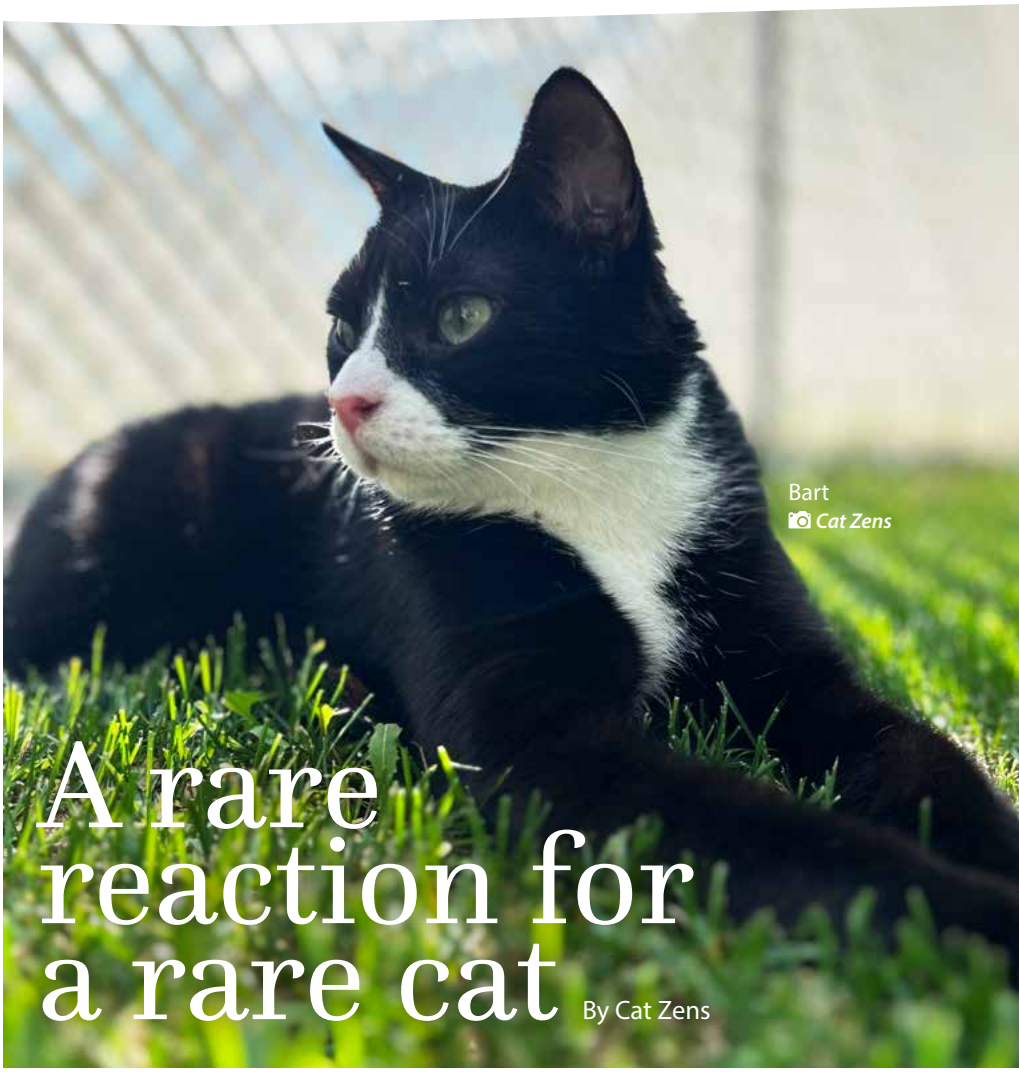
COMPANION ANIMAL HEALTH FUND • WESTERN COLLEGE OF VETERINARY MEDICINE

Vet Topics

SUMMER 2023



Bart
Cat Zens

A rare reaction for a rare cat

By Cat Zens

My cat Bart is my best friend. When I'm sad, he jumps to where I am and lies down for pets and cuddles. He goes crazy for chicken liver cat treats. And he greets me at the door when I come home from a long day at university.

Last year, I adopted 15-month-old Bart from a local pet shelter, and two months later, I took him to our local veterinarian for his annual vaccinations. But soon after we left the clinic, Bart began vomiting and having diarrhea. Shortly after, he started panting and his usual high-pitched meow turned low and robotic.

I rushed Bart back to the clinic for emergency care where the vet gave him antihistamines and steroid drugs to treat his symptoms. He recovered within a few hours.

Adverse reactions to vaccines are reported in only half a per cent of cats, according to the American Animal Hospital Association (AAHA). Bart became part of this very small statistic.

Dr. Karen Sheehan (DVM), a clinical associate at the Western College of Veterinary Medicine's (WCVM) Veterinary Medical Centre, stresses that potential post-vaccination adverse effects are extremely rare and shouldn't steer cat owners away from vaccinating.

