CEVSS | Canadian Emerging Veterinary Scholars Summit

Welcome to the 2024 Canadian Emerging Veterinary Scholars Summit

This annual forum brings the top DVM and graduate student researchers from each of the five Canadian veterinary colleges together to share their research projects and develop their scientific knowledge, research skills and professional networks.

This year, we are excited to welcome an international student from the United Kingdom's University of Surrey, adding a global perspective to our community.

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THURSDAY OCT 24 | DAY 01

Alt Hotel University District | 7:00-9:00 p.m: Registration - ALT Hotel Everest Room, 2nd Floor

FRIDAY OCT 25 | DAY 02

Foothills Campus, Theatre 3

- 7:00 a.m.   **Breakfast - ALT Hotel Magenta Room, 2nd Floor**
- 8:00 a.m.   **Travel to Foothills Campus**
- 8:30 a.m.   Opening Remarks - Dean Renate Weller
- 8:35 a.m.   Keynote Speaker – Dr. Brielle Rosa | Parasites, ponies, and plants: an ecology-based collaborative approach to discovery of novel antiparasitics
- 9:15 a.m.   **Break (15 mins)**

SESSION 1 OF 4

- 9:30 a.m.   Presenter 1: Angelica Dias (University of Calgary, PhD Candidate) | Bacterial Succession: Tracking the Footprints of a Polymicrobial Puzzle in Dairy Cattle
- 9:45 a.m.   Presenter 2: Bianca Garlisi (University of Guelph, PhD Candidate) | Fc3TSR Directed Remodeling of the Tumour Microenvironment to Enhance Efficacy of Immunotherapies and Immune Cell Migration in a Murine Model of Pancreatic Ductal Adenocarcinoma
- 10:00 a.m.   Presenter 3: Madison King (University of Prince Edward Island, Veterinary Student) | The effect of hypoxia on VEGF expression in feline oral squamous cell carcinoma
- 10:15 a.m.   Presenter 4: Juliet Kennedy (University of Saskatchewan, Veterinary Student) | Drug ingestion in dogs: a retrospective study of 240 cases from a Canadian veterinary teaching hospital
- 10:30 a.m.   Presenter 5: Marie-Jeanne Pesant (Université de Montréal, PhD Candidate) | Elucidating deoxynivalenols' antiviral effect against porcine reproductive and respiratory syndrome virus infections in vitro: a multi-omics approach
- 10:45 a.m.   Presenter 6: Celine Said (University of Guelph, Veterinary Student) | Comparison of 2D Linear Dimension Formulas and Optimization of a 3D Bladder Circumference Algorithm for Ultrasonographic Estimation of Feline Urinary Bladder Volumes
- 11:00 a.m.   **Break (10 mins)**

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FRIDAY OCT 25 | DAY 02

Foothills Campus, Theatre 3

SESSION 2 OF 4

- 11:10 a.m.   Presenter 7: Bianca Marini (University of Guelph, Veterinary Student) | To agree or disagree? Validation of observer training to a piglet reaction ethogram

- 11:25 a.m.   Presenter 8 : Nima Khalili Tanha (University of Saskatchewan, Graduate Student) | Breathing New Life: Acute Intermittent Hypoxia, Neuronal Plasticity, and Motor Recovery in a Mouse Model of Spinal Cord Injury

- 11:40 a.m.   Presenter 9: Dominique Marullo-Masson (Université de Montréal, Veterinary and Master's Student) | Analytical validation of portable human Accu-Chek glucometer in mealworm beetle hemolymph

- 11:55 a.m.   Presenter 10: Saylor Martian (University of Saskatchewan, Veterinary Student) | Enhancing pesticide safety in pollinators: A model for gonadotoxicity in honey bee drones

- 12:10 p.m.   Presenter 11: Ty Pan (University of Calgary; PhD Candidate) | Urban Ecology of Culex pipiens (Diptera: Culicidae) in Alberta

- 12:25 p.m.   **Lunch (65 mins) in CWPH 2D14**

SESSION 3 OF 4

- 1:30 p.m.   Presenter 12: Lillian Black (University of Prince Edward Island, Veterinary Student) | Retrospective evaluation of electrocardiographic T-wave indices in Doberman pinschers with dilated cardiomyopathy

- 1:45 p.m.   Presenter 13: Karoll-Ann Morin (Université de Montréal, Veterinary Student) | CTGF and MMP-7 are not specific urinary biomarkers for chronic kidney disease in cats

- 2:00 p.m.   Presenter 14: Amanda Avison (University of Guelph, PhD Candidate) | Cardiac restitution in Standardbred racehorses during routine racing exercise

- 2:15 p.m.   Presenter 15: Katherine Simpson (University of Surrey, UK, Veterinary Student) | The influence of early birth dates on participation and performance: A study of Thoroughbred foals born in 2018 entering UK races

- 2:30 p.m.   Presenter 16: Louise Caplan (University of Calgary, Veterinary Student) | Characterizing common blood-derived therapeutics from horses with Pituitary Pars Intermedia Dysfunction

- 2:45 p.m.   **Break (10 mins)**

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FRIDAY OCT 25 | DAY 02

Foothills Campus, Theatre 3

SESSION 4 OF 4

- 2:55 p.m.   Presenter 17: Marine Rullier, DVM MSc (Université de Montréal, PhD Candidate) | Fecal microbiota transplant as an adjunctive treatment of canine chronic pruritic dermatitis

- 3:10 p.m.   Presenter 18: Sumit Jyoti (University of Prince Edward Island, PhD Candidate) | Utilization of publicly available data to summarize spatio-temporal patterns of fish health events of Atlantic salmon (Salmo salar) reported by marine finfish industries in British Columbia (BC), Canada

- 3:25 p.m.   Presenter 19: Amber Cliffe (University of Calgary, Veterinary Student) | Predicting the impact of somatic cell count on milk production in Thailand

- 3:40 p.m.   Presenter 20: Narsimha Pujari (University of Saskatchewan, PhD Candidate) | The X Factor: How Neuronal NUCB1 Regulates Sex-Specific Metabolism

- 3:55 p.m.   Presenter 21: Sherry Khoddami (University of Prince Edward Island, MSc Student) | "I felt like a lesser veterinarian": Veterinary students' perspectives on their relationship with animals used in veterinary education

- 4:10 p.m.   **Break (10 mins)**

- 4:20 p.m.   Closing Remarks - Dr. John Gilleard

- 6:30 p.m.   **Student Mixer (the Banquet)**

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SATURDAY OCT 26 | DAY 03
Spy Hill Campus - CSB Atrium/CSB 101A

For CEVSS Presenting Students and UCVM Graduate Students

- **7:45 a.m.**   **Bus Pickup for Travel to Spy Hill Campus - In Front of ALT Hotel Lobby**

- **8:15 a.m.**   **Breakfast - CSB Atrium**

- 9:00 a.m.   Workshop 1 of 2 (1 hour) - Daniel Pang | Peer Review: The Good, the Bad and the Ugly

- **10:00 a.m.**   **Break & Coffee**

- 10:15 a.m.   Workshop 2 of 2 (1.5 hours) - Michelle Jackman and Nicole Schaefer | Coaching as the Antidote

- **11:45 a.m.**   **Tour of Spy Hill Campus**

- **12:00 p.m.**   **Lunch - CSB Atrium**

- 1:00 p.m.   Career Panel

- **2:00 p.m.**   **Bus Pickup at Spy Hill Campus (Travel to Zoo) | Zoo: Behind the Scenes with Doug Whiteside**

- **5:00 p.m.**   **Bus Pickup (Zoo to ALT Hotel Calgary University District)**

- **6:30 p.m.**   **Merck Awards Ceremony and Wrap Up Event - ALT Hotel Magenta Room, 2nd Floor**

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KEYNOTE SPEAKER

Brielle Rosa

**Assistant Professor of Veterinary Pharmacology,
Faculty of Veterinary Medicine, University of Calgary**

Dr. Brielle Rosa obtained her DVM from Cornell University (New York, USA) in 2004 and then completed an internship in Ambulatory and Production Medicine. She went on to work in New Zealand at the Massey University Equine Clinic and then obtained her PhD from Massey University in 2014. Her current work in veterinary pharmacology began with sessional instructing and progressed to completing a postdoc in pharmacology before accepting a position as Assistant Professor of Veterinary Pharmacology. As part of her academic appointment, Dr. Rosa also continues to practice part-time as an equine-focused general practice veterinarian in rural Alberta.

