—and whenever possible, I purchase plants developed at USU. Once home, I dig a hole, loosen the dirt between my fingers, add some fertilizer and water, and then wait to see if the roots take hold. **A**

Noelle displays some of the harvest from her garden in Mendon, Utah.

The Power of Food

In March, the university celebrated its 131st birthday. It included a full banquet served by Dining Services. For what is a celebration without food? For that matter, what is our university without it?

And where would we even be? If Utah County legislators had their way in 1888, it would have been in Spanish Fork had there not been a persuasive argument in favor of Cache Valley for its prestige in agriculture.

Our place in the state continues this distinction these many decades later. And what could be more noble and worthwhile than the sharing of knowledge surrounding the production, protection, and preparation of food? I have hundreds of magazines readily available through my Kindle Reader, but the one publication I look forward to each month comes in my email via *Kathy's Corner*, a monthly USU newsletter from the Iron County Extension office. It encapsulates what speaks so well about our land-grant charge, for what Kathy Riggs, USU Extension professor, shares is academic knowledge distilled into tips that are truly relevant in our daily lives, like her primer on the benefits of family mealtime, complete with a Cinnamon Oatmeal Pancakes recipe.

Relevant and tangible, if it is to be grasped and passed on, says Native American Culinary Association founder Nephi Craig. He is a master chef from the White Mountain Apache Tribe who was on campus in March talking about reconnecting indigenous peoples to their roots through food. The sharing of a recipe, as it is with a meal, has potential to be transformational. He sees it literally as a transfer of ancestral knowledge. There is power in food memories, neuropaths formed to last a lifetime so that when we taste it again, it brings us back to that moment, including our college years, says Alan Andersen, director of Dining Services. Like the memory held in an old-fashioned homemade Aggie doughnut, or a warm slice of Hazel's bread. And who knows what memories hold in store for our newest rising star, Aggie Chocolate?

In between these pages, you will find lost foods, and foods that bring people and communities together. I hope you find some new recipes to add to your own family collections, and new food insights and appreciation along the way. For food not only sustains and nourishes us, but also binds and defines us as human beings, and is always there to comfort in times of sadness, and celebrate in moments of joy.

John DeVilbiss
Executive Editor, *Utah State* magazine

We welcome your thoughts. Please email letters to mageditor@usu.edu or mail to *Utah State* Magazine Editor, 0500 Old Main Hill, Logan, UT 84322–0500. Please include full name, address, phone number, and email, if available. We reserve the right to edit for length and clarity.

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Steven Wright, head baker at the Junction, applies final touches to pastries at 4 a.m. Photos above and left by John DeVilbiss.

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www.utahstate.usu.edu

Where is This?

First right answer wins Aggie gear. And while you're at it, letters to the editor are always welcome!

mageditor@usu.edu

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Looking Forward to the Next Issue

I just wanted to comment on what an excellent magazine was published for winter of 2019. I often read magazines. Some are not worth turning the page but I have to say I read this from cover to cover. Every article had a human interest viewpoint and still related to how USU has been a catalyst for growth and development. Looking forward to the next issue!

—Denise Stauffer Yeip, '74

Honoring the FBI

I enjoyed the article titled, "A Desire to Serve" in *Utah State* magazine. I'm also an agent and graduate from Utah State and it was great to see their stories highlighted.

—Ken Shmutz

Snow Angel

Thanks so much for publishing the Johnson's story. It's a really well done piece. I help manage a volunteer group at Copper Mountain Ski Resort called Mountain Safety Patrol. We are an adjunct of the Ski Patrol with our main focus, you guessed it, on safety. Our Manager, Shauna Bocksch, has won several awards for best safety program in the country. We maintain a safety booth on weekends in the base area and will be handing out copies of the story behind the "She Was 5, He Was Doing 50" poster.

—Phil Harris, '61,
Copper Mountain, CO
("81 and still safely skiing")

(Editor's Note: A copy of the Johnson family story is now included in safety materials distributed to the public at Copper Mountain. For more information about this program to promote on-hill safety and responsible skiing and riding, in partnership with Kelli and Chauncy Johnson, go to: www.nsaa.org/safety-programs/collisions*).*

Valued and Appreciated

The last USU magazine issue is fantastic! For what it's worth, I read some of the articles to my kids. And it currently sits in our kitchen where my wife is reading through it. Please let the team know their work is valued and appreciated by future and alumni Aggies!

—John Louviere, MS, '00
Asst. Vice President and
Executive Director,
USU Academic &
Instructional Services

Proud of USU Research

I read your very interesting article "Fighting Disease with Flavonoids" and the fact that many scientific advances happen by serendipity. Please congratulate Lisa Berreau, Tatiana Soboleva, and Abby Benninghoff for their study of molecules to treat diseases.

I'm a USU student graduate myself, who worked for two years for professor Dr. Richard Olsen in the chemistry and biochemistry department in the development and synthesis of a molecule based on amino acids for the study and treatment of cancer cells. I enjoyed very much my junior and senior years as an assistant to the project.

After graduation and for about eight years I worked in a hydrocarbon lab for a major oil company, and today I'm now trading physical barrels of light end hydrocarbons for another major oil company. However, what is going on in research regarding medicine and alternative medicine to cure disease is something that fascinates me.

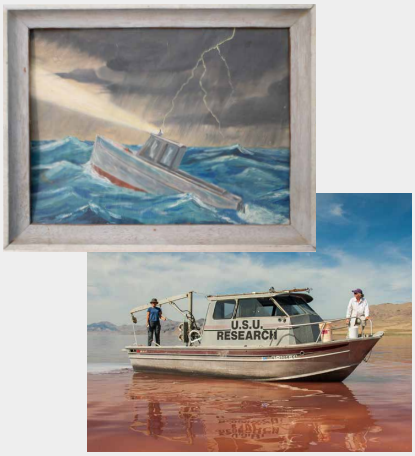
My congratulations to you all for performing such interesting work, which being an alumni, I'm happy to contribute through a small monetary gift supporting USU research, knowing that it helps others with less resources.

I'm very proud of being, at one time, part of a research team for a just cause.

—Manuel Castillo, '83

A Bit More Seaworthy

I had to chuckle as I looked through the winter 2019 issue of *Utah State* magazine. Changing times for the U.S.U. research vessel! My father who graduated and was honored as an outstanding alumni from Utah State University painted the oil picture. He was on the U.S.U. research vessel shown in the painting and doing Cisco research on Bear Lake somewhere around 1953 when a severe storm came up. He said the wooden boat was rotting and he could pick it apart with his finger nail! He was terrified!! He survived the storm as did the boat and he went on to become the world's leading authority on viruses of fresh water fish. The newer boat looks a bit more seaworthy.



I think dad got his Ph.D. in 1956 from Utah State University. He is the author of the book *Fish Viruses and Fish Viral Diseases* by Dr. Kenneth Wolf.

And he learned to paint at Utah State University too.

—Mark Wolf

Photos courtesy of Mark Wolf and Wayne Wurtsbaugh.

Rick Bass '79 returned to Utah State in March to perform a reading from his latest book *The Traveling Feast: On the Road and at the Table with My Heroes* at the Nora Eccles Harrison Museum of Art. Read an excerpt from the book on page 34.

USU Athletics Launches U–State Aggie Network

Athletes are a special breed of student. They study, they compete, they work every day to be a better version of themselves. Who wouldn't want to hire that type of person?

Athlete Network was founded by athletes seeking to partner with companies that want to hire former student-athletes. Student-athletes can apply directly through the U-State Aggie Network for jobs on the platform. All current and former Utah State student-athletes are encouraged to sign up by visiting the Aggie Network website at: www.athletenetwork.com/cn/ustate/landing.

Alumna's Biopic Streams on Netflix

Amberley Snyder '15, MS '18 spent the summer of 2018 as a stunt double for the movie "Walk. Ride. Rodeo" streaming on Netflix, about her return to barrel-racing after becoming paralyzed from the waist down.

"I feel we all have obstacles," Snyder says. "Some are seen and some are not, but everyone faces their challenges. I hope that with my story, people can find strength to overcome what they are facing. We don't always get to choose what happens to us, but we do get to choose what comes next."

President Cockett Launches Diversity Task Force

Since she became president in October 2016, Noelle Cockett has committed to enhancing diversity and inclusion at USU. Her latest effort involves establishing a new Diversity and Inclusion Task Force charged with conducting a campus climate assessment on university inclusion, developing a five-year strategic plan and convening key players to oversee its implementation, as well as production of annual progress reports to monitor the plan's effectiveness.

"Diversity and inclusion are essential to achieving our university mission of education, research, and outreach," says Cockett. "The core values of diversity and inclusion are particularly important as we prepare our students to become citizen scholars and global leaders. To be successful, an effort of this magnitude will take campus-wide coordination and collaboration."

Research Highlights

Photos on this page courtesy of USU College of Engineering.

Aggie Air Partners with NASA

NASA is testing the future of unmanned aerial vehicles in and around Reno, Nevada with the help of Utah State University's AggieAir program, which tests, designs, and deploys drones for remote-sensing applications. The goal of the operation is to evaluate the complexities of managing drone traffic in urban environments in beyond-line-of-sight conditions—a critical next step before drones can safely be used for services such as package delivery and newsgathering. The flights will be a first in aviation history.

"It's a big step forward in what has been years of unmanned systems research and testing," says Cal Coopmans, a research assistant professor and director of the AggieAir program. "In the next 15 or 20 years, the sky will be full of all kinds of autonomous vehicles doing a variety of tasks that benefit society—including taxiing people around."

Fourteen different aerial vehicles will be used in the demonstrations including two drones operated by AggieAir—a fixed-wing aircraft called BluJay built for use in remote sensing operations and a multi-rotor aircraft capable of vertical takeoff and landing. "We'll be flying BluJay alongside test vehicles from Uber and General Electric and other global leaders in civil aviation for unmanned aerial systems," Coopmans says.

Fixed-wing drones are typically used for scientific research, agriculture, and civil works inspections. They fly at higher altitudes and for longer durations, representing an important class of unmanned aerial systems that NASA considers critical to the discussion of unmanned air traffic.

Retinal Disease Researcher Gets $420,000 Boost

Biological Engineering Assistant Professor Elizabeth Vargis received a three-year grant from the National Eye Institute for her ongoing research into why new blood cells form during retinal disease.

Vargis has developed nanoscale methods to mimic disease states and was awarded a grant of $420,715 to support her project. She and her team will determine the relationship between how retinal cells grow normally, and if those conditions change, does the expression of proteins that promote or block blood vessel growth also change.

Pilot Research Program to Launch this Summer

Undergraduate researchers at Utah State have additional funding opportunities thanks to a competitive pilot program endowed by USU professors David Peak, a physicist, and Terry Peak, a social worker. The Peak Summer Research Fellowship will fund eight to 10 students in the College of Science and the College of Humanities and Social Sciences—the Peaks' colleges—to spend 10 weeks on a research project with faculty mentors and participate in special trainings and workshops.

Each Peak Summer Fellow will receive a monetary award intended to cover the cost of housing, meals, and other living expenses for the program. Mentors will also receive a small research-expenses budget.

Awards

• Professor Scott Jones was named a fellow of the Soil Science Society of America in January. Less than one percent of the society's active and emeritus members may be elected fellows each year.

• Robert Winward, professor of Art + Design in the Caine College of the Arts, was recently named a fellow of the Royal Geographical Society joining fellows including Darwin, Shackleton, and Hillary.

• Sophomore Grace Graham, a mechanical engineering student, is one of 38 women worldwide to receive the Brooke Owens Fellowship—a paid internship for undergraduate women studying aerospace engineering.

• Chemistry professor Scott Ensign received the Patriot Award from the National Guard and Reserve, part of the U.S. Department of Defense's Employer Support of the Guard and Reserve program.

Jon M. Huntsman School of Business

• Three students from the Jon M. Huntsman School of Business won the state-level competition for the Chartered Financial Analyst Institute Research Challenge—which includes participants from more than 1,000 universities each year—marking the second straight year Aggies captured the title. The team of Tyson Clark, Kemerey Thompson, and James Huber Clark, advanced to the final round on the strength of their written research report, and ultimately won with their verbal presentation on Pluralsight, an online education company. The team earned a spot in the Americas Regional competition where it will compete against more than 50 other teams from North and South America.

• The Jon M. Huntsman School of Business bested the competition at the United States Association for Small Business and Entrepreneurship in January. The school's center's Small Enterprise Education & Development (SEED) Program won first place for innovation against 53 other universities.

Rankings

U.S. News & World Report included Utah State University in its top online degree programs for 2019.

• USU ranked **#15** for best online bachelor's program and **#3** for best graduate education program.
• The university offers **7** online bachelor's degrees and **12** online master's degrees, with four more launching in the fall.

Upcoming Events

Research Landscapes is Utah State University's latest research effort to share findings about the state's natural resources—land, air, and water—with Utah's problem solvers. Each event includes a networking reception, allowing attendees to have conversations with researchers from the university. The remaining 2019 events will be in Salt Lake City and feature:

• **June 18:** A talk on Utah's water usage by Department of Biology Professor Michelle Baker.
• **October 1:** Courtney Flint, a USU sociology professor will discuss social dynamics of land use.

More information can be found at: researchlandscapes.usu.edu.

USU Scientists Tapped to Study Space Weather

NASA has selected Utah State University's Atmospheric Waves Experiment (AWE) mission to study space weather from the International Space Station. Planned for launch in August 2022, the AWE experiment features an imager, known as the Advanced Mesospheric Temperature Mapper, that will capture colorful bands of light in Earth's atmosphere, called "airglow," to determine the combination of forces driving space weather in the upper atmosphere.

USU Physics professor Mike Taylor, who has studied upper atmospheric gravity waves for more than three decades, leads the project, which is managed by USU's Space Dynamics Laboratory (SDL). Additional USU investigators include USU Physics professor and College of Science dean Maura Hagan, adjunct professor Jeff Forbes, and physicists Dominique Pautet and Yucheng Zhao.

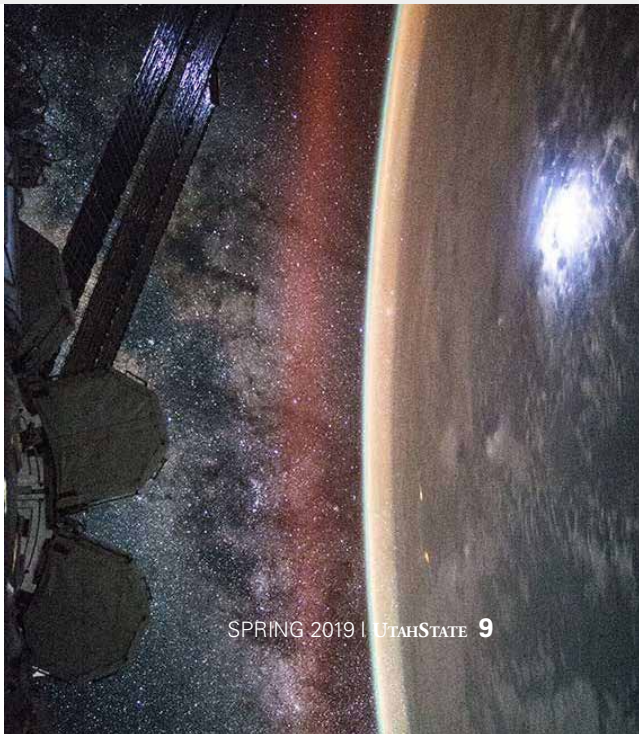


Photo courtesy of NASA.


MOUNTAIN WEST
CHAMPIONS
2019
MEN'S BASKETBALL

While it's fair to say that Utah State's loss to Washington in the NCAA Tournament on March 22 came as a shock to Aggie fans, it's only because the entire season came as a shock to Aggie fans and men's basketball experts from around the country.

Under new head coach Craig Smith, the Aggies were earmarked for ninth place in the Mountain West in the media's preseason poll. And yet, Utah State ended being rewarded with a No. 8 seed in the Big Dance after tying Nevada for the regular conference title and then winning the Mountain West tournament in Las Vegas.

Led by the MW Player of the Year Sam Merrill and Freshman and Defensive Player of the Year Neemias Queta, the Aggies rebounded from a 1–2 start in conference play to win 17 of its last 18 games prior to a 78–61 loss to the Huskies at Nationwide Arena in Columbus, Ohio.

The Aggies, who didn't lose back-to-back games all season on their way to their first trip to the NCAA tourney in eight years, ended up with a 28–7 record and helped reignite a passion for Aggie hoops amongst its fan base.

"It was a historic season really from start to finish," Smith says. "To win the regular season title and then validate it with the post-season tournament was fantastic—the first ever in Utah State history in terms of winning the Mountain West championship.

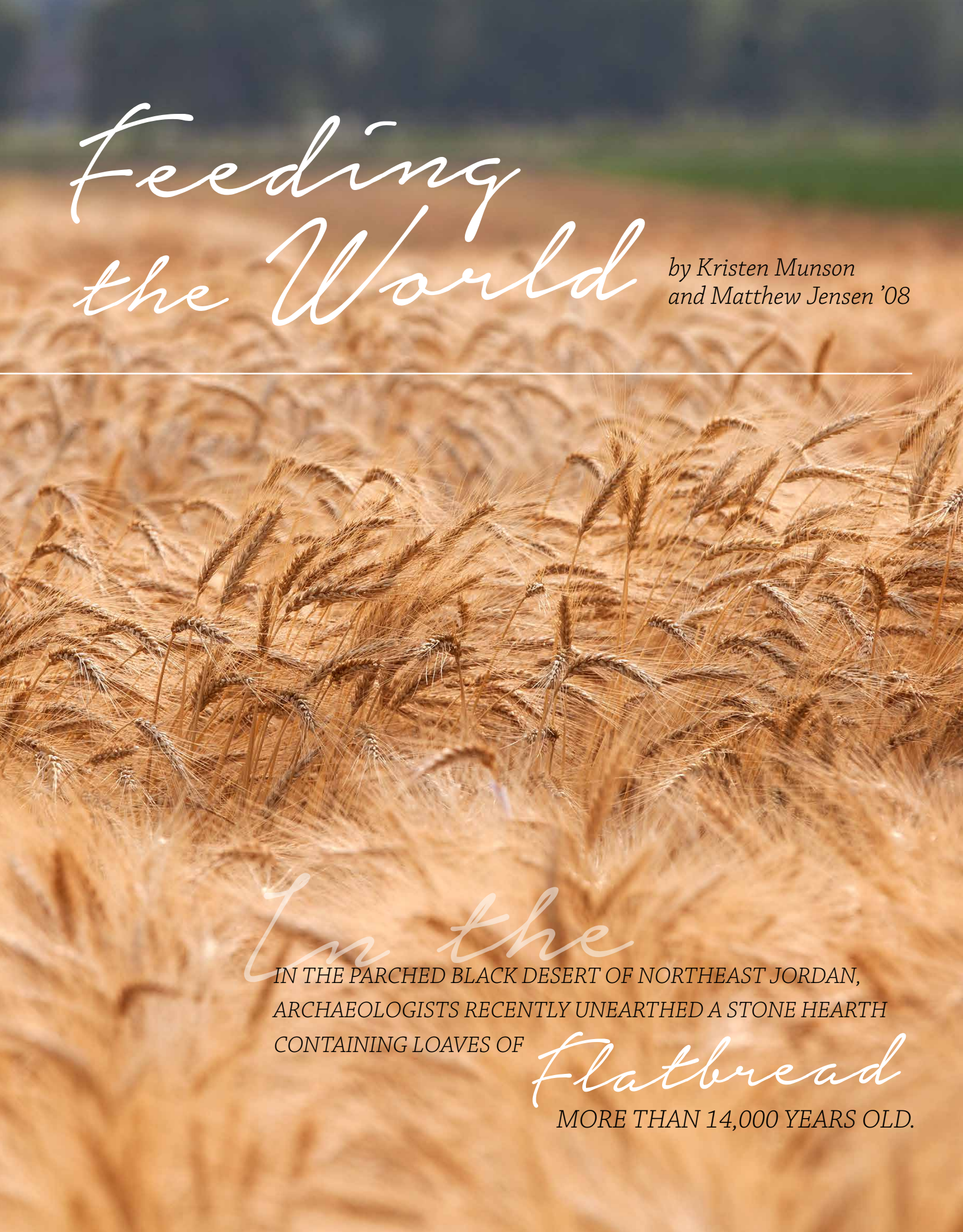
But it's just the start of where we want to go."

Brief by Jeff Hunter '96

Photo by Rick Parker at USU Athletics.

Feeding the World

by Kristen Munson and Matthew Jensen '08



In the IN THE PARCHED BLACK DESERT OF NORTHEAST JORDAN, ARCHAEOLOGISTS RECENTLY UNEARTHED A STONE HEARTH CONTAINING LOAVES OF *Flatbread* MORE THAN 14,000 YEARS OLD.

The samples contained wild einkorn—an ancestor of modern wheat. The bread-like discs were likely not an everyday foodstuff for the hunter-gatherers. But in the centuries since, wheat has become the most widely grown cereal crop in the world. That's why researchers at Utah State University are working to protect the global wheat supply.

BREEDING RESISTANCE

David Hole pulls on a pair of rubber boots and climbs into a pickup with the bumper sticker "wheat fleet" stamped on the back. He steers toward the rain-soaked fields he has overseen for nearly 30 years. He parks between rows of wheat stalks standing like sentinels under the gray sky. They represent many lifetimes of work.

"This has been owned by the university for close to 100 years," Hole says. "The reason this program started back in the twenties was because of this disease called dwarf bunt."

He walks through the diseased portion of the nursery and selects a puffy head of blighted wheat. This is what can happen with this disease, he says crumbling the head between his fingers. "You can see virtually 100 percent infection here. There's no seed in here at all. It's just a mass of spores, maybe 20 to 30 million spores there."

The spores germinate under snow-cover, infect through a stomate in the seedling, and grow with the plant for the rest of the year. Dwarf bunt is similar to common bunt, a different species that produces the same result: a smutted head that smells the same, looks the same, and decimates production. They are so closely related that resistance to dwarf bunt means resistance to common bunt.

"In the 1920s, 80 percent of the rail cars arriving in Ogden were rating as smutty," says Hole, professor of plant breeding at USU. "Now we have a generation of farmers who have grown up without ever really seeing a smut. I've got a picture in my office of a combine going through a field that looks like it is on fire—just smoke billowing out the back. That's the classic image of what harvesting a field like that looks like."

Historically, farmers around the world struggled with common bunt until seed treatments emerged that could prevent infections. A rise in organic wheat farming has shown that a comeback is possible. Hole can plant a variety of wheat called Cache, which is susceptible to common bunt, on a farmer's nursery that has grown nothing but resistant varieties for 40 years, and in the right conditions, some smut will develop, he says. "That indicates that there are still some spores there. Every year they are germinating."

