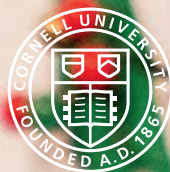


SUMMER 2018
NATIONAL IMPACT

SCOPE



Cornell University
College of Veterinary Medicine

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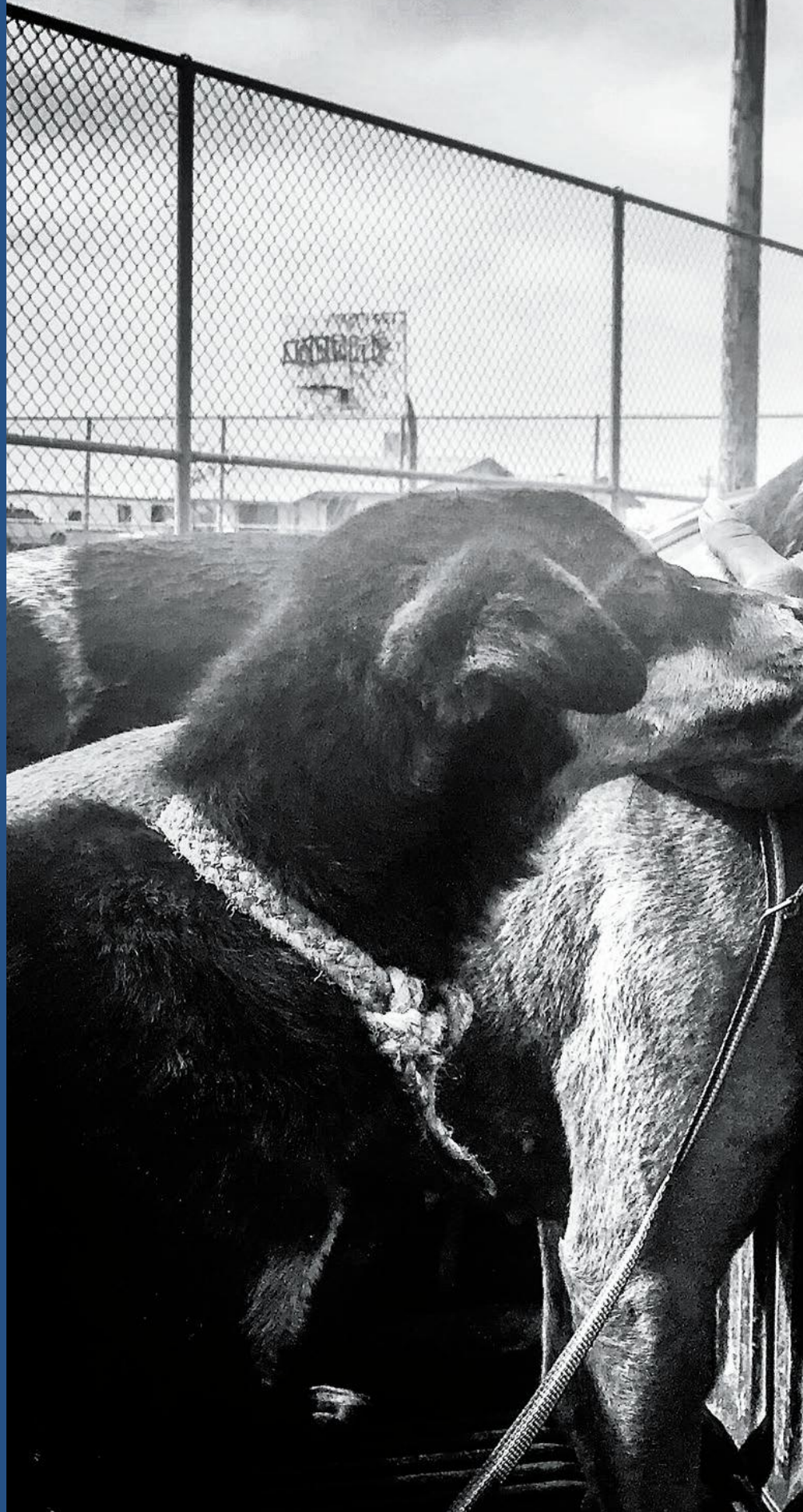
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Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities. Produced by Cornell University 8/18 QMC 8M

COVER: A MAP HANGING IN THE CORNELL UNIVERSITY HOSPITAL FOR ANIMALS SHOWCASES WHERE VARIOUS HOSPITAL MEMBERS COME FROM.

THIS PAGE: CORNELL VETERINARIANS AND STUDENTS DO OUTREACH AROUND THE COUNTRY TO TREAT PETS IN NEED, LIKE THESE DOGS FROM THE SAN CARLOS APACHE RESERVATION IN ARIZONA. PHOTO: SARAH NICKERSON





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Lorin Warnick, D.V.M., Ph.D. '94
Austin O. Hooey Dean of Veterinary Medicine

DEAN'S MESSAGE

NATIONAL IMPACT



This has been an exciting summer at the Cornell University College of Veterinary Medicine. We put the finishing touches on the new preclinical class expansion project, opened the Small Animal Community Practice and now start new renovation projects, beginning with the first floor of Schurman Hall. These activities will help us fulfill the college's missions in education, research and service. In the previous 'Scopes edition we highlighted our programs in New York state; in this edition we expand to the college's national impact.

As we consider the college's role across the country, I am struck by important changes occurring in the profession. When I arrived at Cornell for an internship 30 years ago, the veterinary population was still predominately white and male. Independent practices provided the vast majority of pet veterinary care. American veterinarians were educated at major universities, many of which were land-grant institutions which advanced veterinary medicine through scientific discovery. While the rise of the specialty boards was well underway, species and discipline specialization was much less common than today.

Now, three decades later, corporate consolidation of companion animal practice is a major trend; new educational approaches have emerged; specialization poses both opportunities and challenges; women represent 55 percent of the U.S. veterinarians and over 80 percent of new graduates and racial diversity in the profession has increased — though still not close to reflecting the national population.

Of these many national trends mentioned, I'd like to comment directly on two. The first is the changing business landscape in veterinary medicine. As with many other sectors of the economy, businesses are consolidating into fewer, larger organizations. Concurrently, the role of non-profit providers of veterinary services has grown substantially. Our readers will have their own opinions about these trends; I invite you to hear from alumni and others in the field that might confirm or challenge your views. We have a responsibility to the students in all our degree programs to prepare them for the myriad

career options available. To that end, we are developing a business and entrepreneurship program that will provide our students with vital skills and connections with businesses and organizations.

Another critical topic is diversity — recent years have sparked intense debate around the country regarding how we deal with the differences among us. We take this opportunity to discuss how our institution has approached these issues and to restate our values as a college. In both a community and a country we can choose to focus on commonalities or differences; both views have their place. While common goals unite us, diversity — both readily visible and less obvious ways — can yield depth and strength. We must also talk about differences in order to correct the effects of bias and discrimination, past and present.

As you will read in this issue, we are striving to make every member of the college feel recognized, heard and respected. There is always more work to do, but I'm proud of everyone's efforts thus far. Amidst the contentious national debate about what kind of society we want to be, our college and university will continue on a path to make the founder's ideal of "... any person ... any study" a reality.

Since first arriving in Ithaca in June 1988, I have spent most of my career at Cornell. I am proud to be part of the college community, honored to serve as dean and invigorated by the energy I see as our students, staff and faculty tackle some of society's most challenging problems. I hope you get a sense of that energy through this issue of 'Scopes and catch a part of the vision of the college's impact across the country.

Lorin D. Warnick

Lorin D. Warnick, D.V.M., Ph.D. '94
Austin O. Hooye Dean of Veterinary Medicine

Commencement 2018



Members of the Class of 2018 can look forward to new, exciting challenges. The new doctors were recognized at the College of Veterinary Medicine's Hooding Ceremony May 26 in Bailey Hall and had their degrees conferred the next day during commencement.

"One of the things that I love about the veterinary profession is that it can accommodate that wide breadth of interest," said Lorin Warnick, D.V.M., Ph.D. '94, the Austin O. Hooey Dean of Veterinary Medicine. "You are graduating at a great time — the job market is strong, and at least in most parts of the country and world, jobs are readily available."

Recent news reports of re-emerging threats of the Ebola virus, recalls of romaine lettuce and other public health issues point to the strong need for veterinarians, he said. Tackling climate change issues will also require veterinarians' input to solve, as altering disease patterns and human population growth puts pressure on food supplies, the environment and wildlife, he added.

"It will be your generation of veterinarians who find ways to harness these tools to improve animal health care," Warnick said.



Technology and care combine at Cornell's new Small Animal Community Practice

Students at the College of Veterinary Medicine will experience first-hand many business aspects of running an independent veterinary clinic with the opening of the college's new Small Animal Community Practice (SACP).

The practice opened its doors to patients in July and will function much like a neighborhood small animal practice. Veterinary students will step into the role of veterinarian to perform treatments ranging from vaccinations to routine surgeries like mass removals to dental procedures, all with guidance from experienced faculty and licensed veterinary technicians.

With the practice's opening, the college also implemented ezyVet, a new commercial electronic medical record system that will offer better customer service for clients, provide visibility into practice management and make patient care more efficient for students and staff. Daniela Mancuso, project manager for clinical and business workflows at the Cornell University Hospital for Animals says, "We keep finding all these processes that we used to do manually, but now will be automatic, so it's changing our workflow tremendously."

In the future, SACP will roll out additional features to improve customer service, such as a kiosk for checking in at appointments, a patient portal for viewing medical records, online appointment booking and confirmations through text message.



Cornell veterinarians perform rare procedure to cure puppy's cardiac condition

When a bundle of tissue in a young German Shepherd's heart turned deadly, veterinarians at the Cornell University Hospital for Animals (CUHA) performed a rare procedure to save his life.

Rex suffered from an arrhythmia, a condition that causes the heart to beat abnormally. The culprit: a small bundle of muscle running inside the wall of his heart. CUHA is one of only two places in the United States that routinely offers radiofrequency catheter ablation, where small areas of the heart muscle are heated through the tip of a catheter to destroy the abnormal tissue.

When owner Karen Silverman brought Rex to CUHA, associate professor in the Department of Clinical Sciences and section chief of cardiology Dr. Romain Pariaut, and cardiologist and adjunct professor Dr. Roberto Santilli, worked together to burn the problematic area without damaging the nearby atrioventricular node.

In honor of his successful recovery and the surgeons who made it possible, the Silvermans partnered with the cardiology team to create the Henry and Karen Silverman Initiative to Advance Treatment of Canine Arrhythmias. Their intention is to further the study, diagnosis and treatment of arrhythmias in dogs, as well as to educate pet owners and other veterinarians about these additional treatments for heart rhythm disorders.

Thanks to the initiative, other patients in need of this procedure now have access to financial assistance that will help them save the lives of their own beloved pets.



Mammary stem cells challenge costly bovine disease

Each clinical case of bovine mastitis can cost a dairy farmer more than \$400 and damages both the cow's future output as well as her comfort. It is typically treated with antibiotics, but with the potential threat of antimicrobial resistance and the disease's long-term harm to the animal's teat, researchers at the College of Veterinary Medicine are laying the foundation for alternative therapies derived from stem cells.

In their March 16 paper in *Nature Scientific Reports*, Drs. Gerlinde Van de Walle and Daryl Nydam, D.V.M. '97, Ph.D. '02, explore how the secretions of bovine mammary stem cells can encourage healing and regrowth of damaged tissue as well as rid the mammary gland of harmful bacteria.

"Antibiotics can kill the bugs," said Van de Walle, the Harry M. Zweig Assistant Professor in Equine Health, "but they don't help with regeneration of the damaged tissue."

The researchers are also the first to detail what bovine mammary stem cells secrete. "It's a brand new area of inquiry," said Nydam, associate professor in the Department of Population Medicine and Diagnostic Sciences, "and it's led to a host of discoveries."

"ANTIBIOTICS CAN KILL THE BUGS, BUT THEY DON'T HELP WITH REGENERATION OF THE DAMAGED TISSUE."

—DR. GERLINDE VAN DE WALLE



DR. CHARLES DANKO

Genetic transcription 'pause' is focus of NASA grant

Almost all forms of animal life — from fruit flies to butterflies to mammals — contain a pause in genetic transcription, a step that appears to allow the transcription machinery to take a break to fine-tune its copying process.

No one knows when this pause originated in the evolution of life. Dr. Charles Danko, assistant professor of genetics and molecular biology at the Baker Institute for Animal Health, will investigate that question with a three-year, \$790,000 grant from NASA's exobiology program.

"NASA is interested in understanding how complicated life arose on Earth, with the thought that if we understand how that happened here, we are more likely to identify extraterrestrial life elsewhere in the universe," Danko said.

The pause is a step in transcription where the enzyme RNA polymerase II begins transcribing and then is halted partway through the process and held in place by a specific protein complex.

One objective of the grant is to examine many different organisms that are widely distributed across the phylogenetic tree (branching diagrams that depict the evolutionary relatedness among groups of organisms), and to look for how RNA polymerase is distributed across the whole genome of these organisms. Another objective is to determine whether the proteins that lead to the release of the pause actually may have originated before the proteins that initiate it.

DR. GERLINDE VAN DE WALLE, THE HARRY M. ZWIG ASSISTANT PROFESSOR IN EQUINE HEALTH



College celebrates expanded, renovated spaces

After five years of construction, state officials and members of the university community commemorated the class expansion of the College of Veterinary Medicine with a celebratory ribbon-cutting ceremony on June 8.

“This wonderful project will propel the students, faculty and staff in the College of Veterinary Medicine into the 21st century, and enable Cornell University to provide the best veterinary education in the world to even more students,” said university provost Dr. Michael Kotlikoff. Kotlikoff advocated for and planned the initial stages of the expansion during his tenure as dean of the college from 2007–15.

The \$91.5 million project aimed to fulfill key goals for the college, including expanding its capacity to enroll more students, updating teaching spaces, improving navigation through the college’s many facilities as well as shaping a visual identity. Working with the architectural firm Weiss/Manfredi of New York City, the college partnered with the state and private donors to fund the project. The final stage of the expansion finished this June with the opening of the Cornell Small Animal Community Practice (see page 6).

Among the more notable renovated spaces is Takoda’s Run Atrium, a sprawling space named for Takoda, a greyhound who belonged to friends of the college Janet and John Swanson. Another is Lefty’s Plaza, the expanded and renovated “front door” of the college. Named for golden retriever Lefty, the plaza was made possible by a gift from friends of the college Judy and Fred Wilpon.

“Through our outreach that ranges from rabies prevention efforts to healthy pet clinics, from invasive aquatic species tracking to shelter medicine consultations, from Buffalo to Brooklyn, our college works tirelessly to give back to the state that so generously supports our programs,” said Lorin Warnick, D.V.M., Ph.D. ’94, the Austin O. Hooey Dean of Veterinary Medicine.





CLOCKWISE FROM LEFT: CORNELL AND CVM LEADERSHIP POSE WITH DONORS AND STATE OFFICIALS IN LEFTY'S PLAZA. JANET SWANSON AND JUDY WILPON AT THE CEREMONIAL RIBBON CUTTING. DEAN LORIN WARNICK SPEAKS TO CEREMONY ATTENDEES.



Dedicated culture, advanced medicine:

HOW CUVS KEEPS UP THE SUCCESS

BY MELANIE GREAYER CORDOVA

PHOTOGRAPHY BY MATT BRANSCOMBE OF BSC PHOTO STUDIO



CUVS-US

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DR. SUSAN HACKNER AND HER TEAM AT CORNELL UNIVERSITY VETERINARY SPECIALISTS (CUVS) WORK HARD TO KEEP THE HOSPITAL AT THE FOREFRONT OF MODERN MEDICINE.

It takes more than surgical skills to run an animal hospital, and no one has embraced this concept more than Dr. Susan Hackner.

As both the chief medical officer and chief operating officer of Cornell University Veterinary Specialists (CUVS) in Connecticut, Hackner has seen the hospital blossom from the very beginning.

“I’ve been with the project since its infancy,” she says. Over seven years ago, Dr. Michael Kotlikoff, then the dean of the College of Veterinary Medicine and currently provost of Cornell, approached Hackner with the immense project of bringing CUVS to life. As the first one hired, she knew from the start that for this project to succeed, it had to offer more than other animal hospitals in Connecticut; it had to provide a unique workplace culture and a dedication to customer service for a demanding clientele.

Her plan worked. The hospital has seen tremendous growth since opening in 2011, including a 25 percent increase in patient visits over the last year alone.

“A lot of things have changed in seven years,” says Hackner. “When we opened, we had fewer specialties. We had 30-something staff members and now we have about 100.”

CUVS is a subsidiary of Cornell University and a satellite hospital of the college, owned in full by the university and governed by a board of directors, of which Lorin D. Warnick D.V.M., Ph.D. ’94, the Austin O. Hooey Dean of Veterinary Medicine and Kotlikoff’s successor, is chair. It provides specialty and emergency medicine only — no general practice — and is open 24/7/365 for referrals and emergency cases.

As soon as she came on board, Hackner developed core values for the hospital which are in use to this day: patient-centered medicine, integrated care, collaborative decision-making, a culture of learning, professional partnerships, respect, personal responsibility and integrity. “The core values needed to tell people this is who we are, this is how we operate,” she says.

Anyone who joins the team at CUVS puts these values first. Even students who come to participate in the individualized two-week-long externship at the hospital embrace them from the start. “We think of them as our constitution,” says Hackner. “Unless you use the core values to make decisions and determine where you spend your resources, they’re just words.”

In addition to clearly established values, the operation has the space and facilities to keep them at the top of their game

**“WHAT WE HAVE IS A HYBRID
BETWEEN PRIVATE PRACTICE
AND ACADEMIA. IT’S A
DIFFERENT ANIMAL.”**

—DR. SUSAN HACKNER



CUVS IS AMONG ONLY APPROXIMATELY 20 LEVEL I-CERTIFIED HOSPITALS OF THE VETERINARY EMERGENCY AND CRITICAL CARE SOCIETY NATIONWIDE.

as well. Housed in a 20,000-square-foot building in Stamford, Connecticut, CUVS features state-of-the-art equipment and expertise, enabling a level of medical care that is available at few veterinary institutions. It also houses a tiered auditorium and overnight rooms for rotating residents and students from Cornell and elsewhere participating in the externship it offers. In 2014, CUVS received Level I certification from the Veterinary Emergency and Critical Care Society, distinguishing it as a facility at the highest level of veterinary trauma, emergency and critical care. The hospital is among only 20 or so such facilities nationwide.

Hackner and her team work hard to keep the hospital at the forefront of modern medicine. “Practicing the best medicine possible means nothing if all of the other parts of the hospital aren’t run well or your clients aren’t happy,” says rising third-year D.V.M. student Nicholas Walsh ’16, who completed a business and entrepreneurship-focused externship at CUVS. Walsh was able to dive deeper into the operations of the hospital during his two-week stay, observing how the staff, technicians and specialists keep the place humming. In addition to the dedication of lifelong learning and the immersion of students in its day-to-day life, the hospital’s unique culture was and is a constant undercurrent.

