

Spotls the People WHO DRIVE OUR SCIENCE & TECHNOLOG



Justin Galbraith tests his physical boundaries by participating in ultramarathon trail runs like the Bigfoot 200, where he is seen here climbing out of the Toutle River Valley.





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Justin Galbraith thrives on a challenge. He has yet to find his physical boundary, but in the past year he's come close. He is an ultramarathon trail runner, regularly competing in multiday races of 30 to 200 miles through challenging terrain.



As a hot air balloonist, **Melanee Scarborough** isn't particularly fond of flying. She prefers being on the ground prepping the balloon for flight while her husband takes to the air.



You could say that **Stefanie Bourque** has a home on the range. It started as a child when she had a horse. But she wanted a ranch so she could live with her horse — that dream came true in 2020.



Tony Olson stays on the cutting edge when it comes to designing and forging blades. Inspired by watching HBO's "Game of Thrones," Olson has turned his hobby into a side business called "War Knives."



Patsy Gilbert has been riding and showing horses all her life. Today, the Livermore native lives on the ranch she grew up on as a child and continues to show horses in regional and national competitions. Her current horse, a 10-year-old gelding named Hudson, has even qualified for and participated in world championship shows.



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We hope you enjoy this edition of *SpotLight*. We'd also like to hear from you. Send us your thoughts and suggestions, whether it's what you like — or even what you don't — about this magazine, or if there is something you would like to see in coming editions. You can reach us via email at osc@llnl.gov.

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FINDING ance

100 MILES AT A TIME

By Patti Koning

echanical engineer Justin Galbraith likens himself to a Siberian Husky that gets into trouble without enough exercise.

"I'm very driven. I appreciate a challenge, whether it's pushing myself physically with trail running or intellectually with an intense design review," he said. "I am constantly testing my boundaries so I can earn my rest and relaxation."

He has yet to find his physical boundary, but in the past year he's come close. Galbraith is an ultramarathon trail runner, meaning that he regularly competes in multiday races of 30 to 200 miles through challenging terrain.

He has been with LLNL since 2010, working in the National Ignition Facility (NIF) and Photon Science Directorate. He's worked on the Advanced Radiographic Capability (ARC) petawatt laser, NIF target diagnostics and on Department of Defense Technologies programs. Galbraith earned his master's degree in mechanical engineering from the University of California, Davis through LLNL's Education Assistance Program.

Currently, he's the lead mechanical engineer for Advanced Photon Technologies, working on the DELPHI laser for the MEC-U project at SLAC and on development of rep-rated, high peak- and averagepower lasers that could be drivers for fusion energy.

In 2014, Galbraith completed his first ultramarathon — the San Lorenzo River Trail Run in Santa Cruz. An ultramarathon is defined as any run that covers a distance longer than a standard marathon of 26.2 miles. Ultramarathons typically start at 50 kilometers, or 31 miles and are often run in nature with significant elevation gain.

He ran his first 100-mile race in 2015, the San Francisco Endurance Run, along trails in the Marin Headlands. The following year he doubled that distance in the Tahoe 200 Endurance Run. Participants must cover the rugged terrain along trails and up and down mountains, circumnavigating Lake Tahoe in under 100 hours. Galbraith finished in 85.5 hours.

In 2017, he completed the inaugural Moab 240, a 240-mile loop through the desolate Utah countryside. Then in 2018, he completed the Bigfoot 200 in the Cascade Mountains of Washington state.

"The elevation change on the Bigfoot 200 is insane," he said. "It's like they never heard of switchbacks."

That race covers 210 miles with more than 46,000 feet of elevation gain. For perspective, Mount Everest stands at 30,000 feet above sea level.

These three events make up the Triple Crown of 200s, although to earn that title one must complete all three in the same year.

"Completing a multiday race really strips you bare. It's so overwhelmingly challenging, but if I can finish a 200-mile trail race, everything else seems manageable. And I love the adventure and camaraderie," Galbraith said.

For ultramarathon events, the course is set with sleep and aid stations along the way. It's up to each participant to plan their own strategy to finish under

the time limit. Galbraith learned that he needs to sleep for three or four hours in each 24-hour period. He alternates running and strategic power hiking in steep uphill sections to use different muscles, change his gait and lower his overall exertion level.

