

Vet Topics


● SPRING 2022

Saving Ooma Girl

By Jeanette Neufeld



Ooma Girl as a puppy.

 SUPPLIED PHOTO

When Allan and Maureen Zaleski arrived at the Western College of Veterinary Medicine (WCVN) at 2 a.m. one morning in July 2021, they were ready to do whatever it took to save their dog.

The couple, both in their late 70s, had driven all night from Winnipeg, Man., to seek surgery for Ooma Girl, their three-year-old French bulldog. During the previous evening, Ooma had begun crying loudly with pain in their backyard.

“She was just squealing in pain. I couldn’t believe it,” says Maureen.

Their regular veterinarian, WCVN alumna Dr. Betty Hughes (DVM’77), told them Ooma would need surgery and referred them to the WCVN’s Veterinary Medical Centre (VMC) in a hurry.

“We didn’t want to hesitate because we love her so much,” says Maureen. “Faced with whatever we had to do, we wanted our dog in good health again.”

The couple packed their vehicle, found caregivers for their three small parrots and Isabelle, a 14-year-old pekinese, then began the 780-kilometre trip to Saskatoon.

The Zaleskis say Ooma was clearly in extreme pain during the drive, restricted to her kennel so she wouldn’t further injure herself. The couple got lost on their way into the city and eventually flagged over a taxi driver who led them to the WCVN’s veterinary teaching hospital.

When the Zaleskis arrived, WCVN staff brought Ooma into the hospital and began managing her pain while the couple went to wait at a nearby hotel. The next morning, results of a CT scan confirmed the diagnosis of intervertebral disc disease.

Vet's vision revives textbook



Veterinary radiation oncologist Dr. Monique Mayer worked with a team of University of Saskatchewan (USask) staff and students to complete an English translation of *The Lymphatic System of the Dog*, a 1918 textbook by German anatomist Dr. Hermann Baum.

Now available through the university's open publishing system, the book investigates the anatomy and drainage patterns of the canine lymphatic system. Despite being written over 100 years ago, much of Baum's exhaustive work hasn't been repeated. The information is still relevant for veterinarians as well as for researchers.

"Nobody really does this type of research anymore. The German anatomists really went into amazing detail," says Mayer, a

Western College of Veterinary Medicine (WCVM) professor.

The USask team translated the entire text, modernized it with enhanced images and interactive exercises, and published it to the USask Openpress site. The open textbook includes Baum's original diagrams, three-dimensional computer renderings and images, and interactive activities that are designed to help students engage with the text.

WCVM veterinary students will use the open textbook as part of their coursework, but its reach could go further. While the text is applicable to canine patients, it could also aid researchers investigating the lymphatic system in dogs and humans. 🐾

Read the full story at:

cahfpets.ca

Saving Ooma Girl (continued)

One of the discs within the little dog's vertebral column (spine) had degenerated and displaced. The displaced disc was compressing her spinal cord and causing pain and paralysis.

VMC surgeons performed a hemilaminectomy, which involves drilling a window into the bony vertebral column to access the canal that houses the spinal cord. The window allows surgeons to remove the disc material pinching the spinal cord, explains Dr. Kaustubh Dongaonkar, the small animal surgical resident who conducted Ooma's surgery.

The procedure is considered a major surgery and can take up to two and a half hours. Ooma recovered well from anesthesia and came out of surgery successfully.

"Prior to her discharge, she was able to stand and walk and bear some weight on both her hind limbs. She bounced back quite quickly," says Dongaonkar.

This type of surgery is quite common at the VMC — Dongaonkar says the hospital's surgical team typically performs up to four of these procedures per month. Small breed dogs most commonly experience this condition. According to the most recent literature on this condition, French bulldogs experience recurrence more commonly than other breeds, says Dongaonkar.

"Ooma's long-term prognosis now that she's resumed walking is excellent, however she has a lifelong risk for having this problem recur. The only way to reduce the risk is keeping her from jumping too much," he says.

The Zaleskis spent three days in Saskatoon, an unexpected trip that took place in the midst of the COVID-19 pandemic and the haze of wildfires during the past summer. They're thankful for the advice of their referring veterinarian, who they believe saved Ooma's life.