“What we have is a hybrid between private practice and

academia,” says Hackner. “It’s a different animal.”

CUVS implements a model of exceptional veterinary care that also supports the university’s mission of education and discovery, an ambassador for the mothership college a state away. The effectiveness of the College of Veterinary Medicine comes from the integration of both teaching and research, part of its land-grant foundation. With the success of CUVS, the college’s influence and impact extends beyond New York’s borders.

A unique culture

When staff criticalist Dr. Anusha Balakrishnan first joined the hospital team, the collaboration between the doctors and staff impressed her immediately. “I left a position at an academic institution to come to CUVS, and I feel that the environment at the hospital is just as conducive to constant learning and professional growth as any university setting,” she says.

This hybrid model first piqued her interest in joining the hospital. Bringing together the best of both the academic sphere and private practice is the hospital’s *modus operandi*, the way it fulfills the mission of the college. Hand-in-hand with this is the hospital’s culture. Hackner was determined to create a unique experience for the patient from the first interaction, through treatment, and to the moment they walk out the door.



THE CULTURE AT CUVS HAS EVERYONE WORKING TOWARD THE SAME GOAL:
BRINGING THE BEST POSSIBLE PATIENT CARE TO THE TABLE.

**“... I FEEL THE ENVIRONMENT
AT THE HOSPITAL IS
JUST AS CONDUCTIVE TO
CONSTANT LEARNING AND
PROFESSIONAL GROWTH AS
ANY UNIVERSITY SETTING.”**

—DR. ANUSHA BALAKRISHNAN



THE HOSPITAL'S MODEL OF EXCEPTIONAL VETERINARY CARE SERVES AS AN AMBASSADOR OF CORNELL'S QUALITY EVEN OVER 200 MILES AWAY.

Same for the referring veterinarians, the staff, the surgeons and so on.

"We decided we were going to pay close attention to culture from the start," Hackner says. "We decided to hire people who not only appreciated the culture, but understood their role in maintaining and growing it."

Each employee would give a different answer if asked to define that culture — all will say it's unique, but the reasons are as diverse as the patients they see. For Walsh, for example, it's the interdepartmental collaboration. For Kara Mertzel, the hospital's head of learning, it's the focus on mentorship and continued learning. For alumna Amanda LaCroix, D.V.M. '18, who completed her externship there during her third year in the D.V.M. program, it was the immersion mentality — the welcoming atmosphere that allowed her to jump into the deep end immediately. For Balakrishnan, a "collegial and mutually respectful atmosphere where everyone strives to ensure the best possible patient care, and where every staff member is valued for what they bring to the team."

The variety of answers is precisely the reason the culture is so healthy at CUVS. Their focus, their specialties and interests might be different, but as Hackner says, "we're all headed in the same direction."

In a nutshell, the culture at CUVS is both expansive and centered at the same time; there is a global view of what CUVS is, but it contains a 360-degree self-reflection that focuses on who they are, what they care about and why they get up in the morning.

Balakrishnan recalls last summer as an excellent example of this. They had a staffing crunch in the ER and an exploding caseload. "The caseload became overwhelmingly high," she says, "and we had a situation where virtually every cage, every run in the hospital was full and there were critical patients everywhere."

Everyone stepped up to the plate. "We had specialists picking up extra shifts on their days off, even covering

overnights. We had other specialists helping with cases to minimize the ER workload, and we even had non-emergency and critical care specialists offer to come in and help with ER shifts! Technicians were staying well past their shifts to ensure patients were taken care of. It was an absolutely grueling month, but together we all made it through."

She says it drove home the culture of cooperation, of ensuring exceptional patient care at all times, "no matter what it takes."

"They've built a strong community and open workplace," says Walsh. This community allows people to bring their best selves to the table. "Everyone has that sense of personal accountability," says Balakrishnan. "Each one of us — whether doctor, staff or administration — sets an example with our words and actions every single day."

Lifelong learners

Kara Mertzel is a rare breed. As the CUVS head of learning, she is one of the very few individuals at any animal hospital whose sole responsibility is advancing learning for employees. Usually, she says, learning is only a small percentage of a person's job — part of the laundry list of assignments given to a human resources officer, for example.

"It's important because my sole focus is to measure the effectiveness of learning within a field of individuals who are lifelong learners," says Mertzel. "They have to keep refreshing their knowledge of advances in the medical field, and I'm thrilled to participate in that and bring a different experience."

Since joining CUVS in October 2017, Mertzel has been working to standardize the basics common to every employee: what information do they need to know during their onboarding? What's key to orienting them to work at the hospital? Mertzel's plan has been to start there and then scaffold up to larger projects. "I'm asking what do we need to learn and how can we make it the most effective, most engaging experience so people can spend their time and intellect delivering the best medicine," she says.



MEMBERS OF CUVS RECOGNIZE THAT EXTENDING INDIVIDUALIZED TRAINING TO STUDENTS IS PART OF THEIR MANDATE, AND THEY'RE ENTHUSIASTIC IN CARRYING IT OUT.

“I LOVE THE HALLWAY DISCUSSIONS WE OFTEN HAVE ON THE LATEST LITERATURE PERTAINING TO CASES, OR BRAINSTORMING TO COME UP WITH NOVEL, CUTTING-EDGE DIAGNOSTIC AND TREATMENT OPTIONS FOR PATIENTS.”

—DR. ANUSHA BALAKRISHNAN

Now a few months in, Mertz el can sink her teeth into developing different, more complicated coursework: career pathing. “A big focus for CUVS is not only recruiting,” says Hackner, “but also career development, employee engagement and people developing their careers here.”

This harkens back to Hackner’s words on the hospital’s culture. Once they find staff there in Connecticut who share their core values, who are enthusiastic about their culture, they want to make lifelong relationships with these employees and provide opportunities for growth so that they feel enriched and challenged. This is particularly true for their nursing staff. While Connecticut doesn’t require licensure for technicians at an animal hospital, CUVS does —which means finding qualified candidates can be difficult and they must often seek them out across state lines. Some technicians drive two or three hours both ways to work, so Hackner and Mertz el’s efforts are geared toward making that work compelling enough to continue such a commute. This includes clinical as well as management training.

“Our nursing staff is the largest population of our employees,” says Mertz el. “They have the most opportunities to affect the quality of our patient care, so it’s important that we develop not just the technical side of our team, but also other sides to the business.” Work on communication, leadership skills, problem solving, emotional intelligence and decision-making are key to this training. The 360-degree culture present at the hospital extends to every employee’s growth.

Balakrishnan, for example, finds that efforts to grow professionally and collaborate are present between colleagues in addition to what they might plan with Mertz el. “I love the hallway discussions we often have on the latest literature pertaining to cases,” she says, “or brainstorming to come up with novel, cutting-edge diagnostic and treatment options for patients.”

Since the hospital has grown so much, creating individualized training and a career path for around 100 employees can appear taxing. To Mertz el, however, working on customized learning initiatives is actually quite easy since everyone has the same objective — to deliver the best medicine. “Having that unity of vision makes it much easier to determine what people need,” she says.

Teaching opportunities

Externships at the hospital are just as individualized. One student stays for two weeks in the CUVS housing facilities, which are free to Cornell students. In the last year, 27 students rotated through for a total of 56 weeks, and included both Cornell students and individuals from around the world. In addition to Tufts and the University of Pennsylvania, veterinary schools in Ohio, Iowa, New Jersey, Tennessee and Illinois have all sent students for training at CUVS. International participants have come from places like the Royal Veterinary College in London, the Universities of Queensland and Sydney as well as the Universidad Nacional Autónoma de México.

LaCroix completed her externship just last year and was thrilled by the easy transition into their practice. “So many externships are daunting due to expense of travel and housing,” she says, recalling one night when an emergency case came in and, since she was sleeping in the same building, she was able

to scrub in and observe. “All I had to do was walk down the stairs,” she says.

Externs at CUVS learn by being immersed in the service. While it’s not actually a teaching hospital — which means their learning is done by observation — students are like shadows to the specialist they’re with.

“They get to be part of rounds, see the thought process of a particular case, be there when the specialist is speaking to the client and so on,” says Hackner.

This was the perfect transition for LaCroix, who did the externship before she started her clinical year. “It was a wonderful way to prepare for it,” she says, “and everyone was so receptive to having students.”

Walsh felt similarly, and got to experience firsthand how individualized the externship could be. He was the first student to come with a business and entrepreneurship focus — in addition to observing rounds and surgery and client communication, Walsh observed the inner workings of the hospital from top to bottom. “This externship allowed me to experience and learn about what goes into managing a specialty hospital,” he says. Walsh intends to open his own emergency and referral practice in the future, so the business experience was vital to his time there. “We covered all aspects of management from finance, human resources, inventory, client services and IT to decision-making and contract negotiation.”

While medical experience is integral to being a successful veterinarian, because Walsh anticipates opening his own practice, he knew he needed to diversify his training to ensure he was prepared when the time came to face a world beyond the clinical floor. “I was so impressed with how efficient the hospital is,” says Walsh, “and also by how welcoming and willing to teach people are.”

“We try to help students understand efficiency,” says Hackner. “You can be efficient without compromising quality.”

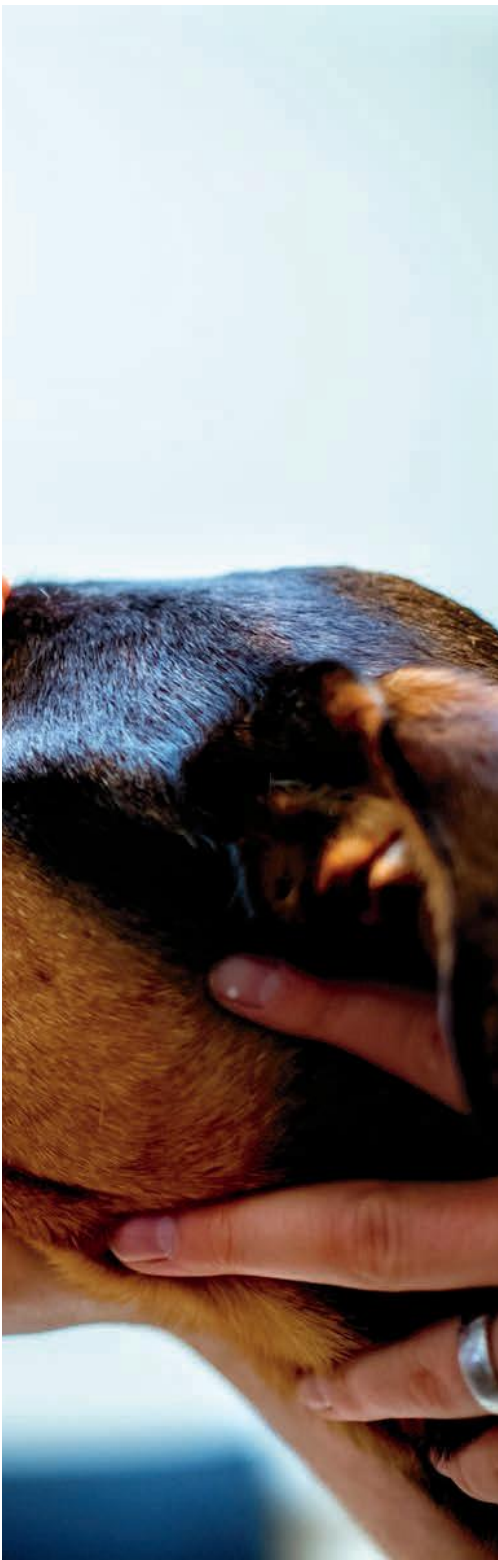
“OUR NURSING STAFF IS THE LARGEST POPULATION OF OUR EMPLOYEES. THEY HAVE THE MOST OPPORTUNITIES TO AFFECT THE QUALITY OF OUR PATIENT CARE, SO IT’S IMPORTANT THAT WE DEVELOP NOT JUST THE TECHNICAL SIDE OF OUR TEAM, BUT ALSO OTHER SIDES TO THE BUSINESS.”

—KARA MERTZEL



“THESE ARE EXPERIENCED PEOPLE WHO ARE COMMUNICATING WITH CLIENTS ABOUT DIFFICULT PROGNoses, ABOUT FINANCIAL ASPECTS, SO THE STUDENTS GET TO SEE MANY DIFFERENT FORMS OF COMMUNICATION FROM PEOPLE WHO ARE VERY GOOD AT IT.”

—DR. SUSAN HACKNER



Members of CUVS recognize that extending individualized training to students like LaCroix and Walsh is part of their mandate, and they're enthusiastic in carrying it out. "The doctors were amazing at giving rounds on subjects relevant to the cases we saw," says LaCroix. "There were many things I learned I'll be able to continue to apply in my daily practice."

Focused on communication

Externs get to see how everyone at CUVS collaborates with each other, what things work and how things feel when the culture is really strong, says Hackner. "Most importantly," she says, "they see how we communicate."

Hackner stresses that she hires communicators, no matter their job title. Each person must be an expert in their field as well as how they express that field to others.

"These are experienced people who are communicating with clients about difficult prognoses, about financial aspects, so the students get to see many different forms of communication from people who are very good at it," she says.

That said, there's not just one way to approach these interactions. Walsh found that each clinician he worked with had their own unique approach to communicating with clients, "but all were flawless in their execution of it." He said he soaked all of this in like a sponge. "It was important to appreciate all that they do at CUVS and learn the skills I should take with me when communicating with my future clients."

Masterful communication is key given the high-stress environment and clientele whom CUVS treats. In the last year, they had approximately 16,000 patient visits, 77 percent from Connecticut and 21 percent from New York. Since they are located over 200 miles away from the Cornell University Hospital for Animals in Ithaca, it's a given that their clientele are completely different — different values, unique concerns. The people whom CUVS serves tend to understand specialty medical options, says Hackner. "We have a very loyal following of clients. They are highly engaged and love their animals," she says. "The definition of providing good service in our world is different than providing good service elsewhere precisely because of that clientele."

Balakrishnan works to ensure that her interactions with clients and her patients are as seamless and calm as possible, given the controlled chaos of an advanced emergency animal hospital. "I strive to make sure I make these experiences less stressful for clients and work closely with them to figure out the best possible options for their pets," she says. "Every clinician at CUVS practices exceptionally high-quality care. To be able to practice this type of cutting-edge medicine with colleagues you love working with is such a pleasure."

Cultivating the culture

For Mertz, who's approaching her first-year anniversary at the hospital, she embraces doing her part to cultivate the hospital's unique culture, recognizing that CUVS can only be as effective as its staff. "Coming from outside of veterinary medicine, it has been exciting to work with individuals who are so invested in their field," she says. "They're so inspired and passionate about what they do that it's difficult not to feel the same."

CUVS is more than the sum of its parts. Its work culture, learning initiatives, professional development, modern practices and general hybrid nature facilitate the challenge of bringing Cornell expertise to Connecticut. "Because we respect what others bring to the table," says Mertz, "we openly ask for input and insight from other experts, which elevates the standard of care we are able to deliver and reinforces a culture of learning."

"We're that mix of academic and practice, medical and service," says Hackner, "and we work — individually and collectively — to deliver the best medicine, which is our ultimate goal." ●

UNITED STATES OF CUHA:

IF YOU WANDER THE HALLS OF THE CORNELL UNIVERSITY HOSPITAL FOR ANIMALS (CUHA), YOU MAY COME UPON A LARGE MAP DOTTED WITH MULTI-COLORED PINS. NED DYKES, D.V.M. '74, A FORMER RADIOLOGIST WITH THE HOSPITAL, STARTED THE PROJECT IN 2012 TO SHOW WHERE THOSE WHO VISIT AND WORK AT CUHA ORIGINALLY COME FROM, AND THE PROJECT CONTINUES TO GROW MORE COLORFUL TO THIS DAY.



**VETERINARY
STUDENTS**

**GRADUATE
STUDENTS**

FACULTY

STAFF

**TECHNICIANS,
LVT, RY**

CUHA RESIDENTS

CUHA INTERNS

FACILITIES STAFF

**VISITORS: (EXTERNS,
COLLABORATORS, ETC.)**

**DONORS & FRIENDS
OF THE COLLEGE**



SERVICE ACROSS

CVM STAFF AND ALUMNI TRAVEL TO ANIMALS IN NEED

BY MELANIE GREAVER CORDOVA

PHOTOGRAPHY BY SARAH NICKERSON



THE NATION:





IN the middle of the Turtle Mountain Indian Reservation in North Dakota, nearly 200 miles away from the capital of Bismark, several vans pull up to an empty gym. For the next few hours, fifty strangers will methodically unload a trailer filled to the brim with medical equipment that's packed like Tetris pieces. Each person has a job and a mission: efficiently set up your station in the gym so that you can provide veterinary care for underserved animal patients.

Soon the place fills up with supplies in such an orderly fashion it seems like a computer simulation. The stations are laid out in a conveyor-belt-style to increase efficiency as volunteers set up tables and stock caddies. They top it all off with several additional hours of orientation and training. Then the strangers — volunteer veterinarians, technicians, students, intake staff — set out their sleeping bags in this same gym and immediately fall asleep. In a matter of hours, the place will be bustling with animal patients and their owners from the reservation. For most of these animals, this visit will be the only care they receive all year.

“There’s a shocking level of poverty that exists in some of these rural areas in the United States,” says Elizabeth Berliner, D.V.M. ’03, the Janet L. Swanson Director of Shelter Medicine at the College of Veterinary Medicine.

The group, a mix of Cornell professionals and volunteers from veterinary schools and practices across the country, will see hundreds of patients throughout the day for spay/neuter services and vaccines. Then, just as quickly as it appeared, this pop-up field clinic will vanish, dismantled by the same volunteers, who must drive another few hours to the opposite end of the reservation. They’ll arrive at the next gym — or community center, or some other central space worked out with their cultural liaison — and start the whole process over again.

Veterinary medicine has always found ways to serve communities in need, but this need has become much more apparent in the last decade. Shelter medicine, for instance, has expanded beyond brick-and-mortar practices so that

practitioners aren’t tied to one building for their tenure; they can extend their services to these underserved communities through humane outreach programs like Rural Area Veterinary Services (RAVS), which provides both wellness and surgical trips to Native American reservations in the western United States.

“There are animals in need in every community, but in some communities, there’s nothing — no shelter, no veterinarian, not even a pet store,” says Windi Wojdak, registered veterinary technician and director of RAVS.

