COMPANION ANIMAL HEALTH FUND • WESTERN COLLEGE OF VETERINARY MEDICINE

# Vet Ioppies

# A passion for pets

Dr. Mathieu Paulin

Growing up in France, Dr. Mathieu Paulin was surrounded by pets of all kinds including dogs, a goat and many ducks. While a love for animals was a constant in his life, it wasn't until Paulin reached adulthood that he considered a career as a veterinarian — a job that would allow him to combine his interest in connecting with people and their pets with his love for science.

Paulin, now a small animal internal medicine resident at the Western College of Veterinary Medicine (WCVM), was recently rewarded for his interest in pet health research by the Companion Animal Health Fund (CAHF). Paulin is the 2022 recipient of the Dr. Michael Powell Award of Excellence, a graduate award supported by the CAHF. The \$1,000 award recognizes a WCVM graduate student working in a companion animalrelated field who excels in academic and research activities.

In addition, Paulin received a 2022 CAHF tuition award and the Dr. Dennis Shute Memorial Award for his outstanding efforts as a veterinary clinician and scientist.

After graduating from the École Nationale Vétérinaire d'Alfort in Paris, Paulin began a rotating small animal internship at the Université de Montréal and was later matched to the WCVM for an internal medicine internship program.

"I wanted to stay in Canada — I love Canada. I like the way people practise. I like the organization, the clinics, the owners' commitment," he says.

Paulin completed a one-year internal

medicine specialty internship at the WCVM before beginning his residency in 2021. He also plans to transfer his Master of Science degree to a PhD degree program.

His research focuses on hormonerelated diseases, and he's pursuing two CAHF-supported research projects under the supervision of WCVM professor Dr. Liz Snead. His first project focuses on adrenal deficiency, or Addison's disease, in dogs. This uncommon disorder occurs when the adrenal glands produce an incorrect amount of hormones.

"I have always been passionate about this disease," he says. "Once you recognize and diagnose this disease and treat appropriately, you go from a dying patient in a crisis in ICU, which everyone thinks won't make it, to a patient



#### **A PASSION FOR PETS**

continued

that can gradually have a normal life, with a good quality of life."

His second project focuses on methods for diagnosing diseases that can cause pets to drink and pee too much (water dysregulation). While clinicians frequently see pets that present with these issues, they can also be symptoms of less common diseases called diabetes insipidus and primary polydipsia, which are both challenging and expensive to diagnose.

The current standard for diagnosis in dogs relies on evaluating the antidiuretic hormone (ADH). Paulin is evaluating whether a hormone called copeptin could be used as an alternative marker for these two diseases.

"In human medicine, copeptin is a very hot topic. Recently, human labs stopped measuring ADH and now measure copeptin. In dogs, this has never been done," says Paulin.

## Guide helps put the welcome mat out for pets

A collaboration between the University of Saskatchewan (USask) One Health and Wellness office, Western College of Veterinary Medicine (WCVM) and Royal Canin has led to a new pet-friendly rental housing guide for Saskatoon.

Unlike elsewhere in Canada, rental housing in Saskatchewan can deny prospective residents if they have pets. By developing this guide, researchers aim to raise awareness of the benefits of allowing pets in rental housing.

The new guide includes information about pet-friendly places in the city, rental policies in Saskatoon and the province of Saskatchewan, tenant rights, older adult residences and regulations for both service and emotional support animals. It also provides templates and fillable resources for pet resumés and pet references.

"Underlying all of this is the humananimal bond and how important the bond is between us and our animals,"



Ultimately, his goal for his research is to improve the standard diagnosis and management of these different hormonal conditions.

"I've always been very happy to do research because it's nice to forward the knowledge to the veterinary community," says Paulin, who plans to work in veterinary academia. "I feel happy when I have this balance of research, teaching and the clinic."



said Dr. Colleen Dell, USask Research Chair in One Health and Wellness.

Dell's collaborators included USask postdoctoral fellows Dr. Holly McKenzie and Dr. Linzi Williamson. WCVM professor Dr. Liz Snead served as the veterinary college's lead on the project.

WCVM veterinary students Kaylyn Kubes, Erynn Buhr, Breeze Agar and Catherine Beaupre also worked on the project, along with USask social science students Kayla Arisman, Maryellen Gibson and Aliya Khalid. Ben Carey, a researcher in the One Health and Wellness Office, and Alexandria Pavelich, a USask Arts and Science PhD student, were also involved in the project.