"Nobody in Winnipeg could do the kind of operation she needed," says Maureen. "Us acting so quickly on her advice really did a good thing for our little dog."

Dongaonkar says Ooma's owners made the right call in rushing to the hospital overnight.

"If you see they're unable to balance or stand or get up, get them examined by a veterinarian. Timely intervention is of the essence in such cases. In certain situations, medical management may be indicated while others may need advanced imaging and surgery," he says.

Dongaonkar notes that this condition can potentially worsen from back pain to dogs being unable to move their legs in 12 hours or less. The worse the condition is before it's diagnosed and treated, the less chance the dog will have of being able to walk again.

Several months after her surgery, Ooma suffered a relapse and is now on medication. The Zaleskis try to keep her calm and not jump too much. She is mostly content to spend her time getting cozy underneath blankets and keeping her family company.

"She loves to sit in our laps," says Maureen. "You couldn't ask for a better companion."

In recognition of the VMC clinical team's efforts for Ooma, the couple donated to the college's Companion Animal Health Fund (CAHF).

"We are so grateful for the care we received," says Maureen. "We recommend the college to everybody." 🐾



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GOOD DOG

Canine patients hold key to new bone cancer therapies for dogs and people.

By Maya Kliewer



CHRISTINA WEESE

You share more things in common with your dog than you think, and these similarities are the focus of research at the University of Saskatchewan (USask) that's aimed at investigating osteosarcoma, a type of bone cancer found in dogs and humans.

A research team led by Dr. Behzad Toosi of the Western College of Veterinary Medicine (WCVM) is studying the characteristics of osteosarcoma that are common to both species. This relatively new approach to studying cancer is known as comparative oncology, and it promises to speed up the development of new treatments for dogs and people.

Comparative oncology seeks to bridge the gaps between laboratory research and human clinical trials by combining research from other fields such as veterinary medicine.

"[Dogs] share a household with you and they develop the same kinds of cancers as you, and those cancers are very, very similar genetically or molecularly," explains Evelyn Harris, a graduate student and member of Toosi's research team.

"It's interesting to study comparative oncology because it is a stepping-stone between the mouse model and the human model."

The researchers' recent focus has been on receptors, small proteins found on the cells' surface. Although these receptors provide many essential functions to cells in the body, they're also known to be easily "hijacked" by cancer cells and used for their benefit. But if researchers could use these receptors to specifically target

cancer cells and deliver treatments, they could ultimately reduce the side effects of chemotherapy drugs.

In osteosarcoma, the small molecules of interest are erythropoietin-producing hepatocellular (Eph) receptors. Although they're found on most cells, previous research indicates that some subtypes of these receptors are overabundant in many human cancers.

"These [receptors] are emerging as some molecules that are very important in regulation of invasiveness of different cancers in humans, but they haven't been studied in dogs," says Toosi, an assistant professor at the WCVM. He also holds the college's Allard Research Chair in Oncology.

After exploring these receptors to determine their role in the progression of dog cancers, the WCVM team has successfully demonstrated the overabundance of some receptor subtypes in osteosarcoma cancer cells from dogs.

Further investigations of some Eph receptor subtypes revealed that they play an essential role in osteosarcoma by enabling cancer cells to grow and move faster — contributing to the cancer's aggressiveness.

Since there have already been some attempts to target these receptors in human cancers, Toosi thinks it's possible to target and interfere with these receptors as a means of more effectively treating osteosarcoma in dogs.

"These receptors are very promising for dog malignancies," says Toosi. "They could lead to new clinical interventions for treatment of dog osteosarcoma."

Traditionally, cancer therapy for dogs with osteosarcoma involves more invasive treatments such as radiation and chemotherapy — treatments with side effects that often trump those caused by the cancer.

"A lot of people will amputate the limb to get rid of the primary bone tumour and then only get a few more months with the pet," says WCVM graduate student Dr. Jessica Sharpe, another member of Toosi's research team.