Since 2007, over 300 members of the College of Veterinary Medicine community have participated in RAVS trips, taking the



AT WORK ON THE RESERVATION. FOR SOME PET OWNERS, THESE TRIPS ARE THE ONLY WAY THEY CAN OBTAIN CARE FOR THEIR CAT OR DOG ALL YEAR.



long flights and extended car rides in stride. RAVS has served over 40 Native American communities across the western United States over the years, and they currently work with 10 reservations regularly. Since 2003, RAVS has cared for more than 115,000 animals with over 6,400 volunteers. It's all for one purpose: improving the lives of animals and providing their owners with the tools and education they need for a pet-healthy home.

Members of the college have learned to be adaptable in the face of unexpected scenarios. At the Cornell University Hospital for Animals in Ithaca, they train in some of the most advanced facilities in the world, but in the field, they must find a way to apply that gold standard however they can.

"It's one thing to make medical decisions in a tertiary facility with an owner who has resources and you have significant equipment and experts to work with," says Berliner. "It's another to figure out how to improve an animal's life in the middle of a remote area with only the tools you brought with you."

This flexibility is a trait all clinicians, faculty, students and alumni share. Whether it's work in an understaffed county shelter, informing the community on animal laws and regulations or physically moving watermelons out of a gym so your pop-up clinic can be ready for the morning intake, the service-oriented mindset of the college extends across the nation.

Animals without advocates

Like most Cornell veterinary students, Renee Staffeld '16 is busy. The third-year student's schedule is full of lectures, clinics, studying and — of course — volunteer work. Staffeld estimates that between her duties as a student and her role as the college's student representative for its Humane Society Veterinary Medical Association (HSVMA) chapter, her day ought to have about five extra hours in it to get everything done.

She knows she's not alone, however. "The students are busy, and we want to be," she says, "but we have to choose the organizations we participate in carefully. If we overextend ourselves, the whole reason we're here is in jeopardy."

Because of the time constraints on students, the HSVMA chapter on campus was inactive for about a year or two. Staffeld revived it in 2017.

"We want these groups to be visible," she says. "Even if it's just a name on a screen, it's important people know that they exist as a resource and an opportunity."

HSVMA has been more than a name on a screen in the last year. The group has organized multiple events that members thought would be useful for the college community. They asked Berliner, who provided the group with suture lab training as well, to speak about service opportunities with RAVS, and they coordinated with veterinarian Holly Cheever, D.V.M. '80, vice president of the New York State Humane Association, to give a

“IT’S ONE THING TO MAKE MEDICAL DECISIONS IN A TERTIARY FACILITY WITH AN OWNER WHO HAS RESOURCES AND YOU HAVE SIGNIFICANT EQUIPMENT AND EXPERTS TO WORK WITH. IT’S ANOTHER TO FIGURE OUT HOW TO IMPROVE AN ANIMAL’S LIFE IN THE MIDDLE OF A REMOTE AREA WITH ONLY THE TOOLS YOU BROUGHT WITH YOU.”

—ELIZABETH BERLINER, D.V.M. '03



lecture on how to identify and report animal abuse. “Our group really wants to promote animal welfare and humane standards across the board,” Staffeld says.

Staffeld’s work doesn’t end there, however. She’s a certified wildlife rehabilitator and president of the college’s shelter medicine club. “It’s a lot, but the extra groups can really enrich your experience here,” she says, acknowledging that, even so, “you can’t help animals if you don’t have time to do your homework.”

Like the HSVMA group, Staffeld and other members of the shelter medicine club, overseen by Berliner, are also passionate about providing additional educational opportunities for the college. For the 2017–2018 academic year, they arranged lectures on topics that might not be in the curriculum — breed-specific legislation in New York, for example, and an overview of shelter medicine for the curious — in addition to running clinics every Saturday, Monday rounds and various fundraising activities. Their work is never done.

Berliner notes the expansive nature of shelter medicine, which encompasses more than may meet the eye. She describes it as two parts of a whole: The first part is comprehensive shelter medicine, focused on population medicine in actual designated buildings. The second is a community component. Groups like HSVMA and the shelter medicine club are particularly engaged with this second component. “It’s a matter of caring for animals in shelters as well as preventing them from showing up in shelters in the first place,” says Berliner. “To the veterinarians and students who are drawn to the public service piece, there’s no distinction between the two groups of animals in need.”

Animals in need are what drew Staffeld to the college initially. The Ithaca native is passionate about bringing more students into the field, who, when they graduate, will disperse and share what they’ve learned in jobs, internships and other service opportunities across the country.

“Animals without advocates is really what we’re focused on. They don’t have anybody responsible for them, no collar, no tag. What happens when you see a deer dying on the side of the road? No one is really obligated to stop,” she says. “I’m the kind of person who always wants to stop.”

Have training, will travel

Working beneath the fluorescent light in a hotel bathroom, Amanda LaCroix, D.V.M. ’18 practices her suture lines. She and her companions are prepping for their test the next morning, when RAVS veterinarians will time them and note their accuracy on this and a range of skills needed for the trip. LaCroix, who was then a third-year veterinary student, must complete a length of suture successfully in under two minutes to be able to perform the necessary spay/neuter procedures during the first week of the surgical trip on a reservation in rural Arizona. If she fails, she has to wait until the second week to test again,



assisting the volunteers in other ways, but she’s determined to pass from the get-go.

And sure enough, when the time comes, LaCroix performs the task beautifully in under two minutes. Those hours spent practicing in the hotel bathroom paid off.

RAVS is a non-profit veterinary outreach program combining community service and veterinary education to bring free veterinary services to underserved rural communities, where poverty and geographic isolation make regular veterinary care inaccessible. They serve western Native American reservations, utilizing the service mindset of thousands of volunteers on hundreds of trips. During the two-week surgical trips that occur in the summer, volunteers perform high-volume spay/neuter services and provide immunizations and other medical services. During the wellness trips, which are a week long and occur during the spring and fall months, pets receive general check-ups, health assessments as well as a range of other medical services.

In 1995, RAVS held their first clinic on the Rosebud Indian Reservation in South Dakota. From there, they expanded

to include other reservations as well as rural communities in Appalachia, in addition to small animal and equine international work. “It evolved quickly and organically from there,” says director Wojdak. In 2002, RAVS became a program under the wing of the Humane Society of the United States and continued to expand in all three program areas until 2009, when their domestic work shifted to focus resources on the reservation communities. Their international programs continued in various forms until 2016, and their resources are now focused on reservations, as these are areas of need that do not receive other services.

“Cornell has been a fairly consistent part of these trips,” says Berliner, who has been involved with the organization since 2007 and served as trip leader many times, noting her desire to fulfill this need for people who cannot access animal healthcare either geographically or financially. “They are the ones we look to serve.”

Berliner has shared this service opportunity with Cornell students, faculty and staff, who arrive at the college already expressing a strong desire to help underserved groups however they can. They want to take what they’ve learned in their studies in Ithaca and share it where it can do the most good. This exchange is often inspiring.

“The pet owners on the reservations know when the clinic is coming,” says Sarah Nickerson, program coordinator of Maddie’s® Shelter Medicine Program at Cornell, who went on a RAVS wellness trip to Arizona’s San Carlos Apache Reservation in April. “They look out for it, because it’s their primary means of getting care for their pets.”

Hundreds of pet owners will flock to these clinics. Alumna Alison Lindsay, D.V.M. ’18 saw the news spread like wildfire across the reservation when she went on a surgical trip during her last year in the D.V.M. program. “The lines begin early and it’s nonstop,” she says. “We’ll have people pull up as we’re closing because they just heard we were there and gathered the pets up in the back to the truck. We have to tell them to come back at five a.m. the next day — or let them know where the next clinic site will be.”

Nickerson was impressed by the dedication the pet owners had to obtaining this care. “They’ll walk, sometimes for miles, if they can’t afford the gas to drive. They’ll ride their bike, they’ll take off work and do whatever it takes to get their pets to the



clinic for care,” she says. And when they get to the clinic, sometimes they must wait a long time to be seen — usually in the heat of the desert sun. Volunteers often set up sun screens and pass out water to keep people and their pets comfortable while they wait their turn.

Although Nickerson does not have training in veterinary medicine, she was able to contribute during the wellness trip performing intake duties — the essential task of sorting through the constant stream of owners with their beloved cats and dogs, asking necessary questions as efficiently as possible. On these trips, there are no extra wheels; everyone contributes their best however they can.

“Because we’re in the field with relatively limited resources,” says Wojdak, “we rely heavily on the fact that we have a team of people who are incredibly skilled and can bring the creative solutions needed to care for the animals that come in.”

Students like Lindsay and LaCroix, who have since graduated from the veterinary program, say that initially they were excited about the opportunity for more surgical experience. On a RAVS trip, it’s all hands on deck for spay/neuter procedures, which will often give a volunteer more time with the scalpel than an entire academic year because of the high volume of cases that these pop-up clinics address.

“During the trip,” says Lindsay, “I saw how the educational aspect of it was also just so worthwhile. You see your work make a difference and that the message you’re sending is getting through to people.”

LaCroix agrees. When she went on her first trip, she had just finished her first year of veterinary school. “I was still able to help people with just one year under my belt.”

A strong, knowledgeable foundation of veterinary medicine is necessary for each case on these trips. Although the passion of students like Lindsay and LaCroix is an excellent quality, they must supplement that with sound science from the beginning so they can apply it when the need arises.

“DURING THE TRIP I SAW HOW THE EDUCATIONAL ASPECT OF IT WAS ALSO JUST SO WORTHWHILE. YOU SEE YOUR WORK MAKE A DIFFERENCE AND THAT THE MESSAGE YOU’RE SENDING IS GETTING THROUGH TO PEOPLE.”

—ALISON LINDSAY, D.V.M. ’18



HURRICANE MARIA CAUSED IMMENSE DEVASTATION IN PUERTO RICO, LEAVING MANY PETS AND STRAY ANIMALS WITHOUT SHELTER OR CARE.

“WHEN I FIRST WENT TO WORK IN A SHELTER IT SEEMED LIKE A HOPELESS SITUATION. I’D GUESS 80 PERCENT OF ANIMALS WERE PUT TO SLEEP. BUT I ALSO SAW IT AS AN OPPORTUNITY TO HAVE AN IMPACT ON WHOLE POPULATIONS OF ANIMALS IN A WAY PRIVATE PRACTITIONERS CAN’T.”

—LILA MILLER ’74, D.V.M. ’77

The College of Veterinary Medicine excels at creating a community of professionals who think on their feet — and trips like this allow them to hone those skills, says Berliner. “It’s about communication,” she says. “We’re teaching cultural competency. It’s about professional relationships and how you work with your colleagues. It’s about respect for people regardless of where they come from or what they have.”

The fifty-some-odd strangers who embark on these journeys arrive as individuals but grow into a team. “It really reminds you of your passion for the field,” says LaCroix.

Beyond graduation

This quest to serve doesn’t stop at commencement. What brings future veterinarians like Staffeld to Cornell is often what sees them through to graduation and beyond: “There’s a lot of interest in relief work, disaster work, the SPCA, shelters in general, because there you find pets that don’t have homes and few people to take care of them,” she says.

While they’re studying and practicing during their time with the college, students often fulfill these goals with local programs like participating in the Southside Healthy Pet Clinics — where student clinicians provide healthy pet services to families in need — in addition to RAVS and HSVMA. There’s also Expanding Horizons, an international outreach arm of the college, and Spring Farm Cares, an organization run by a local veterinarian that allows fourth-year students to practice spay/neuter surgeries in a high-volume feral cat setting.

Alumna Deirdre Halloran, D.V.M. ’17 participated in all of these and more before she graduated. “I have a more open mind on how to treat my patients thanks to my service experiences,” says Halloran, who is currently an associate veterinarian in a small animal private practice in Phoenix, Arizona. “The innovation that is required for field medicine can benefit any practitioner.”

Such service opportunities available through the college allows students to refine their commitment to the Veterinarian’s Oath. They must be mindful of their clients’ situations and offer the best care options possible. “The most important thing this kind of outreach work has taught me is how to practice non-judgmental medicine,” says Halloran. This can be complex to balance, as a practitioner must educate clients as comprehensively as the case allows, but without judgment or condescension. When it works, however, everyone wins. “Client education is one of my favorite aspects of veterinary medicine,” says Halloran.

Alumna Suzanne Nelson, D.V.M. ’16 is currently a shelter veterinarian with the Humane Rescue Alliance in Washington, D.C. Her outreach experiences at the college allowed her to form a tight bond with her peers. “They were usually pretty hardy and had a sense of humor,” she says of those who joined her in service work. “They tend to be a really great group of people to work with — they share a lot of the same qualities of selflessness and dedication.”

In addition to the cross-country network that connects Nelson to like-minded colleagues around the United States, her own particular service work — such as going on both surgical and wellness trips with RAVS — prepped her to expect the unexpected. It was an opportunity to put her knowledge through a constant, high-stress test. “Sometimes you have enlarged lymph nodes that we’re all taught to feel for, but we never feel until we come across a sick reservation dog,” she says. “It may be the first time you’re actually feeling a dog’s spleen, all because of how different the circumstances are.”

Lila Miller ’74, D.V.M. ’77 is a world-renowned expert in animal cruelty and shelter medicine, and is a leading advocate for companion animal welfare in the United States and abroad.

After graduating from CVM, she launched into what was then a novel field: working as a veterinarian at the ASPCA shelter. In a time when shelter medicine was not a recognized field and had no formal structure, recognition or standardized protocols, Miller spent her first five years working in the trenches of a shelter as animal care supervisor, where she developed some of the first protocols and guidelines for the healthcare of shelter animals.

“When I graduated there was no such thing as shelter medicine, and when I first went to work in a shelter it was awful because the outcomes for most of the animals were so depressing,” says Miller. “It seemed like a hopeless situation. I’d guess 80 percent of animals were put to sleep. But I also saw it as an opportunity to have an impact on whole populations of animals in a way private practitioners can’t.”

Expanding her role in the burgeoning field, Miller moved on to become director of the ASPCA Brooklyn Clinic in an impoverished area, where she spent 15 years overseeing the care of thousands of shelter animals and providing care for the pets of owners who may otherwise not have been able to afford it.

“This was very satisfying work,” said Miller, “and I’m grateful to the ASPCA for giving me the opportunity to explore something that hadn’t been done before.”



AMANDA LACROIX, D.V.M. ’18, FOUND THAT VOLUNTEERING ON SERVICE TRIPS HELPED STRENGTHEN HER CLINICAL AND SURGICAL SKILLS.

While in this role, Miller began an outreach program for veterinarians to enhance their understanding of the importance of companion animal welfare and shelter medicine. As part of this effort, she made extensive contributions to teaching throughout the country and the world. Invited by Cornell professor of epidemiology Dr. Janet Scarlett, Miller co-taught the first didactic course in shelter medicine in the country in 1999 at Cornell and became an adjunct assistant professor. Together they went on to found the Maddie's® Shelter Medicine Program at Cornell.

Miller, Halloran and Nelson all share a passion which drives their careers. Halloran, for example, says that she has always been interested in serving veterinary deserts — areas where people have limited to zero access to veterinary services. “In these deserts, animals are at risk of being relinquished to shelters because their owners can’t access or afford their care,” says Halloran, who, like Nelson, continues to perform service work during downtime. “Anything I can do to strengthen the human-animal bond and keep pets in their homes is worthwhile.”

An island in need

The United States saw a high number of natural disasters in 2017. Wildfires raged in southern California and storms caused devastation and flooding in southern states such as Texas and Florida. After Category 5 Hurricane Maria devastated much of the island of Puerto Rico in September 2017, the unincorporated territory with 3.4 million residents saw their entire electrical grid destroyed. Hurricane Maria was the costliest natural disaster in the island’s history, incurring \$91.61 billion in damages across the storm’s path and an estimated over 4,000 human casualties. Approximately 450 human shelters opened in the days before the storm made landfall.

In the midst of this confusion and devastation, family pets became separated from their owners. Regular spay/neuter operations for strays ceased. Residents who could barely provide for their children after the storm found they had nothing with which to feed the cat or dog. Animal shelters were quickly overwhelmed. Humane workers saw families surrendering their animals — not because they didn’t want them, but because they thought the beloved pet would fare better in a shelter than in a home with no electricity, no running water and just the barest necessities of food.

Several animal welfare groups organized the transport of some 1,000 animals from Puerto Rico to no-kill shelters across the mainland immediately following the storm, but as relief efforts continue, more work remains even now almost a year later.

Maddie's® Shelter Medicine Program at Cornell, the college’s shelter medicine group directed by Berliner, is part of a national initiative to alleviate such difficult conditions. “In the years prior to Hurricane Maria, some shelters on the island were euthanizing more than 95 percent of their intake,” she says. “Their intake numbers are expected to rise because of the difficult situation.”

Berliner herself traveled to the island this summer to take part in the Spayathon for Puerto Rico campaign, organized by the Humane Society of the United States. In early June, she joined other volunteers performing high-quality, high-volume

spay/neuter services in seven cities throughout Puerto Rico.

The Humane Society has a stated goal for this campaign of reaching 25,000 animals on the island by May 2019. They will accomplish this number through four trips to Puerto Rico, of which June’s was the first. Berliner will return to lead a surgical team representing Cornell to provide clinics during the three subsequent trips.

“Access to veterinary services for residents living below the poverty line is already difficult, and diseases like leptospirosis are spreading in the post-hurricane conditions,” says Berliner.

Providing these services to the expected 25,000 animals on the island at no cost to their owners will help both the people and their pets recover. The campaign also aims to create a lasting spay/neuter infrastructure by training veterinary professionals on the island in addition to donating all of the surgical equipment, supplies and other remaining assets at the end of the campaign. Non-profits like Maddie's® Fund provided financial assistance in obtaining the needed supplies, such as vaccines, pet food and crates.

Shelter medicine veterinarians like Berliner and the students who follow in her footsteps must be ready to provide expert care upon entering any shelter, any pop-up clinic, any area affected by a natural disaster. In the best of scenarios, they should be well-versed in legal, regulatory, ethical and emotional aspects of shelter animal care. In the worst, they utilize their passion to help those that need them the most.

Power to make a difference

Recently, Halloran found herself with an armful of puppies on the San Carlos Apache Reservation outside of Phoenix, Arizona. It was midday, the weather miserably hot. After diagnosing the dogs with parvovirus she treated each of them on top of the owner’s car, returning them to the backseat one by one. “At the end of the process, I had seven puppies started on their treatments for parvo, and an owner who felt empowered to continue the treatments at home,” she says.

