SPRING 2021

On Call

A MAGAZINE FOR FRIENDS OF THE UNIVERSITY OF WISCONSIN SCHOOL OF VETERINARY MEDICINE

Gemma's Journey

Dog found with severe injuries receives facial reconstruction

Precision Delivery

New radiation therapy system brings next-level care

School of Veterinary Medicine
UNIVERSITY OF WISCONSIN-MADISON

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to all of our instructors, hospital staff and clinicians, researchers, and administrators for your creative solutions, dedication and teamwork in the face of a challenging year.

Together, you have persevered to meet the moment while strengthening the education of our students, the clinical care provided to our patients, and our research to benefit both animals and people. **We could not have done it without each and every one of you.**

Photo by Howie R. on Unsplash

On Call

SPRING 2021

Features

Gemma's Journey

Found in a stairwell in Qatar with horrific facial injuries, today Gemma is healthy and adored by her adoptive Wisconsin family. A collaborative international effort helped provide Gemma the care she needed, and novel reconstructive surgery at UW Veterinary Care repaired her wounds.

Page 10

Superior System

A cutting-edge radiation therapy delivery system at the UW School of Veterinary Medicine brings several advantages for pets and their care providers, from real-time tumor tracking to more precise and effective treatments for Radiation Oncology patients and new treatment opportunities for multiple cancer types.

Page 14

In Each Issue

More

On the Cover

Gemma, a four-year-old mixed breed dog, relaxes at home. Her muzzle sports a distinct shape and hair pattern following reconstructive surgery at UW Veterinary Care to repair severe facial injuries. (Photo: Courtesy Bryan Hasse)

School of Veterinary Medicine
UNIVERSITY OF WISCONSIN–MADISON

Message from the Dean

What A Year


BRYCE RICHTER

Mark D. Markel

Almost exactly one year ago, on March 13, the School of Veterinary Medicine was forced to temporarily close due to its first COVID-19 positive employee. Since then, the pandemic has presented challenging and difficult times for all of us. For the remainder of the spring 2020 semester, the university and school went to complete virtual instruction, including the clinical teaching we provide in our hospital. Fortunately, by early July, we were able to bring our fourth-year students back into the clinic for in-person instruction with safety precautions in place.

In fall 2020, we continued our didactic instruction virtually but provided critical laboratory instruction in-person throughout the semester. We also were able to deliver in-person instruction for fourth-year students in the hospital throughout the fall.

We've used this same model for the current spring semester, now requiring weekly COVID-19 testing of all employees and students in order to enter our buildings. This expanded testing is in accordance with new measures the university implemented this spring to enhance the safety of the campus community.

It appears that vaccinations are soon to be available for many of us, and it is our goal and aspiration to return to greater normalcy this coming fall. (I know that is no doubt among your hopes as well.) There will be much learned from this past year, and I suspect that how we teach our students will be permanently altered, likely with hybrid experiences that incorporate the technologies our instructors adopted to deliver material virtually and more dynamically. I know our students, faculty, and staff highly value in-person experiences, not only to create relationships and gain crucial skills, but also to enhance the culture and climate of the school.

It does appear as if we are emerging from a dark tunnel. I certainly am hopeful that this coming year will be bright and closer to "normal" — for our school and university community, and for you and your loved ones.

This issue of *On Call* highlights several examples of the school's and hospital's national leadership — in advancing COVID-19 and other infectious disease research; through a unique case that required novel, collaborative reconstructive surgery; and our continued strength in radiation therapy through the replacement of our TomoTherapy unit with a new cutting-edge machine. You'll also have an opportunity to hear from Marie Bucko, president of the Student American Veterinary Medical Association this past year, who did a tremendous job leading the organization. We also spotlight the school's chapter of Veterinarians as One Inclusive Community for Empowerment, which again received the Chapter of the Year Award, a well-deserved recognition of its leadership nationally.

Enjoy reading this issue of *On Call*, be safe, and I hope to see you in person in the coming year should circumstances allow.

Mark D. Markel, Dean

On Call SPRING 2021

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Ask a UW Veterinarian

Antibody Test and Immunization Explainer

*This expert response comes from **Laurie Larson**, veterinarian and director of the Companion Animal Vaccine and Immuno-Diagnostic Service Lab at the UW School of Veterinary Medicine.*

Question: My breeder insists on titering. Our state, however, requires rabies shots on a yearly or three-year basis. Are you able to shed some insight into this area as to what is best for our dog?

— Ann, Roscoe, Illinois

Answer: Titers are a subject of much interest to veterinarians and pet owners. Let's look at some common questions.

What is an antibody titer? Antibody titer (pronounced "tight-er") represents how many times a serum sample can be diluted and still show the antibody effect of neutralizing specific viruses. In-laboratory tests are functional, demonstrating that an animal's serum can stop living distemper or parvovirus from interacting with susceptible cells. They are also quantitative, reported as a number.

Is titer testing appropriate for all vaccine agents? The short answer is no. Only vaccines that can induce sterile immunity with known thresholds of protection lend themselves to antibody testing. These include canine distemper, parvovirus, infectious hepatitis virus, and feline panleukopenia virus. All puppies and kittens should receive these vaccines.

Why titer test? Why not simply revaccinate an adult pet? Titer testing is an evidence-based tool to achieve appropriate use of core vaccines by identifying animals that would benefit from vaccination. When the antibody is already above protective thresholds, further vaccination will not make the animal more immune. While the risk of adverse reactions to immunization is small, this risk is not worth taking when there is no benefit to offset it.

What about titers for rabies? Titer testing for rabies antibody is available outside the SVM; however, the result cannot be used to determine revaccination. Rabies vaccination is legally required for all dogs in the continental United States, unless a waiver is written for health reasons.

For more information on vaccinal antibody titer testing for dogs and cats, visit **vetmed.wisc.edu/lab/CAVIDS**.

Questions

Have a question for our veterinary medical experts?
Send it to **oncall@vetmed.wisc.edu**. We cannot guarantee responses to all submissions. For any urgent pet health issue, please contact your veterinarian directly.

Socializing with the SVM

Friends of the school sharing their thoughts (and pets) on social media...

Czar's Promise was able to fulfill our mission and commitment to continue to provide funding for companion animal and pediatric cancer research to help FIND A CURE! Czar's Promise presented a check to American Family Children's Hospital for $2,500 ... AND, a second check was presented to University of Wisconsin School of Veterinary Medicine for $2,500 to establish tumor-intrinsic and -extrinsic mechanisms for CHOP chemotherapy treatment resistance.

–Czar's Promise
Via SVM Facebook (@uwvetmed)

So happy to have my first stethoscope! Receiving my stethoscope reminded me once again of how far we have all come from the start of the semester.

–@maddiez.dvmstudent
Via SVM Instagram (@uwvetmed)

My little buddy is back at the hospital. ... The vets, students and staff at the #uwvetmed are just the best!! He's in great hands and will hopefully be back home tonight.

–@deedldee
Via SVM Instagram (@uwvetmed)

Viral Sequencing Catches Mutations, Guides Public Health Response

Thousands of daily cases. Hundreds of thousands of deaths. Hundreds of millions of vaccine doses. As the tallies of COVID-19's effects in the United States have mounted to a dizzying scale, a team of University of Wisconsin–Madison scientists, including at the School of Veterinary Medicine, has kept its focus on the tiniest shifts in the virus's genetic material.

Beginning with the first known case of the virus in Wisconsin in February 2020, researchers at UW–Madison's AIDS Vaccine Research Laboratory have been sequencing the genomes of as many virus samples as they can process, reading each letter of the viruses' genetic codes. The researchers have been adding to a family tree of infections globally to help fight the disease on intercontinental, interpersonal, and intercellular scales.

A bill introduced in February by Wisconsin Sen. Tammy Baldwin would fund an expansion of virus genome sequencing across the United States. Sequencing tries to keep tabs on the virus that causes COVID-19 as it shifts and evolves, sometimes into more contagious variants. As the virus' genetic material is replicated in people it has infected, random mistakes are carried forward. The more people the virus infects, the more likely mistakes are to happen.

