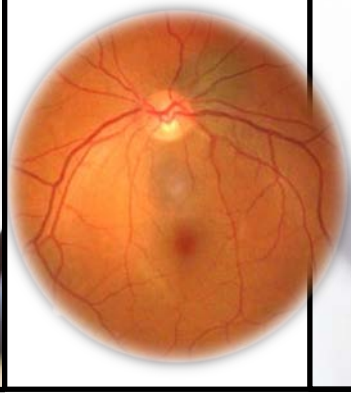
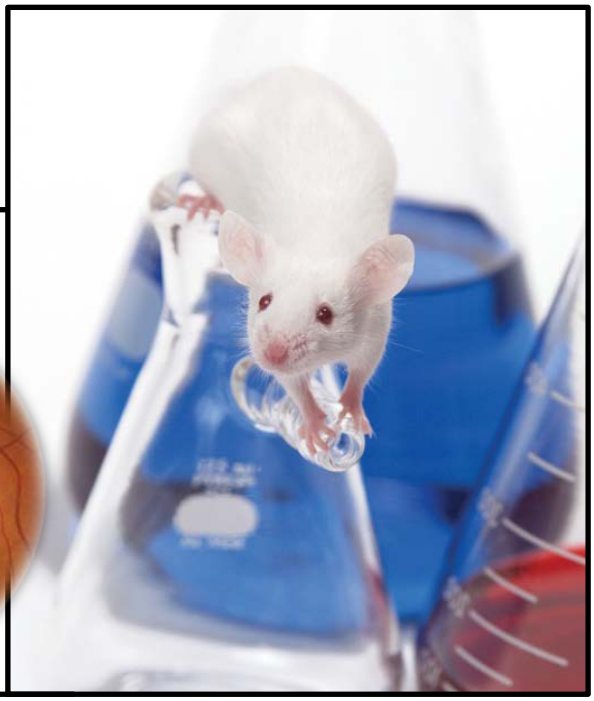
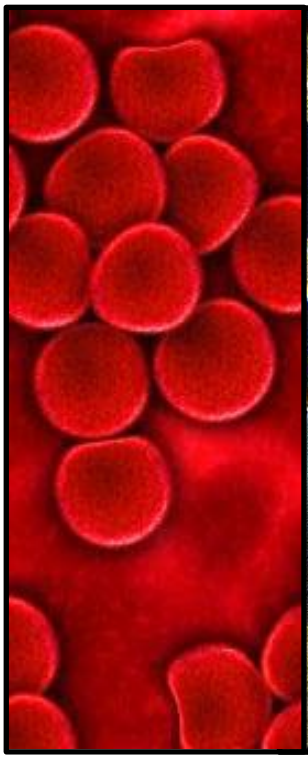
Cornell University
College of Veterinary Medicine





October 10, 2014



Clinical Investigators' Day

Cornell University
College of Veterinary Medicine

Welcome to the 2014 Clinical Investigators' Day, sponsored by the Cornell University College of Veterinary Medicine. The primary goal of this forum is to provide an opportunity for residents and interns to showcase ongoing investigations carried out at Cornell University College of Veterinary Medicine. It is our hope that greater insights will be gained in the breadth and depth of clinical investigations conducted at the College and will serve as a catalyst to promote greater interactions among colleagues with clinical and basic science research interests.

Organizing Committee
Dr. Elizabeth Buckles, Co-Chair
Dr. Jonathan Cheetham
Mr. Kim Eaton
Mr. Doug Fink
Dr. Ursula Krotscheck
Dr. Mary Martin, Co-Chair
Dr. Santiago Peralta
Dr. Tracy Stokol
Dr. Rory Todhunter
Ms. Judy Wood

The organizing committee thanks the following individuals who contributed to the success of the Day:
Mr. Jess Cisco
Mr. Dave Frank
Ms. Kathleen Hall
Ms. Dionne Henderson
Mr. Drew Kirby
Ms. Amanda Mott
Ms. Nancy Rice
Dr. Meg Thompson
Mr. Chad Westmiller

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We thank the following sponsors for their generous support and commitment to Clinical Investigators' Day

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PROGRAM SCHEDULE

Friday October 10, 2014
Lecture Hall III, Veterinary Research Tower

8:00am-8:30am Continental Breakfast (Lecture Hall III, Veterinary Research Tower Foyer)
8:35am-8:45am Welcome & Introductions – Dr. Elizabeth Buckles and Dr. Mary Martin, Co-Chairs
8:45am-9:10am **Presentation**

"CAREER PATHS TO ACADEMIA"
Dr. Andrew Miller, Assistant Professor, Department of Biomedical Sciences
and
Dr. Robert Ossiboff, Postdoctoral Associate, Department of Population Medicine and Diagnostic Sciences

9:15am-10:15am **Resident Presentations – Moderated by Dr. Susan Fubini**

9:15-9:30 PRESUMPTIVE FENBENDAZOLE TOXICOSIS IN THREE HOLSTEIN CALVES **Pg. 1**
Emily Barrell – Large Animal Medicine Resident

9:30-9:45 ALTERED MICROBIOMES IN BOVINE DIGITAL DERMATITIS LESIONS, AND THE GUT AS A POTENTIAL RESERVOIR OF BACTERIAL PATHOGENS **Pg. 2**
Martin Zinicola – Ambulatory and Production Medicine Resident

9:45-10:00 ULTRASONOGRAPHIC MEASUREMENT OF THE OPTIC NERVE SHEATH DIAMETER IN HORSES **Pg. 3**
Stacy Cooley – Diagnostic Imaging Resident

10:00-10:15 SEMI-AUTOMATED COMPUTED TOMOGRAPHY MEASUREMENT OF TOTAL FAT AND VISCERAL FAT IN LAMBS **Pg. 4**
Alana Rosenblatt – Diagnostic Imaging Resident

10:15am-10:30am **Break**

10:30am-11:30am **Resident Presentations – Moderated by Dr. Natasza Kurpios**

10:30-10:45 EVALUATION OF ANALGESIC EFFICACY OF FIROCOXIB, A SELECTIVE COX-2 INHIBITOR IN THE MOUSE MODEL OF INCISIONAL PAIN **Pg. 5**
Balu Reddyjarugu– Laboratory Animal Medicine Resident

10:45-11:00 EFFECTS OF VASOACTIVE THERAPY IN CONTINUOUS CARDIAC OUTPUT MONITORING BY PULSE CONTOUR-BASED ANALYSIS IN ANESTHETIZED PIGS **Pg. 6**
Alvaro Cisternas – Anesthesia Resident

11:00-11:15 TESTING THE EFFECTIVENESS OF NON-OPIOID ANALGESICS IN RAINBOW TROUT (ONCORHYNCHUS MYKISS) SUBJECTED TO ANESTHESIA AND SURGERY **Pg. 7**
Amy Rizzo – Laboratory Animal Medicine Resident

11:15-11:30 PROTECTION AGAINST DIETARY FAT-INDUCED DNA DAMAGE BY THE FANCONI ANEMIA PATHWAY **Pg. 8**
Elizabeth Moore – Laboratory Animal Medicine Resident

11:30am-12:30pm **Lunch & Presentations**

11:30-12:00 **"GRADUATE TRAINING PROGRAM IN COMPARATIVE MEDICINE"**
Dr. John Parker, Associate Professor of Virology, Baker Institute for Animal Health

- and -

"RESEARCH AND TRAINING OPPORTUNITIES BEYOND YOUR RESIDENCY"

Dr. Bettina Wagner, Associate Professor of Immunology
Associate Dean for Research and Graduate Education