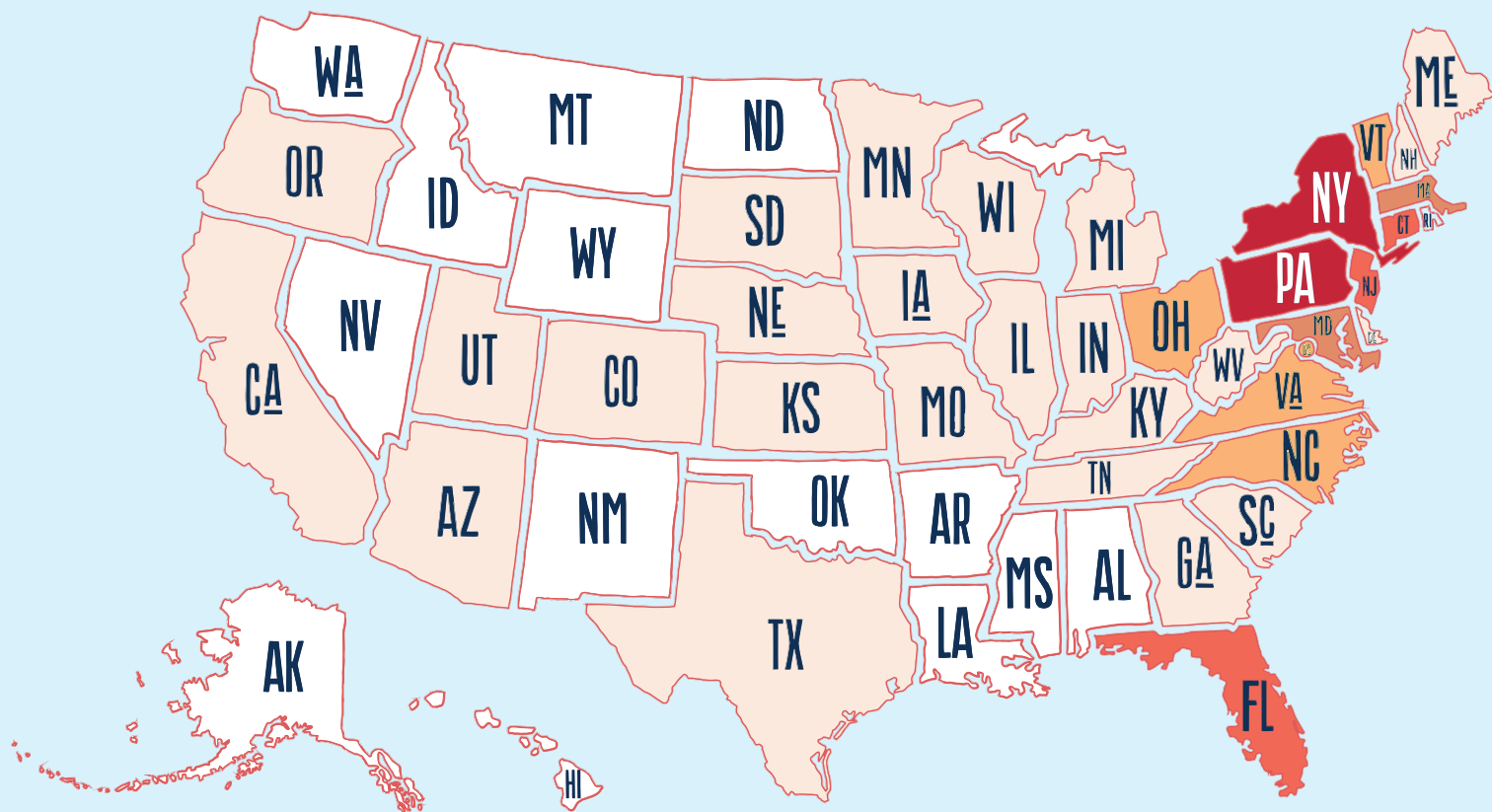
Unconventional, determined, focused even in the most uncomfortable conditions. The College of Veterinary Medicine empowers its students to work with the resources they have and share their passion to do good with others.

“I think a lot of students starting out in their careers don’t even know yet what is possible,” says Wojdak. “They have a lot of power to make a difference in the world, and they should wield it.” ●

“I THINK A LOT OF STUDENTS STARTING OUT IN THEIR CAREERS DON’T EVEN KNOW YET WHAT IS POSSIBLE. THEY HAVE A LOT OF POWER TO MAKE A DIFFERENCE IN THE WORLD, AND THEY SHOULD WIELD IT.”

—WINDI WOJDAK

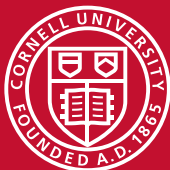
2017 PATIENT CASES



NUMBER OF CASES BY STATE

0

>2,000



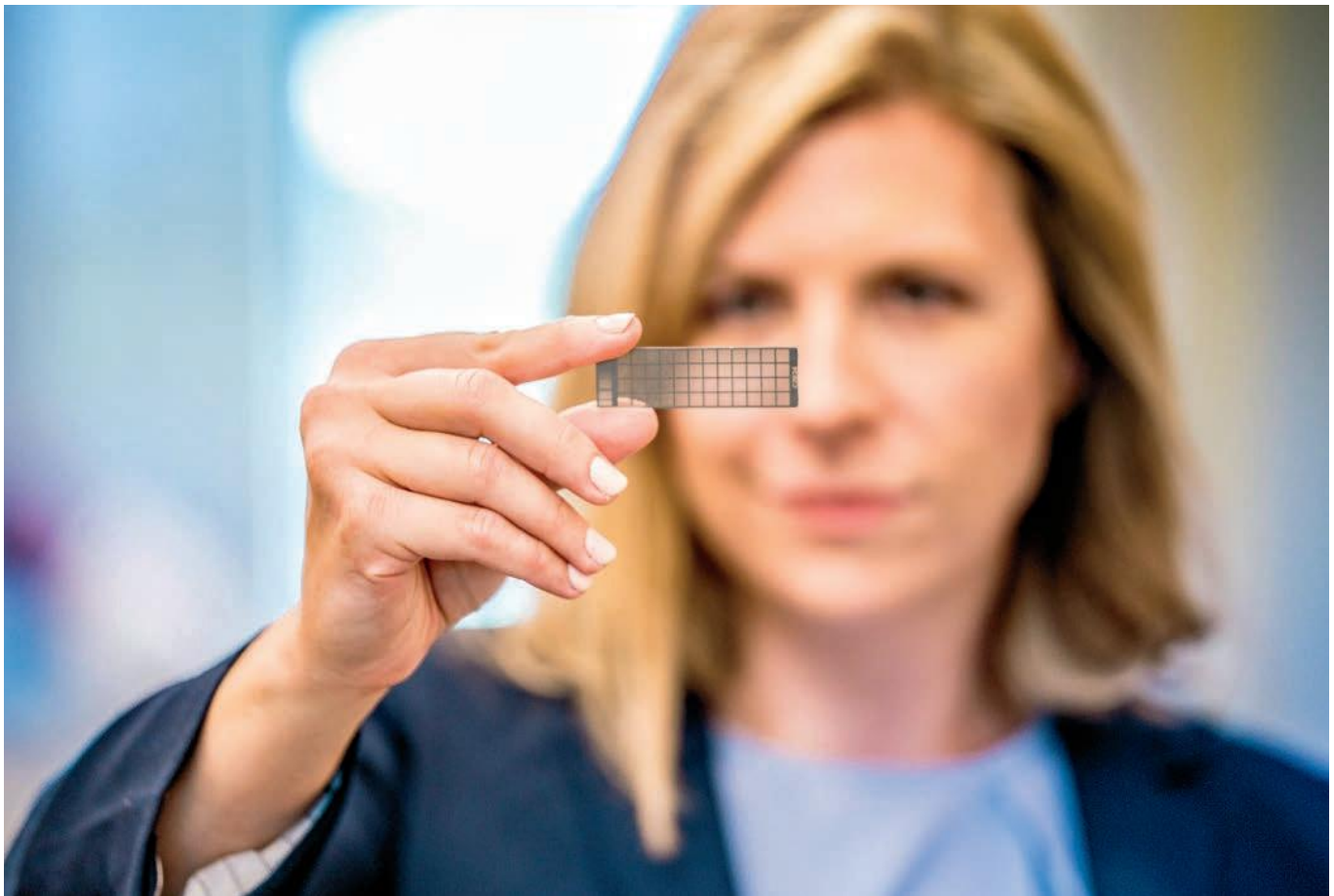
Cornell University
Hospital for Animals

SCIENCE ALLIANCE:

NATIONAL COLLABORATIONS STRENGTHEN CVM IMPACT

BY PATRICIA WALDRON

Researchers at the College of Veterinary Medicine investigate complex problems affecting animal, human and public health. These issues involve biological, environmental, economic and social factors and have implications that reach far beyond New York state. To grapple with these multifaceted questions, CVM researchers forge national collaborations to further the scope and impact of their work.



LAURA GOODMAN, PH.D. '07, SENIOR RESEARCH ASSOCIATE, WITH THE "TICK CHIP."

Fighting tick-borne disease in the Northeast

In her innovative research to develop new veterinary diagnostic techniques, Laura Goodman, Ph.D. '07, assistant research professor in the Department of Population Medicine and Diagnostic Sciences, is one of several CVM faculty members who collaborate with the Northeast Regional Center for Excellence in Vector-borne Diseases (NEVBD). This group of academic and public health professionals come from 60 institutions across 13 states in the Northeast United States, from Virginia to Maine, including the Bloomberg School of Public Health at Johns Hopkins University, the Earth Institute at Columbia University and the Maine Medical Center Research Institute.

"A lot of times, when academics say 'collaboration,' we mean with other academics, but my group and NEVBD are well-situated to work with public health and industry," says Goodman. "We really try to engage with other stakeholders and leverage big data for the greater good."

NEVBD members conduct applied research on tick-borne diseases, train scientists and health practitioners and cultivate a community of people who address these issues. "People have been working in silos on these problems, so what we're trying to do is bring everyone together and enhance collaboration," says program director Dr. Laura Harrington, professor of entomology in the Cornell University College of Agriculture and Life Sciences.

Goodman oversees diagnostic research and development for NEVBD partner institutions at the Animal Health Diagnostic Center/New York State Veterinary Diagnostic Laboratory (AHDC/NYSVDL). Collaborating with the group increases her ability to track tick-borne diseases in New York, to perform testing in partner states and to discover emerging diseases in the Northeast. In 2018, she was the first to detect the tick-borne parasite that causes babesiosis in Tompkins County. The parasite is gradually moving north through the state.

Collaborating with NEVBD also raises the profile and scale of Goodman's work so that she is more competitive for national grants. Currently she is looking for support to defray the cost of testing ticks submitted to the Cornell Tick Evaluation Program. This program, which identifies a tick's species and screens it for disease, has been offered for 10 years. Historically, veterinary practices have submitted the majority of samples, but last year Goodman opened the service to the public.

In 2017, the AHDC clinical molecular diagnostics and parasitology teams, directed by Amy Glaser, D.V.M. '87, Ph.D. '95, and senior extension associate Dr. Manigandan Lejeune Virapin, tested almost 700 ticks from pets, people, livestock and property. And they expect those numbers will only go up. Reports of diseases from tick, flea and mosquito bites tripled in the United States between 2004 and 2016, and nine new types of infections have been detected in that time, according to the Centers for Disease Control and Prevention (CDC).

Fortunately, Goodman has developed a “tick chip” — a nanoscale PCR testing platform for rapid detection of tick-borne diseases. In 2017, the American Association of Veterinary Laboratory Diagnosticians awarded her the first ever Innovation in Veterinary Diagnostic Medicine Grant for this technology. Each chip can detect up to 26 disease agents from 48 samples in a single run.

“Several states have contacted Dr. Goodman to see about having their tick samples tested at her lab,” says NEVBD program manager Emily Mader. “Few labs can run this volume of samples, with a quick turnaround time and tick identification.”

In collaboration with NEVBD, Goodman and Lejeune also work with students from the Cornell Master of Public Health program, and the new master of science in entomology program in vector-borne disease biology. Through these collaborations, Goodman not only expands the reach of her own work, but is helping train the next generation of diagnosticians who will tackle this pervasive problem.

A federal investigation

CVM researchers also collaborate with federal agencies to inform policy decisions and tackle complex problems that require insight from multiple disciplines, such as the rise of antibiotic resistance. Prevailing assumptions contend that antibiotic use on farms accelerates the growth of bacteria that are immune to drug treatment, causing government agencies in many countries to impose limits on agricultural use.

When the U.S. Food and Drug Administration (FDA) began considering ways to limit the use of antibiotics in livestock — leading to a ban on antibiotics for growth promotion that went into effect in 2017 — Dr. Craig Lewis of the Veterinary Medical Office at the FDA approached Dr. Yrjö Gröhn, James Law Professor of Epidemiology. Lewis wanted to know if he could predict the impact of such a ban. Throughout his career, Gröhn has used mathematical modeling to understand how disease spreads on farms with the goal of improving food safety. “For me it almost doesn’t matter what is the problem,” says Gröhn. “I want to understand the whole food supply, from produce all the way to the consumer.”

Gröhn began collaborating with the National Institute for Mathematical and Biological Synthesis (NIMBioS), uniting experts across disciplines to tackle the thorny question of agriculture’s role in creating antibiotic-resistant bacteria. He worked with fellow veterinary researchers, as well as experts in the FDA, the U.S. Department of Agriculture and the CDC to compile publicly available data regarding antibiotic usage and resistant organisms detected in meat and dairy products. The United States does not track individual farm animals, however, and much of the data is anonymous, making it impossible to connect data points from along the food supply chain.

To cope with this problem, the group focused on two types of data. They looked at antibacterial resistance detected at slaughterhouses as a way to represent the number of bacteria evolving resistance on farms, and at bacterial data from retail

“WE TRY TO UNDERSTAND THAT THIS IS NOT ONLY A BIOLOGICAL QUESTION. IT’S ALMOST A PHILOSOPHICAL QUESTION, BECAUSE THERE WILL BE ECONOMIC WINNERS AND LOSERS.”

—DR. YRJÖ GRÖHN

establishments to represent the human exposure to these resistant organisms. Using traditional statistical methods, graphical techniques and machine learning, they tried to identify trends between the two pools of data.

The group concluded that they didn’t yet have enough information to conclusively determine the relationship between antibiotics usage on farms and the rise of resistant bacteria. They made specific recommendations that are being followed for additional data collection regarding how farmers are using antibiotics in the production of cattle, poultry and pork, under existing laws. With this additional information, the group can make recommendations to inform FDA policies.

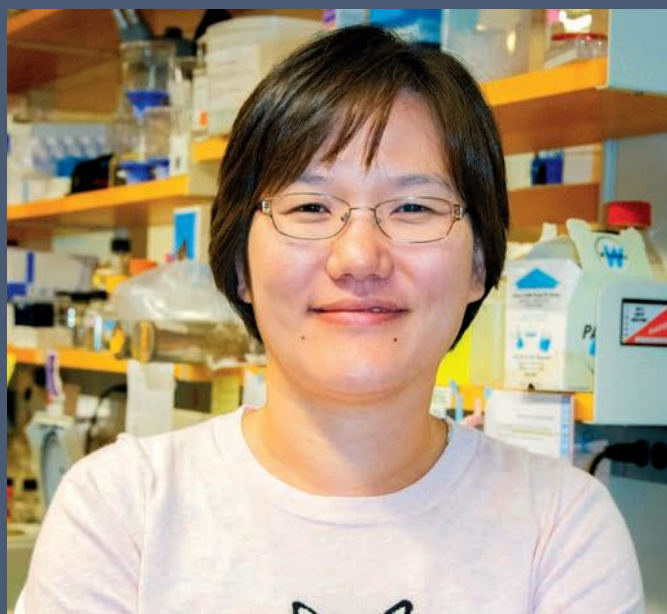
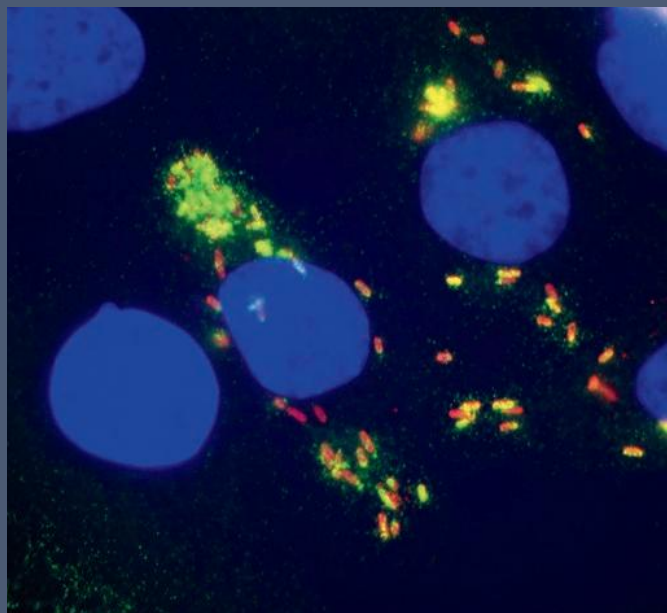
This project has since spun off into a new collaboration called “Living With Resistance,” through the National Socio-Environmental Synthesis Center (SESYNC). “We try to understand that this is not only a biological question,” says Gröhn. “It’s almost a philosophical question, because there will be economic winners and losers.” The collaboration includes plant scientists and social scientists and will address not just antibacterial resistance, but other types of drug resistance, as well as pesticide resistance in weeds and insects, and the spread of invasive species.

Coast-to-coast collaboration to stamp out Typhoid

National collaborations also give researchers access to specialized technology that may be available nowhere else in the country. Dr. Jeongmin Song, assistant professor of microbiology and immunology, started just such a collaboration to advance her research on how the bacterium responsible for typhoid fever establishes long-term infections that cause some patients, like the famous Typhoid Mary, to shed the bacterium for decades.

People usually contract the bacterium that causes typhoid, called *Salmonella Typhi*, through contaminated food or water, making it a problem primarily in resource-limited settings. The infection can be cured with antibiotics, but multi-drug resistant strains are becoming increasingly common in many areas. The FDA has approved two typhoid vaccines, but they are only about 70 percent effective. Even after vaccination, *S. Typhi* can slip past the immune system and hide out in white blood cells, called macrophages, as well as the gallbladder, to create a long-term infection. “The bottom line is that all of the available vaccines work well but they don’t show 100 percent efficacy,” says Song. “We need to develop alternative therapeutics and improve the vaccine.”