"The current estimate is that it makes one of those mistakes — a mutation — for about every two new people infected," says **Thomas Friedrich**, professor in the School of Veterinary Medicine. "Over time, as different viruses take different paths to infect more people, they accumulate different combinations of mutations. We can use those like fingerprints to track how different lineages of the virus spread through space and time."

Drawing samples from patients in the UW–Madison-partnered UW Health system and from positive tests in nearby Milwaukee County, labs run by Friedrich and UW School of Medicine and Public Health Professor David O'Connor have sequenced virus from more than 3,200 infections. Their most pressing concern is surveillance, keeping watch for the arrival of virus variants believed to be more adept at infecting people or possibly carrying mutations that make vaccines and common treatments less effective. Together at the AIDS Vaccine Research Laboratory, they have posted surveillance results online as soon as sequences are complete.

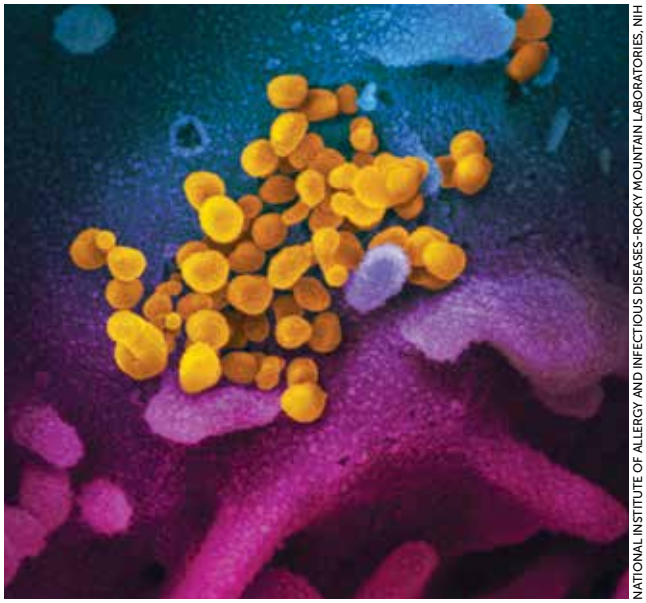
In Madison and Dane County, researchers have sequenced about 5 percent of the positive test cases throughout the epidemic. This sequencing coverage stands out thanks to the decades of experience Friedrich and O'Connor have built trying to stay ahead of global HIV, influenza, and Zika virus pandemics. Nationally, fewer than 0.5 percent of all viruses have been sequenced.

The UW–Madison researchers have funding for their work from the Centers for Disease Control and Prevention's SPHERES program (Sequencing for Public Health Emergency Response, Epidemiology, and Surveillance), from Fast Grants (a group of nonprofits and private donors), and from the Wisconsin Partnership Program, because they were ready to leap in when the pandemic arrived. While they focus on sequences from Dane County, and work hand-in-hand with collaborators in Milwaukee to study the viruses circulating there, colleagues at Gundersen Health System in Western

JEFF MILLER /UNIVERSITY COMMUNICATIONS

Thomas Friedrich, professor of pathobiological sciences in the School of Veterinary Medicine.

"Over time, as different viruses take different paths to infect more people, they accumulate different combinations of mutations. We can use those like fingerprints to track how different lineages of the virus spread through space and time."



NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES-ROCKY MOUNTAIN LABORATORIES, NIH

This scanning electron microscope image shows SARS-CoV-2 (yellow), the virus that causes COVID-19, isolated from a patient in the U.S., emerging from the surface of cells (blue/pink) cultured in the lab.

Wisconsin and the Wisconsin State Laboratory of Hygiene are sequencing viruses from elsewhere in the state.

"There are places in the country for which there's almost no sequence data available, because there isn't somebody there who either has the experience to do it or the ability to navigate the very complicated regulatory issues that are necessary to set up a program in the first place," Friedrich says. "In the UK, where they found one of these variants of concern, they were sequencing 10 percent of cases. They have lots of the leading scientists and a national health system, and there's already an infrastructure onto which you could build a coordinated national effort. Here, the effort was much more patchy and piecemeal."

The new Senate bill provides funding for the CDC to organize the sequencing of virus from 15 percent of COVID-19 infections across the U.S. Without more of this kind of surveillance, much of the country will remain blind to changes in the types of virus circulating in their communities. Even if public health agencies manage to tamp down COVID-19 spread locally, they can't stay disconnected from virus mutations rising in neighboring towns or far-flung countries.

"Those raging epidemics elsewhere are going to potentially generate the viruses that could make vaccines less protective, make disease worse, and then be imported into the U.S.," O'Connor says. "That could unwind whatever hard-fought gains we're able to accomplish."

Sequencing can also describe patterns of infection in communities trying to make important decisions about where to steer public health orders and to whom the earliest vials of vaccine are delivered.

In November, O'Connor, Friedrich, and collaborators published research that used their tree of virus sequences to show that Madison and Milwaukee, while just 75 miles apart, were originally affected by very different variants of the virus. The results demonstrated the effectiveness of stay-at-home orders and limits on public gatherings, and suggested that demographic and socioeconomic differences like income, health care access, and prevalence of diabetes and obesity likely played major roles in the much higher rates of infection and death observed in Milwaukee.

They're also applying the sequencing data to show where the highest risks lie for health care providers — not necessarily in their interactions with infected patients.

Once established, a coordinated sequencing system in the U.S. could help end this pandemic and the next.

"You will see a benefit for HIV, for influenza, for whatever comes along," O'Connor says. "You know you want to be able to track how each of those viruses is circulating, which viruses are circulating, because it will save lives. They are changing constantly, and we will need to keep pace any way we can."

Chris Barncard

COURTESY GAGE MORENO

UW–Madison graduate student Katarina Braun processes samples from COVID-19 patients while sequencing the genome of more than 200 variations on the SARS-CoV-2 virus which infected people in Dane and Milwaukee counties in early 2020.

Other Recent COVID-19 News

- A study led by UW–Madison researchers — including School of Veterinary Medicine Professor **Yoshihiro Kawaoka** and research professor **Peter Halfmann** – found that a strain of the coronavirus that causes COVID-19 mutated in Europe in February 2020 and became the dominant form of the virus across the globe. The mutated SARS-CoV-2 virus is more easily transmitted and grows better within hosts, likely aiding its dominance, the team reported in the journal *Science*. Learn more: **go.wisc.edu/SARSCoV2mutation**

- Professors **Kristen Bernard** and **Thomas Friedrich** were among the panelists for a virtual event, The Coronavirus Pandemic at One Year, hosted by the UW School of Medicine and Public Health in January. Experts in infection control, clinical testing, vaccine development, and more shared perspectives from a year into the pandemic, ranging from success stories to lessons learned. View a recording: **go.wisc.edu/oneyear**

Wisconsin VOICE Chapter Named National Chapter of the Year

The UW School of Veterinary Medicine chapter of Veterinarians as One Inclusive Community for Empowerment (VOICE) has won the VOICE National Chapter of the Year Award for 2020-21. This is the second time in three years the Wisconsin chapter has received the recognition (previously in 2019).

The award honors a VOICE chapter that has organized or sponsored many successful events during the academic year, exceeded programming requirements, and continuously supported the development of a positive and welcoming environment, as well as an understanding of diversity and inclusivity within their local and academic communities.

"It's gratifying to know our efforts are recognized. We, as an executive board, have put a lot of time and thoughtfulness into our programming," says chapter president **Erika Kwong DVMx'22**.

"We appreciate that our club activities impact and support our community," she adds. "We hope to continue to provide a space where everyone can show up authentically and learn from one another."

VOICE is a national student-run organization that seeks to increase awareness, respect, and sensitivity to differences among all individuals and communities in veterinary medicine. The organization aims to celebrate diversity within the profession, encourage campus environments that embrace diversity, promote the success of all students, and emphasize the importance of cross-cultural awareness in veterinary medicine to meet a diversifying clientele's needs. VOICE chapters also provide leadership and mentorship to youth, particularly those from underrepresented backgrounds, interested in careers as veterinarians to ensure a more diverse future for veterinary medicine.

Throughout the 2020-21 academic year, the UW VOICE chapter hosted Let's Talk, a series of open discussions that varied in format and topics, ranging from racism, LGBTQIA+ experiences, mental health, invisible disabilities, and more. The chapter's subcommittee, Broad Spectrum, also hosted a virtual social event and a panel discussion on being an LGBTQIA+ ally.