Wheat is one of the world's most important calorie sources. USU has developed new strains for nearly 100 years.

Yet, for the last 50 years, nobody has done research on bunt resistance to speak of, Hole says. "We do it because there is one chemical that will control dwarf bunt and I just decided when I got here that one single fungicide treatment that lasts long enough to protect against dwarf bunt is not enough and I'd rather provide our growers with genetic resistance."

Every year he plants hundreds of lines of wheat in Box Elder County at the university's primary dryland nursery and on test plots from Monticello through southern Idaho. A number of lines are experimental crosses cultivated for disease resistance and ideal traits for production. It's a process that takes time—years really—with no guarantee that one might hit the mark. Nearly half of the varieties in USU's century plot are from breeders around the country and overseas that Hole's team evaluates.

It's a service that I think is really important," Hole says. "The more resistant genes that we can get into varieties around the world altogether, the better our food security is."

Ancient growers saved seed, selecting heads with the best qualities to sow the next season. Plant breeders today continue this practice, but with a greater knowledge of genetics. In 2018, researchers made headlines for mapping the wheat genome. However, the genetics remain difficult to unravel, partly because wheat is an oddity in nature that emerged at the end of the last ice age.

"It's a natural hybrid between three different species, not all of them even exist anymore," Hole says. "It has three complete sets of chromosomes—we call it a hexaploid—three pairs from those three species."

Hole leans over to inspect a blighted head. "To see something like this here, essentially every head in that plant in that row is infected and right next to it," he points to a pristine row directly across from it. "One gene. That's the difference in one gene."

Hole allows one to two percent of heads to have a low level of infection present. In fact, he wants plant genes to be a little leaky to cut down on the strong selection for new fungal races. Low infection rates mean competition between a fungus and plant is occurring, and that, for now, the plant is winning. The battle plays out every season and plant breeders are constantly searching to gain the upper hand.

In the 1970s, one variety of wheat was found near the Syrian border

that remained the only source of resistance for decades, Hole says. "Then a new race showed up in Idaho. So we found another gene and we started incorporating that." To have one region of the world that produces disease resistance can leave one with an unsettling feeling.

"We are wildly aware of that," Hole says. "That is one of the reasons that we screen this germplasm and why all breeders have this kind of feeling that we really have to protect germplasm. "What are the top three crops we eat in the world? Rice. Wheat. And corn. That's about 80 percent of our calories worldwide. They are all grasses. They are all reasonably closely related. That's a pretty narrow genetic dice to be staking 80 percent of our calorie intake on. We pretty much owe our civilization to three grasses."

Humankind has heard starvation is nigh throughout history. In 1798, T. Robert Malthus predicted human population growth would surpass its ability to feed itself. Mechanized agriculture proved otherwise. Agricultural advancements, particularly in wheat production, during green revolution of the 1950s and 60s are credited with saving 1 billion people from starvation. Change, it seems, is the ballgame. There are changes in diseases. Changes in the wheat strains. Changes in climate. In pests. Standing still is no option.

Hole warns that there are some fungicides growers can no longer use. As we've sprayed fungicides on crops, the spores that could survive have—and they continue to reproduce. "We have to be careful. Herbicides are the same way," he says.

An hour later, the sun has burned off the clouds and the conversation turns philosophical. Population estimates suggest the world's wheat supply needs to double to keep pace. Hole sees promise in conventional plant breeding and in molecular biology—in GMO; he's just disappointed we haven't made greater strides. "We were told that by now we would see plants that could grow with almost no water and we don't," he says. "Turns out it's a lot more complicated than we thought it was."

CHANGE, IT SEEMS, IS THE BALLGAME. THERE ARE CHANGES IN DISEASES. CHANGES IN THE WHEAT STRAINS. CHANGES IN CLIMATE. IN PESTS.

Standing still IS NO OPTION.

ERADICATING DISEASE

About 20 years ago, Thomas Chang, a chemist at USU, was researching compounds for antibacterial resistance when he had an idea—perhaps his collection might contain antifungal agents. He approached Jon Takemoto, a microbiologist at USU, and offered his library of compounds for screening. Takemoto immediately recognized similarities to antifungal compounds he had analyzed and could imagine how they might work using a novel mechanism.

"It makes holes or pores in membranes," Takemoto says. "The previously known antifungal agents that everybody uses in medicine and agriculture don't work by poking holes in membranes. There are two or three classes of fungicides and they all work a little differently."

Some function by binding to ergosterol, a cholesterol-like compound present in fungi, while other fungicides inhibit ergosterol synthesis. However, these chemicals can also bind to cholesterol found in animal cells, which can be quite toxic to people and wildlife, Takemoto says. "The compounds Tom makes don't bind to ergosterol. They bind to another set of lipids—sphingolipids. Fungi have a unique set that are different from animals or plants. Bacteria do not have sphingolipids. That accounts for the specificity."

Since the two researchers began examining potential "green" pathways for new fungicides and medicines, they recently found one that can be used to combat wheat blight caused by Fusarium graminearum, a pathogen that infects cereals including wheat and barley.

"It's a huge problem," Chang says, explaining that the blight not only affects agricultural yields, but it produces a toxin that can make people sick—very sick.

"The big problem with this disease is the production of a toxin called vomitoxin," Takemoto says. "It's very descriptive. It tells you exactly what happens if you (or animals) ingest wheat that is heavily infected."

That's why the U.S. Department of Agriculture monitors for this disease, as well as beer manufacturers and wheat importers like China—no one wants vomitoxin in their products. And resistance to conventional fungicides makes it harder to control. When fungi develop resistance to a fungicide, similar to antibiotic resistance, people need to use more and in higher doses—this can create another set of problems for environmental and human health, Chang says. One concern is that pathogens may jump from plants to humans. "In the anti-fungal world, that's already happening," he says.

Most crop diseases are fungal diseases and resistance to fungicides gets passed down genetically. This happens quicker than people think. That's why a new fungicide created by Chang and Takemoto called K20 could represent a path forward. Studies of K20 have found it nontoxic in animal models. While organisms developing resistance to fungicides will always be a concern, Chang says, it is unlikely to occur in K20. "We don't expect resistance at this point."

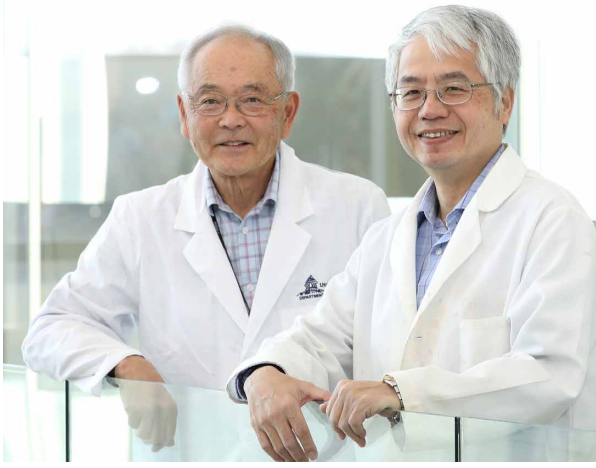
That's because K20 works by poking a hole in the fungi's membrane, much like slashing a tire and letting the air out. "In order to develop resistance you have to change the membrane function and structure," Takemoto explains. "It's just hard for it to do that without dying."

OVERCOMING DROUGHT

But disease is only part of the conversation about wheat. USU's David Britt and an interdisciplinary team of scientists and engineers are leading promising new research into another culprit that threatens this globally important food crop: drought.

Climate variability is expected to intensify drought conditions globally, and expanding urban populations are competing for arable land and water supplies. Drought-tolerant plants and improved crop management practices, experts say, will be the cornerstone of maintaining agricultural productivity.

This interdisciplinary team is developing a unique method to improve drought tolerance in wheat by exposing the plants to engineered nanoparticles that contain copper, zinc and silicon micronutrients. Britt, an associate professor of biological engineering, is coordinating the study along with Joan McLean, a professor of civil and environmental engineering; Astrid Jacobson, an associate professor of plants soils and climate; and Anne Anderson, an Emeritus professor of biology.



Clockwise from top: David Hole, Thomas Chang and Jon Takemoto, David Britt. (David Britt photo courtesy of Matthew Jensen.)

In nature, plants co-exist with beneficial microbes that colonize their root zones. These zones, known as the rhizosphere, are a primary source of bacteria-promoting plant growth. Research from Britt's team demonstrates that complex interactions between microbes, the root zone, and micronutrients contribute to a plant's drought tolerance.

"Plants in native soils exist as an ecosystem involving associations with a variety of microbes," says Britt. "These microbes influence plant health, most notably when plants develop disease or in response to environmental challenges such as drought."

Britt's team is focused on understanding how wheat plants and their root-colonizing bacteria respond to stimulatory doses of nanoparticles. By simulating drought conditions in a greenhouse test, the researchers will investigate whether nano-scale nutrients can enhance the production of drought-protective and other beneficial compounds. **A**

FEEDING THE UNIVERSITY

by John DeVilbiss

Stephanie Ordaz arrives at the Junction on the campus of Utah State University at 2 a.m. when the temperature outside is six degrees and an arctic wind is blasting out of Logan Canyon. She hastily sheds her coat, dons a clean chef shirt beneath a white apron that extends to her knees, and pulls her dark hair back inside a nylon honeycomb hair net.

She moves quickly, turning on ovens and moving bagels from the cooler to the humid proofing cabinets needed for nudging the sleepy yeast. She swiftly weighs and mixes dozens of loaves that will become Hazel's bread—cutting 60 pounds of dough into individual pieces from the 600–pound bulk for baking that day.

Without fanfare, she quietly goes about her regular routine marking the start of a new day in an endless cycle of feeding the university. She is part of a legion of employees under the wide apron of USU Dining Services.

"We serve 8,000 guests per day around here," says Alan Andersen, executive director of dining services. "With 30 full-time people and 350 students, we are managing a very complicated team to make it happen."

Teams within teams, like the baking crew, that also includes Carrie Olson, morning supervisor, and Steven Wright, head baker. Small in number but mighty in productivity. Every portion of Hazel's bread, swirled with blueberry and raspberry for French toast, comes from this thick-walled fallout shelter relic cradled between Mountain View Towers and Richards Hall. Every slice that holds the famous Marv N' Joe tomato and cheese sandwiches, every bagel (260,000 per year), glazed doughnut (46,000 annually), Danish, croissant, turnover, and every one of the 15,000 muffins per year. Every minute matters if they are to meet their 6 a.m. delivery deadline.

By 8:20 a.m. Jaime Castillo, a junior in agribusiness from Ogden, is just finishing a sweet roll Olson had lathered with orange topping hours before. He is rushing off to class, but not before grabbing his customary pastry, apple, and Caffé Ibis coffee, and with no idea that people got up so early to make that possible.

It may seem like a thankless job, and one in which those who prepare and serve the food work in isolation, but there is satisfaction derived in being part of "a really complex thing that works pretty dang well," says Donald Donaldson, chief executive chef. For ultimately, it is the paninis, pastries, and everything else emanating from their kitchens that links them to students like Castillo.

"I relate to the food that connects us," he says. "If the food is presented and they like it, then that's how I like them. And if they keep coming back, that's how they like me."

The Junction

is Donaldson's domain. At 6-feet 3-inches tall, he needs no traditional chef's toke to make his presence known in the kitchen. It is mostly unspoken, though, for like everyone else this day rushing around at 5 a.m., there is no time for chatting.

His responsibilities not only entail creating the menus and meals for the 800 students each day in the Junction, but for eight of the 13 cafés on campus. The complications that he and Andersen refer to come into play here, for every café has its own menu, and personality. For a Bohemian vibe, there's the Artist's Block Café & Bakery, for cosmopolitan, Luke's Café on the Quad and Shaw's 88 Kitchen in Huntsman Hall. For somewhere smart and upscale,

Meet Stephanie Ordaz, the face behind USU's Hazel's bread. Photo by John DeVilbiss.

Noni's Coffee Shop in the newly refurbished Nora Eccles Harrison Museum of Art. In addition, a student favorite, the Quadside Café, with its metro-corner bustle.

Even the traditional dining halls, such as the Junction and the Marketplace mix it up by offering an array of food options, such as fresh salmon and steaks at the Junction every Friday. For those who favor the familiar, the Hub offers both university originals and name-brand fast foods. (We're looking at you, Director Andersen, and that Taco Time Country Breakfast Burrito that starts your day.)

Tastes vary. Students love the barbeque at the Quadside, but black bean hummus, not so much. Meatloaf sells like gang busters at Luke's, but not at Artist's Block. It means rotating menu items among the cafés until they find the ones that sell best at each location. Same for the soups, all coming out of one tiny kitchen in the basement of the Junction. Last count, 20 varieties, Donaldson says.

"We don't want to waste money, time, or food, or disappoint people by trying to sell them something that they don't want or have them buy something begrudgingly. I didn't start cooking food to make people feel bad. I did this because I get a lot of pleasure out of food."

He comes from a culinary school in New Jersey and prides himself in understanding good food and turning basic ingredients into something special. It is important enough to have a formidable cooking knife and key food elements tattooed on his left arm. (He has given his right arm to his children, which prominently includes a bunny.) On his chef's arm, you see a shallot, leek, carrot, celery, and onion, with garlic in the works.

"They're the aromatics of all sauces, and a lot of dishes," he says. "I'll probably be doing some herbs also—rosemary, thyme, parsley, sage, and Simon and Garfunkel it up."

It is not without stipulation whenever he embarks on creating a menu that a student would like, but on a student budget. "My rule: if you wouldn't feed it to your mother, we're not going to feed it to them—unless you hate your mother." The good news: Donaldson loves his mom.

"MY RULE: if you wouldn't feed it to YOUR MOTHER we're not going to feed it to them—unless you hate your mother."

— Donald Donaldson, chief executive chef

Chef Donaldson not only decides what is on the menu in the Junction, but also at most of the the university's 13 cafés.

Jeff Woolley, executive chef in the Taggart Student Center, goes a step further. "If it is something I wouldn't eat, then I won't serve it." Then he quickly backtracks when he thinks about lamb, a food he has not been able to stomach since childhood. He still serves it though, if not with a dash of valor.

On this particular day, the menu calls for London broil with Chimichurri sauce, sautéed mushrooms and onions, sweet potato fries, garlic roasted Yukon potatoes, and steamed vegetables for his 1,500 Marketplace guests. A menu he first etched out on his iPad to help him picture colors and combinations. He also arms himself with tiny plastic spoons for constantly tasting and adjusting ingredients.

Woolley earned a culinary arts degree from USU's Nutrition and Food Sciences before the program ended in 2007. He has cooked at the university for 22 years. Today he has a trio of chefs and 14 cooks under his purview—including the Sky Room, with its own chef—and catering services that also includes a designated chef de cuisine. In addition, Amy Rasmussen, assistant director of catering and special venues, oversees three full-time staff and 55 part-time students. This past year, they catered 3,100 events that fed a whopping 214,354 people. Their single largest day: 4,887. "That was a very busy, long day," she says.

This same afternoon was shaping up to be equally active with the debut of the Campus Kitchen at USU in the Hub, a space donated by Dining Services. It is part of a volunteer consortium at the university focused on feeding hungry students and giving back to the community, says Nelda Ault-Dyslin, '05, Val R. Christensen Service Center coordinator.

They work closely with the Student Nutrition Access Center (SNAC) that takes advantage of Dining Services' policy of never serving day-old bread and pastry items. For the past eight years SNAC has gathered and distributed these unused food items, combined with canned foods from the Cache Community Food Pantry, to students in need. A 2017 study, conducted in partnership with SNAC, reported that 63 percent of USU students surveyed revealed that they experienced food insecurity at some point in their college career.

The new Campus Kitchen at USU creates individual cold meals assembled from the food gathered by SNAC and

Recipe

BIG "A"

Blueberry-Lemon Pie

(From the kitchen of USU Dining Services)

Ingredients:

CRUST:
12.5 ounces flour
2 tablespoons sugar
2 teaspoons salt
10 ounces butter, cold
1 cup cold water

FILLING:
¼ cup tapioca starch
½ cup sugar
pinch of cinnamon
1 tablespoon butter
1 pound blueberries, frozen wild
zest of lemon

FINISHING: 1–2 whole eggs and pinch of raw sugar

Directions:

COMBINE flour, sugar, and salt in a mixing bowl. Cut in cold butter, do not overwork, and leave small bits of butter unincorporated. Add cold water and stir, but don't overwork. Flour working surface and put dough on table, flour outside of dough lightly. Wrap and refrigerate dough for at least one hour, up to one day.

FLOUR working surface generously and roll out into a rough rectangle. Cut two circles in the dough 11" in diameter. Press one circle into a 9" pie tin.

To see the rest of the instructions and watch a recipe video, go to utahstatemagazine.usu.edu/feedingtheuniversity.

For somewhere smart and upscale, Noni's Coffee Shop awaits you in the newly refurbished Nora Eccles Harrison Museum of Art.

other donations from local restaurants. What is a bagel today becomes a bagel chip tomorrow. Nothing goes to waste. Andersen and Jaime Bradford, associate director of retail operations, thrive on this synergy—using every scrap of food and every dollar they can scrape together. This helps to explain the radical transformation of the USU campus dining experience over the past 30 years, about the time Andersen started at USU.

He recalls when most all campus food offerings were limited to the student center. Not too much different from how students dined in the student union a century before that, cafeteria style. Back then, choices were limited. Potatoes, chili, and pie were favorites of the Class of 1922.

Students today mostly come from two-income families, where time-strapped parents rely more heavily on pre-prepared meals and dining out, Andersen surmises. He sees the campus offerings as merely an extension of this new way of life. The variety and options are just something they have come to expect.

It has its appeal for Kathryn Cox, a sophomore from Farmington, Utah, studying environmental engineering. She has just enough time to grab a bagel before heading to class. Her part-time job in the Science Engineering Research Building right across from the Quadside Café is a big plus.

Andersen and Bradford say they think about students like Cox all of the time. What is it she likes that is also affordable and convenient? They note that the abundance of eating establishments on campus sets the university apart.

"It's unique how many cafés USU has in such a condensed area," Andersen says. "It creates challenges to make sure they're not all the same and finding that niche."

Therefore, it was in a bit of desperation that they suggested a theme for the newest campus café in the Life Sciences Building focusing on teas and cheese. While it sounded crazy at first, ultimately the idea caught on. It had just the right Marv N' Joe combination of good, basic food elements, and within a student's budget.

It used to be that campus

buildings consisted mainly of long corridors and classrooms, but today students want places and spaces for conversation, places where they can go to not only share notes, but also meals. It is why cafés are becoming an integral part of a university building's design.

Look no further than Beth's Bistro at the south entrance of the Sorenson Center for Clinical Excellence. It is a bright and cheery space that greets every student, client, faculty, and staff who enters its doors, Andersen says.

"We've been focused on this for quite a few years, of creating a welcoming experience," he says. "We see our role in the university bigger than just providing food."

It is 5 p.m. and he is about to head out the door to check in on how things are going on the third floor of the West Stadium where catering serves up a small feast to 325 athletes three times per week as part of the Training Table program.

It has been 10 hours since most of the cafés and dining areas began serving breakfast. The Marketplace will stay open for another two hours for students getting out of night classes.

By 9:30 p.m., the dish room staff and cleaning crew are finishing up. Typically, though, it is catering that clocks out last. Sometimes as late as 3 a.m. on football game nights.

Gratefully, on this day, it is only 11 p.m. In just two hours, Ordaz will be waking up for the start of a new day at the Junction. She will have ovens to warm, and a campus to feed, certain as the day is long for Dining Services, sure as the winds that howl from Logan Canyon. **A**

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Six Sisters: BUILDING AN EMPIRE

by Jeff Hunter '96

LARRY AND CYDNEY ADAMSON'S half-dozen daughters now oversee Six Sisters' Stuff: Stephanie Loazia '13, Lauren Walker '16, Elyse Ellis, Kendra Murdock '18, Kristen Hills, and Camille Beckstrand '06. All photos courtesy of Six Sisters' Stuff.

The empire known as Six Sisters' Stuff emerged from the sharp minds and creative palates of a half-dozen siblings raised in Layton, Utah. Divided by 12 years and spread out roughly two years apart, Camille, Kristen, Elyse, Stephanie, Lauren, and Kendra are about to publish their eighth cookbook as they continue to grow their brand throughout the country via social media, demonstration videos, and in-person events.

"Our recipes are family favorites that use ingredients commonly found in your pantry," the six Adamson sisters say. "Our crafts and home decor projects can be made with little or no money. We don't claim to be amazing chefs—we just know the importance of feeding your family a home-cooked meal and sitting down to eat it together."

THE SIX SISTERS all have ties to Utah State University—including their grandfather, and father Larry, who earned degrees from USU—but it was the oldest Adamson daughter, Camille, whose experience helped pave the way for four of her younger sisters to become Aggies. "I loved being up there, and I loved that I had other sisters up there with me, too," Stephanie says.

What were mealtimes like when you were growing up?

STEPHANIE: There was always a home-made meal on the table at (almost) the same time every single night. The phone was always taken off the hook, or later on it was always a rule that there were no phones allowed at the table. It was a time for us to reconnect, talk about our days, and enjoy good food.
LAUREN: Consistent! There are only a handful of times I remember us not eating together with a home-cooked meal.
KENDRA: Mealtimes growing up, always took priority. Since my dad didn't have any sons, he wanted us to all play sports, so each of us were involved in various sports and activities, but we knew that every night around 5:30 p.m., dinner would be on the table and we were expected to be there. It was a great time and opportunity for us to communicate ... Plus, enjoy delicious food, which is probably where our love for food and cooking began.

How did the Six Sisters' Stuff get started? And did you consider any other names?

ELYSE: Six Sisters' Stuff started in 2011 after we had all moved to different parts of the country and were in different phases of life. My husband and I had just moved to California with a 6-week-old baby, and I quickly learned how frequently babies sleep during the day. I loved reading blogs online and thought it would be a great way to stay in touch with my sisters and share things that we love. I had originally planned on naming the blog "Everything Ellis," (I obviously have a thing for alliterations) but including something that referenced all six of us seemed much more fitting.
KENDRA: Six Sisters' Stuff started as a way to keep in touch with each other. We had no intentions of making it into a full time job for the six of us. It was just a blog to share recipes and funny stories about our dating lives and kids. We chose "stuff" because we didn't just have one thing to share with each other, we were sharing all our favorite things, stories, memories, recipes, crafts, hair and beauty tips, etc. … we still like to share our recipes, but there is so much more we like to talk about and share.