"Vaccines are always highly effective at preventing disease — they can be very lifesaving," says Sheehan, who has seen fewer than 10 such cases in her 20-year career as a veterinarian.

So what happens when cats like Bart experience adverse reactions after vaccination?

"There was an overstimulation of Bart's immune system which caused him to have an anaphylactic shock reaction," Sheehan says.

Anaphylactic reactions cause the side effects that Bart experienced — diarrhea, vomiting and heavy breathing. Such side effects are described as "hypersensitive" or extreme sensitivities to specific substances.

Allergic reactions are often the cause of post-vaccination adverse effects in cats. Sheehan says that anaphylactic reactions become more severe the more an animal is exposed to the substance they are allergic to.

"If you take it again or eat it again or get exposed to it again [allergens], then those reactions are going to get heightened each time," Sheehan says.

Sheehan says another cause for post-vaccination reactions in cats is the immune system getting overwhelmed

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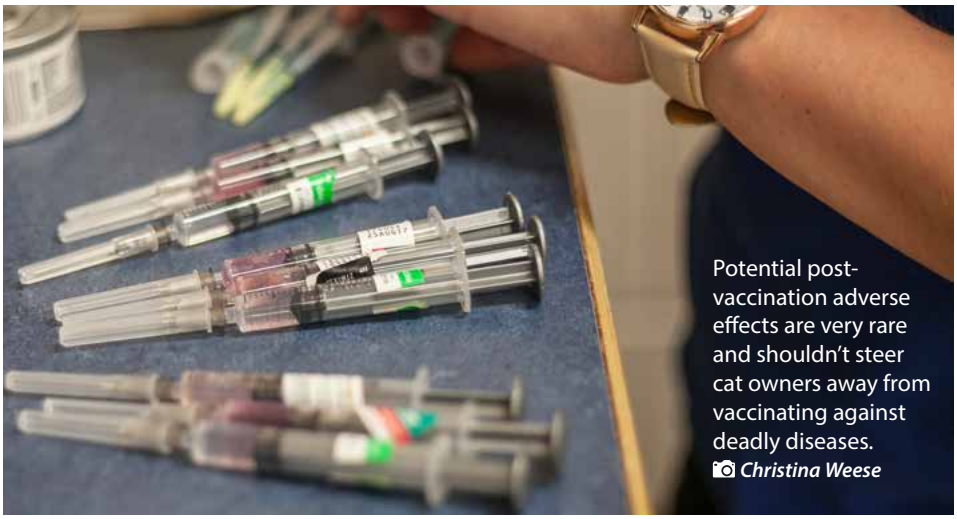
A RARE REACTION FOR A RARE CAT *continued*



Potential post-vaccination adverse effects are very rare and shouldn't steer cat owners away from vaccinating against deadly diseases. *Christina Weese*

from receiving more than one vaccination at once.

Bart was vaccinated for feline viral rhinotracheitis, calicivirus and panleukopenia (FVRCP), rabies, and feline leukemia virus (FeLV) in one day. FVRCP and rabies are considered core vaccines for all cats, while FeLV vaccines are core for kittens under the age of one.

Exposure to these three vaccines at once may make some animals more prone to side effects, although this is incredibly rare.

"When veterinarians give multiple vaccines, it's very difficult for owners to get their cats vaccinated in three separate appointments," Sheehan says.

"Sometimes what happens is we're more likely to have an anaphylactic reaction when we give multiple vaccines during the same appointment."

Sheehan reiterates that cats are much more at risk from deadly diseases that can be prevented through vaccination in comparison to these rare conditions.

She notes that when cats have experienced previous anaphylactic reactions, pet owners should speak with their veterinarians about future vaccine strategies.

Sheehan says veterinarians can give cats antihistamine medication before they're vaccinated. As well, cats at risk of allergic reactions shouldn't receive all required vaccines at once.

If animal owners have questions about potential reactions after vaccinations, Sheehan recommends checking with their local veterinarian.

Cat Zens of North Battleford, Sask., is a fourth-year student in the University of Regina's School of Journalism. She was a WCVM research communications intern during summer 2023.

For more details: visit cahfpets.ca to read the full-length story.

Caitlin Taylor

Dogs needed for lymphoma study

Western College of Veterinary Medicine (WCVM) cancer researchers are seeking dogs with lymphoma that are receiving chemotherapy to participate in a clinical trial.

The research study, led by WCVM medical oncologist Dr. Arata Matsuyama, is determining if an anti-nausea drug called metoclopramide can reduce stomach upset, nausea and other problems in canine patients. Vincristine, one of the cancer drugs used to treat canine lymphoma, causes these gastrointestinal issues.

Dogs of all breeds and sizes that have been diagnosed with multicentric lymphoma (substage a) and are receiving the "CHOP" treatment protocol at the WCVM Veterinary Medical Centre can participate in this study.

