

Proceedings  
**Research Emphasis Day**



**Society of Phi Zeta**

The Honor Society of Veterinary Medicine  
**Tau Chapter**

**February 24, 2021**

Louisiana State University  
School of Veterinary Medicine

# PHD STUDENTS

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PHD2	V.Gomes, K.Crissman, K.Beckers, A.Garcia, J.Sones  Sexually Dimorphic Kiss1/Kiss1r Dysregulation in the Reproductive White Adipose Tissue of BPH/5 Mice, A Model of Preeclampsia	PHD11	E.Turner  The Inactivation Of Sars-CoV-2 By Broad-spectrum UV Radiation
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PHD5	L.Yutzy, P.Allen, J.Martinez  Examination of Rickettsial Effector Proteins and their Putative Functions in Pathogenesis	PHD14	I. Choudhary, T. Vo, K. Paudel, R. Yadav, Y. Mao, S. Patial,, Y. Saini  Postnatal Ozone Exposure Disrupts Alveolar Development, Exaggerates Mucoinflammatory Responses, and Suppresses Bacterial Clearance in Developing Scnn1b-Tg+ Mice Lungs
PHD6	P. Allen, R. Noland, J. Martinez  Rickettsia conorii Growth in THP-1 Macrophages Requires Host Lipid Catabolism and Lipid Droplet Modulation	PHD 15	I. Choudhary, Y. Mao, K. Paudel, D. Singamsetty, T. Vo, S. Patial, Y. Saini  Myeloid Cell Specific IL-4Ra Deletion Protects Against Allergen Induced Lung Injury
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PHD8	D. Singamsetty, T. Vo, R. Lamichhane, I. Choudhary, K.R. Paudel, S. Patial, Y. Saini  Identification of Cell-Type Responsible for the Increased Responsiveness of Females to Ozone	PHD17	T.Vo, I.Choudhary, K.Paudel, D.Singamsetty, R.Lamichhane, S.Patial, Y.Saini  Characterization of a novel mouse model for deletion of floxed gene in alternatively activated macrophages (M2)
PHD9	A. Sharma, T. Tiersch, H. Cheng  Molecular Fingerprinting of Intracellular Calcium Signals for Determination of Spermatozoa Function in Live-bearing Fishes		

# MASTER OF SCIENCE, HOUSE OFFICERS,

## BASIC RESEARCH

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MB2	MHR	T.L. Batts, I. Langhor, C. Moeller, C. Liu, J.L. Sones, A.N. Johnston  The Preeclampsia-Like BPH/5 Mouse Is Not A Model of HELLP Syndrome But May Be Useful As A Model of Preeclampsia Associated Fatty Liver Disease
MB3	DSNDU	K.Crissman, V.Gomes, K.Beckers, D.Reijnders, J.Sones  Kisspeptin/Receptor Dysregulation During Early Gestation in the BPH/5 Mouse, a Model of Preeclampsia
MB4	MHR	C.R. Alling, C. Liu, I. Langohr, M. Haque, R.E. Baker, R.T. Carter, A.C. Lewin  Assessment of Topical Ophthalmic Cidofovir for Treatment of Bovine Herpesvirus-1 Infection in Cattle Using an Ex Vivo Model
MB5	MHR	T. Hernandez  Detection of 5 of the Most Common Internal Parasites in High Animal Traffic Areas
MB7	DSNDU	K. Como, M. Mitchell, K. Boykin  Jiminy Cricket! Exploring the Opinions of the Veterinary Profession Regarding Entomophagy and the Management of Insect Livestock
MB8	DSNDU	M. Miller, C. Liu, A. Johnston  Evaluation of Differential Gene Expression in the Canine FGF19 Signaling Pathway
MB9	MHR	A. Bauman, C. Moeller, A. Boyd, A. Soileau, J. Schaumburg, C. Pucheu, C. Domaracki, N. Welborn, S. Withers  Memory T-Lymphocyte Subsets in Dogs in Health and with Cancer and Inflammatory Disease
MB10	MHR	G. Castro, J. Cremer, P. Queiroz-Williams, C. Hampton, B. Leise  Toxicity Assessment of Buprenorphine on Equine Articular Chondrocytes in Vitro

MB11	MHR	R. Lamichhane, Y. Saini, S. Patial  Myeloid-cell-specific Ablation of Tristetraprolin (TTP) Increases the Susceptibility of Female Mice to Bleomycin-induced Lung Injury and Fibrosis
MB12	MHR	K. Paudel, T. Vo, I. Choudhary, S. Patial, Y. Saini  Ozone and Host Susceptibility to SARS-CoV-2

## CLINICAL RESEARCH

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MC3	DS	M. Sanford, M. Mironovich, R. Carter, A. Lewin  Assessing Potential for Antiviral Resistance in Feline Herpesvirus
MC5	DS	M.J Oubre; CE Hampton; P. Queiroz-Williams; A. Martin; A.T. Gisclair; B.H. Pypendop  Pharmacokinetics of Intravenous and Oral Gabapentin in Duroc Swine
MC6	CCRHOD	L. P. Guarneri and F. Del Piero  Cholangiocellular carcinoma in a Plains Zebra (Equus quagga) with Metastasis and Hepatic Encephalopathy
MC7	MHRN	M.A.Mironovich, M.Mitchell, C-C.Liu, R.T.Carter, A.C.Lewin  In-vivo Antimicrobial Activity of Topical Ocular Diagnostic Medications
MC8	CCRHOD	C. Wu, S. Ramos, T. Watanabe, M. Woodward, S. Dehghanpir, S. Rutherford, C. Pucheu-Haston  Spontaneous Resolution of Canine Acute Eosinophilic Dermatitis with Edema with Concurrent Gastrointestinal Signs
MC9	DS	M France, MR Smith  Perceived Incidence, Diagnosis, and Treatment of Anaphylaxis in Veterinary Medicine - A Practitioner Survey
MC11	CCRHOD	J.Lee, D.Paulsen  Clostridium difficile-associated, ulcerative typhilitis with cryptosporidiosis in a 13-day-old, reticulated giraffe