Where do you find inspiration for recipes?

CAMILLE: For me, inspiration comes in times of desperation. I know that I have to get dinner on the table in a short amount of time, and it has to be something that I know my kids will eat and that my husband and I will enjoy as well. I think that it's a struggle that many parents face, and if I find a good recipe that worked for my family, I am excited to share it and hopefully help out another busy parent out there.
LAUREN: Just about everywhere! I spend a lot of time wandering the grocery store, if we're being honest. My husband also loves to make "requests" to see if I can handle the challenge.
KENDRA: I would say my inspiration for recipes comes from things I make up in my head that sound good to me or from restaurants. I love going to out to eat (I know that's bad to say as a food blogger), but then coming home and recreating it.

How do you manage to do everything "together" when you live apart from one another?

STEPHANIE: We have a weekly video conference call to help us stay on track and informed about what everyone is working on. We are also in constant contact with each other via texting. If you set down your phone for an hour or two, you're likely to come back to 100 missed messages.
LAUREN: We'd be lost without Google hangouts and iMessage. Also Google Docs, lots of Google Docs!
KENDRA: Every Tuesday at 1 p.m. (Utah time) we get on a Google Hangout call. It's a mandatory meeting and we honestly treat it pretty professional (for six chatty sisters), although we do get off on tangents and start talking about other things. We keep every recipe recorded, and stay on top of what is to come and make sure every sister knows her responsibilities for that week, and what we will be posting and when.

Have you been surprised by your success?

CAMILLE: It's crazy to me how just six girls from Layton, Utah can run one of the most popular recipe websites out there. We are just your average moms, taking it one day at a time like everyone else. It's been an incredible journey.
ELYSE: Looking back on some of our older content, I am so surprised at the success of Six Sisters' Stuff. This blog started out as a hobby and a way to keep in touch and has now turned into a business that supports all of our families. It's exciting to see it grow, but also to hear how it has helped people in their lives. We have had thousands of people sign up to receive weekly menu plans from us, and they are constantly telling us how it has changed their lives, which is so rewarding.

Stephanie Loazia is a proud True Aggie. Her children pose for a photograph atop the famous "A" on the Logan campus of Utah State University.

Lauren Walker
and her husband, Jon, pose for a photo during an Aggie football game at Maverik Stadium.

Lauren,
second from left, served as a USU Ambassador on her way to earning a bachelor's degree in family, consumer and human development in 2016.

Camille Beckstrand,
who graduated from USU in 2006 with a bachelor's in elementary education, stops by the Aggie Creamery during a return visit to Cache Valley.

STEPHANIE: Yes! There is a lot of hard work involved and a lot of behind the scenes going on that many people don't see, but it is still so strange to walk into a store and see our faces on a cookbook. It's all kind of surreal.
KENDRA: It makes me so proud of my sisters that all our hard work is paying off, and that we can actually help busy moms and students like ourselves make simple recipes. It has been such a blessing, being able to work with my five best friends.

Have you ever been really nervous about a recipe? Perhaps even scared that no one would like it?

CAMILLE: To be honest, I just share the types of recipes that I like, and if no one else likes it, that's OK. The great thing about a recipe is that you can adapt it and change it to make it into something that you would like, so I figure if they don't like it, they can play with it until they do!
ELYSE: I think anytime you are sharing something with thousands of people, it can be a little bit scary. I think one thing I have learned through this whole experience is that everyone has their own opinion and you will never please everyone. That is, unless you are making our Lunch Lady Peanut Butter Bars. I've never met a person who doesn't love those.
LAUREN: There have been a lot of recipes I've made that I haven't posted to the website, or that I've remade about 10 times until I feel like it's good enough to share. Most of the time if my husband asks me to make it again or goes back for seconds, I know I've made a good one.

Do you usually agree on recipes? Or are there certain types of food that some of you just don't like while the others love?

CAMILLE: I think that our differences are what make us more marketable and popular. Do you like healthy recipes? We have a sister who always shares healthy food. Love chocolate? Only cook in your slow cooker? There really is something for everyone and I think that has played a large part in our success.
STEPHANIE: I think we can all agree than anything cheesy is bound to be delicious, but we have some sisters that WILL not eat seafood and some that just don't like chocolate. I personally don't love red sauce or snickerdoodles. I just would rather eat something else.

How would you describe each other's personalities? Is there a funny one? A serious one? A super smart one? And are there any similar personality traits that seem to run through all of you?

CAMILLE: Something that people always say is that we all sound alike. We also all have the same smile/teeth and part our hair on the same side. Elyse always keeps us laughing with her funny life stories (like roll on the ground laughing), Kristen is such a sweetheart who just loves and serves everyone around her, Lauren has a personality that makes everyone feel comfortable and welcome, Kendra's heart is the size of Texas and she cares deeply for everyone around her, and Steph is incredibly smart and so good at photography (and she doesn't give herself enough credit.)
STEPHANIE: We learned a great work ethic from our parents. Camille is secretly really funny, but Elyse and Lauren have the FUNNIEST things happen to them. I feel like maybe I'm the serious one?
LAUREN: We have a lot in common, but we're all so different. Steph is the super smart one and really good at figuring things out. Kristen might be one of the more serious ones, but she's also extremely passionate and driven. Elyse is probably the funny one and she always has a good story. Camille is definitely the peacemaker (I think it comes with being the oldest!) but she's secretly really funny and kind of sassy. And Kendra is like a combination of all of them, but she's super passionate about anything she puts her mind to. Hopefully I'm not the boring one!

Tell us your favorite go-to dish to prepare on a weeknight.

CAMILLE: My go-to recipe that I make a few times a month is our 20 Minute Skillet Lasagna. All the flavor of lasagna without

all the work. It's a dish that my whole family loves and I love how quickly I can throw it together at the end of a busy day.
STEPHANIE: Right now, my favorite is Elyse's Skinny BBQ Chicken Tostadas. I always have the ingredients on hand, and my kids always eat it!
LAUREN: We've been making the Slow Cooker Ritz Chicken like once a week, it's so yummy and way easy.
KENDRA: I love the Easy Chicken and Broccoli Casserole on our site. It's a great way to sneak in some vegetables, and it tastes so good.

On your website you state: "We are family and friends." When you are all together, what's that like?

CAMILLE: We try to make it up to Bear Lake once a year, and it's so fun to reconnect as a family (outside of work) and let all of our kids play together and have fun with their cousins. At the end of the day, family is more important than anything else that we do.
STEPHANIE: We get together least once a year, and when we do it is SO, so loud. There's at least three different conversations happening all at once, and when you add all of our kids to the mix, it just gets that much more crazy. There's always a lot of food, delicious beverages, and lots of love.
KENDRA: When we are all together, it is LOUD. There is talking, eating, and laughing. We love getting together and just remembering the good old days, and laughing about life.

Is there anything you would like us to know about that you have coming up in the future?

KENDRA: We have another cookbook coming out in September. We are thinking it might be our last, but also ... our best. It's going to be a perfect book for beginners or budgeters.
STEPHANIE: Our—final?—cookbook is launching in the fall. And hopefully an online cooking course by the end of July.

Any humorous or noteworthy memories of USU and your college experience? Especially any—good or bad—that involve food?

CAMILLE: If people remember the kind of food that I made for myself as a college student—I mostly survived on bowls of cereal and peanut butter on tortillas—they might really question the credibility of our website and cookbooks. But my experience at Utah State was incredible. I had the chance to be an Ambassador. I was one of those tour guides who was walking backwards around campus to show potential students around, and I also got to serve a lot of Aggie Ice Cream. At the end of an event, they would always send us home with the leftover buckets of ice cream, which instantly made me the most popular girl on the street (poor college students + free ice cream = instant friends). Some of my happiest years of my life were spent at Utah State, and I love being able to share those traditions with them. My kids are definitely Aggies-in-training!
KRISTEN: Going to college was the first time in my life that I had to cook on my own. I remember calling my mom and asking her for specific instructions on how to make a recipe to impress a boy (who later became my husband). I'm not saying it was the recipe that sealed the deal, but it might have helped!
STEPHANIE: There's nothing I loved more than a thick slice of Hazel's bread with Nutella in the dead of winter—or a Marv N' Joe! My husband and I spent a lot of lunches at the Sky Room during our first year of marriage while he was finishing up his master's degree. I think the most memorable, though, was when I took a basic cooking class, and when it was my turn to be the "head chef" for the day, I rushed to grab the salmon out of the oven as quickly as possible without realizing I didn't have oven mitts on! I ended up burning seven of my fingerprints off. Let's just say I've learned my lesson, and my cooking has only improved since then. **A**

Recipe

COPYCAT WINGERS™ BAR AND GRILL

Sticky Chicken Fingers

(From the kitchen of Six Sisters' Stuff)

Ingredients:

CHICKEN: 1 (25 ounce) package frozen breaded chicken strips

SAUCE:
6 tablespoons *Frank's Hot Sauce*
4 tablespoons water
1 ½ cups brown sugar

OPTIONAL: celery and ranch dressing

Directions:

PREPARE the chicken strips as directed on the back of the package.

HEAT hot sauce, water, and brown sugar in a saucepan over medium heat until sugar is dissolved.

MIX all the Teriyaki ingredients together in medium pan on medium heat. If sauce is too runny, separately combine the water/cornstarch mix and add. Continue to add cornstarch until it is the right consistency. Make sure to mix it with water before putting it into the saucepan.

POUR sauce over chicken. Serve with celery and ranch dressing for dipping.

Make Time for FAMILY MEALTIME — *It's Worth the Effort*

By Julene Reese '85

PICTURE THIS.

THE FAMILY IS SITTING AROUND A MEAL AT THE TABLE. CHILDREN AND PARENTS SHARE EVENTS OF THE DAY. TALKING AND LAUGHING CAN BE HEARD BECAUSE THERE IS NO SOUND OF TELEVISION, VIDEO GAMES, OR PHONES.

Now, think about what might be more realistic. Perhaps people stand at the counter with the TV on, quickly grabbing something to eat before they dash out the door. Or maybe everyone eats alone at different times as they hurry to and from different events. Not surprisingly, with hectic schedules and little time, many families fall into the latter category and getting everyone together to eat can be a challenge. But research shows that it is definitely worth the effort.

According to the National Center on Addiction and Substance Abuse at Columbia University, compared to kids who have fewer than three family dinners per week,

CHILDREN AND TEENS WHO HAVE FREQUENT FAMILY DINNERS ARE:

- At 70 percent lower risk for substance abuse.
- Half as likely to try cigarettes.
- Half as likely to try marijuana.
- One third less likely to try alcohol.
- Likelier to get better grades in school.
- Less likely to have friends who drink alcohol and use marijuana.
- More likely to have parents who take responsibility for teen drug use.

From a nutritional standpoint, the American Dietetic Association has found that children who regularly eat meals with their family consume more fruits and vegetables and less saturated fat than children who do not. Casey Coombs, Utah State University Extension assistant program director for Food $ense (SNAP-Ed) and registered dietician, says making meals in your own kitchen gives you the opportunity to choose exactly what your family eats.

"Cooking at home allows you to increase the nutritional value of meals by incorporating a variety of healthful foods while also reducing nutrients of concern including sodium, added sugar, and saturated and trans fats," she says. "Improving the nutritional value of your meals can result in long-term health benefits for the entire family."

David Schramm, Utah State University Extension family life specialist, says eating together can benefit all families, no matter how large or small. Newlywed couples, who regularly complain about balancing jobs, school, and togetherness time, can greatly benefit from enjoying meal time together. And once the couple gets in the pattern, they will more likely keep it going after having children.

"A wise professor once told me that the purpose of the task is to strengthen the relationship," Schramm says. "With that in mind, the ultimate purpose of family meals is not just to eat, but to eat together, talk, listen, and share. It's important to turn off screens—phones and TVs—to focus on relationships."

With that in mind, 90 percent of Americans surveyed in The Harris Poll of 2016 say cell phones don't belong at the dinner table. Other technology, however, seems to be welcome, with nearly four in 10 eating their family meals in front of the TV.

"THE PURPOSE OF THE TASK IS TO STRENGTHEN THE RELATIONSHIP. WITH THAT IN MIND, THE ULTIMATE PURPOSE OF FAMILY MEALS IS NOT JUST TO EAT, BUT TO EAT TOGETHER, TALK, LISTEN, AND SHARE." — David Schramm, USU Extension Specialist

"With the TV in the background causing a distraction, it's difficult to concentrate on what those at the table are saying and to make any kind of a personal connection," Schramm says. "And most likely, people aren't talking or interacting at all—everyone's just engrossed in the TV."

Schramm says as you look at all the benefits that can come to children and families—nutritionally, socially, and emotionally—eating together as a family is definitely worth whatever effort it takes to make it happen, starting with meal prep together, even shopping together, cooking together, as well as the clean up after.

"These are all opportunities to talk—not necessarily about food, but about life and relationships and the things that are on people's minds," he says. "Eating together helps foster a sense of connectedness in the family and provides an ideal setting for adults to model and encourage positive communication and social skills in their children."

LaCee Jiménez, Food $ense (SNAP-Ed) social marketing and eligibility coordinator, says Food $ense has implemented a campaign called "Create Family Mealtime" to help families with busy schedules and tight budgets learn how to have successful mealtimes. The campaign runs during Family Meal Month in September, but Food $ense also has resources to help families year-round.

"If eating meals together is a new endeavor, it is important to be realistic and set a goal all family members agree on," Jiménez says. "If dinner isn't the best option, perhaps having family breakfast might work better. Be sure to schedule a regular time for whichever meal you choose so family members know what to plan on. Have family members check electronic devices at the door, and keep the conversation positive, trying to involve everyone." **A**

Food $ense provides quick tips, meal plans, recipes, and ideas for overcoming family mealtime challenges. The program also has classes to help participants learn cooking skills and ways to be fit on a budget. Visit createbetterhealth.usu.edu *to learn more. For information about upcoming classes taught by certified nutrition education assistants in your area, contact your local USU Extension office.*

Becoming a Master Gardener

BY JOSHUA PAULSEN

The Graft

When people are grafted into a new family, they often compare upbringings and personalities to see how they measure up. I revere my father-in-law, J. Craig Hale '70 (1946–2016). The former C.I.A. officer bests me in every dimension: Clearfield High School Student Body President, Utah State University Man of the Year, USU Student Association Vice President, and graduate degrees from Stanford and Tufts universities. Among his accolades, he was a self-taught master gardener. He had few weaknesses, so when he was diagnosed with Parkinson's Disease at age 55, it was a difficult blow. He retired from the agency shortly thereafter, moved back to Logan where he was raised, and built a garden to rival the Butchart, in Canada, complete with raised beds and wheelchair-compliant walking paths.

A Budding Gardener

Dad believed that a garden's utility was just as important as its aesthetic. He used to comment, "if you're going to plant a tree, why not make it a fruit tree?" Dad loved freshly picked ears of corn; pesto made from garden-fresh basil; deep colored, almost black concord grape juice; and home-pressed apple cider. His rows of vegetables, patches of berries, and groupings of over 20 varieties of fruit trees provided all these and more.

Several years after building his Garden of Eden, his health began to decline quickly prompting our family to move closer to aid in his and his garden's care. Dad would sit in a chair and point while I interpreted which weed he wanted pulled or branch he wanted cut. My efforts did little—dad seemed to will his garden to grow. It would produce more than enough food to feed his home and those of his nine children, with plenty remaining for neighbors and friends. Incidentally, he would often say he felt the garden was so productive because he gave much of the food away.

About a year before he died, dad pulled me into his office. He wanted to give me a gift. It was clear that, unqualified as I may be, my wife, Amy, and I were likely the future stewards of the family garden. He handed me several thick three-ring binders filled with agricultural fact sheets from USU Extension, news articles, and detailed ledgers of everything he planted by year and location. Dad was attempting to pass on his secret—knowledge.

That first harvest after dad's death was lackluster. I was unable to operate the irrigation pump, the berries were noticeably chlorotic (lacking in iron), and I harvested as many water sprouts as tree fruit. If it hadn't been for the efforts of Amy and Martha, my mother-in-law, the whole garden would have been fallow. It was during the planning for the upcoming season that I consulted dad's binders: soil PH, micronutrients, fertilizer composition, blossom end-rot, thinning cuts, heading cuts—they read like a foreign language. It was clear that his gift would be of little use unless I had an interpreter. So, in January of 2018, I enrolled in USU's Master Gardener (MG) program and began an eight-month journey to green-up my thumb.

Preparing

My first day of MG was like any other first day. I was nervous and my mind filled with irrational thoughts. Would my classmates judge me because I didn't grow 100 percent organic? Was I hippy enough to fit in? What if they asked me the Latin name for an aspen tree and I didn't know it? I discovered the group to be as diverse as plant life with one thing in common: everyone loved trees.

Our instructor and county Extension agent, Jaydee Gunnell was witty, quick to make a pun, and down-to-earth, and inquired about each of our interests and goals. For me, that was learning to grow food like dad.

When you begin a MG class, you have a very narrow understanding of what you will learn. You may want to grow award-winning roses, maintain the perfect lawn, or learn methods for managing bugs. As I quickly learned, becoming a certified MG would require developing broad skills in soils, fertilizers, plant and insect identification, and irrigation. It would also necessitate 40 hours of community service where I would practice my newfound skills. While the class studied an array of information, each person ultimately developed a specialty. I assumed my role as the tree fruit guy.

Pruning

Dad always pruned his trees in February or early March. With Logan's frigid winters I found this to be an unbearable time. However, Jaydee's advice was simple and surefire: prune when the plants are dormant and plant sugars cached safely in their roots. This means that you never prune in a month whose name ends in "r." He also shared a fundamental principle that changed my perspective on gardening forever. He explained that when we garden we aren't farming peas and lentils, cherries, or plums. Gardening is about farming

Would my classmates judge me because I didn't grow 100 percent organic? Was I hippy enough to fit in? What if they asked me the Latin name for an aspen tree and I didn't know it? I discovered the group to be as diverse as plant life with one thing in common:

Everyone loved trees.

Joshua Paulsen inherited his father-in-law's fruit trees after he died. He enrolled in USU's Master Gardener course to learn how to care for them.

light. Suddenly the shape of my apple trees, pruned in v-shaped open vases made sense; they were giant light-collecting dishes.

Jaydee instructed that every type of fruit tree needed to be pruned differently based on its species and age. After removing all diseased wood, a percentage of the tree is removed to encourage new growth. The key to peaches is to remove enough of the tree that you can throw a cat through it without hitting any branches—we followed the rule but spared our cat. By pruning accordingly, we could control both the structure and quantity of the fruit on the tree. Trees needed to be pruned every year, no exception. After practicing in our outdoor class lab, I confidently pruned dad's trees, no finger-pointing needed.

Thinning

Logan had an extremely mild winter and spring in 2018. Our perfectly pruned trees produced a record number of blossoms. The wet and warm weather was also ideal for Fireblight, a bacterial pathogen incurable in apples and pears. Fortunately, the MG course taught me how to identify and treat it. I saved our trees, and as word got out about my training, I spent hours helping neighbors diagnose and treat theirs. Without a spring frost to knock-off the excess blossoms, the tree was quickly weighed down with quarter-sized fruit. The uneducated me would have left them on the tree, but the aspiring master gardener knew better.

Dad often taught me how to identify the king apple in a grouping. That apple would be spared while the three or four adjacent smaller apples removed. I always

Paulsen's late father in law, J. Craig Hale, in his garden.

trusted his technique, but I didn't understand its importance at the time. Like life, if we spread ourselves too thin, we end up with mediocre performance in all areas. I didn't want mediocre fruit, I wanted big, juice and pie-worthy fruit, so I removed 75 percent of the fruit from the trees.

Caring

USU Extension purposefully takes a neutral stance on pesticide use—they teach Integrated Pest Management (IPM), a holistic approach to managing pests and diseases that incorporates natural, biological, and chemical controls to ensure healthy plants while limiting damage to the environment and sparing beneficial organisms. My apples were particularly susceptible to codling moths, which untreated led to wormy apples. Controlling the moth without pesticides is a chore and involves placing a paper bag over each apple which persists throughout the growing season—no thanks. Dad had historically paid someone to spray the trees, but I wanted the experience. The MG course taught me an array of controls, including those that were safe for bees, and instructed me on how to safely apply them. I joined USU's Pest Alert system, which told me the exact time I needed to spray.

Herbicides are another controversial topic for master gardeners. For good reason, most of us, including myself, have misused them. Dad avoided them altogether, which I found extreme. The MG course forever changed my view of chemical controls. Glyphosate, for example, the active ingredient in Round Up or Killzall, can be used in landscapes and vegetable gardens if applied according to the label. It will kill all plants on contact but is inert in soil. One experience during the course cemented the proper use of chemical controls—the time I almost killed dad's trees.

The fall before the MG course I purchased an extended control herbicide to remove the weeds that had popped up in dad's cobblestone path and patio. Dad always pried the roots out with a knife. The spray worked wonders and spared me hours of tedious digging. The following spring, while lounging in our backyard hammock, I looked up and noticed a bunch of dead limbs on a tree overhanging the patio. I stood and curiously inspected the trees throughout the yard. There was random limb die back on the River Birch in the front yard nearest the gravel path.

I went into panic mode. Weeks prior in our MG class we discussed the danger of soil sterilants. These ingredients were now being added to brand-name weed killers, much to the detriment of consumers who—because they didn't read the labels—were applying these chemicals under the drip-lines of trees. Soil sterilants can be nasty in non-commercial applications because they remain active in the soil for years and kill plants by coming in contact with their roots. I scrambled to see if I could find the label of the herbicide I used that fall. I was horrified when I saw it contained trace amounts of the soil sterilant Imazapyr.

