



profiles

Summer/Fall 2014 \ College of Veterinary Medicine



Stepping Up for the **SWINE** **INDUSTRY**

Researchers become
rapid responders



UNIVERSITY OF MINNESOTA

College of Veterinary Medicine

Driven to DiscoverSM

...from the DEAN

As the summer winds down and we gear up for the next academic year, it is a good time for reflection on the past year.

It was a year of major accomplishments for the College of Veterinary Medicine.

In May we said our farewells to 111 DVM, PhD, DVM/MPH, and MS candidates who completed their studies with us. We look forward to hearing about the achievements of this distinguished group as they bring their skills and knowledge to an ever-changing world.

In collaboration with other University partners, we produced the first International Conference on One Medicine One Science (iCOMOS), which examined health issues at the intersection of animals, humans, and the environment—part of the One Health effort. More than 300 participants delved into the science behind infectious diseases and global food production and security. Soon, we will begin planning the second iCOMOS, to take place in 2016.

In this issue of *Profiles* you'll read about the porcine epidemic diarrhea virus and our rush to help the swine industry with research—and vital solutions. In just several weeks, we were able to provide a much-needed diagnostic test to the swine industry. We continue to develop tools to assist pork producers with this threatening disease.

You will also read about changes in how we teach our students. We recently launched a new curriculum as well as redesigned classrooms and learning spaces to provide a more active learning environment for our students. Goals of the new curriculum are to better integrate material between courses and between years in the curriculum; to give students more time for independent study; to create more opportunities for active learning, which has been demonstrated to increase understanding and retention; and to increase efficiency and control cost of delivery of the curriculum. The class of 2017 has completed the first year of this new curriculum, and the reports have been positive!

Finally, you will learn about Buddy, a beagle who captured the hearts of everyone who encountered him at the Veterinary Medical Center. Buddy's remarkable story, from near-paralysis to the ability to run again, is a testament to our comprehensive and team-based approach involving researchers and clinicians providing innovative care in our state-of-the-art teaching hospital.

Every day I am proud of the work of our students, faculty, and staff and their valuable contributions to veterinary medicine and research. I am also grateful to our donors, alumni, and others who support our vital work in comparative medicine, zoonotic diseases, food safety, veterinary public health, and ecosystem health. Your contributions help us realize a student's dream, a researcher's aspiration to find a cure, and an animal owner's desire to provide the best possible care for their beloved pet.

With warm regards,



TREVOR AMES
DEAN



profiles

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◆ TEACHING

Students awarded degrees at annual commencement ceremony

DVM, PhD, MPH, and MS degrees were awarded at the college's annual commencement ceremony at Ted Mann Concert Hall on May 10. The commencement address was presented by Dr. Link Welborn, chairman of the American Veterinary Medical Association's Veterinary Economics Strategy Committee, and Erika MacKinnon presented the response from the class of 2014. A total of 96 DVM degrees, eight PhD degrees, four DVM/MPH degrees, and three MS degrees were presented.

◆ TEACHING

Students receive scholarships at spring scholarship reception

More than 80 scholarships totaling \$370,000 were awarded at the college's spring scholarship reception at the Pomeroy Student-Alumni Learning Center on April 16. Also part of the event was the presentation of the college's Outstanding Service Award to Dr. Mike McMenemy, class of 1969, an Alumni and Friends Society board member. A past president of the Minnesota Veterinary Medical Association, McMenemy is the owner of Kitty Clinic in Minneapolis, Minn.

◆ TEACHING

Veterinary education twinning project launched

The University of Minnesota College of Veterinary Medicine and Chiang Mai University in Thailand have launched a veterinary education twinning project under the World Organisation for Animal Health (OIE) Veterinary Education Twinning Program. Part of a wider OIE initiative to improve the capacity of veterinary services in developing countries, "twinning" is an approach that enables peer-to-peer exchange of knowledge, ideas, and experience between two universities.

"Partnering with Chiang Mai University on this OIE veterinary education twinning project will benefit us both as we strive to enhance the ability of our graduates to support the control of transboundary diseases and zoonoses and strengthen the veterinary services of our countries," says Dr. Trevor Ames, dean.

Dr. Lertrak Srikitjakarn, dean of the Faculty of Veterinary Medicine at Chiang Mai University, agrees. "Thanks to the OIE twinning program, we are looking forward to improving our capacity so as to be recognized as a high-quality veterinary institution within the Association of Southeast Asian Nations," he says.



◆ TEACHING

Teaching awards presented at Education Day

The college's annual Education Day, held on May 30, included a poster session, seminars, a plenary session, roundtable discussions, and the presentation of awards to faculty and staff who exemplify excellence in education. Award recipients included:

Zoetis CVM Collegiate Awards

ZOETIS DISTINGUISHED TEACHING AWARD:

Dr. Christina Clarkson

CVM GRADUATE ADVISING/TEACHING AWARD:

Dr. Sandra Godden

EXCELLENCE IN COURSE COORDINATION AWARD:

Dr. Christina Clarkson

Veterinary Clinical Sciences Awards

TEACHING AWARD: Dr. Sheila Torres

CLINICAL TEACHING AWARD: Dr. Kristi Flynn

CLINICAL TEACHING RESIDENT AWARD:

Dr. Jenny Cho-MacSwain

Veterinary Population Medicine Awards

TEACHING AWARD: Dr. Christie Ward

CLINICAL TEACHING AWARD: Dr. Timothy Goldsmith

TEACHING RESIDENT AWARD: Dr. Dane Tatarskiuk

Veterinary and Biomedical Sciences Teaching Award

Dr. Michael Murtaugh

Veterinary Medical Center Technician Teaching Awards

Marie Bodin (Small Animal Hospital)

Amber Dargis (Large Animal Hospital)

Photos, from left: Dean Trevor Ames with Dr. Christina Clarkson, recipient of the Zoetis Distinguished Teaching Award; Education Day participants take part in an active-learning seminar; Dr. Tom Fletcher, right, discusses a new interactive neuroanatomy quiz at the Education Day poster session.

Photos by Sue Kirchoff

◆ TEACHING

Enchanted Dairy receives Dairy Appreciation Award

Marv, Ron, and Jeannie Miller of Enchanted Dairy in Little Falls, Minnesota, were honored with the college's 2014 Dairy Appreciation Award at the annual Minnesota Dairy Health Conference on May 22. The Dairy Appreciation Award recognizes individuals who have made outstanding contributions to the dairy industry and supported the college's education and research missions. Enchanted Dairy has been an important partner to the CVM for nearly a decade, collaborating with the college to educate students. The family has hosted teaching exercises at their dairy and provided access to their dairy for research studies to develop better systems to manage and support health initiatives on dairies. For many students, their experience at Enchanted Dairy marks their introduction to dairy production medicine.



Dr. Mac Farnham, assistant professor; Dr. Shamilah Namusisi, One Health resident; Scott DeLisi, U.S. ambassador to Uganda; Dr. Muwanguzi David, One Health resident; and Jacinta Mukulu Waila, One Health resident, gather for a photo at the U.S. Embassy in Kampala, Uganda.

● TEACHING

One Health residents meet with U.S. ambassador to Uganda

Accompanied by Dr. Mac Farnham, assistant professor, the college's first three One Health residents from Makerere University in Kampala, Uganda, met with Scott DeLisi, the U.S. Ambassador to Uganda, in August. The One Health residents are supported by the USAID Emerging Pandemic Threats RESPOND project, the University of Minnesota, and the One Health Eastern and Central Africa Network. One Health is an approach that recognizes that human health, animal health, and ecosystem health are inextricably linked.

"In today's interconnected and interdependent world, local issues quickly become global," DeLisi says. Solutions lie in health professionals who "see complexity, understand the connections, and can speak and work in local contexts." He added that the One Health mission is challenging and that small steps are progress, challenging the One Health residents to find "simple steps and useful actions" to help change the world.

● RESEARCH

Study uncovers gene's contribution to asthma susceptibility

Research by Dr. Srirama Rao, Dr. Sung Gil Ha, and their colleagues has uncovered the role gene *ORMDL3* plays in asthma. Recently linked to asthma susceptibility, *ORMDL3* has now been connected to the body's ability to recruit inflammatory cells during an airway allergic reaction. Study findings were published in the journal *Nature Communications*. Rao is associate dean for research and professor in the Veterinary and Biomedical Sciences Department, as well as professor in the U of M Medical School's Division of Pulmonary, Allergy, Critical Care, and Sleep Medicine. Sung Gil Ha, the study's lead author, is a post-doctoral associate in the Veterinary and Biomedical Sciences Department.

● RESEARCH

AKC funds canine health research

The AKC Canine Health Foundation (CHF) is providing nearly \$1.5 million in funding for canine health research in 2014, including \$130,572 awarded to the University of Minnesota College of Veterinary Medicine for an oncology study working to develop a therapeutic brain tumor vaccine. The study's principal investigator is Dr. Elizabeth Pluhar. This funding is in addition to the nearly \$1.5 million in canine cancer research jointly funded by CHF and the Golden Retriever Foundation earlier this year. Dr. Jaime Modiano is a principal investigator on one of the two grants awarded, which looks to develop markers to diagnose and guide cancer treatment in golden retrievers based on newly discovered heritable and acquired mutations. Since 1995, CHF has awarded more than \$3.4 million in research grants to the college, for a total of 45 funded grants for researchers.

Dr. Elizabeth Pluhar examines Dakota, a brain cancer patient.

Photo by Sue Kirchoff



RESEARCH

CVM researchers to address food challenges around the world

In 2013, the Minnesota Legislature authorized an \$18 million annual investment in four research areas reflecting a marriage of the University of Minnesota's distinctive strengths with the state's key and emerging industries:

- Robotics, sensors, and advanced manufacturing
- Global food ventures
- Advancing industry, conserving our environment
- Discoveries and treatments for brain conditions

This effort, named Minnesota's Discovery, Research and InnoVation Economy (MnDRIVE) fosters innovation, cultivates strategic business collaborations that advance Minnesota's economy, and enhances the University's ability to produce breakthrough research that addresses Minnesota's and society's greatest challenges.

