SpotLight

THE PEOPLE WHO DRIVE OUR SCIENCE & TECHNOLOGY

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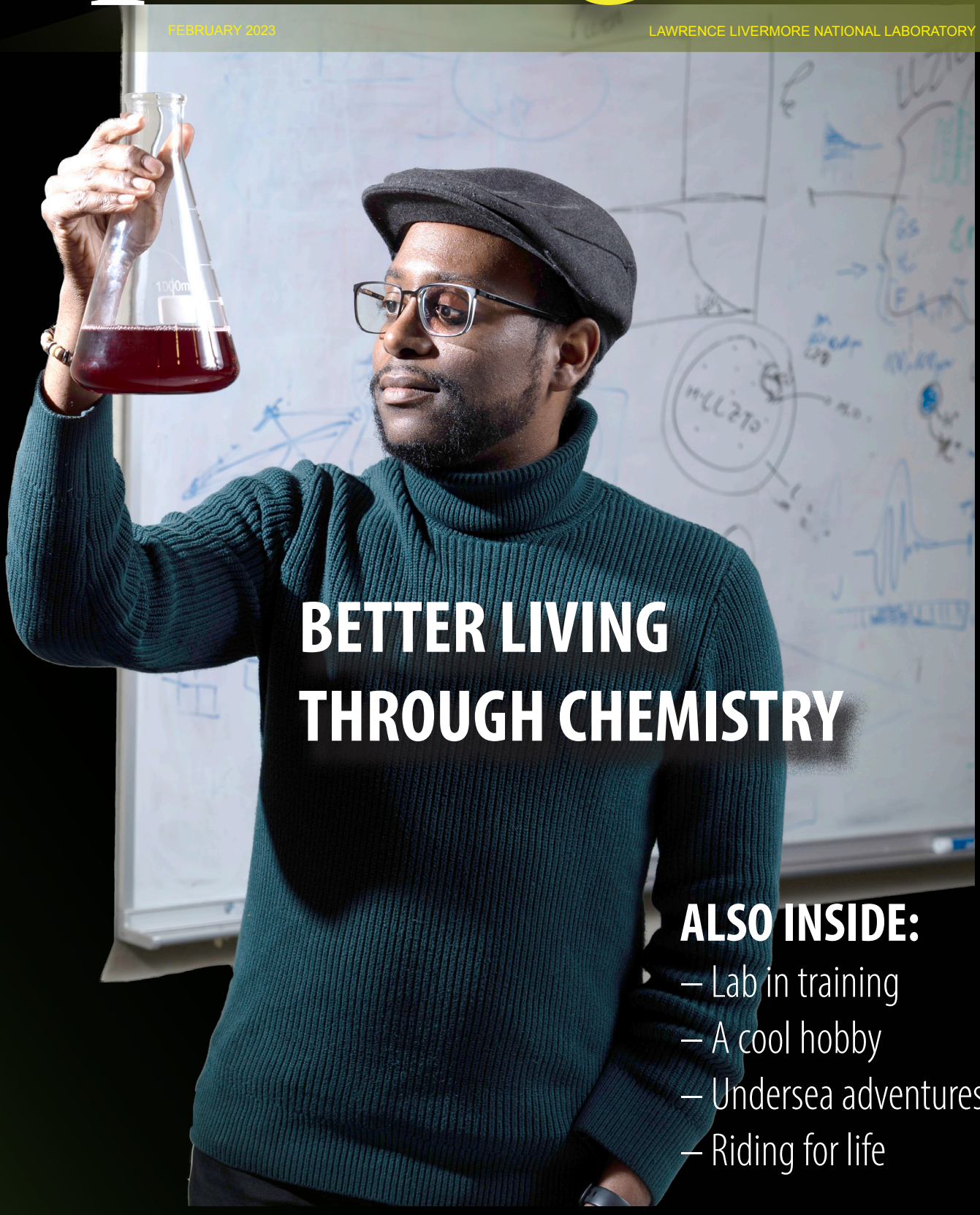
LAWRENCE LIVERMORE NATIONAL LABORATORY



BETTER LIVING THROUGH CHEMISTRY

ALSO INSIDE:

– Lab in training
– A cool hobby
– Undersea adventures
– Riding for life

ON THE COVER: Inspired by a mediocre glass of wine he tasted while in Napa Valley, Lawrence Livermore National Laboratory chemical engineer Jeremy Feaster decided to apply his chemistry skills to make his own. A self-described "chemistry creative," Feaster enjoys the challenge and artistry of putting his own spin on each batch, balancing the different variables needed to create each varietal and concocting their flavor profiles. Photos by Blaise Douros.