12:00-12:30 **"THE REAL DEAL IN PERFORMING CLINICAL RESEARCH"**

Dr. N. Sydney Moise, Professor of Medicine, Cardiology
Section Chief, Cardiology, Department of Clinical Sciences

12:30-12:45 Break

12:45pm-1:30pm **Resident Presentations – Moderated by Dr. Andrew Miller**

12:45-1:00 CONVENTIONAL MONITORING OF NEUROMUSCULAR BLOCK IN ANESTHETIZED DOGS CANNOT RULE OUT RESIDUAL LARYNGEAL DYSFUNCTION **Pg. 9**
Daniel Sakai – Anesthesia Instructor

1:00-1:15 PULSE-PRESSURE-DERIVED CONTINUOUS CARDIAC OUTPUT MONITORING CANNOT RELIABLE DETECT ACUTE SEVERE HEMORRHAGE IN A PEDIATRIC SWINE MODEL **Pg. 10**
Alvaro Cisternas – Anesthesia Resident

1:15-1:30 REPORTING AND INTERPRETING RED BLOOD CELL MORPHOLOGY: IS THERE DISCORDANCE BETWEEN CLINICAL PATHOLOGISTS AND CLINICIANS? **Pg. 11**
Ashleigh Newman – Clinical Pathology Resident

1:30pm-1:45pm **Break**

1:45pm-2:30pm **Resident Presentations – Moderated by Dr. Erica Behling-Kelly**

1:45-2:00 EVALUATION OF A NOVEL CYSTEINE-INACTIVATED NEUROMUSCULAR BLOCKER IN CATS: EFFECTS ON LARYNGOSPASM AND HEMOGLOBIN SATURATION **Pg. 12**
Daniel Sakai – Anesthesia Instructor

2:00-2:15 COMPARISON OF BUPIVACAINE AND DEXMEDETOMIDINE FEMORAL AND SCIATIC NERVE BLOCKS VERSUS BUPIVACAINE AND BUPRENORPHINE EPIDURAL FOR STIFLE ARTHROPLASTY IN DOGS **Pg. 13**
Annatasha Bartel – Anesthesia Resident

2:15-2:30 ASSESSMENT OF HEMATOLOGICAL CONCENTRATING CAPABILITIES AND PLATELET ACTIVATION UTILIZING A COMMERCIAL PLATELET RICH PLASMA KIT ON CANINE BLOOD **Pg. 14**
Christopher Frye – Sports Medicine & Rehabilitation & Clinical Nutrition Resident

2:30pm-3:20pm **Key Note Speaker**

"MULTIDRUG-RESISTANT BACTERIAL INFECTIONS: FROM THE LAB TO THE PATIENT"

Dr. Constança Pomba
Associate Professor of Internal Medicine and Strategies of Antimicrobial Therapy
at the Faculty of Veterinary Medicine of the University of Lisbon, Portugal

3:20pm **Award Presentations and Reception**

Dean Michael Kotlikoff, Austin O. Hooey Dean of Veterinary Medicine

Keynote Speaker

Dr. Maria Constança Matias Ferreira Pomba, DVM, MSc, Ph.D., Associate Professor of Internal Medicine and Strategies of Antimicrobial Therapy at the Faculty of Veterinary Medicine of the Technical University of Lisbon, Portugal

Dr. Pomba earned her DVM from the Faculty of Veterinary Medicine of the Technical University of Lisbon in 1991, her MSc in Tropical Veterinary Medicine and Zootecnis in 1994 and her PhD in Veterinary Science there in 2002. Her area of research focuses on internal medicine, particularly in nephrology, urology and transfusion medicine and the study of antibiotic treatment of multidrug-resistant infections. Current research interests include clonal dispersal of drug-resistant bacterial pathogens and surveillance of antimicrobial resistance and molecular epidemiology of antimicrobial resistance genes in bacteria of animal origin and their public health repercussions. She heads a research group on Antimicrobial and Biocide Resistance at the Interdisciplinary Animal Health Research Centre, is the technical director of the Veterinary Blood Bank, and is responsible for the Laboratory of Resistance to Antibiotics and Biocides.

Dr. Pomba is a founding member of Feline Medicine and Internal Medicine of the Portuguese Association of Veterinarians and a member of the European Society of Veterinary Internal Medicine and the European Society of Veterinary Nephrology and Urology. She is vice-chair of the Antimicrobial Working Party and member of the Scientific Advisory Group on Antimicrobials of the European Medicine Agency. Her research funding is derived from government and national programs in Portugal.

Speakers

Dr. Sydney Moise, DVM, MS, Professor of Medicine, Chief of the Section of Cardiology, Department of Clinical Sciences, Cornell University

Dr. Moise received her DVM degree from Texas A&M University and an MS degree from Cornell University. She is board certified in both Cardiology and Internal Medicine from the American College of Veterinary Internal Medicine and is a member of the European Society of Veterinary Cardiology. Dr. Moise established the clinical program in veterinary cardiology at Cornell University and as the Director of the Cardiology Residency which has the primary mission of training future academic veterinary cardiologists. Dr. Moise's research has centered on spontaneous cardiac rhythm (normal and abnormal) in dogs, and recently has been involved in studies to understand the mechanisms of degeneration of the mitral valve in dogs. She was awarded the AVMA research award for arrhythmia studies and the Bourgelat Award for international contribution to the clinical practice of veterinary medicine. For more than five years Dr. Moise was Editor-in Chief of the international Journal of Veterinary Cardiology where she is now Associate Editor. She has authored more than 100 journal articles and book chapters. She is a past Norden Distinguished Teacher awardee and is extensively involved in the international aspects of academic veterinary cardiology including speaking world-wide, international organizations and training.

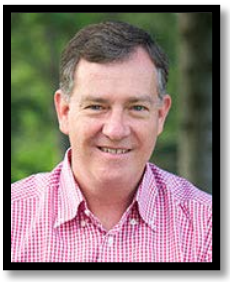
Robert "Oz" Ossiboff, DVM, PhD, DACVP, Postdoctoral Associate, Department of Population Medicine and Diagnostic Sciences, Section of Wildlife and Exotic Animal Medicine, Cornell University

Dr. Ossiboff graduated from Cornell's combined DVM/PhD program in 2010, receiving his Ph.D. in Comparative Biomedical Science studying virus:receptor interactions and virulence determinants in feline calicivirus. He subsequently entered Cornell's Anatomic Pathology residency, where he completed

(Speakers Continued – Ossiboff)

the first two years of his training, followed by an additional year of residency training at the Wildlife Conservation Society's Bronx Zoo. He was certified as a Diplomate of the American College of Veterinary Pathologists in 2013. Following the completion of his residency, Dr. Ossiboff completed a one year Fellowship in Molecular Pathology also at the Wildlife Conservation Society.

He recently accepted a postdoctoral research associate position in the Animal Health Diagnostic Center with Dr. Elizabeth Bunting and Dr. Ed Dubovi, where he will be investigating chytridiomycosis in Eastern Hellbenders in addition to working on a project establishing cell lines of exotic and endangered species with Dr. John Parker at the Baker Institute for Animal Health. As a veterinary student, "Oz" participated in the College's Leadership Program for Veterinary Students and the Cornell Veterinary Investigator Program. He was the recipient of the Anna Olafson Sussex Pathology Award in 2009, the Jacob Traum Award in 2010, and the CL Davis Scholarship award in 2012. His research interests include infectious diseases of exotic species and wildlife, with a particular interest in diseases of reptiles and amphibians. Oz has 12 peer reviewed publications.