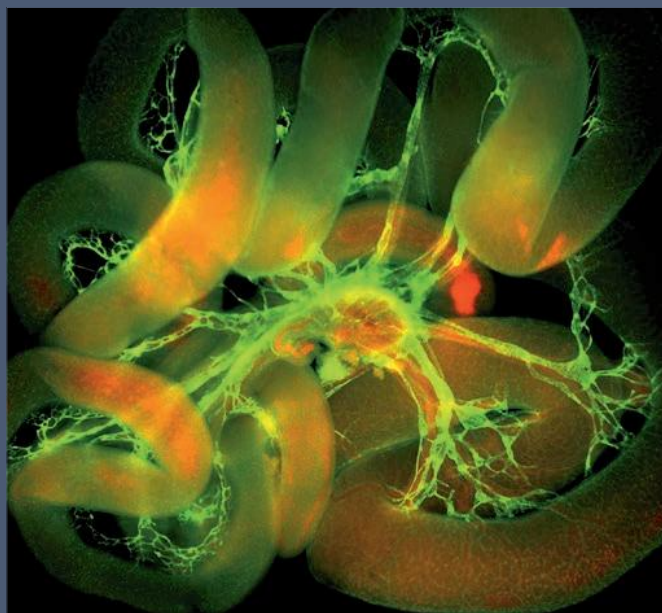
Song and her lab members focus on typhoid toxin, a virulence factor made by the bacterium. “If we target an



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—DR. JEONGMIN SONG

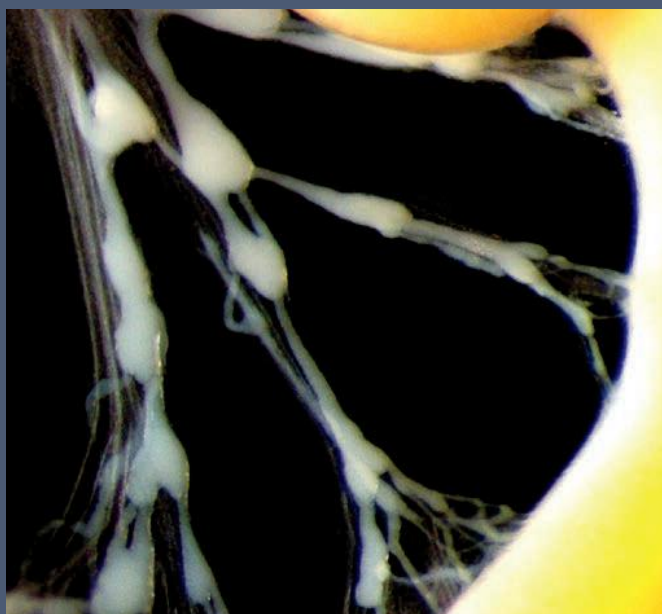
TOP LEFT TO RIGHT: *S. TYPHI* (RED) LIVE INSIDE HOST CELLS AND SECRETE TYPHOID TOXIN (GREEN); DR. YRJÖ GRÖHN, JAMES LAW PROFESSOR OF EPIDEMIOLOGY; DR. JEONGMIN SONG, ASSISTANT PROFESSOR OF MICROBIOLOGY AND IMMUNOLOGY; CATTLE IN A FEEDLOT



NATASZA KURPIOS



NATASZA KURPIOS



NATASZA KURPIOS

CLOCKWISE FROM TOP LEFT: DR. NATASZA KURPIOS WITH D.V.M./PH.D. STUDENT FRANCES CHEN; LYMPHATIC VESSELS (GREEN) TRANSPORT DIETARY FATS FROM THE SMALL INTESTINE; AS IT DEVELOPS, A HEALTHY GUTS LOOPS IN A COUNTER-CLOCKWISE DIRECTION; MICE WITH A BARELY ACTIVE PITX2 GENE DEVELOP CLOGGED LYMPHATIC COLLECTORS THAT HAVE A “BEADS ON A STRING” APPEARANCE.

“THERE’S A LOT OF LIPID PEOPLE, THERE’S A LOT OF LIVER PEOPLE, AND THERE’S A LOT OF DEVELOPMENTAL PEOPLE, BUT THERE ARE VERY FEW WHO ARE WORKING AT THE BORDERS. THAT’S WHY THESE COLLABORATIONS ARE SO IMPORTANT.”

—DR. NATASZA KURPIOS

essential virulence factor, then we have a very good chance to eradicate this pathogen,” says Song. This protein triggers the immediate symptoms of typhoid — lethargy, stupor, malaise, a drop in white blood cell counts and in rare cases, neurological complications — and is instrumental in establishing persistent infections. Not only does the toxin injure cells, but it also helps traffic *S. Typhi* to specific parts of the body.

Song teamed up with Dr. Ruth Nussinov, a senior investigator at the National Cancer Institute in Rockville, Maryland, and expert in computer simulation to model how typhoid toxin’s receptor binding subunit attaches to specific chains of sugars that stick out from the surface of the body’s cells, called glycans. Song also worked with Dr. James Paulson, a glycobiology expert at the Scripps Research Institute in La Jolla, California, whose group developed an array printed with different types of glycans. With this array, Song recently tested which types of glycans the toxin prefers to bind.

“We get so many requests to use our array, so we’re pretty careful about who we get involved with,” says Paulson. “But Dr. Song was very clear about what she was looking for and that she was able to provide us with samples that are biologically active in glycan binding, which made it an interesting, high-priority collaboration.”

The array data showed that the typhoid toxin formed stronger bonds when the glycan had multiple branches. This specific type of branched glycan primarily occurs on the surface of immune cells and on endothelial cells that line the arteries in the brain, providing an explanation for how typhoid toxin attacks these two cell types, which likely helps them establish a persistent infection.

Furthermore, when Song gave mice that are susceptible to typhoid toxin a vaccine against it, they were fully protected. Song thinks that a human vaccine that also targets the toxin would be more effective than existing vaccines. Such a vaccine may prevent long-term infections, as well as typhoid symptoms, so that we could one day eradicate typhoid.

A new twist on the lymph system

Collaborations can also advance a scientist’s research by letting her tap into the highly specific expertise of a colleague. These collaborations can be especially helpful when one’s research takes a sudden left turn due to some unexpected findings, which happened to Dr. Natasza Kurpios, associate professor in the Department of Molecular Medicine. Kurpios’ group studies how organs form, specifically, how tissues deviate from the body’s initial symmetry to create asymmetric organs, like the heart and stomach.

Asymmetry is especially important in the small intestine. As it grows and lengthens, it begins looping in the counter-clockwise direction so that it fits neatly into the gut cavity. A springy, elastic tissue called mesentery suspends the intestines inside the abdominal cavity. Mesentery is crisscrossed with blood vessels supporting the gut. If the small intestine loops in the wrong direction, it can kink like a garden hose and cut off its own blood flow. This can happen in babies with a rare birth defect, creating a potentially deadly pediatric emergency requiring surgery.

By studying development in embryonic chicks and mice, Kurpios’ lab has discovered that besides holding up the growing intestine, the mesentery also gives the signal that begins the process of counter-clockwise looping, thanks to a master regulator called *Pitx2*. Cells in the mesentery also diverge developmentally to become blood vessels that nourish the intestines, and lymphatic tissues that transport dietary fats. “We believe that *Pitx2* sets the stage for asymmetric gut looping and downstream of this pathway is how blood vessels and lymphatics form,” says Kurpios. “If the gut rotates one way, the blood vessels and lymphatics have to follow.”

Further experiments showed that the lymphatic system in the gut depends on the genetic program that makes arteries in the mesentery. This finding overturned a century-old idea that all lymphatic tissues derive from veins. The discovery also plunged Kurpios into the unfamiliar world of the lymphatic system.

Lining the intestine are finger-like projections called villi that absorb nutrients. A lymphatic vessel called a lacteal pokes into each villus to transport most fatty acids from the diet. Healthy lacteals transport these fats to the bloodstream via the lymphatic system, but when lacteals fail, they cause non-alcoholic fatty liver disease, obesity and problems with trafficking white blood cells.

To further investigate how *Pitx2* controls lymph tissue development, Kurpios’ group obtained a mouse in which the *Pitx2* gene is barely active. Due to an unknown malfunction, the mice developed fatty liver disease because the fats travelled straight to the liver, rather than the lymphatic system. Its lymphatic collectors looked clogged, like “beads on a string” and it had symptoms similar to a rare disease that affects humans and some dog breeds, called intestinal lymphangiectasia.

Kurpios had a fascinating metabolic problem on her hands, so she consulted with Dr. Patrick Tso, director of the Cincinnati Mouse Metabolic Phenotyping Center. “Patrick Tso is a pioneer in lipid metabolism and he has been a big supporter of our research,” says Kurpios. “He has been able to provide us with reagents and guidance to look at fat metabolism, so we can figure out how *Pitx2* is regulating lymphatic function in these mice.”

Kurpios plans to visit Tso’s lab so that she can run diagnostics on her sick mice. “There’s a lot of lipid people, there’s a lot of liver people, and there’s a lot of developmental people, but there are very few who are working at the borders,” says Kurpios. “That’s why these collaborations are so important.” ●

Name: College of Veterinary Medicine
Address: Ithaca, NY Date: 2018

R_x



MD: _____

Signature: _____

DIVERSITY Rx:

BY LAUREN CAHOON ROBERTS

CVM pushes new efforts to create an inclusive community

Diversity and inclusion: two words used frequently in organizational discussions, mission statements and national dialogues around policy and politics. With so much mention, the words can run the risk of losing meaning. Yet they represent Cornell's founding principle of '... any person ... any study.' The College of Veterinary Medicine has aimed for that vision — albeit with failings and flaws along the way — throughout its history. Today, the college continues to strive for a leadership role in diversity and acceptance — a complex undertaking considering its placement in a region and industry that are both considerably non-diverse. However, for Lorin Warnick, D.V.M., Ph.D. '94, the Austin O. Hooey Dean of Veterinary Medicine, and the rest of the college community, it's a challenge worth fighting for.

"We have tangible benefits when there's diversity in this community — and I mean diversity in every sense of the word — diversity of race and ethnicity, as well as diversity in thought and in experience," says Warnick. "Many of the best ideas in life have come from

these intersections."

Starting trends, and building from them

In 1910, the college awarded the first veterinary degree to an American woman, Florence Kimball. While Kimball is a badge of pride for CVM, it is marred by the fact that up until 1970, only a small number of seats were made available to female applicants. Mary Smith, D.V.M. '72, professor in the Department of Population Medicine and Diagnostic Sciences, recalls her application process to the college. "After fifty-eight men had been selected, four women were summoned to the Hagan Room," Smith says. "We were told, 'Two of you we will accept and two we will reject,' and one at a time we were called out for an interview." Times changed. New admission policies caused a 500 percent increase in women admitted to Cornell between 1971 and 1977, and today, roughly 75 percent of the college's graduates are female, reflecting the overall trend in the profession where over two-thirds of veterinarians are now women.



THE DEMOGRAPHICS OF THE CVM STUDENT BODY HAVE CHANGED SUBSTANTIALLY OVER THE ERAS.



The college was also one of the first two in the country to admit the most African American students before 1920, conferring a Ph.D. to Frederick Douglass Patterson who would go on to become president of Tuskegee University, develop the Tuskegee Airman Program and found the Tuskegee veterinary college. Today, under-represented minorities (known as URM) and include African Americans, Native Americans, and Latinos) make up about 19 percent of the college's veterinary student body. The incoming class this fall will be 23 percent. Currently, 30 percent of American citizens identify as URM, and are estimated to be up to 40 percent by the year 2050. "We'd like our college to more fully reflect the national population as a whole," says Warnick.

When considered among its peers, Cornell stacks up fairly well in diversity. Twenty-nine percent of the college's veterinary student body are students of color — the sixth-highest percentage of ethnically and racially under-represented students at U.S. veterinary colleges. This statistic includes students of Asian heritage, an ethnic group that is not widely represented in veterinary medicine. Zoom out, however, and the percentages are still problematic. According to 2014 data from the Bureau of Labor Statistics, the field of veterinary medicine is 97.3 percent white — the highest of any field — leading to *The Atlantic* magazine dubbing it as "the whitest profession."

These facts are not lost on the national leadership in the veterinary field. In 2005, the Association of American Veterinary Medical Colleges (AAVMC) launched an initiative to increase diversity at American veterinary colleges, which bumped URM enrollment up from 9.7 percent to 14.6 percent over ten years.

In line with this initiative, Cornell University and the veterinary college have also implemented strategic programs to boost diversity. In 2011, the college launched its Veterinary College Diversity Committee, an expansion from the Faculty Affirmative Action Committee created in 1998. The new committee, which now includes staff and students in addition to faculty, was created to foster inclusion throughout the college. In 2012, Cornell University enacted the Towards New Destinations program, which mandated that each college aim for measurable results in composition, engagement, inclusion and achievement across all constituent groups, including

veterinary and graduate students, faculty, staff and more. In terms of faculty and staff diversity, "This works on top of the college's annual affirmative action efforts," explains Toral Patel, college HR recruiter and member of the Veterinary College Diversity Committee. "The university analyzes the compositional diversity of its workforce by job group, comparing that to the demographics data of qualified talent available. This analysis helps us develop proactive recruitment and retention strategies, and to identify and eliminate any unconscious bias in the employment process." CVM's HR department has also overseen the adoption of gender-neutral bathrooms at the college, and encourages college members to work with diverse contractors whenever possible.

The college's veterinary students have also kept a steady drumbeat of diversity efforts. Cornell had the first chapter of Veterinary Students One in Ethnicity and Color (VOICE), which promotes and fosters cultural diversity at CVM and in the profession as a whole, and organizes guest and social events for students of color. The Vets for Diversity (also known as the Homophiliacs) unites LGBTQ members of the college community with support and social events.

Big changes

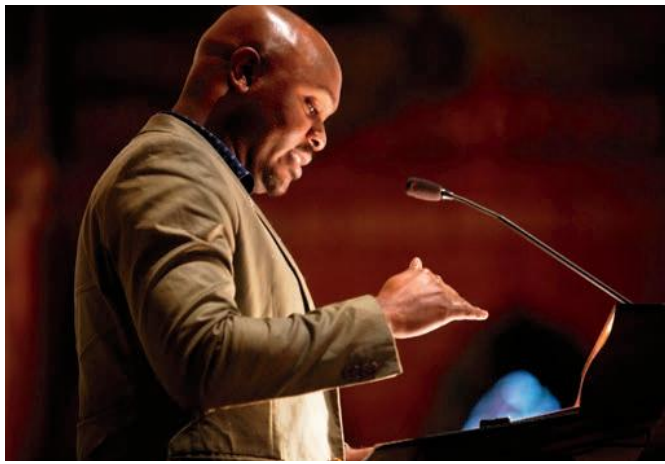
And then, the presidential election of 2016 shook up the entire nation. Topics such as immigration, equality, civil rights and foreign policy became lightning rods for debate for people across the country, the university and at the college. Personal and professional conflicts were heightened everywhere, including at CVM, where the focus on diversity and inclusion reached a new level. "There was a real desire to talk about and acknowledge the events that were taking place," says Jai Sweet, Ph.D. '96, director of student services and multicultural affairs. "People's lives were being impacted on a daily basis by these current events."

In painful punctuation to national tensions, repeated racist incidents took place in Ithaca and on the broader Cornell University campus around this period, which caused fear and anxiety for all Cornell community members, including those at the College of Veterinary Medicine. Toni Thibeaux, program coordinator for the Masters of Public Health (MPH) program, was one of them. She had only recently moved to Ithaca from Washington, D.C. and faced uncertainty and fear in a new town



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—JAI SWEET, PH.D. '96



LEFT TO RIGHT: CORNELL WOODSON; MPH STUDENTS; DR. HECTOR AGUILAR-CARRENO

and working environment. “It was very challenging,” she says of the racist events. “At first, I didn’t want to say anything because I didn’t think it would matter, or that anything would be done.” However, Thibeaux was met with support from her colleagues and college leadership to brainstorm meaningful ways to move diversity efforts forward. “As a person of color, that spoke volumes to me,” says Thibeaux. “It created organizational trust.”

A new approach

With the national and local upheaval, the college had a collective desire to expand its identity into one that valued personal experience, and sensitivities along with its traditional focus on empirical data and clinical outcomes.

“There’s been a concern that the vet school has been isolated from these national debates,” says Sweet. “We wanted the conversations in the school to mirror what’s going on at the national level.”

Those conversations are now in full swing, thanks to the Many Voices, One College series that began in January 2018 and features a combination of lectures and informal discussions focusing on diversity and inclusion. While the college had already been routinely hosting talks on diversity, this series marks a more dedicated and regular effort.

Lectures have included “Black Lives Matter, Blue Lives Matter, All Lives Matter,” facilitated by Cornell Woodson, diversity and inclusion programs lead in the Department of Inclusion and Workforce Diversity, who dove head-first into discussing these slogans while encouraging attendees to open up with their own thoughts and feelings about them. Another talk, “Tackling Impostor Syndrome,” featured activist and educator Dena Simmons from the Yale Center for Emotional Intelligence who discussed how emotionally intelligent and culturally responsive practices can help to tackle impostor syndrome and create equitable and welcoming communities for all. Sara Xayarath Hernández, M.R.P. ’07, associate dean for inclusion and student engagement in the Graduate School, also spoke to the college as part of the program. This fall, the series will host speaker Dr. Jaron Jones, director of diversity and inclusion at the University of Florida College of Veterinary Medicine.

While the speaker series aims to educate, the monthly diversity discussion sessions aim more to engage. “We’ve

designed this series to be a community dialogue, rather than a lecture format,” says Mary Beth Jordan, director of human resources at the college. This dialogue series aims at a specific issue. “I felt that there wasn’t enough mutual understanding among people in the college who come from different backgrounds,” says Warnick. “We wanted to provide a forum to foster open communication.”

These have included events such as unstructured discussions with Warnick on personal experiences of inclusion at the college, and a group viewing of an episode of the hit sitcom *Black-ish* with an open discussion afterwards. “This is much more than we’ve ever done before, and it’s been so much more effective,” says Sweet. “Because of the informal setting of these series, I often find myself engaging in some really interesting conversations that wouldn’t normally happen with coworkers.”

“The fact that these events are regular and informal has really worked to build a community,” says diversity committee member and Associate Dean for Academic Affairs Dr. Susan Fubini.

The point of all of these events is simple — to start conversations and create relationships between people, says Hector Aguilar-Carreno, associate professor of microbiology and immunology and chair of the CVM Diversity Committee. “Cultural divides happen because we don’t try to get to know each other,” says Aguilar-Carreno. “We want to inspire people to make new relationships with people who are different from themselves. Once you make that effort, it’s such a beautiful thing to have that new depth of understanding of one another.”

Addressing diversity in the sciences

Lack of diversity isn’t just a veterinary medicine problem. Academic science departments struggle to reflect a representative number of minorities in their ranks as well.

A 2018 study in *Plos ONE* found that, of students earning a bachelor’s degree in biological sciences, 60 percent are white while 18 percent are URM. Additionally, out of all high school graduates who express an interest in biological or agricultural sciences and then persist from interest to a degree, 46 percent are white, while 25 percent are URMs. Other recent studies found that URMs are only earning 12 percent of doctoral degrees awarded, and make up just 11 percent of post-doctoral researchers.



“It’s pretty striking that the higher you go up in the academic hierarchy, the fewer URMs there are,” says Aguilar-Carreno.

The college is faring better than the nation-wide numbers in terms of its graduate student demographics; 26 percent of current students within the colleges Biological and Biomedical Sciences (BBS) Ph.D. program identify as URM, and 33 percent of the incoming class of 2018 Ph.D. students are URM as well.

