

Poster ID: 221

Poster Code: MB1VST

Presenter Name: Jon LaCour

Author: J. LaCour, J. Flanagan, K. Beckers, K. Crissman, J. Sones

Title: Lactobacillus Supplementation Effects on Maternal-Fetal Outcomes of the BPH/5 Preeclamptic Mouse Model

Affiliation: Veterinary Clinical Sciences, School of Veterinary Medicine Louisiana State University

Pennington Biomedical Research Center Louisiana State University

The Sones Lab

Abstract: Background/Rationale: Maternal obesity significantly increases the risk of adverse pregnancy outcomes, including preeclampsia (PE). The etiology of this is unknown. Key features of PE, late-gestational hypertension, decidual inflammation, and fetal growth restriction (FGR), are observed spontaneously in BPH/5 mice. Similar to obese preeclamptic women, BPH/5 have increased body weight and gut dysbiosis in pregnancy. We hypothesized that supplementation with anti-inflammatory Lactobacillus sp. in pregnant BPH/5 mice would attenuate obesity, decidual inflammation, and FGR.

Methods/Results: BPH/5 mice were fed ad libitum (lib) and given 5g/kg L. plantarum and L. pentosus daily or sham treated beginning at embryonic day (e) 0.5 for 6 days. Implantation sites were collected at e7.5 for real-time PCR analyses (n=4/group). BPH/5 treated females had reduced body weight (p<0.05) without a change in food intake nor visceral white adipose tissue mass (p>0.05). Pro-inflammatory cytokines tumor necrosis factor (TNF) α and interleukin (IL)-6 mRNA were reduced in e7.5 implantation sites from treated mice 10 and 30-fold, respectively (p<0.05). BPH/5 treated mice do not have attenuation of late gestational FGR with treatment only in the first third of gestation.

Conclusion: Maternal weight loss in BPH/5 beginning at conception may improve placental development in this model. Future studies of giving Lactobacillus sp. throughout pregnancy should be performed to see the effects of long-term use on maternal/fetal outcomes. Future investigations are needed to determine the effects on pregnancy outcomes in obese women.

Poster ID: 222

Poster Code: MB2PHD

Presenter Name: Melanie Wilson

Author: M. Wilson, E. Savoie, A. Abdelmoneim

Title: Early Developmental Exposure to Lead (Pb), A Risk Factor for Stress Related Disorders Investigated in Larval Zebrafish (*Danio Rerio*)

Affiliation: Department of Comparative Biomedical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, Louisiana

Abstract: Exposure to environmental contaminants as risk factor for stress-related disorders remain an inadequately explored domain within the field of toxicology. Lead (Pb), a prevalent environmental contaminant and developmental neurotoxin, has been epidemiologically correlated with several neurological and mental disorders including anxiety and depressive disorders. However, a significant gap remains in our understanding of its precise effects, the underlying mechanisms, and safe levels of exposure. This study aims to investigate the effects of developmental exposure to environmentally relevant concentrations of Pb on acute stress response in larval zebrafish, serving as an indicator of disruption in the stress circuitry and a path to exploring associated molecular alterations. Enzymatically dechorionated embryos were exposed to Lead (II) Acetate between 6- and 120-hours post-fertilization (hpf). Concentrations folding from the maximum contaminant level in drinking water as set by the US EPA were tested and media changes were performed daily. At 120-hpf, Pb-induced effects on survival, development, activity, and behavioral responses to acute stressors (visual and acoustic) and peripheral irritants were evaluated. Changes in the transcript levels of molecular biomarkers for developmental neurotoxicity (DNT) and stress-related disorders were evaluated. Our exposures resulted in centrally driven behavioral alterations in acute stress response and associated changes in molecular biomarkers of DNT and stress-related disorders. This research provides insights into the connection between early-life Pb exposure and the prevalence of stress-related disorders. Further research is necessary to fully understand the mechanisms that underlie the observed behavioral alterations; endeavors our ongoing investigations aim to uncover.

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Poster Code: MB3VST

Presenter Name: Meridith Helms-Pack

Author: M. Helms-Pack, T. Tully Jr., B. Freeman, K. Stansberry, C. Liu, J. Tuminello, C. Lattin

Title: Can Sedatives Decrease Plasma Corticosterone in Hispaniolan Amazon Parrots (*Amazona ventralis*) During Restraint?

Affiliation: LSU Summer Scholars Program through Boehringer Ingelheim and the LSU SVM Avian Research Fund

Abstract: Rationale: Corticosterone is the major glucocorticoid in birds and helps regulate multiple body processes. However, it can also have negative effects such as immune suppression when levels are highly elevated. A previous study showed that plasma corticosterone levels significantly increased when Hispaniolan Amazon parrots (*Amazona ventralis*) were restrained. The sedatives midazolam and butorphanol are used to improve the experience of patient handling. It was hypothesized that a clinically relevant dose of midazolam and butorphanol would significantly decrease the plasma corticosterone response in restrained Hispaniolan Amazon parrots (n=11) when compared to the control birds (n=11).

Methods: A baseline blood sample was collected from each bird in <3 min upon entering the room. The bird was weighed and saline solution or midazolam and butorphanol was randomly assigned and administered intranasally. Additional blood samples were taken 15 min and 30 min after saline or sedative administration (a total of three blood samples). Plasma corticosterone levels were determined using enzyme-linked immunoassays.

Results: Males that received sedatives (n=3) had a significantly decreased plasma corticosterone response to restraint than male controls (n=7), female controls (n=4), and females that received sedatives (n=8).

Conclusions: These results suggest a sex-specific effect in the metabolism of midazolam and butorphanol. Pharmacokinetic studies on these sedatives with respect to sex is recommended.

Significance/Impact/Implications: Even if sedated birds present outwardly calm, they can still be experiencing an increase in corticosterone. Veterinarians should be aware of this and refrain from excessive handling in a sedated avian patient.

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Poster Code: MB3VST

Presenter Name: Nicole Torres

Author: N. Torres, A. Musso, C. Takawira, M. Lopez, M. Mitchell, K. Scott, D. Scheurer, L. Hale-Mitchell

Title: The Effects of Targeted Pulse Electromagnetic Field Therapy on Canine Osteoarthritis of the Coxofemoral Joint

Affiliation: Department of Veterinary Clinical Sciences

Abstract: Rationale: Osteoarthritis (OA) affects 25% of dogs with surgical and medical management options. Pulse electromagnetic field (PEMF) therapy is a non-invasive, non-thermal, non-toxic treatment that uses active electromagnetic waveform to promote healing in a certain area of tissue. The purpose of the study was to measure the effects of a targeted PEMF on the coxofemoral joints of dogs with OA and non-OA. We hypothesized that using a targeted PEMF device thrice weekly for 15 minutes per joint will show increased activity, improved gait analysis, and improved range of motion of the OA coxofemoral joints.

Methods: 10 research dogs, 8 with bilateral OA and 2 without OA, were divided into 2 random groups—A and B (4 OA, 1 non-OA each). Goniometry and gait analysis data were collected on Mondays (A) and Tuesdays (B) in a randomized order. Target PEMF treatments were performed every other day for 4 weeks per company recommendations.

Results: A Shapiro-Wilk test, skewness, kurtosis, and q-q plots showed significant increases in z peak force and total time on force plate by group for the left hindlimbs and passive flexions and extensions of coxofemoral joint for both hindlimbs by week. Activity data collection was too inconsistent to obtain significant results.

Conclusions: Targeted PEMF improved pain and increased comfort in dogs with OA allowing them to bear more weight on their left hindlimbs and have improved range of motion in both joints. Non-OA dogs also experienced an improved range of motion.

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Poster Code: MB4VST

Presenter Name: Trace Presley

Author: T Presley , S Smith , M Long , A Niehaus , M Wellman , A Muir

Title: Update on Synovial Fluid Analysis in Adult Dairy Cattle

Affiliation:

School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

College of Veterinary Medicine, The Ohio State University, Columbus, OH

Abstract: Synovial fluid composition in cattle was first described in "Observations on Normal Synovial Fluid of Cattle: I. The Cellular constituents and Nitrogen Content" authored by A Bauer in 1930. This study set the precedent for reference intervals that have been used to evaluate synovial fluid samples in cattle since its publication. Conformation of today's cattle has changed drastically to meet industry demands to produce a larger, more feed efficient, and heavier muscled animal in beef cattle, and larger animals with increased milk production in dairy cattle. Synovial fluid acts to maintain the integrity of the joint and acts as a medium for shock absorption produced from mechanical stress on the bones and joint capsule in affiliation with movement. This study serves to update the synovial fluid reference intervals used in cattle in terms of color, viscosity, turbidity, total protein, and specific gravity to determine if changing bovine structural composition has affected these values. Samples from twenty Holstein cows were evaluated for these parameters. Cattle included in this study were determined to be free of musculoskeletal and systemic disease by undergoing a brief physical examination, gait analysis, and a complete blood count. Synovial fluid was collected from the stifle joint split evenly between the left and right hindlimbs. It was hypothesized that minor changes are to be expected in total protein, specific gravity, and viscosity due to changes in the structural composition of today's cattle, which results in increased mechanical load on the joints, but overall values and composition of synovial fluid should not be significantly altered. Results of this study are still pending.

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Poster Code: MB5VST

Presenter Name: Daniela Saade

Author: C-C. Liu, E P. Mills, B. Stanfield, C J. Thieulent, V N. Chouljenko, U. Emelogu, R T. Carter, P Camacho-Luna, A C. Lewin

Title: Evidence for feline calicivirus as a primary corneal pathogen in domestic cats

Affiliation: Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

Abstract: Objective: To determine the replication kinetics and cytopathic effect (CPE) of feline calicivirus (FCV) in feline corneal epithelial cells (FCEC).

Methods: Seven FCV isolates and one feline herpesvirus type 1 (FHV-1) isolate were obtained from eight domestic short hair cats with active ocular surface disease. FCV RNA was extracted for sequencing using Illumina MiSeq, to identify three genomically diverse isolates for further testing. Following reference-based assembly, viral genomes were annotated and analyzed. Superficial keratectomies were performed to isolate the corneal epithelium of cats and the cells were cultured in vitro. FCEC were infected with the three chosen FCV isolates and one FHV-1 isolate at two different multiplicity of infection ratios (MOIs, 0.1 and 0.01 PFU/cell) with titer assessed at 2, 6, 12, 24 and 48 hours after infection. Before and after infection of FCEC, viral titer was performed, and quantitative PCR was used to confirm viral identity.

Results: Three genomically diverse FCV isolates were chosen for further assessment in the FCEC model. All infections with FCV led to visible CPE (epithelial cell rounding and detachment from the plate) in FCEC by 24 hours following infection, while FHV-1 led to visible CPE within 36-48 hours following infection. All three of the FCV isolates replicated effectively in FCEC at both 0.1 and 0.01 MOI, with a peak increase in titer approximately 12-24 hours following infection.

Conclusions: The results support the role of FCV as a potential primary pathogen of the feline ocular surface. FCV causes CPE and replicates in FCEC in vitro.

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Poster Code: MB6VST

Presenter Name: Taína Rodríguez

Author: T. Rodríguez, G. Doucet, C. Hsiou, C. Ulsh, N. Wenzlow

Title: Characterization of Post-mortem Trauma After Fall from Height in Dogs and Cats

Affiliation: Dept. of Pathobiological Sciences, School of Veterinary Medicine, LSU-LADDL

Abstract: After perpetrators commit acts of cruelty in the form of blunt-force trauma, they might conceal their acts by dropping the cadaver from heights, which causes additional lesions to the body. Hemorrhages allow the distinction between ante- and postmortem changes in fresh bodies but is much less useful in decomposed cadavers. Freshly euthanized puppies (n=10), adult dogs (n=10) and kittens (n=8) were separated into two groups and dropped from 40 feet and 80 feet respectively. All animals had pre-necropsy radiographs taken. Liver lacerations were present in 100% of animals. Of both species, 65% had skull fractures (puppies (93%) and kittens (50%)). Rib fractures were present in 80% of all dogs and mostly in puppies (76%). Although true pulverization of the solid inner organs was not observed, 27% of animals showed rupture of the kidney capsule, and 13% showed fragmentation of the liver into multiple, smaller, detached pieces. Limb fractures were present in 44% of cases, 42% of which were adult dogs and 2% were puppies. Fractures of the spine were seen in 17% of animals. Pre-necropsy radiographs were essential to the identification of most bone fractures. The histology of all fractures confirmed the absence of vital reaction or repair, with pointy sharp edges of the bone fragments typical of wet fractures. The distribution of these lesions is different from those seen in animals with high-rise syndrome, motor-vehicle trauma, and accidental or non-accidental injuries (NAI).

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Poster Code: MB7VST

Presenter Name: Katherine Woolf

Author: K. Woolf, R. Smith, C. Liu

Title: Serum Glucose and Lactate Concentration Changes Over Time in Room-Temperature and Refrigerated Canine Whole Blood Samples

Affiliation: Louisiana State University School of Veterinary Medicine, Baton Rouge, LA

Abstract: Glucose and lactate are important values for both diagnosis and continued treatment of veterinary patients. Delays in samples being tested can lead to artificially increased lactate and decreased glucose as a result of glycolysis. Oftentimes samples are refrigerated before testing to arrest glycolysis. The purpose of this study was to test the efficacy of refrigeration on slowing glycolysis and to compare glucose and lactate levels between refrigerated and room-temperature samples. Blood samples were taken from 10 healthy canines. A CBC and chemistry was run immediately post draw, then lactate and glucose values were obtained at specific intervals following the blood draw. Rate of change of both lactate and glucose was significant between room-temperature and refrigerated samples, with the change being accelerated in room-temperature samples. A change in glucose concentrations was found to be significant after 4 hours in room-temperature samples, and no significant change was seen in refrigerated samples. A change in lactate concentrations was found to be significant for both room-temperature and refrigerated samples at less than 2 hours.

Poster ID: 231

Poster Code: MB8VST

Presenter Name: Michelle MacIntyre

Author: M. MacIntyre, A. Stackhouse, W. Beavers

Title: Linked resistance between arachidonic acid and vancomycin in *Staphylococcus aureus*

Affiliation: Department of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

Abstract: *Staphylococcus aureus* is a Gram-positive pathogen that causes over 900,000 infections every year. It can infect every niche of the host and colonizes about two-thirds of the human population. The increasing number of antibiotic resistant strains of *S. aureus*, such as methicillin resistant *S. aureus* (MRSA), demonstrates the need for new therapeutic targets. Polyunsaturated fatty acids are antimicrobial fatty acids susceptible to oxidation. Arachidonic acid (AA) is a type of polyunsaturated fatty acid that is used in the host immune response for inflammatory signaling. However, our studies showed it can also undergo autoxidation to produce electrophiles toxic to *S. aureus*. An important observation related to AA is that modifications to the cell wall biosynthesis induce AA resistance. These strains are also resistant to vancomycin, a drug of last resort that targets cell wall biosynthesis and is used to treat severe MRSA cases. *S. aureus* resistance to vancomycin is mediated by the VraRS two-component system. We tested the hypothesis that *S. aureus* resistance to AA and vancomycin are both mediated through VraRS signaling. Our data revealed that mutant strains with inactive *vraR* and *vraS* genes are completely susceptible to vancomycin treatment, while strains with inactive *tarO*, *sgtB*, or *lcpB* (*vraS*) genes are resistant to vancomycin. The *lcpB* (*vraS*) resistance phenotype is likely caused by a single nucleotide polymorphism that constitutively activates VraS. The link between AA and vancomycin resistance will be further investigated to determine if inhibiting VraRS signaling can be used to counter *S. aureus*'s resistance to AA and vancomycin.