"This school year and virtual format posed new challenges, but our team has worked hard to continue hosting educational and inclusive events," says Kwong. "We have a supportive and collaborative executive board, and that teamwork translates into the quality of our events."

Kibble

Bits of news from around the school

Momentum Continues: In December, the School of Veterinary Medicine's critical building expansion project received authority to construct from both the UW Board of Regents and State Building Commission — advancing through its last administrative step to move forward with construction in 2021. Construction is expected to begin this summer.

Fighting Cancer: School of Veterinary Medicine Professor **David Vail** is part of research efforts at UW–Madison breaking new ground to make cancer cells more susceptible to attack by the body's own immune system. The research is laying the foundation for future human and veterinary clinical trials. **Related:** In January, Vail and Professor **Lisa Forrest** presented the virtual event Inside the SVM: Helping Pets Fight Cancer to share the school's latest innovations in cancer clinical studies, treatments, and technology. View a recording: **go.wisc.edu/insideSVMcancer**

New Hope Against HIV: A gene that cured a man of HIV a decade ago has been successfully added to developing monkey embryos in an effort to study more potential treatments for the disease — work published in the journal *Scientific Reports*. **Ted Golos**, a reproductive scientist and professor of comparative biosciences in the SVM, and collaborators employed CRISPR to edit the DNA for the animal model. Read more: **go.wisc.edu/embryosHIV**

Honored: Mary Thurber DVM'14, a clinical instructor of zoological medicine at the UW School of Veterinary Medicine, received the 2020 Society of Phi Zeta Research Manuscript Award in Clinical Science for her study of acute phase proteins in koalas at the San Diego Zoo during her residency in zoological medicine. Phi Zeta is the international honor society of veterinary medicine.

Sheth Awarded Diversity Leadership Scholarship

Melissa Sheth, a veterinary medical student in the Class of 2021 at the UW School of Veterinary Medicine, is the 2021 recipient of the Patricia M. Lowrie Diversity Leadership Scholarship from the Association of American Veterinary Medical Colleges (AAVMC).

The Lowrie Diversity Leadership Scholarship recognizes veterinary students who have demonstrated exemplary promise as future leaders and made significant contributions to enhancing diversity and inclusion in academic veterinary medicine.

This $6,000 scholarship honors individuals who have been consistent champions of addressing inequities and underrepresentation in the veterinary profession, advocated for social justice, and advanced valuing diversity and inclusion at AAVMC member institutions.

Sheth has demonstrated leadership by serving as the clinic administrator for Wisconsin Companion Animal Resources, Education, and Social Services (WisCARES). This community veterinary clinic, an outreach partnership of the UW–Madison schools of veterinary medicine, pharmacy, and social work, provides services for low-income and homeless families.

She also served as past chapter president of Veterinarians for One Inclusive Community for Empowerment (VOICE) and as an instructor for a program that aims to help students, particularly students of color and those from lower-income families, successfully transition from middle and high school into and through college.

Overheard

Recent commentary by and about those at the SVM

"All COVID-19 vaccines are expected to protect against severe disease and not prevent infection. Vaccinated people can be infected by SARS-CoV-2. This is the reason why even vaccinated people are urged to wear a mask."

–**Marulasiddappa Suresh**, professor of immunology, in a *Cap Times* article about appropriate public health behaviors following vaccination against COVID-19.

"This is just one more industry that can't really afford it. I feel terrible for everyone involved, whether it's the feed mill, the veterinarian, the family. Everyone's tired of it."

–**Keith Poulsen DVM'04, PhD'12**, director of the Wisconsin Veterinary Diagnostic Lab and clinical professor in the SVM, in *The Atlantic* discussing the impact of COVID-19 on mink farms. In Wisconsin, the largest U.S. producer of mink pelts, two mink farms have experienced confirmed infections.

"Essentially, the huge number of cumulative infections worldwide provides a large number of opportunities for viruses to acquire beneficial mutations and then spread preferentially. This is kind of like playing an evolutionary slot machine. One individual slot may be unlikely to hit the jackpot — but if you are able to play millions of slots in parallel, hitting the jackpot on a few becomes much more likely. ... We are at sort of a crossroads in the pandemic. The virus is already pretty good at transmitting itself, so there's a balancing act to its evolution."

–Professor **Thomas Friedrich**, who studies the evolution of viruses, in a BuzzFeed article about the emergence of new coronavirus variants and COVID-19 vaccines' effectiveness against these mutations.

"From a veterinarian's standpoint, we find these 'breed identification' tests are fun for many owners. But having not been evaluated by the scientific community, they shouldn't be used to alter medical decisions."

–Doctoral student **Lauren Baker MS'14, DVM'16** and Assistant Professor **Susannah Sample MS'07, DVM'09, PhD'11** in a PopSci article about dog DNA tests.

"Fortunately, gorillas at zoos have excellent medical care, and most will likely pull through due to the efforts of dedicated veterinarians. That's not the case for gorillas in the wild, though. ... The most important thing we can do for wild primate populations is to keep the virus out."

–Disease ecologist **Tony Goldberg** speaking with *Science* after gorillas at the San Diego Zoo Safari Park developed symptoms and tested positive for the coronavirus that causes COVID-19.

COURTESY BRYAN HASSE

Graham Thatcher, clinical assistant professor of dentistry and oral surgery, holds Gemma at a follow-up visit two weeks after her facial reconstruction.

A New Face, and New Hope, for Gemma

Dog found with severe facial injuries receives reconstructive surgery

Written by Meghan Lepisto

GEMMA'S journey begins in Doha, Qatar, found in the stairwell of an industrial area with ghastly injuries to her face.

It ends in Beloit, Wisconsin, where together with the Hasse family, she has found her happy home.

In between, her story has many chapters: transport from the Middle East to American Midwest, multiple medical procedures, reconstructive surgery, and generosity from around the world. Thought to be a former stray, today the sweet but shy pup enjoys a life of comfy couches, frequent snuggles, and adoration from her human and canine family. She's come a long way.

"She's an absolute sweetheart," says **Bryan Hasse**, who with his wife Brandi, their three daughters, and two dogs welcomed Gemma first as a foster and then through adoption. "We can't imagine our family without her."

Exactly what caused Gemma's severe injuries is unknown, but clinicians at UW Veterinary Care suspect she sustained chemical burns from contact with corrosive materials. The injuries extended across Gemma's snout, jaw, and down both sides of her face. Large scabs encompassed her muzzle, and her teeth, nasal bones, and upper jaw were visible through the wounds.

A Promise of Love Animal Rescue, based in Wisconsin, was determined to help. After learning of Gemma's situation from PAWS Rescue Qatar and other partners, **Paula Copper**, the group's president and co-founder, helped coordinate Gemma's travel to America, arrange for a foster family, investigate treatment options, and fundraise to help cover costs. In total, donors from across the globe gave more than $8,000 through GoFundMe to support Gemma's specialized care.

Gemma made her first visit to UW Veterinary Care in March 2019 for an initial exam with the Dentistry and Oral Surgery Service. Immediately, doctors realized her recovery would require a creative, multi-pronged approach.

"I hadn't seen anything exactly like this," says **Graham Thatcher**, a clinical assistant professor of dentistry and oral surgery who played a lead role in Gemma's treatment along with section head **Jason Soukup** and resident **Alexander Geddes**.

At a follow-up visit, the team conducted X-rays and a computed tomography (CT) scan of Gemma's head for a more detailed look at her injuries. She was diagnosed with rhinitis (inflammation of tissue in the nose); chronic infection and inflammation in her jaw, cheek, and nasal bones; and extensive loss of skin tissue, including her upper left lip. Gemma's burns had also caused severe gum disease and bone death along her left jaw, which required the removal of four teeth. In addition, her top two canine teeth showed signs of infection and inflammation, so root canal treatments were performed.