The College of Veterinary Medicine's involvement in MnDRIVE is with the Global food ventures program. CVM researchers have developed proposals to partner with industry and agriculture to develop integrated approaches to ensure a sustainable, safe, and

resilient food system. Among CVM's research is the following:

- Andres Perez: *Management and Analysis of Data for Detection and Early Response to Food Animal Health Threats*
- Montserrat Torremorell: *Biosecurity Technologies and Intervention Strategies for Food and Ag Systems*
- Tim Johnson: *Antibiotic Alternative to Improve Performance and Gut Health in Commercial Turkeys*
- Will Hueston, Amy Kircher: *Masters in Food Systems*
- Nick Phelps: *Food Safety Risks in Minnesota's Aquaponic Industry*



MnDRIVE

Minnesota's Discovery,
Research and InnoVation
Economy

- Erin Royster, Gerard Cramer: *Minnesota Quality Assurance Program for Dairy Farms*

The world's population is expected to grow to more than 9 billion people in the next 40 years, requiring a 70 percent increase in food supply. Global food ventures aims to advance industry practices and public policy to promote global food protection and grow consumers' confidence in the food they buy, develop new markets for sustainable development to address resource constraints on water and energy, and train the next generation of food scientists.

RESEARCH

Research Day salutes outstanding researchers and research partners

The college's annual Points of Pride Research Day celebrated outstanding researchers and research partners on October 2. The event included seminars, award presentations, and a poster session, where research posters created by graduate students, Summer Scholars, postdoctoral scholars, and veterinary residents were judged and available for viewing. Dr. M. Suresh was named Distinguished Research Alumnus; Dr. Alvin Beitz, chair and professor in the Veterinary and Biomedical Sciences Department, received the Zoetis Award for Excellence in Research; Dr. Shila Nordone, chief scientific officer at the AKC Canine Health Foundation, was honored as Distinguished Research Partner; and Dr. Alice Larson, professor in the Veterinary and Biomedical Sciences Department, was presented with the Mark of Excellence Award.



Poster competition winners Jo Varshney, Hemant Kumar Mishra, Nandita Mirajkar, Jamie Slingluff, and Raffaella Teixeira received awards from Mark Rutherford, associate dean of graduate programs; Srirama Rao, associate dean for research; and Trevor Ames, dean.

Photo by Sue Kirchoff

◆ SERVICE

Raptor Center receives funding for Raptor Lab

Minnesota's Environment and Natural Resources Trust Fund has awarded The Raptor Center (TRC) \$186,000 in funding for the Raptor Lab project, which will integrate online and outdoor learning environments. The Raptor Lab will give students throughout the state access to an environmental education program developed, piloted, and evaluated by TRC in partnership with three metro-area schools over the past two years. Working with the University of Minnesota's Learning Technologies Media Lab, TRC is developing a STEM-focused curriculum targeted at 7th and 8th graders. This curriculum will be Internet-based and be built on experiential learning as the students use TRC's clinic records to analyze real-world data and explore the scientific process. Scheduled to be completed in 2016, the project starts July 1. Dr. Julia Ponder, executive director, is project manager.



Dr. Anna Firshman, assistant clinical professor, examines a camelid patient. Firshman coordinates the college's annual Camelid Health Conference. | Photo by Sue Kirchoff

◆ SERVICE

Camelid conference draws 100 participants

More than 100 alpaca and llama owners, veterinarians, and veterinary technicians gathered at the Pomeroy Student-Alumni Learning Center on January 11 for the college's annual Camelid Health Conference. Coordinated by Dr. Anna Firshman, the conference included a keynote speech by Dr. Norm Evans, who has treated camelid species for 25 years. Topics included genetics, nutrition, breeding, maximizing fiber, and health concerns such as internal and external parasites.

◆ SERVICE

Minnesota Veterinary Institute launched

The University of Minnesota College of Veterinary Medicine, Minnesota Veterinary Medical Association, and Veterinary Hospitals Association launched the Minnesota Veterinary Institute (MVI) in February, offering a seven-part series of programs on dentistry and oral surgery that will run through November 5. MVI offers comprehensive continuing education programs for veterinarians and veterinary technicians, including lectures, wet labs, online interactive case studies, and other content that can immediately be put to use in a veterinary practice. Next year's topic will be feline medicine. Learn more at www.mnveterinaryinstitute.org.





◆ SERVICE

Sea turtle visits VMC for CT

A sea turtle named Oyster from SEA LIFE Minnesota Aquarium at the Mall of America visited the Veterinary Medical Center for a CT scan in October. Oyster has had an abnormal left flipper and shoulder her whole life, and was experiencing some disuse atrophy of the flipper, so the scan was to see what may be affecting this. Because of the sea turtle shell, it is difficult to get good images of internal organs with a standard X-ray, and the VMC is one of the few veterinary clinics in Minnesota that provide this kind of advanced imaging.

◆ SERVICE

Second annual Lemna China Swine Conference draws 1,000 participants

The college hosted the second annual Lemna China Swine Conference at the Quijiang International Conference Center in Xi'an, China, on October 13-15. The conference welcomed more than 1,000 participants from 13 countries and included two general sessions, eight breakout sessions, and 20 speakers, as well as a poster session. More than 350 companies were represented, and more than 50 exhibitors displayed products and services.



THANK
YOU

The College of Veterinary Medicine appreciates the commitment and support of the hundreds of donors who are members of

the 1947 Club

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THE 1947 CLUB • Named for the college's founding year, members of the 1947 Club include donors who have made cash gifts totaling \$1,000 or more to any area of the college during the calendar year. The 1947 Club members are invited to join us at the annual Dean's Spring Reception and other exclusive events and receive recognition in CVM publications.

To learn more, please contact Lindsey Williams at 612-624-7204 or will3069@umn.edu.



After undergoing stem-cell surgery, Buddy is now able to walk again.

Photos by Carleigh Knowles

A NOVEL THERAPY HELPS a beagle

Something was wrong with Buddy. The beagle had never had health problems, but now Joan Hansen noticed that he was having trouble walking. His hind legs were dragging as he moved around the yard. Twenty-four hours later he was unable to walk at all.

Hansen, a telephone marketer who lives in Blaine, called her son Kyle. A petty officer in the U.S. Navy, Kyle had found the dog listed in the newspaper seven years earlier. He'd fallen in love with the puppy and the cute star pattern on the nape of his neck, and he brought him home and, eventually, to California, where he was stationed. But when his mother's terrier passed away, Kyle transported Buddy back to Minnesota to live with Joan and keep her company. Buddy was her constant companion, always

at her side as she moved around the house.

Kyle advised Joan to take Buddy to a veterinary clinic immediately. But when the staff at PetSmart's animal hospital said there wasn't much they could do for Buddy—it appeared that something was wrong with his spine—Kyle got on the Internet and did some quick research. He called Joan and said, "Mom, you're taking Buddy to the U of M."

Beagles are prone to spinal-cord and neck stress because of their

bustle again

BY JOEL HOEKSTRA

U of M veterinarians are increasingly using stem-cell therapies to help pets with pain, paralysis, and other problems

skeletal structure. But few veterinary clinics are equipped to provide anything other than pain pills for spinal disorders. Regionally, the University of Minnesota Veterinary Medical Center is among a handful of places where dogs can be treated for such problems. And, as the Hansen family would soon discover, the U's experiments with cutting-edge therapies like stem-cell transplants are significantly changing the outcomes for dogs with spine injuries – and their anxious owners.

An emergency case

Third-year resident Dr. Justin Uhl was on duty when Joan brought Buddy to the St. Paul campus that spring evening. The dog's rapid progression from mobile to immobile concerned him. After an initial assessment, the surgeon ran a CT scan that confirmed his diagnosis: "Buddy had a large amount of disk material pressing on two spots on his spinal cord," Uhl recalls. "With the amount of compression I was seeing, we took him to surgery right away."

It was nearly 3 in the morning by the time the surgery was complete. Uhl had successfully removed the calcified material that seemed to be causing the problem. But two days later, Buddy's hind legs remained paralyzed with absent sensation. Uhl called Hansen and conveyed the news. He said there was another option they could try: an experimental procedure that involved using adult stem cells.

Stem cells are undifferentiated cells that can grow into other kinds of full-grown cells: tissue, bone, cartilage, and others. Experiments with stem cells in human subjects are highly regulated, but stem-cell transplants in animals are less restrictive and have shown some surprising results. In recent years, veterinarians at the U of M have treated nearly half a dozen dogs with stem-cell therapy. So far, all the animals have recovered with significantly better health results than they might have seen without surgery.

"Still, it's very experimental," Uhl says. "I told Joan, 'I don't know if it will do something—or nothing.'"

Joan Hansen and her son, Kyle, with Buddy.



Inexplicable, but successful

With Hansen's blessing, Uhl consulted with colleague Dr. Kristina Kiefer, a third-year resident who had conducted several successful stem-cell transplants in dogs. Trained at the U of M, Kiefer had investigated the use of stem cells derived from fat to treat osteoarthritis. After extracting a fat sample from each animal, she had isolated the stem cells, mixed them in a saline solution, and injected them back into the dog again. The therapy proved remarkably adept at improving lameness. But Kiefer says researchers remain uncertain about the actual process that produces the outcome: "We know that stem cells have the ability to regenerate tissues and can influence the cells within diseased patients to respond in favorable manner," Kiefer says. "But we definitely have more questions than we have answers."

With Kiefer's assistance, Uhl extracted a sample of fat cells from Buddy and then reinjected the stem cells.

"It was kind of a long shot just to see if we could help him," Uhl says. But three days after the surgery, Buddy went home. Five days after the surgery, the dog had regained the ability to urinate on his own—a sign of recovery. And four weeks later, Buddy's hindquarters began to move again.

On his feet again

Recovery from any illness takes time and effort, however, and Hansen played a critical part in helping Buddy learn to walk again, Uhl says. She transported the beagle to the U campus regularly for rehabilitation therapy appointments, and she followed a regimen for his rehabilitation at home. Using her hands to move his hind legs, she assisted him as he walked around the home hot tub. Fitting the dog into a harness, she led him around the perimeter of the backyard.

"His front legs were so powerful," she says. "He would just go." These exercises were critical to building back his muscles, tendons, and ligaments.

And then one day, she noticed that Buddy's back legs seemed to be supporting him all by themselves.

"I said, 'Oh my gosh!' I called Kyle and said, 'I think he's going to walk!'" The turning point came when Buddy had enough motor function to walk on the treadmill at home with Hansen's assistance.