In October 2022, he won the 24 Hours From Home Challenge. During a set window of time, participants

leave their place of residence and travel as far as they can by any selfdriven means — walking, running, skipping or stumbling. At the end of 24 hours, he had gone the furthest of any participant, completing just more than 100 miles total and finishing 91 miles from home as-thecrow-flies.

He's also competed in several "last runner standing" events. In this

In January, he won the Survive the Night last runner standing competition held in Southern Illinois. "The event started at 9 p.m. and went through the night, so it was at or below freezing the entire time," Galbraith said.

format, competitors must complete a 4- or 5-mile loop once per hour until only one competitor remains. Typically, the time required for each loop gets progressively shorter in the later hours as the competition ramps up.

> He became a runner in college. "I struggled with finding a comprehensive approach to wellness early in my life," he said. "I lost 100 pounds in college. But running has become much more than a mechanism to maintain a weight set point. It's a positive way to relieve stress and gain balance in my life."

To train, Galbraith runs almost every day and completes about 70 miles per week. In 2022, he estimates he ran more than 3,000 miles and destroyed six pairs of running shoes. This level of commitment might seem crazy, but he's not alone. The races Galbraith competes in typically fill up fast and have waiting lists.



Galbraith loves running outdoors, even in extreme conditions like at the Queeny Ultramarathon.

Justin Galbraith

trains on the street

trail runs. Photo by

Blaise Douros/LLNL.

in preparation for

ultramarathon



UP, UP & AVVAY By Anne M. Stark

t started with a pledge to volunteer, driving a golf cart to collect money from various booths. But for Melanee Scarborough and her husband, their volunteering at that year's Sonoma County Hot Air Balloon Classic escalated into a love of hot air ballooning.

Surprisingly, Scarborough, one of the hiring administrators and scholar coordinator for the Lab's Materials Engineering Division, is not particularly fond of flying.

"I think they are beautiful, I love educating people about them, but I don't like to fly," she said. "I prefer to stay on the ground. I'm scared of heights and it's just not something that I'm very excited about."

But that wasn't the same experience for her husband, Joe Lamberti. That first volunteer opportunity, he operated the tether fields for the day and was hooked. Tethering means the balloon is tied to the ground with ropes. This allows the balloon to rise anywhere from 100 to 300 feet off the ground and then come back down. This is especially comforting to people who are fearful of getting into a hot air balloon but want to "give it a try."

"It [tethering] gives them the taste of what it feels like to be off the ground and be lighter than air," Scarborough said.

From there the couple volunteered at many events either crewing (prepping the balloon on the ground for flight) or tethering. "We really got involved in crewing for pilots and learning the sport," she said. "When Joe decided he wanted to get more involved, it was kind of perfect. He runs the flight in air and I run the ground."

The duo continues to help out with local festivals and even a summer camp for teenagers where they can

learn all about ballooning from the ground up. "That's how we keep the sport alive," Scarborough said.