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CAREER PANEL

Natasha Kutryk

Senior Specialist in Scientific Marketing Affairs, Merck Animal Health

Dr. Natasha Kutryk is a Senior Specialist in Scientific Marketing Affairs for a pharmeceutical company, Merck Animal Health. Most recently she practised as a Feedlot Consultant for Telus Agriculture and Consumer Goods. Prior to consulting she was a mixed animal veterinarian in Alberta and Saskatchewan and practised large animal medicine in England and New Zealand. Natasha has served on the Alberta Veterinary Medical Association Council since 2020 and was most recently the ABVMA's President. She obtained her DVM from the Western College of Veterinary Medicine in Saskatchewan. When not working, she farms with her husband in North Eastern Alberta.
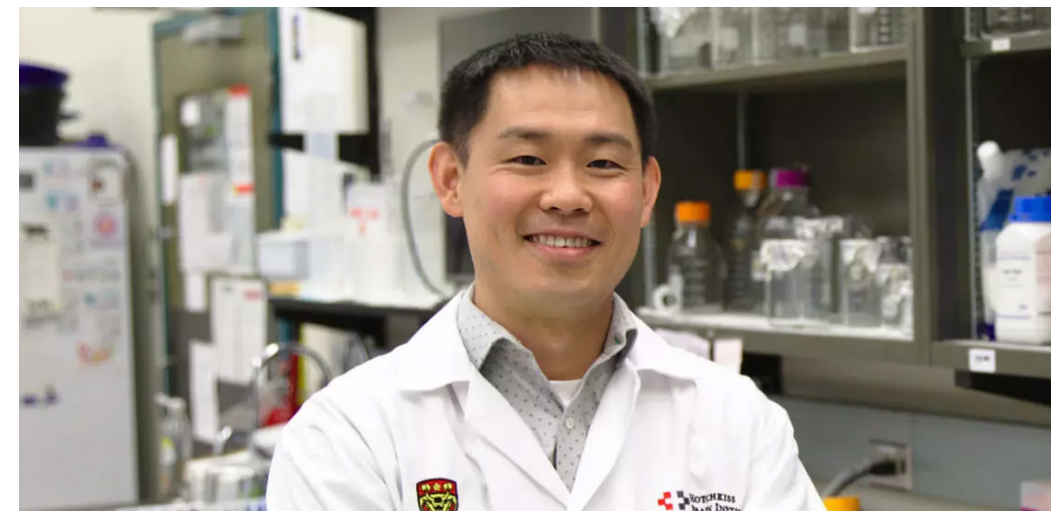
Tuan Trang

Professor, Faculty of Veterinary Medicine, University of Calgar

Dr. Trang received his PhD in Pharmacology and Toxicology at Queen's University and completed a fellowship at SickKids Hospital. He is a Professor at the University of Calgary, leads the Spinal Cord, Nerve Injury, and Pain (SCNIP) NeuroTeam, and CEO and co-founder of a biotherapeutics company, AphioTx. His team is committed to unlocking the causes of chronic pain at the level of genes, cells, and circuits. An area of focus is on understanding how opioids impact the nervous system and on improving the safety of these medications. The work from his team has been recognized by national and international awards.

Delores Peters

Manager, Animal Health Surveillance Unit, Alberta Agriculture and Irrigationh

Delores Peters manages the Animal Health Surveillance Unit for the Government of Alberta, overseeing animal health and food safety surveillance, as well as responding to reportable diseases at the provincial and federal levels. She holds a DVM (1984), MSc in animal biochemistry (1994), and a MVPHMgt (2007) specializing in Veterinary Public Health Management. Delores has a rich career history, from mixed animal private practice to field studies for animal health, and has been with the Government of Alberta in veterinary epidemiology and regulatory medicine since 2006.

Jeff Weissmann

Scientific Communications Veterinarian, Royal Canin

Dr. Jeff Weissmann earned his Doctor of Veterinary Medicine from the University of Calgary in 2015. Though he didn't initially plan on a career in veterinary medicine, his love of science, animals, and problem-solving eventually led him there. After practicing small animal medicine in Calgary for a few years, Jeff found his true passions in veterinary nutrition, dermatology, and education. Since joining Royal Canin in 2019 as a Scientific Communications Veterinarian, he has helped provide nutritional solutions for nearly 7,000 patients across Canada. Jeff also serves as a Sessional Instructor at UCVM, teaching future veterinarians about nutrition and communication. He enjoys life with his partner Amanda, their two orange tabbies, Waffle and Pancake, and their Golden Retriever, Berry.

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WORKSHOP PRESENTERS

Daniel Pang

Professor, Faculty of Veterinary Medicine, University of Calgary

Daniel Pang is a Professor of Veterinary Anesthesiology at the University of Calgary. He received his veterinary degree in 2000 from the University of Bristol and completed a MSc and residency in veterinary anaesthesia at the University of Montreal after a year in small animal practice and an internship (University of Glasgow). He received his doctorate in neuroscience (molecular mechanisms of volatile anaesthetics) from Imperial College, London (2011). Daniel is a Diplomate of the European and American Colleges of Veterinary Anaesthesia and Analgesia, and a Fellow of the Royal College of Veterinary Surgeons. He is co-Editor-in-Chief of the journal, Veterinary Anaesthesia and Analgesia. Daniel teaches anesthesia in the Faculty of Veterinary Medicine (UCVM) at the University of Calgary. His research interests include pain assessment, perioperative safety and improving clinical practice.

Michelle Jackman

Practicing Pediatrician & Clinical Lead, Pediatric Centre for Wellness & Health at Alberta Children's Hospital