Uhl and Kiefer are also pleased with Buddy's progress. While most dogs see a plateau in recovery after about six months, Buddy continues to get stronger and stronger.

"I was very happy with the outcome," says Kiefer. "A dog that once had no ability to feel his legs is now walking!"

What's more, Kiefer says, the U's success with stem-cell transplantation has set the stage for further research. Researchers hope to undertake a broader clinical trial involving stem-cell therapy in the next few years.

"I think the possibilities are endless," Kiefer says. "The more we're discovering about stem cells, the more we're finding that they probably have a contribution to offer in recovering from many diseases."

Hansen takes satisfaction in the fact that Buddy can once again follow her around the house, amble around the backyard, and sit patiently by her side as she talks on the phone or watches TV.

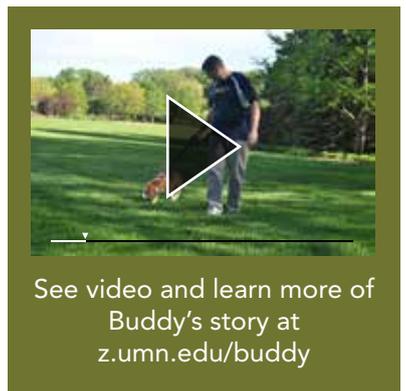
"He's one little miracle boy," she says.

And just weeks ago, Kyle Hansen, on home from a military leave, was reunited with Buddy.

Kyle was surprised to see Buddy's progress but admits he wasn't completely shocked.

"I knew Buddy's attitude and personality," he says. "There were risks in putting him through surgery and stem-cell therapy—but it made sense to give him that chance, and we are so happy we did." ◻

The U's success with stem-cell transplantation has set the stage for further research. Researchers hope to undertake a broader clinical trial involving stem-cell therapy in the next few years.



See video and learn more of Buddy's story at z.umn.edu/buddy



Increasing WINGSPAN

The Raptor Center celebrates 40th anniversary with a new building project



LEFT: Dr. Julia Ponder, executive director, stands by with Pi, a bald eagle, as TRC friends and supporters Kate Nielsen, Lizzie Nelson, Wendy Dayton, Ellen Andersen, and Rachel Hollstadt break ground.

Photo by Sue Kirchoff



As The Raptor Center (TRC) celebrates its 40th anniversary, the facility will also be getting a facelift. This fall, TRC begins construction on a new outdoor education center that will enhance the experience for raptors in its care as well as for visitors.

TRC's old wooden facilities and stairs will be removed and rebuilt using contemporary materials, creating an environment that is handicapped-accessible and more conducive to Minnesota's weather challenges. With an enhanced gathering place and additional exhibits, visitors will be able to view the birds in every season and

from one vantage point. The new center and bird housing is slated for completion by the end of 2014.

"The upgrades will provide increased living and rehabilitation spaces for the raptors in treatment with us as well as for our resident educational birds," says Dr. Julia Ponder, executive director. "So much of what we do is advancing

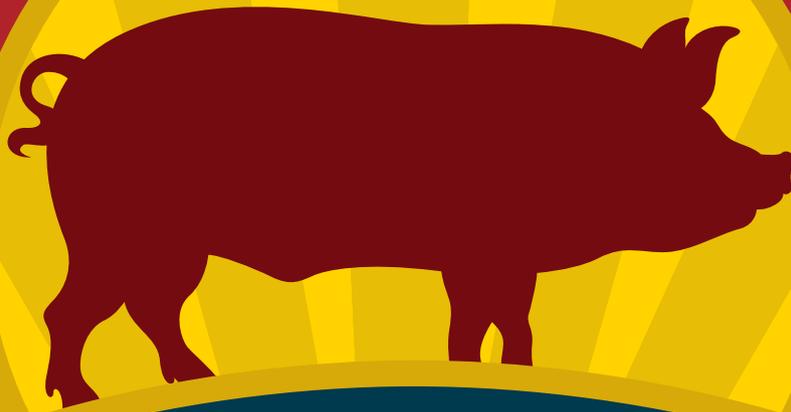
raptor health, conservation, and teaching regarding raptors and their environment. This facility will provide a great forum for these discussions with our visitors."

The Raptor Center rehabilitates more than 900 ill and injured raptors each year and provides veterinary education for veterinarians and veterinary students from around the world. TRC is also a destination for bird lovers, offering public tours to approximately 16,000 visitors each year as well as presenting public programs and events to 200,000 people throughout the community.



Researchers As

RAPID RESPONDERS



The CVM's efforts to help the

SWINE INDUSTRY



BY FRAN HOWARD

On January 2, 2014, sixth-generation swine producer Brandon Schafer of Goodhue, Minnesota, noticed a couple of his sows had very mild diarrhea and were slightly off feed. Four days later, a dozen sows were showing the same symptoms. The next day, when the number increased to 20, Schafer knew he had to move fast.

Schafer was well aware that a new virus, porcine epidemic diarrhea virus (PEDV), had entered the United States and was killing millions of pigs, including pigs in Minnesota.

He began collecting fecal samples from the sick sows and oral samples from the downstream population kept at a growing facility in Wisconsin. That evening he hand-delivered the samples to the University of Minnesota Veterinary Diagnostic Laboratory (VDL).

Within 24 hours, the VDL had run tests on the samples and determined that the sows were positive for PEDV, but the downstream population was negative. Confirmation that PEDV had entered one of the operation's two sow farms, however, was devastating. Schafer Farms manages 2,100 sows producing 62,000 pigs a year.

PEDV, a diarrhea-causing coronavirus, can wipe out 50 to 100 percent of an infected herd. The virus is not transmissible to humans and poses no food-safety risks. Experts believe the virus first emerged in Oklahoma and Kansas, but it was first confirmed in the United States the week of May 13, 2013, on a farm in Ohio. From there it moved to the Carolinas and then to Minnesota. PEDV was confirmed in Europe as early as 1971 and has become endemic in Asia.

Rapid detection needed

Eight months before Schafer received the dreaded news that his sows were positive for PEDV and a week before the U.S. Department of Agriculture announced that the deadly disease had been confirmed in the United States, animal health researchers at the VDL were testing fecal samples from Oklahoma piglets to determine the cause of their diarrhea.

“We suspected transmissible gastroenteritis virus initially,” says Doug Marthaler, a scientist and graduate student in veterinary medicine working in the VDL's PCR laboratory, the largest of the VDL's molecular diagnostic labs. Marthaler and his fellow researchers were also aware that PEDV might have entered the United States, but there were no tests to detect the U.S. strain of the virus—at least not yet.

As soon as transmissible gastroenteritis virus (TGEV), also a diarrhea-causing coronavirus, was ruled out, Marthaler and research associate Yin Jiang immediately sent the sample for next-generation sequencing to determine whether the samples from Oklahoma were positive for PEDV.

Marthaler's team was the first in the United States to sequence a U.S. strain of PEDV, which is now deposited in the GenBank database at the National Center for Biotechnology Information.

“We needed to know the genetic diversity of the virus so we could accurately design a detection assay that would not miss any strains,” says Marthaler. “We then compared our sequence to other available Asian and European sequences from GenBank.”

The next step was to develop a rapid-detection test, called a real-time reverse transcription-polymerase chain reaction (RT-PCR), a molecular test that allows for rapid and highly specific diagnosis of infectious diseases, including viral diseases.



Dr. Dane Goede, a PhD student studying PEDV, holds a piglet suspected of having the virus.

Photos by Sue Kirchoff

“We really had to move fast on this,” says Marthaler. “Within two weeks, we sequenced the viral RNA, designed the test, and examined 500 samples to validate and find the most sensitive and significant PEDV RT-PCR assay.”

While validating the assay, the research team was working 12 hours a day and finding that many of the samples were positive for PEDV. The disease was spreading quickly. In early June, the VDL began offering the test—the first real-time PCR for PEDV in the United States—to swine producers and field veterinarians.

With the PCR test ready for use, the VDL’s work had barely begun. While the PCR test detects the presence of the virus, it does not provide information on whether an animal that has been exposed to the disease has built immunity to the virus. Thus, almost immediately after validating the assay, the PCR lab shared the gene sequence with Dr. Michael Murtaugh, professor in the Veterinary and Biomedical Sciences

Department, so he could design and produce an ELISA (enzyme-linked immunosorbent assay) to detect immunity in live pigs.

The next step: surveillance

The groundwork laid by Marthaler’s team gave Murtaugh’s lab rapid access to the virus, but Murtaugh’s lab had also been laying its own foundation.

Shortly after the disease hit, the National Pork Board put out a call for proposals to develop serological diagnostic tests for the virus. Murtaugh’s lab was one of many research groups that responded.

“The National Pork Board decided to fund Murtaugh’s research due to the experience and ability of University of Minnesota researchers to carry out research in a timely and credible manner and come up with a good test that producers could use,” says Dr. Paul Sundberg, vice president of science and technology at the National Pork Board, Des Moines, Iowa. “Use of the ELISA will help us understand herd status, which

will eventually help us eliminate the virus.”

The college, National Pork Board, and Zoetis, a leading animal health company headquartered in Florham Park, New Jersey, were the key funding partners in Murtaugh’s research.

“Developing the test was very straightforward. We used molecular methods to produce a viral antigen, or protein, and then we placed that protein in wells on a plate to check for antibodies that bind to the protein,” says Murtaugh. “Because my lab has been working on pig immunology for more than 25 years, we have developed good methods for cloning viral proteins, producing those proteins in bacteria, and then purifying the proteins. We were able to rapidly produce the ELISA test to detect antibodies to the virus, which tells producers whether their pigs have seen an infection.”

Veterinary student Benjamin Weir started the ELISA research, which was then continued by Cheryl Dvorak, research associate, and Suzanne Stone, principal laboratory technician, in Murtaugh’s lab.

The entire process of making the proteins and validating the assay was completed within about six months, and the test was released in late January 2014, just weeks after Schafer’s sows tested positive for the disease. When the ELISA was released, the VDL already had thousands of samples waiting to be tested.