Poster ID: 232

Poster Code: MB9HOR

Presenter Name: Amber Moses

Author: A. Moses, V. Costa, C. Moeller, C. Goodermuth, K. Perkins, S. Withers

Title: Prospective evaluation of immunomodulation induced by vincristine chemotherapy in dogs with treatment-naïve high-grade multicentric lymphoma

Affiliation: Department of veterinary clinical sciences

Abstract: The gold-standard treatment for canine high-grade lymphoma is multi-agent chemotherapy (CHOP). Vinblastine occasionally replaces vincristine in CHOP due to its mild side effects. However, with a response rate of only 7% in naïve lymphoma, vinblastine is considered to have inferior efficacy even though response to vincristine in this setting is unknown. Immunomodulation induced by this protocol has not been thoroughly detailed. The study objectives were to: 1) determine the response rate of vincristine in treatment-naïve canine lymphoma, 2) measure changes in immune cell subsets following vincristine, and 3) correlate changes in immune subsets with clinical response.

Dogs with treatment-naïve high-grade lymphoma receiving a 0.7 mg/m² dose of vincristine were included. Lymph node measurements and collection of peripheral blood mononuclear cells (PBMCs) was performed at day 0, day 7 post vincristine. Clinical response and adverse events were recorded. Flow cytometry was performed on PBMCs to quantify lymphoid and myeloid subsets. Immune cell proportions were compared between timepoints and correlated with clinical response.

The objective response rate was 50%. A significant increase in Tregs (%CD25+Fox P3+ of CD4+, $p < 0.0001$) and decrease in monocytic MDSCs (%CD14+MHCII- of CD11b+, $p = 0.005$) occurred following vincristine. No correlation between clinical response and immune subset proportions were detected.

Vincristine should remain in the CHOP protocol due to its higher response rate compared to vinblastine. Vincristine causes immunomodulation in dogs with high-grade lymphoma, which does not correlate with treatment response.

The immunomodulation induced by vincristine in this study has implications for optimizing combination chemotherapy/immunotherapy protocols.

Poster ID: 235

Poster Code: MB62VST

Presenter Name: Gwyneth Miller

Author: G. Miller, J.L. Cornille, R. Hanning, A. Lee, E. Uhl, M. Osborn

Title: Whole Body Analysis of Joint Degeneration in the Fetlocks: A Case Study

Affiliation: Department of Comparative Biomedical Sciences, School of Veterinary Medicine, Louisiana State University

Abstract: Rationale: Lameness is the most common clinical sign in equine veterinary practice and is often associated with degenerative tissue changes that define degenerative joint disease (DJD). While treatments based on whole body analysis and biomechanical therapies are common in humans with DJD, they are not routinely applied in equine cases.

Methods: In this case study, a CT data-based, three-dimensional model of a horse was manipulated using Autodesk Maya® to compare the body positions of a competitive Grand Prix dressage horse with degenerative tissue changes of the hindlimb fetlock joints confirmed during a prepurchase exam. Positions were modeled from photographs of the horse being worked before and after a change to the Science of Motion training approach. Angles of the limb joints and position of the head and vertebral column were measured using Autodesk Maya®, enabling the comparison of the whole-body working postures of the horse before, during, and after a whole-body exercise regime targeted at reducing the forces acting on the hindlimbs through the correction of spinal function.

Results: Notable changes were recorded in joint angles in all limbs, as well as in head and neck position.

Conclusions: Our qualitative and quantitative results support a causal relationship between cervical compression and fetlock hyperextension.

Significance: This case study serves as proof of concept for the feasibility and efficacy of modeling whole-body postures for the purpose of analyzing their relationship to aberrant forces and degenerative joint changes. It also confirms the effectiveness of motion-based therapies for the correction of joint compression.

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Poster Code: MB11VST

Presenter Name: Ciara Miller

Author: C. Miller, J. A. Gines, N. Gill

Title: Morphological Evaluation of Canine Humeral Symmetry

Affiliation: Department of Veterinary Clinical Sciences

Abstract: Rationale: The contralateral limb serves a crucial role in planning surgical procedures, designing custom implants, and postoperative assessment. Existing studies on canine bone symmetry focus on analyzing small regions or areas of the bone in one plane, but there are no studies that evaluate whole bone morphology. The purpose of this study is to determine the morphologic bone symmetry of the humerus using advanced three-dimensional (3D) technology.

Materials and Methods: Bilateral humeral computed tomography scans of 11 mixed-breed dogs were performed and 3D humeral bone models were created. Left and right humeri were superimposed for analysis of an average of 387,000 points on each bone. Differences between the proximal, middle, and distal parts of the bone were also analyzed. Descriptive analysis and one-way ANOVA were used ($p < 0.05$).

Results: The analysis revealed that the proximal, middle, and distal thirds of the bone do not exhibit significant morphological differences ($p = 0.2352$). Whole bone analysis illustrated a mean difference of roughly 0.3 millimeters at a given point.

Conclusions: These findings demonstrate that bilateral humeral symmetry is present in dogs with non-orthopedic conditions, reinforcing the notion of skeletal symmetry. Further research with a larger sample size and consideration of other factors, such as breed-specific differences and life-stage variations, is warranted to strengthen and expand upon these findings.

Implications: The findings of this study bring scientific rigor and precision, allowing for improvement of surgical planning, customization of implants, and optimization of postoperative outcomes.

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Poster Code: MB12VST

Presenter Name: William Sitterson

Author: William N. Sitterson, John A. Kara, Philip Saint Martin, Yan M. Zermeno, Charles C. Lee

Title: Ketamine Therapy Assessed in a Mouse Model of Alzheimer's Disease

Affiliation: Louisiana State University

Abstract: Alzheimer's disease (AD) affects more than six million Americans, ranking as the seventh leading cause of death in the United States. It is characterized by diminished cognitive abilities, memory loss, an array of decreased visuospatial skills, and changes in personality. Several treatments have been proposed to combat the symptoms associated with Alzheimer's disease, and recent findings suggest that N-methyl-D-aspartate (NMDA) receptor antagonists such as ketamine can provide neuroprotection with a decrease in neuropsychiatric symptoms from AD. Studies show that AD acts in a way that increases the levels of quinolinic acid (QUIN), which is a potent neurotoxin that binds NMDA receptors. AD also increases neuronal and glial cell death. Given ketamine's possible neuroprotective action on neurons, glial cells, and astrocytes, it could demonstrate therapeutic benefit, and even slow the onset of AD in patients. In this study, we propose to examine the prospective neuroprotective effects of ketamine treatments in a mouse model of Alzheimer's disease. We will utilize novel object recognition, Y maze, and open field test in an AD mice model that harbors a single amyloid precursor protein (APP) mutation associated with AD. These mice will be treated with ketamine, and their performances will be compared to mice without any treatment.

Poster ID: 238

Poster Code: MB13VST

Presenter Name: Patrik Rollefson

Author: K. Niaz, D. McAtee, P. Adhikari, P. Rollefson, M. Ateia, A. Abdelmoneim

Title: COMPARING THE DEVELOPMENTAL AND BEHAVIORAL EFFECTS OF EXPOSURE TO PFAS-CONTAINING AQUOUS FILM FORMING FOAM TO PROPOSED PFAS-FREE ALTERNATIVES USING THE ZEBRAFISH MODEL

Affiliation: Department of Comparative Biomedical Sciences, Louisiana State University, Baton Rouge, LA. Department of Chemical and Biomolecular Engineering, Rice University, Houston, TX.

Abstract: For decades, aqueous film-forming foams (AFFFs) containing per- and poly-fluoroalkyl substances (PFAS) have been used to combat flammable liquid fires. However, with increasing concerns about the human health risks associated with exposure to PFAS, there is a growing interest in developing PFAS-free alternatives. Evaluating the safety of these alternatives prior to widespread use is imperative. The zebrafish embryo model offers an excellent alternative to evaluate the toxicity of chemicals at high throughput capacity and assess their biological actions. In this study, we evaluated the developmental and behavioral effects associated with early developmental exposure (6 – 120 hours post fertilization (hpf)) of zebrafish to a PFAS-containing AFFF (Buckeye) and two proposed alternatives (Ecopol and Angus). We targeted 0.01% of the working concentration of each chemical and folds lower (5-fold dilution factor). Survival, overall development, prevalence of developmental defects, background activity, and behavioral responses to acute stressors were assessed. Survival was significantly affected by Angus or Ecopol exposures, but not Buckeye. Angus or Ecopol exposures also depressed behavioral responses to acute stressors, suggesting that they do not necessarily offer a safer alternatives to the PFAS-containing AFFF. This work highlights the importance of assessing the safety of proposed PFAS-free AFFF alternatives and the suitability of the zebrafish model for conducting such investigations.

Poster ID: 239

Poster Code: MB14VST

Presenter Name: Phillip Saint-Martin

Author: P. Saint-Martin, T. Vaughn, O. Ogundele

Title: SK2 expression of the motor thalamus in normal motor function, and their dysregulation in Parkinson's disease

Affiliation: Department of Comparative Biomedical Sciences

Abstract: SK2 channels are small conductance Ca^{+2} -activated K^{+} channels found widely in the CNS and are central to many of the vital brain functions such as the transmission of information, memory, learning and synaptic plasticity. Post-synaptic densities that harbor SK2 channels also contain domains with Calcium-calmodulin-dependent kinase II (CaMKII). During an excitatory synaptic neurotransmission, CaMKII auto-phosphorylates at the Thr (T) 286. In this self-activated state, it continues to function even after the absence of Ca^{+2} flux. Because these two proteins (i.e., SK2 and CaMKII) are pertinent to synaptic excitation, and its suppression, thereafter, the proposed research will examine activity-coupled regulation of these proteins in excitation-induced Parkinson's' Disease (PD). Here, we used a hemi-parkinsonian mouse model to ascertain how SK2/CaMKII expression is altered in excitatory synapses of the motor thalamus following the loss of inhibitory striatal inputs. Induced PD was verified through a motor function test for fine and coarse motor skills. The results of this project demonstrates a novel mechanism activity coupled regulation of excitation in the motor pathway.

Poster ID: 240

Poster Code: MB15VST

Presenter Name: Dominic Scheurer

Author: D. Scheurer, N. Torres, L. Hale-Mitchell, M. Mitchell, K. Scott

Title: Designing a Method to Deliver Noninvasive Pulsed Electromagnetic Field Therapy (PEMF) to Raptors

Affiliation: Department of Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

Abstract: Pulsed electromagnetic field (PEMF) therapy can be used as adjunctive therapy by manipulating cellular magnetic fields. When electromagnetic waves interact with tissues, a cascade of biological processes are affected. Usage of PEMF therapy in veterinary medicine is expanding, with many devices designed for use in companion animals. Administration of PEMF therapy in avian patients requires restraining the patient, which makes it difficult to investigate the practical applications and efficacy of PEMF therapy in the field of avian medicine. This study sought to develop a method for administering PEMF therapy to raptors without restraint. An elevated platform was constructed using materials that PEMF therapy can penetrate. Four captive raptors were trained on the platform once-daily for up to 30 minutes for 25 days without administration of PEMF therapy to acclimate them to the new platform. After this period, they were trained on the platform once-daily for up to 30 minutes for 25 days while being administered PEMF therapy at 5Hz. Body language cues displayed during both phases of training were observed and documented using a Body Language Score. The time that the raptors were willing to remain on the platform was also recorded. It was hypothesized that the administration of PEMF therapy at 5Hz would significantly affect the time that raptors are willing to remain on the platform near the PEMF therapy device. Findings indicate that a significant relationship exists between the use of PEMF therapy and the time that raptors were willing to remain on the platform.

Poster ID: 241

Poster Code: MB16VST

Presenter Name: Katie Black

Author: K. Black, S. Bordelon, J. Raney, Dr. B. Dubansky

Title: Morphological Influence of Osteoderm Development in the American Alligator (*Alligator mississippiensis*) and its Implications for Understanding Heterotopic Ossification Disorders

Affiliation: Louisiana State University School of Veterinary Medicine

Abstract: Heterotopic ossification (HO) is characterized by the formation of bone in areas normally comprised of soft tissue. The pathological process of HO resembles osteoderm formation in the American Alligator (*Alligator mississippiensis*). HO lesions occur as a secondary to injury or trauma. The development of HO and osteoderm formation has been characterized, but its initiation not well understood. One hypothesis suggests this process is initiated by mechanical stress on soft tissue via muscular and ligamentous attachments.

Gross dissection was utilized to map muscular attachments to osteoderms located in the head, neck, and shoulder regions of American alligator specimens.

Three layers of fascia adhering to the cervical osteoderms were observed during dissection. The superficial cervical fascia lies directly beneath the skin and attaches to the tuberculate scales. Medially, there is a deep cervical fascia, comprised of a superficial and deep leaf. The superficial leaf covers the lateral surface of the neck and adheres to the ventral surface of the nuchal shield osteoderms. The left and right superficial leaves combine to create a deep leaf, which extends from the dorsal midline to insert onto the spinous processes of the cervical vertebrae.

These multiple layers of connective tissue help disperse mechanical forces enacted on the body by normal movements, such as swimming and eating. Tension distribution along these planes of connective tissue could serve as the initiating factor for osteoderm development via mechanotransduction.

Ongoing research will focus on the biomechanics of these attachments in American alligators and how it contributes to understanding heterotopic ossification.

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Poster Code: MB17VST

Presenter Name: Mackenzie Hebert

Author: M. Hebert, N. Falconnier, N. Wenzlow, C. Menk, F. Del Piero, J. Lee, E. Sasaki

Title: Multifocal Polyphasic Myositis in 14 Pelicans

Affiliation: Louisiana State University School of Veterinary Medicine;

Animal Disease Diagnostic Laboratory & Department of Pathobiological Sciences, Louisiana State University School of Veterinary Medicine

Abstract: Signalment and History: Between 9/2022 and 6/2023, six pelicans were submitted to Louisiana Animal Disease Diagnostic Laboratory (LADDL) for necropsy and tissues from eight pelicans were submitted for histopathological examination. Pelicans ranged from 1-12 years of age with two of unknown age. The common presenting complaints were inappetence (6/14), limb paresis (7/14), lethargy (8/14), and natural death (11/14).

Gross and Histopathologic Findings : All birds had polyphasic myofiber degeneration and necrosis with five also having steatitis. In one pelican, vitamin E and selenium levels were 62.53 ug/g and 2.85 ug/g dry weight respectively.

Conclusions: Polyphasic myonecrosis is the result of repeated muscle damage. Etiologies include focal repeated trauma and multifocal myopathies from nutritional deficiencies, inflammatory conditions, or genetic disorders. In these birds, multifocal polyphasic myonecrosis was most suggestive of a vitamin E/selenium deficiency. Unfortunately, normal pelican reference intervals have not been established. Deficiency could result from the vitamin's antagonistic relationship with microcystin. However, no cyanobacteria were detected within the pelican enclosures.

Significance: Many similar mortality events associated with nutritional related myopathies in captive pelicans have been reported. Determination of the inciting cause is complicated by the lack of a normal reference interval, incomplete understanding of their dietary requirements, and refractory clinical response to supplementation. These cases emphasize the important role research plays in the health of pelicans and highlight the need for further research in pelican dietary requirements. Interestingly, the brown pelican appears to be more commonly affected. Being Louisiana's state bird, research in this area could be of great

Poster ID: 243

Poster Code: MB18VST

Presenter Name: Janay Velez-Leon

Author: J. Velez-Leon, B. Leise, J. Cremer

Title: Can Pain-Associated miRNAs be Used as Biomarkers for Colic in Horses?

Affiliation: Veterinary Clinical Sciences, Equine Health & Sports Performance Program

Abstract: Subjective pain scoring systems have been evaluated in horses using facial expressions, location in the stall, and response to external stimuli. However, utilizing an objective measurement of pain through biomarkers would allow for a better assessment of response to pain management in clinical cases. Specific microRNAs (miRNAs) have been proposed as biomarkers for pain in horses with laminitis and for assessment post-castration. miRNAs have also been proposed as biomarkers for visceral pain in other species. Therefore, this study aimed to determine if the expression of specific pain-associated miRNAs could be correlated with subjective pain scores in horses with colic. We hypothesized that horses with colic would have increased expression in pain-associated miRNAs compared to healthy horses. Horses were placed into one of three groups: healthy (no pain), colic-medical management, and colic-surgical management. On presentation, 10mls of blood was collected and stored for later miRNA analysis. Horses were subjectively assessed for pain and videos were recorded for additional pain assessment by veterinarians who were unaware of patient outcome. Additional, blood samples, pain assessment scores, and videos were taken at 24, 48, and 72 hours post-arrival. Horses with surgical colic demonstrated significantly higher facial and total overall pain scores than healthy controls. There was no significant difference in heart rate between treatment groups. Further assessment of selected pain-associated miRNAs is ongoing and therefore it remains to be determined if they will be useful as an objective method to assess pain in horses with colic.