John Parker, BVMS, Ph.D., Associate Professor of Virology, Baker Institute for Animal Health, Cornell University

Dr. Parker received his B.V.M.S. from the University of Glasgow, Scotland, in 1983 and held several international positions including consulting for the Cornell University Feline Health Center prior to receiving his Ph.D. from Cornell in 1999. Post-Doctoral research at the Baker Institute for Animal Health and Harvard Medical School followed. Dr. Parker also held an instructor position at the Harvard Medical School before joining the Cornell faculty at Baker Institute for Animal Health in 2003.

Fostering the career development of tomorrow's veterinary scientists is important to Dr. Parker. He has been an advisor to 19 graduate students, mentored more than 20 undergraduate students, and 9 post-doctoral associates/fellows in his laboratory. Dr. Parker teaches both undergraduates and in the veterinary curriculum. He is also the director of the Cornell Leadership Program for Veterinary Students and is director of the NIH supported institutional research training grant entitled "Graduate Training Program in Comparative Medicine." The latter is geared towards advanced research training of specifically for veterinarians.

Dr. Parker studies viruses and the ways in which animals respond to viral infection, laying the basic science groundwork for ways to improve diagnosis, treatment, and prevention of these diseases. His lab is focused on viruses that infect humans and animals, including reovirus and feline calicivirus, and the results of most of his projects can be broadly applied to benefit the health of animals and humans alike. His work has been supported by the Morris Animal Foundation, the Winn Foundation, The Burroughs Wellcome fund, US –Israel Binational Agricultural Research Development Fund, and the NIH.

Bettina Wagner, DVM, Dr. vet. med. Habil., Associate Professor in Immunology, Department of Population Medicine and Diagnostic Sciences; Associate Dean for Research and Graduate Education, Cornell University

Dr. Wagner was awarded her DVM in 1990 and Dr. vet. med. in Veterinary Immunology in 1993 from the School of Veterinary Medicine, Hannover, Germany. She has held several fellowships and research positions nationally and internationally. She was a visiting professor and Senior Research Associate at the Baker Institute for Animal Health prior to joining the Population Medicine and

(Speakers Continued – Wagner)

Diagnostic Sciences faculty in 2006. Dr. Wagner was the named the 2009-2011 Harry M. Zweig Assistant Professor in Equine Health. Dr. Wagner is first author on dozens of peer-reviewed articles, has been awarded several international patents and is the Director of the Serology/Immunology section at Cornell's Animal Health Diagnostic Center.

Dr. Wagner's laboratory focuses on research in equine immunology. She is particularly interested in immune responses and protective mechanisms in neonates and young foals. The disease models include intracellular pathogens, such as Equine herpesvirus type 1 (EHV-1), and allergic diseases especially Culicoides induced skin hypersensitivity. Major pathways that are investigated by her group are adaptive T-cell immunity, antibody isotype responses and cytokine regulation. Another major goal is the development of new immune reagents for horses and advanced technologies in veterinary diagnostics, such as the Lyme Multiplex assays for horses and dogs and assays for other infectious diseases, cytokines and immunoglobulin isotypes. Her grant funding has been derived from the USDA and Harry M. Zweig Memorial Fund for Equine Research.

Andrew Miller, DVM, Assistant Professor of Anatomic Pathology and the Anne Groot Sesquicentennial Fellow, Department of Biomedical Sciences, Cornell University

Dr. Miller joined the Cornell faculty in the fall of 2013. He completed a residency in veterinary anatomic pathology at Cornell in 2008 following the completion there of his DVM. Afterwards, he joined the faculty at the New England Primate Research Center, a division of Harvard Medical School, and simultaneously held an appointment in the Pathology Department of the Massachusetts General Hospital. He is a diplomate of the American College of Veterinary Pathologists (ACVP), and is involved nationally in the ACVP through the examination committee and other committees related to the national ACVP meeting. Dr. Miller's research is focused on studying mechanisms underlying neurologic disease, especially neoplasia, in companion animals focusing primarily on dogs. This is being done through histologic, immunohistochemical, and molecular studies between analogous tumors in dog and man. He maintains numerous collaborations with researchers at Beth Israel Deaconess Medical Center, Boston College, University of Georgia, and University of California, Davis. Dr. Miller has a strong interest in training veterinary students and pathology residents and preparing them for a career in comparative veterinary pathology. He believes this is best done through hands-on exposure to clinical cases and basic research techniques and strongly believes in the integration of these modalities into teaching.

Moderators

Andrew Miller, DVM, Assistant Professor of Anatomic Pathology and the Anne Groot Sesquicentennial Fellow, Department of Biomedical Sciences, Cornell University

(Moderators Continued)

Erica Behling-Kelly, DVM, PhD, Assistant Professor of Clinical Pathology, Department of Population Medicine and Diagnostic Sciences, Cornell University

Dr. Behling-Kelly has been an Assistant Professor of Clinical Pathology since 2011 after finishing a residency in Veterinary Clinical Pathology at the University of Wisconsin, Madison where she also received her Ph.D. in 2006 in Comparative Biomedical Sciences. She received her DVM in 2002 from the School of Veterinary Medicine, University of Georgia. She holds several memberships in professional associations including the International Society of Thrombosis and Hemostasis and diplomate status in the American College of Veterinary Pathologists.

Her research interests include Lipoproteins as markers and modulators of disease in domestic species, vascular biology, hemostasis and thrombosis, and molecular determinants of aggressive biological behavior in neoplastic cells. As a clinical pathologist, she is interested in advancing our understanding of disease processes as well as improving our ability to diagnose disease. Her laboratory currently focuses on determining the pathogenic potential and diagnostic utility of serum lipoproteins in domestic species. In two on-going projects, she is investigating lipoproteins in the dog, relative to their ability to promote thrombosis in hyperlipidemic diseases (such as hyperadrenocorticism) and the progression of renal disease. Other projects underway include investigating changes in lipoproteins during various life-stages in dairy cows and investigating the role of the erythrocyte and hemolysis in promoting thrombosis in the dog.

Susan L. Fubini, DVM, Professor of Large Animal Surgery, Section Chief of Large Animal Surgery, Department of Clinical Sciences, Cornell University

Dr. Fubini received her DVM in 1980 and was recognized as Alumna of the Year in 2013 from the University of Georgia. She completed her three-year intern and resident training at Cornell University prior to joining the College faculty. Dr. Fubini was appointed the College's Associate Dean for Academic Affairs in 2013.

She is a member of the Board of Regents of the American College of Veterinary Surgeons. She has served as a member of the College of Veterinary Medicine's College Research Council and was the Associate Chair for Promotion, Tenure, and Mentoring in the Department of Clinical Sciences. Dr. Fubini has mentored more than 50 interns and residents during her tenure at the College and in 1990 received the Norden Distinguished Teacher of the Year award. Fubini has co-authored a leading farm animal surgery text, authored or co-authored nine book chapters, and lead or co-authored 79 published studies. On dozens of occasions, she has accepted invitations to share her expertise at regional, state, national, or international conferences.

Natasza Kurpios, Ph.D., Robert Hovey Udall Assistant Professor, Department of Molecular Medicine, Cornell University

Dr. Kurpios was appointed assistant professor in the Department of Molecular Medicine in the College of Veterinary Medicine in 2009. She received her Ph.D. in Biochemistry and Biomedical Sciences at McMaster University, Hamilton, Ontario, and completed a postdoctoral fellowship at Harvard Medical School.

Currently, her research program addresses problems in developmental biology, specifically the mechanisms that drive intestinal coiling and vascular development of the midgut. Actively engaged with peers in the Vertebrate Genomics Group and the Cornell Stem Cell Program, Dr. Kurpios also collaborates with computational biologists and bioengineers across campus to model developmental changes and analyze the mechanical properties of tissue matrices influencing organ growth.