The same day Schafer delivered his samples to the VDL for PCR testing, he also implemented a crisis management plan on his farm just in case the tests came back positive. The crisis management plan included alerting neighbors that some of his sows had tested



Cheryl Dvorak, research associate in Dr. Michael Murtaugh’s lab, prepares pig serum samples. She will use the lab’s PEDV ELISA assay to determine whether the pigs have PEDV.

Photo by Sue Kirchoff

“We really had to move fast on this. Within two weeks, we sequenced the viral RNA, designed the test, and examined 500 samples to validate and find the most sensitive and significant PEDV RT-PCR assay.”

– DOUG MARTHALER, ASSISTANT SCIENTIST

positive, identifying and limiting staff movements between facilities, and holding meetings with ownership, management, and staff.

Two days after Schafer learned that samples from his farm had tested positive, the virus had already moved into the farrowing population and the first litter showed signs of PED. He sold the positive piglets to a growing facility in southern Minnesota that already had an outbreak and then did a complete facility cleanup.

He also started to test his herd for immunity with the help of University of Minnesota swine expert Dr. Tim Snider. They ran ELISA tests on two subset populations within the sow farm to determine whether the herd had been exposed. One group of 20 sows showed obvious clinical signs of PEDV, while the other group of 20 showed only mild signs of being off feed. The tests came back positive, indicating both groups had been exposed and were developing some degree of immunity.

Schafer then began conducting time-to-stability tests using the PCR test on fecal samples.

“Once the clinical signs are eliminated, you have an invisible monster in the room,” he says. “Are they still shedding the virus to naïve newborn animals? It is critical to monitor the aftermath so you can see at what point these animals are considered safe. The tests developed

at the University of Minnesota have been absolutely critical.”

Researching spread and stability

While Martahler’s and Murtaugh’s teams were designing diagnostic tests, other VDL researchers were trying to determine whether the virus was being spread through the feed supply and how long it could survive in the environment.

Almost immediately after PEDV was confirmed in the United States, microbiologist Dr. Sagar Goyal began looking at the stability of the virus in the environment. His cutting-edge research, funded by the National Pork Board, has been the only study of its kind in the country and will be a critical link for the industry to learn how to control the disease.

“My research focused on how long the virus survives in feces, slurry, feed, and water. We did a study of fresh feces and found the virus survives up to seven days at 40 degrees centigrade, as well as at 50 and 60 degrees,” says Goyal.

He also tested relative humidity and found that at 40° and 50° C the virus survives the longest when the relative humidity is at 70 percent. At 60° C the virus survived longest at both 30 percent and 70 percent humidity.

“We also wanted to find out how long the virus would survive in winter

conditions in Minnesota when it is spread in slurry on the ground,” Goyal notes. At minus 20° C, the virus survived 28 days or longer. At room temperature, the virus in slurry survived only 14 days, indicating it is more stable in cold conditions. In both dry feed and milled feed, the virus survived for one week.

Goyal’s work also showed that in room-temperature drinking water, the virus survived for two weeks. In recycled water stored at room temperature, though, it survived for only a week. The good news emerging from Goyal’s work is that compared to TGEV, PEDV is not as stable.

“It looks like PEDV is not as stable in the environment as some other viruses, but PEDV is highly infectious, and even a very small amount of the virus may cause infection in susceptible pigs,” says Goyal. “Thus, even if only a small amount of the virus survives, it may cause infection in a susceptible host.”

Infectious disease specialist Dr. Albert Rovira and diagnostician Dr. Kurt Rossow were also early responders. In late May 2013, after suspecting the virus was spreading through feed, a client of Rossow’s sent a feed sample to the VDL to have it tested using the VDL’s newly developed PCR assay for PEDV.

The suspicious feed tested positive for the virus. “It told us the feed had

RNA of the virus but not whether it was alive and able to infect pigs,” says Rovira.

The suspicious ingredient in the feed was pig plasma, an expensive but beneficial ingredient for growing pigs, yet plasma fed to pigs has already undergone a heating process to kill viruses.

After failing to grow PEDV in-vitro in the lab, Rovira and Rossow designed a bioassay to test the theory that the virus was spreading through feed.

“The bioassay tries to represent what happens at the farm under very controlled and isolated conditions here at the University,” says Rovira. “In June we gave pigs the PCR-positive feed sample, but they did not become infected.”

Spread of PEDV in Minnesota was slow through summer and fall. “By the end of the year, as more and more farms became infected, more people suspected it was being spread through the feed,” Rovira says. So his

team repeated the bioassay. But again the pigs did not become infected.

At the same time, Canada, which by now had a confirmed outbreak of PEDV, also suspected the virus was being spread through feed. Agriculture and Agri-Food Canada conducted its own bioassay, which involved feeding pigs pure pig plasma confirmed positive for live PEDV, and concluded the feed was infectious.

“What we are leaning toward now is the theory that a lot of the virus detected in pig plasma is dead due to the heat process it undergoes, and that only a little bit of virus survives,” says Rovira. “When the feed is fed to 1,000 pigs, only one pig needs to get live virus to start replicating and shedding the virus.”

The college and its VDL were able to quickly mobilize to design and produce practical tools and information for one of Minnesota’s leading agricultural industries because they had a long history of research and cooperation.

Turning the TIDE

BY FRAN HOWARD

Shortly after porcine epidemic diarrhea virus (PEDV) was confirmed in Minnesota, researchers at the College of Veterinary Medicine were first in the nation to completely sequence the RNA of the U.S. strain of the virus; first to develop a rapid, real-time RT-PCR test to detect the virus in biological samples, water, and feed; and first to design and produce an ELISA test to measure immunity in live pigs.

On the leading edge of PEDV research, the Veterinary Diagnostic Laboratory (VDL) is one of only three such labs in the country to work with pig diseases. The VDL’s quick response to PEDV has been critical to the state’s \$3-billion swine farming industry.

“For field veterinarians to have quick and accurate diagnostics is really important,” says David Preisler, executive director of the Minnesota Pork Producers Association and Minnesota Pork Board, Mankato, Minnesota. “It helps them and their clients make quick decisions based on good information so they can intervene to stop the spread of the disease.”

The virus does not cause disease in humans and poses no food safety issues. “It is specific to pigs and cannot be transmitted to humans or other animals,” says Preisler.

Dr. Bob Morrison, professor in the Veterinary Population Medicine Department, estimates that a 1,000-sow farm that becomes infected with the disease will lose 2,500 pigs, or \$250,000 at recent market prices.

“That rivals the average cost of a PRRS (porcine respiratory and reproductive syndrome) outbreak,” says Morrison. PRRS is still the most costly pig disease because it spreads to a wider age range of animals.



“Once the clinical signs are eliminated, you have an invisible monster in the room. Are they still shedding the virus to naïve newborn animals? It is critical to monitor the aftermath so you can see at what point these animals are considered safe.”

—BRANDON SCHAFFER, SWINE PRODUCER

“We pride ourselves on focusing on food animals and making discoveries that help the livelihood of our state’s agriculture sector,” says Dr. Tom Molitor, chair of the Veterinary Population Medicine Department. “Animal diseases have an economic impact for livestock producers and a major impact on the well-being of their animals. We work to find science-driven solutions to these problems, and we have a history of being able to form interdisciplinary teams to address these problems.

PEDV is also costly to consumers. Since PEDV was first confirmed in the United States a little over a year ago, the U.S. pork industry has lost an estimated 5 million to 6 million pigs to the virus, or about 10 percent of the nation’s swine herd. Preisler expects retail pork prices to be 15 to 20 percent higher this summer compared to last summer due to the disease.

Despite the vast strides made at the University of Minnesota College of Veterinary Medicine over the past year, scientific investigations and epidemiological fieldwork into PEDV continue. “We are at a point with PEDV that we were with PRRS 10 years ago,” says Morrison. “I am worried about our ability to keep it out of swine facilities. I’m sure we are going to solve that in time, but today we do not have all the answers. The PCR and ELISA tests developed by the diagnostic lab are critical to our understanding of PED and to our control program. The College of Veterinary Medicine’s entire effort toward understanding PEDV in the United States has been phenomenal.”

We attacked PEDV using a multi-pronged approach.”

The college and VDL also have a longstanding cooperative relationship with industry. Not only do they train and serve field veterinarians on the front lines of emerging diseases, they also rely on these leaders to continually keep epidemiological information flowing.

“The veterinarian plays a critical role in the identification and monitoring of the spread of emerging diseases,” says Molitor. “The most important part of the College of Veterinary Medicine to food animal veterinarians is the diagnostic lab, and the VDL gives the college a window into what’s happening in the field.”

For nearly two decades the VDL has been preparing for the arrival of an infectious disease like PEDV.

“The sentinels for diagnosing new diseases are the diagnostic labs,” says Murtaugh. “Our diagnostic lab responded very quickly and effectively in recognizing there was a new pathogen and in developing a molecular test. The reason the diagnostic lab could respond so quickly is that it had the foresight to invest in new technologies, which enabled us to be one of the first to respond.”

University of Minnesota researchers are now looking at how PEDV is evolving in the United States as well as at other diseases. Six months after the PCR lab began working on PEDV, it was hit with yet another new virus, swine delta coronavirus, which was first found in Illinois and Ohio and has now been confirmed in Minnesota.

“We constantly work on new diagnostic tests for different pathogens to better support the VDL’s clients,” says Marthaler. “Our workload has tripled in the PCR lab since PEDV was confirmed in Minnesota.”

Schafer is also still monitoring for PEDV, although all of his pigs are now healthy.

“We will continue the time-to-stability testing,” Schafer says. “It’s ongoing, but our results have been very positive.”



Suzanne Stone, principal laboratory technician, weighs out sodium chloride to make the buffer for the PEDV ELISA.

College hosts first International Conference on **ONE MEDICINE ONE SCIENCE**



Hemant Kumar Mishra, right, a postdoctoral associate in the Department of Veterinary and Biomedical Sciences, discusses One Medicine One Science with Tamene Melkamu, research assistant professor, Department of Animal Science.

Photos by Steve Voit

“ iCOMOS has set new standards. The topics were engaging, the speakers excellent, and the environment perfect for meeting and exchanging ideas with colleagues.”

—Professor, Texas A&M University

“ Coming from Asia, it was illuminating to learn about the problems, particularly HIV and tuberculosis, in Africa and what efforts have been and are being implemented. Acknowledging the similarities and differences in different regions is critical for the understanding of the global context. The panel discussions also gave perspectives regarding how various types of organizations—governmental, nonprofit, and academic institutions—function regarding global health work.