As doctors next shifted to preparing for Gemma's facial reconstruction, they uploaded her CT data into computer image processing and design software to create a three-dimensional model of

COURTESY GRAHAM THATCHER AND BRYAN HASSE

Clinicians uploaded data from a CT scan of Gemma's skull (center) into image processing and design software, and printed a 3D model (top left), to plan and rehearse reconstructive surgery to repair her injuries (bottom left). At right, Gemma recovers hours (top) and two weeks (bottom) after surgery.

her skull. This allowed Thatcher and colleagues to view the fine details of Gemma's head in 3D and conduct virtual surgical planning. Through virtual simulations they rehearsed removing the dead and damaged segments of bone. Then, they planned and practiced how to repair the remaining bone, down to intricate details like where to place surgical screws.

"In a sense, it's like a dress rehearsal for surgery," explains Thatcher. "It's exactly what we worked on physically during the actual surgery."

As a final step, they printed in 3D at the School of Veterinary Medicine an exact model of Gemma's skull with changes incorporated from the virtual surgery. Using this model, they then cut and shaped a portion of contourable titanium mesh to help recreate Gemma's snout. During reconstructive surgery, the titanium mesh would provide a strong base over the missing bone, and serve as a support bed for surrounding soft tissues.

Orthopedic surgeon **Jason Bleedorn**, who leads innovative efforts in the School of Veterinary Medicine to virtually design and plan surgical models and launched a 3D-printing lab at the school, provided a crucial assist in this area and was an important part of Gemma's surgical team.

Eventually, it was showtime. One month after Gemma's initial CT scan and dental extractions, she returned for facial reconstruction. To begin the operation, surgeons removed the decaying bone fragments, then placed a fascia transplant (a thin layer of connective tissue) inside Gemma's nose.

Thatcher says this fascia transplant was critical and, though common in human reconstructive surgery, is a relatively novel application in veterinary medicine. The tissue recreated Gemma's nasal lining and repaired a hole caused by burns. "Probably the most important thing was to cover the hole from the outside of Gemma's nose to the inside of the nose," Thatcher notes. "Without lining the nasal component, we might not have had the same success."

For the next step in surgery, the piece of titanium mesh — pre-contoured to Gemma's 3D skull model to create a perfect fit — was screwed into place atop Gemma's snout. Following this, surgeons cut a flap of skin from Gemma's cheek and neck, then carefully rotated and sutured it over her muzzle to recreate the necessary skin covering. This skin flap extends from Gemma's left lip over her snout down the right side of her mouth. In total, the surgery took six hours.

While the team had implemented similar individual components of the operation with previous patients, Thatcher says Gemma's procedure was novel in its combination of techniques. The ability to conduct 3D virtual planning was of immense benefit, and he believes UW Veterinary Care is one of only a few veterinary medical teams internationally to use 3D modeling and virtual planning for oral and maxillofacial surgery.

"It takes out of the equation a lot of the questions that come up in the middle of a surgery and takes into account the anticipated challenges that you might foresee," he says. "We didn't have any surprises. I felt like I had done the surgery before, even though for me, it was, from start to finish, the first time I'd done a surgery quite like this. We were really well prepared."

In the days and months following, Gemma healed tremendously. Follow-up CT scans have shown that new, healthy bone tissue has formed in her jaw, cheek, and skull, just as the doctors hoped.

Without the surgery, Thatcher says Gemma would have experienced chronic infections, as well as additional inflammation and deterioration inside her nose. "Rather than heal and close over as they did with surgery, the tissues would have likely continued to get worse," he says.

Because the skin flap that was grafted across Gemma's muzzle originated from her neck, the fur is longer than the surrounding muzzle hair and grows in a different direction. This gives the pup her signature look, like a snout combover. Occasionally, when the hair grows too long, her family gives it a trim.

"But that's what makes her who she is," says Hasse. "She's very, very quirky."

While it's gratifying to have completed the innovative surgery, Thatcher says the ultimate reward is seeing Gemma, now approximately four years old, enjoy an exceptional quality of life.

"I'm so thankful she found a family that took good care of her and made her feel comfortable and confident," he says. "It's heartwarming to see how happy she is, snuggling with her dog siblings and human companions. She's so full of life and it really solidifies my desire to help these animals."

For the Hasse family, caring for Gemma has been a labor of love. "If you ask my wife and kids, they'll say from the day she got home that they knew she was going to be part of our family forever," says Bryan. "She's had nothing but love since she's been here."

A lieutenant with the Town of Beloit Police Department, Hasse's work schedule requires that he's early to bed and early to rise. But in the evenings, he often settles in to watch a bit of TV with his wife and their dogs — a routine that has become "cuddle time" for Gemma. Once the couple sits down, "almost immediately she'll jump right up on Brandi, lay down on her chest, and she'll be completely sound asleep," he says.

The family's two other dogs have also helped Gemma feel content. She is especially smitten with Koda, the youngest of the pack. "Gemma and Koda are best buddies," he says. "They're always lying next to each other."

Looking back on Gemma's entire journey, it feels like "things just fell into place," he notes. "Her entire journey from the start to where we're at now … we didn't have any major setbacks or anything we had to be concerned with. It was a very positive experience for the doctors, for us, and for Gemma."

"It's definitely been a success story," he adds. "We're happy that she's healthy, safe, and happy here. And thankful for the people that found her and then took the steps to get her whatever they could and find the love that she needed."

COURTESY BRYAN HASSE

Now fully healed, Gemma is living the good life with the Hasse family and their two other dogs.

Timeline of Gemma's Care

- **Early 2019:** Gemma is found in an industrial area in Doha, Qatar, with severe facial injuries. PAWS Rescue Qatar takes her in, contacts UW veterinarian Graham Thatcher about her case on Instagram, then coordinates with Wisconsin-based A Promise of Love Animal Rescue to transport Gemma to America for specialized treatment. A GoFundMe page is launched to raise funds for her care.
- **March 15, 2019:** Gemma boards a 15-hour flight from Qatar to O'Hare International Airport. She then travels by car to her foster family's house in Beloit and begins to acclimate to her new home and life.
- **March 18:** Gemma makes her first visit to UW Veterinary Care's Dentistry and Oral Surgery Service for an evaluation.
- **March 27:** Gemma receives a comprehensive oral examination and computed tomography (CT) scan to provide clinicians the information they need to plan and prepare for her facial reconstruction.
- **April 10:** Four tooth extractions and two root canal treatments are performed on teeth damaged by the burns Gemma experienced to allow time for healing before reconstructive surgery.
- **May 8:** Doctors perform a six-hour facial reconstructive surgery, tightly rehearsed through virtual surgical planning.
- **October 21:** Gemma returns to UW Veterinary Care for spay surgery and a follow-up CT scan to evaluate the facial reconstruction. Successful bone remodeling can be seen in her nose, jaw, and cheek.

Precision Delivery

UW Veterinary Care cancer patients benefit from advanced radiation therapy system.

Written by Meghan Lepisto

Certified veterinary technician Abigail Jones holds Davis, a 14-year-old domestic short-haired cat who received radiation therapy treatment for nasal carcinoma with the new Radixact machine (below). UW Veterinary Care is currently the only veterinary medical hospital globally to offer this treatment.

ACCURAY INCORPORATED

Oncology patients undergoing radiation therapy at UW Veterinary Care will now receive treatments with an adaptive, motion-tracking radiotherapy system. The cutting-edge machine, installed in fall 2020, provides several advantages for companion animals and their care providers, from precision to speed to new treatment possibilities.

"With this technology, we can now treat tumors and spare healthy tissue with more confidence and more accuracy, in addition to targeting tumors in areas of the body that we couldn't previously," says Professor **Lisa Forrest**, head of UW Veterinary Care's Radiation Oncology Service.

Most significantly, the new Radixact system provides real-time motion tracking of tumors and synchronizes treatment delivery. As a tumor moves, treatment moves with it — the radiotherapy delivery beam is continuously synchronized to the tumor position. For example, during treatment of a lung tumor, as a patient's lungs expand and contract with each breath, the machine tracks the moving tumor and adapts the beam's location. This ensures accurate delivery of the treatment dose and better sparing of the surrounding normal tissue.

