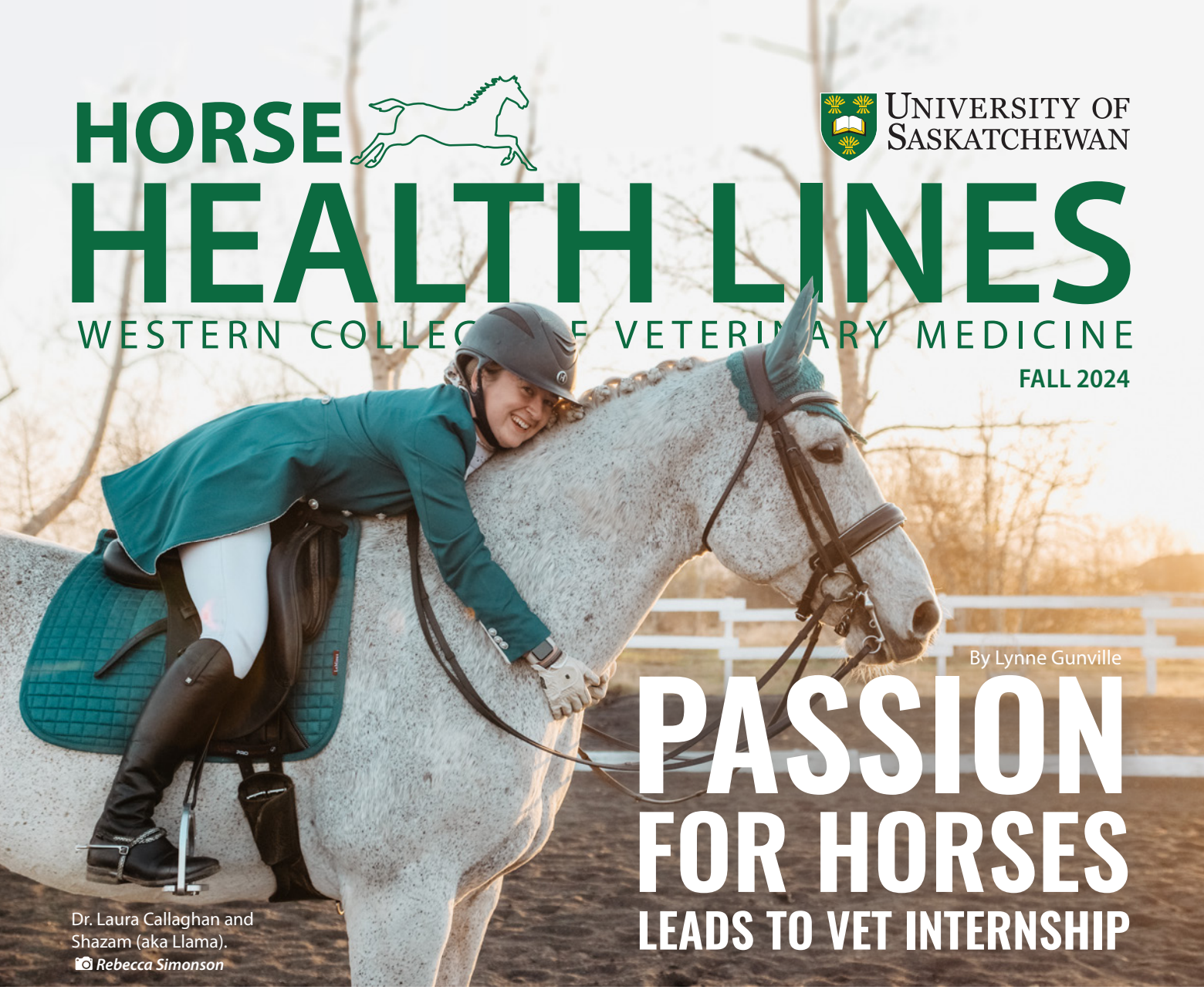
HORSE HEALTH LINES
WESTERN COLLEGE OF VETERINARY MEDICINE
UNIVERSITY OF SASKATCHEWAN
FALL 2024



Dr. Laura Callaghan and Shazam (aka Llama).
Rebecca Simonson

By Lynne Gunville

PASSION FOR HORSES LEADS TO VET INTERNSHIP

After years of "living and breathing horses," Dr. Laura Callaghan is savouring her new role as an equine field service intern at the Western College of Veterinary Medicine (WCVM). Having already spent a summer as a student with the WCVM Veterinary Medical Centre's Equine Field Service, Callaghan is returning as a licensed veterinarian who can now "sign on the vet line instead of the student line."

"I know the clinicians super well, and I know many of the clients and the horses. I'm also involved in the equestrian community, so I know quite a few people, and it's really comfortable to come back and continue working with them," says Callaghan.

Callaghan didn't start seriously riding until she was 16 years old. Lessons led to a friendship with veterinarian Dr. Michelle Rowe — along with a job for six years at Cypress View Veterinary Clinic in Medicine Hat, Alta. Rowe and her business partner, Dr. Peggy Taylor-Mason, "ended up rooting for me my whole vet school life."