Dogs in this clinical trial will receive certain tests and services free of charge at the hospital. Those services include flow cytometry, MDR-1 (multi-drug sensitivity) testing, and an abdominal ultrasound exam.

If you wish to enrol your dog or have any questions, contact Dr. Arata Matsuyama (medical.oncology@usask.ca) for more details.

University of Saskatchewan

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Oncologist's work focuses on cancer challenges

By Cat Zens

WCVM medical oncologist Dr. Arata Matsuyama. *Cat Zens*

Devoting himself to veterinary cancer research wasn't always the plan for Dr. Arata Matsuyama (DVM, PhD), the Western College of Veterinary Medicine's (WCVM) newest medical oncologist.

Originally from Ehime, Japan, Matsuyama studied veterinary medicine at Hokkaido University where he was more interested in clinical work than in research. But his outlook changed when one of his professors — Dr. Kenji Hosoya — returned to Japan after completing specialized training in veterinary medical and radiation oncology at Ohio State University's College of Veterinary Medicine.

"When he came back, Dr. Hosoya was just amazing. He knew all the evidence, his literature, and he was so experienced," says Matsuyama. "So that made me realize: I want to study more in North America."

After graduating in 2011 and completing clinical internships at Hokkaido University, Matsuyama and his wife (who is also a veterinarian) moved to Ontario. In 2021, he completed a combined medical oncology residency and Doctor of Philosophy (PhD) program at the University of Guelph's Ontario Veterinary College (OVC). Matsuyama also earned board certification as a veterinary medical oncologist with both the American and Asian Colleges of Veterinary Internal Medicine.

Last fall, Matsuyama joined the WCVM as an assistant professor in the college's Department of Small Animal Clinical Sciences. As part of the college's veterinary oncology team, he's participating in two research projects supported by the Companion Animal Health Fund (CAHF).

One of the studies, for which Matsuyama is the principal investigator, is determining if metoclopramide can prevent gastrointestinal-related side effects in dogs with lymphoma undergoing chemotherapy.

Matsuyama is also a co-investigator on another CAHF-funded project led by Valerie MacDonald-Dickinson. In this study, the WCVM researchers are investigating the effects of carboplatin chemotherapy on dogs with cancer.

This summer Matsuyama is mentoring Eric Kim, a third-year WCVM veterinary student, who is collecting tumour cells from previous veterinary oncology patients at the WCVM to aid with further cancer research. The pair are also studying PET-CT (positron emission tomography-computed tomography) scans to determine if the imaging technology can identify patterns associated with primary cancers found in the body spreading to the lungs of canine patients.

Matsuyama and his colleagues are part of the University of Saskatchewan's (USask) Comparative Oncology Research Group. Its members, who are scientists in veterinary medicine and human medicine, share findings to help improve the diagnosis and treatment of cancer in animals and people.

With these new One Health connections, Matsuyama hopes his role as a veterinary medical oncologist will help contribute to human cancer research.

For instance, he points to sarcoma — a soft tissue cancer that's common in dogs but rare in humans. In future research, he hopes to use protein or gene assessment tools in dogs to find out why sarcoma cancers spread so aggressively and why they're resistant to some chemotherapy drugs.

"We have easier access to [canine tumour samples], and they may be a good representative for human cancers …. What we find will of course help our patients — dogs and cats — but it might help in human patients. That's what I'm hoping," says Matsuyama.

It will soon be one year since Matsuyama joined the WCVM faculty, and he has appreciated the support of his colleagues and students.

"I've been very fortunate and happy to be here — joining the team," says Matsuyama. "It's been an amazing experience here."

For more details: visit cahfpets.ca to read the full-length story.

PET RESEARCH IN MOTION


Christina Weese

An investment of over $150,000 from the Western College of Veterinary Medicine's (WCVM) Companion Animal Health Fund (CAHF) will benefit scientists and graduate students whose research focuses on improving pet health. This year, nearly $78,000 of the CAHF funding will support the work of six research teams whose members include WCVM faculty, graduate students and collaborators at University of Saskatchewan (USask) and elsewhere.

In addition, the CAHF is allocating $72,500 toward tuition awards for 11 graduate students investigating pet health questions as part of their training. One of the tuition award recipients is veterinary ophthalmology resident Dr. Shayna Levitt, who also earned the prestigious 2023 Michael Powell Award of Excellence.

The CAHF annually provides financial support for companion animal health research, specialized training and public outreach. For more information, visit cahfpets.ca.

Can an anti-nausea drug help to treat adverse effects of chemotherapy in dogs?

Drs. Arata Matsuyama and Valerie MacDonald-Dickinson, WCVM

Is methadone effective in managing ferrets' pain?