Comparative oncology may be key to developing new treatments more quickly — and that's promising for humans and their furry friends. Dogs have a much shorter lifespan than people, and they develop osteosarcoma naturally and at a higher rate than humans. As a result, new treatments can be taken to canine clinical trials more quickly than in their human counterparts.

"Since the biology of cancer is similar between dogs and humans, these investigations in dog clinical trials can inform further research or clinical trials conducted in humans," says Toosi. 🐾

Maya Kliewer of Saskatoon, Sask., is a WCVM veterinary student who worked as a summer research student in 2021.

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Researchers piece together feline diabetes puzzle

By Jeanette Neufeld

“Kevin” the cat.

 COPPERHEAD PHOTOGRAPHY

Kevin the cat has faced a roller-coaster of health problems during his five years of life.

First, dental surgery. Next came pancreatitis, followed by a diabetes diagnosis. Kevin’s most recent health scare led to a late-night emergency visit to the Western College of Veterinary Medicine (WCVN)’s Veterinary Medical Centre (VMC).

Kevin was with a cat sitter when he stopped eating and eventually became unresponsive. When his vacationing owners heard about his worsening state, they flew home and rushed their cat to the VMC at 2:30 a.m.

Kevin was experiencing a serious condition called diabetic ketoacidosis. High ketone levels in the blood can make cats feel like not eating, and they can get weak and experience vomiting or diarrhea. Cats eventually can go into a diabetic “coma” and lose consciousness before death. Treatment is essential to save the patient.

The VMC’s clinical team were able to stabilize Kevin’s condition by treating him with intravenous fluids, potassium and insulin. Diabetic cats that experience a decrease in appetite should be assessed by their veterinarian as soon as possible.

While veterinarians can diagnose and treat diabetes in cats, WCVN researchers are also exploring physiological processes

that occur in affected cats to better understand and manage the disease. The research work is led by Dr. Melissa Meachem, an assistant professor in the WCVN’s Department of Veterinary Pathology.

During the past few years, Meachem and her former graduate student, Dr. Peter Toh, investigated how a protein called nesfatin-1 presents in lean, overweight and diabetic cats.

“We’re always looking to improve management in animals,” says Toh, who conducted the research as the focus of his Master of Science program in veterinary pathology. “This is sort of the first step ... is there something there, are those connections present in these cats, and can we use that to improve management of diabetes?”

Toh collected tissue samples from the cats, searching for nesfatin-1 within their bloodstream. The novel protein is the focus of a broad range of research in humans and animals. In humans, elevated nesfatin-1 levels in the body are linked to insulin resistance in obese and diabetic people. Nesfatin-1 levels decrease significantly in people whose type 2 diabetes is in remission.

The WCVN researchers’ work explored whether a similar pattern of nesfatin-1

response occurred in cats. Owners participating in the WCVN study monitored their cats’ blood glucose levels at home while researchers treated the pets’ diabetes for a month. WCVN researchers also collected blood samples from these cats to monitor changes in nesfatin-1 levels. Study results showed that when treated, nesfatin-1 levels in diabetic cats decreased.

After graduating in 2021, Toh returned to practise in his home country of Australia — but Meachem is continuing the next phase of this research. She’s part of a project supported by the WCVN’s Companion Animal Health Fund (CAHF), developing species-specific tests for measuring nesfatin-1 in tissues and bodily fluids of cats and dogs.

As for Kevin, he went home after spending four days at the VMC and continues to delight his family with his outgoing personality and wild behaviour. His owners control his diabetes with a special diet, blood glucose monitoring and twice-daily insulin doses. He rewards them by destroying their phone and laptop charging cables.

Kevin has cost his family thousands of dollars — and they love him dearly. 🐾

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CAITLIN TAYLOR

PET BOOM STRAINS EMERGENCY SERVICE

By Jeanette Neufeld

As the only 24-hour veterinary hospital in Saskatoon and area, the Western College of Veterinary Medicine's (WCV) Veterinary Medical Centre (VMC) is experiencing increased demand for its services.

"The VMC emergency service has been busier, especially over the past year. This is not just a VMC problem but something we're seeing across North America," says Dr. Jen Loewen, a board-certified specialist in emergency and critical care at the WCV. "As pet ownership has increased, the number of vets hasn't increased at the same rate."