Callaghan purchased Griz, her first horse, and began competing in dressage. Two years later Callaghan bought Llama, a grey percheron-thoroughbred cross gelding that accompanied her to Saskatoon in 2020. Callaghan and Llama competed in Equestrian Canada-sanctioned shows, and in April 2023, they made their debut in Prix St. Georges — the beginning of the international levels in dressage.

But a severe tendon injury recently sidelined Llama's career — he's now on stall rest and rehabilitation. Callaghan still plans to compete and is considering training a young horse to advanced levels of dressage.

Llama helped spark another passion for Callaghan. Originally named Shazam, his crazy face at mealtime reminded her of a llama — hence his new nickname and her new interest. She eventually adopted Marjorie, a llama-alpaca cross (a huarizo) that lives at an acreage owned by WCVM professor and mentor Dr. Trisha Dowling.

Callaghan eventually hopes to practise near Saskatoon and work with performance horses.

"I'm fresh and I'm excited and I like sharing what I know with people, and I like hearing about their concerns and learning about their horses."

Read full story at tehrf.ca.

Horse health RECHARGED

This spring, researchers and graduate students based at the Western College of Veterinary Medicine (WCVM) received over $132,000 in support of equine health studies and student training.

The funding supports three equine health research projects, a summer research student award, two graduate tuition awards and a graduate research fellowship. While the bulk of the funding stems from the college's Townsend Equine Health Research Fund, other contributions include $15,657 in funding from the Mark and Pat DuMont Equine Performance Fund as well as a $20,000 fellowship provided through an estate gift. Kathleen H. Stinson, who passed away in 2019, left $100,000 to TEHRF in her will to support equine health education.

RESEARCH PROJECTS

Is ceftiofur use linked to colonization with antimicrobial-resistant organisms?
Drs. Fabienne Uehlinger, Joe Rubin and Lorena Santos, WCVM. Supported by TEHRF.

Ceftiofur is an antibiotic that's widely used in equine medicine. While it's licensed for treating *Streptococcus equi* subsp. *zooepidemicus* infections in horses, it's often used in an extra-label manner. By investigating the correlation between ceftiofur use and colonization with resistant *E. coli*, this study will address the significant threat of third-generation cephalosporin resistance, which is critical to human and animal health.

Can fish skin grafts help metacarpal wounds heal faster?
Drs. Keri Thomas, Alannah Friedlund and Joe Bracamonte, WCVM. Supported by TEHRF.

Human physicians use acellular fish skin grafts to treat human burn victims and patients with chronic non-healing wounds. So far, no one has evaluated the use of this alternative biologic material to treat lower-limb wounds in horses. In this study, WCVM researchers will investigate the use of fish skin grafts and if they help lower-limb wounds heal more quickly.

Can troponin testing help vets diagnose heart disease in horses?
Drs. Vanessa Cowan and Lynn Weber, WCVM. Supported by Mark and Pat DuMont Equine Performance Fund.

This study aims to improve the diagnosis of myocardial (heart) disease in Saskatchewan horses by developing reference intervals in healthy horses and implementing a point-of-care troponin test in hospitalized patients. Cardiac troponins are proteins that act as diagnostic markers of myocardial disease.

WCVM scientists will also examine the effect of extreme temperature on cardiac troponin in healthy horses — novel research that can provide valuable insights into how environmental stressors affect equine heart health.

STUDENT AWARDS

Undergraduate summer research award (2024)

- Marilyn Mullan-Fraser of Courtenay, B.C. (Class of 2026). Research mentor: WCVM professor Dr. Claire Card. Mullan-Fraser helped to investigate the interaction between the embryo and the mare's endometrium to establish the cascade of events that leads to maternal recognition of pregnancy.

Graduate tuition awards (2024-25)

- Dr. Josefina Ghersa of Argentina is beginning a combined Master of Science (MSc)-equine theriogenology residency program under the supervision of Dr. Claire Card.

  Ghersa will study an aspect of maternal recognition of pregnancy, which is still not fully understood in mares. Her aim is to assess and describe the role of exosomes and their lipidic content in equine pregnancy. Exosomes are small vesicles (sacs) that play a vital role in intercellular communication.

- Dr. Bukola Alaba of Nigeria is enrolled in a PhD program under the supervision of Drs. James Carmalt and Suraj Unniappan.

  Alaba is studying the role of fibrocartilage in equine temporomandibular joint inflammation. The study focuses on the differences between fibrous cartilage and hyaline cartilage and their respective responses to damage and treatment.

Equine fellowship (2024-25)

- Dr. Alannah Friedlund of Fiske, Sask., is the first recipient of the Kathleen H. Stinson Equine Fellowship, which is worth $20,000. Friedlund is completing a MSc-large animal surgery residency under the supervision of Dr. Keri Thomas.

Visit page 5 to learn more about Friedlund's research project.

University of Saskatchewan

Horse Health Lines is the news publication for the Western College of Veterinary Medicine's Townsend Equine Health Research Fund (TEHRF). Visit tehrf.ca for more information, Send comments and article reprint requests to:

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PUMPING UP EQUINE HEALTH

New research aims to improve heart disease diagnostics

By Rigel Smith

Imagine being able to diagnose equine myocardial disease — diseases that affect horses' heart muscles — quickly, accurately and right at the barn. That's the goal of new research at the Western College of Veterinary Medicine (WCVM), where scientists will explore the value of implementing a blood test that can produce results in 10 minutes.