Dr. Michelle Jackman is a practicing pediatrician, born and raised in Ontario. She grew up in the City of Kawartha Lakes and is a University of Toronto Alumni OT1. She completed three years of surgical residency at Queen's University in Kingston and earned her FRCPC in pediatrics in 2008. Dr. Jackman has been clinical lead at the Pediatric Centre for Wellness & Health at Alberta Children's Hospital since it was established in 2012. Her clinical expertise is in supporting children and youth with mental health and metabolic and mechanical co-morbidities of obesity to achieve their best health. She completed her executive coaching certification and coaching mastery program through Erickson International and is passionate about bringing coaching into the medical field to help her colleagues navigate challenges, excel in their professions and increase their fulfillment in all aspects of their lives.
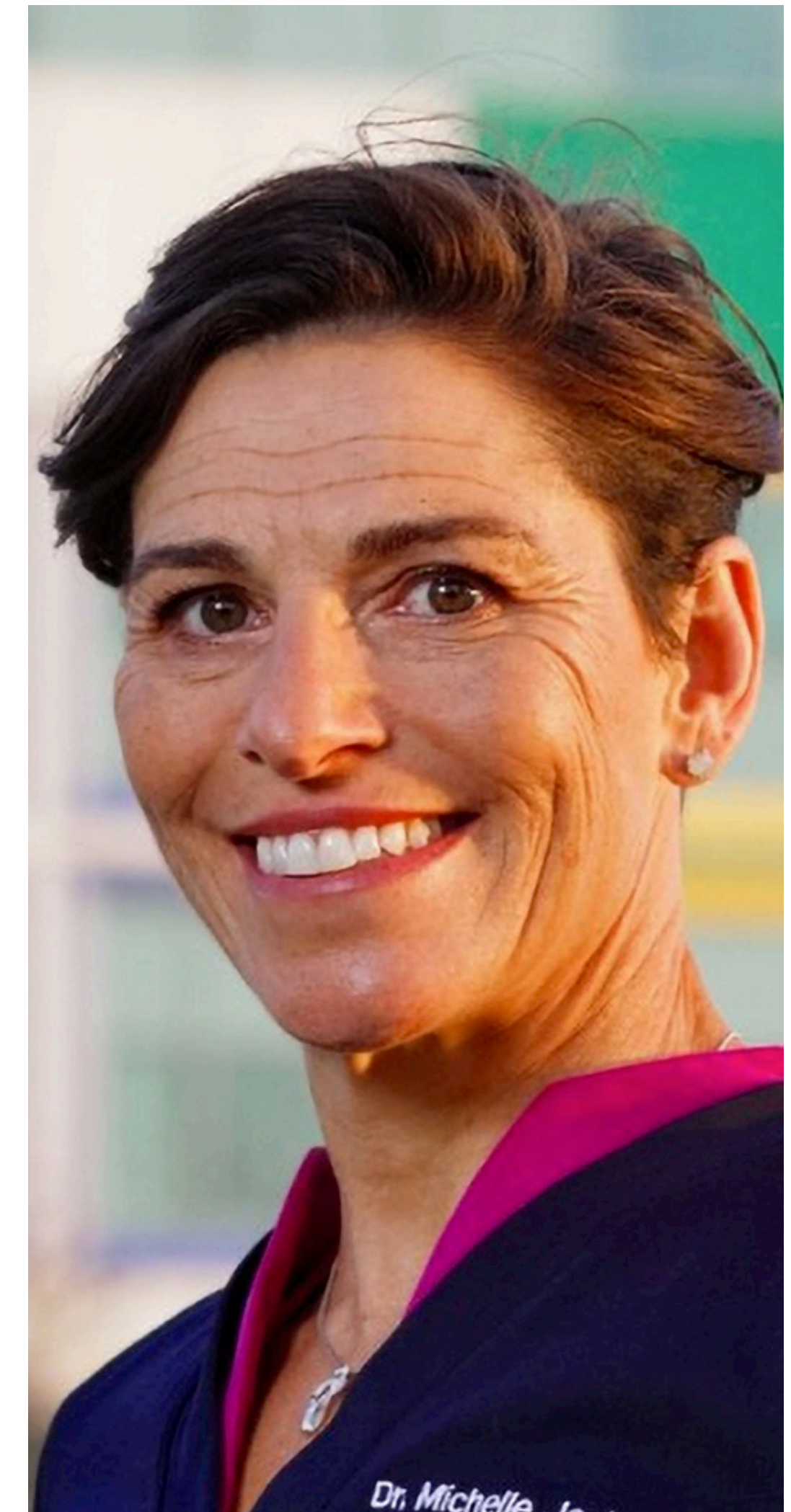
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PRESENTATION
ABSTRACTS
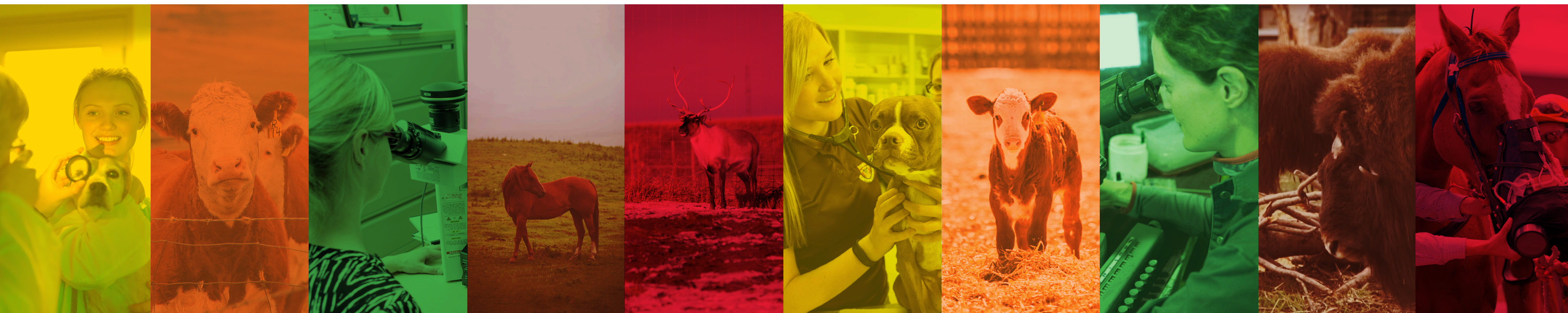
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PRESENTER 1

Angelica Dias

University of Calgary, PhD Candidate

Bacterial Succession: Tracking the Footprints of a Polymicrobial Puzzle in Dairy Cattle

AUTHOR NAME / AFFILIATION

- Angelica P. Dias: Faculty of Veterinary Medicine, University of Calgary
- Karin Orsel: Faculty of Veterinary Medicine, University of Calgary
- Corienne S. Gammariello: Faculty of Veterinary Medicine, University of Calgary
- Jeroen De Buck: Faculty of Veterinary Medicine, University of Calgary

ABSTRACT

Digital dermatitis (DD) is a skin infection of cattle's feet with multiple bacteria suspected to be involved, yet its precise etiopathogenesis remains unclear. In a longitudinal study, we explored the temporal changes of seven DD-associated bacteria in feet developing lesions or remaining healthy, while simultaneously investigating their persistence in potential reservoirs as sources of infection. Weekly swabs were collected from feet skin and saliva of 53 Holstein cows without DD lesions sequentially enrolled at calving in a commercial dairy herd. At the end of the study, samples from all cases and a subset of matched controls were analyzed (1:2 ratio) at five-time points (weeks -3, -2, -1, 0 - when early signs of DD were observed - and +1) and subjected to qPCR targeting Treponema phagedenis, T. medium, T. pedis, Porphyromonas levii, Bacteroides pyogenes, Fusobacterium necrophorum, and F. mortiferum. Linear mixed-effect models assessed the bacterial number changes within cows (cases) and between cows (cases vs controls). Throughout the study, 8 cows developed signs of DD. P. levii, F. necrophorum, and B. pyogenes numbers increased two weeks before the first visible lesion. T. phagedenis and T. pedis numbers increased one week before, suggesting a sequential colonization and potential synergism in triggering DD. Only P. levii and F. necrophorum were persistently present in saliva and skin, while Treponema spp. persisted solely in lesions. Our results inform specific bacterial dynamics associated with DD pathogenesis and advise future research and attempts to effectively treat and control DD.