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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.

A VINTNER'S VISION

LLNL scientist Jeremy Feaster explores creativity through winemaking

BY JEREMY THOMAS

For Lawrence Livermore National Laboratory chemical engineer Jeremy Feaster, chemistry isn't just a career path, it's a conduit for serving others. Whether it's through his own foundation for underrepresented minority students, his leadership role with the Lab's African American Body of Laboratory Employees (ABLE) or his love for cooking and winemaking, service has always been at the core of his being.

"It's why I do the things that I do," Feaster said. "In a lot of ways, [science] is an expression of creativity. I refer to myself as a 'chemistry creative' — I'm very much a creative person that just happens to do chemistry and chemical engineering."

Born premature and legally blind from a pair of birth defects, Feaster said his drive to help others stems from his gratitude for the miracle of having his vision today, which he credits to the power of prayer and his parents finding the right doctors and medical procedures. His childhood experience served as an anchor for his religious faith and a catalyst for giving back to his community.

"I'm blessed, so why shouldn't I try to do as much as I can, for as long as I can, to make a positive impact on other people's lives?" Feaster said. "Because so much has been given to me, it allows me to give freely and to want to be able to help so many others."

Growing up in Charlotte, North Carolina, Feaster also saw the devastating impact that racial inequalities and a lack of educational and job opportunities had on his peers, and on Black Americans in general. His first exposure to chemistry came in high school, when he got a summer job washing dishes in a chemistry lab at the University of North Carolina at Charlotte. There, a professor allowed Feaster to try some experiments in chemical synthesis, which became his first research project. That happenstance eventually led Feaster to blend chemistry with service through tutoring, teaching and providing scholarships and mentoring opportunities for Black and underrepresented students.

In 2012, Feaster founded the Jeremy T. Feaster Foundation while he was still a student at the Georgia Institute of Technology. To date, the 501(c)(3) nonprofit has awarded $25,000 in scholarships to students around the country who embody the foundation's philosophy, while mentoring hundreds more and sparking creation of five new nonprofits.

Photos by Blaise Douros.

A "chemist at heart," Lawrence Livermore National Laboratory chemical engineer Jeremy Feaster has discovered a creative outlet in winemaking, where he leans on his experience in the Lab to concoct wines of various varietals at home. Ingrained with a lifelong motivation to serve others, Feaster enjoys gifting his wines, and using wine and food to create a comfortable environment for friends and family.

The organization's "lift as you climb" motto reflects Feaster and his team's approach to creating a lasting ecosystem for opportunity and empowerment. Recently, the organization entered a new phase, developing a curriculum to help students start their own nonprofits and teach them the value of "servant-leadership" through community service.

"We can be a lot more intentional about increasing opportunities that are available to underrepresented minorities here in this nation, especially given the history of what so many minorities have had to endure," Feaster said. "It's about realizing the future for equal opportunity and equal access, but also truly building a sustainable and thriving community centered on empathy, on compassion and appreciating diversity and equity. There are so many problems in society that are pervasive, but that just means that the solutions have to be just as pervasive."

Engineering an 'oasis' with food and wine

An extension of Feaster's dedication to service is in preparing and creating spaces for people to feel relaxed and comfortable, be it through cooking — his "de-stressor" activity — or his most recent venture, winemaking.

"I like people to feel like they have an oasis where they can take a load off and rest," Feaster said. "To be able to share a bottle of wine that I made with love and care, and to see people enjoy it — or even to get feedback on it — is enjoyable because it just allows me to get better and grow in different ways. I appreciate those challenges. It's about having the space to be able to help and to serve others, even if it's just over a meal or a glass of wine."

Feaster's foray into wine production began when he and a few friends went on a tasting excursion in Napa Valley, where they experienced a subpar glass of wine and discussed what might have gone wrong.

"We were like, 'OK, what happened here? What would we need to do instead?'" Feaster explained. "Then I thought, 'How hard is it; could we do this?' Whenever I start thinking of things that we could try, I get excited. I'm like, 'I'm a chemist, I can figure this out,' and I just fell into it. It was such an interesting space."

In 2019, Feaster and his friend Bianca began their winemaking experiment, purchasing all the necessary equipment to create a sterile environment — including fermenters, carboy containers and siphons — and set up operations at his mentor's home in

San Francisco. Feaster's first batch taught him a valuable lesson. After bottling his Cabernet Sauvignon, he tasted it too soon and thought he had made a mistake. But he kept the bottles and went back to them years later, finding their flavor had improved dramatically.