Dr. Vanessa Cowan, an assistant professor at the WCVM, is leading the new study that will begin in May 2025 with $15,657 in support from the Mark and Pat DuMont Equine Performance Fund.

Veterinarians currently rely on relatively non-specific diagnostic methods such as electrocardiograms (ECGs), echocardiography and basic blood tests to detect myocardial disease in horses.

"That's where this test would come in — it would quantify cardiac troponins, which are considered the gold standard for diagnosing myocardial disease in humans and animals," says Cowan.

Cardiac troponins are proteins that are released into the blood when heart muscle is damaged.

"When the cardiac muscle is damaged— perhaps due to disease — all these damaged cardiac muscle cells will leak out the cardiac troponins, and so you will see a spike of those cardiac troponins in the blood," says Cowan.

These proteins could offer a precise diagnostic marker for equine myocardial issues — similar to what physicians use to diagnose heart attacks in human patients. While troponin tests are available for veterinarians, lab analyses are time consuming. Veterinarians also can't take the tests on field calls, which limits their diagnostic abilities.

This test would also help diagnose an increasingly common poisoning in horses: ionophore toxicity. Ionophores are a class of antibiotic-like compounds that are added to the feed of animals such as cattle, chickens and goats. But for horses, ionophores can be deadly. In the past five years, WCVM researchers have received an increasing number of calls about potential ionophore poisonings in horses.

Researchers still aren't sure why horses are so sensitive to the additive, but accidental consumption can easily happen due to cross-contamination in the feed mill or accidental ingestion of the wrong feed. Cowan says that current tests can't help veterinarians differentiate between general muscle damage and cardiac-specific muscle damage — making it challenging to diagnose ionophore poisoning in equine patients.

"Say a horse has been recumbent for a while and it can't get up — just the horse being on its side for a long time, compressing those muscles, is enough to cause a spike in indicators of muscle damage in the blood," she says. "We need to be able to look at cardiac muscle specifically for better sensitivity in our diagnostics."

In addition, the project aims to establish a baseline level for cardiac troponins in horses that veterinarians can use to gauge results of potentially sick horses. Cowan also plans to investigate how extreme temperatures affect cardiac troponin levels in horses — novel research that could provide valuable insights into how environmental stressors affect horses' heart health.

Dr. Vanessa Cowan is seeking a master's student. If you have equine handling experience and are interested in graduate studies, email vanessa.cowan@usask.ca.

Visit tehrf.ca to read the full story.

SWITCHING 'OFF' EQUINE HERPESVIRUS

The Morris Animal Foundation (MAF) has awarded US$99,846 over three years to University of Saskatchewan virologist Dr. Kristen Conn in support of foundational research targeting equine herpesvirus (EHV).

Conn is an assistant professor at the Western College of Veterinary Medicine (WCVM) who specializes in virology and virus-cell interactions. The new funding will support her research project that will focus on understanding the chromatin (structure that controls DNA replication and gene expression) regulation of lytic equine herpesvirus 1 (EHV-1).

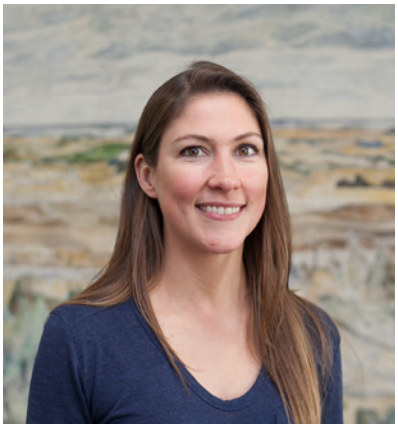
One of the most common EHV species is EHV-1, a highly infectious virus that can cause serious illness including respiratory disease, neurological disease, abortions and newborn foal death. EHV-1 establishes a lifelong, latent infection in an affected horse, and it can reactivate in response to stress — causing disease and spreading to other animals.

EHV-1 is not transmissible to people and most animal species, but the virus is highly contagious among horses and camelids (llamas and alpacas). Current equine vaccines don't prevent EHV-1 infection and available therapies only offer supportive care.

Based in Denver, Colo., MAF is one of the largest non-profit animal health research organizations in the world. With the foundation's financial support, Conn will study how to prevent the virus from replicating in the horse's body and spreading infection. As a first step, Conn and her team will explore how the EHV-1 virus takes over host cells by harnessing their biological processes to make more virus particles (virions).

The team will then explore how these basic interactions can be targeted — helping the cells silence or "switch off" the invading virus and stop replication. Findings may eventually play a role in developing a more effective vaccine and new antiviral therapies that could help to address EHV-1 outbreaks and individual infections.

EHV-1 is mostly spread when horses come in to contact with one another. Indirect contact — through situations such as sharing contaminated equipment or people moving between horses without adequately following hygiene measures — can also play a role in the virus' spread.