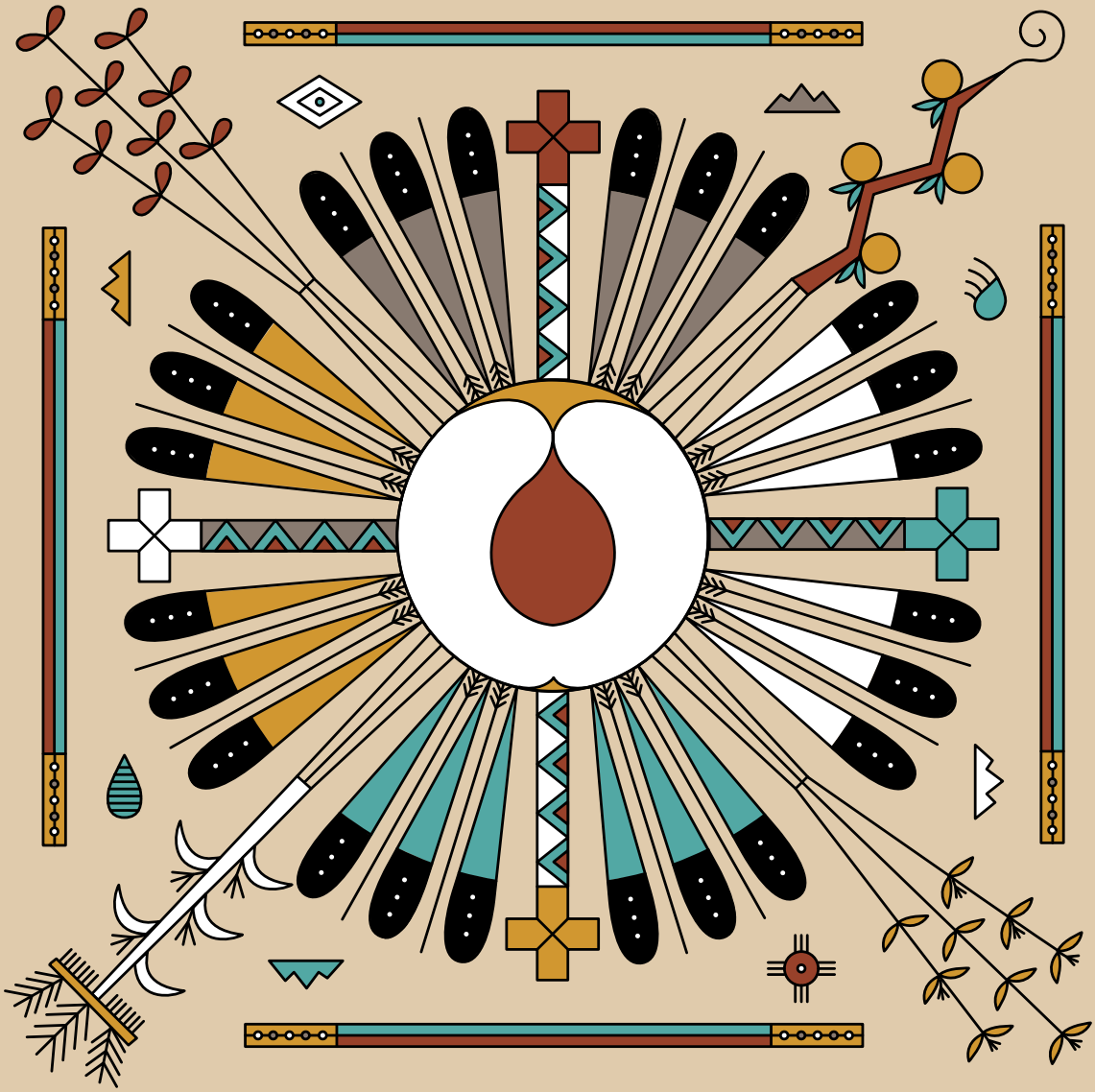
After the tears dried, I texted Jaydee: "I may have killed my dad's trees. I need you to come look at them. I don't know how I'm going to confront my mother-in-law." Extension specialists are too busy to make house calls, that's what us master gardeners are for, but he made one for me. With his expert eye, he was able to rule out the soil sterilant as the cause. The dieback was likely due to a wound at the trunk and the River Birch had contracted a disease. The lesson remained: exercise care with chemicals and read the labels.

Enjoying

Our harvest the fall after my MG training was record-breaking. Mother nature deserves most of the credit, but the knowledge I gained also had a profound effect. We pressed 60 gallons of apple juice and had bushels remaining for fresh-eating, pies, and applesauce. The peach tree branches hung close to the ground dripping with enormous, juicy peaches. The plums fed our family and several herds of deer that frequented the yard.

We made grape juice, pesto, pickles, and canned enough tomatoes to make fresh sauces the coming year. Most importantly, the graft that dad started with me in 2016 finally took, and a new generation of master gardener was born. Dad's books of fact sheets no longer intimidate me. The garden has ceased to be a chore and is now a laboratory for creating, experimenting, and learning. **A**

To learn more about the Master Gardener program and sign up for classes, go to extension.usu.edu/mastergardener.



FINDING LOST FOODS

by Kristen Munson

SEVERAL DIRT MILES OUTSIDE NAVAJO MOUNTAIN, DOWN AN ISOLATED CANYON NAVIGABLE ONLY BY FOOT OR FOUR-WHEELER, A GROVE OF PEACH TREES SWAYS NEAR A CREEK.

NOW, IF ONLY THEY WOULD TALK.

REAGAN WYTSALUCY (MS '19) SPENT THE LAST SIX YEARS TRYING TO COAX THEIR STORY FROM SEEDS SHE PLANTED NEARLY 600 MILES NORTH IN THATCHER, UTAH. THEY ARE JUST STARTING TO WHISPER.

"I GREW UP VERY DISTANCED FROM MY CULTURE," SHE SAYS.

The research helps fill "a hole" she felt growing up across the border from Navajo Nation in Gallup, New Mexico. Although many of Wytsalucy's relatives live on the reservation, she doesn't speak Navajo. Her journey to learn her culture's old ways

Illustration by Elizabeth Lord, BFA '04.

Top to bottom: Wild peach trees next to a field of corn in Jayi Canyon, AZ; Closeup of a peach; Purple blossoms of spinach in Logan, UT. Opposite page: Blooming Maygi peach trees in Thatcher, UT. Photos courtesy of Reagan Wytsalucy.

began when she started college. She enrolled at Brigham Young University to study business, but transferred to Utah State University after her father, Roy Talker, suggested another path: why not look into why traditional foods like Navajo spinach and native peaches were disappearing from the Four Corners region? Perhaps she could bring them back.

"As a young man, I would take my grandfather around and ask him 'where did the peach tree come from.'" Talker says. "He said,'They were always there.' The ancient ones, the Anasazi, had them."

That's part of the story Wytsalucy is investigating. What is the origin of the old orchards dotting the Southwest? Are they derived from trees brought by Spanish explorers centuries ago like many historians theorize, or do they pre-date the Spanish missions like some native oral histories suggest?

TALKER GREW UP HERDING SHEEP IN SHONTO, ARIZONA, IN THE HEART OF NAVAJO NATION.

Before being sent to boarding school off the reservation like many children of his generation, Talker recalls people maintaining peach orchards, harvesting the fruit to dry and reconstitute over the winter. "I remember it tasting like a jam and spreading them on tortillas," he says. The wild spinach, *cleome serrulata*, which grows across the Western United States, took longer to cook.

"People nowadays, they don't really eat it because they don't know how to prepare it," Talker says. "My mom would take us down to the canyon because that's where there was a lot of it. We would pick the leaves and sometimes she would have to boil it twice or three times to get the bitterness out of it. It tasted just like the spinach you would get out of a can."

But over the decades, he says, both Navajo spinach and native peaches have declined in the region. Wytsalucy is trying to determine if cultivating these plants for agricultural purposes is possible. Her work blends historical research with the agricultural sciences and has taken years to gain the necessary permissions to work on National Park Service land and support from Navajo tribal leaders to enter sacred lands and collect seeds. It has been a diplomatic effort as well as a research one.

"I think there's a humility in her that people respond to," says USU soils specialist and professor Grant Cardon who began working with Wytsalucy when she was an undergraduate intern assisting on vegetable research projects.

He and other faculty members quickly realized she was "an idea mill" and encouraged her to apply for an undergraduate research grant to pursue work down on the reservation. Cardon helped her identify ideal soil conditions for potential demonstration projects. They have whittled 10 potential sites down to four, including one on Reagan's ancestral lands.

"This project has soils, fruit, vegetables, culture, and oral history," he says. "It's a really unique project. I call it 'a signature project'—a real once-in-a-lifetime project that you get to be involved in. It's reconnecting with her own culture as well."

In 2016, Cardon, Wytsalucy, and her adviser Brent Black, USU professor and Extension fruit specialist, traveled to Navajo Nation to explain the project and search for abandoned orchards. Her dad came, too. Wytsalucy says this work would not be possible without him. Even though he hasn't lived on the reservation in decades, "he still has that connection, which I don't." But she's trying to build one and learn Navajo. "There is going to be a time when my father is not here."

The group found sites with bleached patches of sandstone where people used to boil and dry wild spinach. During the oral history portion of her research, coached by USU folklorist Randy Williams, elders told Wytsalucy that the spinach, known as Rocky Mountain Bee Plant, used to grow all over the roadsides, but is becoming scarce. "They think it's the water—they are getting less water than when they were growing up," she says. "They asked me, 'can you bring that back?'"

The spinach is a bush that can grow about four feet tall with long, slender leaves and bright purple blossoms. It was never cultivated by Navajo, but gathered and used as dye, medicine, or food. It's such an important plant, not just for Native Americans, it's a pollinator plant, Wytsalucy says. She gathered seeds and worked with Dan Drost, professor of plant, soils, and climate, to boost germination rates from three percent to about 90 percent. She wonders if it can be grown on a more commercial basis, would people even want to eat it again?

Wheat, pork, and sugar were not part of the Navajo diet until the U.S. Government

forced the tribe off its lands in the 1800s. Troops ripped thousands of peach trees from the soil as part of a starvation campaign against the tribe. Today, Native Americans have some of the highest rates of diabetes in the country. For a lot of indigenous people, it's the biggest problem in our time, Talker says. "I guess I didn't help by introducing McDonalds in this area. (He owned three franchises across the reservation.) If we can go back, we might find a cure. Everything we do eat nowadays is all processed." He envisions Navajo spinach on grocery store shelves.

The project has brought him and Wytsalucy closer and to the reservation they live outside of. "In doing this I have actually found myself," Talker says. "I have been in the business world. I thought that making all the money was important. But it's not—it's your family, and knowing who you are. Everyone has their own purpose—I think this is Reagan's purpose."

Talker recalls watching his daughter take a core sample from peach trees in Jayi Canyon and considering the history within each tree ring. "If those trees could tell you a story, they could tell you a lot that has happened," he says.

Dried leaves crunch underfoot as Wytsalucy tours the university's research orchard in Thatcher.

She points to two rows of about 40 peach trees planted from seeds from Jayi Canyon, near Navajo Mountain, and the Hopi reservation. She can already see a difference in their leaves from modern commercial varieties.

"Peach trees have a distinct leaf," she says. "Their leaves curl."

With the three Hopi trees in the collection, their curl is very gentle and slight, she says rubbing one of the few remaining leaves clinging to the branches. "The oldest orchards are no longer thriving anymore. It's only a select few that continue to replant seeds from these old strains."

When the Navajo returned to their land, the government provided peach seeds so they could replant, Wytsalucy says. "The elders, they knew they were different. They intentionally kept the seeds separate." Over the years, out-crossing has occurred in many of the old orchards as newer varieties were introduced.

Why didn't the elders tear out the new peaches like the government did? "It's food. It's a life," Wytsalucy says. "You don't want to damage something because it's damaging yourself." That's why Navajos don't normally prune trees in traditional growing practices, she says. "Part of it is cultural practice where it is like you are removing the start of a life form. You're cutting off life in the bud stage, in the beginning of its life. They don't practice thinning as well—it's the same concept. You are removing life at the beginning of its cycle."

She scrolls to a picture of seven peaches picked in the Four Corners area on her phone screen. They are the size of large apricots with mostly green skins and a slight red blush. The dense white flesh has a sweet-tart taste. Modern agricultural practices prune new growth to promote larger fruit development. Most of these trees have grown without human intervention. They are wild.

When you save seed and plant, you likely won't get the same fruit as the parent, Black explains. The seed has some of the qualities, but only by grafting from existing trees are you guaranteed to get the same qualities in the fruit. Because of the way these peaches have been grown over the last 400 years, there may be advantages in their root stock, he says. "That can benefit not just the Navajo, but any Western grower."

Wytsalucy recently partnered with another USU graduate student to test the native peaches for drought resistance. They found the Navajo peaches grew faster through severe drought cycles than commercial varieties. She has another project at USU's Botanical Center in Kaysville testing root distribution that will continue after she graduates. Afterward, she aims to continue gathering fruit quality data, and eventually, to return seeds to the Navajo and start a native seed bank.

"One of the challenges is Reagan has so many questions," Black says. "The things she wants to study take a career, a lifetime to solve."

A gentle rain splatters off Wytsalucy's winter coat. Her jeans are baggy on her tiny frame. She is a 5-foot tall force in this empty orchard. The Zuni say the Spanish brought peaches, but that we had our own—that they are different, she says pointing to tiny buds that will fruit next summer. She sent seeds to a South Carolina lab for genetic testing and is awaiting results for her thesis.

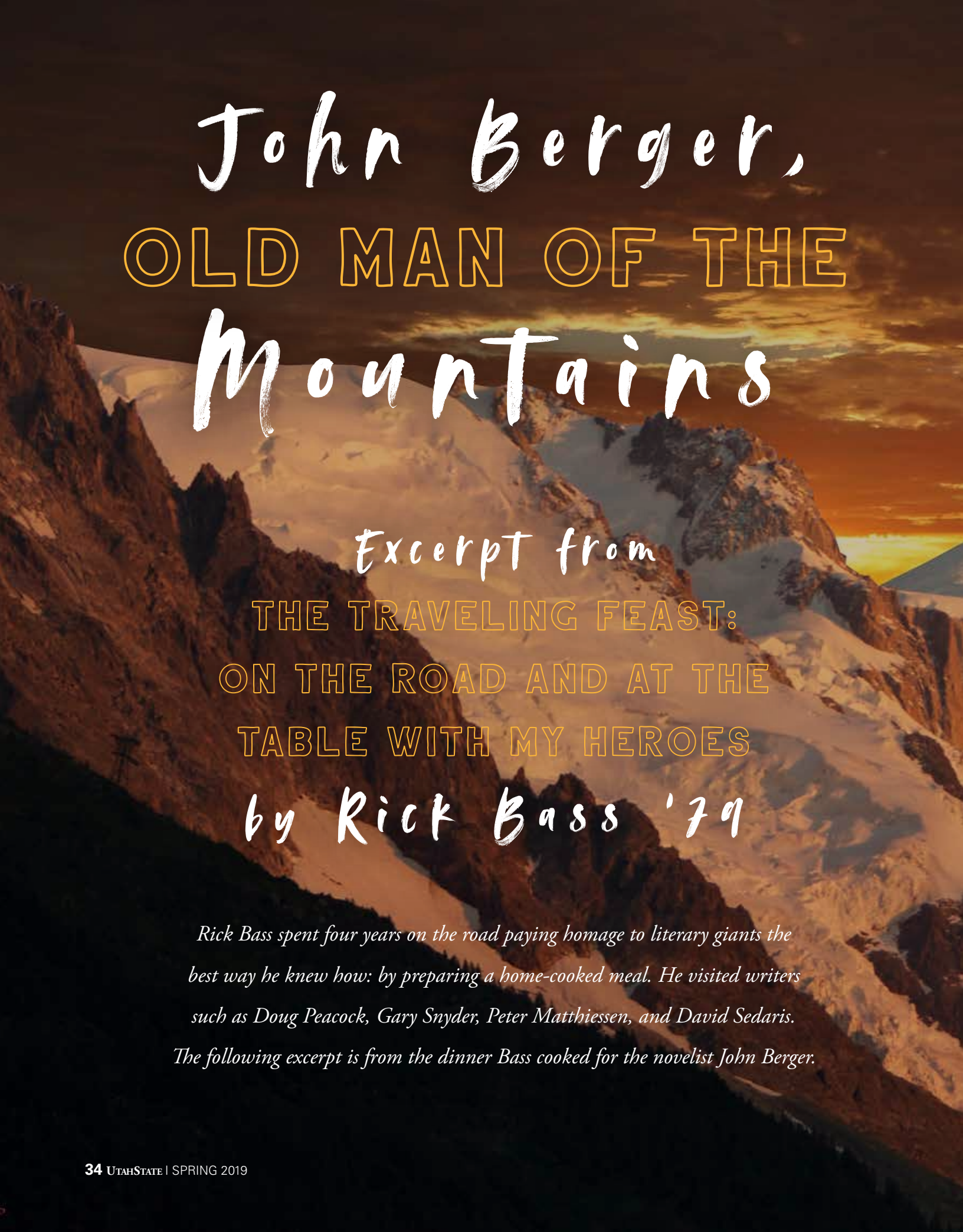
"It's almost like returning something to us if I am able to say these [peaches] have been here all along." Wytsalucy says.

She looks around the orchard and admits it will be hard to leave the trees behind when she graduates.

"Every tree that I've planted I have built a connection and a love for," she says. "I want to see it grow, I want to see it fulfill its life. … I talk to them. They, like us, have their own spirit and they need to be nurtured, they need to be cared for, they need to feel like somebody is there that wants them so that way they can continue to thrive and feel like they have a purpose."

These seeds feel like her calling. Like her work has been blessed, she says. Wytsalucy wonders why it's peaches and not pistachios or apples or some other traditional food.

"Out of all of these trees, I think this is kind of the pathway for bringing back all of those as well," she says. "This tree has a story with it and I am hoping to reveal that when the time comes." **A**



John Berger, OLD MAN OF THE Mountains

Excerpt from THE TRAVELING FEAST: ON THE ROAD AND AT THE TABLE WITH MY HEROES

by Rick Bass '79

Rick Bass spent four years on the road paying homage to literary giants the best way he knew how: by preparing a home-cooked meal. He visited writers such as Doug Peacock, Gary Snyder, Peter Matthiessen, and David Sedaris. The following excerpt is from the dinner Bass cooked for the novelist John Berger.

PIE TIME.

Ideally we wouldn't have eaten quite so much before serving dessert, but so be it. In anticipation, John, our faithful sommelier, rises and navigates the long table once more, refilling glasses, the wine like rich paint in our sunlit crystal goblets. He places his hand on each of our shoulders as he pours, trembling not with age, it seems, but joy. He sits back down at the head of the table, just to my left—Yves is at the other end—and I can't resist letting loose the question I've been carrying around and trying to ask each of my mentors, timing be damned.

"I'm here to share you, my hero, with these two young writers I believe in deeply," I tell John. "But I'm also here for myself. "What do I need?" I ask him. "What will life look like, from here on out?"

If he was unprepared for such an earnest question, or considers it a gauche imposition, he does not show it. And although the timbre of my voice is casual and the words are not arranged with any particular gravity or elegance, he recognizes the intensity behind the calm. He locks my eyes with his own: those icy, unclouded blue eyes, translucent in their depthlessness, unsettling if they weren't so beautiful.

"Courage," he says. His answer has such emotion in it: firmness, understanding, and gentleness, with more sorrow in his voice than I would have expected. "Courage," he repeats, not as incantation, but as echo, a shadow of the first utterance. As if the word, the thing, is so substantial that it has that shadow at all times.

Something's passing between us, and I can't help but wonder if he's remembering standing where I am, at a point in time where he still—despite some significant years having passed by—had the opportunity to make a change, maybe a dramatic one, with his life. Is that what brought him to this farmhouse in the mountains, with a few peasant farmers for neighbors, and the freedom of anonymity?

"You come to a spot," he says, leaning forward—his eyes still have not lost their lock on mine, so that I feel like a horse being gentled—"and you make the hard decisions to go on." His eyes bore deeper now, telling me that he's been where I am. "It's hard," he says. "Not many do. That's all I am going to say." He straightens up in his chair, holds my gaze long enough to imprint these things, and then we speak of it no more.

After that, the conversation shifts in tone, takes on even more depth. At the other end of the table, Yves is talking about the differences between store-bought meat and animals acquired by oneself, whether hunted or raised, and specifically about a pig he raised a full year for slaughter, and the ceremony of the day they killed it.

He speaks of the gratitude they felt for it, and how every step of the process—the cleaning and butchering, then the curing—was done with the attentiveness of art. He uses the word sacred. Before eating, they passed around the knife that had been used to kill the pig. The same knife they then used to carve the meat.

"It was very special," he says in his quiet way. "Very moving."

I tell the story of the elk we have just consumed, how it stood at the top of the mountain, in the sunlight, while I was hiking up out of the valley's autumnal fog—how the elk was poised at the leading edge of that fog, as if it were a lake to which he'd come to water. I could see him on the other side, as the fog tendrils began to burn away in the light of the day, though he could not make out what I was. I raised the rifle and took him, and was grateful. I spent days afterward cleaning, butchering, and packing him out, while in subsequent days ravens and eagles circled what remained, coming in to feed on the bones, and after I was gone and had

Photos by Pixabay.

taken everything, bears and wolves came and carried away the bones. I froze the meat, and now, a year later, have carried it to John.

John excuses himself from the table, disappears into the back room, and returns with a large envelope. It's the loose galley pages of a book Yves and John have written together: *Flying Skirts*, which was Beverly's nickname. John hands the package to Yves, and Yves, with even greater care than his father, pulls out the pages, the loose pieces that will be sewn and bound into the book, not bringing Beverly back to life, but fanning her spirit back into their lives.

Yves delivers the book to me with both hands. I take it in my open arms like a tablet, and, making sure that my hands are spotless, begin turning the pages.

It's as if everyone's heart slows and there is nothing beyond these mountains, this meal, no world beyond this one.

I read some of the vignettes: concise, elegant, raw but without lamentation. In one of them John writes about how she informed the pages of his work, and hence his life.

COURAGE.

Each piece is more beautiful and intense than the last. It's too intense. I fold the pages, hand them back to Yves with an apology. "It's too much for me at once," I tell them both. "It's so beautiful. I'd like to read it while I'm alone, if I might."

They understand, and the envelope is carried away.

But like a tide, and as graceful, John begins to churn the heart's country below. He goes to his room once more and returns with a poem. "Carrying the Songs," by Moya Cannon, an Irish poet with whom he's been corresponding. He reads it beautifully, his rich voice deepening to a gentle but powerful baritone. It's an actor's voice, Shakespearean—and though there is no brogue, somehow it feels, sounds, Irish.

We all sit quietly. He has cast a trance upon our hearts.

I'm still thinking about the answer I got from him, my treasure. Does he know of the drift in my life, the severance? Has Marc told him? I'm not sure, but it wouldn't surprise me at all if he knew things without their ever being spoken.

"You have such a beautiful reading voice," Erin says, and I love how John is neither self-deprecating nor its close cousin, vain. He just smiles, pleased by her happiness.

He sits back down at the head of the table, clears his throat, dons his reading glasses, adjusts them as might a hunter examining the optics of his scope, thumbs through the pages of one of his books, and then seems to relax, finding what he was searching for. As he reads a passage from *Bento's Sketchbook*, about a character named Bento (a diminutive of the philosopher Spinoza's first name) in a municipal swimming pool, we sit mesmerized and sheltered beneath his voice. I listen to his breath and imagine how it must have been when he joined these words and sentences together, the slow-rolling sound waves that bring the story into us. He finishes and sits back, happy again with our silence, and only now, for the first time, does he look even the least bit fatigued.