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## Pet health research studies gain vital support

Five research teams at the Western College of Veterinary Medicine (WCVM) have received over \$93,000 in funding for research projects targeting a variety of health issues and questions in companion animals. The WCVM's Companion Animal Health Fund (CAHF) and another fund administered by the CAHF provided financial support for the five studies.

### Are imported dogs bringing zoonotic diseases to Canada?

Dr. Tasha Epp, WCVM; and Drs. Sylvia Checkley, Chantal McMillan, Serge Chalhoub and Susan Cook, University of Calgary Faculty of Veterinary Medicine

## Which types of white blood cell subsets are present in chylous effusions of cats?

Drs. Nicole Fernandez, Melissa Meachem and Ryan Dickinson, WCVM; and Dr. Laura Black, SpecialtyVETPATH, Seattle, Wash.

#### What's the most efficient way to transfuse blood in dogs?

Drs. Jennifer Loewen and Nicole Fernandez, and Samantha Ekanayake and Madlyn Lung, WCVM

#### Which tissues are at risk during cancer treatment in dogs?

Drs. Monique Mayer, Sally Sukut, Koji Aoki and Brent Bobick, and Nava Hassani, WCVM; and Dr. Sheldon Wiebe, University of Saskatchewan College of Medicine

#### What's the effect of long-term prednisolone in dogs?

Drs. Elisabeth Snead, Mathieu Paulin, Suraj Unniappan, Anthony Carr, Kevin Cosford and Jennifer Loewen, WCVM

In 2022, the CAHF awarded tuition awards to 12 WCVM graduate students including **Dr. Mathieu Paulin**, the 2022 recipient of the Dr. Michael Powell Award of Excellence.

**Dr. Rina Nabeta** is a Master of Veterinary Science (MVetSc) student who is supervised by Dr. Melissa Meachem (Department of Veterinary Pathology). Research focus: feline pancreatic carcinoma.

**Christopher Zinck** is a PhD student who is supervised by Dr. Maarten Voordouw (Department of Veterinary Microbiology). Research focus: Lyme disease and *Borrelia burgdorferi*.

**Dr. Alexandra Frey Belotta** is a medical imaging resident who is supervised by Dr. Sally Sukut (Department of Small Animal Clinical Sciences). Research focus: veterinary radiology and radiation safety.

**Dr. Kylie Pon** is a MSc student who is also supervised by Meachem. Research focus: feline infectious peritonitis.

Shabnam Abdi is a PhD student who is supervised by Dr. Behzad Toosi (Department of Small Animal Clinical Sciences). Research focus: comparative oncology.

**Alexandra Foley-Eby** is a PhD student who is also supervised by Voordouw. Research focus: *Borrelia burgdorferi*.

**Dr. Bruna Hech Pereira de Souza** is an anesthesiology resident and MSc student who is supervised by Dr. Barbara Ambros (Department of Small Animal Clinical Sciences). Research focus: anesthesia.

**Dr. Jennifer Pelchat** is an anesthesiology resident and MSc student who is supervised by Dr. Shannon Beazley (Department of Small Animal Clinical Sciences). Research focus: blood pressure of animals under anesthesia.

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

**Dr. Ariel Schlag** is a small animal medicine resident and MSc student who is supervised by Dr. Cindy Shmon (Department of Small Animal Clinical Sciences). Research focus: small animal surgery.



**Dr. Jessica Sharpe** is a MSc student who is also supervised by Toosi. Research focus: canine and human osteosarcoma.

## Study targets health of imported dogs

By Jessica Colby

🙆 Caitlin Taylor

Dr. Tasha Epp wants to connect with pet owners or canine rescue organizations that have recently imported dogs into Canada or plan to bring animals into the country.

"We're asking that when the dog [comes] into Canada — if you know the date — contact us early so that we can arrange things," says Epp, a professor of zoonotic disease at the Western College of Veterinary Medicine (WCVM).

Dogs that have been recently imported into Canada and can be examined by a veterinarian within 30 days of entry can participate in the study that's aimed at evaluating the potential animal health and public health risks linked to imported pets. The study is voluntary and participation in the project doesn't affect the entry status of any imported dogs.

"In the last five or six years, there's been quite an interest from both the Public Health Agency and the Canadian Food Inspection Agency (CFIA) to look at the issue of importing dogs into Canada," says Epp.

In September 2022, the CFIA implemented a new measure prohibiting

the entry of commercial dogs from countries at high risk for rabies (a zoonotic disease) into Canada. The United States implemented a similar measure in 2021.