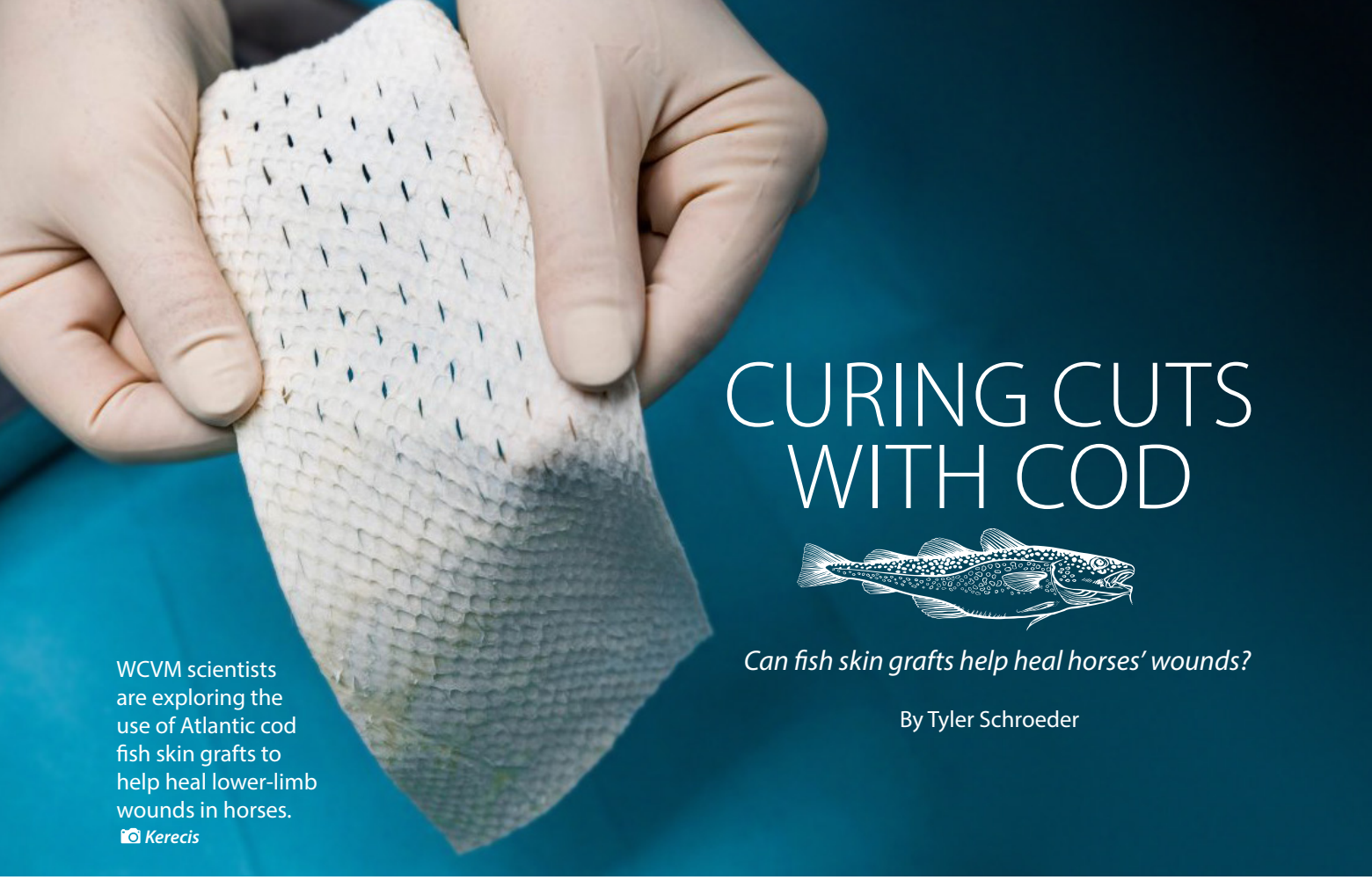


Dr. Kristen Conn *Christina Weese*

Another contributing factor is aerosol transmission over close distances, such as when horses cough and form infectious droplets.

While Conn's previous research focused on herpes simplex virus (HSV) in humans, she now studies herpesviruses that infect cattle and horses. Her initial EHV research, which was supported by the Townsend Equine Health Research Fund (TEHRF) in 2019, investigated how EHV-1 protein expression is regulated — vital information that will help advance future investigations.

Visit tehrf.ca to read the full story.



WCVM scientists are exploring the use of Atlantic cod fish skin grafts to help heal lower-limb wounds in horses.
Kerecis

CURING CUTS WITH COD

Can fish skin grafts help heal horses' wounds?

By Tyler Schroeder

Dr. Alannah Friedlund has gained firsthand experience treating all kinds of bloody, nasty cuts, gashes and slices on horses' legs during her time at the Western College of Veterinary Medicine (WCVM).

"We see a lot of horses with leg wounds coming into our clinic [WCVM Veterinary Medical Centre]. Owners can spend a lot of time cleaning wounds, bandaging wounds and then monitoring the wounds in the healing process," says Friedlund, a resident in large animal surgery and graduate student at the University of Saskatchewan.

A common occurrence in horses of all ages, lower-limb wounds are challenging to treat and manage since they're slow to heal and vulnerable to infection. With financial support from the WCVM's Townsend Equine Health Research Fund, Friedlund is conducting research on an unconventional approach for treating these wounds: fish skin grafts.

Human physicians have successfully used these grafts to treat burn victims and patients with chronic non-healing wounds. Now Friedlund and her graduate supervisor, Dr. Keri Thomas, want to find out if fish skin grafts have a practical use in equine health. Dr. Joe Bracamonte, an equine surgeon at the WCVM, is also part of the study.