Drs. Barbara Ambros, Jane Shin, and Isabelle Desprez, WCVM; Dr. Heather Knych, University of California, Davis

What's the most effective way to detect platelet function in cats with blood clotting disorders?

Drs. Kevin Cosford and Anthony Carr, WCVM

How can we treat opioid-induced nausea and vomiting in dogs?

Drs. Barbara Ambros, Jane Shin and Bruna Hech, WCVM

What are the most effective sedation protocols in ferrets?

Drs. Isabelle Desprez, Barbara Ambros and Jessie Vandenbruggen, WCVM; Dr. Hughes Beaufrère, University of California, Davis

Are there affordable ways to detect urinary biomarkers in dogs receiving chemotherapy?

Drs. Valerie MacDonald-Dickinson, Arata Matsuyama, Al Chicoine, Sheri Ross and Ryan Dickinson, WCVM

TUITION AWARDS

Dr. Shayna Levitt is a Master of Science (MSc) student and ophthalmology resident, supervised by Dr. Lynne Sandmeyer (Department of Small Animal Clinical Sciences). Research focus: pigmentary uveitis in golden retrievers.

Dr. Mathieu Paulin is a MSc student and internal medicine resident, supervised by Dr. Liz Snead (Department of Small Animal Clinical Sciences). Research focus: canine adrenal deficiency and water dysregulation in pets.

Dr. Kylie Pon is a MSc student, supervised by Dr. Melissa Meachem (Department of Veterinary Pathology). Research focus: feline infectious peritonitis.

Shabnam Abdi is a PhD student, supervised by Dr. Behzad Toosi (Department of Small Animal Clinical Sciences). Research focus: canine and human melanoma and lymphoma.

Dr. Bruna Hech Pereira de Souza is an anesthesiology resident and MSc student, supervised by Dr. Barbara Ambros (Department of Small Animal Clinical Sciences). Research focus: treatments for opioid-induced vomiting in dogs.

Nicole Rose is a MSc student, supervised by Dr. Bruce Wobeser (Department of Veterinary Pathology). Research focus: pathology associated with anesthetic death in cats and dogs.

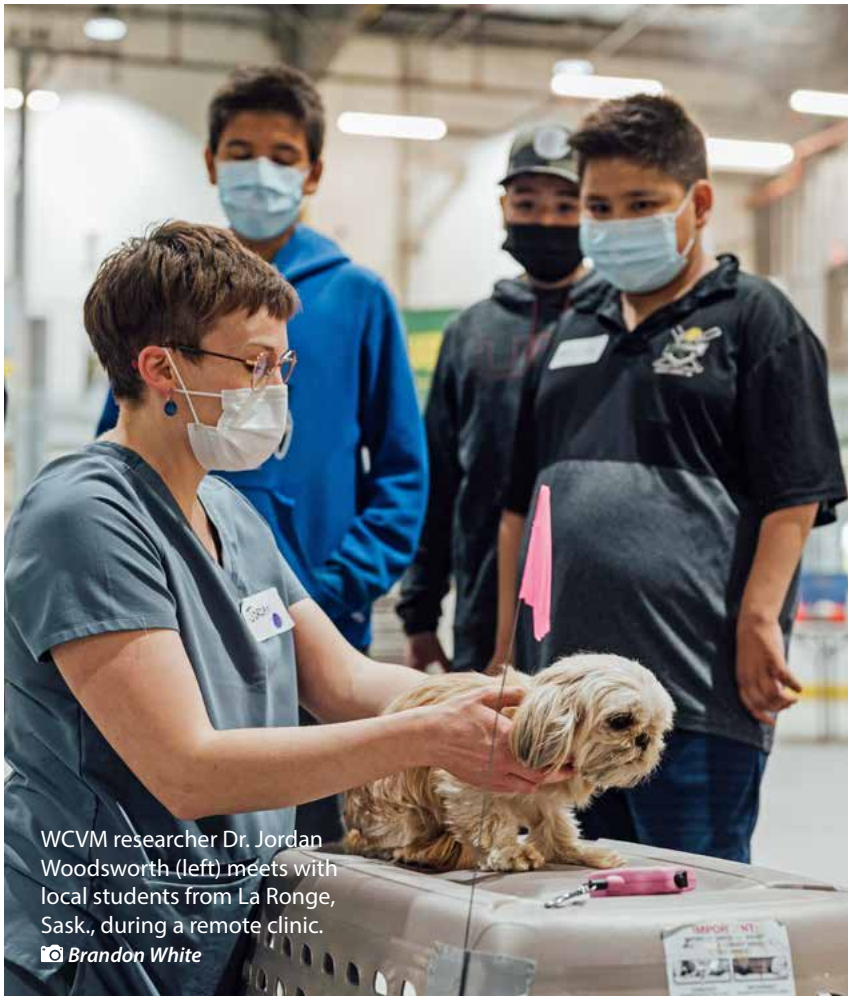
Elise Bokshowan is a MSc student, supervised by Dr. Lynn Weber (Department of Veterinary Biomedical Sciences). Research focus: grain-free, legume-based diets for dogs.