"I learned that sometimes it takes time for things to gel," Feaster said. "Ultimately, that's a good lesson in general, when it comes to research and in life, that sometimes I've got to give myself grace and to be patient. Things might be where they need to be, but sometimes it just takes a little bit of time for it to really kind of all come together, but when it does, it could be something beautiful."

When the COVID-19 pandemic hit in 2020, Feaster pivoted to an expanded space and turned a large closet at his home into a winery, adding secondary equipment and areas to store and age the bottles. He makes about six cases of wine a year, enough for him to enjoy and give out as gifts to friends and family.

For Feaster, the enjoyment he gets from the hobby comes from expressing his creativity by balancing the different variables required to create each varietal and concocting their flavor profiles. In some ways, winemaking echoes his work in the lab, where he designs 3D-printed electrochemical reactors that convert air into fertilizer and carbon dioxide into valuable products such as plastics or fuels.

"I'm a chemist at heart, so I very much rely on my experience in the lab to help guide me through the process, whether it's just doing accurate measurements, or being very thorough with cleaning," Feaster said. "It's a really cool way to do chemistry outside the lab."

The road to each batch begins with the "story of the grapes," Feaster said, and factors in where they were grown, whether the growing season was wet or dry, how much sunlight the grapes received and the contact time the wine had with the skins of the grapes, which can all affect flavor.

To source his starting material, Feaster visits vineyards in the Livermore area and talks to local winemakers. He purchases his grapes pre-crushed into a liquid "must" — the juice containing the fruit pulp, skins, stems and seeds. Starting with the must, Feaster begins a primary fermentation process, adding yeast and other ingredients to convert the sugars to alcohol and carbon dioxide.

Feaster can predict how much alcohol the wine will contain based on the Brix level — the grams of sugar in 100 grams of the liquid — or based off its specific gravity, the liquid's density that can be measured by a hydrometer.

The primary fermentation process takes several weeks, allowing for the sugar to fully convert to alcohol. During the process, Feaster performs measurements and calculations to track the progression of the reaction. The next step is the secondary fermentation, where Feaster taps into his culinary side, adding ingredients to give the wine different flavors. For his 2022 Syrah, Feaster infused the wine with fresh American oak, giving it more tannins and producing a more metallic or bitter taste. Once satisfied with the flavor profile, Feaster moves to the bottling process. Then the "waiting game" begins.

"It's a matter of letting it age and letting it mature," Feaster said. "A lot of people in the lab have that background of studying aging and the degradation processes, and that's effectively what's happening. You're getting all these chemicals that are getting extracted and maturing to the point where it's reaching the right composition that allows it to interact with your tastebuds and with your palate to give it all the wonderful flavors that you want."

So far, Feaster has made seven batches of wine of several different varietals. He is currently making a 2022 Rosé — a pinkish varietal that absorbs some color from the grape skins, but not enough to become a red wine — and a Syrah, a darker, fuller red wine. Feaster said his best year was 2020, where his Pinot Noir received many compliments, and his Rosé from that vintage remains his favorite creation to date.

"I don't know what it was about that first year of the pandemic — if had something to do with the wildfires or what — but that Rosé was pretty solid; I'm not going to lie," Feaster said. "It was fruitful. It was just very pleasant. It's something that you could literally see yourself drinking on a porch or patio somewhere."

"I refer to myself as a 'chemistry creative' — I'm very much a creative person that just happens to do chemistry and chemical engineering."

– Jeremy Feaster

Ingrained with an entrepreneurial spirit, Feaster isn't ruling out scaling up the hobby into a business venture, joking that winemaking might be his "retirement plan." But while he dreams of possibly owning his own vineyard someday, he's not quitting his day job anytime soon, where he strives to reduce greenhouse gases in the environment and make an impact on sustainability and climate change.

For others considering making wine themselves, Feaster has some words of wisdom that could apply to any new endeavor: Done is better than perfect, getting good takes time and it's ok to fail.

"If something's worth doing, it's worth doing badly at first," Feaster explained. "When a child is learning how to walk, they might stand up, but then they fall down. We don't shoot down the dreams of the child and say, 'you're terrible at walking, why are you still trying?'; we encourage them. Whether it's trying to make wine or starting out with research or starting anything, the mentality we try to make sure we're embodying is to give yourself grace. It's OK if it doesn't work the first couple of times or if it takes you longer compared to somebody else. This is your path; this is your story. And if we keep at it, ultimately things are going to click."

ALL IN A DOG'S WORK

BY STEVE WAMPLER

Photos by Blaise Douros.

Every work day, Z-Program analyst Kristi Swope brings a companion to her job at the Laboratory — her Guide Dog for the Blind charge, Galway, a male black Labrador, whom she expects to raise and train until about October.