"The fish skin grafts that we'll use in our study consist of a commercial product derived from Atlantic cod. We're using a graft that's already commercially available because if it proves to be effective, we want to know if it's something that is actually feasible to start using in clinical practices," says Friedlund.

The research team will make two small surgical wounds on each of the front lower limbs (mid-cannon bone) of eight horses participating in the study. Next, they will apply a fish skin graft to one wound and leave one wound without a graft on each front limb of each horse.

Over a three-week period, the researchers will monitor and document the healing process of each wound. Using 3D wound management software, the research team can calculate precise measurements of the length, width, depth and surface area of the wounds as they progressively heal.

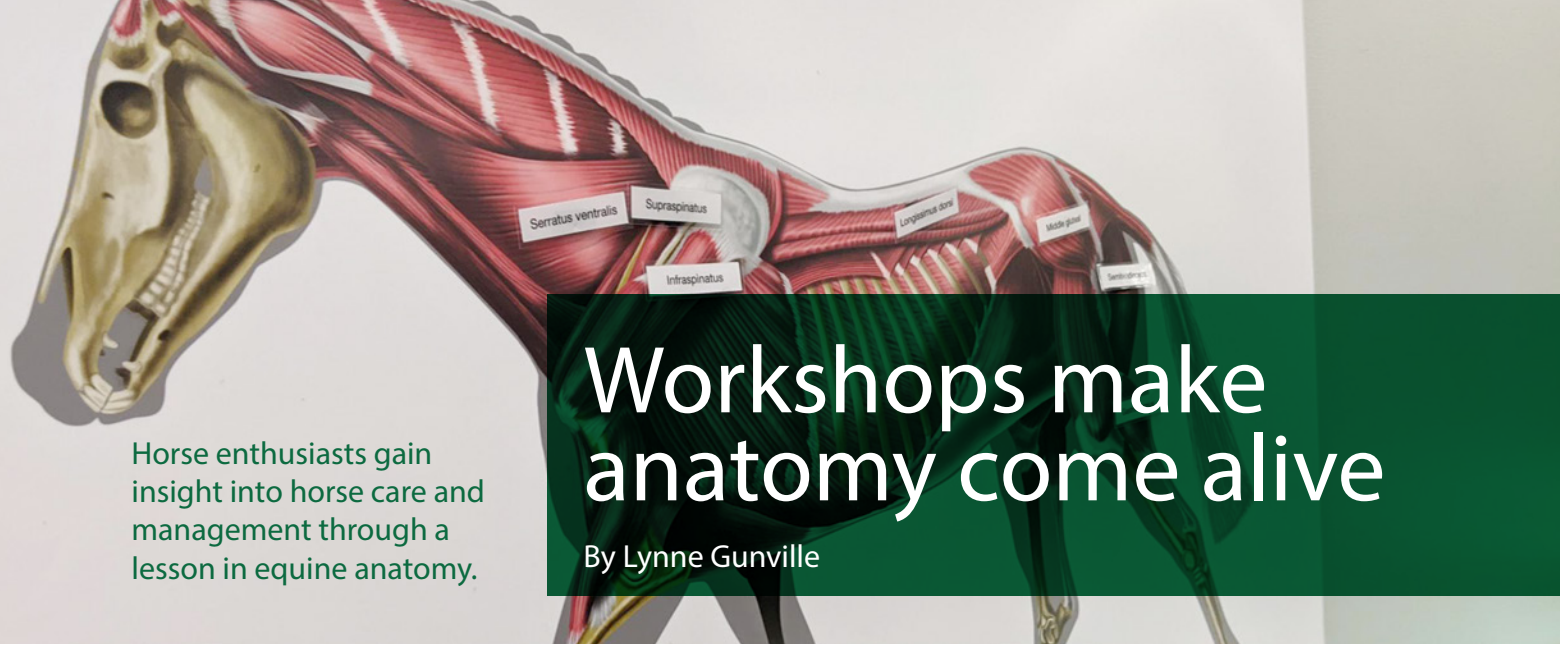
In addition to accelerating skin growth, Friedlund points out that the grafts could provide other beneficial functions such as acting as a physical barrier against infection and bacterial contamination — an important factor for horses.

The fish skin grafts also show potential in stopping the growth of exuberant granulation tissue (proud flesh), which can hinder the healing of lower-limb wounds in horses.

Friedlund is optimistic that fish skin grafting could eventually become a viable treatment option for treating horses' lower-limb wounds. She hopes that data gathered through her research study will help to better inform horse owners' decisions on practical wound treatment options.

"If there's a way that we can use these grafts to decrease the amount of time and stress involved in recovery, it would be very beneficial," says Friedlund. "Not only for the horses, but for the people taking care of them, too."

Visit tehrf.ca to read the full story.



Workshops make anatomy come alive

Horse enthusiasts gain insight into horse care and management through a lesson in equine anatomy.

By Lynne Gunville

Tired of memorizing the intricacies of equine anatomy? Put that textbook aside — Dr. Madison Ricard (DVM) offers an entertaining way to make the topic memorable.

Ricard has developed three-hour anatomy workshops for horse lovers aged 12 and older. All that she requires is a host and a large enough space for the hands-on workshop.