Dr. Jane Shin is an anesthesia resident, supervised by Dr. Barbara Ambros (Department of Small Animal Clinical Sciences). Research focus: treatments for opioid-induced vomiting in dogs and ferret pain management.

Alexandra Foley-Eby is a PhD student, supervised by Dr. Maarten Voordouw (Department of Veterinary Microbiology). Research focus: *Borrelia burgdorferi*.

Dorsa Mehrabanpour is a MSc student, supervised by Dr. Jaswant Singh (Department of Veterinary Biomedical Sciences) and Dr. Liz Snead (Department of Small Animal Clinical Services). Research focus: non-invasive diagnosis of feline infectious peritonitis with the use of PET-CT technology.

For more details: visit cahfpets.ca and click on "Research" to view current research projects.



WCVM researcher Dr. Jordan Woodsworth (left) meets with local students from La Ronge, Sask., during a remote clinic.
Brandon White

STUDY'S GOAL: healthy dogs, healthy communities

By Cat Zens

Over $149,000 in funding from the Saskatchewan Health Research Foundation (SHRF) is helping University of Saskatchewan (USask) researchers from multiple disciplines provide support to Saskatchewan communities that are experiencing challenges with dogs.

The SHRF-supported research project uses a One Health approach to study human-dog relationships and circumstances surrounding aggressive dog-human encounters such as dog bites. With this approach, researchers explore the human and animal contributors to dog issues in communities. They hope to better understand risk factors for dog bites and other dangerous encounters with dogs.

Using existing tools, communities can also access support in identifying their unique needs regarding dogs and the dog-human interface as part of this project. The goal is to identify and begin developing strategies to meet the needs of rural, remote and Indigenous communities in identifying local dog issues.

This study is part of SHRF's Solutions Program, which supports collaborative research projects that respond to pressing health challenges in Saskatchewan.

Dr. Tasha Epp (DVM, PhD) is the project's principal investigator and an epidemiology professor in the WCVM's Department of Large Animal Clinical Sciences. Her team consists of both human and animal health researchers to help address these issues.

WCVM clinical associate Dr. Jordan Woodsworth is the project's co-principal investigator who recently completed a PhD program. Her recently published dissertation, supervised by Epp, employed Indigenous and Western research approaches within a community-oriented case study to explore and illustrate dog-human relationships as well as dog care and control in the northern Saskatchewan tri-community area of La Ronge, Air Ronge and Lac La Ronge Indian Band.

"In the course of doing [my doctoral research], we identified a number of different gaps and one of them was around how to manage the safety of the dog-human relationship in communities," Woodsworth says.

She notes that communities with limited access to veterinary services experience risks to dog and human health related to limited vaccination coverage in the dog population. There's also an increased tendency for dogs to roam and compete for resources such as food and mates when they remain sexually intact.

In 2018, Epp co-authored *The Community Dog Workbook* with Dr. Jasmine Dhillon (DVM, PhD). This booklet is designed to help communities identify their unique needs about dog management and work toward achieving short-, medium- and long-term goals in this area. As part of the SHRF project, Epp's research team is positioned to provide support to communities in using this resource.

Access to veterinary care and related challenges with dogs in rural, remote and Indigenous communities are complex issues with no simple solutions. Without easy access to veterinary clinics, creative alternatives to the usual model of providing animal health care are necessary. WCVM researchers anticipate that this project will enable them to identify opportunities and develop alternatives with partner communities that specifically work for these communities.

"It's really just trying to think outside the box instead of just … reacting to dog aggressive encounters after they occur. Let's try to be more preventive or proactive," Epp says.

She adds that public health personnel spend a lot of time dealing with dog bites — particularly managing the risk of rabies transmission — but they aren't trained from an animal health perspective. Epp's research team hopes to better understand why dogs bite so more effective preventive and interventive strategies can be developed and applied.

"If you have healthy dog-human interactions, you'll have healthier communities," Epp says.

MOLECULAR MARKER STUDY

may lead to canine and human therapies

By Jessica Colby

University of Saskatchewan (USask) scientists have confirmed that canine osteosarcoma cells express a molecule that could be potentially used to develop future cancer therapies for people and dogs.

Osteosarcoma is the most common malignant primary bone tumour in people and dogs. The research team is investigating naturally occurring osteosarcoma in dogs to explore the potential for establishing clinical trials targeting new therapies such as radioimmunotherapy for both dogs and people.

To meet this challenge, human and veterinary researchers are using naturally developing cancers in animals as models for human diseases to develop treatment options such as radioimmunotherapy (combination of radiation therapy and immunotherapy).