Warnick would like to encourage even greater strides throughout every unit and level at CVM, noting that diversity efforts have a two-fold goal. “One is to benefit the organization itself, to bring new ideas and challenge each other’s assumptions,” says Warnick, “and the other is simply to make things right for groups who have been disadvantaged by unfair bias and discrimination.”

The numbers of URMs in the college’s faculty will hopefully get a boost thanks to a new grant program run by Aguilar-Carreno and Associate Professor of Immunology Cynthia Leifer, Ph.D. ’00. Funded by the National Institute of Allergy and Infectious Diseases (NIAID), the program specifically aims to increase the level of success of URMs in Cornell faculty that are working human allergy and infectious disease research. To do this, Aguilar-Carreno and Leifer’s program will have three goals: mentoring junior URM faculty, training URMs in grant writing and bringing more URM post-doctoral researchers to Cornell with the aim of recruiting them to eventual faculty positions. These targeted efforts will tackle a key attrition point in the advancement of URMs in scientific academia — the jump from post-doctoral training into tenure track positions.

Struggle and strength

Aguilar-Carreno can personally identify with the story told by the statistics. As a graduate student at the University of Southern California, he faced not only a rigorous research and academic workload, but a language barrier as well, having moved from Mexico after his undergraduate degree. “I really struggled,” says Aguilar-Carreno. “My peers had the writing and social skills that I didn’t have yet. I almost didn’t graduate.” His academic performance was suffering so much that his a member of his advisory committee publically stated that they didn’t think he was going to graduate. “I was really devastated by that,” he says.

“CULTURAL DIVIDES HAPPEN BECAUSE WE DON’T TRY TO GET TO KNOW EACH OTHER. WE WANT TO INSPIRE PEOPLE TO MAKE NEW RELATIONSHIPS WITH PEOPLE WHO ARE DIFFERENT FROM THEMSELVES. ONCE YOU MAKE THAT EFFORT, IT’S SUCH A BEAUTIFUL THING TO HAVE THAT NEW DEPTH OF UNDERSTANDING OF ONE ANOTHER.”

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JAI SWEET, PH.D. '96 LEADS A MANY VOICES, ONE COLLEGE DIVERSITY DISCUSSION SERIES; BBS STUDENTS TALK AT A POSTER PRESENTATION SESSION.



What his committee members didn't know at the time was that Aguilar-Carreno was supporting his parents and his two younger siblings on his graduate student stipend. On top of the financial stress, he was dealing with intense emotions. Aguilar-Carreno had found himself in love for the first time — with another man — a fact that he was terrified to reveal to his traditionally minded family and friends. "I was afraid I was going to be disowned," he recalls. "This is just an example of how the scientific community may not be aware of what people are going through. Those who don't look great on paper, who aren't at the same level as their white peers can end up being very successful if someone believes in them and has the patience to coach them enough."

Luckily, Aguilar-Carreno's deep motivation spurred him to compete his graduate work, and he's since gone on to lead a highly successful research lab conducting foundational studies on some of the world's most deadliest viruses.

Not just a numbers game

While the grants and programs led by college and the university answer part of the issue around flagging diversity numbers — the issue of inclusion and integration is harder to solve.

A 2011 survey of all veterinary students done by the AAVMC showed that almost a third of racial and ethnic minority students had experienced racism, mostly from other students. Additionally, 20 percent of LGBT students have heard homophobic slurs in the academic environment. Students with disabilities also reported feeling alienated. Even without directly harmful acts, subtle and often unintentional assumptions and statements (often referred to as "microaggressions") can erode a person's sense of belonging and respect.

This highlights the dissonance between an institution's written mission and the day-to-day reality for its members. "I call it the blueprint," says Thibeaux. "Every organization has its blueprint, the words on paper that validates its initiatives. But the blueprint only protects the brand — it doesn't protect the people."

To take the mission beyond the blueprint, the college has begun to seriously tackle issues like unconscious bias and microaggressions in the classroom and beyond. The MPH program has cultural competency and social justice baked

into the curriculum through courses such as the Public Health Leadership and Ethics course and the Public Health Foundations courses, which focus on the social and structural determinants of health and one health and planetary issues.

On the HR side, college supervisors are now actively encouraged to promote professional cultural and diversity training within their teams. Gen Meredith, MPH associate director, cites one such training — a weeklong cultural competency course — as a turning point for her own awareness. "I needed to learn what I didn't know and find ways to manage my guilt," says Meredith. "I have always been working to assure equity in health, but now I have better ways to move forward."

The college has hosted these kind of pivotal trainings within its own halls. In 2016, the college was formally recognized as a role model in supporting and promoting LGBTQ+ initiatives and advocacy within the Cornell University community for their LGBTQ seminar series which included 'Safer People, Safer Places,' which covered sexuality, homophobia, heterosexism, and ways to create an inclusive space; and 'Trans 101,' which explored issues and processes faced by transgender individuals.

In additional efforts, the college has invited the Cornell Interactive Theater Ensemble to enact scenes where these incidents occur between actors, and then facilitate discussions with the audience afterwards. "It was wildly successful in the Department of Clinical Sciences," says Fubini. "Everyone really got a lot out of it. I think it really shows us that we all have unconscious biases, and we need to work on being aware of them." Plans are in motion to present the program to other units within the college.

"Our natural behavior is to quickly classify people based on their readily apparent differences," Warnick says. "And what I want to encourage our community to do is to treat each person as an individual, and also consider the possibility of their not-so-readily-apparent differences—those that come from their own personal life experiences."

“I WANT TO GET TO A POINT WHERE WE DON’T HAVE TO DEFINE WHAT DIVERSITY IS AND MAKE A CASE THAT IT’S IMPORTANT. I WANT IT TO BE SO INGRAINED IN OUR COMMUNITY AS A WHOLE, SO WE CAN MOVE FORWARD WITH MORE NUANCED TRAININGS AND GOALS.”

—TORAL PATEL



CVM COMMUNITY MEMBERS CELEBRATE NATIONAL COMING OUT DAY.

The dialogue continues

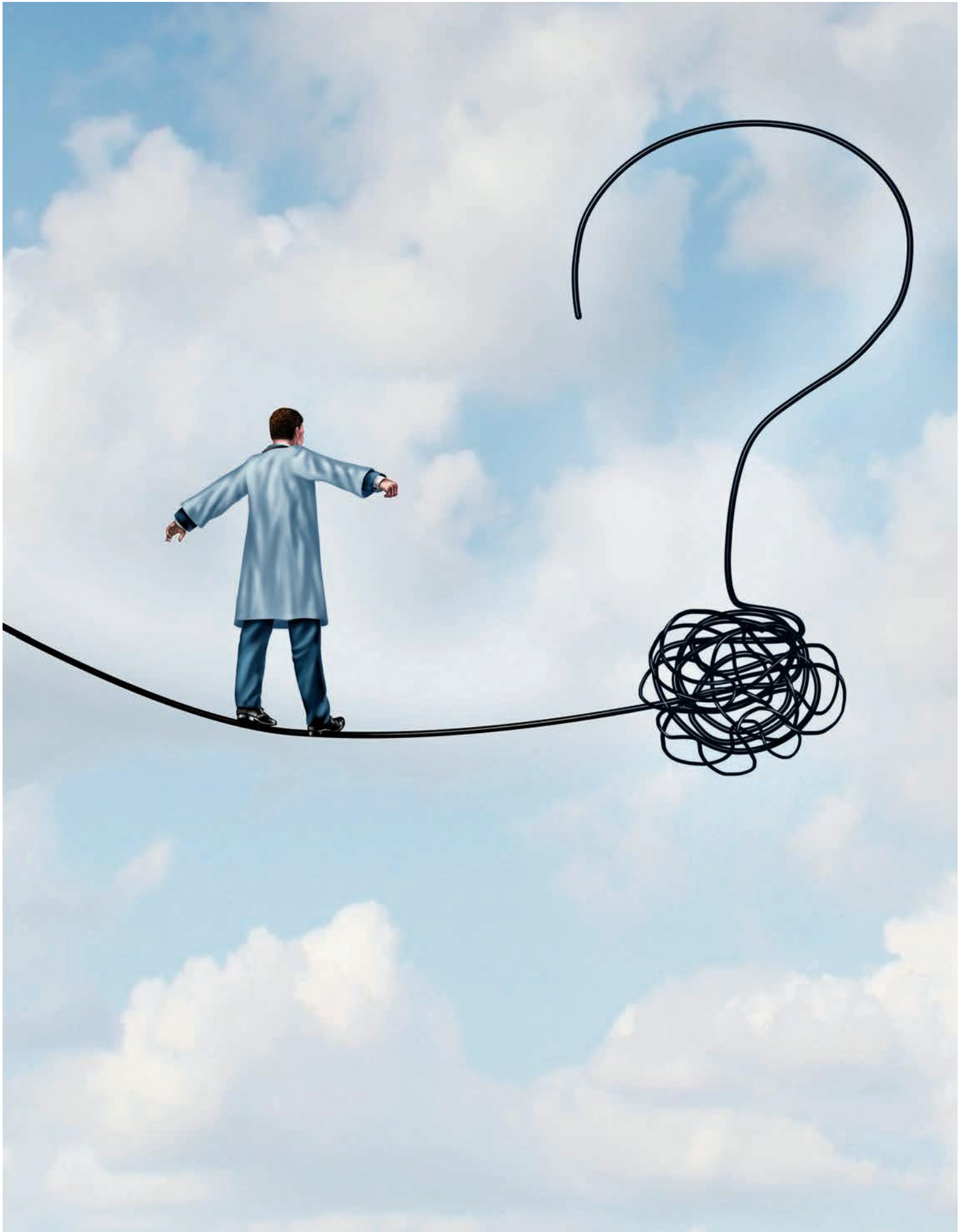
With the next academic year on the horizon, college leadership is thinking hard about ways to take diversity and inclusion efforts to a higher level — beyond hiring and admissions targets, beyond overused platitudes and PowerPoint slides, and into a true sense of belonging for every person involved with the College of Veterinary Medicine.

“This is not just an HR issue,” says Jordan. “This is a community issue. We need every member of the community to be fully engaged for success. I want to hear that people feel they can bring their whole selves to work — whatever that means to them, whether it is their religious, cultural, or gender identity. That’s when I will feel like we’ve achieved our goal.”

There is also a hope that, in the future, efforts on increasing diversity and inclusion will grow beyond the “101” stage. “I want to get to a point where we don’t have to define what diversity is and make a case that it’s important,” says diversity committee member and HR Generalist Toral Patel. “I want it to be so ingrained in our community as a whole, and we can move forward with more nuanced trainings and goals.”

The journey to that goal for the college continues. Plans are in place to host graduate student discussion sessions around acceptance and identity. The college will also host “My voice, my story,” a film and discussion program featuring personal struggles of graduate and professional students. Future trainings will cover unconscious bias and intergroup dialogues that touch on difficult conversations.

Open and honest conversations around our differences and our acceptance of others are the kind of things Warnick wants to encourage, with the caveat that these diversity dialogues are only fruitful if the people that attend are, in fact, diverse. “The biggest challenge right now is drawing more people to the discussion,” Warnick admits. “Right now there is a core group of people who take a personal interest in this area who attend.” He explains that it can often be the people who are the least interested or willing to have these conversations that will benefit from them the most. “It can be quite hard for people to talk completely honestly with each other—every group has its own culturally accepted set of things to say. But I believe that real change happens when people from different backgrounds and viewpoints can talk to one another with both respect, and transparency, around these challenging topics.” ●



Veterinarians, Inc.

Veterinarians weigh the choice to stay small or join the giants

BY MELANIE GREAYER CORDOVA & LAUREN CAHOON ROBERTS

As newly-graduated veterinarians enter the workforce each spring, they're seeing more and more of the same logos across the veterinary job boards: Pet Partners. Blue Pearl. Banfield. NVA. Large veterinary care conglomerates are on the rise, with practice consolidation occurring at an increasingly rapid rate. For many in the field, it's a trend that sparks either excitement or concern. While college alumni and other veterinary colleagues fall on both sides of the debate, it will be up to the students to decide which path of the trend to travel, and for the college to prepare them for both.

Years in the making

The process in which larger practices buy smaller ones is not new. For decades, independent practices have joined to pool resources and maximize efficiency. In recent years, however, larger corporations joined the game. Just over a decade ago, Mars Petcare, a subsidiary of the food giant Mars, Inc., bought Banfield Pet Hospital, which had more than 900 branches in the United States. In 2015, they acquired BluePearl — the largest companion animal specialty and emergency care chain in the country with 53 locations. They then purchased Pet Partners in 2016, a group of 60 general practices.

Mars' next move shook up the veterinary industry even further: In early 2017, they announced their purchase of VCA Animal Hospitals, which at the time owned 780 animal hospitals in the United States and Canada, along with 50 diagnostic laboratories. This most recent consolidation names Mars as the owner of nearly 2,000 practices in North America, about two-thirds of all corporate-owned hospitals. Mars Petcare's reach dominates over any other veterinary conglomerate, with National Veterinary Associates coming in at a distant second with 422 branches.

Dr. Nick Nelson, acting president and chief operating officer of Pet Partners, attributes the consolidation trend to

factors like failure to keep up with wage inflation, which is a daunting prospect for veterinary students emerging from school carrying high levels of debt. He also notes how wages for para-professionals like licensed and associate technicians were staying stagnant at best and were unlivable at worst. These factors, combined with hospitals duplicating purchases of expensive equipment in the same town, can make for an unstable, unproductive field, says Nelson.

"Part of private practice consolidation is about creating a stable future for our profession," he says, "as well as a future that is about the health and well-being of our people."

Maritza Perez-Bruno, D.V.M. '87, notes that in New Jersey, where she owns her family-run practice West Orange Animal Hospital, the outlook is much different. "I personally don't see consolidation as a long-term thing," she says, "at least not in our area." Indeed, small practices aren't going anywhere. Of the total veterinary medical firms in the United States, corporations own only 3,000 of the total 26,000.

Perez-Bruno runs her practice with husband and fellow alum Donald Bruno, D.V.M. '87. Their daughter Ashleigh Bruno, D.V.M. '18, will be joining the practice in 2019. Perez-Bruno says she has witnessed the profession's instability actually increase in her area since she purchased her hospital in 2002, after signing on as an employee under the previous owner in 1989. "At first, people in our area who sell to corporate receive a lot of money, and for the first however many years, they have contracts with the doctors to stay on to make the transition smoother," she says, "but when that contract is gone, they keep the original associate as the medical director and keep hiring new associates, and what we're finding is that clients aren't happy with those sorts of changes." Perez-Bruno says that this "revolving door" of associates coming in and out is part of the problem with corporate consolidation.



MITCHELL KORNET '76, D.V.M. '79, SPEAKS TO CORNELL VETERINARY STUDENTS AT THE 2018 WHITE COAT CEREMONY.

Consolidation: benefit to new vets?

Student debt is a major concern for most graduates entering the field. For this and other reasons, Donald Powell, D.V.M. '69, co-founder of Pender Veterinary Centre in Fairfax, Virginia, sees consolidation in a more positive light. "It's doing good things for veterinarians, and I've got no problem with that," he says. "We're currently dealing with a shortage in veterinarians, so some corporations are offering a six-figure starting salary, and help pay off some student loans as well." Powell knows that to compete with corporations, his hospital needs to offer attractive salaries and work-life balance to new recruits.

In November of last year, corporate veterinary practice Banfield Pet Hospital introduced a Veterinary Student Debt Relief Pilot Program that offers its eligible doctors options that include loan refinancing, a \$150 monthly student loan contribution, and \$2,500 one-time, lump sum contributions for every qualifying student program a doctor might have participated in prior to graduation.

Additionally, practices like Banfield often have the ability to offer comprehensive benefits packages that smaller, private practices may not. This was key for Dr. Ashley Harris, director of veterinary quality at Banfield. "To me, the number-one advantage of working in corporate practice is the benefits we can offer our associates, which don't compare to any private

practice I know of," she says. "At Banfield, that's everything from health insurance, to paid time off, medical leave and volunteer opportunities, to covering costs of continued education and licensing — whether for our doctors or our para-professionals."

Lauren Griggs, D.V.M. '16 worked at a Banfield clinic in Arizona for over a year immediately after graduating, and attributes the signing bonus of \$15,000, fully-funded moving expenses, and benefits package as a key part of the appeal that initially drew her to take a position with the company. But, for Griggs, these perks could not make up for the eventual burn-out she experienced at her high-volume branch. "I loved the benefits. They were really good," she says. "But they weren't worth my sanity."

Meeting financial goals

Griggs' comment touches on a key complaint around corporate clinics — the focus on the bottom-line.

"At Banfield, they do emphasize getting as many pets in as possible," Griggs recalls of her branch. "They have had a reputation of pressuring vets and practice managers to sell more plans and products."

"Every quarter," says Perez-Bruno of West Orange Animal Hospital, "corporations want to have increased productivity, which translates to increased revenues. You're not just accountable to you anymore; you're accountable to a board

of directors.” In some ways, she says, this can be a good thing because it shows associates how a well-run practice makes money. When a corporate entity purchases a private practice, they provide that practice with all the tools and help they can, especially if it’s struggling, she notes, and all of this help is contingent on meeting those quarterly goals. “You can only make so much money after a while,” Perez-Bruno says. “After a couple of years of having a very good practice, they will still want more.”

Mitchell Kornet ’76, D.V.M. ’79, owner of Mid Island Animal Hospital in Hicksville, New York, says many of his colleagues see an apparent difference in the goals of some corporate practices and private practices. “Corporate practices have to answer to stockholders and the bottom line, while many private practices focus on long term relationships with patients and clients,” says Kornet. “Every practice has to make a profit to be sustainable, but a concern is that some corporations are not as interested in the bonds that their veterinarians make.”

Profit often comes through enacting efficient policies throughout a practice. Michelle Vitulli, D.V.M. ’91, owner of Caring Hands Animal Hospital in Centreville, Virginia, says, “For the business, there is a focus on streamlining the ‘back office’ operations, improved market share for the pharmacy with lower pharmacy costs and increased profitability by a more focused management of expenses.” These expenses can be daunting for a young professional considering owning her own practice, and can play a role in whether one chooses the corporate or private route especially in the early stages of a career.

Corporations often mitigate these concerns, as there are few ownership risks involved for those who join up with Pet Partners, for example. Nelson says that Pet Partners can provide the leadership skills a veterinarian might be interested in learning but without the financial risk of building her own team. He describes Pet Partners as a place “where you can lead a team and cut your teeth but not on your own dime.” Nelson’s focus is less to do with straight financials and more to do with people: “Only a small percentage of business ownership is owning from a bank,” he says. “In fact, I would challenge that most of business ownership is when you get to lead and develop people, when you provide a harmonious environment, where you create a great place to work, where inclusion is at the forefront.”