"The workshop is actually a series of stations that give people hands-on interactive activities," explains Ricard, a PhD candidate at the Western College of Veterinary Medicine (WCVM). "There's a list of instructions on the wall with the goal for each station, and it's up to you [each participant] to decide what you are most interested in and what you want to investigate and play around with."

Ricard was largely inspired by her childhood memories of Edmonton's Telus World of Science — particularly "The Human Body," an exhibit that contained various stations like the ones she has created for her workshops.

Ricard's learning stations facilitate learning about equine organs and structures, management issues and diseases. Activities range from playing board games to examining specimens such as a heart and a dissected limb.

"Having the wet specimens and the bones and all of the hands-on materials — it makes the anatomy come alive to them and shows them how that would actually apply to their living horse," says Ricard.

By offering the horse community a better understanding of equine anatomy, Richard hopes to benefit riders and owners as well as their horses and veterinarians.

"The more people understand how science works and how research works, and even how their animals work, it gives them the information they need to make better decisions about [horse] care and management," says Ricard.

Ricard has also created a website featuring simple explanations of over 250 different equine diseases and a Facebook page where she shares interesting cases.

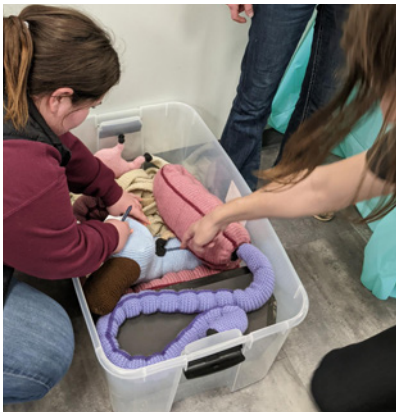
"Obviously at the end of the day, disease is pretty cool," says Ricard. "I try to always share interesting images with each post so they're eye-catching and people can really engage with that material."

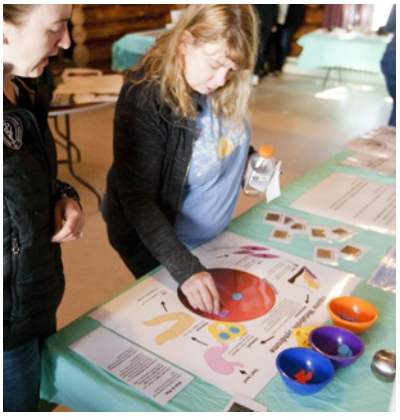
Ricard's outreach work combines her love for knowledge with her lifelong love of horses. Although she had always considered becoming an equine veterinarian, Ricard developed a keen interest in pathology while attending the University of Calgary Faculty of Veterinary Medicine. After completing her veterinary degree in 2020, Ricard began graduate studies in the WCVM's Department of Pathology, and became a board-certified veterinary pathologist in 2023. Her PhD program in anatomic pathology wrapped up this past summer.

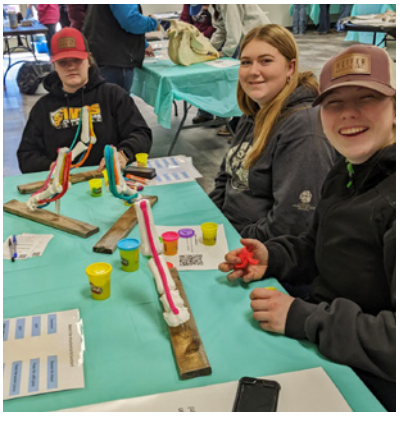
"I think I've always been a teacher at heart. I really love teaching and science communication," says Ricard, who hopes to find an academic role in veterinary medicine. "I just love being able to take the information that I have acquired through my veterinary degree and through my residency program and make it more accessible to people by giving it to them in a format that they find palatable and understandable."

Contact Dr. Madison Ricard (madison.ricard@usask.ca) for more details about the anatomy workshops.