Poster ID: 244

Poster Code: MB19VST

Presenter Name: Corrine Wang

Author: C. Wang, A. Vatta, M. Mitchell

Title: Prevalence of endoparasites in native wildlife presented to the Wildlife Hospital of Louisiana

Affiliation: Department of Veterinary Clinical Sciences and Pathobiological Sciences, School of Veterinary Medicine, LSU

Abstract: Anthropogenic activities have led to detrimental changes in the ecosystems of native wildlife, including habitat loss and fragmentation. These changes have led to wildlife being forced into smaller home ranges and increasing their risk for exposure to parasites, which have been found to decrease an organism's fitness by altering host behavior, lowering their immune defense, and decreasing nutrient intake. These changes in the host lead to increased susceptibility to infection, disease transmission, and predation. The Wildlife Hospital of Louisiana (WHL) is a medical facility focused on rehabilitating native wildlife in Louisiana. We hypothesized that parasite prevalence in native wildlife presented to the WHL would exceed 25%, and patients receiving treatment for endoparasites would have a reduced parasite burden at time of release. To date, 82 wildlife cases have been screened for parasites (3 classes: 4 reptiles, 64 birds, and 14 mammals), with nematodes being the most commonly identified parasite. The prevalence of endoparasites in this population was 54.8% (45/82, 95% CI: 43.7-65.2), and there was no significant difference in the likelihood of shedding parasites by animal class ($p=0.68$) or species ($p=0.10$). Data collected suggests that raptors were more likely than other avian taxa to shed trematodes and that mammals were more likely to shed *Trichuris* spp. and *Turgida turgida* than birds and reptiles. Information obtained from this study can be used to evaluate and improve treatment plans not only for the WHL, but also for other wildlife rehabilitators facing the same challenges.

Poster ID: 245

Poster Code: MB20PHD

Presenter Name: Priscilla Devora

Author: P.A. Devora, A.N. Johnston

Title: A Novel Method for the Detection of *Heterobilharzia americana* Ova using RNA In Situ Hybridization

Affiliation: Veterinary Clinical Sciences, Louisiana State University School of Veterinary Medicine, Louisiana

Abstract: Background & Rationale: Canine schistosomiasis caused by the fluke, *Heterobilharzia americana*, can lead to severe morbidity and eventual mortality. Deposition of *Heterobilharzia* ova in the liver and gastrointestinal tract triggers recruitment of peri-ova inflammatory cells. Although fluke eggs can be identified in H&E-stained histologic sections, low ova burdens, ova fragmentation, or concealment of ova by inflammatory infiltrates may impede histologic diagnosis.

Methods: Using the *H. americana* 18S rRNA sequence, an RNA probe was designed. We evaluated the capability of the RNA probe to fluorescently label *Heterobilharzia* ova using an RNA in situ hybridization strategy. We validated its performance on archival formalin-fixed paraffin-embedded canine liver tissue. Fluorescence-positive ova were confirmed by ova specific inclusion criteria and comparison to complementary H&E-stained sections.

Results: A positive fluorescent signal was observed for whole and fragmented ova, including ova not easily distinguishable on H&E.

Conclusions/Significance: This technique augments standard diagnostic methodology, enabling spatial co-localization of fluke ova and peri-ova cell populations when using fluorescent techniques. Future use of this methodology could aid understanding of the pathogenesis of *H. americana* infection in dogs by employing powerful multiplex strategies.

Acknowledgment: This work was funded by the VCS CORP GRANT (2022-2023)

Poster ID: 246

Poster Code: MB21VST

Presenter Name: Lucy Barré

Author: L.Barré, I.Ogunleti, J.Martinez

Title: Analysis of proliferation of genetically modified spotted fever group (sfg) Rickettsia species in mammalian cells

Affiliation: Department of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA (Barré, Martinez)

McNeese State University, Lake Charles, LA (Ogunleti)

Abstract: Rickettsiosis (Spotted Fever Group) is spread by ticks to humans and animals. Patients can suffer skin lesions, fever, and malaise. Severe cases lead to vascular necrosis, systems failure and death. Rickettsia are the etiologic agents: a group of obligate intracellular bacteria including *R.rickettsii* and *R.parkeri*. SFG Rickettsia target vascular endothelial cells, but studies have linked strongly-virulent strains with infection of phagocytes. For infection, pathogenic species must trigger internalization into cells, avoid lysis, inhibit apoptosis and sequester nutrients from the host. To investigate, we obtained single transposon mutants of *R.parkeri* strain "Portsmouth" in genes of interest. A pilot study determined that mutant SP-39 (single transposon insertion in gene for protein RARP-1) is able to infect and proliferate within mammalian endothelial (EA.hy926) and epithelial (Vero) cells but not within human macrophages (THP-1). Contrastingly, other mutants were not impaired for growth in THP-1 cells. Thus, we investigated if SP-39 and other mutants would exhibit growth differences within immortalized murine bone marrow derived macrophages (iBMDMs) as compared to wild type *R.parkeri*. Growth characteristics were determined by immunofluorescence microscopy and RT-qPCR-based assays. Wild-type *R.parkeri*, *R.parkeri* SP-9 and *R.parkeri* SP-39 demonstrated similar growth patterns within EA.hy926 cells. Despite impaired growth in THP-1 cells though, mutant SP-39 grew like the wild type within iBMDM cells. Mutant SP-64 (insertion in a gene for protein RARP-2) exhibited delayed growth within EA.hy926 and iBMDMs despite normal growth in THP-1. Results suggest species' differences in cell lines may account for disparities in growth outcomes, for which mechanisms are being currently investigated.

Poster ID: 247

Poster Code: MB22PHD

Presenter Name: Rita Aoun

Author: A. Musso, Z. Ogunmola, C. Takawira, and M. Lopez

Title: Horseshoe Effects on In vivo Equine Gait Kinetics During the Walk.

Affiliation: Department of Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University, 70803, Baton Rouge, LA, United States of America

Abstract: Rationale: Horseshoes for protection or therapy alter loading among hoof regions. There is limited data about shoe configuration effects on gait kinetics. Hypotheses tested here were: 1) kinetic forces and impulses (IMP) are greatest with heart-bar (HB), then egg-bar (EB), open-heel (OH) shoes, or when unshod (US), and lowest with wooden clogs (WC); and 2) Resultant ground reaction force (GRF) vectors have the longest cranial angulation with OH, followed by EB, HB, and WC, and are least when US.

Methods: Six non-lame, light-bred horses were walked over a force platform with or without EB, HB, OH, or WC shoes. Forelimb vertical (V), braking (B), and propulsion (P) peak forces (PF), IMP, time to PF, and coefficient of friction (COF) were quantified. The GRF angle was calculated at 5% stance intervals. Shoe shape effects on kinetic values was assessed with a mixed model ($p < 0.05$).

Results: Time to PFV, PFB, and PFP and braking time were highest with WC. The PFV was lower with WC versus EB or US. The IMPB and IMPV were higher with OH versus US, while IMPP was higher with HB versus OH or US. The COF was lower with WC than US. While US, the GRF vectors were uniformly distributed versus a compressed vertical to caudal angulation while shod.

Conclusion: Shoe shape affects PFV, PFB, PFP, IMP, COF, and GRF vector angulation and values are distinct with and without shoes.

Significance/Impact: Changes in kinetics due to horseshoes should be considered for optimal shoe selection, design, and function.

Poster ID: 248

Poster Code: MB23HOR

Presenter Name: Eliza Richartz

Author: E. Richartz, B. Hodgkiss, N. Black-Ocken, R. Fuentes, J. Looper, S. Withers

Title: Characterization of the Dissemination of Canine Cancer Misinformation on YouTube

Affiliation: Department of Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA, USA

Abstract: Rationale: YouTube is the third most popular app in the world and continues to grow each year while it reaches over 2 billion users a month. A variety of veterinary topics are addressed on YouTube but to date there have been no studies analyzing misinformation of various canine cancer topics on YouTube or social media usage as it relates to veterinary topics.

Methods: This study was evaluated by four individuals and described the characteristics of 99 unique videos using the validated DISCERN quality criteria for consumer health information and the Patient Education Materials Assessment Tool (PEMAT) to characterize their usefulness. Misinformation level was scored by a board certified medical oncologist and radiation oncologist.

Results: The overall median DISCERN quality score was 3 (out of 5), the median PEMAT understandability score was 72%, and 61% of videos contained little to no misinformation. 53% of videos were created by veterinarians and this subset had significantly higher PEMAT understandability and DISCERN quality scores compared with client-created content ($P = 0.0228$ and $P = <0.0001$, respectively). Videos with little to no misinformation had statistically significant higher DISCERN quality scores (3 vs 2, $P = 0.0001$). There was no statistical significance between misinformation levels and video length, PEMAT understandability, thumbs up/view, or views/mo.

Conclusions: These data reveal similar rates of misinformation in videos on canine cancer compared to that reported for various human cancer topics. This study highlights the need for veterinarians to guide clients to more reliable and understandable information regarding their pet's health.

Poster ID: 249

Poster Code: CR1CR

Presenter Name: William Holl

Author: W. Holl, F. Del Piero

Title: Systemic Amyloidosis Causing Spontaneous Hepatic Rupture in a Domestic Short-Haired Cat

Affiliation: Department of Pathobiological Sciences and Louisiana Animal Disease Diagnostic Laboratory

Abstract: Background: Systemic amyloidosis is the deposition of amyloid in multiple organs. Amyloid is the collective term for misfolded proteins which are biologically inept, unable to be processed, and accumulate extracellularly. Their classification depends on their original identity such as light chain (AL) amyloid from abnormal plasma cells or serum amyloid A (AA) from chronic inflammation. The severity depends on the volume of amyloid deposited which is more profound in systemic versions with the predominant amyloid produced being AA in domestic animals. Although not a comprehensive list, other feline-associated conditions include hereditary AA amyloidosis in Abyssinian cats and pancreatic islet amyloidosis.

Case: A 6-year-old, female spayed, domestic short-haired cat was found dead and submitted for necropsy. On gross examination, there was generalized icterus and were multiple tan, red, and purple, irregular, soft nodules along the gingiva of the premolars and molars. The abdominal cavity was filled with blood, and the liver was severely enlarged, predominantly tan with an enhanced reticular pattern, and friable with multifocal to coalescing capsular hemorrhages. Histopathologic examination of the gingival nodules revealed severe plasmacytic and proliferative gingivitis, and the liver revealed abundant amyloid deposition with severe neutrophilic cholangiohepatitis. There was mild to severe amyloid in multiple organs with the most deposited in the thyroid glands separating the parenchymal cells and structures. The amyloid was variably congophilic depending on the organ affected.

Summary: This is a case of feline chronic gingivostomatitis leading to multiorgan amyloid deposition causing organ structure weakening and spontaneous hepatic rupture, hypovolemic shock, and death.

Poster ID: 250

Poster Code: CR2CR

Presenter Name: Mary Ella Robison

Author: J. C. Menk, N. Richmond, S. Dehghanpir, M. Mirza, F. A. Uzal, I. M. Langohr

Title: Postpartum Clostridial Metritis Due to *Paeniclostridium Sordellii* In A Nigerian Dwarf Doe

Affiliation: School of Veterinary Medicine, Louisiana State University, Baton Rouge, Louisiana. Department of Pathobiological Sciences and Louisiana Animal Disease Diagnostic Laboratory, Louisiana State University

Abstract: Background: Postpartum metritis in does is predisposed by retained fetal membranes, dystocia, and multiparous births. Infectious organisms commonly associated with postpartum metritis include *Coxiella burnetii*, *Chlamydia* spp., *Yersinia pseudotuberculosis*, and *Mycoplasma* spp. Clostridial species were recently described as causative agents of gangrenous postpartum metritis in goats, including *Paeniclostridium sordellii* (formerly *Clostridium sordellii*) and *C. perfringens*. *P. sordellii* is an anaerobic, gram-positive, spore-forming bacterium that inhabits soil, sewage, and water.

Case description: A 4-year-old Nigerian Dwarf doe was presented to the LSU-VTH for suspected metritis with a history of lethargy, anorexia, decreased milk production, and recumbency after kidding. CBC and venous blood gas analysis revealed marked neutropenia, hyperglycemia, metabolic acidosis, hyperkalemia, hypernatremia, and hyperchloremia. Despite treatment with insulin, dextrose, plasma, bicarbonate, and a synthetic plasma expander, the doe continued to decline and was humanely euthanized. On postmortem examination, there were dark gray to purple areas in the caruncular and intervening regions of the uterine horns, which contained reddish-brown, malodorous fluid. On microscopic examination, the uterus was affected by coagulative necrosis with large gram-positive bacilli accompanied by suppurative inflammation. The intralesional bacilli were identified as *P. sordellii* with immunohistochemistry for multiple clostridial species.

Summary: Gross, histologic, and clinical findings in this case are consistent with the recent reports of clostridial metritis and terminal exotoxemia in goats, most commonly associated with retained placental remnants. *P. sordellii* should therefore be considered a possible cause of postpartum metritis in does.

Poster ID: 251

Poster Code: MB24VST

Presenter Name: Christina Ulsh

Author: C. Ulsh, D. Badamo, T. Rodríguez, J. Tuminello, G. Doucet, K. Webb, N. Wenzlow

Title: Widening the Veterinary Forensics Arsenal: Gunshot Wounds in Canine Integument

Affiliation: Department of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University, Louisiana Animal Disease Diagnostic Laboratory

Abstract: Rationale: Characteristics of canine gunshot wounds (GSWs) and correlated distance estimates are missing from medical literature. Veterinary pathologists must extrapolate what is known about human GSWs to guide their findings, which has implications in court decisions in cases of animal abuse. This study aimed to provide insight on GSWs to canine integument for clinical and diagnostic veterinarians.

Methods: Categorical data on canine GSWs to integument was collected for different distances. A 12-gauge shotgun and .38 Special revolver were fired from two and three distances respectively (contact, close-range, and intermediate-range) at the head, chest, abdomen and hindlimb on euthanized canine cadavers (n=15) and at different colors of canine hides (n=4) for each distance four times. The study took place at an outdoor firearm training facility.

Results: Dense fur coats and darker colors interfered with gross examination. GSWs from both firearms varied in appearance of soot deposition in relation to different distances and no stippling was present. Shotgun contact wounds had seared margins but wadding inconsistently caused squared-off abrasions.

Conclusions/Implications: There are species differences in characteristics of GSWs to canine integument compared to those in humans. Distance estimation is still possible, though, in forensic post-mortem examination of dogs killed with firearms.

When a non-accidental GSW kills a pet, it may be up to a court of law to determine whether the perpetrator acted maliciously or in defense. Growth in the veterinary forensics field not only holds weight in upholding animal welfare but also in detecting individuals who pose a threat to society.

Poster ID: 252

Poster Code: CR3CR

Presenter Name: Luis Tondo

Author: L. Tondo, N. Wenzlow

Title: Asphyxiation due to smoke inhalation in a dog – case report.

Affiliation: Department of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University, and 2Louisiana Animal Diagnostic Disease Laboratory (LADDL), Baton Rouge, LA, USA.

Abstract: Background: Forensic veterinary pathology is a discipline that examines data and physical evidence to assist criminal investigations in a context of animal cruelty, where it helps to confirm or exclude foul play that might have caused the demise of an animal.