# AND VETERINARY STUDENTS

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MC13	MHRN	M. St. Blanc  Effects of a Supplement Containing CBD on Sedation, Ataxia, and Equine Health Parameters	MC22	MHRN	J. Hui; K. Ryan; E. Breitswerdt  Osteomyelitis Associated with Bartonella Henselae Infection in a Cat
MC14	MHRN	A. Dessellea; C.E. Hamptona; A. Favaro da Cunhab, P. Queiroz-Williamsa; E.H. Hofmeister  Aging does not affect the induction dose of propofol in dogs	MC23	MHRN	V. Costa  Exploring the Association of Intratumoral Immune Cell Infiltrates with Histopathologic Grade in Canine Mast Cell Tumors
MC15	CCRHOD	J. Lima, A. Schlueter, S. Dehghanpir, B. Boudreaux, C. Robinson, I. Langohr  Feline mesothelioma: A case report and comparison of cytologic, immunocytochemical, histopathologic, and immunohistochemical findings	MC24	MHRN	L. Kadic  An Ex Vivo Comparison of Metacarpophalangeal Joint Arthrodesis Techniques in the Horse
MC16	CCRHOD	E. Sasaki, D. B. Paulsen, M. R. Smith, V. A. Wurlod, F. Del Piero  Outbreak of Extraintestinal Pathogenic Escherichia coli Necrotizing Pneumonia in Dogs	<b>POST-DOCTORAL FELLOWS</b>		
MC17	MHRN	L. Barden, L. Gaschen, C. Hampton, C. Takawira, A. Nourbakhsh; L. Chin-Chi, M. Lopez  CT Myelography Technique and Morphometry in Healthy Yucatan Pigs	PD1	PD	C. Birkenheuer, J. Baines  HSV-1 ICP22 Maintains Transcriptionally Active RNA Polymerase II On The Viral Genome During Lytic Infection
MC18	DS	A. Free, A. Chapman, F. Andrews  Evaluating the Severity of Macrolide Resistant Rhodococcus equi in Foals	PD2	PD	Liliang Jin, and Samithamby Jeyaseelan  NLRP3 regulates autophagy to control neutrophil extracellular trap formation in sepsis
MC19	DS	O Geels, VCL Gomes, CC Liu, E Oberhaus, JL Sones  Analyzing the Effects of Kisspeptin-10 on In Vitro Models of Equine Placental Development	PD3	PD	D. Bhattarai, S. Paudel, L. Ghimire, L. Jin, S. Jeyaseelan  NLR4 Deficiency Improves Host Protection in Sepsis through Macrophage and T-Cell Responses
MC20	DS	E Rumfola, H Banse, J Ireland, C McGowan  Survey of Perspectives on Veterinary Diagnosis and Management of Laminitis in the Field	PD4	PD	Catherine Takawira, Kathryn P. Spivey, Takashi Taguchi, Michelle L. Osborn, Mandi J. Lopez  Canine Coxofemoral Joint Extension Alter Radiographic Joint Volume
MC21	MHRN	Y Chun, AC Lewin, RT Carter  Retrospective Evaluation of Patients Undergoing Surgical Corneal Grafting Procedures at an Academic Referral Institution: 69 Cases	PD6	PD	J. Chen  Loss of RNA Binding Protein, ZFP36L1, promotes EMT and fibrosis in Hepatocellular

# POST-DOCTORAL FELLOWS AND FACULTY

Cancer Cells by regulating EMT-inducing transcription factor ZEB21

## FACULTY/NON-COMPETING

FP1      FAC      B. Stanfield

Histone Deacetylase 3 associates with key regulators of Toll-like Receptor Signaling in lung epithelial cells

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School of  
Veterinary Medicine

Skip Bertman Drive  
Baton Rouge, LA 70803  
vetmed@lsu.edu  
225-578-9900

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**Poster Code : MB1DSNDU**

**Poster Title : Decreasing the Inhibitory Effects of Myeloid Cells on Lymphocyte Function Using All-Trans Retinoic Acid (ATRA) in Dogs with Cancer**

**Poster Category :** Basic Research

**Poster SubCategory :** DVM, Non-DVM Students

**Presenter Name :** Soileau, Aimee

**Author :** A. Soileau, J. Schaumburg, V. Costa, A. Boyd, C. Moeller, S. Withers

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

**Abstract :** Rationale: Immunosuppressive myeloid cells in the tumor microenvironment, such as tumor associated macrophages and myeloid-derived suppressor cells (MDSCs), play a major role in suppressing antitumor immunity via soluble mediators. One of these factors is arginase, which inhibits T-cell function in other species. Our objectives were to evaluate the inhibitory activity of arginase on canine T cells and the ability of all-trans retinoic acid (ATRA) to modulate immunosuppressive myeloid cells. Methods: Peripheral blood mononuclear cells (PBMCs) isolated from cancer-bearing dogs were exposed to arginase (0-200 nM) in the presence or absence of concanavalin A (5 ug/ml). Phenotypic changes in lymphocyte expression of CD3, CD4, CD8, granzyme B, CD25, and Ki67 was evaluated by flow cytometry. ATRA's immunomodulatory ability was evaluated on sorted MDSCs and monocyte-derived macrophages (2 µM), and cell function was evaluated by an arginase activity assay and reverse transcription quantitative PCR. Results: Arginase decreased expression of granzyme B on CD8+ T lymphocytes and inhibited CD4+ and CD8+ T lymphocyte proliferation. ATRA decreased mRNA expression of IL-10, IL-6, IL-4R, TGF $\beta$ -1 and arginase in monocyte-derived macrophages while having no effect on arginase activity in sorted MDSCs, compared to controls. Conclusions/Significance: These results indicate arginase decreases canine T cell proliferation and cytotoxicity. While ATRA did not alter arginase activity in MDSCs, preliminary evidence suggests its potential inhibitory effects on cancer-promoting inflammation and immunosuppression by canine monocyte-derived macrophages. Further studies are needed to evaluate ATRA's effects on immunosuppressive myeloid cells in clinical patients to determine its utility as an antitumor immunotherapy in dogs.