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PRESENTER 2

Bianca Garlisi

University of Guelph, PhD Candidate

Fc3TSR Directed Remodeling of the Tumour Microenvironment to Enhance Efficacy of Immunotherapies and Immune Cell Migration in a Murine Model of Pancreatic Ductal Adenocarcinoma

AUTHOR NAME / AFFILIATION

- Bianca Garlisi: Department of Biomedical Sciences, University of Guelph, Ontario Veterinary College
- Caroline Aitken: Department of Biomedical Sciences, University of Guelph, Ontario Veterinary College
- Sylvia Lauks: Department of Biomedical Sciences, University of Guelph, Ontario Veterinary College
- Cielle Lockington: Department of Biomedical Sciences, University of Guelph, Ontario Veterinary College
- Jack Lawler: Department of Pathology, Faculty and Vice-Chair for Research of Pathology, Beth Israel Deaconess Medical Center and Harvard Medical School
- Jim Petrik: Department of Biomedical Sciences, Faculty of Biomedical Sciences, University of Guelph, Ontario Veterinary College

ABSTRACT

Introduction: Pancreatic Ductal Adenocarcinoma (PDAC) has a poor survival rate with late diagnosis and distant metastasis. Angiogenesis, vessels sprouting off pre-existing vasculature, is critical for tumour growth and metastasis, delivering necessities to tumours. In cancer, there is an upregulation of angiogenic promoters, increasing the rate of vessel development, creating leaky vessels and poor perfusion. Fc3TSR, designed from the potent angiogenic inhibitor thrombospondin 1, has normalized the tumour microenvironment (TME) in ovarian cancer in our lab), and we hypothesize it can enhance therapy uptake and efficacy in PDAC.

Methods: Using our orthotopic syngeneic murine model of PDAC, we injected 2.5×10^4 PDAC cells into the pancreas of mice. Administration of Fc3TSR (0.158mg/kg) or PBS occurred on day 14 and 21. Immune checkpoint inhibitor (ICI) (25ug) injections were administered on day 23 and 26. Mice were euthanized on day 30, metastatic lesions were counted, and tumours were collected. Tumours were stained for apoptotic, proliferative and vasculature markers, hypoxia, and immune cells.

Results: Fc3TSR, alone and with ICIs, significantly reduced tumour weight and metastasis compared to PBS. Fc3TSR significantly remodeled the TME (hypoxia and vasculature) compared to PBS. Fc3TSR significantly increased apoptosis and presence of many immune cells in tumours, but the combination of Fc3TSR + ICIs increased this further compared to either alone. Remaining immune cell presence is currently being optimized.

Conclusion: This data could provide evidence of the importance of normalizing the TME before cancer therapies to ensure effective delivery and strong immune responses in PDAC patients.

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PRESENTER 3

Madison King

University of Prince Edward Island, Veterinary Student

The effect of hypoxia on VEGF expression in feline oral squamous cell carcinoma

AUTHOR NAME / AFFILIATION

- Madison King: Department of Pathology and Microbiology, Atlantic Veterinary College, University of Prince Edward Island
- Haili Wang: Department of Pathology and Microbiology, Atlantic Veterinary College, University of Prince Edward Island
- Luis Garcia: Department of Pathology and Microbiology, Atlantic Veterinary College, University of Prince Edward Island
- Russel Fraser: Department of Pathology and Microbiology, Atlantic Veterinary College, University of Prince Edward Island
- Chelsea Martin: Department of Pathology and Microbiology, Atlantic Veterinary College, University of Prince Edward Island

ABSTRACT

Vascular endothelial growth factor (VEGF) is a biomarker for poor prognosis in human oral squamous cell carcinoma (OSCC), but it responds poorly to treatment with anti-angiogenic drugs. VEGF-A and VEGF-D proteins have been found in feline OSCC (FOSCC) tissue samples and cell lines, but VEGF-B and VEGF-C expression have not yet been reported.

This study aimed to characterize VEGF-A, VEGF-B, VEGF-C, and VEGF-D gene expression in feline FOSCC cell lines following 72 hours of culture in hypoxic conditions (1% O_2 with 5% CO_2) compared to typical cell culture conditions (about 17% O_2 with 5% CO_2). Three FOSCC cell lines (SCCF1: laryngeal, SCCF2: gingival, SCCF3: lingual) and a fibroblast cell line (CRL6167) were selected to represent the FOSCC microenvironment. Renal cortical cells (CCL94) were also included for their mesenchymal characteristics in cell culture. PCR primers were designed and validated in order to evaluate relative VEGF mRNA expression semi-quantitatively using reverse transcription PCR.

Each FOSCC cell line differed in VEGF expression profile and response to hypoxia. VEGF-B and VEGF-D expression was stimulated by hypoxia in SCCF1 cells, but VEGF-A expression was inhibited by hypoxia in SCCF2 cells. There was no statistically significant effect of hypoxia on SCCF3 cells. Conversely, hypoxia stimulated VEGF-A and VEGF-C expression in fibroblasts. Interestingly, VEGF-C expression was much higher in fibroblasts than in any of the FOSCC cells.

Future experiments will determine changes in VEGF expression at the protein level, and RNA sequencing will be used to characterize changes in the transcriptome-wide response of FOSCC cells to hypoxia.

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PRESENTER 4

Juliet Kennedy

University of Saskatchewan, Veterinary Student

Drug ingestion in dogs: a retrospective study of 240 cases from a Canadian veterinary teaching hospital

AUTHOR NAME / AFFILIATION

- Juliet Kennedy: Department of Veterinary Biomedical Sciences, Western College of Veterinary Medicine, University of Saskatchewan
- Al Chicoine: Department of Veterinary Biomedical Sciences, Western College of Veterinary Medicine, University of Saskatchewan
- Jen Loewen: Department of Small Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan
- Vanessa Cowan: Department of Veterinary Biomedical Sciences, Western College of Veterinary Medicine, University of Saskatchewan

ABSTRACT

Background: Drug ingestion is a common cause of poisoning and hospitalization in companion animals. Pets may be exposed through accidental overdosing of prescribed drugs, access to unattended medication, and administration of inappropriate drugs by owners.

Objective: To document drug ingestion cases in dogs admitted to a Canadian veterinary teaching hospital over a 5-year period (2018-2023).
Methods: Medical records were retrieved from the veterinary hospital database using keywords related to poisoning. A total of 251 were related to drug ingestion. Eleven cases were excluded. Information pertaining to patient signalment, context of exposure, treatment, and case progression was collected to characterize the common factors associated with canine drug exposure.

Results: Drug ingestion was reported in 240 dogs and confirmed in 102 cases. The most common categories ingested by dogs were NSAIDs, psychiatric drugs, acetaminophen, opioids, and recreational stimulant drugs. There were 32 different categories of drugs identified. The most common patient signalment was female spayed, young ($\leq$4 years), large breed dogs. Normal physical exams on presentation were noted in 161 cases. Accidental drug exposures were more common than intentional drug administration. Human drug ingestions were 4x more common than veterinary drugs. The survival-to-discharge rate for one-time drug exposures was 100%. Only one dog died during the study period following chronic NSAID overdose. The most common therapies were emesis induction, activated charcoal, fluid support, and gastroprotectants

Clinical significance: Toxicity due to drug ingestion in dogs is a common reason for hospital admission. Improved client education is needed to avoid preventable drug exposure.

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PRESENTER 5

Marie-Jeanne Pesant

Université de Montréal, PhD Candidate

Elucidating deoxynivalenols' antiviral effect against porcine reproductive and respiratory syndrome virus infections in vitro: a multi-omics approach

AUTHOR NAME / AFFILIATION

- Marie-Jeanne Pesant: Swine and Poultry Infectious Diseases Research Center (CRIPA-FRQ), Faculty of Veterinary Medicine, University of Montreal
- Chantale Provost: Veterinary Diagnostic Center of the University of Montreal (CDVUM), Faculty of Medical Medicine, University of Montreal
- Younès Chorfi: Swine and Poultry Infectious Diseases Research Center (CRIPA-FRQ), Faculty of Veterinary Medicine, University of Montreal |Department of Biomedical Sciences, Faculty of Veterinary Medicine, University of Montreal
- Francis Beaudry: Department of Biomedical Sciences, Faculty of Veterinary Medicine, University of Montreal |Swine and Poultry Infectious Diseases Research Center (CRIPA-FRQ), Faculty of Veterinary Medicine, University of Montreal
- Carl A. Gagnon: Swine and Poultry Infectious Diseases Research Center (CRIPA-FRQ), Faculty of Veterinary Medicine, University of Montreal |Veterinary Diagnostic Center of the University of Montreal (CDVUM), Faculty of Veterinary Medicine, University of Montreal

ABSTRACT

Deoxynivalenol (DON) is a mycotoxin produced by Fusarium spp. and often found in animal feed. Swine are notably sensitive to its harmful effects. Our research team has highlighted a significant antiviral effect against porcine reproductive and respiratory syndrome virus (PRRSv) infection in vitro but have not explored a cellular and mechanistic explanation for this effect.