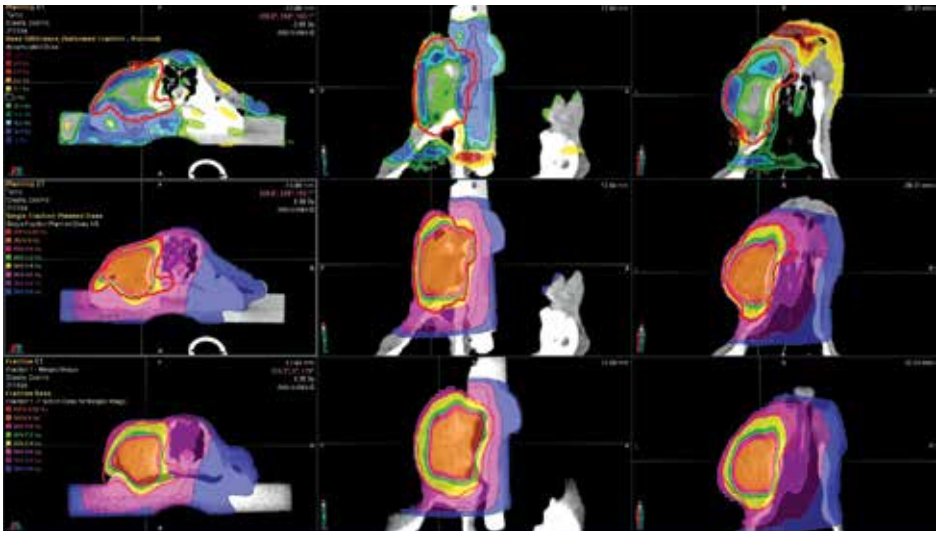
"In real time the machine will track the tumor's location, meaning we can now reduce the tumor target size — allowing accurate dose delivery to the tumor and reduced dose to normal tissues," Forrest explains.

The real-time tracking and adaptation opens up new treatment opportunities for cancers in the abdomen and thorax — such as lung, heart, liver, and kidney tumors — where the close proximity of vital organs and other sensitive tissues made radiation therapy previously difficult or impossible.

In addition, the technology provides quicker, more detailed computed tomography (CT) imaging during pre-treatment positioning to help align patients for treatment with more precision. It also offers refined tumor dose accuracy, delivery, monitoring, and adaptation.

"Treatments are, on average, shorter than before, and the quality of each radiation plan has increased," says **Nate Van Asselt**, a clinical assistant professor of radiation oncology. "We can ensure that the tumor gets all the radiation it needs while the sensitive organs close to the tumor get as little radiation as possible."

The machine automatically monitors how tumors change in size during treatment and any time the radiation beam reaches surrounding normal tissue. Then it immediately alerts the clinical team that changes to the treatment plan may be necessary. It also calculates any difference between each planned treatment dose and the amount delivered.



COURTESY UW VETERINARY CARE

Photo above: The Radixact software allows clinicians to evaluate how tumors have changed during treatment and review the dose they received. This oral melanoma tumor (outlined in red) grew slightly between the treatment planning period and the start of treatment, so there is a difference (displayed in the top row) between the planned dose calculated for treatment (middle row) and the delivered dose (bottom row). With awareness of this discrepancy, clinicians can then correct the dosage.

"Changes in the size of the tumor affect the treatment dose that is actually received, compared to what we planned for it to receive," notes **Michelle Turek**, a clinical associate professor with the Radiation Oncology team. "This software allows us to evaluate how tumors have changed during treatment and to review the dose they received. If there is a discrepancy between the planned dose and the delivered dose, then we have an opportunity to correct it."

UW Veterinary Care is currently the only veterinary medical hospital globally to offer this treatment. Gifts to the UW School of Veterinary Medicine's Pets Make a Difference Fund — inspired by the late golden retriever **Scout**, whose cancer journey and care provided at the UW School of Veterinary Medicine were spotlighted in WeatherTech's 2020 Super Bowl commercial — helped make possible this significant equipment upgrade.

Funds raised by the Super Bowl commercial and from other generous donors are being used to support research at the school to better diagnose, treat, and prevent cancer, and to purchase specialized equipment that will help clinicians and researchers identify new cancer-fighting drugs and treatments — discoveries that are shared with the world.

"This generous support will continue to benefit not only patients of our hospital but pets and people battling cancer all across the world as our clinical findings translate to innovations in treatments and technology," says UW Veterinary Care Director **Ruthanne Chun DVM'91.** "We are so thankful."

The Radixact machine builds on the TomoTherapy radiotherapy delivery system that UW Veterinary Care previously utilized. This radiation machine built into a CT scanner was developed at UW–Madison. Successful clinical trials in pet dogs with nasal tumors at UW Veterinary Care in the early 2000s, shepherded by Professor Forrest, led to TomoTherapy's widespread use in human medicine worldwide.

Oncologists at the UW School of Veterinary Medicine are world-renowned for advancing clinical treatments and technologies for dogs and cats with cancer. The school is also a leader in comparative oncology research, where companion dogs and cats (with owner consent) are included in clinical trials to investigate new cancer therapies with the goal of informing clinical treatments with better effectiveness and less toxicity in both animal and human patients.

International Team Discovers First Two Relatives of Rubella Virus

At night in a Ugandan forest, a team of American and African scientists take oral swabs from insect-eating cyclops leaf-nosed bats.

In a necropsy room near the Baltic Sea, researchers try to determine what killed a donkey, a Bennett's tree-kangaroo, and a capybara at a German zoo — all of them suffering from severe brain swelling.

Neither team was aware of the other, yet they were both about to converge on a discovery that would forever link them — and help solve a long-enduring mystery. They were each about to find two new relatives of the rubella virus, which had been, since it was first identified in 1962, the only known member of its virus family, *Matonaviridae*.

In Africa, this relative is ruhugu virus, named for the place where it was found, Ruteete Subcounty, and the word in the local Tooro language that describes the flapping of bat wings in the hollow of a tree: *obuhuguhugu*. The virus found in Germany, slightly different from rubella and ruhugu, is rustrela, named for the nearby Strela Sound.

The two teams have now collaborated to publish their findings in *Nature*. They describe the new viruses, their similarities to rubella virus, and their differences. Neither of the new viruses is known to infect people.

"Why has it been so challenging to track down the origins or relatives of rubella virus?" asks **Tony Goldberg**, a University of Wisconsin–Madison professor of epidemiology at the School of Veterinary Medicine, who led the American efforts. "Why did it take 206 years from the time George Maton first described rubella, and why did two teams working independently figure it out within three months of each other, get lucky enough to learn of one another's results, and then lucky enough to work together to publish?"

It isn't because people haven't tried, Goldberg says. It may be that advancing technology has made it easier — rubella virus genomes are notoriously difficult to work with, and the new viruses share these characteristics.

It may just be serendipity.

Goldberg's team — whose efforts in the new study were led by his former graduate student **Andrew Bennett PhD'20** — wasn't even looking for rubella-like viruses. (Bennett, who earned his doctorate in Comparative Biomedical Sciences, is now employed as a scientist for the Naval Medical Research Center.) They were, pre-COVID-19 pandemic, working with their Ugandan colleagues to look for coronaviruses carried by bats. Ruhugu virus popped up as a strange string of letters in the giant analyses of genetic code the team was performing on samples collected from the bats.