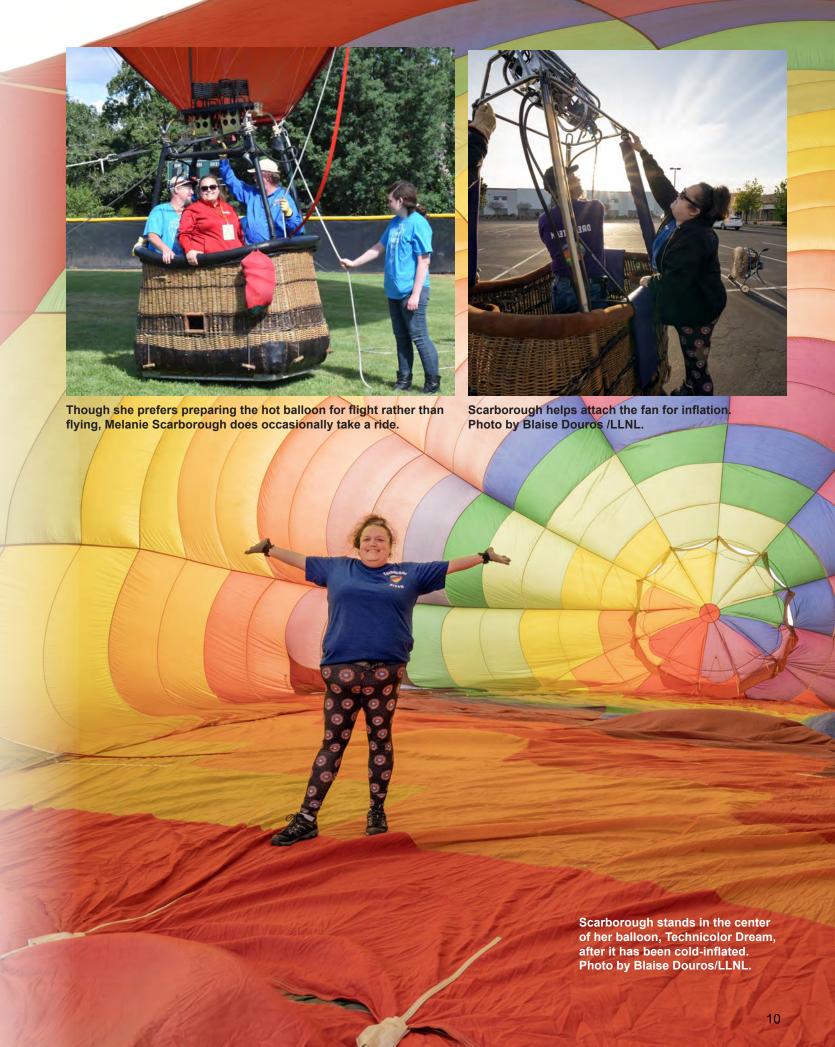
While Lamberti is still training to be a full flight pilot, they both learned the craft by crewing for others to hone their skills. "That's what was really important for us to be able to crew for as many different pilots as we can. That first year we crewed for 20 pilots at more than 30 different events. So that when we did make the decision to become a team, we took pieces from everything that we learned and made it our own," she said.

Their own is "Technicolor Dream," which the couple bought in 2019. They often fly out of Tracy Airport or San Martin Airport in Salinas. Ideal weather is the key: in the 60s and low 70s, no precipitation, no fog and wind at only one to three miles per hour.

A trek worthy of breakfast

Getting a balloon ready for flight includes many steps. Upon arriving at the airfield very early, Scarborough checks in with her crew. Everyone is made aware of the plans for the day and safety protocols are reviewed. From there, the team begins unloading the balloon assembly from the trailer. Lamberti makes the decision if they will use a ground tarp (depending on where they are launching from) and that will go down first. From there, the basket is assembled, the burners are tested and then the basket is laid on its side to connect to the balloon (also called an envelope). Once connected to the basket, the envelope is pulled out of the bag so that it lays flat on the ground before inflation. The crew then sets into a predetermined assignments and prepares for the "cold inflation."

A crown person is responsible for stabilizing the top of the balloon. They hold a rope and serve as a counterweight to stabilize and prevent the balloon



from standing too quickly. Other crew members will hold open the mouth (throat) of the balloon and another will run the fan. Lamberti then gives the green light to start cold inflation where the fan blows in cold air and the balloon starts to inflate and gets big and round.

Then comes the pièce de resistance: the balloon goes hot and slowly starts to rise. Once standing, there is a series of checks from burners, propane, radios and of course the kiss goodbye, before Lamberti goes light and off into the great blue sky. Scarborough then gathers the crew together, packs all the remaining gear in the trailer and waits. Will Lamberti be landing back on the launch field or will weather conditions change and he lands somewhere else?

"We stay at the launch site and see which direction he's headed," Scarborough said. "I do a radio check to make sure that our radios are working and we can hear one another. And then we watch the balloon. A lot of times we just wait and see what happens. When he lets me know he's ready to land or I see that he's descending to land, then our job is to be there to help him when he lands. I'm always a little worried because anything can happen," she said. "I know it's something Joe enjoys. I know all the safety that surrounds it. You never know what's going to happen in life. He's doing something he enjoys. As long as we continue to enjoy it, we'll continue doing it for a as long as we can. That's why I always make sure that I get that kiss before he leaves."

The whole trek, from leaving home to the field, flying, packing up and heading home is all in a morning's work. Then, Lamberti and Scarborough treat the crew to breakfast.

A vital crew member

Lamberti and Scarborough have a member of their crew that is most vital, a Siberian Husky named Blu.

During the pandemic, Lamberti, a health care worker, was in his office daily while Scarborough was working at home. Just she and Blu, always by her side. She noticed he started to wake her up the same time every morning.



Scarborough makes sure the tethers are secure on the balloon. Photo by Blaise Douros /LLNL.