This study aims to elucidate in vitro DONs' antiviral mechanisms against PRRSv using transcriptome and proteome approaches.

Briefly, cells were infected with a Quebec reference strain, treated post-infection (pi) with DON [280ng/mL]. Total RNA and proteins were extracted 72h pi and 3' mRNA libraries were sequenced with Illumina MiSeq platform and proteins were run through an UHPLC coupled with a Q-Orbitrap Mass Spectrometer (MS/MS). Curation of reads and differential expression analysis were performed. RNAseq results revealed, uniquely in treated and infected cells, 154 differentially expressed genes (DEGs) [p-value<0.05; -1 > Log2FC > 1] whereas proteomics results revealed 23 DEGs [p-value<0.05; -1 > Log2FC > 1]. A ranked gene-list from these combined DEGs was generated and enriched with the computational method GSEA and visualized with Cytoscape. Early analysis suggests a strong link with downregulation of some genes such as APOE, PDCD6IP and LAMP1, which play crucial roles in viral life cycles. Subsequently, it is planned to confirm transcriptomic and proteomic results using alternative methods such as RT-qPCR and siRNA technology.

DON, which has no realistic direct application against PRRS, could hence point towards novel targets for future antiviral strategies against this costly swine virus.

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PRESENTER 6

Celine Said

University of Guelph, Veterinary Student

Comparison of 2D Linear Dimension Formulas and Optimization of a 3D Bladder Circumference Algorithm for Ultrasonographic Estimation of Feline Urinary Bladder Volumes

AUTHOR NAME / AFFILIATION

- Celine Said: Department of Clinical Studies, Ontario Veterinary College

ABSTRACT

Kidney disease is the leading cause of death in cats, making the analysis of kidney function essential in veterinary medicine. Measuring urinary bladder volume (UBV), allows veterinary clinicians to assess urine production and evaluate kidney function.

Traditionally, UBVs are most accurately measured through urinary catheterization. Although this method is precise, it poses significant concerns for patients, including discomfort, physical tissue trauma, and potential long-term complications such as infection, urethral spasms, or stricture formations. In contrast, ultrasound provides a non-invasive and convenient way to assess UBV at the bedside. Both 2D and 3D ultrasound methods for estimating UBV are currently under development in human and veterinary medicine.

This study aims to identify the most accurate and precise 2D linear dimension formula for estimating UBVs, as only one has been evaluated in cats. Additionally, it seeks to address the consistent underestimation associated with a recently developed 3D bladder volume computation method validated in prior research.

A total of 509 longitudinal and transverse bladder ultrasonographic images were analyzed. Estimated UBV obtained from eight 2D linear dimension formulas and five modified 3D algorithms were compared to actual urine volumes measured via urinary catheterization using regression analysis, Lin's concordance correlation coefficient, and Bland-Altman analyses.

Our study identified the best 2D linear dimension formula and improved the 3D bladder volume computation method for UBV estimation in cats. These non-invasive methods for UBV estimation can be clinically implemented to prioritize patient comfort.

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PRESENTER 7

Bianca Marini
University of Guelph, Veterinary Student

To agree or disagree? Validation of observer training to a piglet reaction ethogram

AUTHOR NAME / AFFILIATION

- Bianca Marini: Department of Population Medicine, Ontario Veterinary College, University of Guelph
- Dr. Minh Man Pham: Department of Population Medicine, Ontario Veterinary College, University of Guelph
- Dr. Rocio Amezcua: Department of Population Medicine, Ontario Veterinary College, University of Guelph
- Alexis Buzby: Department of Population Medicine, Ontario Veterinary College, University of Guelph
- Gavyn Duffield: Department of Population Medicine, Ontario Veterinary College, University of Guelph
- Dr. Terri O'Sullivan: Department of Population Medicine, Ontario Veterinary College, University of Guelph

ABSTRACT

Introduction: This trial is part of a larger study evaluating the efficacy and welfare implications of using a needle-free injection device on piglets, in which observers score piglet injection reactions based on an ethogram. The outcomes of the trial therefore rely on subjective scoring; hence it is essential to validate that observers are properly trained and reliable, and that the ethogram used is appropriate.

Methods: Three observers were trained on how to appropriately score piglet reactions using a 4-point ethogram with a group training session. Three sets of videos from the larger study, each containing 12 randomized videos were developed, with some videos repeating within and across sets. To test whether sound was influencing scoring, each original set was duplicated and made muted. Observers independently scored two video sets using Google Forms once per day.

Results: Observers had substantial and almost perfect inter-observer agreement for ethogram Scores 0-3 (Kappa = 0.83, 0.66, 0.73 and 0.79), giving an average for inter-observer agreement of 0.75. High values were also achieved for intra-observer agreement and ranged from 0.72-0.86. Additionally, the difference between scores with and without audio was not found to be statistically significant (p = 0.16).

Conclusions: The results confirm that observer training and the ethogram used were generating consistent and reliable scores. This can be extrapolated to the results from the overall study utilizing this training and ethogram to confirm that their results are considered meaningful, and hopefully supports evidence of improved animal welfare with needle-free technology.

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PRESENTER 8

Nima Khalili Tanha

University of Saskatchewan, Graduate Student

Breathing New Life: Acute Intermittent Hypoxia, Neuronal Plasticity, and Motor Recovery in a Mouse Model of Spinal Cord Injury

AUTHOR NAME / AFFILIATION

- Nima Khalili Tanha: Department of Small Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan
- Mohammad-Amin Abdollahifar: Department of Small Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan
- Alexander Hylkema: Department of Small Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan
- Gillian Muir: Department of Veterinary Biomedical Sciences, Western College of Veterinary Medicine, University of Saskatchewan
- Behzad Toosi: Department of Small Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan

ABSTRACT

Spinal cord injury (SCI) leads to significant motor deficits. Despite medical advancements, restoring neural activity post-SCI remains challenging. This study explores the therapeutic potential of acute intermittent hypoxia (AIH) in enhancing neuroplasticity and motor recovery, using a murine model of partial cervical spinal injury.

Healthy male C57BL/6 mice underwent spinal hemisection at the 3rd cervical spinal segment or a sham surgery (n=24 per group) followed by one week of recovery. Mice were then treated with daily AIH (10, 5-min episodes of 11% inspired O2 with 5-min intervals of 21% O2) or normoxia (continuous 21% O2) following either a short-term (7 days) or long-term (7 days plus an additional 3 weeks) protocol (n=6 per group). Motor recovery was assessed using the narrow beam walking test (NBT), and the expression of the neuroplasticity marker, BDNF, was analyzed using Western blotting and immunohistochemistry.

The spinal hemisection resulted in significant motor deficits, detectable with the NBT. Long-term AIH treatment improved motor recovery in mice with spinal injury. Enhanced BDNF expression was detectable after 7 days of AIH, suggesting changes in plasticity markers precede improvements in motor functions. Additionally, an increase in glial cells and astrocytes at the injury site was observed, as indicated by immunohistochemistry for Iba-1 and GFAP.