While the veterinary profession is struggling to meet this increased demand, it's also experiencing labour shortages of both veterinarians and registered veterinary technologists (RVTs). For the VMC's small animal emergency and critical care service, another challenge is finding clinicians and RVTs who are trained to deal with emergency situations.

When a sick or injured pet arrives at the VMC, a senior veterinary student or an RVT conduct an initial physical examination and assessment to determine if the animal's condition is life threatening. The entire team plays a role in this triage or "sorting" process, with much discussion between the clinicians and RVTs.

"If all cases are deemed stable, we'll go in the first-come-first-served basis, with the allowance that if a more unstable patient comes in the meantime, that patient will jump the queue," says Loewen.

The most critical cases can include animals hit by vehicles or pets that are experiencing excessive bleeding, breathing

problems, choking or high temperatures (over 103.5 F or 39.7 C). Pets that have been exposed to poison or toxic products, very young patients and service animals are also considered top priority.

Cases considered to be serious but not life threatening would include wounds without major bleeding, high temperatures, coughing, allergic reaction or eye problems. The clinical team sees these cases on a first-come-first-served basis.

For other minor injuries or illnesses such as diarrhea, ear issues or skin conditions, the VMC's team advises owners to see their family veterinarian or be aware that there may be a long wait to see a VMC clinician.

While some owners may become impatient waiting for their pets to receive care, Loewen points out that a longer wait time typically means that a pet's health is more stable compared to other incoming patients.

"The other thing that's important to remember is that we are also a teaching hospital," says Loewen. "Teaching is something we're doing as well to allow our fourth-year clinical students to get the appropriate training for them to successfully become veterinarians."

Loewen stresses that owners should call ahead before bringing their pet to the hospital. If an animal's condition is life threatening, advance notice will ensure that the VMC's clinical team is ready.

"Giving the emergency clinic a call is very helpful. If we know a case is coming in in serious condition, that helps us plan accordingly," says Loewen. 🐾

TRIAGE: When you arrive, the VMC clinical team will check your pet's vital signs and neurologic function. They will also check for signs of bleeding and toxin exposure. Patients are sorted into three health status categories.

LIFE THREATENING CONDITION

IMMEDIATE

📞 Call on your way 306-966-7126

- Unable to walk
- Breathing problems
- Seizures
- Ingestion of poison or toxic products
- Severe bleeding
- History of trauma
- Choking
- Very young ill patient

VMC team treats patients with life-threatening illness/injuries first.



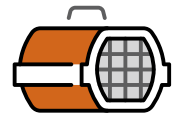
SERIOUS BUT STABLE CONDITION

URGENT

📞 Call before leaving 306-966-7126

- Minor wounds without major bleeding
- Temperature more than 39.7 C (103.5 F)
- Coughing
- Allergic reaction
- Eye issues

VMC team will triage urgent cases and see them in order of urgency.



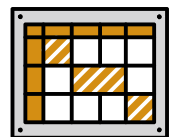
MINOR INJURY OR ILLNESS

NON-URGENT

📞 Call during regular hours

- Diarrhea
- Ear issues
- Skin conditions
- Difficulty walking

Make an appointment with VMC or family veterinarian.



Small Animal Clinic: 306-966-7126

24/7 Pet Poison Helpline
(fee for service): 855-764-7661



USask researchers track multi-species transmission in world first

University of Saskatchewan (USask) researchers have cracked a multi-species mystery, documenting the flow of a common canine pathogen from a dog to a human.

This finding is the first documented, symptomatic urinary tract infection (UTI) in a human patient caused by transmission of *Staphylococcus pseudintermedius* bacteria from a dog.

Led by Dr. Joseph Blondeau of the USask College of Medicine and Dr. Joe Rubin of the Western College of Veterinary Medicine (WCVM), this collaborative effort involved taking samples from a pet and its owner to find the source of infection.