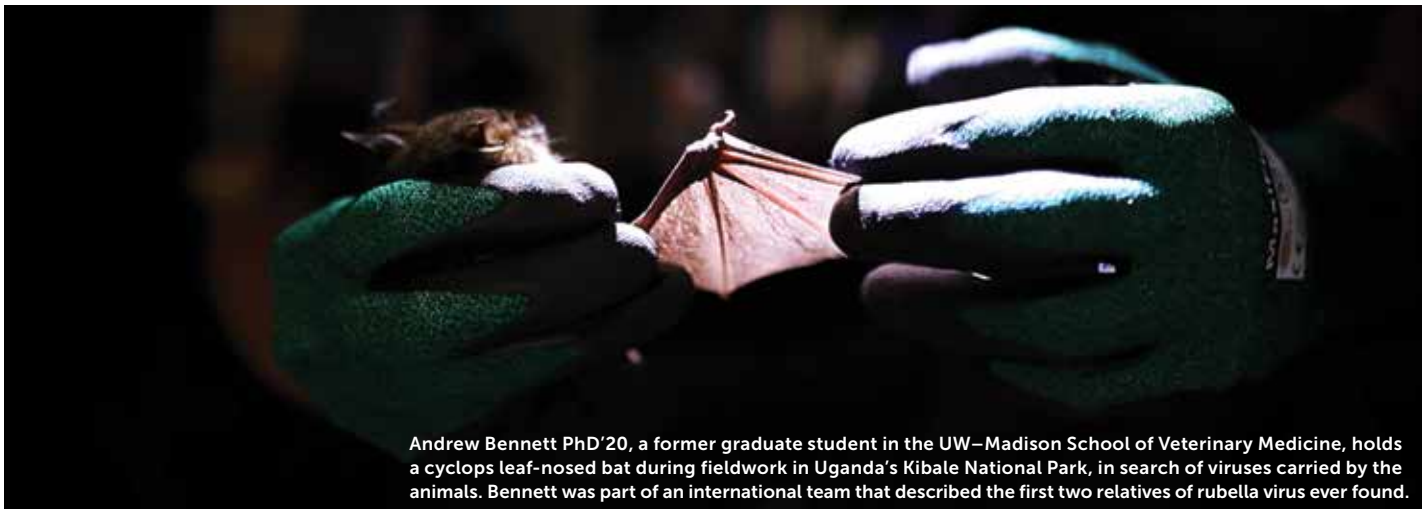
When they looked closer, they saw that it was quite similar to rubella virus, just one short word, or amino acid, different in a key region of the genome that lets viruses bind to host cells. (Rustrela virus has a few more amino acid differences.) The researchers are currently working to further study both viruses in the lab.

Rubella, also known as German measles, is an airborne virus that has largely been eradicated thanks to an effective vaccine, though pockets of disease still exist throughout the world. It can cause rash and flu-like symptoms. During pregnancy, the virus can cause miscarriage, stillbirth, or fetal development defects — as many as 100,000 children each year are born with congenital rubella syndrome and may be deaf, blind, or experience heart problems.

Rubella has not been found in animals, which has made it easier for the World Health Organization to target

CHARLES J SHARP / CC BY-SA

Ugandan red colobus monkeys in Kibale National Park. With the discovery of two relatives of rubella virus, including a virus found in bats in the park, scientists and others stress the importance of protecting Uganda's forests from human encroachment.



EMILY JULKA

Andrew Bennett PhD'20, a former graduate student in the UW–Madison School of Veterinary Medicine, holds a cyclops leaf-nosed bat during fieldwork in Uganda's Kibale National Park, in search of viruses carried by the animals. Bennett was part of an international team that described the first two relatives of rubella virus ever found.

elimination of the virus. However, both of the new viruses have been found in common mammal species in Uganda and in Germany (researchers have found rustrela virus in yellow-necked field mice). Up to half of the bats and half of the mice tested were carriers of their respective viruses. This suggests both species may act as viral reservoirs, carrying and transmitting pathogens without getting sick.

The study also indicates that rubella, like many other human viruses, probably originated in animals. Researchers do not know whether rubella virus can jump back into animals.

"There is no evidence that ruhugu virus or rustrela virus can infect people, yet if they could, it might be so consequential that we should consider the possibility," Goldberg says. "We know that in Germany, rustrela virus jumped among species that are not at all closely related. If either of these viruses turns out to be zoonotic, or if rubella virus can go back into animals, that would be a game-changer for rubella eradication."

The team's analysis suggests the three viruses may be similar enough that the current rubella vaccine could be effective against all of them — a key question for research going forward, says Goldberg.

The new viruses also provide scientists with new tools to probe the biology of rubella virus and the *Matonaviridae* family. There are no good animal models for rubella, but rustrela virus provides a new opportunity to explore one. Mice are common model species in the laboratory.

Additionally, the findings reinforce the critical importance of conservation efforts in Uganda to protect forests from encroaching development, and the important work scientists and others there are undertaking to study the effects of a changing environment on human and animal diseases.

For instance, Deputy Director of Field Operations for the Uganda Wildlife Authority Charles Tumwesigye says the study's findings will be incorporated into their community conservation awareness programs, especially around Kibale National Park, where the ruhugu virus was found.

The study "will help management to further protect unique aspects of the ecosystem as well as keep the population safe," he says. "Uganda Wildlife Authority values scientific research because it provides key information for decision-making in protected area management."

Tumwesigye adds that the ways in which people and wildlife relate are "key to harmonious co-existence … When communities around Kibale National Park appreciate the value of the bats, for example, they become supportive in their conservation initiatives and learn how to protect themselves."

If not for the country's "long history of excellent medical and conservation science," says Goldberg, "there might have been no bats to study."

Protecting habitat is of utmost importance to animals and people, he adds.

"Viruses stay in their place when ecosystems are intact."

Kelly April Tyrrell

In Memoriam

The UW School of Veterinary Medicine regrets to announce the loss of an alumnus.

Narayana Rao Kosuri PhD'69, passed away in December after an 18-month battle with cancer. He emigrated to the United States in 1962 as a graduate student. He came as a doctor of veterinary medicine but went on to earn a master of science, PhD in pharmacology, and ultimately a medical degree. He made his home in St. Louis, Missouri, where he practiced medicine as a psychiatrist for 35 years with the Missouri State and BJC health systems.

‘Golden Girls Living Their Best Lives’

ERIC HOWLETT

Former resident donor and teaching cows Maxine and Lois enjoy retirement on the farm of Eric Howlett DVM’18 (lower left) and his wife Bethany (top left).

Eric Howlett DVM’18 grew up in the sprawling Texas suburbs of Houston and freely admits to never touching a cow until he visited a UW School of Veterinary Medicine (SVM) open house for incoming students.

“**Maxine** was my first,” he says fondly, referring to the school’s Holstein teaching cow. Later, during his large animal rotation as a student, he met **Lois**, the second of the school’s teaching cows. “Those girls spoiled me. They were not intimidating at all,” he recalls.

Lois, named after Lois Lane of Superman fame, and Maxine were treasured among School of Veterinary Medicine students in their role as teaching cows, helping students learn bovine physical examination skills. They also served as a source of whole blood, plasma, and rumen fluid donations for cow patients of UW Veterinary Care.

Lois was six years old when she came to the SVM in 2013, joining Maxine who had been there since she was four. (Lois is currently estimated to be about 13 years old and Maxine approximately 14). Both were aging gals when Howlett, as a fourth-year veterinary medical student, was assigned daily care and feeding of the pair. Standing in their stalls one day, looking gently in on them, he wondered what would come of them in their old age? Later in the semester, Howlett asked **Ruthanne Chun DVM’91**, the school’s associate dean for clinical affairs and UW Veterinary Care director, “Do they have a retirement plan?” After learning from Chun that nothing had been formally planned for the cows’ retirement, Howlett made an offer. “Well, I have a farm and pasture — they can come live with us,” he recalls telling her.

Howlett, who came to the Doctor of Veterinary Medicine program after completing a PhD and working in research, had recently moved to a hobby farm outside of Madison with his wife Bethany. “The place was a dairy farm in the 50s,” he says. “The most recent owners had it set up for cow, calf, and goat operations. It was perfect. All we needed to do was add animals.”

In July 2019, after a party at the school bidding the cows farewell, a trailer pulled up to Howlett’s driveway. With this special delivery, Maxine and Lois’s retirement officially began. (A new pair of teaching cows, **Ginger** and **Daisy**, have since joined the school.)

"Every day Maxine and Lois get a bale of hay in the a.m. and another bale at night. Plus, a scoop of grain when I get home from work. Maxine bellows if I forget. Oh, and bananas too. I buy the brown ones at the store just for them," laughs Howlett, now a veterinarian at the Mazomanie Animal Hospital not far from his farm.

The pair enjoy a free-roaming life, having access to the entire property. They divide their time between pastures, driveways, barns, and drinks at the pond. Even though the property is fenced, Maxine is an escape artist — finding every gap in the fence. Luckily Lois tattles on her with a long, strong bellow. When Eric or Bethany hear bellowing, they know Maxine has broken out again. But most often, the pair is seen wandering the woody hillsides. "The old girls love to wander up there and settle in — watching over the farm. A habit they must have perfected after spending years in the vet school stalls, watching the busy students go by," he says.