We developed a mouse model of SCI to study AIH-induced neuroplasticity. Our findings suggest AIH treatment can enhance motor recovery following SCI, potentially through the upregulation of BDNF. These results provide a promising foundation for further investigation into AIH's therapeutic potential in SCI recovery.

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PRESENTER 9

Dominique Marullo-Masson

Université de Montréal, Veterinary and Master's Student

Analytical validation of portable human Accu-Chek glucometer in mealworm beetle hemolymph

AUTHOR NAME / AFFILIATION

• Dominique Marullo-Masson : Department of pathology and microbiology, Faculty of Veterinary Medicine, University of Montreal

ABSTRACT

Glucose and trehalose are the primary energy sources used by the mealworm beetle to support its daily activities. These sugars play a dynamic role in hemolymph alongside the high metabolism of insects. Considering their significant role, they may serve as valuable indicators for assessing the physiological state, metabolism, and homeostasis of the mealworm beetle, a widely used species in food and feed production. However, there is no validated method for quantifying these sugars in the hemolymph.

The aim of the study is to conduct an analytical validation of a portable human glucometer (Accu-Chek Guide) for measuring glucose in the hemolymph of mealworm beetles and to compare it with a reference method (GluCH, Univecel DxC 600; Beckman Coulter). Although insects are not included in the guidelines of the Canadian Council on Animal Care, hemolymph was extracted from anesthetized mealworm beetles in compliance with ethical considerations. Dilution linearity, inter- and intra-assay imprecision and method agreement were assessed in accordance with the quality assurance guidelines set by the American Society for Veterinary Clinical Pathology (ASVCP).

Glucose concentrations measured by both instruments exhibited a strong correlation, demonstrating linear agreement within a range of 2 to 25 mmol/L. Additionally, inter- and intra-assay imprecision suggest that the glucometer offers reliable measurements for quantifying glucose concentration in the hemolymph of the mealworm beetle. Further studies are warranted to investigate the use of glucometer in other species to secure the emerging edible insect farming industry.

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PRESENTER 10

Saylor Martian

University of Saskatchewan, Veterinary Student

Enhancing pesticide safety in pollinators: A model for gonadotoxicity in honey bee drones

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ABSTRACT

Introduction: Agricultural intensification has been linked to chronic pesticide exposure in honey bees (Apis mellifera). However, reproductive castes (queens and drones) are often neglected in pesticide risk assessments, which mainly focus on workers. To address this gap in pollinator pesticide safety, we aim to develop a protocol for assessing gonadotoxicity in male bees and evaluate survival, body weight, testicular weight, and testicular gene expression after xenobiotic exposure. Aspirin, known to negatively affect mosquito reproduction, was chosen as our positive control. We hypothesized that increasing doses of aspirin would produce dose-responsive effects on survival, weight, morphology, and gene expression in drones.

Methods: Drone larvae were chronically exposed to incremental doses of aspirin for seven days during larval development in vitro. We monitored survival daily until adulthood and recorded body weight at prepupal and adult stages. Testicular development was assessed via in situ hybridization chain reaction imaging and histopathological analyses.

Results: Drone larvae exposed to aspirin exhibited significantly reduced survival until the prepupal stage (x^2 = 15.48, p < 0.0001). Prepupal body weight increased significantly with aspirin exposure (Kruskal-Wallis test = 27.31, p < 0.0001). Adult survival, testicular weight, and gene expression analyses are ongoing.

Conclusion: Aspirin may serve as an effective positive control in future gonadotoxicity assessments for male honey bees, helping to refine pesticide safety evaluations.

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PRESENTER 11

Ty Pan

University of Calgary; PhD Candidate

Urban Ecology of Culex pipiens (Diptera: Culicidae) in Alberta

AUTHOR NAME / AFFILIATION

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- Michaela Seal: Faculty of Veterinary Medicine, University of Calgary
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ABSTRACT

Climate change is changing and increasing the range of invasive mosquito species, affecting the dynamics of vector-borne diseases in new areas. Culex pipiens is a globally invasive mosquito and is a vector of many parasites and pathogens, including West Nile virus, Saint Louis encephalitis, and filarial worms. In 2018, Cx. pipiens was first detected in Alberta in Edmonton and was the most common species of mosquito found in the city in 2021. It has since been detected in a number of those cities in Alberta. Much of the biology of this invasive mosquito, which subspecies may be in Alberta, as well as the distribution in the province, is unknown. Here, we describe sampling efforts from the summer of 2024 to detect Cx. pipiens in Calgary and compare their distribution to other native mosquito species. We used larval surveys of typical Cx. pipiens larval habitat as well as gravid and CO_2 traps distributed throughout the city in collaboration with the City of Calgary and the Calgary Zoo. We detected Cx. pipiens at multiple locations in Calgary in primarily urban locations. Compared to other species commonly collected in Calgary, Cx. pipiens was captured at a relatively lower frequency. We will also present on the preliminary analysis in assessing the subspecies composition of the Edmonton and Calgary Cx. pipiens populations.

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PRESENTER 12

Lillian Black

University of Prince Edward Island, Veterinary Student

Retrospective evaluation of electrocardiographic T-wave indices in Doberman pinschers with dilated cardiomyopathy

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ABSTRACT

Dogs with dilated cardiomyopathy (DCM) are at high risk of congestive heart failure (CHF), arrhythmias, and sudden death (SD). Abnormal cardiac electrical repolarization can predispose to arrhythmias and SD. It is hypothesized that Dobermans with DCM will demonstrate repolarization abnormalities detectable by examination of the T-wave on an electrocardiogram (ECG), that T-wave variables will differ between dogs with and without ventricular arrhythmias and between those with and without SD outcome, and that T-wave variables will be predictive of SD outcome.

ECGs of 59 Dobermans with DCM and CHF were digitally scanned, and T-wave variables were measured. The results were compared with available published normal reference values. T-wave variables were compared among groups of Dobermans with and without ventricular arrhythmias on ECG, and with and without sudden death outcome. Survival analyses were conducted to determine whether T-wave variables were predictive of time to SD outcome.

All T-wave variables were significantly higher in DCM Dobermans compared to published normal values, suggesting evidence of abnormal electrical repolarization which can act as a substrate for arrhythmias. However, T-wave variables did not differ between Dobermans with and without ventricular arrhythmias on ECG, nor between those that experienced SD or not, and were not predictive of time to SD. These findings may be related to the way in which ventricular arrhythmias were detected (limited to 3-5 minute ECG) or the confounding effect of euthanasia in this group of dogs with advanced disease.

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PRESENTER 13

Karoll-Ann Morin

Université de Montréal, Veterinary Student

CTGF and MMP-7 are not specific urinary biomarkers for chronic kidney disease in cats

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ABSTRACT

Chronic kidney disease (CKD), characterized by renal fibrosis, commonly occurs in cats. Most available diagnostic tools detect the disease once renal function is altered. Therefore, there is a crucial need to identify novel biomarkers of early renal changes. CTGF and MMP-7 are proteins implicated in renal fibrosis and have been shown to be increased in urine from humans with chronic renal disease. These markers could be detected in urine of cats with CKD, and therefore be used as a biomarker of renal fibrosis for CKD.

The objective is to evaluate the potential of CTGF and MMP-7 as urinary biomarkers of renal fibrosis in chronic kidney disease in cats.

For the control group (n=5), voided urine samples were collected in young cats presented for sterilization. For the sick group, urine samples submitted to the Centre de Diagnostic Vétérinaire de l'Université de Montréal (CDVUM) were screened and categorised into four groups (n=5/group) (early CKD, late CKD, urinary tract infection and inflammatory diseases unrelated to the genito-urinary tracts based on biochemistry and urinalysis. Urinary proteins were concentrated, and CTGF and MMP-7 proteins identified via Western Blot using specific antibodies. Statistical analyses were performed to compare protein levels between each group.