"I just thought he was lonely," said Scarborough, who is diabetic. "And then I realized I was having a sugar problem."

Service dogs are typically trained as puppies into early adulthood. However, Blu did not receive formal training as a pup. "I wasn't quite sure what he was doing," she said.

Scarborough called a friend from the American Diabetes Association who put her in touch with a person that trains diabetic alert dogs (also known as DADs). What she found out was that the body produces a different scent when a person has high or low blood sugar and dogs, with their keen sense of smell, can pick up on that.

With a bit of training, Scarborough found out Blu had a natural talent to be a lifesaver. Following the guidelines set forth in the DAD training, Blu was able to successfully complete the courses and became a certified diabetic alert dog. Blu goes to ballooning events and joins her onsite from time to time, always keeping an eye on Scarborough.

"I'm very lucky to have my Blu dog," Scarborough said. "He literally has saved my life."

Scarborough is very excited to be leading the charge of a brand-new hot air balloon festival that will debut this summer in the city of Ceres. She also is on the board for the Pacific Coast Aeronauts, which is a Northern California Hot Air Balloon Club full of hot air enthusiasts.



companion, but also a service dog.

Blu is not only a pet and





ven as a toddler, Stefanie Bourque knew exactly what she wanted. She remembers wishing she had a horse when she was as young as four years old, but her mother believes it goes back even further, all the way to when she was only one.

"I believe it started when I began to talk. My first word was 'mom' and I think my second word was 'horse.'

I was more drawn to barnyard books and stuffed animal horses than anything else," Bourque said.

"Each birthday, my mom would ask me what I wanted and I'd make her a list of five things and a horse was always at the top of the list. They would give me stuffed animal horses and Breyer horse figurines.

"I was six years old when I got my first pair of cowboy boots and horseback riding lessons. I wore the boots all the time and was in absolute heaven the first time I set

foot in the barn. My mom is the best; every year she would make me a horse cake for my birthday. My friends from kindergarten and grade school all have said they knew I would own a horse and a ranch some day."

Someday finally came when she was 22 years old and after almost two decades of dreaming and hoping, Bourque purchased her first horse, Dusty, a then-sixyear-old, male quarter horse. "It was the best day of my life." But there was one more thing that the Lab employee deeply desired.

"I not only wanted a horse; I wanted a ranch, so I could live with my horse. It was my dream and it's come true."

In 2020, Bourque purchased a five-acre ranch in Acampo, about four miles east of Lodi and her sister,

Jennifer, a loan officer in Sacramento, brought a five-acre ranch next door to her.

"My backyard view is 7,000 acres of open pastureland. My ranch has great sunrise views and my sister's ranch has great sunset views — so we compromised and named our ranching business High Noon Highlands. My drive to develop my ranch stems from wanting to help one more animal and to give back to my community," Bourque said.

One way that Bourque and her sister have given back to the community has been by throwing their first-ever Harvest Festival

last fall. With a minimal amount of advertising through social media, the sisters just opened the doors to their ranches

Their first Harvest Festival in October 2022 drew about 200 people and featured a pumpkin patch; a photo booth with Waylon, Bourque's miniature Highlander bull who is almost two years old; food trucks; and about 15 vendor booths.



During the stormy weather of February and March, many chickens were happy to be inside a building and underneath heat lamps. The ranch has about 30 chickens, who produce two to four dozen eggs daily and 55 chicks.

This year's second annual Harvest Festival, set for Oct. 7, will be highlighted by another pumpkin patch; an area where people can meet Waylon, some of the goats and Kady, the mini-horse; vendors; a very large food truck and a dessert vendor.

Beyond Dusty, who is now 23 years old, she owns two other horses, JuneBug, a 17-year-old mare who is a retired racehorse thoroughbred; and Rip, a three-year-old mustang quarter horse

But the stars of the ranch show are Bourque's Highlander cows, a Scottish breed of rustic cattle that originated in the Scottish Highlands and the Outer Hebrides islands of Scotland and has long horns and a long shaggy coat.

Bourque currently owns eight Highlander cows — four red, two black and two gray. She hopes someday to have a total of 25-50 Highlander cows. In a sense, she is well on her way to having a larger herd. Her current herd includes two bulls and six cows. who are all pregnant and expected to deliver calves this fall. The Highlanders are four to four-and-a-half feet tall, about five feet long and weigh between 800 and 1,200 pounds.