He pours more wine for us and then goes back to his room. After we finish it, the rest of us walk outside and climb the wooden ladder to Yves's painting loft. The ladder goes straight up, vertical rung-and-rail nailed to the side of the barn. We pop into the loft, walk past the hay bales, which glow in the late-afternoon attic light, and across the wide planks to the studio.

When we open the door we are greeted by the smell of paint and a flood of white light, along with an extravagance of easels and canvases, cans of soaking brushes of all sizes and lengths. And the mountain. Always the mountain.

The most famous peak in Europe, the iconic Mont Blanc—the wild soul of Europe, or what's left of its wild soul. Of course these two men, father and son, would live at its flanks, milking that wildness from it each day and night. Of course their family has settled here as the outside world slips into the future. Mont Blanc fills the huge window. One cannot prepare for opening a door and stepping into a small room in which is housed an entire mountain, much less that mountain.

I worry that I can't properly describe Yves's paintings. I don't have John's facility for art criticism, after all. If I use the word figures—apparitions—coupled with the adjective abstract, the mind drifts away from rather than toward the subject. The paintings are thickly textured, in hues of smoke—blue, gray, purple, black, eggplant, mauve—and would seem to have nothing to do with Mont Blanc, which, I realize now, is the point. It is Yves' knowledge of the view when his back is turned to the mountain that lets him go wherever he wants in his painting. The mountain will always be there when he turns around.

His counter space, and every scrap of wall space, are filled with talismans: shells, nests, feathers, bones, stones, and myriad pictures, including photographs of his parents when they were young and brimming with verve. Looking at the pictures of John then—in a sedan outside a restaurant, smoking a cigarette, or on a motorcycle on a country lane in the fall—one understands why he is still as powerful as he is. Such a light can never completely go out. **A**

KOLACHES,
KIN, CATHER, AND CULTURE

BY EVELYN FUNDA

Pillowy kolaches rest on top of a doily crocheted by Ántonia "Toni" Funda, Evelyn Funda's mother.

THE ICONIC CZECH PASTRY KNOWN AS KOLACHES is a delicacy made with a supple, raised sweet dough and filled with any number of traditional fillings, including cottage cheese (the Czech version of cheesecake), poppy seed, or spiced plum.

Kolaches are to Czech culture as apple pie is to American. They are as much an expression of the cultural values of tradition, hospitality, resourcefulness, and artistry as they are a dessert staple, and nearly every special occasion from a wedding to a Sunday afternoon visit with friends is marked by a heaping plate of them on the table. Any Czech cook worth their salt is both expert at the intricacies of the recipe and unyielding in their stance on about the "correct" way to bake kolaches.

Does your recipe include the sweet crumble topping called posipka? Yes, please. Can you use pie fillings as modern substitutes? I'd really rather not. Are they round, square, or folded? Um, round, of course! Can kolaches come in versions with savory fillings? Heavens, no! A jalapeño-cheese kolach is a Tex-Czechs abomination! (Sorry, my Texas friends).

Now that you know where I stand on these important controversies, let me admit that such debates highlight issues of authenticity versus regional adaptations. In other words, the history of migration is written on the humble kolach.

Kolaches also symbolically mark one of the places where my own personal history meets my professional research and scholarship. As an American Literature professor, I have spent the last three decades researching the novelist Willa Cather, with much of that time focusing on her portrayal of Czech-American immigrants, such as her famous depiction of Ántonia Shimerda Cusak in the 1918 pioneer novel set in Nebraska entitled *My Ántonia.* I come by my interest in Cather's Czechs serendipitously, for my own Czech mother's name was Ántonia. Like Cather's character, she escaped political strife in the old country (in her case, the Soviet Communist takeover after World War II) and arrived here almost penniless. She moved out West to Idaho where she married another Czech-

Clockwise: Artwork by Evelyn's grandfather; Kolaches as community; Some of Evelyn's Czech cookbooks, including her paternal grandmother's 1954 cookbook written in Czech. Pottery is from Evelyn's Polish pottery collection.

American and made a comfortable, if not prosperous, life on a farm. Also like Cather's character, outside our back door she kept a cellar filled with jars of fruits and preserves, and she was known for her light-as-air kolaches—among the many traditional Czech foods that she regularly put on our table.

I've written about my own Ántonia in a memoir entitled *Weeds: A Farm Daughter's Lament,* where I describe my paternal grandfather's immigration to the United States in the first decade of the twentieth century, at the height of Czech immigration. After working as a baker for two years in St. Paul, Minnesota, Frank answered the lure of western settlement and came to southern Idaho, where he both homesteaded and worked as a baker until he could devote his time entirely to his farm. Like Cather's main character in *Neighbour Rosicky,* my grandfather Frank believed that owning his own land offered a liberty that made life "complete and beautiful."

Thus, my Czech family as a whole inspired my current research project, a book entitled *Willa Cather and the Czechs,* which considers how Cather, who descended from Welsh and Irish ancestry and was born on a fourth-generation sheep farm in Virginia, could so accurately depict the unique challenges of Czech immigration to the American prairies in a number of novels and short stories. As I have studied Cather's interests in Czech politics, music, literature, mythology, and, of course, foodways, I have recognized her compassionate and nuanced portrayals of European immigrants from Germany, Scandanavia, and Eastern Europe.

> In carrying on the tradition of baking kolaches, Ántonia suggests how successful assimilation does not mean giving up pride in her family's national identity or faith in their cultural history.

Within the anti-immigrant climate of the early twentieth century, those immigrants were more often stereotyped and viewed with suspicion. But Cather honored the intelligence and imagination these immigrants brought to America, arguing that they had contributed significantly to the prosperity of the nation.

Regarding Czech immigrants specifically, Cather called them "people of a very superior type" and cited their "sturdy traits of character," "elasticity of mind," and "honest attitude toward the realities of life." As for the superiority of their pastries, Cather believed they were an indication of true cultural sophistication. "I could name a dozen Bohemian towns in Nebraska," she wrote in 1923, "where one used to be able to go into a bakery and buy better pastry than is to be had anywhere except in the best pastry shops of Prague or Vienna."

Cather's Ántonia had been patterned after a childhood friend from Nebraska, Anna Sadilek Pavelka, who Cather once called "one of the truest artists I ever knew." In a 1921 interview reprinted in *Willa Cather in Person,* she cites "the order and harmony of her kitchen" and the "real creative joy of all her activities." With Anna, Cather said, "Art springs out of the very stuff that life is made of."

We see this theme in Cather's iconic fruit cellar scene at the end of *My Ántonia* where the novel's narrator Jim Burden returns to Nebraska to visit his childhood friend and her large, exuberant family. He recognizes how the hardships of her early days on the prairies are far behind her.

Ántonia's children proudly show Jim their mother's new cellar and draw his attention to barrels full of pickles and other preserves. "They said nothing," Cather writes, "but, glancing at me, traced on the glass with their fingertips the outline of the cherries and strawberries and crabapples within, trying by a blissful expression of countenance to give me some idea of their deliciousness."

Then one of Ántonia's sons suggests she show Jim the spiced plums, adding "Americans don't have those … Mother uses them to make kolaches." In a comic end to the scene, Ántonia's youngest, impish son Leo "tossed off some scornful remark in Bohemian" to his brother, to which Jim quickly responds, "You think I don't know what kolaches are, eh? You're mistaken, young man. I've eaten your mother's kolaches long before that Easter Day when you were born."

In carrying on the tradition of baking kolaches, Ántonia suggests how successful assimilation does not mean giving up pride in her family's national identity or faith in their cultural history. Yet, in Jim Burden's teasing response to little Leo, the kolaches also symbolize cross-cultural connections forged over food, meaningful shared experiences that stand in contrast to the complexities of translating linguistic meaning between languages. To my mind, that is the recipe for a powerful message. **A**

"There is an old Czech proverb that says, "Without work, there are no kolaches." While the multiple steps to making kolaches would never qualify them as a fast food, many fine Czech pastries actually begin with the same basic dough. Czechs traditionally made their sweet dough with melted goose or duck lard, but modern cooks substitute butter. Although my mother always kneaded her dough by hand, I have updated my instructions to use a bread machine. My mother never made fewer than three types of kolaches at a time, and I've included here several traditional fillings, including the spice plum recipe Cather referred to in her novel. More of my Czech recipes and other Cather-related foods can be found in *At Willa Cather's Tables: The Cather Foundation Cookbook* (available at willacather.org). As a bonus, that cookbook includes my recipe for apricot and nut fillings, as well as recipes by Anna Pavelka's granddaughter, who, by the way, also makes her kolaches round and *never* savory!

What follows are my own Ántonia's recipes, which I've transcribed from the butter-stained pages of the spiral notebook where my mother and I wrote down her recipes many years ago. To read the full instructions for assembling and baking the kolaches, visit utahstatemagazine.usu.edu/kolaches.

Toni Funda's picture framed with her rye bread recipe hangs in Evelyn's kitchen.

Czech Kolaches

(From the kitchen of Evelyn Funda)

Ingredients:

BASIC SWEET DOUGH:
¼ cup melted butter
1 cup sugar
1 teaspoon salt
1 ¼ cup warm water
2 scant tablespoons dry yeast
3 eggs
Grated rind of 1 lemon
2 teaspoons vanilla
4–6 cups flour (to make a soft smooth dough)

SPICED PLUM FILLING:
1 pint prune butter*
1 cup sugar
1 teaspoon ground cloves
½ teaspoon cinnamon

COTTAGE CHEESE FILLING:
1 32 ounce tub of regular cottage cheese
¼ cup melted butter
1 cup sugar
Grated rind of one lemon
2 egg yolks, beaten
3 tablespoons of flour
¾ cup of golden raisins

POPPY SEED FILLING:
3 cups ground poppy seed (use a coffee grinder to finely grind the seeds)
1 can evaporated milk
1 cup sugar
½ cup butter
1 tablespoon rum flavoring

POSIPKA (Crumb Topping):
2 cups flour
1 ½ cup sugar
1 cup butter, softened

**Prune butter is made of Italian plums slowly cooked down to a fruit butter consistency. You can substitute one pound of chopped dried prunes, reconstituted with hot water. Drain the prunes and blend with a food processor before adding sugar and spices.*

THE *Art* AND *Science* OF Cacao

By Lynnette Harris '88

IT'S A LONG WAY

from the cacao-growing regions of the world to northern Utah. But cacao is making the trip from south and central America to the newly opened Aggie Chocolate Factory, and students at Utah State University are learning first hand that the journey from cocoa bean to chocolate bar is no less dramatic than differences between Belize or Ecuador and Utah.

The process from bean to bar begins with harvesting cacao beans from cacao pods. The hand-sorted beans are run through a machine to separate the shells from the cocoa nibs, which make up the word "Chocolate" on this page.

The College of Agriculture and Applied Sciences (CAAS) opened the Aggie Chocolate Factory in late 2018. Part teaching facility, part laboratory, and part café, the factory is an outgrowth of food science Professor Silvana Martini's research in fats and sensory evaluation and the course she teaches each fall semester, *Chocolate: Science, History, and Society.*

Josie Sorensen, a sophomore food science major from Gunnison, Utah, enrolled in the course having no idea chocolate making was so complicated or that working in a chocolate factory was in her future.

In addition to serving students in that course as a laboratory, the factory staff and college faculty will be doing research as new funding opportunities arise, and collaborations with chocolate and candy makers large and small are explored. CAAS Dean Ken White considers the factory a new tool for fulfilling USU's mission to serve people and industries in Utah, including the state's numerous candy companies and nearly a dozen artisan chocolate makers and chocolatiers.

"People don't understand what food science is," Sorensen said. "Everyone thinks I want to be a chef, but I don't. I want to be a food scientist, studying food's components, systems of producing it and processing it, and my dream is to do humanitarian work focused on hunger issues. It is really fun when people come to the chocolate factory and café because I can tell them all about the process, the components, and explain flavor differences."

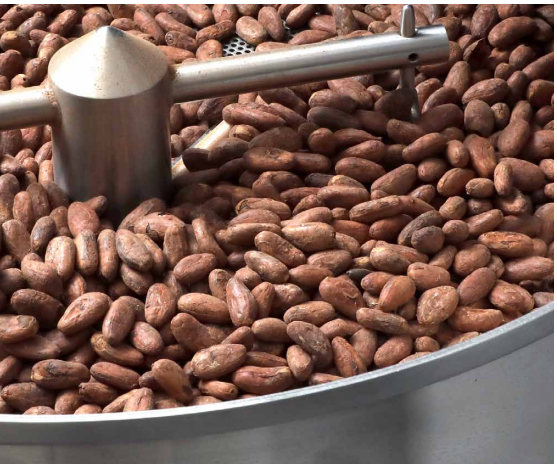
Sources differ slightly on the amount of chocolate American's consume on average each year, but agree on about 11 pounds, which is fully half of all the candy Americans consume, though 11 pounds doesn't come close to the 22 pounds of chocolate consumed annually by Europeans. But all the chocolate in the world begins with the pods of cacao trees that can only be grown in countries within the narrow band 20 degrees north or south of the equator.

It Starts with Beans

A sweet welcome from Aggie Chocolate Factory manager, Steve Shelton, and Silvana Martini, associate professor in USU's Nutrition, Dietetics and Food Sciences Department.

"About 70 percent of cacao production worldwide is in Africa, and especially West African countries," Martini says. "Growers there are quite poor, not well educated, and their cocoa beans are sold through governments so there are layers of people being paid between buyers and growers. Cacao in West Africa begins in the hands of growers on more than two million small farms that are almost all family owned. Their yields are very low because they don't have the knowledge to increase yields with best practices for caring for the trees and the soil."

Those beans are bought by companies that make huge quantities of chocolate. The world's top chocolate makers—including Barry Callebaut, Cargill, and Olam—make chocolate to sell to large candy makers that use it to create the confections we commonly see on store shelves. The chocolate makers are working to help farmers improve the health of their trees and recognize diseases before entire farms or harvests are lost. Martini adds that the companies are also building roads and schools, and teaching growers basic math and business skills, all in an effort to get ahead of predictions that in the near future there will be too little cacao being grown to meet demand.



Hand-sorted cacao beans are roasted to perfection.

As with most fruits and vegetables, cacao flavors are the result of a long list of variables, including different plant varieties, soils they are grown in, temperatures and weather, water sources and amounts, elevation, harvest time, and handling after harvest.

"For the mass market, you can't have a bar of chocolate with fruity flavors one time and then have completely different flavors the next batch or the next year," Martini says. "Big companies are looking for consistency and roast beans at higher temperatures to achieve it."

Flavor variations in beans from different sources are prized though by small-batch, artisan chocolate makers, who typically buy cacao directly from growers or co-ops in South and Central America. Aggie Chocolate Factory Manager Steve Shelton says the factory is committed to purchasing fair trade cacao and organic sugar, cane sugar, because other sugars just don't work well with chocolate.

"Our cacao from Belize comes from Maya Mountain Cacao and they work with more than 400 farmers and have increased the farmers' income by more than 20 percent," Shelton says. "But even more importantly, since Maya Mountain was founded (in 2010), the number of those farmers' children who go to school has increased by over 85 percent."

In addition to the chocolate produced from the Maya Mountain beans, the Aggie Chocolate Factory currently makes chocolate sourced from a family-owned, 100-hectare farm in Ecuador that is the "house chocolate" that goes into the cookies, brownies and other confections sold in the factory's café.

Shelton and Martini foresee the factory producing eight-to-10 single source chocolate bars with beans from several countries. Even now, with just two in-house bars to compare, the differences in flavor are striking.

The cacao from Belize produces a bar that first releases flavors likened to berry or pineapple as it melts on your tongue and then finishes with what Shelton calls "a little kick to remind you that this is a very dark chocolate." The Ecuadorian chocolate maintains a good, straightforward flavor similar to a dark brownie batter. Both bars are made from just two ingredients, organic cacao and sugar, and most steps in the long process are the same.

Flavor is Perfected

Developing distinctive flavor profiles while roasting and processing the beans is where art meets science in artisan chocolate making. But it's a long process from bean to bar, and parts of it beg the question, "Who on earth looked at a cacao pod and thought of doing this in the first place?"

The short answer is the Olmecs, whose complex civilization along the Mexican Gulf Coast thrived from 1500–400 B.C., but whole volumes have been written about the history of chocolate. Students in Martini's chocolate course get to try their hands at grinding cacao and blending it with hot water to make a drink that was prized by Olmecs and later civilizations in the New World. It's a good experience, but the bitter drink is a long way from the sugary, creamy hot cocoa drinks people are used to and not likely to win over even devoted lovers of dark chocolate.

Splayed cacao beans cut-tested to ensure the quality of fair-trade beans from countries such as Belize and Equador.

Chocolate begins with pods from cacao trees that are vibrant shades from green to red. The pods are opened sometimes by machete, sometimes with other tools (including baseball bats), to reveal a fibrous, white, slimy pulp surrounding rows of large seeds. Shelton describes the pulp as similar to a delicious fruit smoothie, "but the texture is really not pleasing." The beans, which are actually seeds, and pulp are put in wooden boxes or on the ground on top of banana leaves where the sugars in the pulp are broken down through a fermentation process. The beans are moved through a series of boxes, or stirred with a shovel when fermentation occurs on the ground, until the white pulp disappears. The fermented beans are then spread on a platform and left there to dry.

Dry beans are hand-sorted, bagged and shipped worldwide, but their path to being transformed into chocolate is just beginning. When bags of cocoa beans arrive at the Aggie Chocolate Factory, they are put in a freezer set at 0° F and kept there for two weeks to kill any diseases, mold, or insects that may have made the trip. At the end of two weeks, the beans are moved to a walk-in cooler at about 42°F for a week, and then to the sorting room which is kept at a cool 61°F so the beans gradually warm and condensation that could cause mold does not form. The factory's small team of student workers sort the beans by hand, removing any pebbles, twigs, broom bristles, or other non-cacao items and any beans with broken shells.

"If we put a cracked bean in the roaster it will get ultra-roasted in relationship to the other beans and it would bring a lot of very dark flavor to that batch of chocolate," Shelton explains. "Each batch of sorted beans for the roaster in our small facility is about 11 pounds, and six batches from the roaster go on to become one batch of chocolate."

But the beans' transformation is still far from finished. Each batch is in the roaster for 25–30 minutes to develop the beans' unique flavors, then into a cracking and winnowing machine to separate the shells from the cocoa nibs. The nibs are put in a pre-refining machine with two rollers made of stone that break the nibs to bits about twice the size of a typical sugar granule. From there, 11 pounds of nibs at a time are poured into the cutter mixer that is like an industrial strength food processor, where the heat produced by the friction of the spinning blades causes fat in the nibs to melt and create a slurry known as cocoa liquor.

"It is a consistency a little thinner than peanut butter and it's extremely bitter," Shelton says. "If I had been inventing chocolate, I would have gotten to this stage and said, 'I'm done. Nothing good can come of this.'"

And Finally, Chocolate

Fortunately, someone in history pushed past that unappealing phase, but there are still more steps in the process. The cocoa liquor is put in a press and cocoa butter is excreted and captured, while the solids become hard disks of cocoa powder. The cocoa liquor can also be placed in a grinder, or melanger, where stone wheels roll over it continuously for six days.

The Glossary of Chocolate

CACAO:
Raw materials, including beans and cocoa liquor, used for making chocolate, cocoa powder and cocoa butter. Technically, cacao and cocoa are interchangeable, but the industry tends to use "cacao" to mean raw ingredients and "cocoa" to describe processed elements like cocoa powder and cocoa butter.

COCOA SEED/BEAN:
Seed obtained from a cocoa pod.

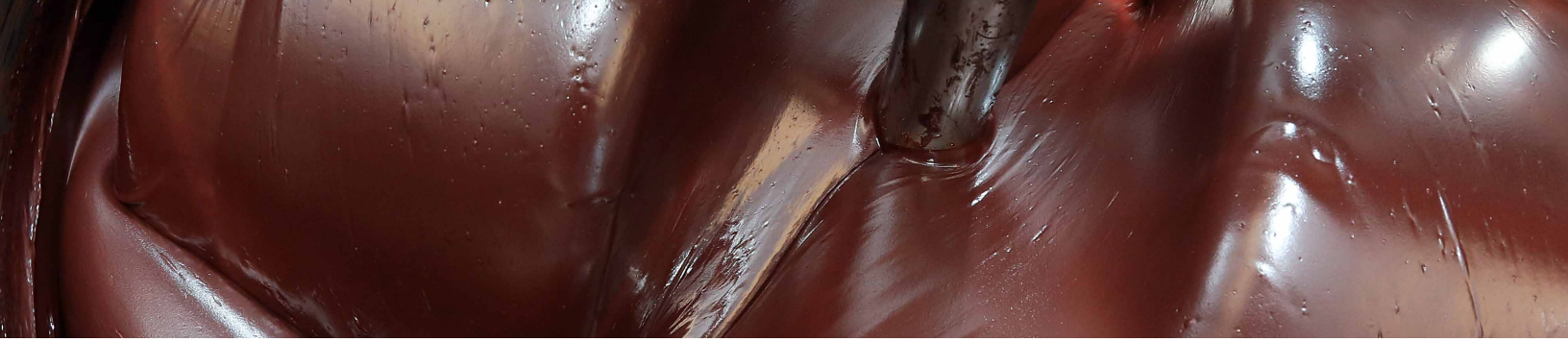
COCOA SHELL:
Shell or skin present in the outer part of a cocoa seed.

COCOA NIB:
Inner part of a cocoa seed/cocoa bean without its shell.

COCOA LIQUOR:
A dense, dark, cocoa liquid created by finely grinding roasted cocoa nibs. It contains no alcohol, but refers to the liquid state the nibs are in as they are ground. It may also be referred to as cocoa mass.

CHOCOLATE MAKER:
Person or company that produces chocolate by processing dried cocoa beans.

CHOCOLATIER:
Person that uses chocolate produced by a chocolate maker to create confections, which may be chocolate bars, enrobed candy centers, truffles, etc.



Shelton says the point is to grind it so finely that your tongue can't perceive individual particles that would make it feel even the least bit gritty. At the right time during this grinding process sugar and other ingredients are added. Yes, the timing of when sugar is added also changes the flavor profile even when you begin with the same batch of cocoa liquor. Then the chocolate is aged to let flavors develop further, re-melted and tempered to allow for cocoa butter to form the right crystals and finally, chocolate is poured into molds, taken to a cooler to allow hardening, then hand-wrapped in foil, and packaged.