UTI infections can be caused by a range of different bacteria, but this is the first time that *S. pseudintermedius* was found to cause a UTI in a human patient. The bacteria commonly live in dogs without issue, and researchers have only begun to investigate how it could affect humans — thanks to recent improvements in diagnostic technologies.

USask scientists previously published three reports of *S. pseudintermedius* infections with clear evidence of transmission from the family pet. Beyond documenting these occurrences and providing important clinical information, the study also reinforces how humans share microbes with the creatures that live around us.

“It highlights the biology. It highlights that we all share organisms and that we

RESEARCH IN PRINT

A roundup of WCVM-related companion animal research articles that have been recently published in peer-reviewed journals.

Schmidt K, Feng C, Wu T, Duke-Novakovski T. “Influence of maternal, anesthetic, and surgical factors on neonatal survival after emergency cesarean section in 78 dogs: a retrospective study (2002 to 2020).” *Canadian Veterinary Journal*. 2021. 62(9):961-968.

Norton EM, Minor KM, Taylor SM, McCue ME, Mickelson JR. “Heritability and genomic architecture of episodic exercise-induced collapse in border collies.” *Genes*. Nov. 2021. doi:10.3390/genes12121927

Reis LG, Morris T, Quilliam C, Rodrigues LA, Loewen ME, Weber LP. “The effects of fermentation of low or high tannin fava bean-based diets on glucose response, cardiovascular function, and fecal bile acid excretion during a 28-day feeding period in dogs: comparison with commercial diets with normal vs. high protein.” *Metabolites*. 2021. 11(12):878. doi:10.3390/metabo11120878

Various WCVM contributors. *Nutrition and Management of Pets: Frontiers in Veterinary Science*. E-book. Nov. 2021. Edited by Shoveller AK, Trevizan L, Wakshlag J, Bosch G, Columbus D.

Cosford K, Snead E, Hutcheson M, Sukut S. “The effect of per os vs subcutaneous 123 iodine administration on percentage thyroidal radioactive iodine uptake in normal cats.” *Journal of Veterinary Internal Medicine*. 2021. 35(6):2646-2651. doi:10.1111/jvim.16261

Blondeau LD, Deutscher M, Rubin JE, Deener H, Kanthan R, Sanche S, Blondeau JM. “Urinary tract infection in a human male patient with *Staphylococcus pseudintermedius* transmission from the family dog.” *Journal of Chemotherapy*. Nov. 2021. doi:10.1080/1120009X.2021.1995251

Broqueza J, Prabakaran CB, Allen KJH, Jiao R, Fisher DR, Dickinson R, MacDonald-Dickinson V, Uppalapati M, Dadachova E. “Radioimmunotherapy targeting IGF2R on canine-patient-derived osteosarcoma tumors in mice and radiation dosimetry in canine and pediatric models.” *Pharmaceuticals*. 2022. 15(1):10. doi:10.3390/ph15010010

Belotta AF, Sukut S, Lowe C, et al. “Computed tomography features of presumed normal mandibular and medial retropharyngeal lymph nodes in dogs.” *Canadian Journal of Veterinary Research*. Jan. 2022. 86(1):27-34. PMID: 34975219.

Podsiedlik M, Hofmeister EH, Duke-Novakovski T. “Comparison of two blind approaches to the paravertebral brachial plexus regional block in canine cadavers.” *Canadian Journal of Veterinary Research*. Jan. 2022. 86(1):20-26. PMID: 34975218.

Craven MD. “Repurposing medical devices as ‘button’ esophagostomy tubes for extended nutritional support.” *Journal of Veterinary Internal Medicine*. 2022. 36(1):196-203. doi:10.1111/jvim.16313

Paulin MV, Dunn M, Vachon C, Beauchamp G, Conversy B. “Association between hyperlipidemia and calcium oxalate lower urinary tract uroliths in dogs.” *Journal of Veterinary Internal Medicine*. 2022;36(1):146-155.