Seven goats, including a new kid born on March 26, call the ranch home. Here it's time for two of the goats, Bubble and Emmie, to settle in for a little grub.



Bourque puts her arm around Waylon, her miniature Highlander bull, as he munches on some hay.

Since she started her Highlander herd, Bourque has of useful purposes down on a ranch — in addition to being cute.

Once the cows have delivered their calves and the calves have reached five months old, the cows can be milked daily to produce a few gallons of milk. The Highlanders also turn out fertilizer and, in Bourgue's view, are the "best lawn mowers." They've also been the focus of about 50 photo sessions of children and families, with the proceeds covering the ranches' liability insurance.

Among the menagerie of other animals who call the Bourgue ranch home are about 30 chickens, who produce two to four dozen eggs each day; 55 chicks and seven goats, including a new kid born on March 26.

In addition to the Harvest Festival, another way that Bourque gives back to the community is by rehabilitating horses that have encountered problems.

"As a child, I wanted to become a veterinarian, but I didn't

For the past five years, Bourgue has worked weekends at Berkeley-based Golden Gate Fields, where she massages and strengthens racehorses, helping build up their abdominal and pectoral muscles, along with their

"When I'm working at Golden Gate Fields, some horses won't make it because of their physique, build or ability. Sometimes, a trainer will ask me if want to take a horse to rehab him and find him a good home."

"I've always loved Highlander cows. I like their temperament; they're calm and more social than other cows. They're also cute as anything."

- Stefanie Bourque

discovered that the native Scottish cows serve all kinds

like seeing horses sick. Now I take retired racehorses, rehabilitate them and help them find forever homes."

endurance.

It usually takes about a year to rehab a horse and, to date, Bourque has found homes for four horses.

At the moment, Bourque is rehabbing four horses – Midnight, a four-year-old thoroughbred who is about to give birth; Freya, a five-year-old guarter horse; and two baby horses, who are eight months and six months old, respectively.

Bourque calls her ranch a "very easy-going" place. "It gets hot, but there's a breeze in the afternoons. I have great shade from a whole strip of eucalyptus trees."

At the Laboratory, Bourque works as a contract analyst in High Volume Procurement, a division of Supply Chain and part of the Lab's Operations and Business Directorate.

"I love it. I couldn't ask for a better community of people to work with in my job," she said.

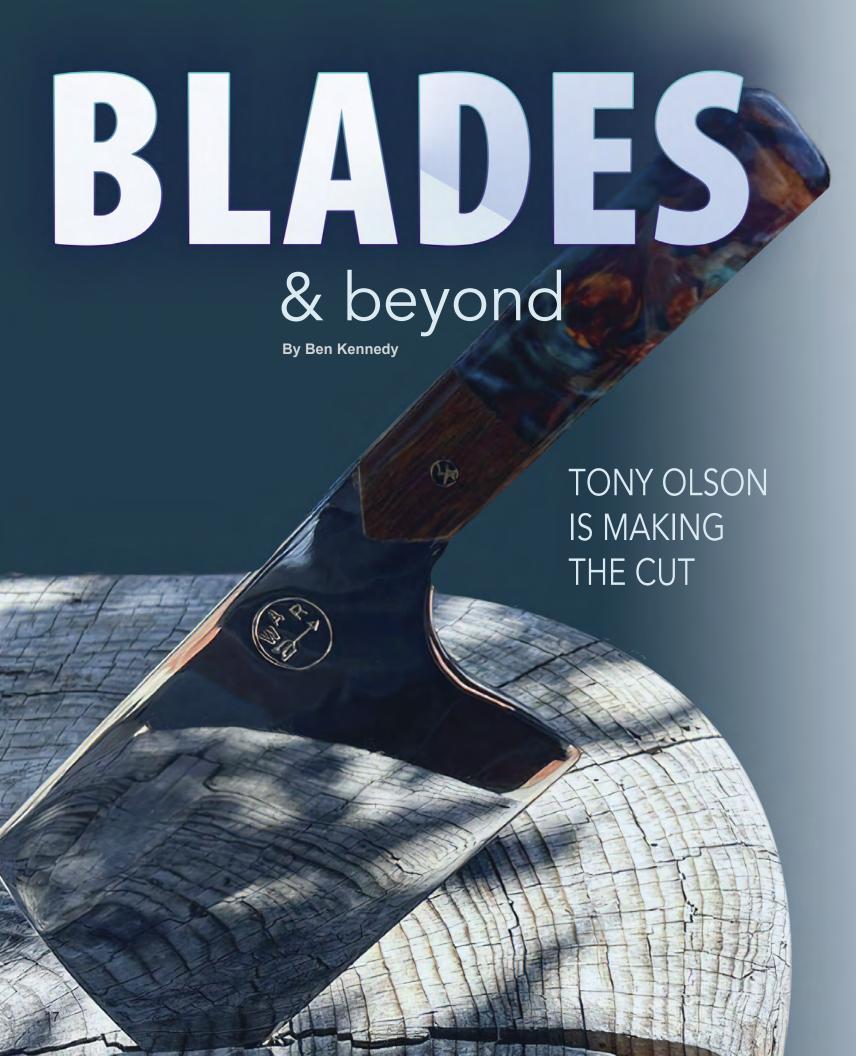
As she looks back on how her dreams of some day owning a horse and her own ranch have come true, she said she wants to encourage others, particularly women, to follow their dreams. "And to know that anything is possible."