Sorensen says in labs for the chocolate class, small groups of students made chocolate using different processes and fats. In the end, they made 12 different chocolates from bean to bar with very distinct flavors and textures for a side-by-side tasting.

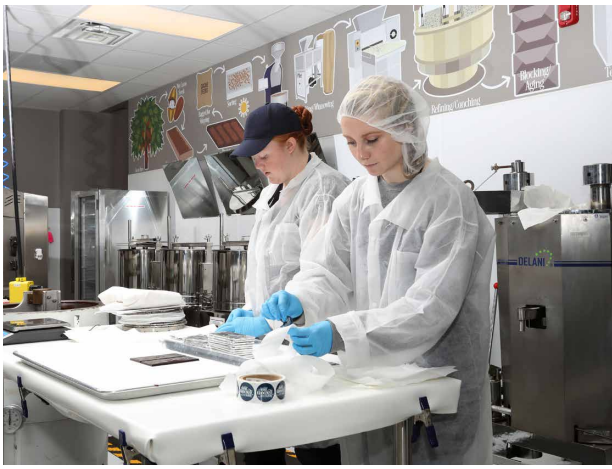
Bars of chocolate currently at the factory are 70 percent cacao and 30 percent sugar. That's it. No other ingredients. But it's far from simple because each recipe—which includes every step from roasting to being poured into molds—will have to be slightly adjusted with each new harvest. Even though cacao will be coming from many of the same sources year after year, each harvest will have slightly different flavors because growing and harvest conditions will never be exactly the same.

Martini points out that a defining characteristic of cocoa butter is that it melts very fast in your mouth.

"Fast melting allows flavors to be released," she says. "So when you eat a piece of chocolate, especially an expensive piece, you don't want to swallow it quickly. You want to hold it on your tongue, let it melt, breathe to allow those aromas to travel from your mouth to your nose and try not to chew it too much. You want to give it time to melt in your mouth, not in your throat or your stomach."

In the end, it all stacks up to Aggie Chocolate bars that are ethically sourced, all organic, single origin and fair-trade certified.

Above: Small-batch, stone-ground, hand-crafted deliciousness that makes up Aggie Chocolate. Right: Josie Sorensen (blue cap) and Annelise Burr are part of Shelton's Aggie Chocolate Factory team that is 100 percent student employed.



Sorensen loves telling potential customers about chocolate and offering tastes, but has found many just won't try it because they are certain they don't like dark chocolate.

"Some of them say, 'I'll just have hot chocolate,' and I have to warn them this is not your American style hot chocolate mix and some hot water. Our sipping hot chocolate is dark and so rich that if you refrigerate it, it will solidify. But it's fun when someone orders it and really appreciates it."

As the Aggie Chocolate Factory becomes more established and students and faculty experiment with processes and products, expect more varieties of dark chocolate, milk chocolate, Aggie Chocolate in Aggie Ice Cream, tasting events, and educational opportunities. This summer the factory will host its first week-long short course for people in the industry, and shorter workshops for home candy makers are expected to follow.

"It will be exciting to see what we will create with our students when we've been up and running for more than just a few weeks," Martini says. "I tend to like very simple chocolates more than chocolate with a lot of other things mixed in. Actually, I need to rework that sentence. I really love all chocolate." **A**

To learn more about the Aggie Chocolate Factory, go to: www.aggiechocolate.com.

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GROWING A FOOD MOVEMENT

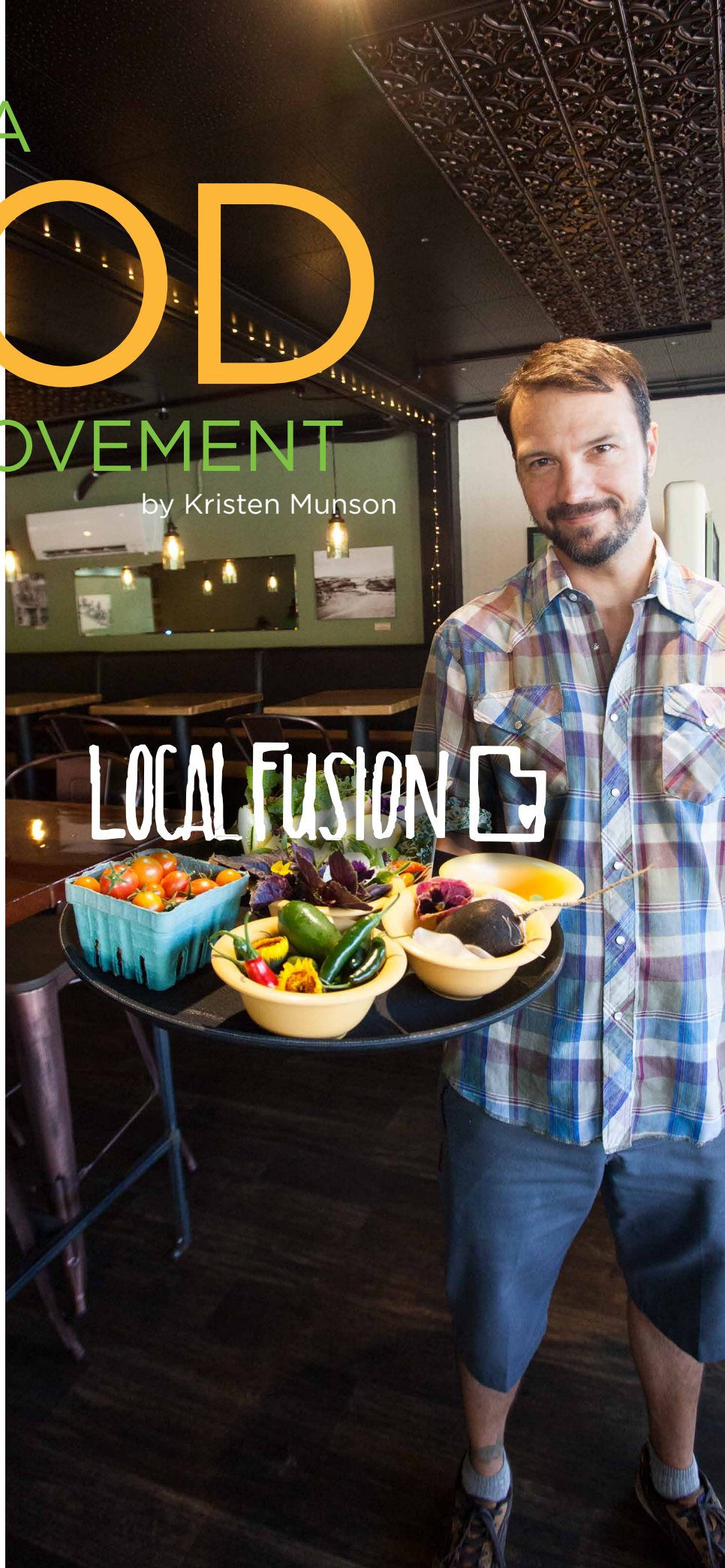
MOAB, UTAH.

by Kristen Munson

A PLACE WHERE, HISTORICALLY, PEOPLE CAME TO PASS THROUGH, HIDE OUT, OR DIG IN. SOME ROOTS TOOK AND OTHERS DRIED TO DUST. For centuries, humankind has grazed and gutted this land of peaches and potash. Mormon pioneers tried to tame it. Stockmen and miners came to build their fortunes or die trying. Prospectors and homesteaders flowed in and burned out. Hollywood came calling and so did the government.

But in 2019, the tourists remain. They come for outdoor adventure. Shiree Duncan '02 wants them to stay for the food. She looks at places revered for their native foods, like green chilies in New Mexico, and thinks Moab could carve out a niche place in the culinary world. "I feel like there is potential here," she says. "It could be 'Come to Moab to mountain bike and come to Moab to eat.' It could be a win-win for the restaurants and the people that grow for them—but we are not there yet."

Duncan managed the Moab Farmers Market and works with Roslynn Brain McCann, associate professor of environment and society at USU and Extension specialist in Moab, to connect local growers with new markets. In 2017, they inventoried agricultural production within a 100-mile radius to create a local food guide for the region. Duncan believes Moab is ripe



CHEF ALEX BORICHEVSKY, co-owner of 98 Center in Moab, is committed to sourcing ingredients from local producers.

for a resurgence in agricultural development. Despite obstacles like a limited water supply and high cost of real estate, she is hopeful that small growers can thrive here.

"It's just finding those people who want to move down here and make that happen," she says. "The demand is here. If a person wanted to do it, they could."

She speaks from experience. Duncan majored in environmental studies at USU and later conducted research on native plants. But it was a visit to a Colorado farm that pointed her in a new direction. "I am supposed to be growing food," Duncan says. "I just feel like this is my life's purpose. It's what makes me happy."

Like thousands of small growers around the country, Duncan is making a go at farming even though she doesn't own land. She plants where she can—in the backyard of the house where she lives and in a former fallow field she tends in exchange for a lease. Duncan keeps the periphery weeded and mulched for the owner and grows pea shoots, cherry tomatoes, and cucumbers for area restaurants. She sells her greens, radishes, and carrots at the farmers market or local coop grocer.

One August evening, she and her friend Haley Olsen weed a row of purple and orange zinnias as the sun slips behind a red rock mesa shading the front yard. They calculate growing 750 pounds of produce—so far—in the 2,500 square feet they work. "I can get rid of anything I grow," she says.

"TELL YOUR STORY"

Grand County has never been one of Utah's premier agricultural regions. Early census reports show it often ranked among the least productive areas in the state. In the book *The Far Country: A Regional History of Moab and La Sal, Utah,* historian Faun McConkie Tanner attributes flagging agricultural ventures in Moab to its isolation. She notes that "virgin soil and an abundance of water for irrigation gave rise to a thriving agricultural society," particularly for fruit producers. "It was the boast of people in "Sunny Moab" that they produced fourteen-ounce peaches and 20 to 25-ounce apples as everyday products," she writes. One problem for early farmers was they didn't have a timely way to transport yields to market.

A century later, that hurdle has largely disappeared, but there remains a disconnect between local growers and potential buyers. Enter Brain McCann. She identified "a need across the state to connect small, diversified growers with restaurants to reduce food miles and enhance farm security," she says. And in 2012, she helped establish the Utah Farm–Chef–Fork program to connect Utah growers with local chefs.

The program is funded through a U.S. Department of Agriculture (USDA) grant and promotes relationship building between growers and restaurants through farm-chef mingles, farm dinners, and training workshops on direct marketing practices. Since its launch, one third of producers report increasing their business with chefs after attending an event. Producers learn to pay attention to details like how searchable are

SHIREE DUNCAN '02 gets creative about finding locations around Moab to plant her crops.

they online and what story are they are telling on their website? Because these details matter. "It's extremely important to be able to tell your story," says Brain McCann.

She recently worked with Kailie Leggett MS '18 to examine the traits most important to high-end chefs in the Mountain West. Leggett found most chefs are less enamored with labels like "organic" and more interested in the story that comes with each product. "That had a much higher appeal," Brain McCann says. "Chefs play an increasingly important role in shaping the food market."

Chefs like Alex Borichevsky. He co-owns 98 Center, an Asian restaurant in Moab, and chooses to stock his refrigerators with produce from local growers. When patrons enter 98 Center they are immediately greeted by its mission statement painted on the wall: "We maintain strong relationships with our local farmers and artisans by sourcing local, organic, and sustainable ingredients from our passionate partners. We are committed in … helping push Moab forward as a foodie destination and cultural hotspot."

If he's honest, it was the water that drew Borichevsky to Moab years ago. He came as a river guide, but he had worked in kitchens since he was 15 and that made him want to open his own one day. Using local ingredients was something he endeavored to do, but sourcing wasn't reliable, he says.

"It was very inconsistent," he says. And when you run a kitchen, you need to know you have a steady supply of onions and carrots coming. Ordering from a vendor is easier—you know it will come, he says. You just don't always know how good it will be.

CONNECTING LOCAL GROWERS WITH RESTAURANTS IS JUST ONE BULLET POINT TO IMPROVE ENVIRONMENTAL PRACTICES IN THE REGION.

Things started changing in December 2017. He and Natali Zollinger, manager for 98 Center, developed a list of their needs that they shared with local producers to budget into their spring planting. Now, the restaurant sources about half of their ingredients locally, including cherry tomatoes, cucumbers, basil, peppers, onions, mixed greens, flowers, eggs, and herbs.

Duncan and Brain McCann helped bring farmers to the table by organizing meet and greets with restaurateurs, Borichevsky, says. Many don't have time or marketing savvy to take their product around for restaurants to sample. About a dozen Moab eateries now purchase some of their ingredients from area producers, a move that keeps money in the community, reduces food miles, and preserves farmland.

"There is a lot of sacrifice as a restaurant to go local," Zollinger says. "There are a lot of people that aren't ready to sacrifice the margins. Asian food is known to be cheap. And we are not cheap."

One problem is customers don't always make the connection with what they are eating and where it came from and how it was produced, she says. "They don't see that we use grass-fed meat. We don't use GMO foods, MSG, rancid oils, or high fructose corn syrup. That package is why we cost more." Zollinger believes 98 Center is more than the food it prepares.

"Food is fuel," she says. "It is medicine. It is information for your body to grow in new directions."

"AREAS OF HOPE"

Brain McCann sees the local food movement taking shape in the form of intensive, small-lot farming like what her former intern Duncan is doing. "I think that type of model could work really well here," she says. "Moab is too expensive for young farmers to come in and buy."

Sitting on a porch swing outside her straw-bale house, she points out the graywater system—the state's first legal residential one. The two-bedroom home overlooks an orchard shared by the neighborhood. Brain McCann pays less than $9 a month for electricity. She does more than teach sustainability to USU students—she lives it. Part of her job description is to facilitate community-level environmental change. Connecting local growers with restaurants is just one bullet point in her plan to improve environmental practices in the region.

Moab averages less than 10 inches of rain a year, and its economy is largely tourism based. In 2017, the

The demand for Jess Oldham '09 (left) and Rhonda Gotway's (right) Community Supported Agriculture program grows every year.

Roslynn Brain McCann, associate professor of environment and society, was awarded a nearly $500,000 grant from the USDA to connect low-income and minority families to locally grown produce.

Moab Chamber of Commerce reported that more than 83 percent of taxable sales was generated from tourism-related industries. With six hotels already in the construction queue, many residents wonder how the town can support additional growth.

If we were effectively using our rainwater, we wouldn't be in a water crisis, Brain McCann says. She is helping revise the state's graywater policy to make it more feasible for Utah residents to collect rainwater. This year, during her sabbatical, Brain McCann will visit 20 research sites across the country to study how various permaculture techniques can be applied in the desert. Afterward, she will implement a nearly $500,000 grant awarded by the USDA's Farmers Market and Local Food Promotion Program to connect low-income and minority families to locally grown foods. This opens another segment of the market to local growers and ensures the program doesn't just touch "foodies," but also the populations most vulnerable to food insecurity. These days, Brain McCann is optimistic about the prospects for agriculture in the region.

"I'm seeing a lot of interest in farming in younger generations—a lot of innovative approaches, too," she says. "I'm noticing a burning desire to enact positive change."

Twelve miles down the street, the staff at Easy Bee Farm are picking green onions for Community Supported Agriculture (CSA) baskets being prepared for delivery. Owner Rhonda Gotway inspects a row of peppers while talking about her childhood in Calhoun County, Illinois where soybean and corn fields abound. Her grandmother always planted a garden, an act that influenced Gotway for life. After college nearly 30 years ago, she moved to Utah for a job with the Student Conservation Association and never left.

Gotway purchased land once used to farm alfalfa and spent three years remediating the soil in her spare time. Most of this land was alfalfa fields, she says, gesturing to her neighborhood of single family homes flanked by the La Sal Mountains. Gotway farms using low-water methods and Easy Bee Farm doesn't use all of its allotted shares for operations. She acknowledges the start-up challenges for would-be farmers are difficult to overcome because property values are so high. Most new farmers can't do it, she says, but, if you can buy two acres and live down here, why not make it usable? "I see an opportunity to farm this old agricultural land."

Easy Bee Farm benefits from a steady supply of local volunteers—people she relies on. The moments Gotway is most stressed are when she considers "the future and how I'm going to keep this all going—I can't do it by myself. If I don't have that community support, I'm done." Gotway teaches area residents how to repair their land and sees her work as training the next generation of farmers like her business partner Jess Oldham '09.

"I feel positive about this generation," Gotway says nodding toward Oldham.

It's a true partnership. The farm is located on Gotway's land and grows with Oldham's enthusiasm. Over the last four years the farm has increased the amount of produce they supply to area restaurants and expanded CSA shares. Oldham studied international studies at USU, but felt overwhelmed studying the problems of the world. Farming made sense.

"Gardening is simple. It's a way of making a difference. It's a form of activism," Oldham says while organizing chives on a cutting board. "I can't save the world, but I can save myself and a bunch of other people."

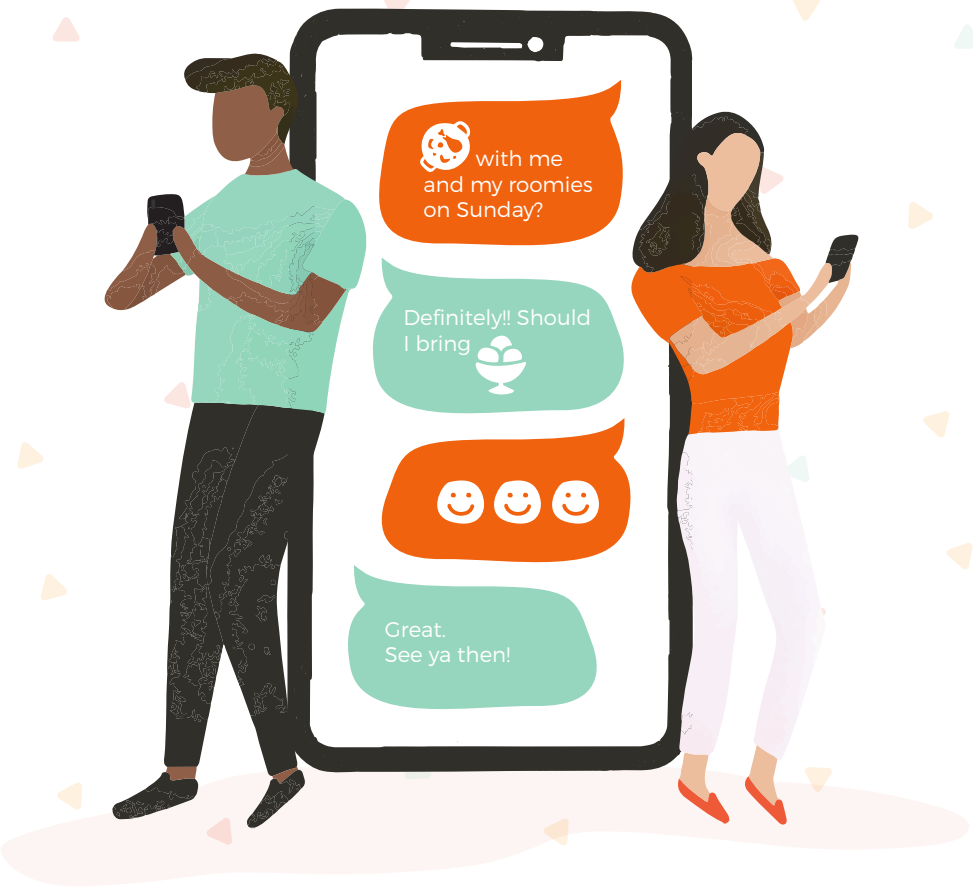
Part of Easy Bee's role is to educate the community about what is possible, she says. "It's in our history. The fruit trees, they were all part of the early settlers. We have the climate. We have the soil. Everyone knows Moab for its red rocks, but people don't know one pound peaches grow here … We live in a little [reservoir] in the desert—there's so much potential." **A**

To learn more about the Utah Farm-Chef-Fork programs, events and trainings, go to extensionsustainability.usu.edu/utah-farm-chef-fork.

FOOD CONNECTS

by Keilani Merrill '18

I've often heard that food is the way to a man's heart. But maybe food is the way to everyone's heart.



I LIVE in an apartment complex where dozens of people walk past my window every day. I don't know most of them, but they likely sleep within 100 feet from me and I don't even know their names.

Growing up, all I wanted was to defeat my shyness. I waited for a savior to come into my life and fix my problem. That didn't happen. And neither did waiting for other people to reach out to me first. So, during my last semester at Utah State, I decided to be this person for someone else. I combined cooking with trying to meet new people. I started inviting strangers from the complex to my house each Sunday for a meal.

My primary goal was to get people out of their virtual world and into the real world with real people and real conversations. In the book *iGen*, psychologist Jean M. Twenge describes the effects increased social media use and decreased in-person interactions have on happiness on the generation born after 1995. According to national survey data, since the release of iPhones in 2007, social media use has significantly increased among iGen, and so has unhappiness. In 1990, 53 percent of high schoolers got together with friends almost daily. By 2014, that number had dropped to less than 30 percent. One study found that eighth graders who spend 10 or more hours a week on social media are 56 percent more likely to be unhappy than peers with less screen time. Teens are also sleeping less and dating less than previous generations. I want to break that cycle.

One cold Sunday evening I found myself enjoying a game of pool in the clubhouse. The American League Championship Series game between the Boston Red Sox and Houston Astros played behind me on the wall. Two strangers from the complex rooted their team on and became my first target. During a commercial break, I asked them about the game and secretly cheered for the Astros. After the game, Taylon and Jesus gathered their belongings to leave. Before they walked out, I extended my first Sunday dinner invite. "My roommates and I are trying to get to know new people in the complex. Would you want to come over for dinner next Sunday? Food is on me." Puzzled, they looked at each other and gleefully agreed. Baffled, my pool partner exclaimed, "Wow that seemed easy. I'm impressed you just invited strangers over to your house. Good job. I wish I was more like that."

The following Sunday, I cooked rice, grilled chicken, and stirred together a simple teriyaki sauce for my roommates, neighbors, and guests. During the dinner conversation, I learned that both Taylon and Jesus were athletes at junior colleges before transferring to Utah State. Jesus is an avid soccer player and the more we talked, the more connections he made with others around the table. I found that we both like to play Spikeball, Mario Party, and bust some moves in Just Dance so we planned a future Spikeball competition and dance party.

Many of us discussed our prior fears of eating dinner with strangers. Some of us imagined we wouldn't have anything

Illustration by Elizabeth Lord, '04, and rawpixel.com.

For the next five weeks, my roommates and I welcomed strangers to dinner. Walking around campus, I started receiving more waves and hellos. The all-too-familiar feeling of loneliness that many college students feel began to dissolve.

in common or would just spend an hour sitting around a table in awkward silence. Others worried what judgments people would make about them. But we found our conversations surprisingly entertaining and easygoing. Taylon even mentioned he was flattered the dinner invite came from a stranger.