Researchers recognize that imported dogs can bring disease into Canada, but the risks associated with these illnesses are still unknown, says Epp. As well, scientists are still learning what specific diseases can be carried by imported dogs into Canada.

"There are lots of countries around the world in which they have diseases that we don't have in Canada in our dog population," says Epp. She adds that other countries may also have different strains of existing diseases to which Canada's dog population have never been exposed.

The WCVM study is open to western Canadian participants who have had an imported dog arrive within the previous month. The project covers all costs associated with disease testing (including blood and fecal samples). Plus, it provides up to \$120 per pet toward a required health assessment that can be done by the owner's regular veterinarian. "[After getting] the [disease testing] results, we try to link back with the veterinarian so that if there is anything that needs attention, then the veterinarian and the owner can discuss that," says Epp.

Completing the medical examination within the 30-day window after a dog's entry to Canada is critical to the study's value, says Epp. If the evaluation isn't done in this time frame, the researchers run the risk of not being able to associate test results with health issues derived from the animal's country of origin.

"When we get the [test] results, we can link it back to them [the dogs] being imported and not what they've had while present here in Canada."

For this first surveillance study of its kind in Western Canada, Epp hopes to include at least 120 dogs in the study.

"[We're] trying to get people aware of it so that we can just capture as many [dogs] as possible," says Epp.

Email compan.surv@usask.ca for more information about participating in this study, which is supported by the Companion Animal Health Fund.

## **Blood on the double**

WCVM researchers seek more efficient way to transfuse blood in dogs

#### By Madlyn Lung, WCVM Class of 2023

Last summer I worked with Dr. Jen Loewen, an emergency and critical care specialist at the Western College of Veterinary Medicine (WCVM), on a research project to find a more efficient way to conduct blood transfusions in dogs.

Red blood cells deliver oxygen throughout the body. Dogs may need more red blood cells if they bleed a lot, if their body attacks and destroys their own red blood cells, or if their body can no longer make enough of them — if any. A blood transfusion usually involves a donor dog's blood in a blood bag travelling through a clear filter chamber so a clinical team member can count drips. The blood is filtered, then goes through the tubing and into the bloodstream of the dog that needs blood.

But using the gravity drip system to give a blood transfusion takes a lot of time because someone must watch and count each blood drip coming through the line. It's difficult to keep dogs still enough to allow for consistent counting, and if the patient is small, the drip rate must be very slow.

"Using gravity and drip rates sounds simple in theory," says Loewen. "But when the dog receiving the transfusion is moving its leg or shifting its position from standing to sitting down or vice versa, the rate of the transfusion can easily speed up or stop completely."

Fluid pump machines allow clinical staff to more accurately deliver the transfusion and spend more time providing high quality veterinary care. But in previous research, scientists found that using these devices may damage red blood cells and cause them not to survive as long. Those results surprised Loewen, who has previously used fluid pump machines for blood transfusions.

In our study, we tested different methods of administering a blood transfusion using a new red blood cell label marker called PKH26, a red fluorescent dye that can be used to track cells inside the body.





This microscopic image shows red blood cells marked by PKH26. WCVM researchers are evaluating two different ways to conduct blood transfusions in dogs.

We used it to trail the red blood cells that we transfused into dogs several days later.

PKH26 makes red blood cells glow when observed using a special microscope, allowing us to find them later so we can see how long these cells survive. The higher the percentage of glowing cells that we find in the dog's bloodstream, the higher the number of red blood cells that survived the transfusion.

We found that this cell label works with canine blood cells and can be used to measure red blood cells' survival rate in dogs given a transfusion with a gravity drip system in the short term. In the project's next phase, we're using PKH26 to compare two types of blood transfusion delivery: the first with a syringe driver (blood pushed into the line through a syringe), and the second with a fluid pump machine. Once we analyze our results, we can determine whether the previous research favouring gravity drip systems is still accurate or whether fluid pumps are more effective for transfusing healthy, functioning red blood cells.

"Being able to use pumps to provide life-saving transfusions rather than counting drips would allow the individuals working with these patients to devote more time focusing on the patient rather than the transfusion method," says Loewen.

The WCVM's Companion Animal Health Fund provided funding for this research project. Madlyn Lung of Edmonton, Alta., is a fourthyear WCVM veterinary student who was a summer research student in 2022.