Has the luster dimmed on her dreams now that she's achieved them? "If anything, the luster has grown because I'd love to have some more animals and some more land.

"When I think about what's happened, it brings tears to my eyes at least once a week. It's hard to describe what it's like to work and work and work and sacrifice and then see your dream become a reality."



open pastureland.



G rowing up in Livermore, Tony Olson knew he wanted to work at the Lab from an early age. To get there, he developed a clear way of making decisions.

In high school, he felt lazy — so he joined the Marines, where they could "knock the lazy right out of me." During his Marine Corps service as an aviation mechanic, he chose the most prestigious detail he could: working on President Obama's helicopter, Marine One.

Keeping his ultimate goal in mind, Olson went on to guide drones in Afghanistan — "being incredibly pressured is just my bread and butter," he said — and later taught drone piloting to other Marines.

Servicemembers in Afghanistan are often limited in their entertainment options; frequently they can only watch shows and movies that have been downloaded to a nearby laptop. One night while watching armored soldiers in HBO's "Game of Thrones", Olson thought, "I bet making that stuff is really cool." When he returned to the United States, he bought an anvil and a hobby forge and started making blades. Around this time, he finally arrived at the Lab with a job at the National Ignition Facility.



A few of the tools Olson uses to forge the blades for War Knives.





Olson has been producing only the "most interesting" blades for his customers for the last several years; above is a pair of "sister knives," used for skinning. At below right, a fishing knife with Marine Corps insignia for a retiring friend; at below left, a "pirate-style" Damascus Bowie knife.



"It makes me feel like a Viking or a caveman," Olson said, before bellowing "Beat metal!" He started forging blades that he thought were cool, but it was costing him a lot in materials and time. His wife suggested he start taking commissions and War Knives was born.

"When I was a kid, knives were the cool thing that you can't have," he said. "Now I want to make what I like." Today he's making only the projects that are most interesting to him.

After moving from the National Ignition Facility to the High Explosives Applications Facility, Olson says his career has him exactly where he wants to be. "Who doesn't want to blow stuff up?" he asks, remembering a few fireworks from his younger days. "Now I do it in a way that accelerates science."

And his creative pursuits are earning him attention, as well: War Knives has a presence on Instagram and other social media sites, where Olson's unique personality can shine through beyond the blades. In addition to his day job and his blade-making, he also performs occasional standup comedy in the Tri-Valley.

As for next steps, Olson has a lot of hope for his forge. In early 2023, he had plans to renovate his workspace, but since it's outside, the rain kept him from making the upgrade. Now that things have begun to clear up, there's nothing stopping him from staying on the cutting edge.







To Krista and Anthony Olson
With appreciation,

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Life in the saddle

By Paul Rhien

LLNL facility manager Patsy Gilbert finds fulfillment showing her horse, Hudson, in world championship shows.

LLNL senior facility manager Patsy Gilbert has been riding and showing horses all her life. Today, the Livermore native lives on the ranch where she grew up on and continues to show horses in regional and national competitions. Her current horse, a 10-year-old gelding named Hudson, has even qualified for and participated in world championship shows.

"Growing up, we lived far enough out on Tesla Road that when I got home from school, there weren't a lot of other kids around," she said. "The only friends I had were our horses, our dogs and cats and the cows. And so, I spent all my time riding."