One unique detail about having former donor and teaching cows is that both of the animals still have a porthole, called a fistula, in their side. While at the hospital, this covered opening allowed for access to the cows' stomach to retrieve rumen fluid donations, which helped re-establish the gut microbiome of ailing patients. (Throughout their tenure, Maxine and Lois donated to hospital patients a combined 1,400 gallons of ruminant fluid and 1,200 liters of blood.) Under Howlett's care, he is making good use of the fistulas — now to deliver pain medication. "As older cows, they get arthritic, just like we do. I give them meloxicam for pain. Their fistula ports work well for this. I pour the medicine right into their stomach," he says.

It's been nearly two years since their arrival and everyone seems to have settled into a bucolic routine. Lois and Maxine share their pen with a herd of goats. When the temperatures dip, they all snuggle up together. Other members of the crew include Abe, a Great Pyrenees mix, and Lupini, a Catahoula Leopard Dog-heeler mix, along with flocks of chickens, guineafowls, and a few barnyard cats.

"When I go out to the pasture with a beer or coffee in hand, I count on Maxine wanting to drink it," Howlett says with a smile. "It's all those little things that add up … our golden girls living their best lives. I'm just happy to see them so happy."

Denise Garlow

In Memoriam

The UW School of Veterinary Medicine regrets to announce the loss of an alumnus.

Joseph Edward Kelley DVM'89, 59, passed away in November following a four-year battle with amyotrophic lateral sclerosis (ALS). "Joe was the person who made everybody feel like a somebody," his obituary reads. Veterinary medicine was Kelley's passion. He served as a clinician, surgeon, mentor, and teacher to many at Sauk Prairie Small Animal Hospital. He also went on seven international relief trips offering free spay and neuter clinics. Through these trips, he impacted many young veterinarians and built connections with all he met.

A Message to DVM Alumni

Looking Forward

As I write this, we still have plenty of snow on the ground, which I hope will no longer be the case when you read this. (I do love the snow — I am just especially ready for spring this year!) And it occurs to me that while I believe in living in the moment, looking forward is really important right now. I am grateful for so many good things to be excited about in the year ahead.

Of course, the COVID-19 vaccine is top of that list, as I am eager for us all to begin returning to something a lot closer to the normal we knew before the pandemic. I would be remiss if I did not highlight veterinary medical professionals' critical role in the pandemic response, from serving on the public health frontline and aiding diagnostics, to advancing SARS-CoV-2 research and vaccine development, to providing essential animal care that has only increased in demand over the past year. Thank you!

I am also looking forward to breaking ground on the long-awaited (and much needed) building expansion project. So many of our alumni and other friends have helped get us to this point. This expansion will significantly enhance our ability to provide exceptional patient care, outstanding teaching and learning opportunities, and critical research advancements that benefit animal and human health. We are thrilled and grateful to move ahead.

These are just a few highlights. I can't wait to see more people in person (including, I hope, at alumni events this year), to be back in the SVM building with fantastic colleagues and inspiring students, and the list goes on. If I learned nothing else this past year, it's that I really can't predict what lies ahead. But I still feel pretty confident in knowing that good things await us in 2021.

Take care and be well.

Kristi V. Thorson

Kristi V. Thorson
Associate Dean for Advancement and Administration

‘Quite the Journey’: Bucko Leads National Student Association

Since March 2020, **Marie Bucko DVMx’21** has served as president of the Student American Veterinary Medical Association (SAVMA). The national organization, comprised of 37 student chapters and more than 17,000 student members, aims to support all veterinary students in improving their lives, education, and career.

Bucko entered her presidency “in unknown waters,” just as COVID-19 was declared a global pandemic.

“When I started my term as president in March alongside COVID, to say that we hit the ground running is an understatement,” Bucko said during a speech to the American Veterinary Medical Association (AVMA) House of Delegates in July. “I quickly bonded with the AVMA Board of Directors with our weekly, and many times twice weekly, COVID calls, while my officer team and I rushed to wrap our head around the best way to educate our student body in what was happening.”

As Bucko and other national officers embarked on their work in an entirely virtual format, they committed to a shared value statement: together we overcome, united we rise.

And rise they did. In the past year, in collaboration with AVMA (the group’s parent organization), SAVMA provided financial support to 250 student chapter-hosted events with more than 26,000 participants through the Achieving, Leading, Learning for Students program. They initiated an effort to help students identify and match their interests to internship and externship opportunities, which have been limited and complicated by COVID-19, and encouraged the American Association of Veterinary State Boards to provide flexibility for Class of 2020 graduates, who had to navigate taking their licensing examinations amidst the pandemic.

The group also began new One Health-inspired partnerships with peer organizations, including the American Medical Student Association; launched a SAVMA smartphone app to provide a real-time information hub for students; and implemented a social media campaign with practical tools related to wellbeing and inclusion.

COURTESY MARIE BUCKO (3)

As Bucko nears the end of her presidency, the Brodhead, Wisconsin native shares more about the experience and her hopes for the future.

On Call: Broadly speaking, what are your duties as SAVMA president?

Bucko: This role is multi-dimensional. I lead our executive board and student delegates from each school to help optimize the best educational experience and support for students through grants, externships, leadership opportunities, and student exchanges with other veterinary programs. I also am an invited guest to sit on the AVMA Board of Directors to represent our student body. Essentially, my

From left, Douglas Kratt DVM’98, Marie Bucko DVMx’21, and UW School of Veterinary Medicine (SVM) Dean Mark Markel form a trifecta of SVM-connected leaders of national veterinary medical organizations. The trio in 2020 served in the roles, respectively, of president of the American Veterinary Medical Association, Student American Veterinary Medical Association, and Association of American Veterinary Medical Colleges.

role, with my officer team, is to help this national organization create an environment to foster communication, support our students, and see what we can do to make our veterinary students' experience a little bit better.

What tenets have guided you through your term as president?

My leadership style is adaptive, collaborative, and mission driven. I try to identify the end and common goals, empower my team, use lots of positive reinforcement, and be flexible on the process and insistent on the outcome.

My ultimate goal, from the UW School of Veterinary Medicine to SAVMA, has been to empower the officers and students I work with so they can be the best version of themselves. That looks different for each person for what they deem success, so adaptivity is key.

What were some of your and SAVMA's top priorities?

A lot of our actions are driven by what our students need support in. Right now, diversity, equity, and inclusion (DEI) are at the forefront.

On the national level, we want to make sure we can give students tools and resources to talk about race, disabilities, geographic diversities, and what that looks like for each school, because each of them is so different. It's been important for us to empower students to talk about what can we provide. We've put out on social media and to our delegates tangible ways students can support diversity, equity, and inclusion. We also are putting together a DEI assessment on how schools and chapters can evaluate internally their student body, to have an honest and safe discussion about how we can make our student environment more inclusive.

Another priority is our students with disabilities. We have quite a few students in veterinary schools who have hearing disabilities or impairments. So, when things are now virtual, and on top of everyone wearing masks, they face challenges. It's important for us to be able to bring this to schools and SAVMA chapters to say what are ways we can help our fellow classmates, noticing there are some gaps and discrepancies.

"Everything in life is built on relationships. Find someone that's not like you and listen. When we reach out to our neighbors with intent to learn, listen, and love, we create relationships and from there we show up for them. I ask each of you to have those uncomfortable conversations. And I implore that we as leaders of our organizations lead by example, taking actionable steps, even if they're small, to combat racism. ... We need to stand together as colleagues, as students, as a profession, as humans. We are at a tipping point in our society right now. We must show up for one another."

–Excerpt from Bucko's speech to the AVMA House of Delegates

Before veterinary medical school, you worked at the FDA in Washington, D.C. Can you describe that experience?

I served the U.S. Food and Drug Administration's Foods and Veterinary Medicine Program as a science policy analyst. I was the point person for the agency's Center for Veterinary Medicine, helping to prepare staff and agency leadership for Congressional briefings, leading the program's Congressional Appropriation response efforts, coordinating industry meetings, and leading National Antibiotic Resistance Monitoring System communications across the USDA, CDC, and FDA. During this time, I received my master of science in food safety from Michigan State's College of Veterinary Medicine.

As you approach graduation, what are your goals as a veterinarian and for veterinary medicine?