—Resident, University of Minnesota Veterinary Public Health and Preventive Medicine

“ Human health is inextricably and elegantly linked to local, national, and global ecosystems. Therefore, the treatment and prevention of disease requires the engagement of the community on all levels and the cooperation, collaboration, and communication of an interdisciplinary team of professionals, including veterinarians, experts in agriculture and the environment, public health specialists, infectious disease scientists, and human health professionals. As a nurse, I want to give my patients the best care possible. iCOMOS helped me realize that to provide this level of care, I must expand my concept of a health care team and approach the care of each patient from a holistic perspective that includes his or her part in the complex and delicate health ecosystem.”

—Student, University of Minnesota School of Nursing

“ I still carry my excitement and cannot wait to transfer the ideas and projects from both the conference and my meetings with participants. This conference will not only lead to innovations in the field of exact science, but also innovations in the field of ethics.”

—Professor, Ankara University, Turkey

“ The iCOMOS conference was both what I expected and hadn't expected all at the same time. What I hadn't expected to see was the vast array of professions working together toward a common goal. I believe that this is a valuable conference to learn, network, and challenge our previous conceptions of global public health. As we continue toward a healthier future, we need to remember that we need the input from all professions to provide 'one' united force.”

—Student, University of Minnesota Medical School



More than 300 people attended the International Conference on One Medicine One Science (iCOMOS) in April.

The inaugural International Conference on One Medicine One Science (iCOMOS) produced by the College of Veterinary Medicine took place April 27-30.

More than 300 participants from the United States and 13 other countries attended the meeting, discussing key challenges to human, animal, and environmental health through a scientific lens. The conference focused on infectious disease challenges and solutions at the animal-human-environment interface, and on meeting global food production challenges while preserving food safety and environmental security. International perspectives were provided from scientists, health professionals, and other experts in higher education, government, funding agencies, and the business community.

Organized by co-chairs Dr. Srirama Rao, professor and associate dean of research, and Dr. Michael Murtaugh, professor, Veterinary and Biomedical Sciences Department, the conference

included Peter Agre's Nobel Prize lecture showing the important role science plays in solving grand challenges of health and panel discussions by agribusiness industry leaders on how to feed the world while preserving the environment. Other presentations illustrated integral balances between animals, humans, and the environment that result in a cascade of problems when disturbed; examples included monkeypox and tuberculosis in Africa, salmonella food poisoning in the U.S., and honey bee health in North America. Major sponsors from the National Institutes of Health, U.S. Agency for International Development, Bill and Melinda Gates Foundation, and U.S. Department of Agriculture described a vision for future development of scientific

partnerships to solve complex problems of health and disease.

The conference culminated with a series of workshops focused on safe food systems, prediction of outbreak threats, research funding in the current climate, and the reality of One Health partnerships.

According to Rao, the goal of the conference was to create a global forum for facilitating collaborations aimed at addressing emerging zoonotic diseases, food and waterborne pathogens, food systems, and challenges in environmental health.

"We certainly succeeded in engaging policy makers, scientific experts, and various stakeholders on issues of importance in animal, human, and environment health," he says. "I heard of several new networks and collaborations that originated

"We certainly succeeded in engaging policy makers, scientific experts, and various stakeholders on issues of importance in animal, human, and environment health."

—DR. SRIRAMA RAO, CONFERENCE CO-CHAIR

from the conference, and based on the feedback, iCOMOS appears to be one of the most successful and high-profile conferences organized at and by the University of Minnesota."

Plans for the next iCOMOS are already underway. An April 2016 conference will focus on comparative medical aspects of One Medicine One Science. ◊

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Students and mentors are matched based on mutual interests and mentors' expertise. Mentoring pairs create individualized action plans that help students with career exploration, experiential learning, networking, and skill-building.

The mentor-student relationship is informal, with monthly contact by phone, e-mail, or in person. It is a great way for alumni and friends to connect with the college as well as current and future professionals in their field.

Handshake designed by Dima Yagnyuk

FRESH *perspective*

A new curriculum transforms learning for CVM students



Veterinary students take part in a lab session in the new surgery laboratory.

Photos by Sue Kirchoff

It's a new way of learning for students in the College of Veterinary Medicine freshman class. In the past, students would listen to a lecture and then wait in line for a brief opportunity to practice a clinical skill on a cadaver or their personal pet. Now, with a new curriculum introduced to last year's first-years, students are getting the opportunity to practice clinical skills as much as they like.

The revamped Clinical Skills class, for example, features a variety of online "how-to" videos. Students are able to practice these skills on a nonbiological model as many times as they want to become proficient in a competency the vast majority of them will use countless times during their careers as veterinarians. Veterinary models are also becoming more readily available and as students have discovered they are infinitely more patient than pets.

The Clinical Skills class is part of a new, more-integrated curriculum that will be rolled out during the 2015-16 school year. A tweaked fourth-year

curriculum was introduced in 2012-13, and the first-year curriculum was launched for the class of 2017.

“The buzz on the street is that first-year students have gone from being afraid they were the guinea pigs to being envied by the second- and third-year classes,” says Dr. Peggy Root, assistant dean of education and facilitator of the Curriculum Review Board (CRB). The CRB developed the new curriculum after gathering significant input from students, graduates, area practitioners, veterinary colleges, and other health professional schools.

The path that led to the college’s new curriculum began in 2009, when the University of Minnesota’s Blue Ribbon Panel asked each college to convene its own team to determine what it should do more of, what it should do less of, and what it should

eliminate to improve efficiency and increase cost savings while retaining or improving the effectiveness and quality of their programs.

The American Association of Veterinary Medicine’s Council on Education requires all veterinary schools to develop relevant measures and provide evidence that all graduating students attain core competencies. To continue to deliver up-to-date, efficient, and state-of-the-art learning to students year after year, veterinary and other schools must periodically review and revamp their curriculums. In March 2013, the Council on Education went even further when it announced a new mandate that veterinary colleges review their curriculum every seven years.

“We embarked on our recent review because it was time,” says



Associate clinical professor Dr. Greg Anderson, right, demonstrates a procedure for a student.

Curriculum REVIEW BOARD

For the past four years, in addition to their regular duties, members of the Curriculum Review Board have spent countless hours reviewing, revamping, and implementing a new curriculum for the College of Veterinary Medicine.

“The Curriculum Review Board was magnificent,” says Dr. Peggy Root. “We were seven people with diverse fields of study, as well as diverse ideas on how to do a review and what the new curriculum should look like, but it was a very productive group.”

The curriculum revision is far from over, though. The collegiate curriculum committee is carefully monitoring the implementation of the new curriculum and will make adjustments when necessary.

Members of the CRB:

Dr. Peggy Root, facilitator

Dr. Dave Brown, Veterinary and Biomedical Sciences Department

Dr. Mike Conzemius, Veterinary Clinical Sciences Department

Dr. Dan Feeney, Veterinary Clinical Sciences Department

Dr. John Fetrow, Veterinary Population Medicine Department

Dr. Erin Malone, Veterinary Population Medicine Department

Dr. Jim Mickelson, Veterinary and Biomedical Sciences Department

Laura Molgaard, associate dean for academic and student affairs, who was hired in 1997 to implement what was then a new curriculum for incoming freshmen. “It is best practice to undertake a review periodically and redesign the curriculum if needed.”

Eliminating bloat and drift

“One might say that what happened to the old curriculum over its 16-year life span was too much of a good thing,” says Molgaard. Those in charge of school curriculums refer to it as “bloat” and “drift.” Bloat, or expansion, occurs when a curriculum expands through additional courses or additions to courses without a coinciding reduction in content. Drift occurs when the overall curriculum moves away from demonstrated goals because of changes that have occurred over time in individual courses. In 2011, the CRB was set up to rectify expansion and drift and to identify efficiencies in faculty effort and resources.

“We started with a needs assessment,” says Root. “The needs assessment included the creation of a blog to get discussion started and encourage input.” The CRB also established an input wall—multiple

sheets of paper mounted to a wall—where the CRB could provide information and raise questions and faculty, staff, and students could provide feedback. Twice a month for three years, members of the CRB met to determine what content and courses would remain, which would be combined, and which would be eliminated. Department chairs and faculty were welcome to attend. The committee also held larger town hall meetings that were open to everyone.

“We used a backwards design model for the new curriculum,” says Root. “We looked at the fourth year first to see where we were and where we wanted to be, and then we determined the best way to get there. Fourth-year curriculum was only tweaked, which was very encouraging for the review board to come to the conclusion that our process was working.”

The board’s first major decision was whether to create a curriculum based on organ systems or one with an integrated approach in which students learn related competencies simultaneously to achieve an end point. The old curriculum originally was system-based, but it had drifted toward being a quasi-integrated curriculum. The board decided

on a more streamlined, integrated curriculum that redefined what content was core and reorganized that content into fewer classes with less lecture time and more time for hands-on learning.

“We increased the number of laboratory opportunities and decided what we did not need to teach anymore,” says Dr. Erin Malone, professor of large animal surgery and member of the CRB. “For example, a highly functional anesthesia team and board-certified surgeon are needed for optimum outcomes with colic surgery on horses. Why teach colic surgery when most veterinarians won’t be doing it? I need to spend more time teaching students to do the things they are going to do on an everyday basis.”

Making learning active

Malone says the new curriculum meets three teaching goals. First, by eliminating bloat and drift, it creates new opportunities for active learning. While active learning is difficult to define, it is different from conventional modes of instruction in which teachers mostly lecture and students remain passive receptacles for data.

Current data from research conducted at the University of Minnesota’s Office of Information Technology shows learning improves when students play a more active role, that active learning classes contribute significantly to learning concepts, and that the teaching space matters.

According to these studies, students in active learning classrooms outperformed their expected grades based on what their ACT tests would indicate, says Deborah Wingert, director of educational development for the college. Wingert works with faculty members to help develop active learning techniques.

For example, the jigsaw technique occurs when a class is broken into small groups of, say, six students. Each group looks at a different

The board decided on a more streamlined, integrated curriculum and reorganized that content into fewer classes with less lecture time and more time for hands-on learning.

real-life scenario such as identifying a parasite and then choosing a treatment. Once the group has completed its task, the six students split up, each going to a different small group. The new small groups thus consist of one student from each of the previous groups, which means each student brings a task to present to the other students in the group.