**Poster Code : MB2MHR**

**Poster Title : The Preeclampsia-Like BPH/5 Mouse Is Not A Model of HELLP Syndrome But May Be Useful As A Model of Preeclampsia Associated Fatty Liver Disease**

**Poster Category :** Basic Research

**Poster SubCategory :** Master (MS), House Officer, Residents

**Presenter Name :** Batts, Tifini

**Author :** T.L. Batts, I. Langhor, C. Moeller, C. Liu, J.L. Sones, A.N. Johnston

**Affiliation :** Departments of Veterinary Clinical Sciences & Pathobiological Sciences

**Abstract :** Rationale: Preeclampsia (PE) is a multisystem disease of pregnancy characterized by abnormal vascular response to placental growth. In 20-30% of PE patients, liver enzymes increase in late gestation due to primary vascular endothelial damage or more severe preeclampsia associated liver diseases, including acute fatty liver of pregnancy (AFLP) and HELLP syndrome ((H) for hemolysis, (EL) for elevated liver transaminases, and (LP) for low platelets). BPH/5 mice spontaneously develop maternal and fetal hallmarks of PE during pregnancy. We hypothesized that they may also phenotypically copy human PE associated hepatic dysfunction. Methods: Blood and liver samples were collected from BPH/5 and C57Bl/6 non-pregnant (NP) females and pregnant BPH/5 mice. Clinicopathologic markers of liver disease, liver and body weight were recorded. H&E and Oil Red O staining were performed to evaluate hepatic histomorphology and lipid accumulation. Inflammatory and metabolic markers were assessed via qPCR. Results: NP BPH/5 female mice had a 25% increase in liver mass compared to NP C57Bl/6, while their body weight was only 15% greater ( $p=0.05$ ). Histologically, the hepatic microsteatosis score was significantly greater in the NP BPH/5 compared to NP C57Bl/6 mice ( $p=0.02$ ). Plasma albumin levels in BPH/5 mice mid (2.95 g/dL) and late (2.78 g/dL) gestation were significantly decreased from NP BPH/5 mice (3.42 g/dL;  $p=0.0008$ ,  $p<0.0001$ , respectively). There were no other significant differences in clinicopathologic markers of liver disease between groups. Conclusion: BPH/5 is not a model of HELLP syndrome but may be a model for PE associated fatty liver disease.

**Poster Code : MB3DSNDU**

**Poster Title : Kisspeptin/Receptor Dysregulation During Early Gestation in the BPH/5 Mouse, a Model of Preeclampsia**

**Poster Category :** Basic Research

**Poster SubCategory :** DVM, Non-DVM Students

**Presenter Name :** Crissman, Kassandra

**Author :** K.Crissman, V.Gomes, K.Beckers, D.Reijnders, J.Sones

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

**Abstract :** Rationale: The BPH/5 is a mouse model of preeclampsia (PE) with females exhibiting increased reproductive white adipose tissue (rWAT) mass and body weight (BW), which are exacerbated during pregnancy. Kisspeptin/receptor (Kiss1/Kiss1r) are expressed in rWAT and the uteroplacental interface, potentially associated with obesity and inadequate placentation seen in PE, respectively. We hypothesized that at embryonic day (e) 7.5, Kiss1/Kiss1r will be higher in BPH/5 implantation sites (IS), but lower in rWAT versus C57 controls. Furthermore, BPH/5 calorie restriction (CR) and weight loss in early pregnancy could ameliorate the Kiss1/Kiss1r dysregulation. Methods: IS and rWAT were collected at e7.5 from BPH/5 and C57 fed ad libitum (ad-Lib), and from e7.5 BPH/5 post 25% CR from e0.5 to e7.5 (n=5-9/group). RT-PCR was utilized to measure Kiss1/Kiss1r and compared using independent samples t-test. Results: BPH/5 e7.5 IS had 2-fold higher Kiss1/Kiss1r when compared to C57 ( $p < 0.05$ ). In the rWAT, Kiss1 was approximately five-fold lower in IS from BPH/5 vs. C57 ( $p < 0.05$ ). Kiss1r expression was 1.5-fold higher in BPH/5 vs. C57 ( $p < 0.05$ ). When comparing ad-Lib and 25% CR e7.5 BPH/5 females, there was no difference in the rWAT Kiss1/Kiss1r ( $p > 0.05$ ). Conclusion: Lower rWAT Kiss1 may correlate with increased adiposity observed in BPH/5 pregnancy; however, CR had no effect on the level of Kiss1/Kiss1r expressed in rWAT of the BPH/5 mouse. BPH/5 mice have higher Kiss1/Kiss1r expression in the IS during early gestation, which may be associated with poor placentation seen in PE. Further investigations are warranted.