Judges

Rodrigo Carvalho Bicalho, DVM, PhD, Assistant Professor of Dairy Production Medicine, Department of Population Medicine and Diagnostic Sciences, Cornell University

Dr. Bicalho received his Ph.D. in 2008 in Comparative Biomedical Sciences from Cornell University College of Veterinary Medicine. After being awarded his DVM in 2002 from the Federal University of Goiás, Brazil, he completed a residency in Ambulatory and Production Medicine at Cornell. He is a member of several professional organizations both nationally and internationally, including the Lameness Committee of the American Association of Bovine Practitioners, American Dairy Science Association, and Regional Council of Veterinary Medicine, Goiás, Brazil. His research interests include production medicine, epidemiology, and microbiology. He has four primary focus areas: a) Bovine lameness, metritis, and mastitis. b) Factors affecting reproductive efficiency in dairy cows. c) Estrous synchronization. d) Microbial genomic and metagenomic study of infectious diseases. His work is supported by the USDA and corporate sponsors. Dr. Bicalho has 6 graduate students, 3 postdoctoral associates, and 3 residents in training. He was recently named the 2014 Zoetis Animal Health Award in Research Excellence recipient.

Ricardo de Matos, LMV, Lecturer in Zoological Medicine, Department of Clinical Sciences, Cornell University

Dr. de Matos received his LMV, graduating first in class, from the Faculdade de Medicina Veterinaria, Lisbon, Portugal in 2002. He completed an internship in Zoo, Wildlife and Exotic Animal Medicine in 2004 and a residency in Exotic Animal Medicine and Surgery in 2006 at Cornell University Hospital for Animals. Dr. De Matos received the 2006 Presentation Excellence Award from the first annual Resident Research Seminar.

In 2007, in collaboration with the Roswell Park Cancer Institute, he completed a Postdoc in medical oncology in the Department of Clinical Sciences, under the leadership of Professor Rodney Page. His efforts focused on investigating ovarian cancer in the avian model. He is a diplomate of the American Board of Veterinary Practitioners, Avian specialty, the European College of Zoological Medicine -Avian specialty, and European College of Zoological Medicine -Small Mammal specialty. He began his position as lecturer in 2008 and his special interests include medical oncology, backyard poultry medicine and surgery, and analgesia.

Rodney R. Dietert, Ph.D., Professor of Immunotoxicology, Department of Microbiology and Immunology, Cornell University

Dr. Dietert received the BS degree in Zoology from Duke University in 1974 and his Ph.D. from University of Texas at Austin in 1977. Dr. Dietert has been the Director of Graduate Studies for the Graduate Field of Immunology, Director of the Institute for Comparative and Environmental Toxicology, Director of the Program on Breast Cancer and Environmental Risk Factors and President of the Immunotoxicology Specialty Section of the Society of Toxicology.

Dr. Dietert's research and public health interests concern the protection of children from immune dysfunction-based chronic diseases. His initiatives include the study of developmental immunotoxicity of environmental chemicals and drugs and the adverse outcomes that result, identification of patterns of interlinked chronic diseases, improved approaches for immunotoxicity testing to protect against chronic diseases, application of fractal biology to the assessment of immune status and intervention strategies that can reduce the risk of chronic disease comorbidities during aging.

(Judges Continued – Deitert)

Dr. Dietert designed and co-taught the course *Tools for a Lifelong Career in Research*, which emphasizes contemplative practices to make the most of a researcher's career, for which he won the inaugural Excellence in Teaching Award for undergraduate and graduate teaching. With his wife Janice, Dr. Dietert authored *Science Sifting: Tools for Innovation in Science and Technology* which provides tools and strategies to facilitate creative thinking and innovation among scientists.

Angela L. McCleary-Wheeler, DVM, PhD, Assistant Professor of Oncology, Department of Clinical Sciences, Cornell University

Dr. McCleary-Wheeler is a recently appointed faculty member, having completed her 2014 Ph.D. in Biochemistry and Molecular Biology at the Mayo Graduate School College of Medicine. She is a 2011 Board Certified Oncologist and served for three years as a medical oncology resident at the North Carolina State College of Veterinary Medicine following a rotating small animal internship at the University of Missouri-Columbia College of Veterinary Medicine in 2005-2006. She received her DVM from Iowa State University.

Dr. McCleary-Wheeler's research interests focus on uncovering the molecular mechanisms driving cancer development and progression through detailed investigations into the regulatory mechanisms governing gene expression. She applies this approach to the study of the regulation and function of the oncogene GLI2. Her laboratory seeks to describe and understand the molecular mechanisms governing the activity of the GLI2 gene in cancer cells.

As veterinary medical oncologist, Dr. McCleary-Wheeler is also interested in how we can apply what is learned in the laboratory to our companion animals diagnosed with cancer, providing an opportunity to interact with both basic science researchers as well as clinicians. Finally, she enjoys teaching and interacting with students and trainees both in the laboratory and the clinic settings.

Scott Palmer, VMD, Adjunct Professor, Department of Population Medicine & Diagnostic Sciences, Cornell University; New York State Equine Medical Director

Dr. Palmer is a renowned veterinarian from New Jersey with more than three decades of experience in providing medical care for horses. As the recently appointed New York State Equine Medical Director, Dr. Palmer oversees the health and safety of horses at all New York State Thoroughbred and Standardbred racetracks.

Since graduating from the University of Pennsylvania, School of Veterinary Medicine in 1976, Dr. Palmer has worked as a staff clinician at the New Jersey Equine Clinic, serving as the Hospital Director from 1997 through 2013. He is a two-time recipient of the New Jersey Equine Practitioners Veterinarian of the Year award, as well as a recipient of the AAEP President's Award in 2009 and the AAEP Distinguished Service Award in 2010.

Dr. Palmer is board certified in equine practice by the American Board of Veterinary Practitioners. He has authored dozens of peer-reviewed publications and is a featured speaker at veterinary conferences world-wide. He is a member of several professional organizations and has held leadership positions in many, including the American Veterinary Medical Association, the American Association of Equine Practitioners, the American Board of Veterinary Practitioners, the New Jersey Veterinary Medical Association, and the New Jersey Association of Equine Practitioners. Dr. Palmer chaired the New York Task Force on Racehorse Health and Safety, which was formed at the request of Governor Andrew M. Cuomo in 2012 in the wake of 21 equine fatalities during Aqueduct's 2011-12 Winter Meet.

Emily Ann Barrell, DVM, MSc
eab335@cornell.edu

Institution and location	Degree	Year
Colorado State University, Fort Collins, CO	DVM	2011
Cornell University, Ithaca, NY	Residency	2012-Present

Current Position: Resident, Large Animal Internal Medicine, 3rd year

Abstract Title: PRESUMPTIVE FENBENDAZOLE TOXICOSIS IN THREE HOLSTEIN CALVES

Authors Names:
Emily A. Barrell[1], Rebecca E. Ruby[2], Belinda Thompson[3], Theresa Southard[2], Gillian A. Perkins[1]
[1]Department of Clinical Sciences, Cornell University, Ithaca, New York
[2]Department of Biomedical Sciences, Cornell University, Ithaca, New York
[3]Department of Population Medicine and Diagnostic Sciences, Cornell University, Ithaca, New York

Project Mentor:
Dr. Gillian Perkins, DVM, DACVIM, Department of Clinical Sciences