“The teacher is not lecturing. The students are teaching each other,” says Wingert. “Think, pair, and share is another simple, active learning technique, where the professor might lecture on a subject for 10 minutes, then ask a question. Students are given a brief time to ponder their answer before they pair up with a classmate to discuss and share answers.”

While the College of Veterinary Medicine has been integrating active learning into its curriculum for more than a decade, two new classrooms designed for the new curriculum present opportunities for even more of these sessions.

A former study hall in the Animal Science/Veterinary Medicine building was converted into a new active learning classroom, with 17 bullet-shaped tables all facing the center of the room.

“Students bring their own laptops, but there are two screens on each table, one facing the students and one facing the instructor in the middle of the room,” notes Malone. “The instructor can monitor how the student sessions are progressing.”

Each small group of students working independently can decide when and what they want to share with the class. For instance, in the new Microscopic Anatomy class, a group of students might decide to display on their screen a slide of cardiac muscle cells or astrocytes. Once the cells are projected onto the small group’s screen, the instructor can determine whether they will be shared with the entire class by projecting the image onto a larger, central screen.

In the surgery laboratory, a wall was removed to accommodate twice the number of students. The room is also equipped with the newest technologies, including a camera located in an overhead surgical light that can be used to project images of a surgery onto a main screen or even onto the students’ personal laptops.

“The students don’t all have to be crunched around one table anymore,” says Curt Knutson, manager of experimental surgery and teaching laboratories. “They can now watch the surgery on a monitor.” At the same time, though, the surgeon instructors are in the room, available to answer whatever questions arise.

The second teaching goal of the new curriculum was that it needed to be cost-effective by optimizing the faculty’s time. For example, a course Malone taught in the old curriculum, Equine Limb Anatomy, was discontinued. Portions of the elective were incorporated into the core anatomy course, enabling her



Kellie Strand, animal care technician specialist, and Dr. Erin Malone, clinical specialist, work with a videographer to produce a how-to video for the Clinical Skills course.

The surgery laboratory can now accommodate twice the number of students. This room is also equipped with the newest technologies, including a camera located in an overhead surgical light that can be used to project images of a surgery onto a main screen or even onto the students’ personal laptops.

Over the new four-year curriculum, lecture time will decrease by 21 percent while laboratory contact time will increase by 10.8 percent.

to reach more students. The other material is still being scrutinized to determine whether it will be redundant in the new curriculum.

The board also wanted to make sure that students had enough time in their schedule to actually assimilate and learn newly presented material. The two new Clinical Skills laboratories illustrate how the CRB accomplished all three goals—active learning, cost reduction, and more independent study time for students—in one course.

In the new course, instead of listening to a lecture, students watch “how-to” videos, many of them created at the College of Veterinary Medicine, prior to attending lab. They can watch each video as often as they like until they feel comfortable with the material. Models, some produced commercially and purchased by the college and others made by faculty members, now replace cadaver dogs, which were becoming pricier and more difficult to find.

Because many of the models are made from nonbiological materials—such as Penrose drains filled with water that’s been dyed red and placed neatly inside a replica of a dog’s leg—they can be used over and over.

“With cadavers, we had a two- to three-hour window,” says Malone. “And we would have to rotate 50 to 100 students through

the laboratory. Each student had a limited time to practice in that one laboratory session.” Now, students have more independent study time and can practice their blood draws more frequently and in a more relaxed atmosphere.

Chicken thighs filled with mayonnaise-filled balloons make a perfect model for a pus-filled abscess. In early April, Root made 60 abscess models for a large third-year laboratory. Models are also being used in the “old curriculum” for student practice. When developing the new curriculum, the CRB’s goals also included keeping lecture time, including small group work, to 20 hours per week; increasing laboratory time to 15 to 20 hours per week; and increasing independent study time. Over the new four-year curriculum, lecture time will decrease by 21 percent from 2,764 hours to 2,182 hours, while laboratory contact time will increase by 10.8 percent, from an average of 7.4 hours to 8.2 hours a week.

Perhaps the best news of all for students, however, is that there are fewer tests. Because small discipline-based courses are now a part of larger courses, there is more hands-on learning, and more time to practice between classes what is learned in class. ☐

Highlights of the NEW CURRICULUM

Many small changes, as well as some major ones, were made to the curriculum. Highlights include:

- Anatomy increased from one semester to two.
- Histology and Organology were consolidated into Microscopic Anatomy.
- Biochemistry now contains Genetics and Nutrition.
- Physiology increased from one semester to two, and information on Neurobiology and Reproductive Biology, two formerly separate courses, was added.
- Professional Development and Animal Populations were reconfigured.
- A new, two-semester course, Agents of Disease, combined the old-curriculum courses of Bacteriology, Virology, and Parasitology.
- Pharmacology and Toxicology were consolidated into one course.
- Discipline-based courses were consolidated into larger medicine, surgery, and specialty courses.
- Veterinary imaging was integrated with medicine and surgery courses.
- A first-year Preventive Medicine course was added.
- The bacteriology laboratory was replaced with a comprehensive diagnostics lab.

CVM to the RESCUE

Students aid Animal Humane Society and other rescue animals



A veterinary student spays an animal awaiting adoption at the Animal Humane Society.

Photo by Carleigh Knowles

a University of Minnesota clinical veterinarian and a team of veterinary technicians.

“It is a great opportunity for veterinary students in their last year of training to gain surgical training by working in a surgical clinic setting, much like what they will encounter in private practice,” Swanson says. “Students gain experience, while the U of M plays a vital role in helping to reduce pet overpopulation.”

Fourth-year student Cherie Pepin says the shelter medicine rotation was by far her favorite this year. Before this experience, she had done just one dog spay and one dog neuter surgery.

“Each day, we were able to do a cat or dog surgical procedure and an anesthesia,” she says. “To get that kind of hands-on experience and have it not be terrifying but wonderful was terrific. I learned techniques that I could use in the real world—including a stitch Dr. Swanson taught us that was incredible.”

Animal Humane Society also appreciates the student resource.

“We are happy to be partnering with the University of Minnesota,” says Kathie Johnson, Animal Humane Society director of operations. “This collaboration benefits AHS animals, and it helps the U because it better prepares its students to work in a shelter medicine setting and provide spay and neuter services to their clients.” ◊

In February the College of Veterinary Medicine (CVM) joined forces with Animal Humane Society (AHS) to offer reduced-cost spay neuter surgeries to cats and dogs being cared for by rescue organizations and animals awaiting adoption at AHS.

Fourth-year veterinary students are getting a taste of shelter medicine as they provide these much-needed surgeries as part of a two-week rotation at Animal Humane Society’s Golden Valley, Minnesota, location.

For more than 15 years, CVM students have worked with several pet rescue organizations in the Twin Cities to provide sterilization surgeries. This new collaboration with the Animal Humane Society expands on these services, providing opportunities for more rescue organizations to obtain the surgeries at a reduced fee.

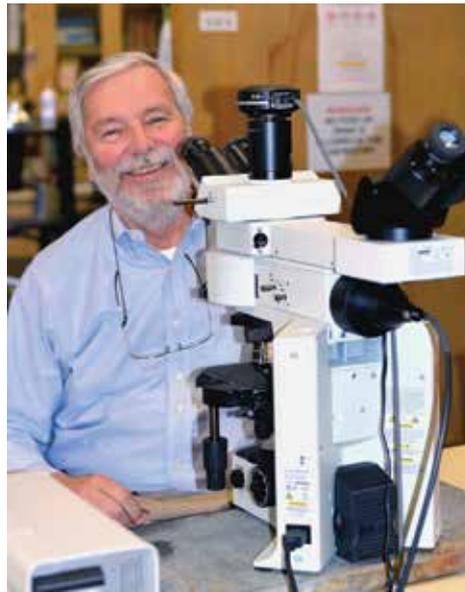
According to Dr. Jonna Swanson, director of the College of Veterinary Medicine’s shelter management program and a former staff veterinarian at Animal Humane Society, the students work under the direct supervision of



Dr. Trevor Ames, dean, became president of the Association of American Veterinary Medical Colleges (AAVMC) in July. The AAVMC is a nonprofit membership organization working to protect and improve the health and welfare of animals, people, and the environment

by advancing academic veterinary medicine. Its members include 35 veterinary medical colleges in the United States and Canada, nine departments of veterinary science, eight departments of comparative medicine, 13 international colleges of veterinary medicine, and three affiliate colleges of veterinary medicine.

VCS chair's position is a very important role for the college and the department, and I am very grateful for all that Dr. Washabau did as chair," says Dean Trevor Ames. "The VCS Department saw significant growth in all its missions of research, education, and service under Robert's leadership."



Dr. Bert Stromberg, a parasitologist and longtime professor with the Veterinary and Biomedical Sciences Department, retired on June 30 after 35 years with the college. Stromberg's career included serving as director of the Clinical Investigation Center and starting the Summer Scholars program. He plans to continue his research as a professor emeritus. Read more on the Web at www.cvm.umn.edu/faculty-and-staff/featured-faculty-stromberg.

The American College of Veterinary Dermatology (ACVD) honored **Dr. Sheila Torres**, professor and head of the Veterinary Medical Center's Dermatology Service, with the ACVD Award for Excellence for Outstanding Contributions to Science and Education. The award was presented at the North American Veterinary Dermatology Forum in Phoenix in April.



"Large Animal Medicine for Veterinary Technicians," a new book edited by Laura Lien, a Wisconsin veterinary technician, **Sue Loly**, large animal technical supervisor, and **Sheryl Ferguson**, manager, Large Animal Hospital, has been published by Wiley-Blackwell. The comprehensive guide to all aspects of caring for horses, cattle, camelids, small ruminants, and pigs helps veterinary technician students learn everything they need to know about large animal medicine.

University of Minnesota President Eric Kaler presented **Lisa Berg**, library assistant III, with a 2014 President's Award for Outstanding Service at Eastcliff on June 3. The award recognizes faculty and staff



Dr. Jim Collins, director of the Veterinary Diagnostic Laboratory, has joined the National Animal Health Laboratory Network (NAHLN) Coordinating Council as an

NAHLN laboratory representative. The NAHLN is part of a national strategy to coordinate the nation's federal, state, and university laboratory resources to allow authorities to better respond to any type of animal health emergency, including bioterrorist events, newly emerging diseases, and foreign animal disease agents that threaten the nation's food supply and public health.