**Poster Code : MB4MHR**

**Poster Title : Assessment of Topical Ophthalmic Cidofovir for Treatment of Bovine Herpesvirus-1 Infection in Cattle Using an Ex Vivo Model**

**Poster Category :** Basic Research

**Poster SubCategory :** Master (MS), House Officer, Residents

**Presenter Name :** Alling, Christopher

**Author :** C.R. Alling<sup>1</sup>, C. Liu<sup>1</sup>, I. Langohr<sup>2</sup>, M. Haque<sup>2</sup>, R.E. Baker<sup>1</sup>, R.T. Carter<sup>1</sup>, A.C. Lewin<sup>1</sup>

**Affiliation :** 1Dept. of Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University 2Dept. of Pathobiological Sciences, School of Veterinary Medicine, Louisiana State University

**Abstract :** Rationale: Bovine herpesvirus-1 (BoHV-1) infection causes respiratory, ocular, and reproductive disease in cattle and leads to significant economic losses. The objective of this study was to determine the most effective topical ophthalmic antiviral for treatment of BoHV-1 in cattle and to demonstrate efficacy in a novel ex vivo bovine cornea model. Methods: Standard plaque reduction assays were performed for cidofovir, ganciclovir, idoxuridine, and trifluridine. A commercial luciferase assay was used to compare cytotoxicity for these antiviral compounds. Corneoscleral rings (CSRs) from fresh cadaver bovine globes were harvested and cultured with  $3 \times 10^5$  PFU of BoHV-1; a subset was also treated with  $18 \mu\text{M}$  (10X IC<sub>50</sub>) cidofovir. Various parameters of BoHV-1 viral replication and corneal viability were assessed. Results: Trifluridine was the most potent inhibitor of BoHV-1 with the lowest IC<sub>50</sub> but was also the most cytotoxic. Of the remaining three compounds, cidofovir was the most potent inhibitor of BHV-1 and also the least cytotoxic. Ex vivo CSR culture demonstrated that cidofovir significantly reduced BoHV-1 titers. No significant differences in histopathologic criteria or caspase-3 IHC were observed between treatment groups and controls. No significant differences in BoHV-1 IHC were observed between treatment groups. Conclusions: Cidofovir warrants further investigation as a topical treatment for ophthalmic manifestations of BoHV-1 infection in cattle. Trifluridine should be avoided for use in bovine tissues due to cytotoxicity. Significance/Impact/Implications: Cidofovir is a promising agent for treatment of BoHV-1 keratoconjunctivitis in cattle and may ultimately translate to improved treatment outcomes and reduced financial losses for livestock producers.

**Poster Code : MB5MHR**

**Poster Title : Detection of 5 of the Most Common Internal Parasites in High Animal Traffic Areas**

**Poster Category :** Basic Research

**Poster SubCategory :** Master (MS), House Officer, Residents

**Presenter Name :** Hernandez, Tanner

**Author :** T. Hernandez

**Affiliation :** LSU Shelter Medicine

**Abstract :** Intestinal parasitism is highly prevalent in domestic animals especially those in animal shelters. This study evaluated 4 shelters as well as 1 veterinary school for the prevalence of roundworm, hookworm, and whipworm ova, as well as coccidia and giardia species in soil samples taken from high traffic areas such as walking areas and play yards. It was hypothesized that 40% of the solid samples obtained would be positive for at least 1 type of internal parasite. The study was divided into two phases. Phase 1 consisted of fecal flotations evaluating for worm ova and coccidia presence, while Phase 2 consisted of giardia snap testing. In Phase 1, 25 samples were taken per major site (125 samples in total). 55.2% of the samples were positive and of those positive samples, 27.564% were positive for more than one parasite listed above. Overall, these results are highly supportive of the hypothesis and lay the groundwork for future research on the same topic. This data supports regular deworming and fecal examinations especially in the shelter medicine aspect of the veterinary profession. Phase 2 of the study has yet to be completed, but a Giardia sp. screening is schedule at all of the original locations and results will be added at a later date. Research is ongoing.

**Poster Code : MB6DSNDU**

**Poster Title : Loss of RNA Binding Protein, ZFP36L1, promotes EMT and fibrosis in Hepatocellular Cancer Cells by regulating EMT-inducing transcription factor ZEB2**

**Poster Category :** Basic Research

**Poster SubCategory :** DVM, Non-DVM Students

**Presenter Name :** Chen, Jian

**Author :** J. Chen

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

**Abstract :** Loss of RNA Binding Protein, ZFP36L1, promotes EMT and fibrosis in Hepatocellular Cancer Cells by regulating EMT-inducing transcription factor ZEB2 Jian Chen and Sonika Patial Department of Comparative Biomedical Sciences, School of Veterinary Medicine, Baton Rouge, LA 70803 Introduction: RNA binding proteins (RBPs) of the ZFP36 family, including zinc finger protein 36 like 1 (ZFP36L1) are implicated in cancer, however, the mechanisms remain unclear. These proteins function by binding to AU-rich elements (ARE's) within the 3'untranslated regions (3'UTRs) of specific mRNA and increasing their mRNA turnover. Here, we tested the role of ZFP36L1 in hepatocellular cancer (HCC) using HCC cancer cell lines. Methods: ZFP36L1 was either knocked down or overexpressed in HCC cells and the effect of ablation/overexpression of ZFP36L1 was assessed on cellular morphology, cellular migration, and the transcriptome. The expression of the three RBPs was determined in various HCC cell lines through quantitative PCR and immunoblotting. Results: ZFP36L1 was the most highly expressed among the three RBPs in a majority of the HCC cells tested, both at the mRNA and the protein level. Knockdown of ZFP36L1 in two of the seven HCC cell lines resulted in epithelial-mesenchymal transition (EMT) characterized by the transition to elongated mesenchymal morphology, significant downregulation of E-cadherin, an epithelial marker, and increased migration potential in wound healing assays. Conversely, overexpression of ZFP36L1 prevented these changes. Transcriptomic analysis revealed a significant upregulation of EMT-inducing transcription factor, ZEB2 (zinc-finger E-box-binding homeobox 2), following knockdown of ZFP36L1. ZEB2 mRNA contains AREs within its 3'UTR indicating ZEB2 mRNA as a potential ZFP36L1 target in these cells. Conclusions: Our results demonstrate that ZFP36L1 suppresses EMT in HCC cells by down-regulating ZEB2. Impact: Our data indicates that ZFP36L1 functions as an anti-fibrotic and anti-EMT protein in HCC.