Case description: A 7-year-old male dog was submitted for a forensic necropsy as a part of an arson investigation. The animal was found deceased and partially wrapped and restrained around the snout and abdomen with a large piece of fabric. The request was to determine if the animal was deceased before, or died as a result of the fire. At necropsy, 70% of the body surface was covered in soot with singed fur. The fabric is partially coagulated, forming charred, hard, plastic-like plaques melted to the fur. The oral and tracheal mucosa are moderately backend and covered with soot. On histology, a moderate amount of soot was adhered to the epidermis and fur, with subjacent areas of coagulative necrosis. Soot was also adhered to lining epithelial cells of the tracheal mucosa, pulmonary bronchi, and bronchioles.

Conclusion: The presence of soot within the lower respiratory tract confirms that the animal was alive during the fire and died therefore of asphyxiation from the smoke/CO inhalation. The fabric appears to have partially restrained the animal, although did not necessarily prevent the animal from moving and possibly escaping. The manner of death is undetermined, however, a non-accidental killing (homicide equivalent) cannot be ruled out completely.

Poster ID: 253

Poster Code: MB25VST

Presenter Name: Yan Zermeno

Author: Y. Zermeno, C. Lee, J. Kara

Title: Crossed Corticothalamic Projections of Prefrontal Cortical Modules

Affiliation: Department of Comparative Biomedical Sciences, School of Veterinary Medicine

Abstract: The prefrontal cortex (PFC) plays a key role in accomplishing goal-oriented tasks. Alterations to the neuroanatomy and chemical imbalances in the PFC have been linked to disorders such as schizophrenia, autism spectrum disorder, and post-traumatic stress disorder. Transgenic mouse models have been subsequently developed to better understand these disorders and the neuroanatomy responsible for them. Ipsilateral corticothalamic projections are regarded as modulatory for cortical activity, but contralateral corticothalamic connections (CCCs) from the PFC have been largely overlooked. The goal of this study is to elucidate transgenic mouse lines and types of neurons involved in prefrontal CCCs. Evidence suggests neurons from cortical layer 6 typically form corticothalamic connections and neurons from layer 5 tend to project to subcortical structures. This led us to hypothesize that mouse cell lines that emphasize layer 6 neurons are likely to have the strongest CCCs. In this study, the Allen Mouse Brain Connectivity Atlas was utilized to analyze the strengths of CCCs originating from the prefrontal modulus of the mouse and to determine the transgenic mouse lines best present CCCs. Injections into wild-type mice prefrontal cortices were performed to confirm the presence, pattern, and strength of these contralateral projections. Transgenic mouse line Syt6-Cre KI148, which outlines layer 6 neurons in the prefrontal cortex demonstrated the strongest CCCs. Ntsr1-Cre GN220, which outlines layer 6 neurons in sensory areas, demonstrated weak CCCs. Rbp4-Cre KL100, which outlines layer 5 neurons, demonstrated stronger CCCs than Ntsr1 but weaker than Syt6.

Poster ID: 254

Poster Code: MB26VST

Presenter Name: Nicole Akers

Author: N. Akers, A. Harmon, T. Dugas, L. Dirikolu, S. Dennis, F. Gaschen

Title: Effects of Prokinetic Drugs in Dogs with Clonidine-delayed Gastric Emptying

Affiliation: Departments of Veterinary Clinical Sciences and Comparative Biomedical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

Abstract: Background: In dogs, delayed gastric emptying (GE) can occur following abdominal surgery or inflammation. While orally administered acetaminophen (AAP) can be used to assess GE, there are currently no clinically applicable methods to document the occurrence of gastroparesis in dogs.

Objectives: To evaluate the effects of gastric prokinetics on GE of liquids in dogs treated with clonidine, an alpha-adrenergic agonist that delays GE, using AAP as a plasma tracer.

Animals: 8 healthy purpose-bred dogs

Methods: Prospective cross-over study. In a randomized sequence over 6 weeks, each dog received either no treatment, clonidine (0.03 mg/kg SC), azithromycin (2 mg/kg IV) and clonidine, or metoclopramide (0.5 mg/kg SC) and clonidine 1h before ingesting a liquid meal supplying 25% of the dog's RER mixed with acetaminophen (20 mg/kg). Blood samples were collected preprandially and at 10 time points between 0.5 and 24 hours. Plasma AAP concentrations were obtained using reverse-phase HPLC. Times to maximum AAP concentration (Tmax) were calculated to estimate GE time, and a 2-way ANOVA with Sidak-adjusted multiple comparisons was performed.

Results: Clonidine treatment significantly delayed Tmax ($p < 0.05$). Additional therapy with prokinetics metoclopramide or azithromycin did not shorten Tmax.

Conclusions and clinical importance: AAP can be used to evaluate GE of liquids. Clonidine increased Tmax for AAP, presumably due to its delaying effect on GE. The clonidine model may not accurately replicate the mechanisms underpinning delayed GE in dogs. However, the documented lack of impact of gastric prokinetics in this study casts some doubt on their effect in clinical cases.

Poster ID: 255

Poster Code: CR4CR

Presenter Name: Matías Dorsch

Author: M. Dorsch, W. Holl, B. de Cecco, C.E. Walsh, M. Mitchell, C. Menk, E. Sasaki

Title: *Klebsiella pneumoniae* infection in raccoons: report of three cases

Affiliation: Department of Pathobiological Sciences and Louisiana Animal Disease Diagnostic Laboratory

Abstract: Background: *Klebsiella pneumoniae* is a Gram-negative bacterium and a commensal of the intestinal tract of animals, including humans. This bacterium is typically associated with opportunistic infections of the reproductive, respiratory, and urinary tracts, and may lead to fatal septicemia.

Case description: Three 6-to-7-month-old raccoons (*Procyon lotor*) were submitted for necropsy with a history of lethargy, anorexia, tachypnea, diarrhea, and death. Grossly, up to 600 mL of opaque, white to yellow, viscous material expanded the peritoneal cavity. The omentum was diffusely dark red with congested blood vessels. Mesenteric lymph nodes were diffusely enlarged, and white viscous fluid oozed from the cut surface (2/3). On microscopic examination the omentum and serosal surfaces of abdominal viscera were markedly infiltrated by abundant neutrophils and foamy macrophages occasionally containing short, encapsulated, Gram-negative rods, mixed with fibrin and necrotic debris. In the mesenteric lymph nodes there was pyogranulomatous lymphadenitis with areas of necrosis, and numerous intracellular and extracellular Gram-negative short rods. Other findings included ulcerative ileotyphlitis with intralesional bacteria (1/3), eosinophilic enterocolitis with intraluminal parasites (2/3), neutrophilic and histiocytic splenitis (2/3), and eosinophilic adrenalitis (1/3). *Klebsiella pneumoniae* was isolated in pure culture from peritoneal swabs and lymph nodes. On a string test, the isolates were of the hypermucoviscous phenotype.

Conclusion: Infections by *K. pneumoniae* in raccoons have not been reported thus far. Given the hypermucoviscous phenotype of the isolates (a feature of hypervirulent strains) and the zoonotic potential, further investigation is warranted.

Poster ID: 256

Poster Code: MB27VST

Presenter Name: Maryella Cohn

Author: M Cohn, L Russell, H Rhim, K Boykin, M Mitchell

Title: Determining the Pharmacokinetic Properties of Two Different Doses of Hydromorphone in Barred Owls (*Strix varia*)

Affiliation: Wildlife Hospital of Louisiana at LSU School of Veterinary Medicine

Abstract: Injured avian wildlife are routinely presented to veterinarians with traumatic injuries, and success with these cases often requires the incorporation of analgesics as a component of the treatment plan. Unfortunately, there is a dearth of evidence-based analgesic protocols in avian medicine, and, to date, those that are published suggest species respond differently to these drugs. The barred owl (*Strix varia*) is the most common species of raptor presented to the Wildlife Hospital of Louisiana, and there are no published pharmacokinetic studies for this species. The purpose of this study was to determine the pharmacokinetic properties (harmonic means, times to maximum concentration, and elimination half-lives) for single intramuscular doses of 0.5 mg/kg and 1.0 mg/kg hydromorphone in 12 adult barred owls. We hypothesized that both would provide appropriate concentrations for 12 hours and that there would be significant differences in the pharmacokinetic properties between the doses. Each owl recruited for the study was >500g and found to be healthy on examination. Owls were randomly assigned to Group 1 (0.5mg/kg) or Group 2 (1.0mg/kg) using a random number generator (random.org), and baseline bloodwork was collected before hydromorphone was injected intramuscularly into the left pectoral muscle. After the injection, subsequent blood samples were collected 5 minutes, 30 minutes, 1.5 hours, 3 hours, 6 hours, 9 hours, and 12 hours later. Plasma samples are being processed using liquid chromatography-mass spectrometry. The evidence gained by this research will provide us the opportunity to better manage these animals while in our care.

Poster ID: 257

Poster Code: FP0FP

Presenter Name: Paula Reis Ribeiro

Author: P.R. Ribeiro^{1,2}, W. Dittmar¹, C.J. Thieulent¹, C.D. Gamage¹, S.P. Pavarini², U.B.R. Balasuriya¹, M. Carossino¹

Title: Characterization and Transcriptional Landscape of Feline Leukemia Virus (FeLV)-induced Thymic Lymphoma in Cats

Affiliation: 1 Department of Pathobiological Sciences & Louisiana Animal Disease Diagnostic Laboratory, Louisiana State University.

2 Setor de Patologia Veterinária, Universidade Federal do Rio Grande do Sul.

Abstract: Rationale: Feline leukemia virus (FeLV) is a gammaretrovirus that infects cats and leads to neoplasia, such as thymic lymphoma. Thus, we characterized thymic lymphomas in FeLV-infected cats and evaluated their transcriptional landscape.

Methods: Six FeLV-infected cats with thymic lymphoma and submitted for necropsy were selected. Formalin-fixed paraffin-embedded tissues were characterized by histopathology, anti-FeLV p27, -CD3, -CD20 immunohistochemistry (IHC) and env-specific in situ hybridization (RNAscope[®]). Viral loads were determined using RT-qPCR targeting the long terminal repeat. Bulk RNA sequencing from neoplastic and non-neoplastic thymus was performed.

Results: Thymic lymphomas were categorized as T-cells, and intense viral antigen immunolabeling and viral RNA signal were detected in neoplastic cells by IHC and RNAscope[®], respectively. Mean tumoral viral loads were 1.45×10^{11} copies/g ($\pm 7.77 \times 10^{10}$). In other tissues, viral RNA was detected in multiple cell types, including hematopoietic and immune cells, various epithelial cells and cardiomyocytes. A total of 536 differentially expressed genes (DEGs; 289 downregulated and 247 upregulated) were identified in thymic lymphomas of FeLV-infected cats compared to normal, age-matched thymuses from uninfected cats. The downregulated DEGs were involved in biological processes associated with cell differentiation and regulation of apoptotic processes, while upregulated DEGs were involved in the cell cycle.

Conclusions: Thymic lymphomas induced by FeLV are typically T-cell in origin, and neoplastic cells are characterized by high viral loads. Interestingly, FeLV tropism is widespread, encompassing a wide variety of cell types beyond immune and hematopoietic

cells. The transcriptional landscape and specific role of dysregulated biological processes are still under investigation.

Poster ID: 258

Poster Code: MB28HOR

Presenter Name: Bianca Santana de Cecco

Author: B.S. de Cecco, M.L. Osborn, N. Wenzlow

Title: Forensic Cases and the Use of 3-Dimensional Illustrations

Affiliation: Department of Pathobiological Sciences, Louisiana Animal Diagnostic Disease Laboratory (LSU - Diagnostics), Department of Comparative Biomedical Sciences, Louisiana State University

Abstract: Rationale: Forensic veterinary pathology is a growing field that focuses on the meticulous examination of an animal corpse that has potentially been a victim of acts of cruelty, injured or killed as part of a crime. This study aims to demonstrate the use of 3-dimensional (3D) technology to visually illustrate forensic cases.

Methods: Included in this study are four cases of animals shot and killed by firearms, and submitted to the Louisiana Animal Diagnostic Disease Laboratory from June 2022 to October 2023. Diagnostic Imaging (X-rays) and forensic necropsy were performed in all cases following laboratory standard procedures. Based on the necropsy findings, reconstructions of projectile trajectories were then generated using 3D skeletal models from CT data,

Results: The reconstructions depicted each projectile's pathway through the animal, indicating the position of the fired weapon in relation to the animal and the position of the animal's body at the time of the shot. These reconstructions help to differentiate cases of non-accidental killings (animal equivalents to "homicide") from those of self-defense.

Conclusions: The analysis and reconstruction of forensically relevant events including gunshots are an important tool to elucidate the circumstances under which the incidents occurred.

Implications: High-tech methods are gaining increasing importance in forensic investigations. 3D models based on X-rays and necropsy results are helpful to accurately visualize and recreate the conditions in which the incidents occurred and classify the manner of death in order to make often complex analyses more easily understandable in the courts.

Poster ID: 259

Poster Code: MB29PHD

Presenter Name: Wellesley Dittmar

Author: W. Dittmar, N. Gaudreault, U.B.R. Balasuriya, J.A. Richt, C.J. Thieulent, M. Carossino

Title: Development of a deer-adapted SARS-CoV-2 cDNA clone to evaluate spike variants arising in North American deer

Affiliation: Department of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA, USA

Abstract:

Rationale: White-tailed deer (WTD) can be naturally infected with SARS-CoV-2 and subsequently transmit the virus to in-contact naïve WTD. This has raised concerns of potential spillback into humans, which has been reported in Ontario, Canada. The role of WTD-specific mutations in viral kinetics, replication dynamics, pathogenicity, and transmissibility between animal species as well as at the human-animal interface is currently unknown. We hypothesize that WTD-derived SARS-CoV-2 variants contain deer-specific mutations in the spike glycoprotein, increasing viral fitness and facilitating transmission both in WTD and wild peridomestic rodents that could serve as bridging hosts.

Methods: Recombinant spike variants based on WTD-derived SARS-CoV-2 strains will be generated. Two separate reverse genetic systems are being tested to generate recombinant spike variants, namely the Circularized Polymerase Extension Reaction (CPER) system and the In-Vitro Ligation (IVL) system.

Results: For CPER, the SARS-CoV-2 USA-WA1/2020 genome was amplified in 10 overlapping fragments and annealed with a linker containing a human cytomegalovirus promoter and hepatitis delta virus (HDV) ribozyme, and bovine growth hormone polyadenylation signal. Transfection into permissive cells is ongoing. For IVL, 8 overlapping fragments spanning the SARS-CoV-2 USA-WA1/2020 genome were cloned into plasmids (BEI Resources), digested and ligated followed by generation of in vitro transcribed RNA. Transfection of products into permissive cells is ongoing. These tools will be used to generate a WTD-adapted SARS-CoV-2 backbone for subsequent generation of WTD-adapted spike variants.

Implications: The data generated in this work will help to characterize the effect of SARS-CoV-2 evolution in WTD, other wildlife, and the human-animal interface.

Poster ID: 260

Poster Code: MB30PDR

Presenter Name: Chandika Gamage

Author: D. Cryderman, C. J. Thieulent, W Dittmar, U. B. R. Balasuriya, M. A. Vissani, V. Parreño, M. E. Barrandeguy, M. Carossino

Title: Development and immunogenicity of a vaccinia-vectored vaccine against equine rotavirus A

Affiliation: Department of Pathobiological Sciences, School of Veterinary Medicine, and Louisiana Animal Disease Diagnostic Laboratory, School of Veterinary Medicine, Louisiana State

University, Baton Rouge, LA

Abstract: Rationale: Equine rotavirus A (ERVA) is a non-enveloped virus and a major cause of diarrhea in foals worldwide. ERVA strains are classified in G-genotypes based on the outer surface glycoprotein VP7, which contains neutralizing epitopes. The most prevalent genotypes in horses include G3 and G14. Current vaccines only include a G3 genotype strain and do not elicit complete protection against heterologous strains (i.e. G14 genotype). The objective of this study is to develop a vector-based vaccine for ERVA.