Iwaki Y, Gagnon J, MacDonald-Dickinson V. “Incidence of sterile hemorrhagic cystitis in dogs treated with cyclophosphamide and low-dose furosemide.” *Journal of American Animal Hospital Association*. March 2022. 58(2):85-90. doi:10.5326/jaaha-ms-7169

have transmission within households,” says Rubin. Instead of something to be feared, Rubin says we should view zoonotic disease as part of the human experience. Animals aren’t out to “get us” with bacteria and viruses, but rather, it’s biology at play.

“What we’ve really been able to do with these collaborations is shed light on the biology and highlight how ... there’s a recognition that this is normal and this is expected,” he says.

It’s also important to remember that the benefits of animal-human interactions often outweigh the risk of illness, adds Blondeau.

“We don’t want to make this an alarmist situation. What we’re saying is that there’s something there to be learned that can help people coexist with their pets, and at the same time, reduce their risk.” 🐾

Bits & Bites

NEW RESEARCH LEADERSHIP

The broad scope of interdisciplinary research taking place at the Western College of Veterinary Medicine (WCVN) is one of the college's greatest strengths, says the new interim head of WCVN research.

"We have to do it all, and we have to do it in multiple species. We have an obvious agriculture connection, but there's also a One Health and medicine connection, which can then relate to the other health sciences across campus," says Dr. Lynn Weber, who was appointed as interim associate dean research and graduate studies for one year beginning on Nov. 1, 2021.

Weber holds a PhD degree in pharmacology and toxicology from the University of British Columbia. She joined the WCVN's Department of Veterinary Biomedical Sciences (VBMS) in 2005 after completing postdoctoral training at the University of Calgary and Oklahoma State University.

Weber teaches veterinary physiology and pharmacology in the college's Doctor of Veterinary Medicine program,

as well as graduate-level physiology and toxicology courses. She previously served as graduate chair for the University of Saskatchewan's (USask) interdisciplinary toxicology program and interim VBMS department head.

Through her research, Weber collaborates widely with experts across campus including scientists in pharmacy and nutrition, agriculture, medicine, biology and toxicology.

"I know what a lot of people are doing across campus, and I feel like I can take that and leverage it for the good of research in our college," says Weber.

Her main research focus is the effect of environmental influences on the cardiovascular system. While she also works extensively with fish and other mammals, Weber is well known for her work in pet food research. The Companion Animal Health Fund (CAHF) has supported many of her projects — including a recent investigation into whether grain-free, legume-based diets cause heart failure in dogs.



Dr. Lynn Weber

Weber's colonies of research dogs have been a beloved fixture at USask since 2009 when she began studying whether peas were a healthier alternative to rice or corn in pet food.

WCVN LINK TO BCC RESEARCH

University of Minnesota (U of M) scientists' new findings about border collie collapse (BCC) have a direct link to previous studies conducted by Dr. Susan Taylor, a professor emerita of the WCVN's Department of Small Animal Clinical Sciences. The Companion Animal Health Fund (CAHF) supported some of these initial BCC research investigations. The U of M research team's genetic work, which was published in *Genes*, reported that BCC is a moderately- to highly heritable complex genetic disorder. Many genetic variants — combined with environmental factors — contribute to the likelihood of border collies and related breeds developing this episodic nervous system condition that's triggered by strenuous exercise. In their paper, the U of M team acknowledged the pioneering research done by Taylor and her collaborators: "Most of our medical, epidemiological and physiological understanding of BCC comes from studies conducted by Dr. Sue Taylor and colleagues,



who performed pre- and post-exercise evaluations of normal and affected border collies via standardized sheepherding and ball-chasing protocols."

Border collie collapse is a genetic disorder that's triggered by strenuous exercise.



HONOUR THEIR LIVES WITH THE GIFT OF PET HEALTH

Pay tribute the lives of your patients, clients and loved ones by making a donation to the Companion Animal Health Fund through its memorial program. Each time you give to the CAHF, we will send a letter to the client or loved one's family acknowledging your gift to the pet health fund.

"Town Centre Veterinary Hospital donates to the CAHF memorial program for each of our patients that passes away. It has been a very rewarding hospital policy — a win-win-win if you will — for the veterinary community, for our specific clients, and for our specific hospital."

Dr. Pam Goble (WCVM '89)
CAHF donor

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Dr. Pam Goble

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