More than 30 years ago, Kristi Swope listened intently to a dinner presentation about the need for volunteers to train puppies as service animals.

It was then that a seed was planted for her future, as she told herself, "This is something I'd like to do someday."

Now, more than three decades later, the Z-Program analyst is living the dream — raising puppies to become service animals for San Rafael-based Guide Dogs for the Blind, an organization founded in 1942.

"I never wanted two dogs at the same time and I had a pet dog until several years ago. Two years ago, I didn't have a pet and I decided, now is the time for me to raise a service animal," Swope said.

As puppies raised for Guide Dogs for the Blind need to be with their trainers 24 hours a day, seven days a week, Swope had one hurdle to overcome before she could start — obtaining permission to bring her dogs to work at the Laboratory.

A nearly 23-year Lab employee, Swope spoke with her Z Program management and her managers were supportive of her guide dog training efforts, giving her the green light. She has even been given an ABC (Accompanied By Canine) badge from the West Gate Badge Office.

"I need to have the dog with me all the time, so that I can socialize him. The point of the socialization is to expose the dogs to a variety of environments, so that when they're with a client, even if the environment is new, the dog is still comfortable," Swope said.

As the largest guide school in North America, with more than 16,000 canine graduates, Guide Dogs for the Blind breeds their own dogs, Labradors and Golden Retrievers.

"My understanding is that one reason they breed these dogs is that they are food motivated and they're easier to train because you can make training a positive experience," Swope said. "The dogs are always thinking, 'What do I have to do for my next treat?'"

“Another reason they breed these dogs is that they are more approachable than some other dogs, such as possibly German Shepherds. They look more friendly.”

After a puppy is born, Guide Dogs for the Blind names the dog and the pup begins life with a starter puppy raiser, who raises the dog from eight weeks to five months, house-breaking the dog and teaching the dog to observe simple commands, such as sit, down, stay and come.

Swope is a finisher puppy raiser and her work from about five months to 16 months with her current dog Galway, a male black Labrador, focuses on continuing with the basic commands and socializing the puppy.

Once Swope and other finisher puppy raisers complete their time with their dogs, the animals go back for formal training to Guide Dogs for the Blind facilities in San Rafael and Boring, Oregon.

“When they go into their formal training, they learn much more. For example, we can’t take them on escalators; that’s one thing they learn as well as alerting their sight-impaired clients that there’s an obstacle in their path.”

In their formal training, they also learn “intelligent disobedience” — such as refusing a client’s command to cross the street when the dog recognizes a car is coming.

Swope and her charge are members of the Pleasanton Puppy Club, which meets twice a month on Tuesdays.

One Tuesday each month is dedicated to outings, such as trips to the hardware store, the pet store (for a bath), a downtown Livermore walk and a jaunt down Candy Cane Lane in Pleasanton. Some of Galway’s other adventures have included trips to a department store, a drug store, a movie theater, parks, a restaurant and elementary schools in Livermore and San Ramon.

During the other monthly Tuesday meetings, Swope and other dog owners run their dogs through training sessions on particular topics, such as polite greetings of people, polite greetings of other dogs, blind awareness exercises for humans and basic commands.

“When I go shopping, I always need to use a cart rather than a shopping basket. Wherever I go, it’s important for me to have a free hand so that I can reward the dog,” Swope said. “Every normal activity is now different.

“It’s a person’s job to know where they’re going and how to get there; it’s the dog’s job to get them there safely.”

The Lab employee received her first dog to train, Hiker, a blonde female Labrador, on Dec. 31, 2021 and worked with her until June 2022. Between June and October of last year, when she started teaming with Galway, she performed puppy-sitting for three different puppies, whose trainers had gone on vacation or were taking a break.

“There are people who don’t know that a guide dog in training should not be disturbed. Guide dogs in training also are working and so people should ignore them the way they would already-trained service dogs that are working,” Swope said.

“When I make progress with the dog and I see him learning something, it’s very rewarding to me.”

Swope, who will be training Galway until about October of this year, enjoys bringing her canine companion to her office in Bldg. 140. “It’s fun because sometimes when I’m walking in the building and I turn a corner, a colleague breaks out in a smile when they see the dog. I could even see their smiles when we were all wearing our masks.”

If Guide Dogs for the Blind sees that a dog may not be a good fit for sight-impaired people, the organization may transfer the dog to another organization that trains dogs for other purposes, such as to provide diabetic or seizure alerts (based on chemical scents).