Methods: The modified vaccinia virus Ankara (MVA) was used as a vector platform to express the VP7 glycoprotein of ERVA genotypes G3 and G14 through homologous recombination. Expression of G3 and G14 VP7 was confirmed by Western blotting and immunofluorescence. To assess immunogenicity, eight-week-old male and female BALB/c mice were immunized intraperitoneally with a 2-dose regime containing 107 PFU of MVA-G3, MVA-G14 or MVA-G3+MVA-G14 at a 14-day interval. Antibodies were measured via indirect immunofluorescence assay.

Results: Recombinant MVA viruses successfully expressed ERVA G3 and G14 VP7 (~37 kDa). No adverse clinical signs were observed in immunized mice following vaccination. Both vectored vaccines and their combination (MVA-G3+MVA-G14) induced VP7-specific serum antibodies with titers between 1:64 and 1:128 after 7 days post-vaccination, and increasing to 1:256 following the booster dose.

Conclusion: The MVA-vectored vaccine candidates elicit favorable antibody responses against the ERVA G3 and G14 genotypes. The vaccine efficacy evaluation of these recombinant vector-based vaccine candidates is in progress.

Poster ID: 261

Poster Code: MB31HOR

Presenter Name: Yi Kwan Lee

Author: YK.Lee, J.Suchodolski, T.Lendvey, W.DePaolo, F.Gaschen

Title: Autologous oral fecal microbiota transplantation and microbiome recovery after antibiotic treatment, a randomized controlled trial.

Affiliation: - Department of Veterinary Clinical Sciences, Louisiana State University School of Veterinary Medicine

- Gastrointestinal Laboratory, Texas A&M University

- Tend Health Inc, Portland, OR

Abstract: Background: Metronidazole is commonly prescribed to dogs with diarrhea and has a substantial negative impact on the gut microbiome and metabolome. The restoration of microbiome following discontinuation of metronidazole can be delayed.

Objectives: To describe the impact of 10-day autologous oral FMT administration on the recovery of fecal microbiome after metronidazole treatment in healthy dogs.

Animals: Twenty healthy pet dogs.

Methods: Prospective, randomized controlled study. Fecal samples collected from each dog before initiating metronidazole treatment were processed into fecal microbiota transplantation (FMT) capsules using a capsule processing device and stored frozen until administration (1.25-2.33g feces/kg PO over 10 days). Dogs were randomly assigned to 2 groups. All dogs received a 7-day course of metronidazole (12.5mg/kg PO q12h). Subsequently, test dogs received oral FMT capsules for 10 days (D0-D10), while control dogs only received FMT 24 days after completion of metronidazole treatment (D24-D34). The fecal microbiome was evaluated using the qPCR-based fecal dysbiosis index (FDI) at 6 time points. Results were evaluated using mixed-effects analysis with Sidak's multiple comparisons test and Fisher exact test as appropriate. **Results:** Metronidazole increased FDI and decreased the abundance of *Clostridium hiranonis* immediately after treatment (D0) in all dogs ($p=0.0001$). A higher proportion of control dogs had an abnormal FDI (>0) at D10 ($p<0.05$) and decreased *C. hiranonis* abundance at D10 ($p<0.05$) and D17 ($p<0.02$) compared to test dogs.

Conclusions and clinical importance: This study demonstrates the efficacy of autologous oral FMT capsules in accelerating the recovery of gut microbiome after metronidazole

Poster ID: 262

Poster Code: MB32MS

Presenter Name: Christella Nelson

Author: C. Nelson, E. Ruiz, F. Musarrat, Md I Hossain, H. Mohan, K. Kousoulas

Title: Kinase Inhibitors as a Potential Antiviral Drug against HSV-1 infection

Affiliation: Department of Pathobiological Sciences and Division of Biotechnology and Molecular Medicine, School of Veterinary Medicine, LSU, Baton Rouge, LA

Abstract: Herpes simplex virus type 1 (HSV-1) is a common pathogen that causes many diseases in humans, from minor mucocutaneous lesions to life-threatening encephalitis. However, our knowledge of the molecular mechanism and the interaction between HSV-1 and human host factors is limited. Therapeutic drugs in the market are nucleoside analogs that can lead to drug resistance. Recently, protein kinases have been used as potential antiviral candidates. Protein kinases are responsible for cellular transduction signals and can be an important therapeutic target for disease intervention. We showed that Akt phosphorylation takes place during virus entry (Musarrat et al 2021). The present study hypothesizes that viral and cellular kinases are involved in the regulation of viral infection. We utilized a high-throughput kinase inhibitor library to identify cellular kinases that control virus cell cycle. We screened 796 kinase inhibitor drugs in cell culture. African Green Monkey Vero cells were infected with HSV-1 (McKrae), constitutively expressing GFP and then treated with compound for 15 hours post- infection (hpi) and viral cycle was visualized by monitoring the intensity of GFP expression. We identified 133 drugs that blocked virus cycle. These results are on the process to be confirmed in a classic drug assay to estimate the IC50 (Inhibitory concentration at 50%) at different time intervals. Furthermore, in silico, in vitro and in vivo analyses will be performed that will lead to a better understanding of the molecular and cell signaling mechanisms involved in HSV-1 infection and as well as to identify new targets for antiviral therapy.

Poster ID: 263

Poster Code: MB33PHD

Presenter Name: John Le

Author: S. Paudel, T. Rangasamy, K. Hoang, A. Brown, S. Jeyaseelan

Title: The NLRP10 Inflammasome Modulates Host Defense During Gram-Positive Bacteria-Induced Pneumonia

Affiliation: Department of Pathobiological Sciences and Center for Lung Biology and Disease, Louisiana State University School of Veterinary Medicine, Baton Rouge, LA, United States

Abstract: Rationale: Pneumonia is one of the most common respiratory diseases and can be life-threatening. The role of the recently identified NLRP10 (NACHT, leucine-rich repeat [LRR], and PYD-containing protein 10) inflammasome in Gram-positive bacteria-induced pneumonia remains elusive.

Methods: Female C57BL/6 wild-type (WT) and NLRP10 knockout (KO) mice were infected with methicillin-resistant *Staphylococcus aureus* (MRSA USA300 strain). The mice were euthanized 12 and 24 hours post-infection. We performed bronchoalveolar lavage fluid (BALF) phenotyping, quantified cytokines and chemokines in the BALF and lung tissues, and enumerated bacterial burden in the lungs, liver, and spleen. We also quantified the levels of different granulocyte populations and granulocyte progenitor cells in the blood and bone marrow using flow cytometry. Furthermore, we performed bone marrow transplantation and infected the chimera mice with MRSA.

Results: The WT mice had lower levels of total white blood cells (predominantly neutrophils and macrophages) and cytokines/chemokines (IFN- γ , CXCL1, CXCL5, and IL-17A) in the BALF. However, higher bacterial burdens in the lungs and spleens were found in the WT mice compared to the NLRP10 KO mice. The NLRP10 KO mice had lower levels of granulocyte progenitor subpopulations but higher levels of neutrophils released from the bone marrow into the bloodstream compared to the WT mice. The WT-to-NLRP10 chimeric mice had significantly lower levels of bacterial burden compared to the WT-to-WT chimera mice.

Conclusion: The NLRP10 inflammasome plays a critical role during MRSA-induced pneumonia through modulating neutrophil and macrophage recruitment as well as granulopoiesis in the bone marrow.

Poster ID: 264

Poster Code: MB34MS

Presenter Name: Victor Medina

Author: V.Medina, S. Cousseau, C. Pinto

Title:

Effect of Pre-maturation Treatment on Nuclear Maturation of Domestic Cat Oocytes

Affiliation: Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University

Abstract: Rationale: The objective of this study was to evaluate whether domestic cat oocytes could be kept at room temperature for 18 hours before being incubated for in vitro maturation.

Methods: Ovaries were collected from cats undergoing surgical sterilization at a local veterinary clinic. Immediately after surgical removal, ovaries were transported to the laboratory in 0.9% saline solution. For the study, 80 cumulus oocyte complexes (COCs) with a dark homogeneous cytoplasm and at least 3 layers of cumulus cells were selected. Recovered COCs were placed either into oocyte maturation media (Direct In Vitro Maturation -DIVM- control group) for 24 h or into holding media (treatment group -Hold-) and maintained for 18 hours at room temperature before IVM for 24 h. Differences in nuclear maturation between treated and control groups were assessed by Chi-square analysis, with significance level set at $p = 0.05$.

Results: The proportion of oocytes undergoing nuclear maturation after incubation did not differ between control and treated oocytes, 35% vs 30%, respectively, $P > 0.1$). Most oocytes held at room temp remained at the germinal vesicle stage.

Conclusion: In this study, holding immature domestic cat oocytes for 18 h at room temperature did not affect their ability to undergo in vitro maturation.

Significance: Based on the results of this study, cat oocytes could be safely preserved at room temperature for several hours before arriving at an assisted reproduction laboratory. This protocol could be useful whenever harvesting and transporting of oocytes collected

from wild felids on the field is needed.

Poster ID: 265

Poster Code: MB35MS

Presenter Name: Giselle Doucet

Author: G. Doucet, N. Wenzlow, C. Liu, E. Watson, K. Webb, L. A. Granger

Title: Postmortem computed tomography characterization of high velocity projectile entry wound beveling in the canine skeleton

Affiliation: A thesis presented to the graduate school of the University of Florida in partial fulfillment of the requirements for the degree of Master of Science

Abstract: Understanding skeletal trauma patterns is essential in medicolegal investigations. Beveling is a fracture pattern well-documented in human forensic pathology, but minimally explored in veterinary forensic pathology. Beveling often results from high-velocity projectile trauma to the skull and is defined as conical chipping of bone circumferentially in the direction of projectile trajectory. This study aims to characterize the pattern in the canine skeleton through postmortem computed tomography (PMCT) and postmortem examination. Three firearm and ammunition combinations including .22LR, using both a semi-automatic rifle and single-action revolver, and .38 special LRN using a double-action revolver were fired at canine cadavers of varying maturity, from different distances, and targeting the skull, ribs, and femur. Findings show that PMCT is a useful, non-invasive modality for evaluating internal beveling in entry wounds of the skull. Firearm type, shooting distance, and skeletal maturity are independent of skull beveling. Rib beveling was not observed in our study. Projectiles from a .22 caliber rifle are significantly associated with internal femoral beveling on postmortem, possibly due to causing decreased skeletal damage on impact. PMCT was useful for detection of canine entry wounds of the skull and is an applicable and valuable tool in veterinary forensic sciences.

Poster ID: 266

Poster Code: MB36VST

Presenter Name: Dalia Badamo

Author: D. Badamo, C. Ulsh, N. Wenzlow

Title: Range, Caliber, and Firearm Effects on Gunshot Wound Characteristics in Canine Integument

Affiliation: Department of Pathobiological Sciences, Louisiana State University School of Veterinary Medicine, Baton Rouge, Louisiana

Abstract: The characteristics of canine gunshot wounds (GSWs) and correlated distance estimates are missing from much of the veterinary literature. Therefore, veterinary pathologists must extrapolate what is known about human GSWs to guide their findings, which can have implications in investigations and court decisions in cases of animal abuse and cruelty. This study aimed to provide insight on GSWs to canine integument for clinical and diagnostic veterinarians. Four firearm calibers (12-gauge shotgun, .38 special handgun, .22 handgun, .22 rifle) were fired from three distances [0 inches (contact), 6 inches (close-range), 3 feet (intermediate-range)] to the head, chest, abdomen and hindlimb on euthanized canine cadavers (n=27) and on four different-colored canine hides. Darker pigmented and dense fur interfered with the gross examination. Contact and close-range entrance GSWs only caused soot deposition but no stippling nor tattooing as described in humans, and shotguns produced partial petal marks in the form of squared-off abrasions. Intermediate entrance GSWs may be well hidden by long fur and only cause searing of the wound edges with bullet wipe. While all entrance wounds show bullet wipe, its presence on exit wounds is possible yet unpredictable. Gunshot-entrance wounds do have a somewhat different appearance on dogs' skin than on humans. The shooting distance evaluation is much less specific, therefore more challenging for shooting reconstructions. Growth in the veterinary forensics field not only holds weight in upholding animal welfare but also in detecting individuals who pose a threat to society.

Poster ID: 267

Poster Code: MB37HOR

Presenter Name: Michael St. Blanc

Author: M. St. Blanc; M. Mirza; L. Riggs; B. Leise

Title: Ex Vivo Comparison of One-Layer vs. Two-Layer Closures in End-to-End Anastomoses in Normal Equine Descending Colon

Affiliation: Equine Surgery Resident, Department of Veterinary Clinical Sciences, Louisiana State University School of Veterinary Medicine. Skip Bertman Drive, Baton Rouge, Louisiana 70803

Abstract: Rationale: Despite numerous potential advantages of single-layer anastomoses of the descending colon, there are no studies evaluating these closures in comparison to two-layer anastomoses. The objective of this study was to evaluate time to closure, bursting pressure and luminal diameter of single-layer and double-layer anastomoses. We hypothesized that single-layer closures would be faster to perform and would result in less reduction in luminal diameter while maintaining equivalent bursting strength.

Methods: Four segments from eight horses were randomly assigned to a control (n=8, CON), one-layer (n=12, Group 1; continuous Lembert pattern), or two-layer group (n=12, Group 2; simple continuous oversewn with a Cushing pattern). Anastomoses were performed, and time to closure, luminal diameter, bursting pressure, and location of failure were recorded. Mixed analysis of variance was employed.

Results: Mean time to completion in group 1 was 18.6 minutes, compared to a mean of 21.35 minutes in group 2. Luminal diameter was reduced in group 2 (47 mm) compared to group 1 (65 mm). Bursting pressure was lower in group 1 (131 mmHg) relative to group 2 (164 mmHg). Excluding one segment, all anastomoses remained intact.

Conclusions: Two-layer end-to-end anastomoses resulted in significant luminal reduction and took longer to complete than one-layer anastomoses but maintained higher bursting strength.

Clinical Significance: Use of one-layer closures may be advantageous with respect to luminal diameter and efficiency of completion. While bursting pressures in all segments were above expected postoperative intraluminal pressures, use of one-layer end-to-end anastomosis should be validated in clinical models.

Poster ID: 268

Poster Code: CR5CR

Presenter Name: Naomi Falconnier

Author: N. Falconnier¹, S. Gray², S. Kuttichantran^{2&3}, A. Izquierdo⁴, N. Wenzlow¹

Title: White Spot Syndrome Virus in a Cohort of Imported Blue Crayfish (*Procambarus alleni*)

Affiliation: 1LADDL & PBS Dept, School of Vet Med, LSU

2Disease Laboratory & Department of Infectious Diseases and Immunology, CVM UofFL

3Emerging Pathogens Institute, UofFL

4Audubon Nature Institute, New Orleans

Abstract: Rationale: White spot syndrome virus (WSSV) is a globally important disease of crustaceans, causing economically devastating mortality in penaeid shrimp. While many other crustaceans are permissive to infection, mortality is often low, resulting in potential reservoirs.

Methods: Twenty blue crayfish (*Procambarus alleni*) were purchased from a New York vendor that were imported from Thailand. During quarantine, sixteen crayfish were serially found dead, five of which were submitted for postmortem examination and one was frozen at -80°C. The remaining surviving four crayfish were subsequently humanely euthanized. All fixed crayfish were processed routinely, and sections were stained with hematoxylin and eosin. Pooled samples of fresh-frozen cuticular epithelium, gills, and stomach were submitted for WSSV PCR and for Illumina Novaseq next-generation sequencing (NGS) and phylogenetic analysis.

Results: Histologic examination revealed large intranuclear viral inclusions, mainly within the cuticular and gastrointestinal epithelium, gills, and antenna gland, in all naturally deceased crayfish and two euthanized crayfish. Those without viral inclusions had mild hemocytic infiltration of similar tissues. Initial WSSV PCR detected viral nucleic acid, and NGS generated a genetically distinct 281,205bp WSSV genome that formed a unique branch among Australian and Asian prawn and shrimp isolates.