## Beloved cat inspires teen's gift

By Jeanette Neufeld

Percy Jackson was an affectionate, snuggly kitten who immediately bonded with his new owner Charlie Hoffman. The ragdoll cat was an important support for the 14-year-old high school student who was dealing with anxiety and symptoms of attention deficit/ hyperactivity disorder (ADHD).

"I wasn't having the greatest time in school, and so I got Percy to help me with it," says Hoffman, who lives in Victoria, B.C.

When Percy was only a year and a half old, he died suddenly of a disease called feline infectious peritonitis (FIP). To honour Percy's memory, Hoffman donated his birthday money to the Companion Animal Health Fund (CAHF) at the Western College of Veterinary Medicine (WCVM).

"I just decided to try to make it so that nobody else loses a Percy," says Hoffman.

FIP is a sporadic, viral disease that mutates from a more common and contagious form of feline coronavirus that typically only causes mild symptoms such as diarrhea. Cats that develop FIP get quite sick with a range of "vague" symptoms and often die of the disease, explains Dr. Kylie Pon, a veterinarian and graduate student in the WCVM's Department of Veterinary Pathology.

There are no widely available treatments for the disease, and testing is typically only available after a cat has died. The "gold standard" test is performed after taking a tissue biopsy of internal lesions caused by the disease, which is difficult to do on a very sick cat, says Pon.

She's investigating a diagnostic technique called cell tube block (CTB) — a technique used regularly in human medicine. To perform the test, a technician takes a fluid sample from a patient, then "spins down" the material, reducing it into a solid state — much



like a cook reducing soup stock to make a thick gravy. Next, the material can be embedded into a solid wax block, sliced into small sections and examined under a microscope. It can also be preserved indefinitely, which would add value for researchers conducting long-term studies.

Cats with FIP often have fluid build-up in the abdomen, and a clinician could remove some of this fluid for CTB testing, explains Pon.

The CAHF funded the CTB project in 2021, as part of research led by WCVM veterinary pathologists Drs. Bruce Wobeser and Melissa Meachem — Pon's graduate supervisor. Pon is excited that her work could change how veterinary diagnostics are performed, providing different options for clinicians and a more cost-effective option to owners.

"FIP is one thing we hope to improve, but this technique is applicable for a lot of different conditions," says Pon, adding that they're also testing the technique for use in diagnosing types of cancer.

Hoffman and his family hope that by contributing to the CAHF in memory of their beloved pet, they can help researchers find better treatments and diagnostic tests for FIP.

"The more research we can have on something, the better it is for our animals," says Samantha Hoffman, Charlie's mother.



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"FIP is one thing we hope to improve, but this technique is applicable for a lot of different conditions," says Pon, adding that they're also testing the technique for use in diagnosing types of cancer.

Visit cahfpets.ca to read the unabridged version of this story.

## WANTED: Golden retrievers

WCVM veterinary ophthalmologists are seeking golden retrievers to take part in a genetic study of cystic uveal disease or pigmentary uveitis — a blinding eye disease that commonly affects this breed. The disease causes thin-walled cysts to develop in the affected dog's eye, which progresses to inflammation and then to painful and blinding glaucoma.

The WCVM team is conducting a study to evaluate potential genetic mutations that may be associated with this disease in golden retrievers. Pedigree analysis from Western Canada has confirmed that pigmentary uveitis is an inherited disease but the genetic mutation is not yet known.

Altogether, researchers are seeking 46 dogs affected by the disease as well as 46 unaffected golden retrievers. Unaffected dogs must be 11 years or older. Participation is entirely voluntary. The team will provide a screening eye exam for purpose of certification.

Dogs participating in this study must have one 30-minute visit with a veterinary ophthalmologist at the WCVM Veterinary Medical Centre, or at another satellite ophthalmology clinic. Visits to the WCVM will be free of charge.

If you wish to enrol your golden retriever, contact Dr. Shayna Levitt (shl159@mail.usask.ca) for more details.

## **RESEARCH IN PRINT**

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

Kim S, Matsuyama A. "Canine mast cell tumours: when to worry about aggressive behaviour pre-surgically." *Canadian Veterinary Journal*. Dec. 2022. 63(12):1261-1263.

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Solis DB, Mayer MN. "Low dose radiation therapy for the treatment of refractory canine osteoarthritis." *Canadian Veterinary Journal*. Aug. 2022. 63(8):819-824.

Visit cahfpets.ca to view full list of research citations.

## 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

#### **Questions?**

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Dr. Pam Goble

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