Dr. Robert Washabau, who had been chair of the Veterinary Clinical Sciences (VCS) Department since 2004, stepped down from the position for personal reasons in April. **Dr. Dan Feeney** was named interim chair. "The

who have provided exceptional service to the University, its schools, colleges, departments, and service units. Berg is a longtime staff member in the Veterinary Medical Library.

The American Kennel Club's Canine Health Foundation (CHF) named **Dr. Eva Furrow**, postdoctoral fellow, as one of five 2014 clinician-scientist fellows. Furrow will receive support from the CHF for her research efforts in urinary stones in dogs. Established in 2013, the AKC Canine Health Foundation Clinician-Scientist Fellowship Program seeks to encourage and support the next generation of canine health researchers in order to sustain future advancements in canine and human health.

The Minnesota Veterinary Medical Association (MVMA) honored **Dr. Kurt Rossow**, associate clinical professor in the Veterinary Diagnostic Laboratory, with its annual Outstanding Faculty Award at the MVMA annual meeting in February. The Outstanding Faculty Award is given to a College of Veterinary Medicine faculty member who has provided outstanding service to Minnesota veterinarians, given time and talent to the veterinary profession, and been a dedicated contributor to organized veterinary medicine. Rossow's research and clinical interests include disease diagnosis and infectious diseases of swine. He earned his DVM from Kansas State University and his PhD from the University of Minnesota.



Dr. Stephanie Valberg, professor, was honored by the University of Minnesota Postdoctoral Association as Outstanding Mentor-2013. ◊



STUDENT news

The University of Minnesota Graduate School awarded doctoral dissertation fellowships to all four of the college's nominees for the 2014-2015 academic year: **Jonathan B. Clayton**, **Jaclyn Dykstra**, and **Tiffany Wolf**, who are PhD students in the comparative and molecular biosciences graduate program, and **Carlos Andres Diaz**, a PhD student in the veterinary medicine graduate program.

Kevin Lang, a student in the comparative and molecular biosciences graduate program, was awarded an Institute on the Environment Mini Grant for the project "Dioxin Testing in Son Tra Nature Reserve." Lang and his team will conduct dioxin tests on a species of primate indigenous to Vietnam known to withstand the negative impacts of the dioxin used during the Vietnam conflict. The project seeks to combine animal physiology, ecology, microbiology, and molecular biology to develop a new dioxin-degrading process. Mini Grants are designed to encourage collaboration among faculty, staff, and students across University of Minnesota disciplines, units, and campuses on environmental themes.



Veterinary students **Ericka Funfsin**, **Alexandria Schauer**, and **Chris Thomson** participated in the House of Delegates meeting at the SAVMA (Student American Veterinary Medical Association) Symposium hosted by Colorado State University in Fort Collins, Colorado, in March. The SAVMA Symposium is an educational opportunity that exposes students to a variety of topics outside their typical curriculum while offering unique networking experiences and career-building skills. Next year's SAVMA Symposium will be hosted by the University

of Minnesota College of Veterinary Medicine.

Eleven students were awarded Minnesota Veterinary Medical Association (MVMA) scholarships at the MVMA annual meeting in February. The awards included the new MVMFcares Scholarship, which was presented to first-year student **Zach Loppnow**, and the new Arrowhead VMA Scholarship, which was awarded to **Alisa Stegskal**. The other recipients were:

- **Mitch Bellrichard**, Spannaus Scholarship
- **Thyra Bierman**, Public Health Award
- **Amy Dahlke**, Food Animal Scholarship
- **Graham Engle**, Companion Animal Scholarship
- **Nicholas Mayer**, VHA Memorial Scholarship
- **Tim Mayerhofer**, Margaret Pomeroy Scholarship
- **Allison Pace**, MVMA Leadership Award
- **Adrienne Schucker**, James O. Hanson CE Scholarship
- **Abigail Wirt**, Dr. Tom Bloom Memorial Scholarship

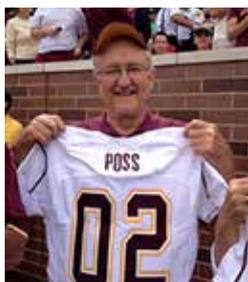
Five students were recognized at the annual conference of the American Association of Bovine Practitioners in Milwaukee in September. An Amstutz Scholarship was awarded to **Lee Michels**; **Andy Kryzer** received first prize for best research project in the Student Case Competition; the Cargill Animal Nutrition Award went to **Brett Boyum**; and AABP Bovine Veterinary Student Recognition Awards were presented to **Amy Dahlke**, **Andy Kryzer**, and **Abbie Wirt**.

Carmen Alonso, a student in the veterinary medicine graduate program, received the University of Minnesota Distinguished Master's Thesis Award for her thesis, "Epidemiological and Economic Implications of Air Filtration Systems to Prevent PRRSV in Large Sow Herds." She was advised by Peter Davies and is now working on her PhD at the college. ◊



Dr. Kevin Barcus, class of 1986, was presented with an Alumni Service Award at the University of Minnesota Alumni Association's Alumni Awards Celebration in September. A longtime volunteer for the college, Barcus served on the Alumni Friends and Society Board from 1988 to 2013. He also led the college's mentor program for 24 years, helping to create mentor relationships for an estimated 500 students. He continues to offer counsel for improving the mentor program to benefit the students, the college, and the practice of veterinary medicine. Barcus is the owner of Mounds View Animal Hospital, which he cofounded in 1988.

Dr. Peter Poss, class of 1957, and other Siehl Prize winners were honored at TCF Bank Stadium during "Celebrate Ag and Food Day" in September.



The Siehl Prize for Excellence in Agriculture recognizes individuals who have made extraordinary contributions to the production of food and alleviation of hunger in three categories: production, agribusiness, and knowledge. A poultry consultant with an extensive background in turkey production management, Poss was awarded the Siehl Prize in Agribusiness in 2002. He is currently president of the Minnesota Veterinary Historical Museum.

Five CVM alumni have joined the college's Alumni and Friends Society Board: **Dr. Christopher Anderson**, class of 2003 (Banfield Pet Hospital); **Dr. Abby Coodin**, class of 2010 (Community Pet Hospital, Amery, Wisconsin); **Dr. Ian Drummond**, class of 1985 (Corcoran Pet Care Center, Corcoran, Minnesota); **Dr. Kelsey Gehling** (formerly Ness), class of 2013 (Country Doctors Veterinary Service SC, Menominee, Wisconsin), and **Dr. Mike McMenemy**, class of 1969 (Kitty Clinic, Minneapolis, Minnesota).

class notes

1960s

The American Veterinary Medical Association named **Dr. Benjamin Hart**, class of 1960, as Bustad Companion Animal Veterinarian of the Year. A distinguished professor emeritus at the University of California, Davis, Hart developed the school's first program in veterinary behavior and helped establish the Center for Animals in Society. The award recognizes a veterinarian's work in preserving and protecting human-animal relationships.



1970s

Dr. Bill Hartmann (class of 1978), executive director of the Minnesota Board of Animal Health and state veterinarian, was presented with the National Assembly of State Animal Health Officials 2013 Annual Award at the American Association of Veterinary Laboratory Diagnosticians meeting in San Diego in October. The award was in recognition of outstanding, dedicated service and leadership in regulatory veterinary medicine.



Governor Mark Dayton appointed **Dr. Mary Olson**, class of 1976, to the Minnesota Board of Veterinary Medicine. One of the owners of East Central Veterinarians in Cambridge and Mora, Minnesota, Olson is a past president of the Minnesota Veterinary Medical Association. The Minnesota Board of Veterinary Medicine is the licensing agency for veterinarians in the state.

1980s

Dr. Rick Goullaud, class of 1983, completed the IRONMAN Wisconsin race in Madison, Wisconsin, in September. He was the first in his age bracket, with a time of 13 hours and 25 minutes. This accomplishment qualified him for the IRONMAN World Championship in Hawaii and the Olympic-Distance National Championships in Milwaukee.

1990s

The American Veterinary Medical Association (AVMA) House of Delegates elected two CVM alumni to AVMA councils during its annual business meeting in 2013.

Dr. Steve Barghusen, class of 1994, was elected to the Judicial Council as an at-large member. A full-time practitioner for nearly 18 years, he is a board-certified diplomate of the American Board of Veterinary Practitioners.

Dr. Michael Hodgman, class of 1990, was reelected to the Council on Biologic and Therapeutic Agents as an at-large member. Hodgman works for Elanco Animal Health providing technical support to veterinarians, nutritionists, and dairy farmers throughout the Midwest.

Dr. Mark Brody, class of 1997, has retired.

2000s

Dr. Christine Hoang (DVM 2007, MPH 2008), was named the 2013 Food Safety Veterinarian of the Year by the American Association of Food Safety Veterinarians. Hoang is currently assistant director of the American Veterinary Medical Association's Scientific Activities Division.



Dr. Jamie Litke, class of 2002, recently opened Litke Veterinary Service in Pierz, Minnesota, where he offers on-farm large animal service and is on call seven days a week.

Dr. Michelle Rider, class of 2005, is now the owner of the Mishicot Veterinary Clinic in Mishicot, Wisconsin.

Dr. Jodi Shultz, class of 2004, is now chief of veterinary clinical services at Yale School of Medicine.

Dr. Jerri Smith, class of 2003, received an award from Companion Laser Company for “Veterinary Best Therapeutic Laser Case Study” on Stewie the cat.

2010s

Dr. Carla Baum, class of 2012, completed a rotating internship at Garden State Veterinary Specialists, a private practice in New Jersey, and is currently serving a cardiology internship with Blue Pearl Veterinary Partners in Tampa, Florida.

João Ribeiro Lima, 2013 PhD, received the 2013 Mark Gearhart Memorial Graduate Student award from the Association for Veterinary Epidemiology and Preventive Medicine at the annual Conference of Research Workers in Animal Diseases in December. Lima’s PhD research examined bovine tuberculosis, a zoonotic disease that affects domestic and wildlife species. He is currently an assistant professor in veterinary epidemiology at the Lusofona University School of Veterinary Medicine in Portugal.