Nonetheless, one dinner was not enough. I made a goal to invite new strangers each Sunday for the remainder of the semester. To reach all sorts of people, not only the outgoing ones I met at social activities, I knocked on doors at the complex and invited entire apartments of people over. For the next five weeks, my roommates and I welcomed strangers to dinner. Walking around campus, I started receiving more waves and hellos. The all-too-familiar feeling of loneliness that many college students feel began to dissolve.

Remarkably, my efforts were spreading. Other people began hosting Sunday meals and invited me to their tables. During one dinner, the host forgot about the boiling rice on the stove and scorched the bottom, leaving us with crusty rice to fill our burritos. Rather than embarrassing the cook, this gave us more to laugh about and bond over. More smiles painted across our faces as we crossed paths throughout the week.

During this period I became more aware of how much time I spend on my phone. I noticed people around me reverting to their phone when they didn't know what else to do. I tried resisting the temptation to pull out my phone while walking around campus, talking with friends, or to fill silence. At first, I felt so alone. While everyone else looked at pictures, posts, and texts, I stared at them in silence. I felt I had nothing to do. Joining them separately living in their virtual reality seemed convenient, but I waited and hoped someone would put away their phone to talk to me.

Most of the time nothing happened, but slowly I noticed my friends making comments while on their phone, "I don't know why I'm even scrolling through Facebook. I'm not reading anything; my fingers just do this. This isn't even fun. Why am I still on my phone?" I responded by dragging them into the real world to do real things. We played card games, baked treats, and went on car rides to explore nature and the city. Many of us hadn't purposefully done these things in a long time and doing them made us happier.

After graduation I travel to Costa Rica for humanitarian service, move to a new city, and will eventually find a job. I will have to start my life over again. This experience taught me that the friends and positive memories I gain outweigh the awkward encounters leading up to it. The more time I spend out of my virtual world, the happier I am. I may not always have the resources to host Sunday dinners every week, but I will try and hope that others will continue the tradition on their own. **A**

SUNDAY DINNER

Teriyaki Chicken and Rice

(From the kitchen of Keilani Merrill)

Ingredients:

CHICKEN: 1–2 boneless chicken breasts, thawed, cut into strips

RICE: 2 cups

TERIYAKI SAUCE:
¼ cup soy sauce
1 cup water
5 tablespoons brown sugar
2 tablespoons white sugar
1 tablespoons honey
¼ teaspoon garlic powder

KEEP SEPARATE FOR LATER:
¼ cup water
2 tablespoons cornstarch

OPTIONAL: 1–2 dashes of crushed red pepper and 1 teaspoon sesame seeds

Directions:

COOK rice. I used a rice cooker, but you can boil the water in a large saucepan, add the rice (using a 2:1 ratio or package directions), and simmer until water is absorbed. Fluff with a fork.

GRILL chicken in a pan on medium-high heat until juices run clear. Set aside and keep warm.

MIX all the Teriyaki ingredients together in medium pan on medium heat. If sauce is too runny, separately combine the water/cornstarch mix and add. Continue to add cornstarch until it is the right consistency. Make sure to mix it with water before putting it into the saucepan.

LAYER on individual plates rice, then chicken, then sauce. Top with sesame seeds or crushed red pepper and serve.

SUGAR + HOPE

BY JOHN DEVILBISS

You know that spark when you are talking to somebody and they suddenly light up? That happened when Mark Bold walked into a room, just off his spacious garage, where 10 varieties of wine were fermenting in stainless steel tanks.

This was Bold's laboratory and his experiments were proving his hunches correct. Distinctively good wines can, indeed, be produced in the arid land surrounding St. George, Utah. Of course, Brigham Young could have told him that 157 years ago, because even though this region is known more today for turning deserts into golf courses, it enjoys an immensely rich, albeit abbreviated, viticulture heritage. And while neither Mark or his wife, Mary, spoke much about those grape-growing glory days of the mid-to late-1800s, if past is prologue, they have reason to be optimistic.

And nothing says hope more than Bold's grapes. That is the street they live on and the name of the three-quarter-acre vineyard gracing their backyard on the hillside not far from the iconic "Dixie" splashed in white letters on the vermilion cliffs above the city. They moved to St. George from San Francisco, where they spent most of their careers in finance, and at least two trips a year to St. George after Mary's parents moved to the area in 1985. Her father, DeVere McAllister, had retired from Utah State University as a professor in agronomy. Mary, a Logan girl, graduated from USU in 1969 with a bachelor's degree in economics and later received an MBA from University of California, Berkeley.

Her father's mission was to make the desert bloom, including the planting of a vineyard, which, in his later years, he turned to Mark for his help. Their visits to St. George were frequent enough for Mark to not only become a pruner of vines, but under the tutelage of his agronomist father-in-law, a student of viticulture. His love of wine and travels to wine country spurred him on.

"He's the one with the passion," Mary says. "I'm the one with the tolerance—but limited." Even so, while she may not hold the same enthusiasm for grape growing and winemaking as her husband, she absolutely shares his vision for how such an agricultural enterprise can come to benefit their community ecologically, economically, and even culturally.

Brigham Young's vision was equally pragmatic. In October 1862, he declared that the southern colonies should supply the territory with wine "for the Holy Sacrament, for medicine, and for sale to outsiders," wrote Dennis R. Lancaster in his 1972 Brigham Young University master's thesis, "Dixie Wine." Church members zealously took their leader's advice to heart with vineyards popping up in towns from Toquerville to Santa Clara.

They successfully produced and sold thousands of gallons. A thriving industry that Mark and Mary would love to revitalize, for if it was a success then, why not again?

The area already has an active wine community, including some 1,800 members of the St. George Wine Club, Mark says. "It's astounding." Between people moving to the region from out of state, and the burgeoning tourist industry, he sees a strong market for it, but only if other growers take his lead. For in this enterprise, competition is not the enemy. It takes a village of vineyards to create a Napa Valley. In fact, it is by regions that wineries are classified as American Viticultural Areas, or AVA's. Regions distinguished by geographical features. Washington county currently has four other small vineyards, in addition to Bold's.

"I think the potential for this area is huge," he says. "And I think it could become an AVA, a really great wine-producing area. I've done proof of concept."

As for its geographical features, it is where the Mohave Desert, Colorado Plateau, and Great Basin converge. Its distinction is not only sun-filled days, but soil of quaternary sediment—a glacial residue of sand, silt, clay, and loam, with a healthy dose of volcanic particulate thrown in for good measure, says Mark.

While he enjoys wine from his backyard vineyard, such as the Nebbiolo-Grenache blend, the grapes ripen a bit too soon in the St. George heat. Cooler summer evenings extend hang time for a better balance of sugar and acid. It's a delicate dance and balance of soil, water, temperatures, and elevation for better flavor. Mark improved the balance by finding property nearly 2,000 feet higher, and 16 miles up the road in Dammeron Valley where he could expand his vineyard pursuits. That extra elevation provides a slight edge and explains why higher-elevation communities like Toquerville did so well in Brigham Young's day.

It helped, as well, that Young could rely on the expertise of Toquerville's Naegle Winery owner John C. Naegle, considered in his day "the dean of Dixie wine makers." In this same tradition, Mark found John Delaney, a sommelier at a local fine-dining restaurant by night, and now his partner in vine by day.

Delaney walks the nine acres of vineyards like walking among his children. He eyes each vine's potential, one internode at a time, patiently guiding shoots to grow in that all-important vertical direction for maximum growth and production. He talks about the Mediterranean and Spanish influence, volcanic soils included, on their choice of grapes in the lower vineyard like Grenache and Tempranillo, and a new section of Barbera that is in the works. But just to mix things up, they are going with Pinot Noir in their two newest vineyards. In a desert.

"It's a little crazy, he says. "It's all crazy. We are totally walking the gauntlet. It's a juggling act of mother nature's frost, pests, and disease. We are trying to keep everything maintained. It's a constant battle with gophers, rabbits, deer, black mold, and whatever."

Frost and floods, too. In 2017, just as the vineyard was becoming a showcase, it was hit with a late-May frost that killed 80 percent of the early green growth with only a weakened second growth to follow. "That was a gut punch," Mark says. The only consolation was that Bordeaux, Burgundy and other great grape growing regions also suffered from killing frosts that year. Last summer, hail and five inches of rain in less than an hour, turned his Dammeron Valley vineyard into a swamp. But you press on, Delaney says. "You got to come in here and fight the fights. One at a time."

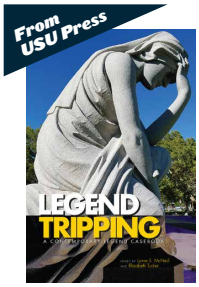
And so they go, 14 more rows in their newest vineyard, another 462 plants. This year they harvested around 9,000 pounds that produced just under 200 gallons, or about 100 cases. That is their limit, for now, until they are bonded and certified. Mark expects that to happen soon. He also expects to build a winery in the heart of his small Dammeron Valley vineyard before year's end. Delaney envisions a small tasting room accompanying it. A place where visitors can sip wine and enjoy the snow-capped Pine Valley Mountain in the distance.

When that day comes, hope that you get to share the view—and a glass—with Mark. And if you do, watch for that spark. **A**

"WE ARE TOTALLY WALKING THE GAUNTLET.

JOHN DELANEY, a partner of Mark and Mary Bold, stands in the newest section of the Dammeron Valley Vineyard.

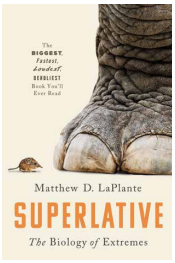
It's a juggling act of mother nature's frost, pests, and disease. We are trying to keep everything maintained. It's a constant battle."
– JOHN DELANEY



Legend Tripping : A Contemporary Legend Casebook

Edited by Lynne S. McNeill and Elizabeth Tucker

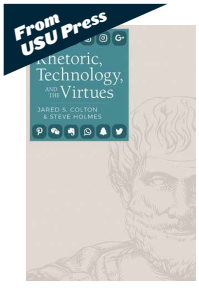
November, 2018
by Utah State University Press



Superlative: The Biology of Extremes,

By Matthew LaPlante

April, 2019
by BenBella Books



Rhetoric, Technology, and the Virtues

By Jared S. Colton and Steve Holmes

October, 2018
by Utah State University Press

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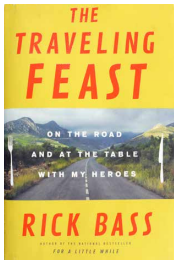
By Terence Clarke, about Peter Kranz, '69

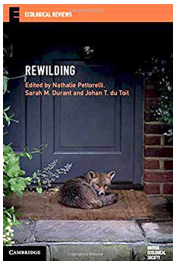
March, 2019
by Ingram Spark



The Traveling Feast: On the Road and at the Table with My Heroes

By Rick Bass '79

June, 2018
by Little, Brown and Company



Rewilding

Edited by Johan T. du Toit, Nathalie Pettorelli, and Sarah M. Durant

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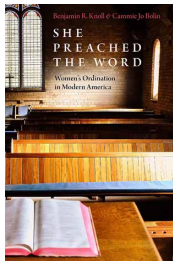
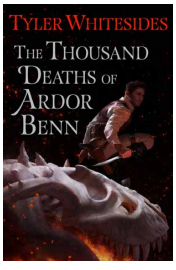
by Cambridge University Press



She Preached the Word: Women's Ordination in Modern America

By Benjamin Knoll '06 and Cammie Jo Bolin

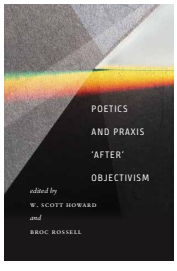
July, 2018
by Oxford University Press



The Thousand Deaths of Ardor Benn

By Tyler Whitesides

May, 2018
by Orbit



Poetics and Praxis 'After' Objectivism

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August, 2018
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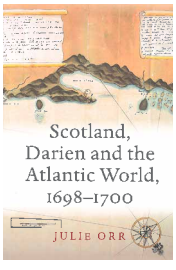
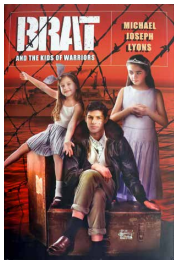


Scotland, Darien and the Atlantic World

By Julie Orr, '72

October, 2018
by Edinburgh University Press
(U.S. distributor, Oxford University Press)



BRAT and the Kids of Warriors

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November, 2018
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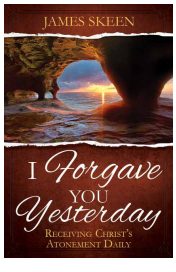


I Forgave You Yesterday: Receiving Christ's Atonement Daily

By James Skeen

December, 2018
by CFI, Cedar Fort, Inc.

DISSECTED //

HOW TO MAKE MOZZARELLA

by Kristen Munson

MORE THAN 7,000 YEARS AGO,

humankind made one of its greatest discoveries to date: cheese. Without it there would be no pizza, no mac, no schmear for our bagels, no cheddar for our burgers. A dark age indeed.

Early cheese production is believed to have emerged as a way of preserving milk products. "You did what you could to get calories. Milk is highly nutritious, but it's also highly perishable," explains Don McMahon, Ph.D. '83, director of the Western Dairy Center (WDC). Without refrigeration, milk that spoiled was calories lost. And 7,000 years ago, those calories might translate to health and fertility advantages. Fermenting milk into cheese preserved valuable sources of calcium and nutrients, McMahon says. Today, more than 500 varieties of cheese exist. And civilization is tastier for it.

recipe

Crush rennet tablet and dissolve in cold water.

Pour milk in stainless steel pan; sprinkle with citric acid and stir gently to blend. Heat milk over medium/low heat until it begins to curdle. Add rennet and stir to blend. Heat until curds and whey begin to separate.

Line colander with cheesecloth; gently pour curds and whey into colander. Microwave on high; remove and gently press whey from curds with hands. Repeat process 2–3 more times.

Knead cheese, as the curds press together and cheese is warm, like bread dough until smooth and pliable. Knead salt in during final stages. Cheese is done when smooth. Form cheese into a ball and place in cold water to cool. When cheese is cold, remove and place in plastic wrap. Use within a week.

For detailed recipe instructions, including equipment and ingredients, visit
utahstatemagazine.usu.edu/dissected/mozzarella.

LAUNCHING

an artisanal cheese operation costs about $500,000 in startup costs. USU has taught cheese making in some capacity for a century. The WDC's basic cheese making course teaches people the technical skills they will need to produce cheese you can sell.

This is a recipe you can make from home, courtesy of Becky Low, Dairy Council of Utah/Nevada.

Illustrations by Elizabeth Lord, '04. Photos by rawpixel.com / Freepik.

A dandy judge weighs the milk output of two dairy cows, part of the USAC's 40 head of milk cows pastured south of the Logan cemetery in the 1920s. All images courtesy of USU Special Collections and Archives and the Aggie Creamery.

A Lick Back:

Warming Up to Aggie Ice Cream

By John DeVilbiss

What was Aggie Ice Cream before it became famous? *Meh,* apparently.

The 1932 *Student Life* newspaper reported that the 350 students who daily frequented the college's cafeteria, only consumed two gallons of milk and often less than one gallon of ice cream. They loved their potatoes, gravy, chili, salad, and pie, though. The paper reported that 200 Aggies ate salad and pie, and consumed 120 pounds of potatoes, seven gallons of gravy, and 15 gallons of chili.

Understandably, with the country in the throes of the Great Depression, basic food staples had taken on elevated meaning and appreciation, including pie, evidently. However, let them eat ice cream was the rallying cry of students who came before them. They were the scholars of the 1920s, and they were roaring for the stuff.

Patience had been required up to that point to allow the use of the Animal Science Building, which still stands on the Quad but referred to as the Livestock Building in its early days, to serve as a convalescent hospital during the 1919 Influenza Pandemic. It remained that way until the full return of the Animal Industry Department in 1920. The restoration involved equipping the building for dairy manufacturing, including refrigeration and freezers—a key first step in the commercial processing of milk into butter, cheese, ice cream, and other dairy products, said Donald McMahon, dairy foods professor in the USU Nutrition, Dietetics and Food Sciences Department.

And none too soon, either, for the students.

The Jan. 9, 1920 edition of *Student Life* reported that "… we are assured cheese, butter, and ice cream will soon be manufactured in such large quantities that servings of each will be granted free at the cafeteria to those who have so far stood the menu without refusing to pay or raising a riot."

The stage was set for the future father of Aggie Ice Cream to make his first appearance. That was in 1921 when Gustav H. Wilster was recruited from Iowa State University, then known as the Agricultural College and Model Farm. Prior to that, he headed up dairy husbandry at Queensland Agricultural College, which is today the University of Queensland, Australia.

Although the university had been processing milk into butter and cheese from its beginnings in the basement of Old Main, it was not until 1907 that dairy manufacturing first entered the college's curriculum. Even then, it was not until Wilster's arrival that the college began in earnest to ramp up student curriculum in dairy science and production, McMahon said.

At that time the school owned 40 head of milk cows, both Holsteins and Jersey's, which were pastured just south of the Logan cemetery as well as in a holding field by the milk barn that today is the parking lot directly north of the University Inn. There was plenty of milk for making butter, cheese, and ice cream, and Wilster wasted no time.

On Jan. 9, 1922, within months of his arrival, he began teaching a short course in ice cream making and testing. He was experimenting with a lacto ice cream, which was new to Utah. He brought the recipe with him from Iowa. It was made from pasteurized milk, ripened with pure culture, and then added with sugar and flavoring—a forerunner, McMahon observed, of today's frozen yogurt. He also dabbled with a cherry lacto, wrote V.T. Mendenhall in *Aggie Ice Cream: Our Smoothest Tradition in 100 Years*.

Browse through the school's old *Buzzer* yearbooks, and you are hard-pressed to

find any photos of Wilster. Fortunately, at least one does exist in the 1924 edition. You find him standing straight and earnest with pencil and notebook in hand. Equally stoic are his three students who look to be professors themselves, Millard Cluff, J.R. Fawcett, and Kimball Slaugh. On the table before them are three pints of milk, three blocks of cheese, and three cubes of butter. It is November 1923, and they are in Portland, Oregon competing at the *Pacific International Live Stock Exposition*. It is the first time in school history that a team representing the UAC was competing against the likes of University of California, University of Idaho, Washington State College, and Oregon Agricultural College.

The college was breaking new ground, and although they did not take first place at the exposition, they made their presence known. "The benefits derived from sending a team to such shows are numerous and it is hoped that each year the Utah Agricultural College will be represented," the *Buzzer* reported.

This was not a club event, but an academic one, and Wilster and his smartly-dressed students appear to recognize the gravity of the moment, as if to say, "we've done our part, now the fate of Aggie artisan cheese and blue mint ice cream firmly rests with you. Seize the whey!"

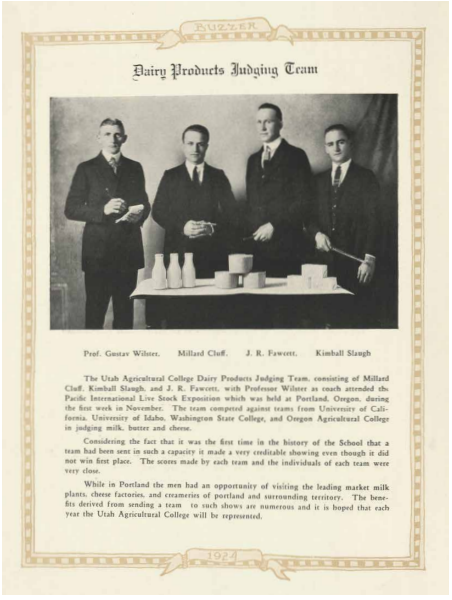
Except for the pun, Dave Irish, today's creamery manager, does take that unspoken sentiment to heart. He said he is well aware of his responsibility to ensure that Aggie Ice Cream always remains in the top tier of ice creams around the state and is somewhat unnerved by the charge.

"It concerns me all the time," he said. "I know we are a hallmark of the university."

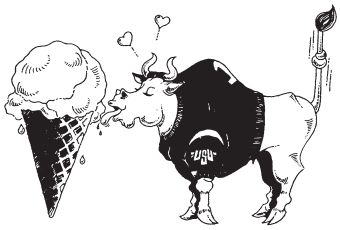
Today Wilster would probably be pleased, and amazed, how consumption of Aggie Ice Cream has increased from hundreds of gallons per year to today's annual production of 52,000 gallons of ice cream and 5,000 pounds of cheese.

Wilster knew he had a good thing going and was confident enough to share a sample of his cherry lacto with Utah Gov. Charles R. Mabey when he paid a visit to the college in February of 1922. He also made sure there was plenty on hand for the 2,500 in the Logan community who camped out on the Quad that summer for the farmers and homemakers encampment. It was the beginnings of Aggie Ice Cream where cones "of all colors and flavors" were offered, according to the October 1922 edition of *Student Life*. "…such as Yum, Pineapple, Raspberry, Chocolate and Vanilla."

Yum, indeed. And to the students of 1932 with that penchant for pie, you want to know what goes good with that? **A**



Top to bottom: The original 1890s Aggie Creamery in the basement of Old Main; The Creamery annex in 1924, approximately where the Block A stands today northeast of Old Main; The father of Aggie Ice Cream, Gustav H. Wilster (left) at a judging competition in Oregon with his students; When Aggie Ice Cream was eight cents and the creamery in 1953 was on the main floor of today's Animal Science building; Love at first lick, the image below donned Aggie Ice Cream cartons from the 1970s through 90s.