Both proteins were detected in urine samples in all groups, with no significant statistical difference in levels between the groups.

Our preliminary data suggest that CTGF and MMP-7 are not specific enough to be associated solely to renal fibrosis or CKD. Additional experiments are required to identify their potential use as inflammatory biomarkers.

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PRESENTER 14

Amanda Avison

University of Guelph, PhD Candidate

Cardiac restitution in Standardbred racehorses during routine racing exercise

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ABSTRACT

Sudden cardiac death is a huge concern for ethical animal use and public perception of the racing industry. Complex ventricular arrhythmias are thought to be a significant causal factor. Cardiac restitution, calculated from a surface electrocardiogram as QT/TQ, has been used as a measure of arrhythmia risk in humans and represents the ability of cardiomyocytes to recover between successive action potentials. The purpose of this study is to characterize changes in the QT interval and cardiac restitution ratio (CRR) in clinically normal Standardbred racehorses under typical racing conditions to determine if CRR is a viable biomarker to predict cardiac arrhythmias in racehorses.

Continuous electrocardiograms (ECGs) were previously collected from 42 Standardbred racehorses including time spent resting in the race paddock, warm-up exercise, recovery, live racing, and post-race recovery. Custom software was used to calculate RR interval, QT interval, and CRR for selected pairs of cardiac cycles. Instantaneous heart rate ranged from 26 at rest to 293 beats per minute during live racing. Multivariable logistic regression identified numerous significant associations which are undergoing additional analyses. Preliminary results show significant associations between both QT interval and CRR with racing gait, ECG channel, exercise period, age, and RR interval.

Insights gained from this in-depth restitution analysis will enhance understanding of the unique equine myocardial electrophysiology and arrhythmogenic predispositions. Next steps in this project include similar analysis of ECGs from Thoroughbred racehorses and changes in restitution variables immediately prior to the onset of naturally occurring complex ventricular arrhythmias.

Funding graciously provided by Equine Guelph.

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PRESENTER 15

Katherine Simpson

University of Surrey, Veterinary Student

The influence of early birth dates on participation and performance: A study of Thoroughbred foals born in 2018 entering UK races

AUTHOR NAME / AFFILIATION

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ABSTRACT

Within the Northern Hemisphere equine racing industry, stud farms often aim for early foal births, based on beliefs that this leads to better performance. Official Thoroughbred birthdates are set to January 1, and early births are thought to provide additional time for training and muscle growth before prestigious races at ages two and three. This practice, however, is costly and lacks a scientific consensus regarding its validity.

Our quantitative retrospective cohort study analysed a dataset of 52 Thoroughbred foals born February to April 2018 and followed till end of three-year-old race season. We assessed the impact of early birthdates on indicators of athletic ability including races entered, race earnings, official rankings, days to first start, wins, and placings. We found moderate positive correlations between early birthdates and overall earnings, and at three-year-old races alone, though no correlation was noted for two-year-olds alone. Additionally, early birthdates correlated with horses entering more two-year-old races.

A further correlation was shown between younger age at first race and the number of two-year-old races entered, and others suggested that foals born earlier may also start their careers sooner. This raises questions about the original motivations for pursuing early birthdates.

Our findings support the pursuit of early foal births for athletic success which could enhance current practices within the industry. Additionally, we indicate the need for further research on the impact of age at first race in conjunction with birthdate on athletic performance, as well as determining impacts on health and wellbeing of foals racing younger.

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PRESENTER 16

Louise Caplan
University of Calgary, Veterinary Student

Characterizing common blood-derived therapeutics from horses with Pituitary Pars Intermedia Dysfunction

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- Dr. Holly Sparks: Faculty of Veterinary Medicine, University of Calgary & McCaig Institute for Bone and Joint Health

ABSTRACT

Pituitary pars intermedia dysfunction (PPID) is an endocrine disorder affecting approximately 21% of horses over 15 years of age, leading to delayed shedding, immunocompromise, muscle wasting and often, the need to treat joint injury and osteoarthritis. Yet, traditional therapeutics such as corticosteroids carry an increased risk of causing laminitis. As an alternative, kits to process the patient's own blood in order to concentrate specific cells (such as platelets and leukocytes) as an "Orthobiologic" therapeutic are increasingly recommended in treating joint disease in horses. Yet, as PPID is known to affect the circulating immune cells, it is not known if orthobiologics produced from these patients are similar to that published in healthy horses. To explore this, we have collected blood from PPID-affected horses and age-matched healthy controls to produce Autologous Protein Solution (APS) and characterized the relative concentration of specific cell types as well as their cytokine and growth factor profile. A complete blood count on the peripheral blood and orthobiologic products occurred as well as an analysis of cytokines from the orthobiologics and conditioned media of peripheral blood mononuclear cell (PBMC) samples. The PBMCs were treated with inflammatory products including silica, LPS and IL-1. Concentrations of cytokines, platelets, red and white blood cells were compared between the PPID-affected and healthy horses. Findings indicate the presence of wide patient variability and donor health factors likely impacting the final product. This research aims to enhance our understanding of the cellular differences in autologous products for PPID-affected horses, aiding clinical decision-making.

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PRESENTER 17

Marine Rullier, DVM MSc

Université de Montréal, PhD Candidate

Fecal microbiota transplant as an adjunctive treatment of canine chronic pruritic dermatitis

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ABSTRACT

Background: Imbalances of the intestinal microbiota has been suggested to play a role in the inflammation process associated with canine chronic pruritic dermatitis (CPD). Re-establishing a healthy microbiota via fecal microbiota transplant (FMT) has been reported to improve clinical signs in both humans and dogs.

Objectives: Investigate the potential of FMT to change the intestinal microbiota composition of dogs with CPD.

Animals: Twenty-seven guide dogs (18 dogs with CPD and 9 healthy dogs) currently living in various foster homes or breeding facility were selected from a guide training institution.

Methods: Single blinded placebo-controlled clinical trial. Treatment group: 8 dogs with CPD received an FMT from a healthy donor by enema, and oral encapsulated FMT daily for 30 days. Placebo group: 9 dogs with CPD received an autologous FMT (with their own feces) by enema and oral capsules containing crushed kibbles. Control group: 9 healthy dogs. All dogs were fed the same diet. Fecal samples were collected before the FMT and 30 days after the first FMT. DNA was extracted for microbiota analysis.

Results: There were no significant differences in microbiota richness nor its diversity between the treatment and placebo groups. CADESI-04 lesion scores were lower in both groups. There was a significant difference in the dysbiosis index between the control group and the placebo group (p=0,0015) and between the control group and the treatment group (p=0,0001).

Conclusion: The FMT protocol used in this study was not able to induce changes in the microbiota of this population of dogs with CPD.

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PRESENTER 18

Sumit Jyoti

University of Prince Edward Island, PhD Candidate

Utilization of publicly available data to summarize spatio-temporal patterns of fish health events of Atlantic salmon (Salmo salar) reported by marine finfish industries in British Columbia (BC), Canada

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ABSTRACT

Introduction: Atlantic salmon aquaculture companies in British Columbia (BC) are required to report fish health events to Fisheries and Oceans Canada (DFO) as part of their licensing conditions. This study aimed to summarize these fish health events reported by Atlantic salmon farms in BC and identify spatial and spatio-temporal clusters.

Methods:We extracted publicly available data on fish health events in farmed Atlantic salmon from 2016 to 2022 from the DFO website. Descriptive analyses and retrospective global and local cluster analyses were conducted using Moran's I and scan statistics.