**Poster Code : MB7DSNDU**

**Poster Title : Jiminy Cricket! Exploring the Opinions of the Veterinary Profession Regarding Entomophagy and the Management of Insect Livestock**

**Poster Category :** Basic Research

**Poster SubCategory :** DVM, Non-DVM Students

**Presenter Name :** Como, Katie

**Author :** K. Como, M. Mitchell, K. Boykin

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

**Abstract :** Rationale: With an increased awareness of an emerging global food crisis, entomophagy, the practice of eating insects, is being discussed as a viable option to feed ever-growing human and animal populations. Veterinarians play essential roles in ensuring the safety and security of food sources and the well-being of livestock. The aim of this study was to conduct a cross-sectional survey to gauge the opinions of the veterinary profession on entomophagy and the farming of insects as food animals. Methods: A preliminary survey was constructed based on findings from a literature review, and pilot interviews were conducted for survey refinement. The final questionnaire was emailed to the LSU veterinary community. Kruskal Wallis ANOVAs were used to determine differences between gender, age, years in practice, and diet by the survey questions. When a difference was found, Mann Whitney U tests were used to further characterize the difference. Results and Conclusions: Based on the current LSU veterinary faculty and students, it appears that entomophagy and insect production would be well-received by the veterinary profession. The overwhelming majority (90%) of respondents believe there is a current issue with global food security today, and 92% believe there will be an issue in the future. Most respondents (85.5%) agreed that insects could be a valuable food source, and appreciated a need for alternative food sources. This is the first attempt to assess the opinions of the veterinary profession on entomophagy and the results suggest that our profession should invest energy into further investigating our role in it.

**Poster Code : MB8DSNDU**

**Poster Title : Evaluation of Differential Gene Expression in the Canine FGF19 Signaling Pathway**

**Poster Category :** Basic Research

**Poster SubCategory :** DVM, Non-DVM Students

**Presenter Name :** Miller, Mayzie

**Author :** M. Miller, C. Liu, A. Johnston

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

**Abstract :** Evaluation of Differential Gene Expression in the Canine FGF19 Signaling Pathway M. Miller, C. Liu, A. Johnston  
Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University Rationale: Fibroblast Growth Factor 19 (FGF19) is a hormone produced in the intestines of both humans and dogs in response to the presence of bile acids. FGF19 signaling in the liver inhibits bile acid production, promotes glycogenesis and protein synthesis. In humans, bolus feeding of a high fat diet changes gene expression patterns in the FGF19 metabolic signaling cascades. We hypothesized that this would be true in dogs with long-term high fat/high protein diet feeding. Methods: We evaluated the gene expression profile dataset GSE22945 from 12 healthy beagle dogs fed a high fat/high protein, animal derived diet or a low fat, moderate protein, plant derived diet. The GEO2R platform was used to compare the FGF19 associated gene expression pathways between the 2 groups. Results: This study does not support that diet alters the primary FGF19 signaling cascade in canines. However, differentially expressed genes in ancillary pathways associated with FGF19 were identified. Conclusions/significance: In the future, experiments involving administering FGF19 to dogs to establish associated gene expression in the canine liver using RNA sequencing and protein analysis. Additionally, experiments to determine how nutrient differences modify FGF19 signaling using in vitro cell based models will reveal more information on FGF19 signaling and the effects of diet in dogs.

**Poster Code : MB9MHR**

**Poster Title : Memory T-Lymphocyte Subsets in Dogs in Health and with Cancer and Inflammatory Disease**

**Poster Category :** Basic Research

**Poster SubCategory :** Master (MS), House Officer, Residents

**Presenter Name :** Bauman, Annie

**Author :** A. Bauman, C. Moeller, A. Boyd, A. Soileau, J. Schaumburg, C. Pucheu, C. Domaracki, N. Welborn, S. Withers

**Affiliation :** Department of Veterinary Clinical Sciences

**Abstract :** Rationale: In humans, surveillance of naïve (TN), central memory (TCM), effector memory (TEM), and terminal effector memory (TEMRA) T-lymphocyte subsets is used to monitor immune responses in numerous disease contexts and in immunotherapeutic development. We present one component of a larger project aiming to validate differential expression of CD45RA and CD62L, markers of antigen naivety and lymph node homing, respectively, as a tool to delineate canine memory T-cell subsets. Here, we compared the proportions of canine memory T-cell subsets in dogs with cancer and inflammation to those in healthy dogs. Methods: Peripheral blood mononuclear cells isolated from inflammation- or cancer-bearing dogs (n = 9 and 14, respectively) and age- and weight-matched controls (n = 13) were analyzed by flow cytometry using antibodies for CD3, CD4, CD8, CD45RA, and CD62L. Statistical comparisons of group means and matched pairs were performed. Results: Preliminary results reveal that mean percentages of CD4+ TN were greater in controls than in inflammation-bearing dogs. In the CD8+ compartment, the opposite was found. Analysis of remaining subsets in the inflammation- and cancer-bearing groups and matched-pair analyses are ongoing. Conclusions: Greater CD4+ TN proportions in control dogs compared to inflammation-bearing dogs suggests this subset is likely accurately identified by the proposed phenotypic markers. CD8+ TN proportions in control versus inflammation-bearing dogs were surprising and require further evaluation. Imminent paired analyses will yield the most robust findings. Significance/Impact/Implications: Further canine memory T-cell subset examination is warranted, and this data helps guide future studies defining canine memory T-cell populations.