However, many maintain that business ownership is the best path to financial success in the veterinary field. Kornet is concerned how the consolidation trend might remove this path for many veterinarians.

“This is really impactful for alumni looking to buy a practice,” he says. “Thirty years ago, the model was that, as a veterinarian, you’d buy into your own practice, or start your own practice — but now there’s the competition with a larger corporation buying that practice instead. I think that’s bad for future entrepreneurs because they don’t have the same opportunities.” If young veterinarians want to enhance their earning potential, says Kornet, they’ll need to own their own practice.

Harris weighed these considerations carefully before deciding to join Banfield. “Years ago,” she says, “I was



LAUREN GRIGGS, D.V.M. ’16

considering owning my own practice, but ultimately realized there were many things I didn’t want — to be my own marketing department, finance department, public relations and so on. At Banfield, we have experts in each of those areas, so I can do as much or as little of them as I want, and that’s one of the many reasons I chose Banfield, along with the community of support, flexibility, dedication to quality medicine and commitment to continuous learning and improvement.”

Client care

Client care is another point of debate between private or corporate practices. For those who are pro-consolidation, there’s much to be gained.

“[Banfield’s] scale enables us to strengthen and improve veterinary medicine by sharing our data, tools and insights with the profession and pet owners alike,” says Harris. “Being part of an even larger company like Mars enables Banfield and our sister practices to learn not only from each other but also to benefit from the wealth of knowledge within the Mars network.”

Griggs had a different experience at her Banfield clinic, where she found herself, just a year out of veterinary school, struggling as the only veterinarian on staff. “I was working by myself and not continuing to grow,” says Griggs. “I had to turn so many patients away because I didn’t have the experience to treat some of the more complicated cases ... Ultimately, the medical care was the last straw for me — I felt like the quality was really lacking.”

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—MITCHELL KORNET ’76, D.V.M. ’79

While caseload may be high, corporate practices do provide a standardized customer experience, with a set of guidelines on how each branch delivers its services. While this standardization may appeal to some clients, it could wear on a clinician, says Kornet. “Some corporations have formulas that dictate how you’re to treat an animal, and that leaves out a lot of the creativity a veterinarian might have,” he says. “In private practice, I get to have a lot of fun thinking about each patient and using my creativity.”

Perez-Bruno agrees. “[Corporations] have an algorithm they have to follow,” she says, “and each doctor has to practice the same way.” By contrast, in Perez-Bruno’s practice, she employs four veterinarians, each of whom practices medicine differently. She says there is no need to dictate to them a specific way of practicing if their methods differ or if they come from a different school.

“As long as my patients are happy and that you’re doing good medicine, we allow you to practice any way you feel comfortable,” she says. “We also have the flexibility to practice according to the owner’s financial situation, since we are more flexible than corporate in how much we want to charge to help a patient for treatment.”

Creating a community

The opinion on corporate vs. private practice culture runs the gamut. Some say corporations provide a unified culture and others that it can feel like a faceless organization, while still more may argue that the stress of keeping a private practice afloat undercuts the flexibility it can also provide.

Newer generations of veterinarians are clear about the work-life balance they expect in their field. Bigger companies are able to offer more flexible work schedules, and that sort of culture may drive them to the corporate side.

Perez-Bruno remarks on the trade-off: “One thing with corporate is you can leave everything behind you at the end of the day, but then you’re an employee only,” she says, which isn’t the case with her practice. “It’s more of a family culture here,” she says of West Orange Animal Hospital.

“We have patients who have been coming here for generations. People come in here and say they remember when they were a kid. It’s being kept by the same person for over 30 years, people know you in the community and you’re part of the community.”

Vitulli of Caring Hands Animal Hospital adds, “Just because there are these benefits [to corporate consolidation],” she says, “it doesn’t necessarily equate to a better work experience, better team experience or better client experience.”

In Griggs’ case, she has since left Banfield and joined a different kind of conglomerate — a co-op of 21 different hospitals in Arizona known as AZ Pet Vet where she works for Surprise Animal Hospital. Each co-op member functions as an independent business, but adheres to core standards set out by AZ Pet Vet. “From the moment I walked through the door, I could see a huge difference, not only in quality of medicine that was being provided, but also the compassion the providers had,” says Griggs. “I couldn’t believe it was all there in one place.”

In reflection on her previous job, Griggs notes that the Banfield model can work well in other branches. “If you’re in

a location that’s able to retain its veterinarians and practice managers, then you wouldn’t get the same kind of burnout I had,” she says. “I really like the values Banfield promotes — it’s all about preventative care, and they make veterinary care affordable for people who struggle with those costs.”

Ownership still an option

While alumni may differ in their views on the benefits that consolidation presents to clients and clinicians, there’s agreement that a form of practice ownership is a smart path for many young veterinarians. “What I did myself thirty years ago is still possible,” says Kornet. Indeed, money is even more accessible today than decades ago. “Banks are more willing to lend than they were before. They realize that veterinary practices are often profitable business entities.”

“If I was a graduating today, I would still go out on my own,” Powell says. “I would look very hard at the right location, right building and the right business to purchase. If you look at those factors carefully, practice ownership is still a very valid thing to do.”

For Harris at Banfield, choosing between owning a practice and going corporate is a very personal choice. “When I entered practice, I wrongly assumed every practice had the same set of offerings,” she says. “So whatever the case may be, it’s important to ask questions in advance to increase the likelihood that your needs will be met.”

There are banks that specialize in veterinary hospitals, says Perez-Bruno, and there are even veterinary accountants. “There are people out there who are willing to help you if that is your dream.” And, while the financial options may be more constrained due to the consolidation trend, says Kornet, that doesn’t mean that buying or starting a practice can’t be done.

Training for any path

While debate stirs around issues such as finances, professional development, client care and work culture, the College of Veterinary Medicine seeks both productive engagement in the discussion and to prepare students for career success. “There is no doubt that practice consolidation is happening,” says Lorin Warnick, D.V.M., Ph.D. ’94, Austin O. Hooey Dean of Veterinary Medicine. “And I believe it is our job as a college to prepare our students for the full spectrum of career opportunities out there — whether it’s starting their own private practice or a veterinary service corporation.”

As part of that training, the college has driven business and entrepreneurship skills through several efforts, including the Animal Health Hackathon and bringing in business leaders in the veterinary field to speak to students. The latest and most comprehensive effort is through the recent launch of the new Small Animal Community Practice (SACP), a new 10,000 square foot building on Campus Road, which operates as an independent companion animal clinic.

“Our goal is to prepare them for the day-to-day challenges of running an independent general practice,” Warnick explains. “The new clinic will do just that, blending entrepreneurial education with hands-on clinical training.” In addition to performing clinical treatments, fourth-year D.V.M. students will also be involved with billing, facilities, tracking cash flow, service pricing and human resources. Students will also be training

on new automated, smart software systems for managing electronic patient records, referrals and patient treatments.

Looking to the future

Veterinary medicine will continue to have its conflicting views on the corporate consolidation trend in years to come, and young professionals entering the field will be witness to the debate. They may also experience — and participate in — a range of other debates that alumni currently in the profession see on the horizon. Issues like the cost of medicine and livable wages, insurance for pet parents as well as for practitioners, are all movements developing in the field even now. On the consolidation trend, however, the dust has not settled, and the college isn't waiting for it to do so. "As more of our graduates find their place in the veterinary profession, they'll start shaping the pathways themselves," says Warnick. "And I'm confident the field will be richer and more robust for it." ●



MICHELLE VITULLI, D.V.M. '91, STANDS OUTSIDE ONE OF HER CARING HANDS ANIMAL HOSPITAL LOCATIONS.

DAVID BETTS/METROPOLITAN PHOTOGRAPHY



The Incredible Journey: Wounded hound travels across state lines to find healing at Cornell

BY KRISHNA RAMANUJAN

Sadie, an American foxhound, went missing from a hunt club on the West Virginia border in 2014. Over the next two-and-a-half years, she traveled close to 400 miles to upstate New York before being rescued in June 2017. Toward the end of that journey, she caught her right hind paw in a coyote trap and ended up losing it.

Fortunately, the story has a happy ending. Thanks to the care from her new owner and treatment from veterinarians at the Cornell University Hospital for Animals, Sadie was fitted this year with a prosthetic leg and is well on her way to thriving after an epic journey of survival.

On Jan. 10, 2017, Linda Hamilton, the dog control officer in the town of Chenango, New York, in Broome County, received a call reporting a stray brown and white hound with floppy ears was seen dragging a coyote trap on its right hind leg.

Between January and June last year, Hamilton worked tirelessly fielding reports of sightings in towns across Broome County. She learned that the dog was caught on a trail cam carrying the trap as early as December 2016, and by February 2017, a resident in Maine, New York, found the trap with Sadie's foot in it. Hamilton built a humane enclosure trap with an electro-magnetic door and posted a few hundred flyers in areas where the dog had been sighted. But Sadie avoided people and traps and kept running.

"She was traveling about nine miles a day," Hamilton said. "Everybody wanted to help her, but people have a hard time understanding that a dog is in survival mode at that point."

In June 2017, Nicole Asher, owner of Buddha Dog Rescue & Recovery in Tuxedo Park, New York, who specializes in capturing trap-savvy dogs, drove to the Endicott area and assisted in rescuing Sadie by setting up an enclosure trap. A tag on her collar identified her as belonging to the West Virginia hunt club, which Hamilton called, but the club didn't want her back. Soon thereafter, Hamilton adopted her.

"She had lost an upper canine," Hamilton said, "probably trying to get out of the [coyote] trap, and had a tear in her tongue. She probably had a litter of puppies on the way." And she had an infection of the uterus "that would have killed her" had she not been caught, Hamilton said.

In October 2017, Hamilton contacted Chris Frye, D.V.M. '11, assistant clinical professor of sports medicine and rehabilitation at the Cornell University Hospital for Animals, to inquire about fitting Sadie with a prosthetic limb. Upon examination, he found that the bones of her rear hind leg were sharp and splintery from where she had chewed her paw off the trap, he said. The soft tissue covering the area was thin, and he noticed the site was painful to her.

"I knew if I fitted a prosthetic with a stump like that the bones would cause ulceration in the soft tissue, and all sorts of problems would evolve," Frye said.



FROM LEFT, LINDA HAMILTON, DOG CONTROL OFFICER IN THE TOWN OF CHENANGO, NEW YORK WITH SADIE AND CHRIS FRYE, D.V.M. '11, ASSISTANT CLINICAL PROFESSOR OF SPORTS MEDICINE AND REHABILITATION AT THE CORNELL UNIVERSITY HOSPITAL FOR ANIMALS.

But he also found that Sadie was a perfect candidate for a prosthesis since her amputation had occurred below the ankle, leaving the joint, which provided an anchor that prevents the prosthesis from slipping.

Upon Frye's recommendation, in February of this year, Dr. Julia Sumner, assistant professor of small animal surgery, successfully operated on the limb to smooth out the bones and fold the skin over to create a soft tissue pad. Once the foot had healed, Frye measured the limb, took a molding and had the prosthetic made.

"It couldn't be any better than it is," said Frye of the way her leg has healed and how well she has taken to the prosthesis. He added that Sadie was a perfect dog for this type of treatment, with the right attitude and the right family.

"You have to have the right family and a dog that can tolerate surgery and bandaging and cast moldings and fittings and slinging the limb if necessary," Frye said. "Then you warn the owner, we could do all of it, we could have a perfect fitting with great alignment over the joint, and we may have a dog that doesn't want to use the thing."

Throughout the process, Sadie has been "the best patient in the world," Hamilton said. After regular appointments, physical therapy and slowly increasing the amount of time each day that Sadie wears the prosthetic, she is taking well to it, Hamilton said. She walks normally on it; she recently swam with it; and when she's romping around Hamilton's enclosed backyard with her three other dogs, she runs on it.

"She used it running the other day," said Jamie Szenher, Hamilton's partner and one of Sadie's owners. He heard a sound, "ba, ba, ba, ba, ba," of Sadie's prosthetic rapping on the ground outside. "We call her thumper," he said. ●



DR. ANIL THACHIL EXAMINES SAMPLES.



TRIED AND TESTED:

How the Animal Health Diagnostic Center protects the nation

BY CARRIE KOPLINKA-LOEHR

The 2001 outbreak of foot and mouth disease in the United Kingdom, which led to the death of six million cows and sheep, is a dire reminder of the need to monitor for foreign animal diseases. “We need to be vigilant and prepared,” says Dr. François Elvinger, executive director of the Animal Health Diagnostic Center (AHDC) & New York State Veterinary Diagnostic Laboratory (NYSVDL) at Cornell. His words capture the purpose of the AHDC — to improve and protect animal and public health. In serving New York and the country, this facility has developed into a powerhouse, diagnosing problems in an alphabet of creatures, from anteaters and equine Olympians, to dogs, dolphins and sea otters.

The AHDC’s 240 staff and faculty monitor for animal diseases and zoonoses. But they also develop new and improved diagnostic tests, maintain systems for responding to disease outbreaks and support veterinarians. The AHDC has been successful because of its unique constellation of breadth, collaboration, longevity, innovation and extension. Here are some of the lessons learned.

One-stop shopping

As part of the academic Department of Population Medicine and Diagnostic Science, the AHDC integrates research, teaching and extension with surveillance and testing. Laboratories span anatomic and clinical pathology, comparative coagulation, endocrinology, microbiology (including bacteriology, virology, parasitology, molecular diagnostics and serology) and toxicology.

AHDC programs include the Quality Milk Production Services (QMPS), Veterinary Support Services (VSS), rabies control and avian and wildlife health. These labs and programs offer more than 900 individual assays. Some tests are specialized; others are more typical: microbial cultures, parasite egg counts, chemistry profiles, complete blood counts and many more.

More than 7,300 clients from every state in the United States and from abroad submit samples annually. Nearly all are veterinarians caring for domestic animal species, wildlife, exotics and even zoo creatures, but some manage dairies, other livestock and poultry. In 2017–2018 clients shipped or delivered over 220,000 submissions from nearly 600,000 different animals, which the AHDC analyzed with more than a million tests. Belinda Thompson ’77, D.V.M. ’81, assistant clinical professor, says, “When you consider that about half of those submissions are coming from outside New York state, our impact nationally is tremendous.”

Collaborate

The AHDC is part of the USDA National Animal Health Laboratory Network (NAHLN), a consortium formed in 2002. Sixty laboratories in the United States coordinate surveillance, testing and response for 14 devastating animal diseases that could be brought to this country either by mistake or intentionally.

Under contract with NAHLN, the AHDC can test for avian influenza (AI) and virulent newcastle disease, influenza A virus in swine,



SCIENTISTS LIKE DR. MANI LEJEUNE (MIDDLE), HELP MAKE THE AHDC A KNOWLEDGE AND DIAGNOSTICS RESOURCE FOR THE ENTIRE NATION.

chronic wasting disease and scrapie, classical swine fever, and foot and mouth disease (FMD). Each year it tests several thousand samples for some of these diseases.

“So far,” says Elvinger, “we’ve been fortunate that we have not been hit by one of the very high consequence diseases like highly pathogenic AI or FMD. The network is designed to maintain capacity. No state would be able to respond to a major disease outbreak without help from other laboratories.”

Having a network expands the capacity for testing thousands of samples in a short period of time. The AHDC feeds results into a database that state and federal veterinarians can access as they evaluate risk. In the event of a positive finding, the AHDC will report the case to New York’s state veterinarian and forward the sample to federal laboratories in Ames, Iowa or the Foreign Animal Disease Diagnostic Laboratory on Plum Island, N.Y.

Amy Glaser, D.V.M. ’87, Ph.D. ’95, director of molecular diagnostics at the AHDC, is responsible for most of the NAHLN testing. “We have a deep-rooted connection to the external world of animal health,” says Glaser, “and we take that responsibility really seriously.”

Innovate

Faculty at the AHDC are encouraged to develop new diagnostic methods. Their work, spurred by the needs of their clients, fills some very specific niches in veterinary medicine and has led to many firsts for the country. For example, the AHDC was one of the first veterinary diagnostic laboratories to test for West Nile virus and continues to receive samples from out of state. Thanks to the Comparative Coagulation Laboratory directed by Marjory Brooks ’77, D.V.M. ’81, veterinarians throughout the world get routine access to 65 different advanced tests related to bleeding and clotting for any species. No other veterinary college has a laboratory with this scope of testing because the instruments, reagents and techniques are so specialized. Brooks has patterned this menu of animal tests after those of the most advanced human coagulation laboratories.

Dr. Bettina Wagner, chair of the Department of Population Medicine and Diagnostic Sciences, designed a unique test

for Lyme disease that can differentiate vaccination from infection and determines whether an infection is in the early or chronic stage. The AHDC was the first animal diagnostic laboratory to use this multiplex procedure for Lyme disease and now tests samples from all over the country and even from Europe.

The AHDC’s Endocrinology Laboratory helped to develop the anti-Müllerian hormone (AMH) assay, and it was the first to offer it as veterinary diagnostic test. The AMH test can indicate whether a dog or cat has been spayed. In animals that have already been spayed, it can be used for the diagnosis of ovarian remnant syndrome. The Endocrinology Laboratory is also renowned for its equine insulin testing, receiving samples for the diagnosis of equine metabolic syndrome from across the United States.

Daryl Nydam, D.V.M. ’97, Ph.D. ’02, director of the AHDC’s QMPS, studies pathogen-based therapy — using diagnostic tests to determine which cows will benefit from antibiotics for treating clinical mastitis. His team has decreased antibiotic use by 50-60 percent while increasing profits for farms and maintaining the cows’ well-being and performance. “When it’s boring, we’re doing a really good job,” he says. In May, Nydam shared research results about selective dry cow therapy with herd owners in Arizona who could implement these methods on roughly 50,000 cows. Now his group is collaborating with colleagues in California, Minnesota and Iowa on a federal grant for selective dry cow therapy.

The bacteriology laboratory tests more than 7,000 bacterial isolates a year for antibiotic sensitivity and has screening tools for most of the significant antibiotics for different animal species. Dr. Anil Thachil, director of bacteriology, says his lab keeps working to include more organisms and antibiotics, but in the meantime has a good picture of resistance trends, helping clients treat animals with the right antibiotic.

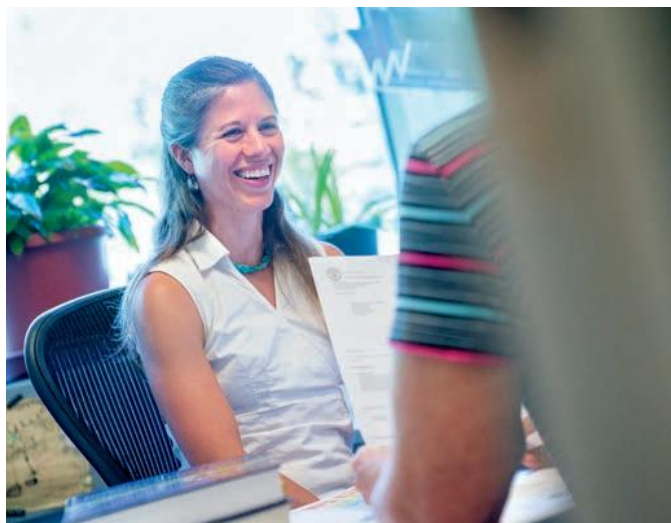
Extend a hand

The AHDC’s Veterinary Support Services (VSS), which helps clients troubleshoot difficult cases and navigate the services of the AHDC, was the first program of its kind in the country.