Abstract:
Fenbendazole, a benzimidazole that interferes with microtubule formation, is a widely used anthelminthic agent that is considered safe in ruminants. Albendazole, a closely related compound, interferes with mitotic activity in rapidly dividing cells, resulting in bone marrow hypoplasia and intestinal crypt epithelial necrosis. This abstract describes the clinical findings and necropsy examinations of three 2-month old Holstein calves that suffered adverse reactions secondary to fenbendazole administration. Prior to presentation, all three had received approximately four times the labeled dose of fenbendazole for presumptive *Giardia*-induced diarrhea. Progression of signs prompted referral, and two of the three animals were presented for evaluation. Signs included fever, tachycardia, dyspnea, profuse diarrhea, and recumbency. All three animals exhibited absolute neutropenia on hemogram. Despite treatment, one calf was euthanized due to poor response and one calf died. The third calf was treated on-farm and recovered over several weeks. Histologic examination of liver, lung, and intestinal epithelial cells revealed hyperplasia, cell atypia, mitotic figures that were often irregular, and/or ring mitosis and abnormally clumped chromatin. The bone marrow had severe changes with an overall cellularity of less than 5%. The feces were negative for *Salmonella* spp, bovine viral diarrhea virus, rotavirus, and parasites, and positive for bovine coronavirus. Based on histopathology and history of multiple animals affected, a toxic etiology was suspected. Based on clinical history the only common exposure among the three affected calves was repeated administration of high dose fenbendazole. This suggests that judicious use of fenbendazole in calves is warranted.

Martin H. Zinicola, DVM

mhz32@cornell.edu

Institution and location	Degree	Year
National University of Litoral, Argentina	DVM	2009
National University of Litoral, Argentina	Buiatrics specialist	2013
Cornell University, Ithaca, NY	Residency	2013-Present

Current Position: Resident, Ambulatory and Production Medicine, 2nd year

Abstract Title: ALTERED MICROBIOMES IN BOVINE DIGITAL DERMATITIS LESIONS, AND THE GUT AS A POTENTIAL RESERVOIR OF BACTERIAL PATHOGENS

Authors Names:
Martin Zinicola[1], Fabio Lima[1], Svetlana Lima[1], Charles Guard[1], Vinicius Machado[1], Marilia Gomez[1], Dörte Döpfer[2], Rodrigo Bicalho[1]
[1]Department of Population Medicine and Diagnostic Sciences, Cornell University, Ithaca, New York
[2]Department of Medical Sciences, University of Wisconsin, Madison, Wisconsin

Project Mentor:
Rodrigo Bicalho,DVM, PhD, Department of Population Medicine and Diagnostic Sciences

Abstract:

Introduction

Bovine digital dermatitis (DD) is the most relevant infectious disease associated with lameness affecting the welfare of cattle worldwide. Here, we characterize the microbiome of healthy skin and lesions from dairy cows affected with different stages of DD and we also identified DD-causing Treponema in rumen and fecal samples.

Material and Methods

A total of 140 biopsies (51 healthy skin and 89 DD lesions) samples were collected from Holstein dairy cows housed in three different dairy farms. Rumen fluid (n= 8) and fecal (n=14) samples were also collected. DNA was extracted and the microbiome was determined by shotgun and 16S metagenomic techniques using Illumina MiSeq platform.

Results and Discussion

Discriminant analysis revealed that microbiomes of healthy skin, active and inactive DD lesions were completely distinct. *Treponema* spp. were found in greater relative abundance in active DD lesions when compared with healthy skin and inactive DD lesions and these *Treponema* species were nearly ubiquitously present in rumen and fecal microbiomes. *Candidatus amoebophilus asiaticus,* a bacterium not previously reported in DD lesions, was encountered in high relative abundance in active and inactive lesions but not in healthy skin. In conclusion, our results indicate that there is particular group of six *Treponema spp*. (*T. denticola, T. maltophilum, T. medium, T. putidum, T. phagedenis and T. paraluiscuniculi*) that dominate active DD lesions and these *Treponema* species are nearly ubiquitously found in rumen and fecal microbiomes, suggesting that the gut could be a reservoir for microbes involved in DD pathogenesis.

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Institution and Location	Degree	Year
Oregon State University, Corvallis, OR	DVM	2010
Oregon State University, Corvallis, OR	Internship	2012
Cornell University, Ithaca, NY	Residency	2012-present

Current Position: Resident, Diagnostic Imaging, 3rd year

Abstract Title: ULTRASONOGRAPHIC MEASUREMENT OF THE OPTIC NERVE SHEATH DIAMETER IN HORSES

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Project Mentor:
Peter V. Scrivani, DVM, DACVR, Department of Clinical Sciences

Abstract:
Early diagnosis of elevated intracranial pressure (ICP) and the ability to monitor treatment response is critical to preventing progressive brain injury due to ICP induced reduction in cerebral perfusion. In people, the detection of enlargement of the optic nerve sheath diameter (ONSD) by transpalpebral ultrasonography is a highly accurate test for elevated ICP. Additional benefits are noninvasiveness, accessibility, affordability, and lack of requirement for general anesthesia. Our study aims were to demonstrate the feasibility of making this measurement stall-side in live horses and establish a reference range based on age and body weight. The study design was prospective, observational, and cross-sectional. Two blinded observers used ultrasonography to measure the ONSD of both eyes of horses of various ages and body weights and without clinical signs of ocular disease or elevated ICP. Repeatability was assessed as the mean difference of duplicated measures. Agreement within and between observers was assessed using Bland-Altman plot analysis. Correlation between ONSD and age or body weight was assessed using Pearson's correlation. The sample population consisted of 31 horses of different breeds. In all horses, the ONSD ranged between 3-6 mm for both eyes and both observers. The mean difference (limits of agreement) between measures of ONSD by two observers was -0.1 (-0.8 to 0.7) mm for the left and 0.0 (-0.8 to 0.8) mm for the right eyes. ONSD increased with age and body weight ($P<0.02$). Ultrasound measurement of ONSD was repeatable and should be evaluated further for its ability to identify horses with high ICP.

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University of Queensland, Brisbane, Australia	BVSc	2005
Cornell University, Ithaca, NY	Residency	2012-present

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Abstract Title: SEMI-AUTOMATED COMPUTED TOMOGRAPHY MEASUREMENT OF TOTAL FAT AND VISCERAL FAT IN LAMBS

Authors Names:

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Project Mentor:

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Abstract:

Body fat content is a predictor or outcome of disease, metabolic processes, and therapeutic responses. Computed tomography (CT) allows noninvasive measurement of body fat, with differentiation of metabolically active visceral fat from total fat. Common protocols in people whereby fat percentages are estimated from a single CT slice might be an invalid assessment of whole-body values, and is unlikely repeatable in growing animals. An alternative is acquiring whole-body volumetric data, which is easily obtained using modern CT scanners but laborious to analyze manually. The aim of this method comparison study was to compare semi-automated computer analysis of whole-body volumetric CT data to carcass analysis in lambs, which are a model for intrauterine growth retardation. Twelve lambs underwent duplicate whole-body CT, euthanasia, and carcass analysis by dissection and chemical analysis. CT measures of total-fat and visceral-fat content were obtained using a newly developed semi-automated computer algorithm. Agreement between methods was assessed by Bland-Altman plot analysis. CT systematically underestimated total-fat and visceral-fat weights compared to chemical analysis, and the limits of agreement exceeded ±10% of the mean fat weight. Compared to dissected weight, CT produced similar results for visceral-fat weight. The two CT acquisitions were repeatable for total-fat and visceral-fat volume, as the mean difference of repeated measures was approximately zero. Carcass analysis and semi-automated CT measurement are not interchangeable for quantifying body fat contents. However, we predict that CT can be used to monitor relative changes in body fat serially in the same lamb because the measures are noninvasive and repeatable.