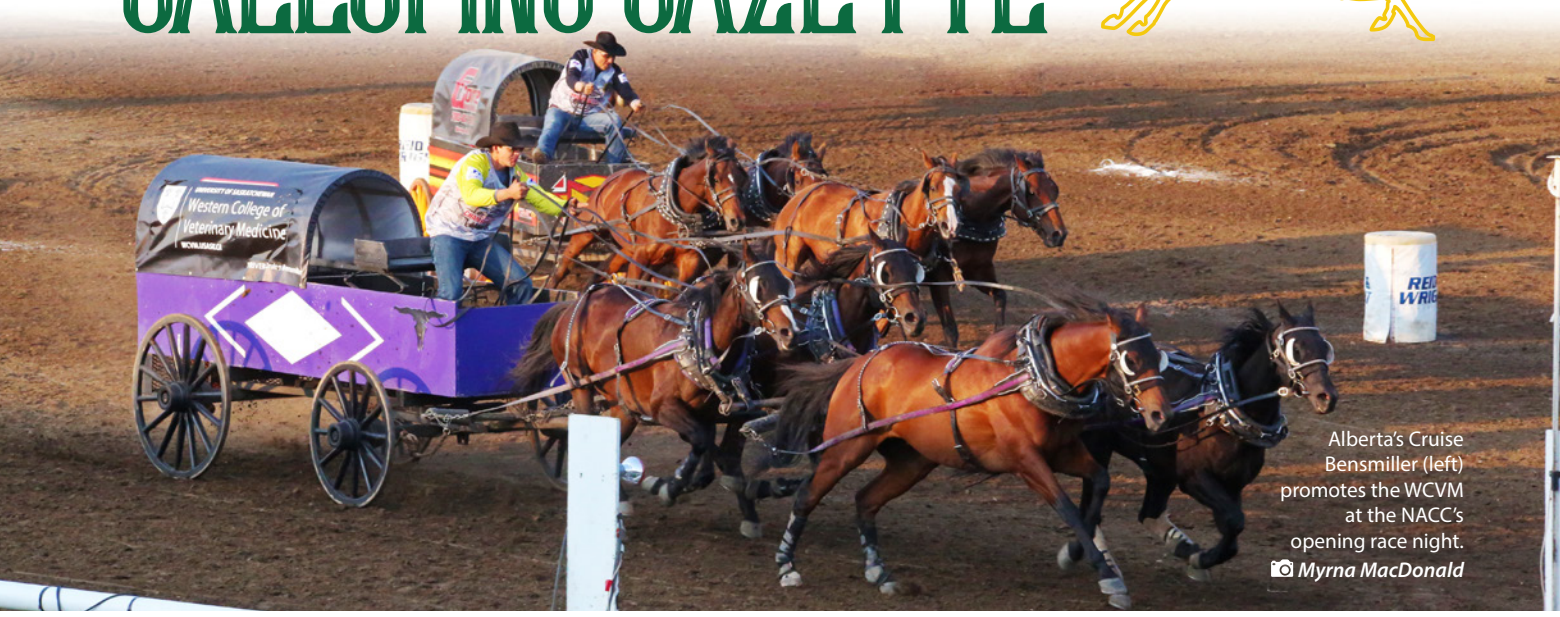
Read full story at tehrf.ca.







GALLOPING GAZETTE

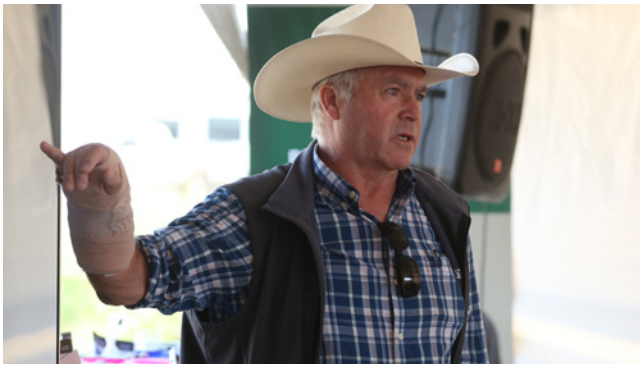


Alberta's Cruise Bensmiller (left) promotes the WCVM at the NACC's opening race night. *Myrna MacDonald*

NACC CELEBRATES HORSE HEALTH

On Day 1 of the nine-day North American Chuckwagon Championships at Halstead Downs in Lloydminster, Sask., chuckwagon teams took a horse health break before races began on July 4. Drivers, outriders and other team members spent two hours learning more about equine osteoarthritis, nutrition and equine gastric ulcers with the help of experts from Zoetis, Platinum Performance and Boehringer Ingelheim.

The horse health-focused event was organized by Dr. Taryn (Holtby) Schachtel of the Lloydminster Animal Hospital, a 2012 graduate of the WCVM. Schachtel, who was part of the NACC organizing team, also arranged for the Townsend Equine Health Research Fund to be the beneficiary of the first evening's 50/50 draw. Thanks to the NACC's efforts, the fund received a generous gift in support of the WCVM's vital horse health research and training programs.

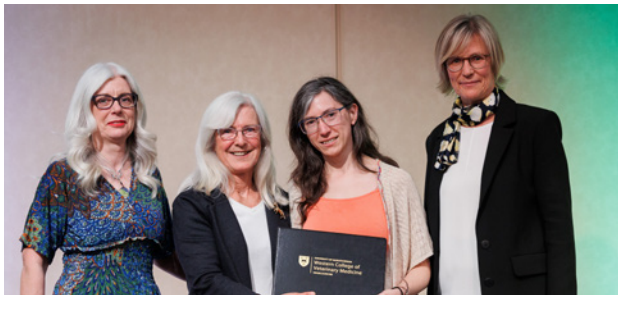


Dr. Doug Myers of Boehringer Ingelheim describes the treatment and prevention of equine gastric ulcers.

STUDENTS HONOURED FOR EQUINE EXCELLENCE

During the WCVM's 2024 graduation awards ceremony in June, veterinary graduate **Dr. Emma Hinz** of Humboldt, Sask., received a $3,000 award from the Saskatchewan Speed Horses Association. The award recognizes Hinz's commitment to exceptional patient advocacy and compassionate care during her equine-focused clinical rotations at the WCVM.