VSS faculty are veterinarians with practical field experience who understand the diagnostic capabilities of the AHDC. They run educational programs and juggle phone calls from practitioners in the field, tapping into the expertise of AHDC staff. “A lot of what we do is in response to need,” says Thompson, director of VSS.

Simon Alexander, Ph.D. ’07, a client of AHDC and owner of Exeter Veterinary Service near Bangor, Maine, agrees. “I’m much quicker to reach out to Cornell than I am to anybody else,” he says. Alexander recently called VSS after being unable to determine why cows on a well-run dairy farm had dropped their milk production unexpectedly. Thompson and her colleagues guided Alexander in submitting samples and funneled them to the correct labs. The AHDC concluded that a change in forage dry matter had led to subclinical acidosis, which caused a low-pathogenic form of Salmonella. “They helped me come to a diagnosis pretty quickly,” said Alexander. “I definitely would not have been able to do without their help. ... Everything about the diagnostic lab at Cornell is first rate.” ●



DR. ERIN GOODRICH, ASSOCIATE DIRECTOR, VETERINARY SUPPORT SERVICES.

Dogging canine influenza

The AHDC led the nation in identifying two different strains of canine influenza, first in 2004 (H3N8) and again in 2015 (H3N2). Now the labs involved in that detection work are analyzing samples from dogs in Brooklyn, New York, where active infections have been found. Canine influenza, believed to be introduced to the United States primarily by rescue dogs being imported from Asia, weakens a dog’s defense system and can lead to pneumonia and death.

Amy Glaser, D.V.M. ’87, Ph.D. ’95, director of the molecular diagnostics laboratory, and Dr. Edward Dubovi, director of the virology laboratory, predict that a totally new virus could come out any day. Their laboratories monitor what’s emerging in the canine population so they can be ready if they find a virus with the potential to infect other species, including humans. “That’s our big worry,” says Glaser. “The current regulatory environment surrounding the importation of dogs cannot prevent this introduction. Our only hope is to identify it really quickly once it happens; our surveillance system is designed to try to do that.”

In 2015, to help track the spread and transmission of this virus in dogs, Glaser set up a voluntary surveillance system of public and private entities. This consortium depends on Assistant Research Professor Laura Goodman, Ph.D. ’07, (AHDC), Colin Parrish, Ph.D. ’84, J. M. Olin Professor of Virology at the Baker Institute for Animal Health, Antech Diagnostics, Idexx Laboratories and state diagnostic laboratories. Partners obtain influenza genome sequences from positive samples or isolates identified at Cornell and other consortium labs, analyzing them to understand where the viruses are coming from and how they are changing. Samples testing positive and negative for H3N2 are mapped to zip code and displayed on a map available to the public. “It’s a unique, unprecedented partnership,” says Glaser, “with such good cooperation.”

The consortium’s June 2018 paper in the *Journal of Virology* documents multiple independent introductions of canine influenza from Asia, where dogs have been shown to be mixing vessels for novel strains. “The fact that this is occurring repeatedly,” says Glaser, “heightens the risk that a novel virus with more dangerous properties may arrive in the United States via this route.”

That’s why breadth depth, and interconnectedness at the AHDC are so critical. Once faculty and staff define a problem with a companion animal, they try to identify the source and determine the risk to the population. “We have the expertise,” says Dubovi, “to take these cases beyond a simple yes/no answer. We pride ourselves on the value that’s added to the testing that comes here.”

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—KATHRYN ISCHINGER



A gift for a better world: New endowment will focus on crossover research

BY SHERRIE NEGREA

Kathryn Ischinger, a retired real estate agent from the San Francisco Bay area, has never attended or visited Cornell. But she has known for years that the College of Veterinary Medicine is one of the premier veterinary schools in the country.

So when Ischinger was drawing up her estate plans last year, she decided to leave a significant portion of her charitable trust to the College of Veterinary Medicine. In January, Ischinger established an endowment to fund research at the college that will benefit animals and humans, particularly in diseases like cancer.

"It's important to me, when it's time for me to pass on, to do this knowing that I stand to make the world a better place, vis-à-vis Cornell," she said. "It's about my love of dogs and cats and all sorts of animals. And I just think that when it's my time, that that's going to be a comfort to me knowing that I've done something meaningful."

Ischinger knows firsthand about the effects of cancer on animals because she has had "nonstop golden retrievers," including Lucy, 12, and Ava, 9. The breed has a high cancer rate, and Ischinger lost one golden to liver and spleen cancer, while Ava had a tumor removed last year.

"It's always in the forefront of my mind," she said. "But goldens don't have the market cornered on cancer either."

Ischinger, who has lived in California since high school, reached out to the College of Veterinary Medicine last year to establish an endowment to support what she calls "crossover" research into diseases afflicting animals and humans. The endowment has been named the Kathryn G. Ischinger Love of Research Fund.

One type of research the endowment could eventually support is that of Dr. Kristy Richards '90, who heads the comparative cancer program at the College of Veterinary Medicine. Richards focuses on developing new drug regimens to treat lymphoma in both humans and dogs based entirely on immunotherapy, a strategy that harnesses the immune system to attack cancer cells.

While chemotherapy can cure two-thirds of people who have lymphoma, the drugs have been ineffective in dogs. "None of them are cured," Richards said. "There's very rarely a long-term survival. They all go into remission, and then within six months of finishing therapy, it comes back."

Immunotherapy may not only offer a cure for lymphoma in dogs but it could also spare human patients from the need to undergo chemotherapy, which can have severe side effects ranging from nerve damage to leukemia. Despite its potential, it is difficult to study immunotherapy by manipulating cells in a laboratory or testing drugs on mice, which are grown in sterile cages and don't have "educated" immune systems, Richards said.

"Dogs are perfect for this," she said. "It's not a tumor that we're engineering in a lab, and they also have an immune system that is educated and acts in a more similar way to ours."

While Richards is leading a research team that has been awarded a five-year \$5 million grant in a joint project with Tufts University, she is thankful that the endowment created by Ischinger will offer additional support for investigating cutting-edge approaches to treating diseases such as lymphoma.

"It's exciting, mostly because I've been spreading the word about how good dogs are for testing this type of cancer research and how it can help both dogs and humans," Richards said. "I'm so happy to hear that somebody also thinks this is important and enough of a cause to provide all this support for it."

Ischinger, who studied psychology at Mills College, said she is glad that researchers like Richards are studying how to improve cancer treatment in both dogs and humans. "The way I see it," she said, "is that crossover provides more bang for the research buck." ●



A MAP HANGING IN SCHURMAN HALL PINPOINTS WHERE MANY OF OUR ALUMNI CURRENTLY LIVE.



CVM alumni travel across country to see new spaces, fun surprises at Reunion

BY MELANIE GREAVER CORDOVA

A celebratory spirit filled the air this June at the College of Veterinary Medicine, which welcomed alumni back for the first construction-free Reunion in five years. The festivities boasted a mix of classic events as well as a few surprises for alumni and their guests.

“As you can see, the place looks quite different from your time on campus,” Lorin Warnick, D.V.M., Ph.D. ’94, the Austin O. Hooey Dean of Veterinary Medicine, said to a large crowd gathered to commemorate the completion of the class expansion project with a ribbon-cutting and cake. He noted the many ways the college community has been using the new and renovated spaces, like hosting cross-campus symposia and other events.

Activities over the weekend ranged from barbecues to lectures. Before the ribbon-cutting, members of the college community surprised attendees with an unannounced flash mob, dancing to disco and pop hits from 1953-2013 based on the graduation years of Reunion attendees — classes ending in 3 and 8. The group earned a hearty round of applause from onlookers before Warnick and Dr. Michael Kotlikoff, university provost and former dean of the college, gave their remarks.

In addition to tours of the facilities, like the farrier shop and the brand-new Small Animal Community Practice, attendees were treated to overviews of the college’s impact at home and abroad and a “Top Five” update from Warnick. Many participated in a game of CVM Jeopardy, in which attendees tested their knowledge of the college’s history and notable persons. Howard Evans, ’44, Ph.D. ’50, emeritus professor of anatomy with over 70 years of experience, filled the renovated lecture hall for his “Tails of Natural History” talk, where he shared his vast collection of specimens with the audience.



DEAN LORIN WARNICK

No veterinary college reunion could be complete without the animals. Minnie the miniature horse — the college’s unofficial mascot — joined dogs from the Cornell Companions, a llama, a parrot named Izzy and many other pets for a family-friendly Festival of the Animals meet-and-greet in the atrium.

Alumni also had chances to mark their hometowns on a large United States map in Schurman Hall, illustrating just how widespread the CVM community has become.

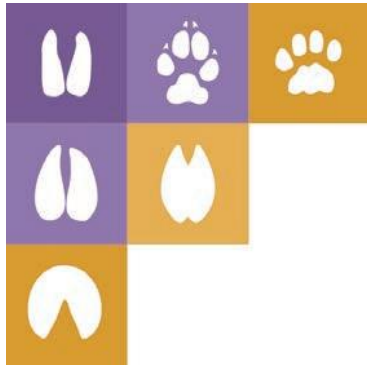
In his remarks to reunion attendees, Warnick described the unique role that the college plays for current and former students at Cornell: “Our students are able to take advantage of the vast array of resources the university provides, while simultaneously experiencing the close-knit CVM community, before joining a strong, dedicated network of accomplished and exceptionally well-trained Cornell Vet alumni.” ●



ALUMNI GATHERED WITH GUESTS IN CVM'S NEWLY RENOVATED SPACES TO CELEBRATE REUNION 2018. HIGHLIGHTS INCLUDED A LECTURE BY THE LEGENDARY HOWARD EVANS, '44, PH.D. '50, A FLASHMOB DANCE, AND MEET-AND-GREETs WITH MINNIE THE HORSE.







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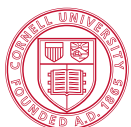
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EARLY BIRD ENDS SEP 10



Cornell University
College of Veterinary Medicine



Since the spring 2017 issue of 'Scopes, the college has been notified of the passing of the following:

Lorna J. Marke, D.V.M. '90, February 23, 2018
Edward C. Melby, Jr., D.V.M. '54, April 22, 2018
Richard J. Montali, D.V.M. '64, May 27, 2018
Robert C. Nelson, D.V.M. '53, January 15, 2016
Frederick W. Oehme, D.V.M. '58, April 9, 2018
Harry Radcliffe, D.V.M. '45, June 21, 2018
Andrew S. Ritter, D.V.M. '45, December 26, 2017
Stephen H. Schwirck, D.V.M. '56, October, 2017
James P. Watson, D.V.M. '45, March 25, 2018



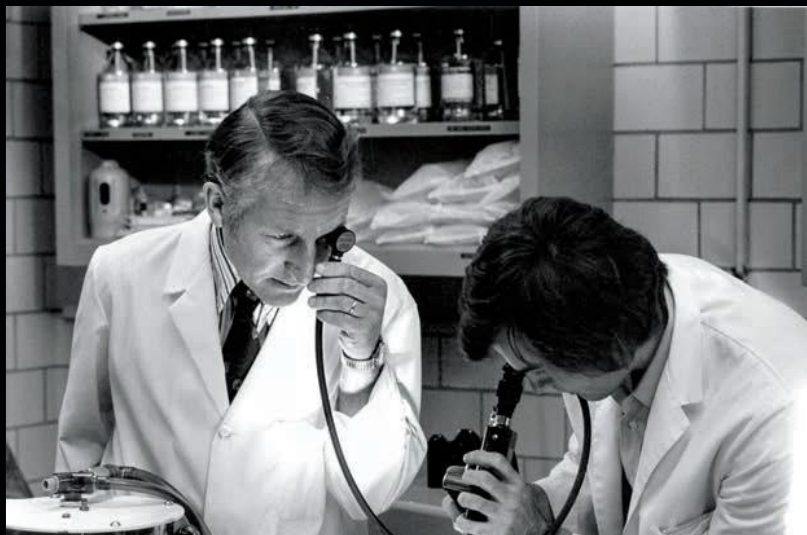
On page 10 of the spring 2017 issue of 'Scopes, we incorrectly stated the percentage of CVM students that are New York state residents as being 45%. That number should have been listed as 55%.



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In Memoriam: Dean Emeritus Edward C. Melby Jr. D.V.M. '54 (1929–2018)



Edward Carlos Melby, Jr., D.V.M. '54, dean emeritus of the College of Veterinary Medicine at Cornell University, died April 22, 2018, following his battle with Alzheimer's disease. He was 88 years old.

Melby was the sixth dean of the college, appointed on Oct. 1, 1974, by the Board of Trustees when Dr. George C. Poppensiek completed his term in 1974. He served as dean until 1984. His years at the helm of Cornell represented a decade of considerable growth and the expansion in the size and scope of college facilities and programs.

"Though Dean Melby's leadership of the college preceded my arrival in 1988, we have all benefited from his work expanding our research programs and in obtaining funding for new facilities that were built after his term as dean," said current dean Lorin Warnick, D.V.M., Ph.D. '94. "His service and dedication has had significant, lasting impact on our college and the veterinary profession. On behalf of all of us at the College of Veterinary Medicine, I offer our sincere condolences to Dean Melby's family for their loss."

With Melby as dean, the number of college employees grew from 468 to 820 full-time and 139 part-time student employees. The college's budget also increased from \$8.6 million to exceed \$32 million. Over that same period, competitive grants and contracts awarded for current and future years rose tremendously from \$3.8 million to \$21.2 million.

For many years, Melby worked to set the stage for planning and funding a new teaching hospital and to upgrade facilities built in the 1950s. New facilities were critical to preserving the college's standing and to meet the challenges and opportunities of expanding clinical programs. He also oversaw the new building to house an enlarged State Diagnostic Laboratory to offer

expanded services to practitioners and others, including a program of Equine Drug Testing and Research to serve the equine racing and importation industry in the state. Furthermore, he presided over the opening of the only Contagious Equine Metritis quarantine facility in New York state at the time, one of the few in the nation.

Administrative units at the college also saw expansion and reorganization under Melby's leadership. In particular, the Baker Institute for Animal Health underwent a major reorganization and growth. The Department of Avian Diseases changed its name and scope to include aquatic animal medicine and a poultry facility was built to further research on atherosclerosis, vaccines, Marek's disease and other poultry disease. New departments, Preventive Medicine and Pharmacology, were also formed, while a single Department of Clinical Sciences was created that was sub-sectioned by clinical specialty as well. The number of faculty, including interns and residents in the teaching hospital, increased along with both the size and complexity of clinical research.

Born in Vermont in 1929, Melby studied at the University of Pennsylvania and University of Vermont prior to receiving his D.V.M. degree from Cornell in 1954. After being in private veterinary practice for eight years in Vermont, he took a teaching post in laboratory animal medicine at the Johns Hopkins University School of Medicine in Baltimore, where he became professor and director of the Division of Comparative Medicine. In addition to his regular teaching and administrative responsibilities, Melby served on several national councils and boards related to laboratory animal medicine. He also had a strong interest in the Baltimore Zoological Society, serving as its director and president. In addition, he edited four major textbooks on laboratory animal science, including the three-volume



“His service and dedication has had significant, lasting impact on our college and the veterinary profession.”

—Dean Lorin Warnick

LEFT PAGE: DR. MELBY AT THE CLINIC AND OFFICE WITH COLLEAGUES. RIGHT PAGE: DR. MELBY SPEAKS AT THE DIAGNOSTIC LAB DEDICATION.

Handbook of Laboratory Animal Science with Norman H. Altman, as well as publishing more than 50 scientific papers.

When Melby became dean, Alexander de Lahunta, D.V.M. '58, Ph.D. '63 was a professor of anatomy in what was then the Department of Anatomy, and was involved in the establishment of a clinical neurology program at the teaching hospital. “Early in his deanship, Dean Melby decided to combine the two species-oriented clinical departments into one Department of Clinical Sciences. He felt that this would facilitate the handling of the department functions that were similar for the two species oriented departments. He knew of my involvement with most of these faculty members through my development of a clinical neurology program and felt that I should be the first chair of this new department. This occurred in 1977. Dean Melby agreed to give me the help that I needed so that this responsibility would not interfere with my teaching obligations in the anatomy department and my role in clinical neurology.”

“In 1957 the College of Veterinary Medicine moved from its location near the arts quad to its present location on the east end of Tower Road,” added de Lahunta. “By 1980 when Ed Melby became the dean, the teaching hospital facilities were very much in need of an update. Dean Melby made a great effort to obtain the necessary funding from the State of New York for this to be accomplished. The clinical faculty have Dean Melby to thank for the hospital facilities that are available to them today.”

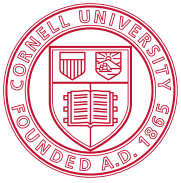
De Lahunta recalled that Melby and his aide, Bob Brown, went for a run nearly every day and used the Department of Anatomy’s men’s room for its shower. “It was conveniently located right across the hall from my office. Thus I had daily access to the dean when I had

need of his advice, which was quite frequent.”

Donald Henry Lein, D.V.M. '57, emeritus professor of pathology and theriogenology, former chair of the Department of Population Medicine and Diagnostic Sciences and former director of the Animal Health Diagnostic Center, spoke warmly of working with Melby. Lein said that Melby’s advocacy was instrumental in helping Lein and his team establish the Cornell Equine Park. “He was cognizant of what we were doing with the facility and was excited for us to use it for both teaching and research,” said Lein, who noted that Melby was also key in setting up the equine drug testing program. “He had great foresight. He really sold it to the state and the racing commission.”

Melby was also an important voice in creating a barrier in the Northeast to raccoon rabies in the late '90s, said Lein, who described him as a bridge between Lein, his colleagues and numerous states in the Northeast and Canada. “When we started the program,” said Lein, “Dr. Melby got in contact and helped us a great deal in Vermont and New Hampshire. He was excited about it and his help was significant. It reminded me of being back at Cornell and him helping us with the diagnostic lab.”

Melby left the college in 1984 and took a position as vice president for research and development and vice president for science and technology at SmithKline Beecham Laboratories in Philadelphia, from which he eventually retired to his family farm in Vermont. ●



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COLLEGE STUDENTS, ALUMNI AND FACULTY VOLUNTEER TO TREAT PUPPIES LIKE THIS ONE ACROSS THE NATION.
SEE MORE ON PAGE 22.