IN MEMORIAM // *Through March 13, 2019*

Utah State Magazine • 1590 Old Main Hill,
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1930s

David S. Kunz '39 Att, Nov. 19, CA
Virginia M. Nielsen (Mortensen) '38, Dec. 31, MT

1940s

Afton J. Bateman (Jones) '48 Att, Jan. 22, UT
LaVar Bateman '43 Att, Mar. 8, UT
Clara Baugh (Bair) '43 Att, Feb. 13, UT
Leatrice S. Buttars (Seamons) '49 Att, Nov. 22, UT
Frances Joyce Callister (Barber) '45, Jan. 13, UT
W. Boyd Christensen '48, Nov. 26, UT
Betty L. Corey (Balch) '45 Att, Jan. 14, OR
Hazel J. Criddle (Evans) '44, Dec. 10, UT
Wendell P. Droubay '44 Att, Jan. 20, UT
Ann M. Duncan (Claypool) '49, Mar. 5, UT
Catherine F. Feeny '42, Dec. 6, UT
Ruth J. Gittins (Jorgensen) '45 Att, Feb. 1, UT
Owen Lesslie King '47, Nov. 19, MD
Janet McCowin (Daines) '49, Dec. 21, CA
Paul R. Montrose '43 Att, Mar. 6, UT
Anna O. Morrill '48, Jan. 9, UT
Glen S. Page '48 Att, Dec. 3, ID
Robert Paulsen '47, Nov. 24, AZ
Marjorie G. Simmons (Green) '41 Att, Mar. 2, UT
Gordon A. Smith '46 Att, Feb. 27, UT
Raymond M. Turner '48 Att, Dec. 9, AZ
Raymond C. Urbom '49, Jan. 2, WY
Rex Basil Walker '42, Dec. 9, UT
Irene F. Wall (Freeman) '42, '50, Nov. 27, UT
L. C. Wanlass '46, Dec. 18, CA

1950s

ValDee W. Allred '58, Nov. 22, AZ
Mark J. Barnard '59, Mar. 3, ID
Eldon Talbot Bennett '52, Dec. 18, ID
Donna K. Bergener (Kearl) '56, Nov. 20, CO
Jack E. Bills '56, Dec. 21, ID
Robert Irven Braegger '51, Jan. 21, FL
Lynn C. Broadbent '55, Jan. 19, UT
Claude Brown, Jr. '58 Att, Feb. 26, ID
Ralph E. Campbell '50, '54MS, Nov. 24, AZ
Jay Newell Childs '57, Nov. 25, UT
Lincoln Clifford '56, Dec. 14, UT
Dix W. Cloward '54, '59MS, '71EDD, Nov. 29, UT
Joseph W. Cook '55MS, Jan. 22, UT
Helen J. Cutler (Funk) '52, Jan. 12, UT
Myrle G. Ehmann (Graham) '54, Jan. 13, UT
Richard M. Eskelsen '53 Att, Nov. 17, UT
Samuel G. Fletcher '51, Dec. 19, UT
Gerald R. Gibson '52 Att, Feb. 18, UT
Marilyn J. Gordon (Healy) '59, '67MA, Jan. 1, CA
Jerry D. Grover '56, '61MED, Mar. 6
Milo Steele Hadlock '52, Feb. 5, UT
Keith D. Hansen '57, '59MS, Feb. 24, UT
Shirley Hart (ESPLIN) '51, Feb. 2, UT
Leon Dee Hicken '58, Feb. 2, CA
Marilyn P. Hinckley (Peterson) '58, Feb. 9, ID
Bonnie F. Holmes '51 Att, Feb. 18, UT
Dale M. Holyoak '56, Dec. 1, KS
Joyce R. Horgan '59, Feb. 28, CA
Grace Irby (Hendricks) '54, Nov. 18, CA
Ray D. Jackson '56, Dec. 25, AZ
Delos C. Jensen '50 Att, Nov. 17, UT
Donald K. Jensen '52, Mar. 7, UT
Patricia M. Jensen (Wright) '51, Feb. 4, UT
Fellger R. Johnson '50 Att, Dec. 8, UT
George Russell Johnson '53, '62MIE, Feb. 28, UT
Don S. Knight '58, Jan. 12, UT
Don R. Korth '54, Dec. 31, UT
Charles R. Lambert '52, Dec. 4, UT
Loraine B. Law (Baird) '59, Dec. 5, UT
Floyd Matheson '58, Jan. 19, UT
Dayne A. Mathis '50, Nov. 22, UT
Roy Hyrum Maughan '58, Dec. 12, LA
Gaylord A. McCallson '57, Jan. 2, UT
Gerald D. Minion '59, '61MS, Jan. 20, UT
Charles R. Moyes '57, Dec. 8, WY
Norman W. Olsen '57, Feb. 25, UT
Thomas Darwin Pennock '52, Dec. 24, UT
Willis Petersen '53 Att, Nov. 24, UT
Duane K. Phippen '58, Feb. 16, UT
Calvin A. Price '57, Jan. 5, WY
Alma K. Randall '51, '55MS, Dec. 17, UT
Laraine Redd (Marx) '58 Att, Feb. 20, UT
Roma Robison (Alleman) '54, Jan. 31, UT
William J. Ryan '54 Att, Mar. 3, TX
Norma Eunice Salvesen (DeVries) '57, Feb. 1, UT
Bonnie R. Savage (Hansen) '51, Dec. 12, ID
Don C. Shaw '58, Feb. 21, UT
Jean M. Sorensen (McBride) '56 Att, Jan. 13, UT
Nile A. Sorenson '50, Jan. 15, CA
Roy F. Stewart '56, Nov. 22, UT
George L. Stokes '59, Feb. 18, UT
Frank S. Stott '56, Jan. 12, ID
Frank C. Taylor '50, Nov. 24, UT
Louis Uresk '51, Nov. 26, IL
J. C. Valentine '57, Nov. 15, UT
Robert G. Valentine '52 Att, Dec. 22, UT
Gordon Vaughan '57, Jan. 9, UT
Sybil Haderlie Warnock (Haderlie) '50, Feb. 2, UT
Doyle Webb '52 Att, Jan. 17, UT
Clifford L. Wilcox '51, Dec. 15, UT
Marvin Wing '55, Nov. 14, ID
Rene F. Winward '53, Feb. 19, UT
Karl ZoBell '53 Att, Feb. 20, CA

1960s

Robert A. Adams '69, Jan. 7, WY
Nancy C. Albrecht (Parry) '62, Jan. 1, WY
Gary D. Allen '62, Jan. 8, ID
Frederick Arbogast '62, Jan. 13, MN
Jay H. Arbon '64 Att, Jan. 23, UT
Dale F. Astle '69, Mar. 6, UT
Vern Bailey '67 Att, Dec. 7, UT
Leslie A. Balls '65 Att, Dec. 29, UT
Don Curtis Barney '63, Jan. 20, UT
Margaret A. Barrow (EMPEY) '65, Jan. 22, OH
Charles A. Bartschi '62, Feb. 11, ID
Philip H. Bayles '67, Jan. 10, CA
George Everett Bearnson '62, Nov. 15, UT
Victor Berrett '68, '69MS, Feb. 20, UT
Georgine Buechele (Nixon) '68MED, Dec. 23, FL
Ray N. Bybee '63 Att, Dec. 31, UT
Lola B. Castleton (Nelson) '64, Nov. 24, UT
Alan New Christensen '63, Jan. 9, ID
Robert L. Conrad '60, Nov. 22, UT
Frankie L. Coomer '69, Nov. 20, UT
Fred L. Dahle '67, Dec. 14, TX
Joseph V. Dale '64, Dec. 5, UT
Michael DeBloois '65, '67MA, Feb. 9, UT
Diane H. DeVries (Healy) '65, Jan. 9, UT
Blaine Merle Durrant '61 Att, Jan. 11, UT
Colleen Kjar Durrant '68, '79MA, Feb. 24, UT
Clark M. England '69, '77MBA, Dec. 7, UT
Mary J. Fowers (Heszler) '60, Dec. 30, UT
Lynda Fridal '65 Att, Dec. 2, UT
Charles I. Frost '65, Feb. 12, ID
Lyle B. Gomm '66, Nov. 22, UT
Bruce B. Hall '65, Mar. 5, UT
Francis W. Hamilton '63, Jan. 10, ID
Myra U. Hansen (Ullman) '69, Nov. 26, UT
J. Robert Hawkes '68, Dec. 8, UT
Robert Morris Haynie '60, Jan. 22, UT
David Higgins '65, Jan. 9, IA
James T. Hill '63, Feb. 20, ID
Lavall Edward Hirschi '66, Jan. 14, WY
R. Michael Histon '65, Mar. 3, CA
Linda Huppi (Darley) '68, Dec. 28, MA
Carol J. Jensen (Loosli) '60, Mar. 1, CO
William R. Jensen '67, '71MS, Jan. 12, UT
Merle Day Kennard (Day) '68, Mar. 6, OR
Newel E. Kimball '64, Jan. 29, ID
Rodney J. King '68, Dec. 24, WA
Robert A. Kohl '60MS, '63PHD, Dec. 6, SD
Chao C. Mai '68PHD, Jan. 14, TX
Renee McIff (Stephenson) '66, Nov. 25, UT
William J. Meglen '60, Nov. 30, NV
Richard Y. Moody '65, '68MS, '81PHD, Jan. 14, UT
Stanley G. Morrill '62, Nov. 28, UT
John L. Morris '67PHD, Feb. 20, ID
Pamela M. Neilson '66, Dec. 3, UT
Carroll J. Newby '60MED, Feb. 9, ID
George A. Parker '68 Att, Jan. 30, UT
Tom Patterick '68, Feb. 10, UT
Joy Peterson '66, Dec. 8, UT
Paul Peterson '62, '69MS, Nov. 22, UT
Mary J. Place (Kearsley) '62, Nov. 22, ID
Jim Rees '65, Dec. 11, ID
Marilyn French Rhodes '68, Feb. 4, UT
Don K. Richards '63EDD, Nov. 29, UT
Barbara B. Robertson (Blanch) '63, Jan. 29, CA
Paul William Robinson '67MS, '73PHD, Jan. 14, UT
Jon L. Roundy '68, Jan. 3, UT
Mary Jo Schwab (Merritt) '61, Feb. 19, UT
Carvel R. Shaffer '62, Jan. 12, UT
Anna Jean Skidmore (Bullock) '65MFA, Nov. 17, UT
Marilyn W. Smith (Watkins) '67, Mar. 8, NM
Jerold G. Sorensen '64, Nov. 29, UT
Lynn Speth '62, '66MS, Feb. 11, ID
Sandra Summerhays (Wilson) '64, '69MFA, Feb. 25, UT
Florian Warby (Matheson) '63, Nov. 30, UT
Colleen M. Wilson (Heileson) '63, Dec. 9, ID
Gordon C. Wilson '65, Feb. 25, CO
Alma H. Winward '66, Nov. 16, UT
Vern Watt Wood '66, Jan. 21, UT

1970s

Margaret Bailey '70, Nov. 17, UT
Gary F. Belnap '73 Att, Mar. 3, UT
Ora-Lee W. Bennett (Willes) '79, Feb. 2, ID
James Paul Beutler '70, Dec. 7, UT
Teryl Bodily '73 Att, Nov. 22, UT
John O. Borseth '78 Att, Dec. 24, UT
Denise Bossa '78, Jan. 23, FL
Joseph Lee Broadbent '74, Mar. 1, UT
Roger R. Butler '72 Att, Mar. 8, UT
Sandra W. Clark (Worley) '70, '76MED, Dec. 28, ID
Kathy Christensen Davis (Christensen) '73, Dec. 3, UT
Maureen Einert (McKelvey) '77, Dec. 31, CO
Joseph P. Ercolin '72, Feb. 3, OR
Allen Morris Fox '72, Jan. 5, UT
Lennie David Gammon '74 Att, Jan. 19, UT
Lanny Birtch Gill '72, Nov. 21, UT
Drew R. Gordon '71 Att, Feb. 19, UT
Donald A. Hammer '72PHD, Jan. 3, AZ
Kayla M. Hanna '73, Mar. 8, UT
James Edward Hill '77, Jan. 18, UT
Gerald W. Holman '75MS, Feb. 20, ID
Gary L. Howe '74 Att, Jan. 18, UT
Glen D. Johnson '71 Att, Feb. 16, UT
Dolores M. Keller '71, '80MS, Feb. 5, UT
DuWayne R. Kleinschmidt '73MMA, Jan. 13, WI
Sherman C. Miller '71, Jan. 20, UT
Bipin C. Patel '71MS, Nov. 18, NJ
Bryan Pavlish '74, Jan. 5, UT
Ace G. Pilkington '74, Feb. 20, UT
Melva Searle '70, Feb. 1, ID
Grant R. Skeen '71, Dec. 1, UT
Juelle Sorensen (Hansen) '72, Nov. 16, UT
Beth Sweatfield '73 Att, Feb. 22, UT
Douglas O. Vilven '71, Dec. 23, UT
Rolland L. Voit '78, '85MS, Jan. 17, MO
Mattie A. Webber (Callister) '70 Att, Dec. 25, UT
Christine Bott Wells (Bott) '72, Dec. 28, UT
Cindy Chambers White (Chambers) '78, Jan. 30, AZ
Donald K. Winter '73, Feb. 11, UT
James B. Wyatt '70 Att, Dec. 17, UT
Julia Xanthos (Peterson) '76, Dec. 24, UT

1980s

John C. Bryner '86MS, Mar. 3, UT
Carolyn E. Derricott '88MED, Feb. 15, OR
Kip Brower Harris '88, '89MSS, Jan. 9, ID
David T. Hill '80, Jan. 11, UT
Karen S. Leonard '89, Jan. 6, UT
Walter Eugene Pleisch '83, '89MA, Dec. 26, CA
Alex S. Priskos '84MBA, Dec. 31, AL
Jeffry L. Sessions '84MSS, Jan. 4, UT
Abu T. Shaharier '85, '88MS, Dec. 1, AZ
Kent Walker Smith '80MS, Dec. 28, ID
Joseph E. Strickland '84 Att, Dec. 6, UT
Anna L. Tolman (Packer) '81, Feb. 12, UT
Lance Robert Velasquez '87 Att, Jan. 30, UT
Jacqueline Weigand '84 Att, Feb. 26, IL
Doug A. Whitear '84 Att, Feb. 24, UT
Mark Mills Whitlock '81 Att, Jan. 3, WY
David W. Williams '84MBA, Feb. 27, UT
Jack David Worthen '86 Att, Jan. 13, UT

1990s

Kalei Ahokovi (Arnold) '97, Dec. 22, HI
Faalafua L. Auvaa '90, '97MA, Mar. 4, UT
Tony Decker '94MS, Feb. 5, UT
Lisa Bonnie Gifford '93, Dec. 2, UT
David B. Kadlec '95, '04, '06MS, Dec. 5, UT
Rita M. Nelson '96 Att, Jan. 12, UT
Earl F. Pound '95PHD, Nov. 18, UT
Mark Seeley '97, Mar. 9, UT
Janae D. Stephenson (Peterson) '98, Jan. 23, UT
Stacie L. Wheeler '92, '01, '13, Feb. 4, UT

2000s

Annicka H. Albrecht '03, Feb. 21, UT
Kami Cox '03, Dec. 5, MT
John Jason Coyle '07MED, Jan. 3, UT
Markette Eardley '04, Mar. 1, UT
Carol E. Leslie '01 Att, Feb. 3, UT
Yvonne Neville '07, Nov. 19, IA
Marion D. Robinson '00, Jan. 28, WY
Monica Karen Sanchez '06 Att, Jan. 5, UT
Kelly G. Shumway '06, Mar. 3, UT

2010s

Jastin D. Adams '15 Att, Dec. 29, UT
Trudy Lanae Anderson '14, '15, Jan. 23, UT
Andrew Barnes '17 Att, Dec. 12, UT
Brett K. Binford '10 Att, Dec. 11, UT
Nicole Jaggi Christiansen (Jaggi) '12, '16, Jan. 11, UT
Michael T. Esplin '13 Att, Nov. 29, UT
Krystal Thorpe Furse '12, Dec. 5, UT
Corey Comish Holmgren '10, Jan. 19, UT
DesiRae Jepson '11, '13, Dec. 29, UT
Susan K. Kolthoff '19 Att, Jan. 23, UT
Bryan Lynn Korth '09, Dec. 10, MT
Travis M. Olsen '10, Nov. 27, UT
Casey Jay Parkinson '14 Att, Feb. 26, UT
Devin Scott Seamons '16, Dec. 23, UT
Linda A. Simpson '11 Att, Mar. 4, UT

2010s

Brennan Alexander Conrad '21 Att, Feb. 20, UT

ATTENDERS

Luana O. Allen (Otterstrom) Att, Jan. 27, UT
Daphne J. Aller Att, Nov. 16, UT
David K Allred Att, Feb. 11, UT
Charles G. Anderson Att, Jan. 10, UT
Louis R. Ayers Att, Nov. 28, MO
Lillie Bartell (Martinez) Att, Jan. 23, UT
Georgia J. Bettridge (Rowley) Att, Jan. 12, UT
Patricia Bindrup (Barber) Att, Jan. 25, UT
Earlene Black Att, Dec. 12, UT
Richard Lee Brannon Att, Jan. 8, WY
Lucy R. Bright Att, Feb. 22, UT
Larry C. Bringhurst Att, Dec. 17, UT
Angela L. Brinkerhoff (Riggs) Att, Jan. 11, UT
Sim G. Bunderson Att, Jan. 29, UT
Scott G. Carlson Att, Feb. 19, NY
Robert L. Carmody Att, Dec. 23, FL
Marie T. Cheney (Thurman) Att, Nov. 18, UT
Ted Coleman Att, Feb. 17, AZ
Raquel Condie (Adamson) Att, Jan. 1, UT
Sharon A. Cooper (Anderson) Att, Jan. 22, UT
William A. Cox Att, Jan. 29, NV
George Deeter Att, Nov. 15, UT
Joan Demaree (Mathews) Att, Feb. 17, MA
Lawrence R. Dow Att, Nov. 23, UT
Clark H. Eckersley Att, Feb. 7, UT
Glenn S. Eldredge Att, Jan. 15, UT
Shirlee Etzel Att, Jan. 23, UT
Marsha P. Evans (Perkes) Att, Dec. 22, AZ
Jay F. Facer Att, Jan. 8, UT
Ralph Fossat Att, Jan. 24, UT
Kathryn Frost Att, Nov. 24, UT
Max K. Funk Att, Feb. 27, UT
Fay Geary Att, Dec. 18, UT
Hilda Gilger Att, Mar. 4, UT
Karen S. Goodey (Scholes) Att, Jan. 19, UT
Mildred B. Granger Att, Jan. 1, UT
John Guymon Att, Dec. 23
Betty Jean Hatch Att, Nov. 30, UT
Sandra D. Holt (Perkins) Att, Jan. 9, UT
Todd Isakson Att, Feb. 27, UT
Steven D. Jensen Feb. 1, UT
Ken Jerral Att, Jan. 2, UT
Bonnie O. Johnson (Oliver) Att, Jan. 4, UT
Deborah Johnson Att, Jan. 7, UT
Willaim H. Keetch Att, Dec. 17, UT
George J. Kershaw Att, Nov. 17, UT
Donald Allen Knight Att, Mar. 7
Helen M. Knight Att, Jan. 22, UT
Steven Peart Larsen Att, Dec. 10
Kayrene Leonard Att, Dec. 18
Bonnie L. Lepper Att, Nov. 26, ID
Phyllis C. Likes (Maluy) Att, Jan. 23, UT
Robert M. Lowe Att, Nov. 17, UT
Dollie A. McDonald (Winders) Att, Dec. 31, UT
Karrie F. McDougal (Fitzgerald) Att, Dec. 7, UT
Barbara A. Mickelson (Pilling) Att, Jan. 19, OK
Scott M. Milburn Att, Feb. 10, UT
Barry Miya Att, Jan. 31, UT
Alfred Montez Att, Dec. 2, UT
Carole E. Montmorency (Eccles) Att, Jan. 12, UT
Jim Rob Nelson Att, Jan. 11, UT
Kristin J. Nelson Att, Dec. 10, UT
Joyce H. Niederhauser Att, Nov. 23, UT
Chris Nish Att, Feb. 9, UT
Don J. Northern Att, Jan. 12, UT
Melene B. Norton (Brunett) Att, Nov. 28, UT
Rula Wright Olsen Att, Jan. 7, UT
Albert P. Oppocher Att, Dec. 20, WA
Helen R. Orr (Rumsey) Att, Jan. 22, ID
Lesa June Pace Att, Dec. 20, UT
Larry Ralph Peek Att, Dec. 18, UT
Randy Perri Att, Dec. 27, UT
First Wife Person Jan. 15
Lois Pilling Att, Feb. 24, UT
Russell K. Port Att, Feb. 27, UT
Mary Porter (Georgedes) Att, Dec. 2, UT
Paul Powell Att, Feb. 14, UT
Claude E. Purles Att, Mar. 3, UT
Margaret L. Ramirez Att, Feb. 11, UT
Garth R. Reid Att, Dec. 14, UT
LaDean Riches (Petty) Att, Nov. 17, UT
Elsie M. Robinson (Rowley) Att, Jan. 11, UT
David R. Roderick Att, Jan. 12, UT
Margaree Kaye Roper Att, Dec. 21, UT
Garry M. Rose Att, Jan. 28, UT
Robyn M. Rowley (Alton) Feb. 10, UT
Gene Schneiter Att, Nov. 27, UT
Henry Scorzato Att, Nov. 29, UT
Phyllis F. Sillitoe (Frandsen) Att, Jan. 11, UT
Sylvia D. Sillitoe (Dalpiaz) Att, Dec. 19, UT
Dean E. Smith Att, Jan. 6, UT
Weldon C. Smith Att, Mar. 2, ID
Frederick Mason Snow Att, Nov. 16
Venice Sorensen Att, Feb. 23, UT
Thurman S. Stevens Att, Dec. 9, UT
David Lee Stokes Att, Feb. 16, UT
Helen R. Stratton Att, Dec. 16, ID
Travis Rae Swope Dec. 15, UT
Lyn B. Tanner Att, Feb. 25, AR
Christa O. Tervort (Obray) Att, Feb. 12, UT
Kathy Vallery (Cook) Att, Jan. 10, WA
Shawna Van Meeteren (Cobabe) Att, Jan. 27, UT
Loma P. VanCleave Att, Dec. 5, UT
Mavis L. Venn Att, Nov. 29, UT
LaRee L. Waldron (Lindsay) Att, Jan. 3, UT
Kathryn Ann Wallace Att, Dec. 19, UT
Ann L. White (Morgan) Att, Feb. 18, UT
Trevor G. Whiteside Att, Feb. 8, UT
Boyd W. Wilkes Att, Nov. 20, WY
Glen L. Williams Att, Jan. 6, WA
Kirby H. Williams Att, Dec. 25, WY
Barbara Wilson (Cima) Att, Dec. 20, UT
Camille Windley Att, Feb. 20, UT
Billie L. Wiser (Gilbert) Att, Jan. 8, UT
Gail M. Womack Att, Nov. 15, ID

USU EDUCATORS

Nola A. Taylor Jan. 5, UT
Clark M. England Dec. 7, UT
Lamar M. Anderson Mar. 10, UT
Carol E. Leslie Feb. 3, UT
Gary M. Chan Dec. 9, UT
Larry Boothe Dec. 17, UT
Gardiner Stuart Stiles, Feb. 26, UT
Carol E. Leslie Feb. 3, UT
Lynn R. Pierson Feb. 22, UT
Earl F. Pound Nov. 18, UT

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