I'd like to keep my options open, but a common goal exists: to advocate for our profession. Whether that looks like returning to D.C. to work on policy to give a voice to veterinary medicine and American agriculture or working in a rural setting through the Veterinary Medicine Loan Repayment Program to help fill the need of rural veterinarians, I'm happy to serve our profession however.

Practice ownership is on the horizon in hopes to provide a practice culture that embraces mixed animal medicine and work-life balance for each employee.

New Faculty Focus

Meet Seth Eaton, Clinical Assistant Professor of Comparative Ophthalmology

MEGHAN LEPISTO

How did you get into your field of research? My path was ignited by my involvement in preclinical drug development and comparative vision science as a member of the research consortium Ocular Services on Demand. Thus, some of my research focuses on ocular pharmacology and toxicology in small animal patients, particularly with respect to glaucoma. I am also investigating comparative ocular oncology, specifically the diagnosis and treatment of several ocular cancers and disorders in horses, dogs, and cats.

What attracted you to UW–Madison? The School of Veterinary Medicine (SVM) has an outstanding international reputation for clinical service to the community, state, and beyond, and for being at the forefront of many fields within our profession. This is even more impressive when one realizes that the school is one of the youngest in the United States. I have also always been impressed with the numerous collaborations between the SVM, School of Medicine and Public Health, and other health sciences schools at the university. These collaborations have produced some incredible research and are models for the power of interprofessional partnerships. It is clear that the SVM is serving Wisconsin and beyond at a high level; I hope that my work will contribute to that influence and benefit animal health and public health for our state, nation, and world.

What's one thing you hope students who take a class with you will come away with? The crux of learning more and advancing the field comes from asking questions. Many of us are conditioned to withhold the questions we have in our heads and maybe even dismiss them. I want students to feel empowered to ask questions and question why we do things a certain way. In turn, my promise as a clinician and educator is to be honest in admitting when I don't have the answer. When there is an unanswered question, there is inherently a great deal of opportunity to learn and advance our profession.

Is there a way your field of study can help the world endure and recover from the COVID-19 pandemic? As a veterinarian, we feel heavily tied into public health; specifically, being as knowledgeable as possible regarding any zoonotic factors associated with the pandemic. More immediately, we also feel a strong responsibility to be available to our clients to provide the most attentive and compassionate care for our animal patients. Veterinarians are so well aware of the importance of the human-animal bond. Now, in this time of distress and hardship, the health and integrity of that bond stand to become an even more critical facet of human mental health and the comfort of "normalcy" in our newly disrupted lives. We certainly take that responsibility very seriously.

What's something interesting about your area of expertise that we might not be aware of? An unfortunately common clinical scenario in veterinary medicine is the need to surgically remove an animal's eye to alleviate the discomfort associated with painful and blinding ocular disease. In horses, particularly those that race or perform in other athletic events, many would assume this to be a major handicap and career-ending scenario. However, in the 145-year history of the Kentucky Derby, at least four one-eyed horses have run the race. The mysterious ways animals compensate for vision impairment are remarkable and continue to amaze us in the veterinary medical field.

Fun fact:

Eaton is a classically trained double bassist and member of the UW–Madison Health Sciences Orchestra.

MY VET MED

OUR GIFT REPRESENTS OUR LOVE OF ANIMALS AND OUR COMMITMENT TO THE UW

"As clients of UW Veterinary Care, our dogs have greatly benefited from the life-changing care provided by hospital staff for more than a decade. When it came time to think about our legacy, it made sense to include the school in our estate plans. It is a great comfort to know that our gift will improve the lives of future pets, and all animals, for years to come."

Cindy Trachta Gross and Dave Gross

vetmed.wisc.edu/planned-giving

Badger Trachta Gross

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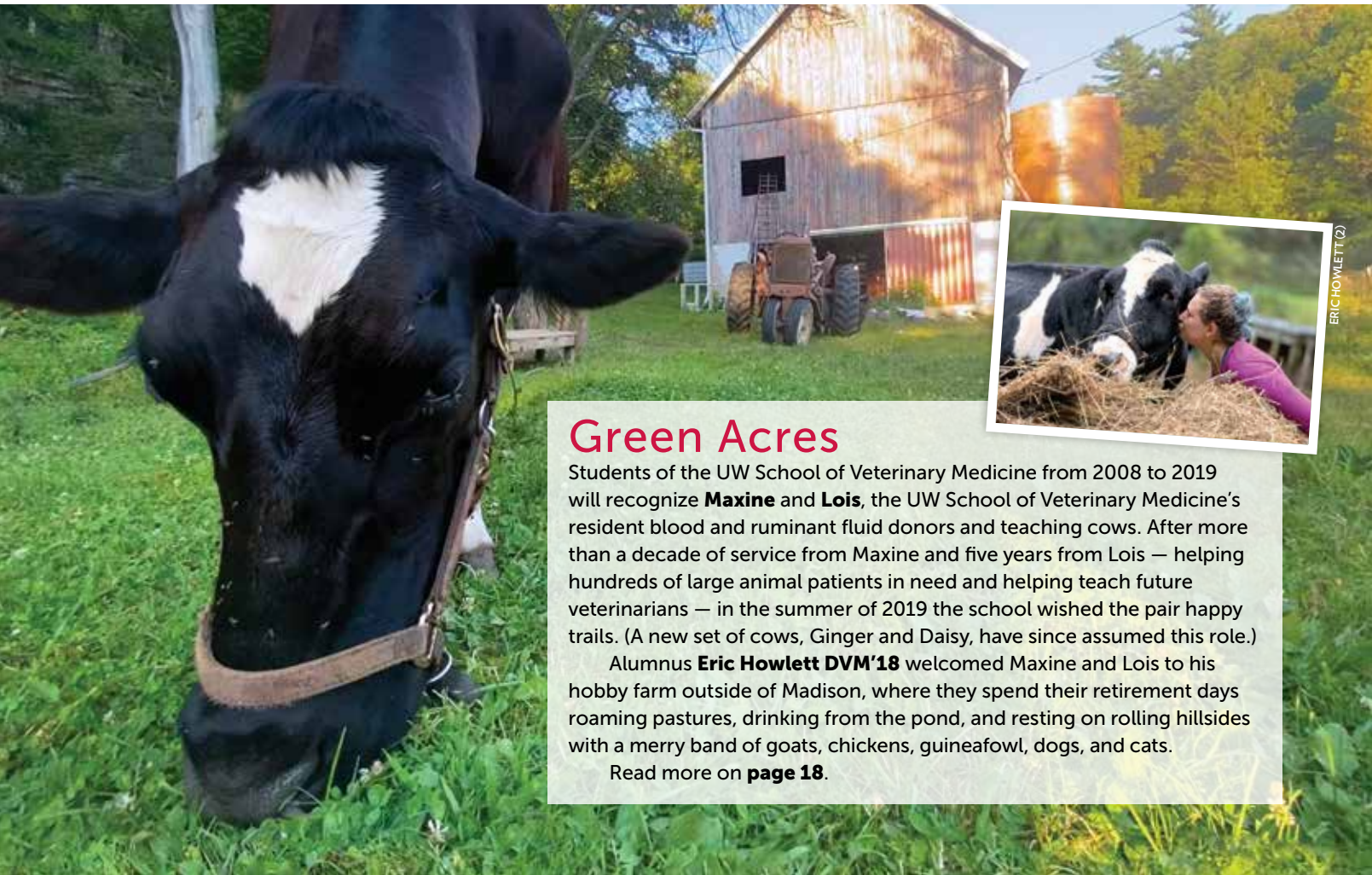

ERIC HOWLETT (2)

Green Acres

Students of the UW School of Veterinary Medicine from 2008 to 2019 will recognize **Maxine** and **Lois**, the UW School of Veterinary Medicine's resident blood and ruminant fluid donors and teaching cows. After more than a decade of service from Maxine and five years from Lois — helping hundreds of large animal patients in need and helping teach future veterinarians — in the summer of 2019 the school wished the pair happy trails. (A new set of cows, Ginger and Daisy, have since assumed this role.)

Alumnus **Eric Howlett DVM'18** welcomed Maxine and Lois to his hobby farm outside of Madison, where they spend their retirement days roaming pastures, drinking from the pond, and resting on rolling hillsides with a merry band of goats, chickens, guineafowl, dogs, and cats.

Read more on **page 18**.