**Poster Code : MB10MHR**

**Poster Title : Toxicity Assessment of Buprenorphine on Equine Articular Chondrocytes in Vitro**

**Poster Category :** Basic Research

**Poster SubCategory :** Master (MS), House Officer, Residents

**Presenter Name :** Castro-Cuellar, Gabriel

**Author :** G. Castro, J. Cremer, P. Queiroz-Williams, C. Hampton, B. Leise

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

**Abstract :** Rationale: It has been demonstrated that intra-articular opioid administration has the potential to alleviate pain post-operatively. The objective of this study was to assess the cytotoxic effect of buprenorphine exposure on healthy equine articular chondrocytes in vitro. Methods: Primary cultured equine articular chondrocytes were exposed for 0, 2 and 24 hours to following treatments: buprenorphine 0.12 mg mL<sup>-1</sup> (HIGH BUPR); buprenorphine 0.05 mg mL<sup>-1</sup> (LOW BUPR); media (MED; negative control); bupivacaine 2.2 mg mL<sup>-1</sup> (BUPI); and morphine 2.85 mg mL<sup>-1</sup> (MOR). Chondrocyte viability was assessed using live/dead staining, WST-8 cytotoxic assay, and flow cytometry. The percentage of live cells was determined for each treatment group and the Kruskal-Wallis test was used for comparison of viability among treatments with significance set at p<0.05. Results: There was no difference in cell viability among any of the treatments at time 0 (p > 0.1). After 2-hours of exposure, chondrocytes demonstrated cell death in the HIGH-BUPR (median=0%live cells;p = 0.03) and BUPI (median=0%live cells). MOR resulted in chondrocyte death at 24-hours (median=99%live cells at 2-hour vs 0%live cells at 24-hours). There was minimal cell death at 2-hour and 24-hours in the negative control (median=98.8%live cells, 99%live cells, respectively). There was minimal cell death with LOW-BUPR at 2-hours (median=96%live cells). LOW-BUPR was closest to the MED control (median=77%live cells; p > 0.9) at 24-hours, demonstrating the least amount of cytotoxicity among the treatments. Conclusions and significance: Low dose buprenorphine appears to have low chondrotoxic effect, further evaluation of this dose clinically is recommended.

**Poster Code : MB11MHR**

**Poster Title : Myeloid-cell-specific Ablation of Tristetraprolin (TTP) Increases the Susceptibility of Female Mice to Bleomycin-induced Lung Injury and Fibrosis.**

**Poster Category :** Basic Research

**Poster SubCategory :** Master (MS), House Officer, Residents

**Presenter Name :** Lamichhane, Richa

**Author :** R. Lamichhane, Y. Saini, S. Patial

**Affiliation :** Department of Comparative Biomedical Sciences, School of Veterinary Medicine, LSU Baton Rouge, LA 70810

**Abstract :** Introduction: Fibrotic interstitial lung diseases, including idiopathic lung fibrosis, are more prevalent and have a poor prognosis in human males. Consistently, male mice are also more susceptible to bleomycin-induced lung fibrosis. However, the underlying mechanisms for these gender/sex-associated differences in the development and presentation of these lung diseases remain unknown. TTP, an RNA binding protein is an endogenous “off switch” of inflammation that functions by decreasing the mRNA stability of inflammatory mediators. Here, we tested the hypothesis that TTP is differentially expressed in male and female myeloid cells which results in differential sex-specific susceptibility to fibrotic lung diseases. Methods: Eight to twelve-week old C57BL/6 wild type (WT), TTP myeloid cell-specific knockout (TTPmyeKO; LysMCre/Cre/TTPflox/flox, and flox-only control (TTPflox/flox; LysMWT/WT/TTPflox/flox) mice were exposed to bleomycin. Lung injury, inflammation, and fibrosis were assessed on days 14, 21, and 28. Results: As compared to WT male mice, WT female mice manifested significantly decreased cellular infiltration and lung injury at day 14. Interestingly, female myeloid cells expressed significantly higher levels of TTP compared to male mice at day 14. In contrast to TTPflox/flox mice, TTPmyeKO male, as well as female mice, exhibited an exaggerated response to bleomycin, including leucocytic infiltration, lung injury, and fibrosis. Conclusions: These findings suggest that myeloid-TTP expression exhibits sex-specificity and that myeloid-TTP is a critical factor that determines the susceptibility to fibrotic interstitial lung disease. Impact: Our findings emphasize the importance of myeloid cells and their genetic repertoire as a contributor to gender/sex-specific differences in the susceptibility to idiopathic pulmonary fibrosis.

**Poster Code : MB12MHR**

**Poster Title : Ozone and Host Susceptibility to SARS-CoV-2**

**Poster Category :** Basic Research

**Poster SubCategory :** Master (MS), House Officer, Residents

**Presenter Name :** Paudel, Kshitiz

**Author :** K. Paudel, T. Vo, I. Choudhary, S. Patial, Y. Saini

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

**Abstract :** Background: SARS-CoV-2, a novel coronavirus, and the etiologic agent for the current global pandemic, causes acute respiratory tract infection leading to severe disease and significant mortality. Ever since the start of SARS-CoV-2, countless uncertainties have been revolving around the pathogenesis and epidemiology of the SARS-CoV-2 infection. Given the strong correlation of air pollution to increased SARS-CoV-2 morbidity and mortality, whether environmental pollutants like ground level ozone affects the host susceptibility to SARS-CoV-2 is not yet established. Objective: To investigate the impact of ozone inhalation on the expression levels of signatures associated with host susceptibility to SARS-CoV-2. Methods: We analyzed lung tissues collected from mice that were sub-chronically exposed to air or 0.8ppm ozone for three weeks (4h/night, 5 nights/week), and analyzed the expression of signatures associated with host susceptibility to SARS-CoV-2. Results: SARS-CoV-2 entry into the host cells requires proteolytic priming by the host-derived protease, transmembrane protease serine 2 (TMPRSS2). The TMPRSS2 protein and Tmprss2 transcripts were significantly elevated in the extrapulmonary airways, parenchyma, and alveolar macrophages from ozone-exposed mice. A significant proportion of additional known SARS-CoV-2 host susceptibility genes were upregulated in alveolar macrophages and parenchyma from ozone-exposed mice. Conclusions: Our data indicate that unhealthy environmental ozone levels may predispose individuals to severe SARS-CoV-2 infection. Given the severity of this pandemic, and the challenges associated with direct testing of host-environment interactions in clinical settings, we believe that this study informs the scientific community of the potentially detrimental effects of the ambient ozone levels determining the host susceptibility to SARS-CoV-2.