Swope said that although she’s found working with Galway and other dogs to be a lot of work, she’s learned much and found their interactions “quite rewarding.”

“While it’s hard to say good-bye to a dog you’ve raised, it makes it all worthwhile to know that the dog is going on to improve someone else’s life.”

Now that Swope is living her dream after more than three decades, she anticipates continuing to raise other dogs for Guide Dogs for the Blind to help people for years to come.

Galway intently eyes his trainer. Swope and Galway are members of the Pleasanton Puppy Club, which meets twice a month on Tuesdays.

Photos by Blaise Douros.

Swope is a finisher puppy raiser, whose work with her guide dog spans from when the dog is about five months to 16 months of age. Her efforts focus on continuing with basic commands and socializing Galway, who naturally loves his treats.

Inspiration on Ice

BY PAUL RHIEN

Mila Shapovalov shares how a pandemic hobby has brought unexpected joys and connection to a new community

As the COVID-19 pandemic emerged, disruptions to regular routines brought about lifestyle changes for many people, some with lasting impacts.

For Lawrence Livermore resource manager Mila Shapovalov, the pandemic opened a whole new world of inspired movement and creative expression.

"The first few months of having to stay at home were okay, but several months into the pandemic I really started feeling a desire to get out and do some activities that I find enjoyable," Shapovalov said.

In November 2020, that desire prompted a family trip to an outdoor ice rink in Brentwood, California. The outing rekindled Shapovalov's life-long interest in figure skating and became the start of a journey to develop a new hobby.

Shapovalov's love for ice skating began while growing up in Russia. She recalls regularly enjoying the popular winter activity with friends during long Siberian winters.

"I've been in love with figure skating all my life," she said. "Even when I wasn't skating, I would watch major figure skating competitions. I'm always left in awe when watching professional figure skaters, inspired not only by their artistry, but also impressed with what they're able to do on the ice. Some of the jumps and the spins that they perform are mind blowing to me."

Having only been back on an ice rink a few times over the past many years, skating with her family in late 2020 reminded Shapovalov how much she enjoys the sport.

"I just had a wonderful feeling from that experience," she said. "It brought me so much joy that I thought, 'why don't I make this my regular activity and commit myself to improving my skills on the ice?'"

Discovering personal potential

Following the outing, Shapovalov enlisted the mentorship of Adrienne Anderson, a professional figure skating coach, who happily agreed to start giving her private lessons. With coaching and training, she has learned fundamental free skating skills and has started to move on to learn progressively more difficult steps, jumps and spins.

In 2022, she passed the U.S. Figure Skating moves in the field and free skate tests at the adult pre-bronze level, demonstrating her skills before a qualified judge. She completed her bronze level certification in early 2023 and is now working towards the silver level.

Shapovalov credits her coach with continuously inspiring her to set goals, work hard and push her limits.

"I really appreciate having my coach to lead me through this journey," she said. "I think for a coach, it takes a lot of patience — as it does for the student — because some elements take a long time to learn and some of them can be very complicated. She's always very supportive and patient and encouraging."

Shapovalov also describes being driven by an inspirational quote from motorsports racer Bobby Unser, "Success comes

During the COVID-19 pandemic, Lawrence Livermore National Laboratory resource manager Mila Shapovalov rekindled her lifelong love for figure skating.

Photos by Blaise Douros.

from having dreams that are bigger than your fears."

"That quote really resonates with me, and I've seen this play out in different aspects of my life, not just figure skating," she said. "This sport can be really challenging, but it comes with continued practice. At times, learning a new element for my skating program seems really difficult or maybe even impossible to do. But then, as I set myself a goal, keep trying, and persevere, I'm able to achieve it. It brings a great sense of accomplishment.

"Sometimes we don't know what we're capable of until we put in the effort," she said. "I'm in the process of discovering my potential in this sport."

A sport for everyone

In Shapovalov's mind, figure skating was always just a sport for children and youth. As she has become more involved in the ice-skating community, she has met and been inspired by many older skaters.

It's been eye opening to learn how many other adults figure skate, she said. Learning of others who started the sport later in life has encouraged her on her journey.

"There are a lot more adults doing it than I thought," Shapovalov said. "That was a misconception I held, but I have discovered that figure skating is really a sport for everyone."

Overall, Shapovalov has found the figure skating community to be supportive and inclusive. "It's been wonderful to meet so many different people," she said. "I've made a lot of great friends and am blessed to have them in my life now."

Skating for a cause

Late last year, Shapovalov participated in the "Sk8 to Eliminate Cancer" event hosted by the Scott Hamilton CARES Foundation. The fundraiser was held at the Redwood Empire Ice Arena in Santa Rosa, commonly known as Snoopy's Home Ice, an ice rink built and owned by famed Peanuts cartoonist Charles Schulz.