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Institution and location	Degree	Year
ANGR Agricultural University, Tirupati, India	BVSc	1999
University of Georgia, Athens, GA	MS	2008
Educational Commission for Foreign Graduates	DVM	2009
Cornell University, Ithaca, NY	Residency	2012-present

Current Position: Resident, Laboratory Animal Medicine, 3rd year

Abstract Title: EVALUATION OF ANALGESIC EFFICACY OF FIROCOXIB, A SELECTIVE COX-2 INHIBITOR IN THE MOUSE MODEL OF INCISIONAL PAIN

Authors Names:
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Project Mentor:
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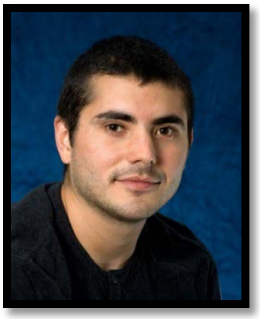
Todd J. Pavek, DVM, DACLAM, Center for Animal Resources and Education (Co-mentor)

Abstract:
Pain management in laboratory animals is generally performed using opioids and/or non-steroidal anti-inflammatory (NSAID) drugs. However, opioid use is hindered by controlled substance requirements and a relatively short duration of action. In this study, we evaluated the analgesic efficacy of firocoxib (a COX-2 selective NSAID) relative to buprenorphine in the mouse model of plantar incisional pain by objective measurement of mechanical allodynia and thermal hyperalgesia using electronic von Frey and Hargreaves equipment, respectively. Our experimental design included five groups (n=10 mice/group) – i) Firocoxib @10 mg/kg (F10) i.p. every 24 hours [q24h], ii) Firocoxib @20 mg/ kg (F20) i.p. q24h, iii) Buprenorphine @0.2mg/kg (Bup) s.c. q8h, iv) Normal Saline i.p. q24h and v) sham group (anesthesia, no incision) treated with firocoxib 20 mg/kg i.p. once q24h. All mice underwent nociceptive response assays examining mechanical allodynia and thermal hyperalgesia at -24 (baseline), 4, 24, 48 and 72 hours post-surgery. All drugs were administered preemptively and continued up to 72 hours post-surgery. Buprenorphine provided alleviation ($p<0.05$) from allodynia at all-time points post incision. F10 alleviated allodynia at 4, 24, and 48h post-incision while F20 alleviated allodynia at 24, 48, and 72h. For thermal hyperalgesia, none of the drug groups provided alleviation at 4h. With the exception of F10 at 24h ($P=0.19$), thermal hyperalgesia was alleviated for all drug groups at 24, 48, and 72h. Thus, our results indicate that once daily firocoxib administration alleviates pain resulting from soft tissue injury in mice and may be a suitable alternative to buprenorphine dosing at q8h.



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Institution and location	Degree	Year
Santo Tomas University, Santiago, Chile	DVM	2008
Cornell University, Ithaca NY	Internship	2011-2012
Cornell University, Ithaca NY	Residency	2013-present

Current Position: Resident, Anesthesiology, 2nd year

Abstract Title: EFFECTS OF VASOACTIVE THERAPY IN CONTINUOUS CARDIAC OUTPUT MONITORING BY PULSE CONTOUR-BASED ANALYSIS IN ANESTHETIZED PIGS

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Project Mentor:
Manuel Martin-Flores,MV, DACVA, Department of Clinical Sciences (Mentor)
Robin D. Gleed, BVSc, MRCVS, DACVA, Department of Clinical Sciences (Co-Mentor)

Abstract:
Continuous cardiac output (CO) facilitates clinical decision making in hemodynamically unstable patients. However, pulse pressure-based CO might be susceptible to changes in the pressure waveform induced by vasoactive therapies. We examined whether it is necessary to recalibrate a pulse pressure-based CO monitor during vasoactive therapy.

Ten piglets (6.6-10.1 kg) were anesthetized with dexmedetomedine, ketamine and isoflurane. Initially CO was measured by transpulmonary ultrasound-dilution. Thereafter, continuous CO was obtained simultaneously with two monitors from the same femoral arterial waveform; one monitor was recalibrated (CO_{CAL}) after each vasoactive intervention while the other monitor was not recalibrated (CO_{NOCAL}). Piglets received phenylephrine (PE; 1 or 3 μg kg^{-1} m^{-1}) and sodium nitroprusside (SNP; 1 or 5 μg kg^{-1} m^{-1}), in random order. CO, HR, MAP, and systemic vascular resistance (SVR) during each infusion were compared with baseline values (paired t-tests). Bias, limits of agreement (LOA) and percentage error between simultaneous CO_{CAL} and CO_{NOCAL} were examined with Bland-Altman plots.

PE infusion significantly increased CO (43.8%), HR (36.8%), and MAP (43.1%), while SNP administration did not produce significant changes. There was no bias between monitors at baseline; but bias decreased to -0.025 and -0.021 L m^{-1} during PE and SNP administration, respectively. The LOA increased substantially during drug administration. Percentage error increased from ≤5.3% at baseline to 32% and 27% during PE and SNP, respectively.

Even mild changes in arterial blood pressure and CO adversely affected the performance of an uncalibrated continuous CO monitor. Pulse pressure-based CO monitors should be recalibrated during vasoactive therapy.

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Current Position: Resident, Laboratory Animal Medicine, 2nd year

Abstract Title: TESTING THE EFFECTIVENESS OF NON-OPIOID ANALGESICS IN RAINBOW TROUT (ONCORHYNCHUS MYKISS) SUBJECTED TO ANESTHESIA AND SURGERY

Authors Names:
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Project Mentors:
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Paul Bowser, PhD, Department of Microbiology and Immunology

Abstract:
Techniques to manage pain in fish are still in their infancy. Opioid analgesics have been shown to ameliorate aversive behaviors and physiologic changes when fish are exposed to noxious stimuli. However, the opioid agents are controlled substances requiring special licensing, reporting requirements, and security measures. If non-controlled agents such as nonsteroidal anti-inflammatory drugs (NSAIDs) can be proven safe and effective, this may encourage wider use of analgesics in fish. To determine the effectiveness of three different NSAIDs in managing pain, 48 rainbow trout underwent an exploratory celiotomy using MS-222 anesthesia. Fish were randomly assigned to one of 4 treatment groups with 12 fish per group: flunixin (0.5 mg/kg), ketorolac (0.5 mg/kg), ketoprofen (2 mg/kg), or saline. At specific time points before and after surgery the behavior of the fish was monitored for vertical position in the water, respiratory rate, and response to food (presentation of three pellets). Clinical pathology was assessed one week before surgery and 48 hours after surgery. Fish were euthanized at 14 days after surgery using MS-222 and tissues were collected for histopathology. No significant differences existed between the treatment groups for behavioral observations or histopathology. In evaluating clinical pathology, postoperative phosphorus levels were shown to be significantly higher in the control saline treatment group than the flunixin treatment group. Although the NSAID treatments were not proven to be more effective in managing pain than the saline treatment, it was demonstrated that the NSAIDs had no adverse effects on the health of the fish.