The Equine Foundation of Canada also presented an award, valued at $5,750, to **Dr. Paula Viviani**, a PhD candidate under the supervision of former WCVM professor Dr. Julia Montgomery. Originally from Argentina, Viviani's research focused on establishing baseline measurements for adrenocorticotropic hormone (ACTH) and insulin in normal horses living in Saskatchewan. These reference values, now used in equine metabolic testing offered by Prairie Diagnostic Services, help western Canadian veterinarians with early diagnosis of horses suffering from equine metabolic syndrome (EMS) or pituitary pars intermedia dysfunction (PPID).



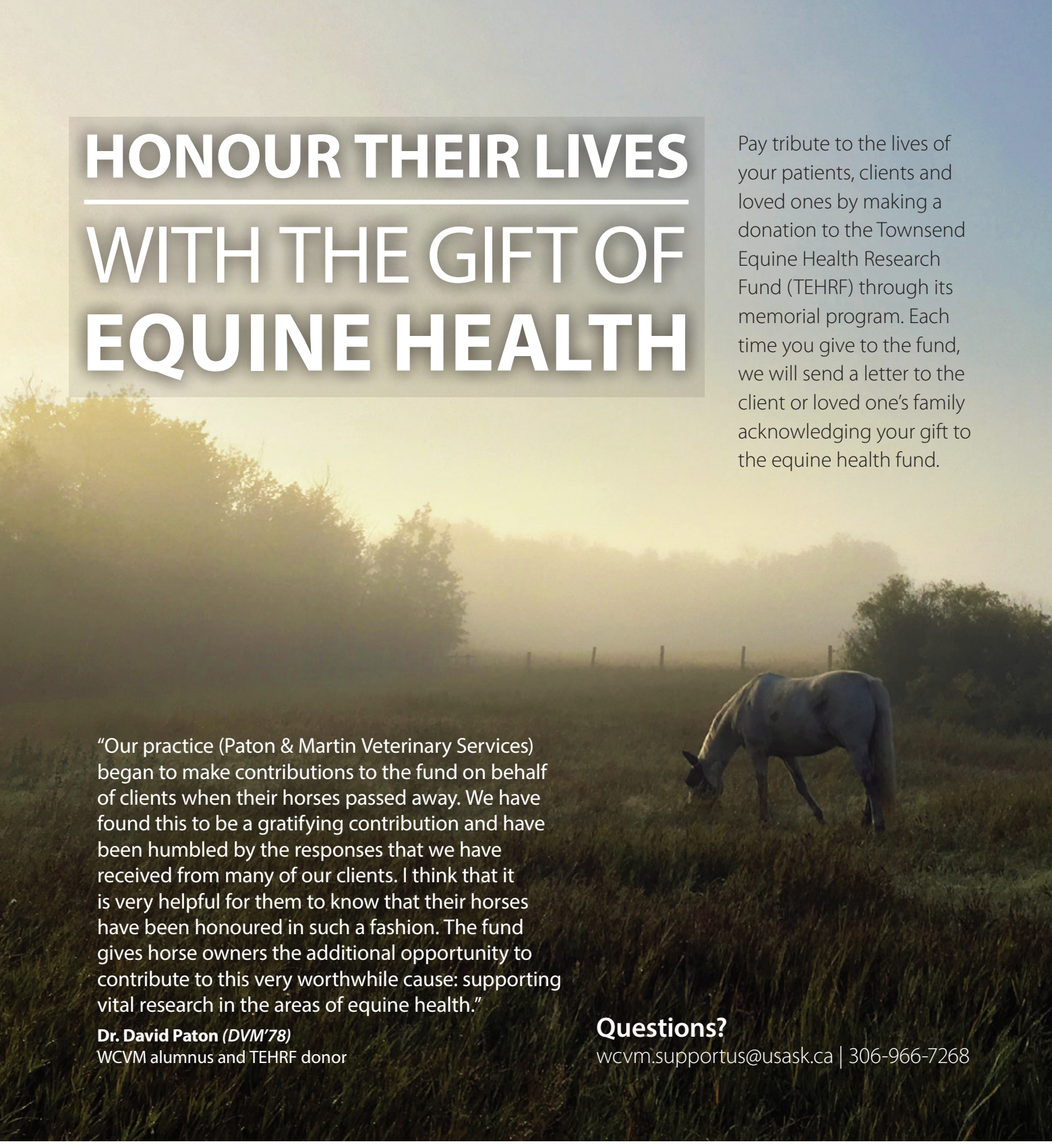
From left: EFC representatives Candas Rolls and Charlene Dalen-Brown with Drs. Paula Viviani and Gillian Muir. *Dave Stobbe*

Visit tehrf.ca for more news updates.

HONOUR THEIR LIVES

WITH THE GIFT OF EQUINE HEALTH

Pay tribute to the lives of your patients, clients and loved ones by making a donation to the Townsend Equine Health Research Fund (TEHRF) through its memorial program. Each time you give to the fund, we will send a letter to the client or loved one's family acknowledging your gift to the equine health fund.



"Our practice (Paton & Martin Veterinary Services) began to make contributions to the fund on behalf of clients when their horses passed away. We have found this to be a gratifying contribution and have been humbled by the responses that we have received from many of our clients. I think that it is very helpful for them to know that their horses have been honoured in such a fashion. The fund gives horse owners the additional opportunity to contribute to this very worthwhile cause: supporting vital research in the areas of equine health."

Dr. David Paton ***(DVM'78)***
WCVM alumnus and TEHRF donor

Questions?
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