The event included a 5k skate, where Shapovalov completed more than 35 laps around the ice rink to raise funds for innovative cancer research.

"As I was skating, I was thinking about a colleague that we recently lost due to cancer and some of my family members that have had cancer," she said. "I was really motivated by the cause. It was a very good and emotional event."

Shapovalov draws on the mentorship, encouragement and support of her professional figure skating coach Adrienne Anderson, left, as they work together toward goals for learning progressively more difficult moves and completing U.S. Figure Skating certification levels.

As one of the top fundraisers for the 5k, Shapovalov was chosen to participate in a group figure skating program to be performed at the gala exhibition before a sold-out crowd later that weekend. The Sparky's Ice Spectacular was hosted and emceed by Olympic champion Scott Hamilton and included performances by elite competitive skaters Karen Chen, Polina Edmunds, and Kim Navarro.

"I was really impressed by the organization of it," she said. "I had no prior experience skating with this group of people. We got together for two hours to learn the number choreographed by Kim Navarro and Kim Brack Volante, and then performed it in the evening.

"That whole experience was so magical. Just being part of that atmosphere felt very special."

Lab's Got Talent

In 2022, Shapovalov prepared a figure skating program for the Livermore Laboratory Employee Services Association (LLESA) Lab's Got Talent competition, placing second overall.

Especially in the unusual environment of being isolated from each other, she said the competition was a nice way to connect with colleagues and bring awareness to figure skating.

Shapovalov put a lot of thought into her Lab's Got Talent program. "I really try to feel the music and understand what it's all about, and then I try to convey it through my body movements and expressions," she said.

"Figure skating has enriched my life greatly. I really enjoy telling a story through a figure skating program. It means a lot to me to be able to touch somebody's heart on an emotional level."

A member of the Stockton Figure Skating Club, Shapovalov has participated in a variety of local ice shows, competitions and group exhibitions. She loves how figure skating combines athleticism with artistry and appreciates the beautiful, emotional and creative aspects of the sport.

COUPLE GOES DEEP FOR UNDERWATER ADVENTURES

BY PATRICIA KONING

For Korbie, left, and Bruno, right, Le Galloudec scuba diving is more than a hobby — it's a portal to another world of wonder and adventure. To help others discover the undersea world, Bruno teaches scuba in his spare time (see inset).

Photos courtesy of Bruno and Korbie Le Galloudec.

When they need to get away from it all, Bruno and Korbie Le Galloudec have a special place to escape to. It's beautiful, filled with wondrous creatures and serene.

"No one can talk to you there," Korbie said. "It's an immersive experience that changes every time."

Best of all this place is easy to find — it makes up three-quarters of the Earth's surface and is a mere 50 miles from Livermore.

"A day in the ocean feels like a week on land," Bruno said.

The couple, who met in the control room of the National Ignition Facility, are avid scuba divers and underwater photographers. Bruno also is a scuba instructor. He estimates he's helped more than 100 people become certified divers through the Professional Association of Diving Instructors, or PADI.

"Bruno and I are adventurers and explorers by nature. We can't be astronauts, so we discover the sea instead," Korbie said.

From student to teacher

As a child, Bruno loved being in the water. He started casually scuba diving as a teen in his native France. College and work took him away from the ocean — he spent 13 years at the Nevada Terrawatt Facility in Reno.

He returned to scuba in 2011 when he moved to California to work at LLNL. He and his then 11-year-old daughter got their PADI Open Water Diver certification together and then their Advanced Open Water Diver certification. He later trained his other daughter and Korbie's daughter.

Bruno continued with his scuba training, became a rescue diver and then a divemaster. "I was driven by safety, especially because I was diving with my children," he said. "The more you train, the better you are able to take care of yourself and others."

In 2018, he became a dive instructor at Dive N Trips in Pleasanton. He teaches a few classes each year, which take place over the course of a month with a combination of classroom and open water sessions. He also guides beginners on ocean dives, most frequently in Monterey Bay. As an instructor, Bruno helps others discover their own passion for scuba diving.

"I love starting with someone who has never breathed underwater. Maybe they've snorkeled and want to go deeper. It's amazing to watch them progress, even after just the pool sessions. I love watching their eyes light up as they become more aware of the environment and more comfortable," he said.

A control room romance

Between teaching and personal diving trips, Bruno probably spends a month out of each year in the ocean. When he's not under the sea, he's the group leader for Pulsed Power Systems in NIF&PS and the subject matter expert for the power conditioning system at the National Ignition Facility.