**Poster Code : MC1DS**

**Poster Title : Foal Outcomes from Mares with Colic During the Gestational Period**

**Poster Category :** Clinical Research

**Poster SubCategory :** DVM Students

**Presenter Name :** Middlebrooks, Quinci

**Author :** Q. Middlebrooks, C. Liu, B. Leise

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

**Abstract :** Rationale: The ability for mares to complete their gestation and deliver a healthy foal after colic is an important question asked by many owners and farm managers. Pregnant mares experiencing colic have many factors that could contribute to the survivability of their foal. Previous studies do not agree upon which factors contribute to foal survivability, including gestational age, presence of systemic inflammatory response syndrome (SIRS), and surgical intervention. We hypothesized that gestational age of less than 40 days and mares demonstrating signs of SIRS would result in decreased foal survival. Therefore, the objective of this retrospective study was to determine what factors may contribute to decreased foal survivability in the pregnant mare experiencing colic. Methods: Our study reviewed cases of pregnant mares presenting to LSU-VTH with colic from 2011-2019. Data collected included gestational age, vital parameters, colic examination findings, presence of SIRS, medical vs. surgical treatment and foal outcome. Correlations between parameters were evaluated with Spearman's correlation coefficient. Live foal outcomes were fit via logistic regression. Results: The odds of having a live foal was 4.86 times higher if mare was medically managed rather than surgically managed. The odds of having a live foal was decreased by 13% if packed cell volume increased by 1%. No significant differences were found for foal outcomes based on gestational age or SIRS criteria. Conclusions/Significance: These results suggest that medical management is more likely to result in live foal than surgical management and that PCV of a mare during colic affects foal outcome.

**Poster Code : MC2MHRN**

**Poster Title : Surgical Correction of Large Colon Displacement in the Juvenile Thoroughbred: Effects on Sale Value and Race Performance**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** Edwards, Veronica

**Author :** V. Edwards, S. Loux, R. Embertson

**Affiliation :** Rood and Riddle Equine Hospital (Lexington, KY)

**Abstract :** Juvenile thoroughbreds can be expensive to raise, train and race. Unfortunately financial decisions play an important role when making medical decisions in the management of these horses. The purpose of this study was to determine if surgery to correct large colon displacements affected the sales price and their racing careers. We hypothesized that the surgery would adversely affect the sales price, but would not affect their racing career when compared to siblings. The medical, sales and racing records of horses less than two years of age that had a surgical diagnosis of large colon displacement were examined (n=110). Surgical cases were compared to a control group (n=299) whose sales and racing data was evaluated. There was no difference in average sale price overall between the two groups. Horses undergoing surgery for colic tended ( $p=0.0978$ ) to have reduced racing starts when compared to controls, particularly as two-year olds. There was no effect of surgery on earnings within the 2 to 4 year old period of racing when compared to controls. Overall this study illustrates that colic surgery for large colon displacements has minimal effect on the sales prices of juvenile thoroughbreds. While owners should note that horses undergoing surgery may have reduced starts as two-year olds, there appears to be no effect on average earnings in the first 3 years of racing. Findings from this study will help veterinarians further inform clients on long-term outcomes associated with sales and racing in juvenile thoroughbreds requiring surgery.

**Poster Code : MC3DS**

**Poster Title : Assessing Potential for Antiviral Resistance in Feline Herpesvirus**

**Poster Category :** Clinical Research

**Poster SubCategory :** DVM Students

**Presenter Name :** Sanford, Mikayla

**Author :** M. Sanford, M. Mironovich, R. Carter, A. Lewin

**Affiliation :** Louisiana State University School of Veterinary Medicine

**Abstract :** Feline Herpesvirus (FHV-1) is treated with antiviral medications, but it's unknown if they can lead to virus mutation and antiviral resistance. Our objective is to assess FHV-1 isolates from cats for evidence of antiviral resistance after treatment using Next-Generation Sequencing, with subsequent analysis of viral genomic variation. We hypothesize that point mutations may develop following therapy but it's unlikely they will lead to developing clinically important antiviral resistance. 167 shelter-housed cats with signs of FHV-1 ocular disease have been screened with conjunctival swab rt-PCR to confirm viral presence. Virus isolation was performed using swabs taken before and after 7 day treatment with antivirals (twice daily topical ganciclovir, topical cidofovir or oral famciclovir), as well as placebo medications. To screen for sequence variants which could cause resistance, full genome sequencing of FHV-1 isolates focusing on UL23/30/42 genes will be performed. Data shows the subjects tested positive for multiple pathogens with the highest being Mycoplasma (133), FHV (97), and FCV (83). Samples from 34 animals yielded positive viral cultures before and after the use of antivirals. Of these, 29 animals were positive for FHV-1 using rt-PCR. Thus far we determined that approximately samples from 17.4% of cats screened so far will be suitable for Illumina FHV sequencing following conclusion of sample collection. This data will be used to determine if the use of antivirals influences mutations in the viral genome. We expect these findings will further support the use of antiviral medications for FHV-1 and alleviate concerns regarding potential development of resistance.