Results:A total of 265 fish health events were reported between 2016 and 2022. The annual incidence ranged from 5.60 (95% CI: 3.90−7.80) to 6.86 (95% CI: 4.70−9.60) events per 100 active site-months. The most commonly reported events were yellow mouth (60.75%; 161/265) and salmonid rickettsial septicemia (SRS) (15.47%; 41/265). Moran's I was positive and significant for yellow mouth, SRS, and overall fish health events at various distance bands. Most spatial and spatio-temporal clusters were identified in the west-central and southwestern regions of Vancouver Island.

Conclusion:While the overall trend of fish health events fluctuated slightly over the study period, it remained relatively stable. Our findings suggest that management practices, environmental conditions, and water quality may have contributed to increased reporting in certain regions. This study demonstrates the potential of publicly available data for risk mapping and understanding disease patterns in farmed Atlantic salmon in BC.

Keywords: cluster analysis, Atlantic salmon, infectious diseases, publicly available data

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PRESENTER 19

Amber Cliffe

University of Calgary, Veterinary Student

Predicting the impact of somatic cell count on milk production in Thailand

AUTHOR NAME / AFFILIATION

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- Dr. David C. Hall: Faculty of Veterinary Medicine, University of Calgary

ABSTRACT

The dairy industry in Thailand has seen immense growth since the 1970's and further development within the industry routinely focuses on increasing production potential. Therefore, understanding the factors that influence milk production is of great interest. Somatic cell count is one of the factors that can be used as a predictor for herd health and thus production.

This research aimed to build a model using regression techniques to predict milk production per cow using predictor variables including SCC, location, and milk composition factors (e.g., urea, fat%, and protein%). We hypothesized that increasing SCC is negatively associated with milk production per cow.

Data were obtained from the Government of Thailand from 2021-2024 totaling 335 125 observations from 25 cities. Four linear models (OLS estimator) were built using STATA v15; we assessed best fit by evaluating the F score, adjR-squared, and AIC values.

Linear regression analysis revealed a negative association (b= -0.7907, p<0.001) between logSCC and milk volume. A best-fit model with independent variables logSCC, city, urea (mg/ml) fat%, and protein% was selected with the lowest AIC value (AIC= 2194348, F=2708.99, Adj R-squared= 0.0391).

The linear regression models in this study agreed with previous studies that demonstrated increasing SCC was associated with decreased milk production (Rearte et al. 2022). We further quantified a milk volume decrease of 0.7907kg/cow/day for every one unit logSCC increase. Therefore, our results support Thai policy and interventions that aim to decrease SCC among dairy cattle to improve welfare, production and profits for Thai dairy farmers.

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PRESENTER 20

Narsimha Pujari

University of Saskatchewan, PhD Candidate

The X Factor: How Neuronal NUCB1 Regulates Sex-Specific Metabolism

AUTHOR NAME / AFFILIATION

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ABSTRACT

The sex-biased incidence of metabolic disorders, such as weight gain, diabetes, and cardiovascular diseases, is a well-documented phenomenon. For instance, male felines are more prone to diabetes, while female canines are at higher risk. Despite these differences, we lack a sex-specific treatment strategy for metabolic disorders. Our understanding of metabolism, regulated by neuroendocrine cells that communicate via hormones, is evolving. Nucleobindins (NUCBs), a family of insulinotropic proteins with conserved expression in neuroendocrine tissues, are linked to sex-specific weight gain and obesity in humans. However, the cells and mechanisms responsible for NUCBs' sex-specific roles in metabolism remain unknown, which prevents further development of sex-specific treatments.

The presence of paralogs (NUCB 1/2) in the vertebrates complicates research due to functional redundancy between the two related proteins. To address the functional redundancy, we use the fruit fly Drosophila melanogaster, which lacks NUCB2. Extensive genetic tools in this model also allow the manipulation of targeted cells.

Pan-neuronal knockdown of NUCB1 reduced the body fat in males, but female flies were unaffected. The conserved insulin-glucagon axis, which also regulates lipid metabolism in flies, was targeted to explore this sexual dimorphism. NUCB1 was knocked down in either insulin-producing cells or glucagon-producing ones. NUCB1 knockdown in the glucagon-producing cells resulted in a substantial sex difference in body fat. This difference was abolished when the sex of glucagon-producing cells was reversed, suggesting sex chromosomes mediate this effect.

In conclusion, NUCB1 regulates metabolism in a sex-specific manner via glucagon-producing cells, with the effect modulated by the sex chromosomes.

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PRESENTER 21

Sherry Khoddami

University of Prince Edward Island, MSc Student

"I felt like a lesser veterinarian": Veterinary students' perspectives on their relationship with animals used in veterinary education

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ABSTRACT

Introduction

Veterinary colleges use animals to teach students a range of handling and clinical skills. However, teaching procedures may involve some level of pain or distress to animals, which may result in moral distress for students. This study aimed to understand veterinary students' perspectives on 1) how the perceived quality of life of animals used for teaching affected their learning and emotional well-being, and 2) how their emotional well-being affected the care they provide for animals used for teaching. We conducted 10 focus groups and 2 interviews with 4th-year veterinary students (n = 43) participating in clinical rotations at two Canadian veterinary colleges. We analyzed the data inductively using template analysis and identified four themes. First, veterinary education was rooted in ethical and moral conflicts that caused students moral distress. Second, students' well-being and the welfare of animals used for teaching were intertwined, suggesting that harmful educational practices have negative implications for both. Third, teaching approaches, including supervision and purpose of procedures, affected students' well-being and their interactions with animals. Lastly, students valued their learning experiences with both institutionally owned live animals and alternatives (e.g., models, cadavers). However, non-institutionally owned live animals provided beneficial learning opportunities through purposeful procedures that minimized unnecessary harm to animals and promoted students' well-being. This study highlights veterinary students' perspectives on their relationship with animals used for teaching. We suggest that providing purposeful and ethical learning experiences with animals may support student well-being and learning, while minimizing the welfare consequences of housing animals for educational purposes.

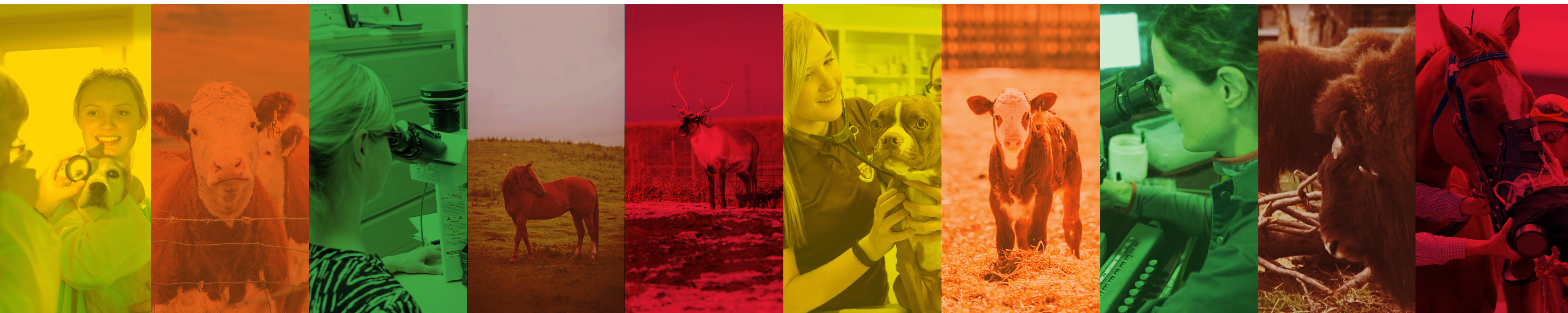**CEVSS** | Canadian Emerging Veterinary Scholars Summit

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