That's how he met Korbie, who was a NIF shot director at the time. She's now the chief engineer for High Energy Density Science in the Weapons Physics and Design Program, which means she is responsible for ensuring successful execution of the HEDS experiments at the NIF.

"I think we might be the first control room romance," she said. "Every time I directed a shot, I'd be interacting with Bruno and his team as we prepared. One day I invited him to a trivia night outside of work."

Dating Bruno meant becoming a scuba diver. She'd done snuba, in which you breathe through a regulator connected to an air supply at the water's surface and was eager to go deeper.

"The world underwater is amazing. Every time we dive, we discover something new," she said. "Cold water and warm water are different environments, just like on land. The animals and foliage change. And they change with the seasons."

Korbie's favorite place to dive is in the Caribbean and her favorite sea creature is a shark. "They are amazing, like the grizzly bears of the sea," she said. "They come in so

many varieties with different personalities. Nurse sharks are like dogs while white tip and black tip sharks are more like black and brown bears.”

Bruno has a hard time naming a favorite place to dive, but he’s partial to the Point Lobos State Natural Reserve in Monterey, especially in the winter months. “Every place is different and wonderful,” he said. “I love wreck diving because it’s not about the wreck, it’s about the creatures that inhabit it.”

One of their most unusual diving experiences was during a magnitude 4.7 earthquake in Honduras. “Something felt weird and out of place in the water,” Bruno said. “That was a first for us.”

The couple also are avid underwater photographers. Korbie leaned from her father, who was a photography instructor at Bradley University. They sign their photos “Brubie” – a combination of their names that began as a nickname from friends when they were dating.

In 2023 and beyond, they are looking forward to repeat dives, like Catalina Island, which they have dived eight times already, and new adventures like the Philippines and Australia. On land, it’s about continuing to advance fusion ignition at the NIF.

> “A day in the ocean feels like a week on land.”
>
> – Bruno Le Galloudec

“I’m so proud to be a part of this,” Korbie said. “The fact that we can now reach even more extreme regimes for even more significant stockpile stewardship work and provide a proof of principle for the possibility of clean energy, it’s just amazing.”

“I’ve been working in this business for 31 years,” Bruno said. “Edouard Fabre, the director of the Laboratory for the Use of Intense Lasers who first hired me out of engineering school, said he hoped I would see this day before I retire. So, it’s magical and very rewarding. And now there are so many exciting challenges and new things to learn.”

The Le Galloudecs met in the control room of the National Ignition Facility, where Korbie was a shot director and Bruno was responsible for the power conditioning system. The couple share a love of scuba and underwater photography, even signing their photos as “Brubie.”

Photos by Blaise Douros.

BUILT FOR SPEED

BY MICHAEL PADILLA

Dawn Mileham with Girls Got Rhythm, Peewee for short, and Wysper. Photo by Blaise Douros.

Dawn Mileham honors son by competing in gymkhana, an equestrian event consisting of speed pattern racing and timed games

Dawn Mileham has always had a knack for speed and an affinity for horses.

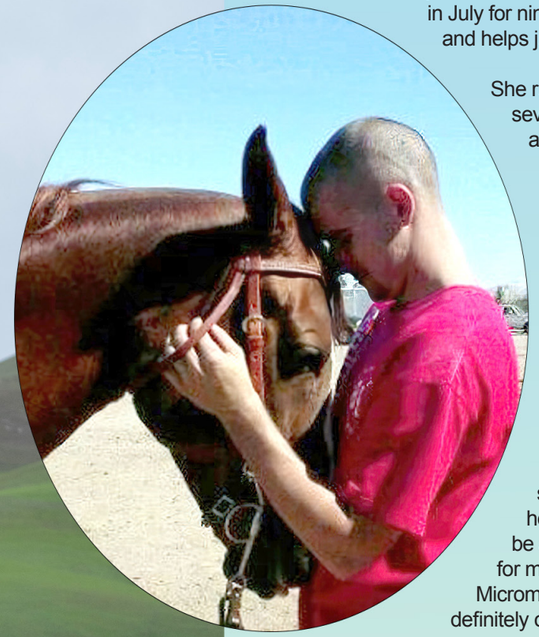
Put those together and you have gymkhana, where riders put their trust in their horses to run through a series of quick turns and maneuvers. A perfect combination for Mileham, an administrative assistant in the Lab's Radioactive Hazardous and Waste Management program within the Weapons Complex and Integration Directorate.