Dr. Dana Neiman, class of 2013, is currently in a small animal rotating medicine and surgery internship at the Animal Medical Center in New York City. She will be moving back to Minnesota this summer.

Dr. Elizabeth Prescott, class of 2013, joined Newburgh Veterinary Hospital in Newburgh, New York.

Dr. Katherine Schiller, 2010 PhD, is a senior clinical research specialist at Medtronic.

In memory

Dr. Jerry Ahrendt, class of 1966, passed away in early September. Ahrendt was a longtime veterinarian in the Delano area.

Dr. Philip Berends, class of 1970, of St. Charles, Minn., passed away on May 27. Berends joined the St. Charles Veterinary Clinic shortly after graduation, where he later became a partner and worked until his retirement in 2011.

Dr. Cheryl Diane Coyle, class of 1977, most recently of Minot, North Dakota, passed away April 20 at home with her family by her side. Coyle’s variety of professional experiences included practicing in Faribault, Minn., opening All Small Critters Pet Clinic in Oakdale, Minn., teaching in the veterinary technology program at Argosy University, and working as a veterinarian for the U.S. Department of Agriculture’s Food Safety and Inspection Service in Minot.

Dr. John C. Dahl, class of 1956, died on May 5 in Waunakee, Wisconsin. After graduating from veterinary college, Dahl purchased a solo vet clinic in Clintonville, Wisconsin, where he focused on milk quality and mastitis control for dairy herds. In 1964, he was hired as a consultant to Dairy Equipment Company of Madison and served them while continuing in his practice. In 1971, he joined the company on a full-time basis as product manager, and was president from 1974 to 1982. In 1984, he became the first director of the Veterinary Medical Teaching Hospital at the University of Wisconsin, where he served until 1995. He was faculty associate emeritus until the time of his death. Dahl was twice named Veterinarian of the Year in Wisconsin, in 1964 and 1992.

Dr. Kenneth G. Gillette, class of 1954, died October 27 in Ames, Iowa. He retired from the U.S. Department of Agriculture’s National Animal Disease Laboratory in Ames, Iowa, in 1987.

Dr. Dale Haggard, class of 1959, died on November 27 at age 79. Haggard was in large animal practice in southwest

Minnesota for many years before joining the faculty at Michigan State University, where he earned a master’s degree. In 1978, he joined the College of Veterinary Medicine at the University of Minnesota, where he also held an appointment with University of Minnesota Extension. A beef cattle expert, he also provided ambulatory service for beef cattle herds during his time at the college. He was active in research, teaching, and outreach until he retired in 1995.

Dr. Rodney Johnson, class of 1970, of Alexandria, Minn., died May 22 after suffering a stroke. Johnson practiced food animal medicine from 1970-1980 before starting the Swine Health Center in Morris, Minn., in 1981. He was named Swine Practitioner of the Year in 1982, served as president of the American Association of Swine Practitioners (AASV) in 1985, and was the 2009 recipient of the AASV Meritorious Service Award. He was a longtime supporter of the AASV Foundation, serving on the AASV Foundation Board from 2002-2008 and as president of the foundation in 2008. After years in private practice, he recently retired from the American Veterinary Medical Association Professional Liability Insurance Trust, having served as chief executive officer. He became a member of the College of Veterinary Medicine’s Alumni & Friends Society Board in 2013.

Dr. Gene Robert Kind, class of 1955, passed away on December 15 at age 82. A resident of St. Peter, Minnesota, Kind was a former president of the Minnesota Veterinary Medical Association and Minnesota Veterinary Medical Foundation and was active in a variety of community organizations. He owned and operated the Kind Veterinary Clinic in St. Peter until he retired in 1998.

Dr. Paul D. Lundgren, a member of the college’s first graduating class of 1951, died at St. Cloud Veteran’s Medical Center on December 30 at age 88.

Dr. Robert “Bob” W. Oman, class of 1976, whom a Barron, Wisconsin, newspaper called “one of the brightest faces in the

Barron community,” died on October 23. A longtime partner at the Barron Veterinary Clinic, Oman joined the firm in 1979 and retired in 2007. He worked most of his years with large animals at area dairy farms, where he made friends with both farmers and their animals.

Dr. Kenneth Peterson, class of 1963, died on January 4. Peterson served in the U.S. military before attending the College of Veterinary Medicine. He operated a large and small animal and exotic animal clinic in Brownton, Minnesota, for 50 years.

Dr. Harry Rozmiarek, class of 1962, died on June 15, 2013. Secretary-general of the International Council for Laboratory Animal Science, he had also directed laboratory animal medicine at the Fox Chase Cancer Center in Philadelphia since 2004. Rozmiarek was known for his commitment

to the development of guidelines for the proper care and use of animals in research. He was a past president of the American College of Laboratory Animal Medicine, American Society of Laboratory Animal Practitioners, and American Association for Laboratory Animal Science.

Dr. Robert Sartori, class of 1957, died on July 25, 2013, in Sun Prairie, Wisconsin. Sartori practiced veterinary medicine in Lake Mills and Sun Prairie, where he was employed at the Sun Prairie Vet Clinic and Sun Prairie Pet Clinic. He retired in 2008 and wrote the book “Doc’s Tales: The Art and Science of Veterinary Practice.” 

from your ALUMNI RELATIONS OFFICER

Have you ever wondered what CVM graduates are doing with their DVM, master’s, and PhD degrees? Where are they living, how are they spending their free time, what awards have they won, and what books have they published? Please, share a class note and stay connected to the college. Let others know what you have been up to!



Jennifer Scholl

STAY CONNECTED: www.cvm.umn.edu/alumni-and-donors/stay-connected

Did you know we have a Facebook page and LinkedIn group for CVM alumni and friends? Please join us on the social media sites and feel free to post comments or “like” posts. Our social media pages are a great way to hear about the latest happenings with your fellow alumni and the CVM.

FACEBOOK: www.facebook.com/umnCVM

LINKEDIN: z.umn.edu/CVMlinkedin

I cannot wait to hear from you. Please don’t hesitate to let me know what you are up to, and I will share the news!

All the best,

JENNIFER SCHOLL
SENIOR ALUMNI RELATIONS OFFICER
612-624-1247
GENZ0005@UMN.EDU

SHARE YOUR NEWS

Send your Alumni Class Notes using the online form at www.cvm.umn.edu/alumni/update or e-mail Jennifer Scholl, alumni relations officer, at genz0005@umn.edu.

Or send your news by mail using the form below (attach additional pages of necessary) to:

Alumni Relations, College of Veterinary Medicine, 1365 Gortner Avenue, St. Paul, MN 55108.

Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Graduation year: _____

Employer: _____

Title: _____

Alumni Class Notes news:

Death announcement (name and class year, place and date of death):



The Minnesota Turkey Research and Promotion Council has provided \$100,000 for the college's **Pomeroy Legacy Scholars program** to support graduate students under the direction of Carol Cardona, the Pomeroy Chair in Avian Health. The contribution will be reviewed each year, and has the potential of providing \$100,000 per year for a total of three years. The Minnesota Turkey Research and Promotion Council is part of the Minnesota Turkey Growers Association, a nonprofit association dedicated to fostering a successful Minnesota turkey industry and its ability to make positive contributions to consumers, the economy, the environment, and its members. Minnesota is currently ranked #1 for turkey production in the U.S., with its 250 turkey farmers raising approximately 46 million turkeys in 2013.

The Raptor Center surpassed its goal of raising \$53,000 on Give to the Max Day in November. Total giving to The Raptor Center for Give to the Max was over \$60,000 from nearly 400 gifts. The first \$53,000 was matched by Rachel and Denny Hollstadt and the Sarah J. Andersen Fund of the Hugh J. Andersen Foundation.



Spotlight on **DR. FORD BELL**

Dr. Ford Bell's association with the College of Veterinary Medicine is a lengthy one. In 1982, he received his DVM. In the 1990s, he served as an assistant clinical professor in internal medicine at the college.

Through the years, he became knowledgeable about various aspects of the college and, in turn, became a key donor to a number of programs.

"Being an alumnus of the college is an important motivation for me to contribute," he says. "I loved my time at the University teaching students and the important relationships I developed." For Bell, it is also the college's work in One Medicine that drives him as a donor.

"To me is it not human medicine or veterinary medicine or environmental health — it is all of these things together that are critical for the health of the planet. There is only medicine and we all have parts of it."

As a donor, Bell has supported student scholarships, alumni scholars, The Raptor Center, and comparative oncology research.

"I believe the College of Veterinary Medicine is an important portal for the University of Minnesota," says Bell. He cites the quality of research, the hospitals, and The Raptor Center as contributing to both the health and the economy of Minnesota. "As a land-grant university, it is important that the U of M connects with people in their daily lives—and that can certainly be said about the College of Veterinary Medicine."

Bell is currently president of the American Alliance of Museums in Washington, D.C.

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POINTS OF PRIDE RESEARCH DAY
October 2, 2014
Pomeroy Student-Alumni Learning
Center and Animal Science/Veterinary
Medicine

CARE AND MANAGEMENT OF
CAPTIVE RAPTORS
October 7-10, 2014
The Raptor Center

DUKE LECTURE: "THE RAPTOR
CENTER'S 40-YEAR ODYSSEY,"
PRESENTED BY DR. PAT REDIG
AND DR. JULIA PONDER
October 9, 2014, 4:30 p.m.
St. Paul Student Center Theater, 2017
Buford Avenue, St. Paul

UNIVERSITY OF MINNESOTA
HOMECOMING 2014
October 12-18, 2014

CVM MENTOR CONNECTION
PROGRAM KICKOFF
October 15, 2014, 7 p.m.
University of Minnesota St. Paul Campus

CLASS OF 1964 50TH REUNION
October 17, 2014, 9 a.m.
University of Minnesota St. Paul Campus

LEMAN CHINA SWINE
CONFERENCE
October 20-22, 2014
Xian, China

CHINA DAIRY CONFERENCE
November 3-4, 2014
Beijing, China



A renovated dairy barn, the Pomeroy Student-Alumni Learning Center is home to the College of Veterinary Medicine's Academic and Student Affairs offices.

For the latest news and information about the College of Veterinary Medicine, visit www.cvm.umn.edu.

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