"In both human and canine cases, the [osteosarcoma] tumours are almost identical. This is why we can use a comparative oncology approach," says Dr. Ekaterina Dadachova (PhD), a professor in the USask College of Pharmacy and Nutrition who also holds the Fedoruk Centre for Nuclear Innovation Chair in Radiopharmacy.

"The study's aim was to establish if canine osteosarcoma cells express a certain molecule called insulin-like growth factor receptor type two (IGF2R), which we would like to target with our radioactive drug."

Dadachova has pioneered the treatment of infectious diseases with radioimmunotherapy. Her previous research work with IGF2R led to this study with Drs. Valerie MacDonald-Dickinson (DVM) and Ryan Dickinson (DVM) from the Western College of Veterinary Medicine (WCVM). Other collaborators included graduate students Dr. Charles Boisclair (DVM) and Sabeena Giri.

USask researchers recently published a paper in the *International Journal of Molecular Sciences,* which reported that IGF2R was consistently expressed on the surface of canine tumour cells. The study's overarching objective was to determine if IGF2R could be targeted with radioimmunotherapy using antibodies engineered to specifically bind to the molecule.

Moving forward, the research team is synthesizing antibodies that bind IGF2R so they can be safely used therapeutically during planned clinical trials — first with dogs and then humans diagnosed with osteosarcoma.

The disease has several "overlaps" in dogs and people, points out Dickinson, a WCVM veterinary pathologist. Osteosarcoma most often occurs in older, large breed dogs while the peak incidence of cases in people is during adolescence or young adulthood. This tumour type arises in the same anatomic locations of the skeleton, and the microscopic cellular appearance and tumour architecture are very similar in dogs and people.

"Human and veterinary oncologists are facing a similar type of therapeutic plateau over the past several decades as far as what's available for treatments based on conventional therapies," says Dickinson.

Even with aggressive therapy, canine patients with osteosarcoma are expected to live for another 10 to 12 months. This cancer is highly metastatic, spreading readily to other areas in the patient's body.

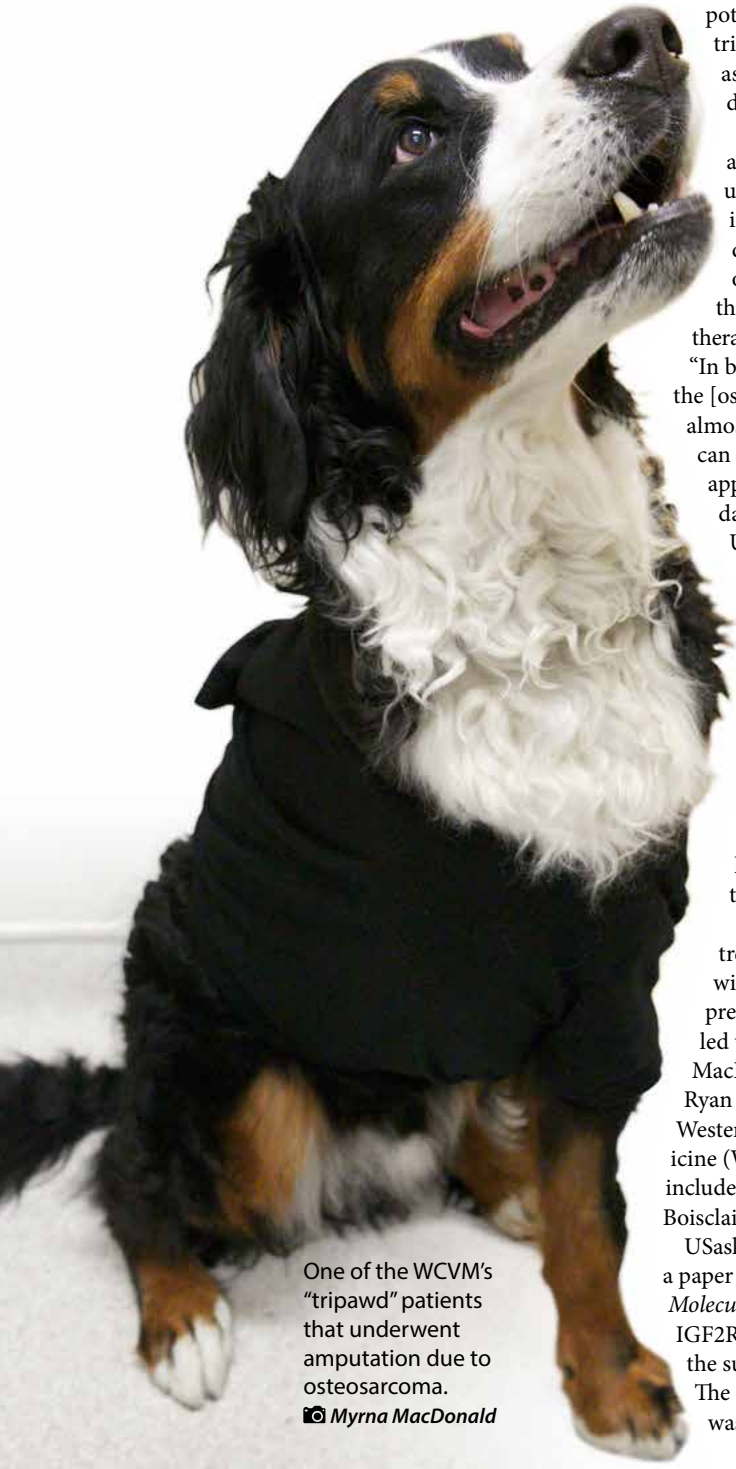
"It's really just remained a stalemate," says MacDonald-Dickinson, a WCVM veterinary medical oncologist. "We're not improving survival times."