"Gymkhana is great for building the bond and partnership between horse and rider," Mileham said, adding that horses need to understand and respond to certain cues and commands during competitions. "Gymkhana requires 13 speed and skill events to be run as cleanly and quickly as possible, so you definitely need to have a strong connection with your horse."

Mileham began working with horses at a very young age in 1979 and credits her friend for getting hooked on gymkhana in 2009. Her friend invited her to take part in a clinic where a trainer was giving lessons in gymkhana. She began taking part in the sport on her horse named Wysper who retired in 2021 due to injury. Currently, she is only competing on a horse named Girls Got Rhythm, Peewee for short, while Wysper enjoys her well-earned retirement and Mileham rides in memory of her son, Jonathon.

Mileham quickly rose in the ranks both locally and throughout the state. On the local level, she serves on the board for District 6 California Gymkhana Association (CGA) out of Livermore. Since the team has not been able

Inset photos, from top: Mileham and Wysper take part in Firecracker Frenzy. Mileham and Peewee take part in a barrel race. Photos courtesy of Dawn Mileham.



Inset: Mileham's son Jonathon referred to Wysper as his little sister. Wysper now enjoys retirement while Mileham continues to ride in honor and memory of her son. Photos courtesy of Dawn Mileham.

Mileham enjoys a ride with Wysper, with PeeWee in tow. Photo by Blaise Douros.

to have any events since 2020 she travels to other districts around the state including Lincoln, Vacaville, San Juan Bautista and Chowchilla. She also serves on the state board of directors for the club and travels to Visalia three times a year for board of director meetings and state finals in Hollister in July for nine days. Mileham also is a carded judge for CGA and helps judge shows.

She runs in the second fastest division and has won several prizes including a saddle, bridles, buckles and gift cards.

"One of my most memorable rides I've had was during a show called Aloha Days in 2018 with Wysper," she said, adding that she won a saddle at that event.

In addition to the connection with the horse, Mileham said her favorite aspect of the sport is the support and camaraderie of all her friends that support her. She also said she enjoys the rush she gets prior to the start a competition.

"It is somewhat scary as you walk in the gate," she said explaining about the competition. "My horse is very ready to get to work, so she can be a bit of a handful. The most important thing is for me to stay out of her way and let her do her job. Micromanaging doesn't work with gymkhana. I am definitely out of breath as I come out of the arena."

A strong bond with her son

She introduced her passion to her son Jonathon at a young age and he grew up sharing that close bond with his mom.

"My son was raised with my horses," she said. "He referred to Wysper as his little sister — he was an only child. As an adult, when he was struggling, he would go out to the ranch and just spend time with them."

Jonathon had attention-deficit/hyperactivity disorder (ADHD) and as an adolescent was diagnosed with bi-polar disorder. Mileham said he struggled so much and tried so hard, but his disease led him to suicide at the age of 22 on July 4, 2013.

"He always came to my local gymkhanas to cheer me on. I think he only missed one," she said.

Remembering Jonathon

Since Jonathon's suicide and before the pandemic, Mileham participated in the Oakland and San Francisco "Out of the Darkness Walks" sponsored by the American Foundation for Suicide Prevention.

"I still participate but virtually on the back of my horse," she said. "I have my hair colored purple and teal, which is the Suicide Awareness colors. I have been able to have conversations with people standing in line at stores asking about my hair. Breaking the stigma of mental illness and suicide is a passion of mine. You never know how hard it is until it affects your life so profoundly."

> "My horses have gotten me through the hardest days in my life and have always been there for me."
>
> – Dawn Mileham

Mileham said the key point she offers to those impacted by suicide is to try hard not to blame yourself.

"It is very hard and I still struggle with it after nine years," she said, adding that those affected by suicide should try to do things that they would love to do if they were still here.

"Honor their memory and remember that they didn't want to die, they just wanted the pain to stop," she said. "They never meant to hurt you and if they knew just how much you love and miss them, they would have stayed."

Her advice to those dealing with mental illness is to not suffer in silence.

"It may feel like you are alone and your mind is probably telling you that no one cares, but they do and you are so loved and you are so worth helping," she said. "Reach out to anyone, don't self-isolate and don't give up. It may seem like it will never get better, but it certainly can and will."

Milehan suggests journaling one good and beautiful thing each day, "so that when you are really suffering, you can read about the things that make life worth living," she said.

"My horses have gotten me through the hardest days in my life and have always been there for me," she said. "The sport of gymkhana is made up of very supportive people who become lifelong friends. My friends in my division are cheering me on as much as I am cheering them on. We help each other ride better and hold each other up when we need it."

SpotLight

THE PEOPLE WHO DRIVE OUR SCIENCE & TECHNOLOGY

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