Conclusions: This is the first report of WSSV in blue crayfish, and the viral isolate is genetically distinct from other reported crayfish isolates.

Significance: Animal transportation is an important route of disease spread, particularly in the pet trade. However, there are few governmental restrictions for aquatic invertebrate importation. Increased awareness of imported infectious diseases could inform future governmental regulations.

Poster ID: 269

Poster Code: MB38PHD

Presenter Name: Yathushigan Kulatheepan

Author: B.Dhakal, J.T. Le, K.Hoang, S.Jeyaseelan

Title: Role of AIM2 Inflammasome in Pulmonary Host Defense Against Methicillin-Resistant Staphylococcus aureus-induced Pneumonia

Affiliation: Department of Pathobiological Sciences, Centre of Lung Biology and Diseases, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA, USA.

Abstract: Background: Bacterial pneumonia represents the preeminent etiological factor for mortality in both children and the elderly. The rise of antibiotic-resistant and hypervirulent strains heightens therapeutic challenges. Therefore, new therapeutic options are warranted. Absent in melanoma 2 (AIM2) is an inflammasome located in the cytosol which is responsible for sensing double-stranded DNA (dsDNA). Its role in pulmonary host defence against Methicillin-Resistant Staphylococcus aureus (MRSA) is not known.

Methods: We infected female C57BL6 (Wild-Type, WT) and AIM2 gene-deficient (Aim2^{-/-}) with MRSA (USA 300 strain; 50ul of 5×10^7 CFU/mouse through intratracheal administration), We sacrificed the mice 12- and 24-hour post-infection and performed bronchoalveolar lavage fluid (BALF) phenotyping and bacterial burden in different organs. In addition, blood and bone marrow samples were also collected to assess the role of AIM2 during emergency granulopoiesis, using flow cytometry.

Results: Aim 2-deficient mice display enhanced recruitment of leukocytes, predominantly neutrophils and macrophages in the BALF collected at 24 h post-infection compared to its WT counterparts. This was accompanied by enhanced bacterial clearance in the lungs, BALF, and in extrapulmonary organs (liver and spleen) of Aim2^{-/-} mice compared to WT mice following MRSA infection. MRSA-infected Aim2^{-/-} showed higher levels of mature neutrophils retained in the bone marrow compared to the MRSA-infected WT mice.

Conclusion: These data demonstrate that AIM2 inflammasome acts as a negative regulator during MRSA-induced pneumonia. Inhibiting AIM2 will be a therapeutical useful strategy to augment bacterial clearance in patients with MRSA pneumonia.

Poster ID: 270

Poster Code: MB39MS

Presenter Name: Saige Annison

Author: R.R. Faleiros, S. Mordoh, B.S. Leise

Title: Effects of Bacterial Products, Inflammatory Mediators, and Insulin on the Phosphorylation of RPS6 and STAT3 in Equine Epidermal Cells

Affiliation: Department of Veterinary Clinical Sciences & LSU EHSP Program, LSU School of Veterinary Medicine

Equinova Research Group Universidade Federal de Minas Gerais, Belo Horizonte, Brazil

Abstract: Rationale: Equine laminitis, a debilitating hoof condition, involves dysadhesion and separation between the epidermal and dermal lamellae, compromising structural integrity. This study examines activation of mTOR and STAT3 signaling pathways during sepsis-related and insulin-related laminitis, hypothesizing that LPS, IL-6, insulin, and LPS-stimulated neutrophils will activate these pathways in vitro.

Methods: Equine epidermal cells from three horses were cultured and stimulated with various concentrations of LPS, IL-6, insulin, and LPS-stimulated neutrophils. Protein isolation and western hybridization were used to assess total and phospho-RPS6 (serine 235/236 and serine 240/244), as well as total and phospho-STAT3 (Tyr 705). Data was analyzed using one-way ANOVA tests and Tukey's post-hoc analysis.

Results: While epidermal cells cultured with LPS-stimulated neutrophil supernatant had the greatest phospho-RPS6 intensity and reIL-6 had the greatest phospho-STAT3 intensity, there were no significant differences in total to phospho band intensity ratios observed between groups.

Conclusion: There were no significant differences in total:phosphor band intensities between groups for either mTOR or STAT3 signaling in vitro. There was significant horse to horse variation which may have affected these findings. This is similar to clinical cases where some horses are observed to be more at risk than others in developing laminitis. Assessment of other cell types, such as dermal cells may also be needed to further investigate activation for comprehensive analysis.

Significance/Impact/Implications: This study contributes to the understanding of mTOR

and STAT3 pathway activation in equine laminitis. Further investigation into signaling pathways could provide in vitro evidence for potential therapies or treatments to combat equine laminitis.

Poster ID: 271

Poster Code: MB40PHD

Presenter Name: Sydney Mordoh

Author: S. Annison, LA. Fugler, BL. Leise

Title: Effects of reIL-8 on Ex vivo Neutrophil Extracellular Traps (NETs) Formation in Healthy Horses

Affiliation: Louisiana State University School of Veterinary Medicine

Department of Veterinary Clinical Sciences

Abstract: Rationale: Uncontrolled formation of NETs can be detrimental in cases of sepsis. The chemokine IL-8 has been reported to induce NET formation in people, and its inhibition via CXCR1/2 blockade ameliorated this response. The objective of this study was to determine if recombinant equine IL-8 will induce NET formation ex vivo in neutrophils isolated from healthy horses.

Methods: Fibronectin coated the 96-well plate at different concentrations, and neutrophils were isolated from healthy horses. The following treatments were applied in triplicate at various concentrations: Phorbol 12-Myristate 13-Acetate (PMA; positive control), reIL-8, media only (negative control) and media with DMSO (PMA negative control). NET formation per well was quantified.

Results: NETosis was induced when neutrophils were stimulated with PMA. There was a significant increase in the number of NETs formed starting at 4 hours ($p < 0.05$) until the end of the experiment when compared to reIL-8 and media negative control groups. There was no difference in the number of NETs that formed between the varying concentrations of PMA. reIL-8 did not induce NET formation, as no differences between reIL-8 and media controls were seen from either horse.

Conclusions: PMA-induced NETosis in healthy equine neutrophils. Coating the plate with fibronectin did not improve the formation of NETs. Unlike people, IL-8 does not appear to induce NET formation in neutrophils isolated from healthy horses. Further studies are needed to determine if other inflammatory mediators present in the blood of horses with sepsis or systemic inflammatory response syndrome would affect NET formation ex vivo.

Poster ID: 272

Poster Code: MB41MS

Presenter Name: Kaitlyn Ieradi

Author: K. Ieradi, J. Cruz-Sanabria, M. Mirza, L. Riggs, ML. Trenta, C. Liu, B. Leise

Title: Assessment of potential risk factors associated with postoperative incisional infections in horses undergoing emergency celiotomy in Louisiana

Affiliation: Department of Veterinary Clinical Sciences, Louisiana State University, School of Veterinary Medicine, Skip Bertman Drive, Baton Rouge, LA 70803, USA

Abstract: Rationale: Surgical site infections (SSIs) remain the most common postoperative complications after equine emergency celiotomy with a prevalence rate of 15-20%. The objective of this study was to determine risk factors for SSI following emergency celiotomy and to determine the common bacterial isolates cultured; isolates subsequently tested in ongoing growth inhibition and tensile strength studies.

Methods: LSU-SVM records for horses undergoing emergency celiotomy between July 2022-November 2023 were analyzed. Horses that were euthanized or died before discharge were excluded. Owners and/or referring veterinarians were contacted to determine SSI development post-discharge. Signalment, intake examination, anesthetic parameters, surgical findings/procedures, and postoperative conditions were recorded for each case. A multi-logistic regression model assessed SSI and survival-to-discharge outcomes. Significance was set at $p < 0.05$.

Results: 119 horses underwent emergency celiotomy during the study period, with 64 meeting inclusion criteria. 35.9% of horses developed SSI with 23.4% of those confirmed via culture in hospital. Most common isolates from incisions included *Escherichia coli*, *Enterobacter cloacae*, *Staphylococcus aureus*, and *Enterococcus faecalis*. Odds of SSI increased by 1.14 times (95% CI: 1.04-1.27, $p = 0.0102$) for each year increase in age. Odds of SSI increased by 4.03 times (95% CI: 1.11-16.09, $p = 0.0378$) when days hospitalized exceeded seven. Odds of SSI increased by 4.44 times (95% CI: 1.11-20.16, $p = 0.0403$) in *Salmonella*-positive horses. Inclusion of the post-discharge SSI cases increased incidence to 35%.

Conclusions: Limitations include short duration and retrospective nature; however, positive culture SSI on 23.4% suggests that continual data collection may reveal additional risk factors.

Poster ID: 273

Poster Code: MB42VST

Presenter Name: Emma Christopher

Author: Emma Christopher, Cambri Moeller, Lauren Guarneri, Emi Sasaki, Sita Withers

Title: Expression of Adhesion Proteins in Low-Grade and High-Grade Canine Soft Tissue Sarcomas

Affiliation: Department of Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

Abstract: Soft tissue sarcomas (STS) are cancers of mesenchymal origin that can be divided into low-grade or high-grade tumors. High-grade tumors are more likely to metastasize and recur after incomplete surgical excision. Due to STS being more common in dogs than humans, dogs can serve as an excellent model for studying STS. One strategy utilized by cancer cells in metastasis is epithelial-to-mesenchymal transition (EMT) and its reverse process, mesenchymal-to-epithelial transition (MET). We hypothesized that high-grade canine STS would downregulate transcripts and proteins involved in cell adhesion and epithelial differentiation, and upregulate markers of mesenchymal differentiation. We identified 11 low-grade (grade 1 or 2) STS, and 11 high-grade (grade 3) STS from the tissue archives at the Louisiana Animal Disease Diagnostic Laboratory (LADDL). Transcriptomic analysis was performed using the nCounter Canine IO panel on the SPRINT profiler (Nanostring). Immunohistochemistry was performed to detect expression of adhesion proteins (epithelial cellular adhesion molecule (EpCAM) and E-cadherin), markers of epithelial differentiation (cytokeratin 7 and 14 (CK7 and CK14)), and a marker of mesenchymal differentiation (vimentin). Whole-slide imaging was performed using NanoZoomer imaging technology, and images were analyzed with QuPath software. Preliminarily, mRNA expression of EpCAM, E-Cadherin, CK7, and CK14 appears downregulated in high-grade STS when compared to low-grade STS. We found that E-cadherin showed lower expression in high-grade STS when compared with low-grade STS. There was not a significant difference in EPCAM, Vimentin, CK7, or CK14 expression. These data may further our understanding of the mechanisms that potentiate the aggressive clinical course of high-grade canine

Poster ID: 274

Poster Code: MB43MS

Presenter Name: Nadia Kelly-Richmond

Author: N.L. Kelly-Richmond, W.N. Beavers, S.D. Dehghanpir, A.N. Johnston

Title: Transgelin, Desmin, and Galectin-1 Expression in Canine Hepatobiliary Neuroendocrine Neoplasms

Affiliation: Departments of 1Veterinary Clinical Sciences and 2Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University

Abstract: Rationale: Hepatobiliary neuroendocrine neoplasms (NENs) are uncommon tumors in people and dogs. The limited understanding of their biologic behavior poses a diagnostic and prognostic challenge in the clinical setting. Previous work in our laboratory compared the proteomic expression of three primary canine hepatobiliary NENs to normal hepatobiliary tissue and identified thirty-two upregulated proteins. The goal of this study was to determine whether there is divergent protein expression in canine gallbladder (GB) versus hepatic NENs.

Methods: Formalin-fixed paraffin embedded tissue from histologically confirmed canine hepatic (n = 10) and GB (n = 24) NENs were submitted for protein extraction, liquid chromatography-mass spectrometry (LC-MS), and bioinformatic analysis. Expression of select proteins was further evaluated by immunohistochemical staining.

Results: Three proteins of interest, transgelin, desmin, and galectin-1, were investigated. Desmin and transgelin were significantly upregulated in GB compared to liver NENs. Galectin-1 expression was upregulated in our previous study but protein expression was not significantly different between these groups. Neoplastic cells of both tissue types demonstrated positive cytoplasmic transgelin and galectin-1 staining, while desmin co-localized with vimentin to perivascular stromal cells.

Conclusions/Implications: Neoplastic cells of canine hepatobiliary NENs exhibit consistent positive cytoplasmic expression of transgelin and galectin-1, both of which have been identified as promising biomarkers for various human cancers. The co-localization of desmin to perivascular stroma suggests that there is increased angiogenesis in GB NENs.

Poster ID: 276

Poster Code: MB44UGST

Presenter Name: Kennedy Trahan

Author: K.Trahan, T.Rangasamy, D.Jeansonne, A.Mohanty-Aldana, J.Le, A.Sharma, B.Abuaita, and S.Jeyaseelan

Title: Development of Small Molecule-based Intervention to Combat the Infection Caused by the Superbug Carbapenem-resistant *Klebsiella pneumoniae*

Affiliation: Department of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA 70803.

Undergraduate Research, LSU College of Science, Biological Sciences Dept.

Abstract: Rationale: The rise of antibiotic-resistant bacteria is a growing concern worldwide, with an estimated 4.95 million deaths in 2019. Bacteria that are resistant to carbapenem (Superbugs) are among the most dangerous to human health. Limited antibiotic treatments are available to control the infection caused by these superbugs. In this study, we evaluated the antimicrobial properties of sulforaphane, a small molecule activator of Nrf2 against the superbug, carbapenem-resistant *Klebsiella pneumoniae* (CRKP).

Methods: We investigated the effects of sulforaphane on the growth of CRKP at different time points. Then, we assessed the phagocytic capacity and intracellular killing abilities of human alveolar macrophages (hAM) and human monocyte-derived macrophages (hMDM) by infecting them with opsonized CRKP. We also characterized the presence of CRKP in infected hAM using transmission electron microscopy (TEM) and analyzed the expression Nrf2 under these conditions by immunofluorescent labeling.

Results: Treatment with sulforaphane (both 10 μ M and 100 μ M) significantly inhibited the growth of CRKP at 5 h time point. Interestingly, both hAM and hMDM were able to phagocytize as well as kill the opsonized CRKP at later time points (5 h and 24 h). Characterization using TEM showed the presence of multiple CRKP in infected hAM. Immunofluorescent labeling using anti-Nrf2 antibody showed the nuclear translocation of Nrf2 in both CRKP-infected and sulforaphane-treated hAM and hMDM.

Conclusion: These results show the effectiveness of sulforaphane against a clinically relevant superbug, which has the potential to improve survival for patients infected with CRKP.

Poster ID: 277

Poster Code: MB45MS

Presenter Name: PRANTHO MALAKAR DIPTA

Author: Y. Kulatheepan, L. Jin, J. Le, D. Jeansonne, K. Hoang, T. Rangasamy, and S. Jeyaseelan

Title: Role of Acute Alcohol Exposure in *Klebsiella pneumoniae* Induced-Pneumonia

Affiliation: Center for Lung Biology and Disease and Department of Pathobiological Sciences, Louisiana State University, Baton Rouge, LA, USA

Abstract: Background: *Klebsiella pneumoniae* (KP), a Gram-negative bacterium, induces severe pneumonia associated with devastating pathological consequences in the lung such as substantial parenchymal damage. The effects of acute alcohol consumption on the host's innate immune response to KP during infection remain unclear.

Methods: Age-matched C57BL/6 female mice were administered 6g/kg of 32% alcohol (600 μ l/mouse) or PBS (600 μ l/mouse) via oral gavage 30 minutes prior to infection with KP (ST 28 strain, 1×10^3 colony forming units in 50 μ L/mouse) through the intra-tracheal route. Mice were sacrificed 24 and 48 hours post-infection and performed bronchoalveolar lavage fluid (BALF) phenotyping, quantified different inflammatory cytokines/chemokines in the BALF, and enumerated bacterial burden in different organs. We treated the bone marrow-derived neutrophils (BMDNs) with alcohol and assessed the extracellular bacterial killing ability and Neutrophil Extracellular Trap (NET) formation at different time points. We also analyzed the levels of different granulocyte population and granulocyte progenitor cells in the blood and bone marrow using flow cytometry.