Gilbert started showing horses when she was 14 years old and has been involved in training and competition ever since.

"Outside of work, this is where I have spent so much of my life," Gilbert said. "I have traveled all over the western United States and across the country and I've met so many wonderful people — other trainers and other competitors. I really love what I do."

Hudson: a winning partner

Several years ago, after taking a brief break from showing horses, Gilbert wasn't really looking to get back into competition. But after reconnecting with a young friend, they decided to buy a horse together to enjoy riding and to share with younger riders.



"We found a really nice, gentle horse and we decided to put it in training," Gilbert said. "Before the horse broke her leg and we eventually lost her even, she got both my friend and I back into the show ring."

Reengaged in the sport, Gilbert started looking for another horse to show.

"I turned 60 years old and thought that I would like to get a really nice horse to take to the world championship show," she said.

After two years of searching, Gilbert and her trainer found Hudson in Whitesboro, Texas.

"Hudson is a really neat horse," she said. "He's just easy to be around and easy to do absolutely everything with. As soon as I rode him, I knew he was the right fit. He's a great partner."

Hudson, also known by his show name "Four On Da Floor", now regularly competes in American Quarter Horse Association (AQHA) competitions in trail class and western pleasure. In trail class, similar to dressage, horses and riders navigate a series of obstacles. Western pleasure, also called "on the rail," is a demonstration of how the horse walks, jogs and lopes, or how the horse travels. Judges evaluate how the horse drives up with their hind end, how they lead out with their front end and how they carry themselves. Competing with a champion "I often say that Hudson is like a Ferrari and I'm a duck in the pond," Gilbert said. "When people say it looks easy, you don't see all the movement my legs are making — I'm sitting with the right posture; I'm making sure my legs are in the right place at the right time; I'm calculating the next move. If I don't shift just right, I'm going to jam the gears and we're not going to work."



Gilbert likens training a horse to a ballet dancer practicing their routine, or a musician rehearsing an instrument.

"Training a horse and getting them ready to show takes a lot of repetitive training and a lot of practice," she said. "I'm not able to just get on the horse and go to show — I work hard at this."

Horse trainers David and Cheryl Busick ride Hudson four or more times a week. Patsy also rides him extensively to prepare for competitions in California, Oregon and Nevada. In 2020 and 2021, the team took Hudson to the Farnam AQHA World Championship Show in Oklahoma City, Oklahoma, the pinnacle events competition with the greatest exhibitors and horses from around the world.

Between training and traveling to shows, Gilbert spends a lot of time working with the trainers, stall cleaners and other support team.

"I spend more time with these people than I do my own extended family," she said. "These people have become very, very good friends. We've been doing this close to 16 years together and they've become a second family."

Healing with horses

Gilbert credits her horses with helping her through some challenging times. After her son passed away in 2000, spending time riding gave her a place to process the grief of her loss.

"Hudson is my therapist," she said. "That is my mental health right there. I can have the toughest week or be dealing with stresses at work and I can go ride my horse or go to a show and I come back and I feel completely cleansed, completely better. Riding my horses is my happy place."

In 2020, riding and training with Hudson helped her to cope with the stresses of the COVID-19 pandemic.

"One of the good things about riding horses is that you're out in the open air," Gilbert said, explaining that a lot of horse shows continued to be held in areas of the country that had fewer restrictions. "We basically just kept going in this sport. We were smart about what we did — we masked and did everything we were supposed to — but we kept riding. I felt like I was able to stay really active."

A career of service and fulfillment

Gilbert joined the LLNL biosciences department more than 34 years ago. She has spent a fulfilling career in environmental safety and health, biological safety and facilities management.

"It has been an amazing career," she said. "I've been involved with some amazing research here. I've started and grown many programs. It's been very worthwhile to me."

Outside of work, she has been very active in the agriculture community. She has held a variety of volunteer positions, including serving as 4H leader, FFA advisor, Livermore High School agriculture department advisory panel member, Alameda County Cattlewomen president and historian and Alameda County Fair board member. She also has led a support group at her church for parents who have lost children. As a trained minister, she finds great satisfaction in leading funerals and celebrations of life, "helping people when they need caring and compassion the most."

"Volunteering to me is part of my life, it's part of who I am," Gilbert said. "I've been just really community involved. I've made some tremendous friends. Fortunately, I hang out with a lot of ladies that are even older than I am. I plan to continue riding horses and giving back as long as I can."







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