With radioimmunotherapy, oncologists could more precisely deliver radiation to where the molecule is being overexpressed in this cancer.

"The radiation is taken up by the target cells which will undergo a cell death due to DNA damage," says MacDonald-Dickinson. "It will spare normal tissue around it. [The treatment is] given intravenously, but it basically finds its target and emits its radiation specifically at that site."

Dickinson says collaboration is critical to the researchers involved with this study that has received financial support from the Canadian Institutes for Health Research and the WCVM Companion Animal Health Fund.

"There's a cumulative effect of combining our knowledge and experience to see how we can look at this and how to go about it more efficiently so that dogs and humans can benefit."



One of the WCVM's "tripawd" patients that underwent amputation due to osteosarcoma.
Myrna MacDonald

USask researchers are seeking canine osteosarcoma patients to participate in this study.
Contact valerie.macdonald@usask.ca or ekaterina.dadachova@usask.ca for details.

RESEARCH IN PRINT

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

Walther E, Griffin L, Randall E, Sandmeyer L, Osinchuk S, Sukut S, Hansen K, Keyerleber M, Lawrence J, Parker S, Mayer M. "Contouring in the optic plane improves the accuracy of computed tomography-based segmentation of the optic pathway." *Veterinary Radiology & Ultrasound*. June 2023. doi:10.1111/vru.13261.

Mayer M, Feng T, Sukut S, Wiebe S, Parker S, Blakley B, Koehncke N. "Blood and hand surface lead in veterinary workers using lead shielding during diagnostic radiography." *Journal of Occupational and Environmental Medicine.* June 2023. doi:10.1097/jom.0000000000002908.

Santana AE, Torres SMF, Costa M de O. "Comparison of two sampling methods for molecular detection of bacteria or fungi from feline hair and scale specimens." *Journal of Veterinary Diagnostic Investigation.* May 2023. doi:10.1177/10406387231175645.

Sims E, Epp T. "Developing a framework for a western Canadian companion animal surveillance initiative: Case definitions and the role of the veterinarian." *The Canadian Veterinary Journal*. May 2023. 64(5):465-473.

Evason MD, Jenkins EJ, Kolapo TU, Mitchell KD, Leutenegger CM, Peregrine AS. "Novel molecular diagnostic (PCR) diagnosis and outcome of intestinal *Echinococcus multilocularis* in a dog from Western Canada." *Journal of the American Veterinary Medical Association*. May 2023.

Chalifoux NV, Burgess HJ, Feng CX, Kong LR, Snead ECR. "Canine hypoadrenocorticism: Insights into the Addisonian crisis." *The Canadian Veterinary Journal.* May 2023. 64(5):457-464.

Yee M, Ambros B, Beaufrère H, Desprez I. "Subcutaneous alfaxalone for sedation of the domestic ferret (*Mustela putorius furo*)." *Journal of Exotic Pet Medicine.* April 2023. 46:12-18.

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Cloet A, da Silva AN, Facioli FL, Levitt S, Sandmeyer L, de Oliveira Costa M, Leis ML. "*Streptococcus canis* prevalence on the normal and abnormal ocular surface of dogs referred for ophthalmic disease in Canada." *Acta Veterinaria Scandinavica*. April 2023. 65(16).

Various WCVM contributors. Edited by Grahn B. "Ophthalmology in small animal care." V*eterinary Clinics of North America: Small Animal Practice*. March 2023. 53(2).

Paulin MV, Gleasure S, Snead EC. "Multiple pituitary hormone deficiencies in a kitten: Hyposomatotropism, hypothyroidism, central diabetes insipidus and hypogonadism." *Canadian Veterinary Journal*. March 2023. 64(3):245-251.