Results: Acute alcohol treatment of WT mice resulted in increased bacterial burden in the lungs, BALF, liver, and spleens, as well as increased recruitment of neutrophils and macrophages in the BALF of mice. Treatment with alcohol inhibited the extracellular bacterial killing ability at 3 hour and 6 hour time point.

Conclusions: Acute alcohol significantly impacts *Klebsiella pneumoniae*-induced pneumonia through modulating the recruitment and function of innate immune cells, such neutrophil and macrophages.

Poster ID: 278

Poster Code: MB46PHD

Presenter Name: Sabrina Bellaver Cousseau

Author: S. Cousseau¹, T. Adams¹, M. Mitchell¹, C. Pinto^{1,2}

Title: Effects of a Pre-maturation Treatment on Markers of Nuclear and Cytoplasmic Maturation of Equine Cumulus-Oocyte-Complexes.

Affiliation: 1 Department of Veterinary Clinical Sciences Department , School of Veterinary Medicine, LSU

2 Department of Ambulatory Medicine and Theriogenology, Cummings School of Veterinary Medicine, Tufts

Abstract: Rationale: The effects of a commonly used pre-maturation treatment known as “holding” on nuclear and cytoplasmic maturation of oocytes with different cumulus cell morphology have not been described.

Methods: A pool of 148 oocytes were divided according to cumulus cell morphology: expanded (EX; n=58) or compact (CP; n=90), and into two sampling times: T0h, at collection; T18h, after 18 hours of treatment. Oocytes were stained with MitoTracker CMTMRos, alpha-tubulin antibody and Hoescht 33342 for mitochondria and microtubule distributions (Heterogeneous; Homogeneous, Abnormal), and chromatin configuration (Immature; Resumption of Meiosis; Degenerated). Chi-square with Yate's Correction or Fisher's Exact test were applied, with $p=0.05$.

Results: At T0h, 95.65% EX and 100% CP were immature. EX presented a higher proportion of chromatin condensation than CP ($p=0.002$). For mitochondria distribution, EX presented similar proportions of homogeneous and heterogeneous. CP presented a higher proportion of homogeneous ($p=0.0001$) and EX presented more heterogeneous ($p=0.036$). For microtubule distribution, EX presented similar proportions of homogeneous and heterogeneous, while CP showed a higher proportion of homogeneous ($p=0.0001$). At T18h, a significant proportion of EX resumed meiosis ($p=0.027$), while all CP remained immature. A progression in chromatin condensation in immature CP was observed ($p=0.001$). Treatment did not influence mitochondria distribution for EX and CP. A reduction in the proportion of EX with normal heterogeneous microtubule distribution was recorded ($p=0.010$). CP did not show progression from homogeneous to heterogeneous.

Conclusions/Significance: Different populations of equine oocytes respond differently to holding and this treatment may not benefit oocyte maturation.

Poster ID: 279

Poster Code: MB47PDR

Presenter Name: Ganesan Muthusamy

Author: G Muthusamy and AN Johnston

Title: Characterization of the PGAM5 Inhibitor LFHP-1c on Hepatocellular Carcinoma

Affiliation: Veterinary Clinical Sciences, Louisiana State University, Baton Rouge, LA

Abstract: Rationale: Metabolic dysfunction-associated steatotic liver disease is emerging as a leading cause of hepatocellular carcinoma (HCC). Phosphoglycerate mutase 5 (PGAM5) is a Ser/His/Thr phosphatase responsible for regulating mitochondrial homeostasis. Overexpression of PGAM5 is correlated with a poor prognosis in HCC. Silencing of PGAM5 reduces HCC growth, which has been attributed to decreased mitophagy, enhanced apoptosis, and dysregulated lipid metabolism. A PGAM5 phosphatase inhibitor, LFHP-1c, has recently become commercially available. We aim to establish whether LFHP-1c recapitulates the effects of PGAM5 knockout in HCC cell lines.

Methods: Human HCC (Huh7) and hepatoma (HepG2) cell lines were treated with LFHP-1c at multiple concentrations. Cell growth and viability were quantified using live-cell bright field microscopy, the Caspase 3/7 assay (Sartorius), and the CellTiter-Glo luminescent assay. Lipid droplet accumulation was measured by spectrophotometric quantification Oil Red O. NRF2 protein expression, determined by Western blot, was used as a surrogate marker of PGAM5 phosphatase inhibition.

Results: At the concentrations tested, PGAM5 phosphatase inhibition by LFHP-1c has minimal impact on HCC cell growth and ATP production. Preliminary data suggest that LFHP-1c reduces lipid droplet accrual following palmitate treatment.

Conclusion: Further experiments are needed to characterize LFHP-1c's impact on PGAM5's phosphatase activity and whether molecular inhibition of PGAM5 catalysis modulates HCC viability.

Poster ID: 280

Poster Code: MB48PHD

Presenter Name: Kiran Fida

Author: K. Fida, T. Taguchi, R. Aoun, M. J. Lopez

Title: Meta-analysis of the Effects of Adult Tissue-Derived Stem Cell Therapy on Equine Tendinopathy and Ligamentopathy

Affiliation: Department of VCS, School of Veterinary Medicine, LSU.

Abstract: Rationale: Tendon and ligament injuries cause functional impairment in horses. A disorganized fiber pattern contributes to a 67% reinjury rate within 2 years. Stem cell treatments have gained attention as a potential solution. This systematic meta-analysis was designed to compare studies in the scientific literature to evaluate their efficacy.

Methods: A comprehensive literature review of PubMed, Web of Science, and Google Scholar databases was performed. Keywords “equine”, “horse”, “tendon”, “stem”, “cells” were used. Randomized controlled trials, prospective studies, and retrospective studies on bone marrow and adipose-derived stem cells were included. Whereas, secondary analyses, review papers, non-English studies, and studies of pluripotent and embryonic stem cells were excluded. Data extracted for this study were: horses returning to soundness, ultrasound imaging, histological, and biochemical evaluation. Statistical analysis was performed using Review-Manager. Results were represented as odd ratios, and standard mean differences with 95% confidence intervals ($p < 0.05$).

Results: Twenty-one studies were included. Significant benefits of stem cell resulted in enhanced return to performance (OR = 5.30, $p < 0.0001$), reduced echogenicity (SMD = -1.94, 95% CI [-2.89, 0.98], $p < 0.0001$), increased vascularity (SMD = 1.07, 95% CI [0.23, 1.92], $p = 0.01$), and improved fiber alignment (SMD = -1.31, 95% CI [-2.32, -0.30], $p = 0.01$) compared to control groups.

Conclusion: A positive impact of cellular therapies on tendon and ligament injuries based on an increased rate of return to performance and improved microstructure was observed compared to controls showing promise. Additionally, randomized controlled trials will increase scientific support of the treatment.

Poster ID: 281

Poster Code: MB49VST

Presenter Name: Christian Arias

Author: C. Arias, S. Mordoh, H. Banse, A. Chapman, M. Keowen, F. Garza, Jr., A. Ferdonnet, F. Andrews, M. Mitchell

Title: *Megasphaera elsdenii*: effect on blood/fecal pH and lactate in horses transitioned to high grain low fiber diet

Affiliation: Equine Health and Sports Performance, Veterinary Clinical Sciences, School of Veterinary Medicine, (Arias, Mordoh, Banse, Chapman, Keowen, Garza, Ferdonnet, Andrews), PBS (Mitchell)

Abstract: Current feeding practices in competition horses include increased amounts of grain and lower amounts of forage. This change in diet has been shown to shift the microbial community to lactic acid producing bacteria and can lead to colonic acidosis. Many probiotics fed to horses do not address lactic acidosis in the hindgut of horses on high grain diets. *Megasphaera elsdenii* (Mega e) is a lactate utilizer and native inhabitant of the equine gut (Biddle et al. 2013; Douthit et al. 2019). The purpose of this study is to measure fecal and blood pH, fecal and blood lactic acid, and evaluate the microbiome in horses transitioned to a high grain, low roughage diet. We hypothesize that daily oral administration of Mega e reduces fecal lactic acid, maintains fecal and blood pH in horses transitioned to a high grain, low roughage diet. Blood and manure samples were collected from 6 horses from the EHSP herd. Horses were randomized into 2 groups (treatment and control) and housed in stalls. Group 1 received 2 Mega e boluses (Lactipro) mixed with feed on Days 0-14, then 1 bolus on Days 15-42. Group 2 received no treatment Days 0-42. Days 0-14 both groups were fed a normal diet then transitioned to a high grain/low roughage diet during Days 15-42. Preliminary results show decreased blood pH in Group 2 from days 0-35. The pH did not decrease in the treated group during this time, suggesting Mega e might be utilizing lactic acid.

Poster ID: 282

Poster Code: MB50UGST

Presenter Name: Allyson Mohanty-Aldana

Author: Allyson Mohanty-Aldana, Tirumalai Rangasamy, Sagar Paudel, Kennedy Trahan, John Le, and Samithamby Jeyaseelan

Title: Investigating the Therapeutic Potential of Lung-Derived Mesenchymal Stem Cells in Pneumococcal pneumonia .pdf

Affiliation: Department of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA 70803

Abstract: Rationale: Pneumococcal infection causes approximately 1.6 million deaths globally and costs hundreds of billions of dollars globally. *Streptococcus pneumoniae* (*Pneumococcus*) is the leading cause of a range of diseases, including community-acquired pneumonia. There is a need to identify novel therapies that can further improve the morbidity and mortality of patients suffering from Pneumococcal pneumonia.

Methods: We determined the extracellular and intracellular bacterial killing abilities (by infecting with the *S. pneumoniae*) of Sca-1+ lung-derived mesenchymal stem cells (LMSCs), bone marrow-derived neutrophils (BMDNs), and macrophages (BMDMs) in vitro. To determine the therapeutic potential of LMSCs, we administered Sca-1+ LMSCs into the lungs of C57BL/6 mice 4 h post-infection with *S. pneumoniae*. We sacrificed the mice 48 h post-infection and performed bronchoalveolar lavage fluid (BALF) phenotyping, lung pathology, and bacterial burden in different organs. We also performed

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survival studies by injecting Sca-1 LMSCs into the lungs of *S. pneumoniae* infected mice.

Results: Sca-1+ LMSCs showed more potent inhibitory effects on the growth of *S. pneumoniae* than BMDNs and are very efficient in the phagocytic uptake and intracellular killing of *S. pneumoniae* than BMDMs. Furthermore, administration of Sca-1+ LMSCs attenuated the infiltration of inflammatory cells

(predominantly neutrophils) in the BALF, reduced the pathologic lesions in the lungs, and enhanced the bacterial clearance in the lungs and in the extrapulmonary organs, as well as rescued the mice from death caused by this highly invasive bacterium.

Conclusion: Our findings revealed the antibacterial, anti-inflammatory, and protective role of LMSCs in pneumococcal pneumonia.

Poster ID: 283

Poster Code: MB51VST

Presenter Name: Emily Smith

Author: E. Smith, R. Aoun, C. Takawira, M. J. Lopez

Title: Radiographic Measures in Unaffected and Laminitic Hooves with Distinct Shoes During Application of a Weightbearing Load

Affiliation: Laboratory for Equine and Comparative Orthopedic Research

Research Grant: Tynewald Foundation

Student Support: LSU School of Veterinary Medicine

Abstract: Laminitis is a hoof pathology that can result in separation of the third phalanx (P3) from the hoof wall. Shoes can be used to support weakened tissues. This study's objective was to compare effects of open-heel (OH), heart-bar (HB), egg-bar (EB), and wooden clog (WS) shoes on radiographic P3 localization in unaffected and laminitic hooves during compressive loading. It was hypothesized that rotation and sinking would be greater in laminitic hooves with increasing load, and WS would reduce displacement, followed by HB, EB, OH, then US. Laminitic and unaffected disarticulated fore digits were fixated at the deep digital flexor tendon and proximal interphalangeal joint. The proximal portion of the specimen was stabilized in polyvinyl-chloride pipe and resin to fit a mechanical testing system mimicking a ground reaction force during a 550 Kg-horse step cycle. Radiographs were acquired at 25% increments of maximum load. The position of P3 was determined by measuring the coronary-P3 extensor process distance (CE) and sole depth (S) contributing to the degree of sinking; and proximal and distal horn-lamellar zones (PHL, DHL) and parietal surface angle (A2) contributing to the degree of rotation. Results show that S decreased most in healthy unshod hooves. In laminitic hooves, HB and EB resulted in the highest A2, PHL, and DHL, while WS resulted in the opposite trend. WS decreased the rotation of P3 with increasing load in laminitic hooves compared to other shoes. Stabilizing P3 in affected hooves with shoes such as WS can reduce the worsening consequences of laminitis.

Poster ID: 284

Poster Code: MB52PHD

Presenter Name: Ignitius Lim

Author: I.E.Lim.O.M.Ogundele

Title: Unraveling the potential circuitry of BNST, CeA, and DRN triad on the neural regulation of positive and aversive stimuli.

Affiliation: Louisiana State University

Abstract: Neural circuits containing projections from the dorsal raphe nucleus (DRN), bed nucleus of the stria terminalis (BNST), and central amygdala (CeA) govern psychosocial conditions and anxiogenic behaviors. How these circuits contribute to the expression of anxiogenic behaviors that are primarily driven by aversive stimuli has been tested with great certainty. However, the role of this (triad) circuit in the expression of behaviors that discriminate between positive and negatively valenced stimuli is still poorly understood. The purpose of this study was to investigate the encoding mechanism of this circuit (triad) to positive and negatively valenced stimuli. Here, we deployed high-throughput in vivo neural recording techniques in head-fixed anesthetized mice. High channel count probes were positioned in the DRN, CeA, and BNST for concurrent recording of neural spikes when odorants (neutral, aversive, and rewarding) were presented. Putative units in the DRN, CeA, or BNST showed a net increase in FR when a positive or negatively valenced stimulus was presented. However, putative units within the DRN or BNST components of the triad discriminated between valences by showing significantly higher thresholds of FR increase when an aversive stimulus was presented. Interestingly, there was a significant sex difference in the fidelity of encoding. As such, ensembles sampled in females showed higher levels of sensitivity in comparison to male ensembles. In conclusion, the results demonstrate sex-linked sensitivity of the triad to both positive and negative valenced stimuli. Furthermore, the encoding mechanism discriminates between valences by altering the magnitude of FR change.

Poster ID: 285

Poster Code: MB53PHD

Presenter Name: Ivan Martinez-Espinoza

Author: I. Martinez-Espinoza, A. Guerrero-Plata

Title: Unveiling the Potential Therapeutic Effect of Novel Interferon Response on Human Respiratory Pneumovirus Infections

Affiliation: Louisiana State University School of Veterinary Medicine

Abstract: Rational: Type I interferons (IFN-I), such as IFN- α and IFN- β , have demonstrated efficacy in treating specific viral infections but pose notable side effects. IFN epsilon (IFN-e), a newly identified IFN-I member, is constitutively present in various tissues, including the lungs. Currently, some reports have shown the efficacy against genital infections, However, its effectiveness against respiratory viral infections has not been reported.

Methods: Our research aimed to investigate if IFN-e has an antiviral effect on human respiratory pneumoviruses such as Human Metapneumovirus (HMPV) and Respiratory Syncytial Virus (RSV). We assessed its expression, toxicity, susceptibility, and antiviral influence on HMPV and RSV infection using an alveolar cell line and recombinant viruses expressing fluorescent proteins in combination with cell-live imaging, flow cytometry, and molecular techniques.

Results: Here we demonstrate that pneumoviruses can induce IFN-e and are susceptible to its antiviral activity, reducing both the number of infected cells and viral titers in vitro. This effect is may be attributed to the induction of IFN-stimulated gene expression and a low inflammatory profile.

Conclusion: Our findings underscore pneumoviruses susceptibility to IFN-e, suggesting a potential therapeutic role for this novel IFN-I family member in treating respiratory viral infections.