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University of Kentucky, Lexington, KY	BS	2008
Cornell University, Ithaca, NY	DVM	2012
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Abstract Title: PROTECTION AGAINST DIETARY FAT-INDUCED DNA DAMAGE BY THE FANCONI ANEMIA PATHWAY

Authors Names:
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Project Mentor:
Robert Weiss, PhD, Department of Biomedical Sciences

Abstract:
Fanconi anemia (FA) is a genomic instability syndrome affecting 1 in 131,000 people in the U.S. FA phenotypes include developmental defects, bone marrow failure, cancer predisposition, and metabolic disorders. The FA pathway becomes activated by DNA replication stresses and plays a major role in responding to interstrand DNA crosslinks (ICLs). FA patients are hypersensitive to exogenous genotoxins; however, the endogenous sources of damage repaired by the pathway remain poorly characterized. We tested the hypothesis that the FA pathway protects against DNA damage caused by lipid metabolism using a mouse model lacking *FancD2*, which encodes a central component of the pathway. *Fancd2*$^{-/-}$ and wildtype (WT) mice were continued on standard diet (SD) or challenged with a high fat, high cholesterol diet (HFD) at weaning, which rapidly led to hepatic steatosis and hepatitis. In a long term HFD trial, *Fancd2*$^{-/-}$ mice had decreased survival compared to WT mice (p=0.01). A preliminary cohort of *Fancd2*$^{-/-}$ mice fed HFD for ten weeks had increased hepatic pathology relative to WT controls, including bile duct hyperplasia, neutrophil infiltration, and lipogranuloma formation, and hepatocellular apoptosis, suggesting that the FA pathway plays a role in protecting against HFD induced damage. We propose that reactive oxygen species and lipid peroxidation products, which can cause DNA damage including ICLs, are a source of endogenous damage repaired by the FA pathway. The HFD hypersensitivity in *Fancd2*-deficient mice described here provides a powerful opportunity to define the roles of the FA pathway in protecting against HFD-induced DNA damage.

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Institution and location	Degree	Year
University of Sao Paulo, Sao Paulo, Brazil	MV	2006
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Cornell University, Ithaca, NY	Residency	2014

Current Position: Anesthesia Instructor

Abstract Title: CONVENTIONAL MONITORING OF NEUROMUSCULAR BLOCK IN ANESTHETIZED DOGS CANNOT RULE OUT RESIDUAL LARYNGEAL DYSFUNCTION

Authors Names:
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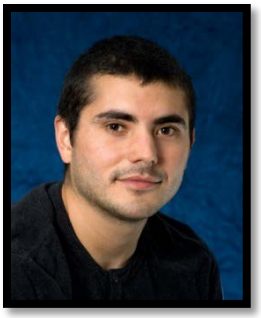
Project Mentor: Manuel Martin-Flores, MV, DACVA, Department of Clinical Sciences

Abstract:
Incomplete recovery from neuromuscular blocking agents (NMBA) increases the risks for upper airway collapse, hypoxia and tracheal aspiration. Conventionally, recovery of laryngeal function from NMBA is not measured directly; instead, neuromuscular function is measured at a limb and the findings extrapolated. We compared recovery times from rocuronium-induced block at the larynx with those at the pelvic limb in dogs.

Six adult beagles (two males), 7.6-9.4 kg, were anesthetized with dexmedetomidine and isoflurane. Neuromuscular block was induced with 0.6 mg kg^{-1} rocuronium, intravenously. The peroneal and recurrent laryngeal nerves were stimulated simultaneously in a train-of-four (TOF) mode every 15 seconds and the amplitudes of the electromyographic (EMG) responses were measured. Fade during TOF (TOF_{FADE}) was quantified to assess adequacy of recovery from the NMBA. Time from rocuronium injection to spontaneous recovery of TOF_{FADE} to 0.7 and 0.9 at the larynx and pelvic limb were compared with paired t-tests, alpha = 0.05. All data were parametric.

Recovery to TOF_{FADE} of 0.7 took 30.8 ± 8 (mean ± SD) and 46.2 ± 16 minutes at the pelvic limb and larynx, respectively, ($p < 0.02$). The time to TOF_{FADE} 0.9 was 34.5 ± 8 and 52.5 ± 19 minutes at the pelvic limb and larynx, respectively ($p < 0.02$).

We conclude that during spontaneous recovery from NMBA return of the EMG evoked in the larynx is delayed substantially with regard to that in the pelvic limb. Hence, when the limb is fully recovered, the protective reflexes of the larynx are likely still obtunded.



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Santo Tomas University, Santiago, Chile	DVM	2008
Cornell University, Ithaca NY	Internship	2011-2012
Cornell University, Ithaca NY	Residency	2013-present

Current Position: Anesthesiology Resident, 2nd year

Abstract Title: PULSE PRESSURE-DERIVED CONTINUOUS CARDIAC OUTPUT MONITORING CANNOT RELIABLY DETECT ACUTE, SEVERE HEMORRHAGING IN A PEDIATRIC SWINE MODEL

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Project Mentor:
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Robin D. Gleed, BVSc, MRCVS, DACVA, Cornell University, Department of Clinical Sciences (Co-Mentor)

Abstract:
Cardiac output can be calculated continuously from the pulse pressure waveform (CCO_{PP}) using coefficients based on hemodynamic models. Calibration of CCO_{PP} might be required during hemodynamic changes due to alterations in pulse pressure waveforms. The purpose of the study was to compare uncalibrated CCO_{PP} with CO measured by the transpulmonary ultrasound dilution technique (CO_{UD}) during blood depletion/repletion.

In eight anesthetized piglets (7.9±1.16 kg) both CO_{UD} (Stewart Hamilton method) and CCO_{PP} were measured simultaneously at baseline, after sequential removal of 15 and 30ml kg^{-1} of blood, and after volume replacement (30ml kg^{-1} of blood). CCO_{PP} was not recalibrated during these procedures. The effects of blood volume depletion/repletion on CO_{UD}, MAP, HR and systemic vascular resistance (SVR) were evaluated with ANOVA for repeated measures. Bias and limits of agreement (LOA) between paired CO_{UD} and CCO_{PP} values were assessed with Bland-Altman plots. The ability of CCO_{PP} to track changes during hemorrhage and blood administration was analyzed with a 4-quadrant plot. Pigs were euthanized after data collection.

Blood depletion (15 and 30ml kg^{-1}) significant decreased CO_{UD} and MAP ($p < 0.05$) with no significant changes in HR or SVR. After blood repletion, all values returned to baseline except MAP, which exceeded baseline. During hemorrhage, CCO_{PP} overestimated CO_{UD} by 25-68%, with wide LOA. During blood depletion or repletion, CCO_{PP} did track changes in CO_{UD} only 77% of the time.

Recalibration of CCO_{PP} is necessary if blood volume changes substantially. Uncalibrated CCO_{PP} cannot reliably detect reductions in blood volume.

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University of Pennsylvania, Philadelphia, PA	VMD	2010
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Cornell University, Ithaca, NY	Residency	2012-present

Current Position: Resident, Clinical Pathology, 3rd year

Abstract Title: REPORTING AND INTERPRETING RED BLOOD CELL MORPHOLOGY: IS THERE DISCORDANCE BETWEEN CLINICAL PATHOLOGISTS AND CLINICIANS?

Authors Names:
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Project Mentor:
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Abstract:
Background Clinical pathologists (CPs) report RBC morphologic (RBC-M) changes to assist clinicians in prioritizing differential diagnoses. However, reporting is subjective, semi-quantitative, and potentially biased. Reporting decisions vary among CPs, and reports may not be interpreted by clinicians as intended.

Objectives The aims of this study were to survey clinicians and CPs about RBC-M terms and their clinical value, and identify areas of agreement and discordance.

Methods Online surveys were distributed to small animal clinicians via the Veterinary Information Network and to CPs via the ASVCP listserv. A quiz assessed understanding of RBC-M terms among respondent groups. Descriptive statistics were used to analyze responses to survey questions, and quiz scores were compared among groups.

Results Responses were obtained from 1662 clinicians and 82 CPs. Both groups considered some terms, e.g., agglutination, useful, whereas only CPs considered other terms, e.g., ghost cells, useful. A majority of respondents from both groups interpreted certain terms, e.g., Heinz bodies, correctly, whereas a majority of clinicians misinterpreted others, e.g., eccentrocytes. CPs often do not report RBC-M they consider insignificant, when present in low numbers. Twenty-eight percent of clinicians think CPs review all blood smears, while 19% of CPs report reviewing all smears.