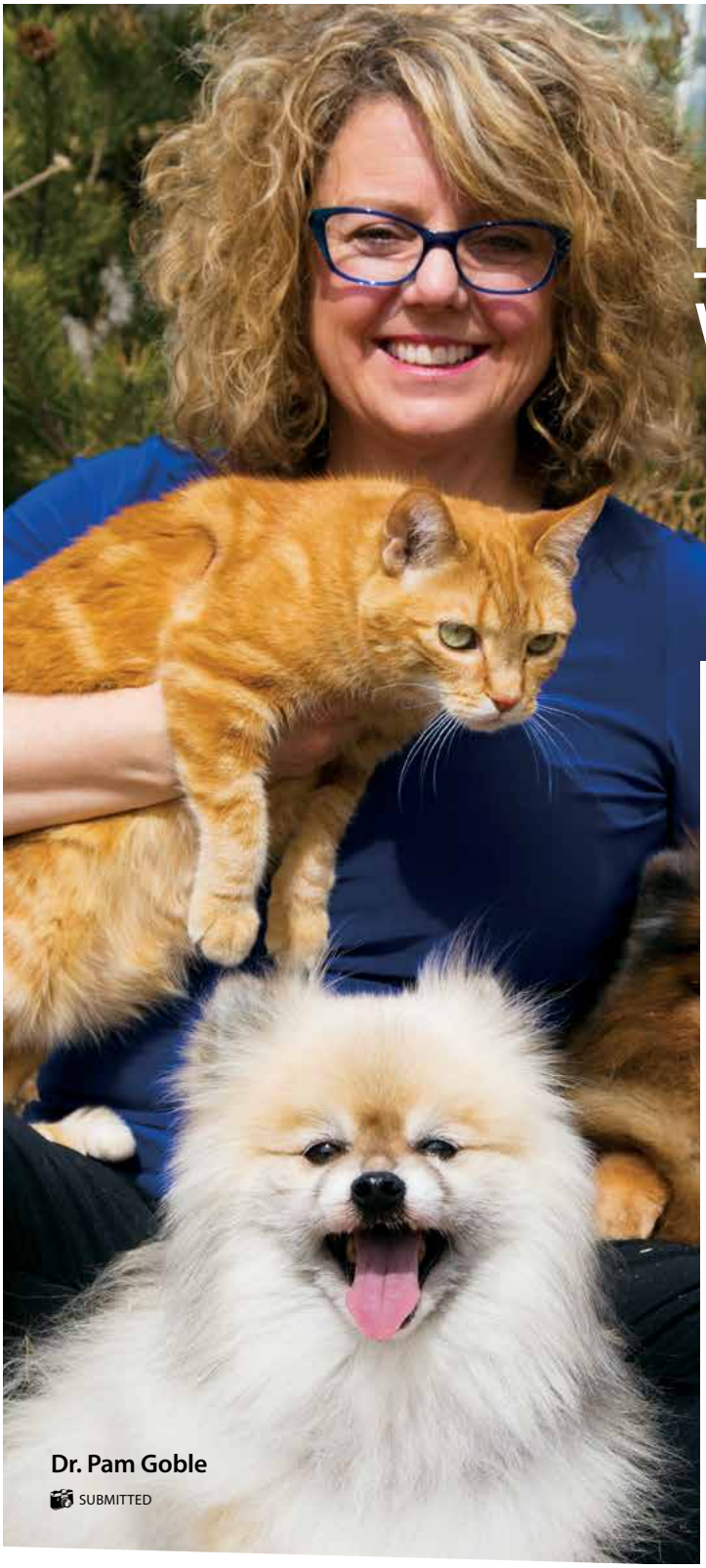
Kolapo TU, Hay A, Gesy KM, Frey CF, Rothenburger JL, Joffe DJ, Spotswood T, Huang Y, Massolo A, Peregrine AS, Hill JE, Jenkins EJ. "Canine alveolar echinococcosis: an emerging and costly introduced problem in North America." *Transboundary and Emerging Diseases*. Feb. 2023. 2023:5224160.

PROVINCES EXPAND FUNDING FOR WCVM

In response to the urgent need for more veterinarians, the Western College of Veterinary Medicine's (WCVM) three partner provinces are providing more funding in support of the regional veterinary college. In September 2022, the Provinces of Saskatchewan and Manitoba announced increased funding to support the college's research, clinical and education programs — including the Doctor of Veterinary Medicine program. With additional funding, Saskatchewan will support 25 seats and Manitoba will support 20 seats in the first-year class for fall 2023.

In March 2023, the Province of British Columbia announced increased funding to permanently double the number of subsidized WCVM seats allocated for B.C. students. B.C. now supports 40 seats in the first-year class entering in fall 2023. As a result of these changes, all 88 first-year seats offered for the 2023-24 academic year at the WCVM are provincially subsidized.

Another development is the WCVM's introduction of "agriculture-focused" seats. These provincial seats are designated for candidates who, based on their academic backgrounds and work experience, are more likely to practise in large animal or mixed animal clinics located in rural communities. For more information, visit wcvm.usask.ca.



Dr. Pam Goble

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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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