Significance: Currently, the absence of a viable vaccine to treat these infections in children adds to the complexity of respiratory infections, creating a scenario with limited therapeutic options. This work highlights the potential use of recombinant IFN-e as an alternative way to treat pneumovirus infections.

Poster ID: 286

Poster Code: MB54PHD

Presenter Name: Biplov Sapkota

Author: N. Chintalaramulu¹, A. Pandit¹, S. Thota¹, R. Begum¹, A. Mansouri², J. Adamec², J. Francis¹

Title: Establishing CAF-like and TAM-like transformation induced by TNBC culture supernatant in 3D in-vitro culture as a model for targeted drug testing

Affiliation: 1Department of Comparative Biomedical Sciences, School of Veterinary Medicine, LSU, Baton Rouge, LA 70820

2Department of Interdisciplinary Oncology, LSUHSC, New Orleans, LA, 70112

Abstract: Several previous studies have highlighted the significance of cell-to-cell communication, or crosstalk, between tumor cells and non-tumorigenic cells in the context of cancer progression and metastasis. Within the tumor microenvironment (TME), these interactions have the potential to alter the phenotypes and behaviors of normal cells. The use of 2D in-vitro cultures has been limited due to their inability to accurately replicate the intricate in-vivo TME. Conditioned Medium (CM) derived from cultured cancer cells contains secreted factors that may influence the phenotype and functionality of normal cells. In our investigation, the exposure of normal murine fibroblast NIH3T3 and macrophage RAW 264.7 cells to conditioned medium (CM) obtained from malignant mammary epithelial 4T1 cells (4T1CM) resulted in a modified phenotype with enhanced cell viability. Treatment with 4T1CM led to the upregulation of genes, including α -smooth muscle actin (α SMA), IL-10, CD206, and vascular endothelial growth factor (VEGF) in NIH3T3 and RAW 264.7 cells compared to their respective control cells. Additionally, NIH3T3 cells treated with 4T1CM exhibited an epithelial-mesenchymal transition (EMT) phenotype, as indicated by the regulation of EMT markers such as E-cadherin, β -catenin, N-cadherin, and Vimentin. Notably, RAW 264.7 cells treated with 4T1CM showed an upregulation of cyclooxygenase-2 (COX-2) and programmed death-ligand 1 (PDL-1), suggesting a propensity for an inhibitory immune response. Moreover, NIH3T3 cells conditioned with 4T1CM demonstrated an upregulation of stemness markers, including sex determining region Y-box 2, and Aldehyde dehydrogenase. In summary, our study highlights the potential role of 4T1CM in transforming normal NIH3T3 and RAW 264.7 cells into cancer-associated

Poster ID: 287

Poster Code: MB55PHD

Presenter Name: Abhishek Pandit

Author: D. Singh, R. Pathak, N. Chintalaramulu, M. White, P. Ebenezer, J. Francis

Title: Caveolin-1 Knockout Mitigates Breast Cancer Metastasis to the Lungs via Integrin $\alpha 3$ Dysregulation

Affiliation: Department of Comparative Biomedical Science, School of Veterinary Medicine,
Louisiana State University

Krannert Cardiovascular Research Center, Indiana University Health, Indiana

Abstract: Rationale: Caveolin-1 (Cav-1) is a critical lipid raft protein playing divergent roles as both a tumor suppressor and promoter. While its role in tumorigenesis, progression, and metastasis is recognized, explicit contribution of Cav-1 to the onset of lung metastasis from primary breast malignancies remained vague. We exhibit here, the first-ever evidence of Cav-1 knockout in epithelial cells leading to a significant reduction in lung metastasis in syngeneic mouse models of breast cancer.

Methods and Results: In vitro, Cav-1 knockout in 4T1 cells suppressed extracellular vesicles secretion, cellular motility, and MMP secretion vis-à-vis the controls. Complementing this, our in vivo analyses demonstrated a marked reduction in lung metastatic foci in mice injected with Cav-1 knockout 4T1 cells as compared to wild-type mice, which was further corroborated by mRNA profiling of the primary tumor. We discerned 21 epithelial cell migration genes exhibiting varied expression in tumors derived from Cav-1 knockout versus wild-type 4T1 cells. Correlation analysis and immunoblotting further divulged that Cav-1 regulates metastasis via integrin $\alpha 3$ (ITGa3). In silico protein docking anticipated an interaction between Cav-1 and ITGa3, substantiated by co-immunoprecipitation. Furthermore, ITGa3 knockdown corroborated its role in metastasis in a cell migration assay.

Conclusion: Therefore, it can be inferred that Cav-1 plays a pivotal role in the pre-metastatic niche establishment and facilitates lung-specific cell migration.

Poster ID: 288

Poster Code: MB56VST

Presenter Name: Jordan Vivien

Author: J. Vivien, E. Turner, S. Clark, R. Christofferson

Title: Assessing the Phenotype of Orthobunyaviruses in Louisiana Mosquitos

Affiliation: Department of Pathobiological Sciences

School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

Abstract: Climate change increases the threats that arboviruses pose. Rising climate temperatures accelerate many biological processes affecting arbovirus transmission. Geographic expansion of mosquito-borne diseases has also resulted from climate change, increasing the transmission of dengue, chikungunya, and Zika in temperate areas like Europe. Recent cases of malaria transmission in Texas and Florida have incited conversations of vector-borne disease threats in the Gulf South. *Aedes albopictus* and *Ae. aegypti* are two mosquito species of interest as they are known to transmit various viruses of concern and have become endemic to the Gulf Coast. While many areas in this region have robust mosquito control programs, interruptions occur during extreme weather events and with substandard housing lacking the infrastructure necessary to interrupt mosquito-human contact. There is no information regarding vector competence of Louisiana *Aedes* mosquitoes for Batai virus. BATV shares many transmission similarities with West Nile virus and can infect *Ae. albopictus*. The initial transmission period for WNV in LA is May-June when the average temperature is 26.6°C. This project tested the vector competence of *Ae. albopictus* to transmit BATV under conditions aligning with IPCC climate projections for 2030, an increase of 1.5°C. *Ae. albopictus* juveniles were collected from Baton Rouge, LA and reared to adults. Females were blood-fed BATV and maintained at 28°C. Mosquitos were force salivated and tested for the presence of BATV in the saliva and midgut using qRT-PCR. Vector competence rates were calculated and the potential for *Ae. albopictus* in South LA to transmit this arbovirus discussed.

Poster ID: 289

Poster Code: MB57HOR

Presenter Name: Alaina Kuehr

Author: A. Kuehr, A. Muir, C-C. Liu, E. Benton-Levith, CM. Scully, J. Cremer

Title: Evaluation of the Sedative and Cardiopulmonary Effects of Zenalpa in Sheep and Goats

Affiliation: Department of Veterinary Clinical Sciences, Louisiana State University School of Veterinary Medicine

Abstract: Rationale: Medetomidine is a reliable sedative and α -2 adrenergic receptor agonist whose peripheral α -2B receptor activation causes vasoconstriction and reflex-bradycardia. Vatinoxan a peripheral α -2 receptor antagonist is proposed to prevent the above effects. Zenalpa (0.5 mg/ml medetomidine and 10mg/ml vatinoxan) is approved for intramuscular sedation in dogs. Our objective was to assess the sedation duration, quality, and cardiopulmonary effects of intramuscular Zenalpa in ten sheep and ten goats. We hypothesized that 0.06 ml/kg of Zenalpa: 1) produces deep sedation in healthy goats and sheep; and 2) cardiopulmonary variables will be better maintained in goats than in sheep.

Methods: For instrumentation animals were anesthetized with sevoflurane. Sedation score, heart rate, respiratory rate, temperature, mucus membrane color, capillary refill time, invasive systolic, diastolic, and mean arterial blood pressure were recorded at baseline before drug administration, and every 5 minutes following drug administration for the first 60 minutes and then every 15 minutes until the sedation score returned to baseline or up to 150 minutes.

Results: Total sedation time for sheep (102.80 ± 10.90 min) was significantly shorter than for goats (133.50 ± 32.63 min) with ($P = 0.012$). Three goats developed hypotension (MAP <60 mmHg) for greater than five minutes. Eight goats and two sheep developed an SPO₂ $<90\%$ or a PaO₂ <60 mmHg.

Conclusion: Adverse effects limit the utility of Zenalpa in goats and provide predictable sedation in healthy sheep with clinically acceptable cardiopulmonary changes in the presence of oxygen supplementation.

Poster ID: 290

Poster Code: MB58VST

Presenter Name: Alanna Costas Oramas

Author: A. Costas, A. Pandit, B. Sapkota, H. Green, J. Francis

Title: Role of Entresto in Doxorubicin-Induced Cardiotoxicity

Affiliation: Department of Comparative Biomedical Sciences, Department of Veterinary Clinical Sciences

School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

Abstract: Rationale: Doxorubicin (DOX) is a potent chemotherapeutic agent known for its high efficacy; however, dose-dependent cardiotoxicity undermines its effectiveness in cancer therapies. Entresto (sacubitril/valsartan), an angiotensin-receptor neprilysin inhibitor, reduces cardiovascular events in heart failure patients with reduced ejection fraction. The objective was to assess the potential cardioprotective effects of Entresto on doxorubicin-induced cardiotoxicity (DIC) in a mouse model of breast cancer. We hypothesized that Entresto treatment will attenuate doxorubicin-induced cardiotoxicity.

Methods: We employed a syngeneic tumor model by injecting 4T1 wild-type cells into the mammary fat pad of 10-week-old female Balb/c mice via intraperitoneal injection. Subsequently, after a week of tumor cell injection, groups were treated with DOX at 8 mg/kg body weight/week for 3 weeks. Following DOX treatment, control and tumor animals were gavaged daily with saline (n = 5), while Entresto groups were gavaged with Sac/Val (60 mg/kg) for 3 weeks. Echocardiography was performed to assess cardiac function at baseline and 3 weeks post-DOX treatment. RT-PCR, ELISA, and histologic staining were performed.

Results: Our results demonstrated that Entresto treatment a) improved cardiac functions as evidenced by fractional shortening and ejection fraction; b) modulated gene expression levels of autophagy-related protein (Beclin-1), apoptosis-associated proteins (caspase-3, and Bcl-2) and antioxidant genes (Nrf2 and Keap1); and c) attenuated histological evidence of cellular toxicity, apoptosis, and fibrosis ($p < 0.05$) in DOX-treated animals with breast cancer.

Conclusions: These findings suggest that Entresto confers cardiac protection against DIC in a mouse model of breast cancer without interfering with the antineoplastic effects of DOX.

Poster ID: 291

Poster Code: MB59PHD

Presenter Name: Pius Babawale

Author: P. Babawale, A. Guerrero-Plata

Title: Molecular Analysis of Antiviral Responses induced by Respiratory Pneumoviruses on Primary Human Epithelial Cells

Affiliation: Department of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University.

Abstract: Background and Rationale: Human Metapneumovirus (HMPV) and Respiratory Syncytial Virus (RSV) are closely related members of the pneumoviridae family and are leading causes of acute respiratory infections (ARI) in infants, the elderly, and immunocompromised individuals. While these two viruses share similar clinical manifestations, the differential antiviral responses between these two viruses remain poorly understood. The objective of this study is to elucidate potential differences in interferon signaling by these two clinically significant viruses.

Approach: In this study, we employ Normal Human Bronchial Epithelial (NHBE) cells cultured in air-liquid interface (ALI) system, which closely mimics the physiological conditions of the human respiratory tract.

Result: Our data revealed differences in the interferon (IFN) responses by these viruses. RSV infection resulted in a robust upregulation of interferon production, as evidenced by elevated levels of IFN-stimulated genes (ISGs). In contrast, HMPV infection exhibited a comparatively modest induction of interferon signaling.

Conclusion/Significance: Our study reveals significant differences in the interferon response elicited by HMPV and RSV in a model closely related to human respiratory epithelium. Identifying differential expression patterns of IFN by HMPV and RSV may lead to the discovery of novel therapeutic targets for developing antiviral drugs, as targeting the interferon signaling pathway represents a promising approach for enhancing host immunity and limiting viral replication.

Poster ID: 292

Poster Code: MB60PDR

Presenter Name: Rizwana Begum

Author: Shilpa Thota, Naveen Chintala, Biplov Sapkota, Abhishek Pandit, Alexandra Noel, Joseph Francis

Title: Epigenetic Control of Autophagy: A Pivotal Modification in Lung Cancer Cells Exposed to E-cigarettes.

Affiliation: Department of Comparative Biomedical Sciences, Louisiana State University and A&M College, Baton Rouge, LA-70803

Abstract: The rising popularity of e-cigarettes (e-cigs) has sparked concerns over their health impacts, particularly regarding lung cancer, a leading cause of cancer mortality globally. Smoking is a well-established risk factor for LCa, but there is growing apprehension about the potential risks associated with vaping and e-cig use. Central to this discourse is the role of autophagy, a crucial cellular process for maintaining cellular homeostasis, which can act as both a tumor suppressor and promoter. The dysfunction of autophagy is believed to play a significant role in the initiation and progression of cancer. Furthermore, the regulation of genes involved in autophagy through epigenetic modifications, particularly DNA methylation, is increasingly recognized as a crucial factor in the development of LCa. Our study explores the possibility that the interplay between autophagy and DNA methylation heightens LCa vulnerability following e-cig aerosol exposure. We exposed the human non-small-cell lung cancer cell line (Calu-3) to menthol-flavored e-cig aerosol using air-liquid interface (ALI) for one hour. Our findings show alterations in autophagy genes (mTOR, ATG12, and ATG16) and stem cell markers (Nanog, SOX2, ALDH1) in the exposed cells. Furthermore, we observed hypermethylation in MGMT (Methylguanine methyltransferase), a DNA repair enzyme involved in chemoresistance, and DAPK (Death-associated protein kinase), a kinase associated with apoptosis, autophagy, and inflammation. We also observed hypermethylation in the CpG promoter regions of Beclin-1 and LC3B. This study provides critical insights into the cellular and molecular alterations induced by e-cigs, highlighting the intricate relationship between autophagy, epigenetic modifications, and lung carcinogenesis.

Poster ID: 293

Poster Code: MB61PHD

Presenter Name: Parisa Zeaiean Firouzabadi

Author: C. Takawira, R. Aoun, and M. Lopez

Title: Optimization of Equine Hoof Laminae Staining and Fixation for Micro-Computed Tomography

Affiliation: Laboratory for Equine and Comparative Orthopedic Research, Veterinary Clinical Sciences Department, LSU

Abstract: Rationale: The intrinsic low contrast of soft tissues limits the use of micro-CT to capture high-resolution structural images. To overcome these constraints, specialized fixation and staining protocols are required. Methods for staining radiolucent tissues with phosphotungstic acid (PTA), iodine metal (I2), and potassium iodide with iodine (I2KI) are available, but equine hoof laminae tissue staining is not well described. The goal is to identify the best fixation and staining protocol for micro-CT imaging of normal and damaged laminae for morphological studies and to generate 3D models.

Methods: Nine samples (4x3 cm) of normal and laminitic tissue were collected immediately after euthanasia. Samples were fixed with graded ethanol concentration fixation (GECF), 70% ethanol, or 10% formalin. After fixation samples were stained with PTA, I2 in ethanol, or I2KI. Specimens were scanned with a micro-CT (Scanco40). Percentage of gray values, gray-scale peak, and volume of each sample were analyzed. Length, distance, and width of laminae in the middle of samples were measured.

Results: Normal sample stained with I2 and fixed with GECF showed more percentage of gray value in comparison with other samples. Subsequently, this sample demonstrated more maximum value of gray scale. Laminitic sample stained with I2KI and fixed with 10% formalin showed more percentages of gray values and maximum values of grayscale values compared with the other lam samples. Normal and laminitic samples illustrated different volume, length, distance, and width of the laminae.

Conclusions: In conclusion, the I2 stain after GECF fixation among others shows optimum visualization of the laminae.