Conclusions Important differences about the clinical relevance of certain RBC-M terms exist between clinicians and CPs. Inclusion of interpretive comments on CBC reports is the clearest way to ensure that RBC-M changes are interpreted as intended by the CP. Reporting practices should be examined critically to improve communication, transparency, and ultimately medical decisions.

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Institution and location	Degree	Year
University of Sao Paulo, Sao Paulo, Brazil	MV	2006
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Cornell University, Ithaca, NY	Residency	2014

Current Position: Anesthesia Instructor

Abstract Title: EVALUATION OF A NOVEL CYSTEINE-INACTIVATED NEUROMUSCULAR BLOCKER IN CATS: EFFECTS ON LARYNGOSPASM AND HEMOGLOBIN SATURATION

Authors Names:
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Project Mentor:
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Abstract:
Laryngospasm impedes orotracheal intubation. Traditional neuromuscular blocking agents prevent laryngospasm and facilitate intubation, but cause apnea that usually requires mechanical ventilation. Gantacurium is a novel, cysteine-inactivated neuromuscular blocker of ultra-short duration. We investigated if it can be used to blunt laryngospasm while causing only brief apnea that does not require mechanical ventilation and does not cause hemoglobin desaturation.

Eight adult short-hair cats were anesthetized with dexmedetomidine/propofol. Laryngospasm was evoked by spraying the larynx with 0.3 mL of sterile water at baseline and after administration of gantacurium 0.1, 0.3 and 0.5 $mg \cdot kg^{-1}$, IV. The presence or absence of laryngospasm was observed via fibroscopy. Duration of apnea and hemoglobin saturation was measured after each laryngeal evaluation. The incidence of laryngospasm was 100% at baseline and after gantacurium 0.1 $mg \cdot kg^{-1}$. Gantacurium 0.3 and 0.5 $mg \cdot kg^{-1}$ reduced that incidence to 37% ($P=0.2$) and 0% ($P<0.01$), respectively. The duration of apnea after gantacurium 0.1 $mg \cdot kg^{-1}$ was [mean (SE)] 15 (6) seconds, not significantly longer than baseline. Gantacurium 0.3 and 0.5 $mg \cdot kg^{-1}$ produced apnea of 2 (1) and 3 (1.5) minutes, respectively ($P<0.001$). Hemoglobin desaturation did not occur in any cat.

The results of this study reveal that gantacurium 0.5 $mg \cdot kg^{-1}$ can prevent laryngospasm without causing prolonged apnea or hemoglobin desaturation in cats. Hence, gantacurium might have a role in improving the quality of tracheal intubation while minimizing the risks of apnea and hypoxia.

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Queen's University, Ontario, Canada	BScH	2002
University of Edinburgh, Edinburgh, Scotland	BVM&S	2008
Royal College of Veterinary Surgeons, England	MRCVS	2008
Small Animal Rotating Internship, Ontario, Canada	Internship	2012
Cornell University, Ithaca, New York	Residency	2012-present

Current Position: Resident, Anesthesiology, 3rd year

Abstract Title: COMPARISON OF BUPIVACAINE AND DEXMEDETOMIDINE FEMORAL AND SCIATIC NERVE BLOCKS VERSUS BUPIVACAINE AND BUPRENORPHINE EPIDURAL FOR STIFLE ARTHROPLASTY IN DOGS

Authors Names:
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Project Mentor:
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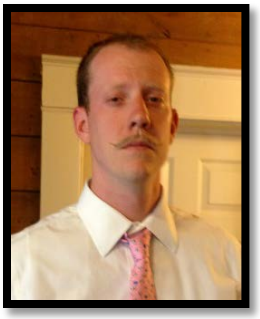
Abstract:
Objective To compare the quality of anesthesia and analgesia of a femoral and sciatic nerve block (FS) versus an epidural injection (EPI) in dogs undergoing elective stifle arthroplasty.

Methods Twenty-six dogs were randomly assigned to groups FS or EPI. Data were collected for a 24h period and included intra-operative cardiorespiratory variables, post-operative behavioral variables, pain scores (Glasgow Composite Scale), sedation scores, and opioid consumption. Rescue analgesia was administered whenever pain scores were ≥6/24. Additionally, the frequency of adverse side-effects was recorded.

Statistical Analyses Parametric and non-parametric data were analyzed by the two-sample Student's t-test and Wilcoxon rank sum test, respectively. For Yes/No variables, e.g. additional analgesia required, the Fisher's exact test was used. Non-parametric continuous data, e.g. time to return to normal behaviors, were analyzed by the Wilcoxon rank sum test.

Results No differences were found amongst any of the variables evaluated. Nine (69%) and eight (61%) patients in the FS and EPI groups, respectively, needed no additional analgesia within the 24h observation period. Most patients requiring rescue analgesia did so within the first 4h post-recovery; only one patient in the EPI group required supplemental analgesia more than 4h after extubation. One patient in each group did not urinate for 24h.

Discussion Our results suggest that either technique has the potential to provide sufficient analgesia for up to 24h, however, patient observation is still recommended. All patients in our study met discharge criteria at 24h after extubation, based on normal physiological and behavioral parameters as well as patient comfort.



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Institution and location	Degree	Year
Cornell University	DVM	2011
Cornell University	Resident	2014-present

Current Position: Dual Resident: Sports Medicine and Rehabilitation and Clinical Nutrition, 1st year

Abstract Title: ASSESSMENT OF HEMATOLOGICAL CONCENTRATING CAPABILITIES AND PLATELET ACTIVATION UTILIZING A COMMERCIAL PLATELET RICH PLASMA KIT ON CANINE BLOOD

Authors Names:
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Abstract Title:

Introduction Canine platelet rich plasma (PRP) is used to treat a variety of orthopedic disorders. There is little data confirming reproducibility (platelet, red blood cell or white blood cell enrichment) or platelet activation status in the various kits utilized.

Material Methods Venipuncture (cephalic/jugular) was performed on 20 client-owned dogs (all dogs over 20 kgs and > 3 years) to examine whole blood and concentrated PRP recovery of all major hematological cell types and platelets, utilizing the Terumo APC-30 processing kit. Platelet activation was assessed on fifteen samples (P selectin and Annexin V). Differences between whole blood and PRP, jugular vs cephalic draw PRP, and sedated and unsedated dogs were assessed using student t-tests.

Results No differences in PRP enrichment were observed based on sedation or site of blood draw. Platelet enrichment was approximately 6.2 fold (62.4 $\pm$ 16.2% recovery). Red blood cells were diminished 2.7 fold (3.7% $\pm$ 0.9 recovery). Total WBC enrichment was 3.1 fold (31.2 $\pm$ 10.3% recovery). Granulocyte and lymphocyte enrichment was 1.9 fold (18.9 $\pm$ 6.8% recovery) and 5.9 fold (58.5% $\pm$ 10.1 recovery) respectively. The percentage of platelet activation based on P selectin and Annexin V staining was 25.5 $\pm$ 32.0%; 9.4 $\pm$ 12.3% for whole blood, and 4.5 $\pm$ 6.6%; 3.6 $\pm$ 0.7% for PRP, respectively.

Conclusions Reproducibility of this specific kit was confirmed and platelet activation status demonstrated that platelets remain quiescent in PRP. Although there is modest WBC enrichment, the majority are not granulocytes, suggesting that kit can be utilized for quality PRP enrichment.

Declarations The research was performed under an approved IACUC protocol at Cornell University and funding was provided by Terumo.