**Poster Code : MC5DS**

**Poster Title : Pharmacokinetics of Intravenous and Oral Gabapentin in Duroc Swine**

**Poster Category :** Clinical Research

**Poster SubCategory :** DVM Students

**Presenter Name :** Oubre, Montana

**Author :** M.J Oubre; CE Hampton; P. Queiroz-Williams; A. Martin; A.T. Gisclair; B.H. Pypendop

**Affiliation :** Louisiana State University, School of Veterinary Medicine, Department of Veterinary Medical Science

**Abstract :** Rationale: Gabapentin is an anti-epileptic drug also used for its analgesic properties against neuropathic pain. Additional effects include anxiolysis and sedation, which have been shown to reduce stress in several species. This drug may represent a viable option to produce similar effects in pigs. However, its pharmacokinetics in swine are unavailable. The objective of this study was determining the pharmacokinetics of gabapentin in swine. Methods: Six healthy, adult Duroc pigs were administered gabapentin intravenously (5.5 mg/kg) or orally (20 mg/kg) in a randomized cross-over design with a 14-day washout period. Blood samples were collected before administration and at various times. Plasma concentrations were quantified using liquid chromatography/tandem mass-spectrometry, and compartment models were fitted to time-concentration data using non-linear mixed-effect analysis. Results: A two-compartment model best fitted the data following IV administration. Typical values for volume of the central compartment, clearance and terminal half-life were 170 mL/kg, 1.2 mL/kg/min, and 360 minutes, respectively. For the oral route, absorption half-life, estimated maximal plasma concentration and time to reach maximal plasma concentration were 58 minutes, 9155 ng/mL, and 194 minutes, respectively. Estimated oral bioavailability was 47%. Recumbency after IV administration was observed in all subjects without adverse clinical effects. Conclusions: The disposition of gabapentin in swine is characterized by small volume of distribution, low clearance, and intermediate bioavailability. Significance: Simulation based on these results suggests that an initial oral dose of 15 mg/kg gabapentin followed by 8.5 mg/kg every 8 hours would achieve plasma concentrations between 5 and 8 g/mL in pigs.

**Poster Code : MC6CCRHOD**

**Poster Title : Cholangiocellular carcinoma in a Plains Zebra (*Equus quagga*) with Metastasis and Hepatic Encephalopathy**

**Poster Category :** Clinical Research

**Poster SubCategory :** Clinical Case Reports by House Officer and DVM Students

**Presenter Name :** Guarneri, Lauren

**Author :** L. P. Guarneri and F. Del Piero

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

**Abstract :** Rationale: Cholangiocellular carcinoma has been reported in dogs, cats, sheep, cattle, horses and goats and has never been reported in a Plains Zebra (*Equus quagga*). Methods: A complete necropsy was performed and all the tissues and organs were collected and fixed in 10% neutral buffered formalin solution. The tissues were processed routinely, cut 4 micrometers thick, and stained with hematoxylin and eosin (H&E) for histopathology. Results: The liver architecture was severely modified by a cholangiocellular carcinoma with metastasis to the spleen, pancreas and lung. Due to extensive hepatocellular loss and interference with ammonia metabolism, there was hepatic encephalopathy with moderate cerebral edema, astrocyte hypertrophy and hyperplasia, and Alzheimer type 2 cells. The skeletal muscle had a mild monophasic myopathy. Incidental findings included a focal bronchioalveolar adenoma and an unrelated subcutaneous low grade soft tissue spindle cell sarcoma. Conclusion/Significance: This lesion and the associated syndrome has not been previously reported in the Plains Zebra (*Equus quagga*) or other species of wild equids. The brain edema and hepatic encephalopathy are the result of hyperammonemia. In humans, dogs, and cats, cholangiocellular carcinomas have been associated with the biliary parasite *Clonorchis sinensis*. In dogs, this tumor has also been associated with chemical carcinogens and with intestinal parasites such as *Ancylostoma* species and *Trichuris vulpis*. Other human causes include primary sclerosing cholangitis, bile duct stones or cysts, viral hepatitis B or C, cirrhosis, inflammatory bowel disease, and diabetes. Smoking, alcohol use, and obesity, may also contribute to the risk of developing cholangiocellular carcinoma.

**Poster Code : MC7MHRN**

**Poster Title : In-vivo Antimicrobial Activity of Topical Ocular Diagnostic Medications**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** Mironovich, Melanie

**Author :** M.A.Mironovich<sup>1</sup>, M.Mitchell<sup>2</sup>, C-C.Liu<sup>1</sup>, R.T.Carter<sup>1</sup>, A.C.Lewin<sup>1</sup>

**Affiliation :** <sup>1</sup>Department of Veterinary Clinical Sciences, School of Veterinary Medicine, LSU <sup>2</sup>Department of Microbiology, Louisiana Animal Disease Diagnostic Laboratory, LSU

**Abstract :** Rationale: Microbiological swabs are frequently taken of the ocular surface in veterinary and human patients for infectious ulcerative keratitis and conjunctivitis. This is most often performed after the application of topical diagnostic ophthalmic solutions. Currently, it is unclear if these medications significantly affect culture results. We hypothesize that fluorescein, tropicamide, and proparacaine will not significantly affect the quantity and species of bacteria cultured. Methods: Twelve female beagles underwent a routine conjunctival swab of a randomly chosen eye via coin flip. One drop of proparacaine, one drop of fluorescein, and one drop of tropicamide were applied sequentially to the same eye with a 5-minute gap between each medication. After five minutes, a second conjunctival swab was taken from the same eye and both swabs were processed for aerobic culture. Bacterial enumeration was performed using the spread plate method. Following a one-week washout period, the experiment was repeated using balanced salt solution (negative control). Following a final one-week washout period, the experiment was repeated using ofloxacin (positive control). Samples were compared using a paired T Test. Results: The sequential application of proparacaine, tropicamide, and fluorescein did not have a significant effect on total colony count. Results from the remainder of the study are still pending. Conclusions/Significant: We expect to demonstrate that topically applied ocular diagnostic medications have a negligible effect on microbial growth in culture when applied to normal dogs. Ocular microbiological swabs can be taken after application of these medications, without fear of negatively impacting culture results.

**Poster Code : MC8CCRHOD**

**Poster Title : Spontaneous Resolution of Canine Acute Eosinophilic Dermatitis with Edema with Concurrent Gastrointestinal Signs**

**Poster Category :** Clinical Research

**Poster SubCategory :** Clinical Case Reports by House Officer and DVM Students

**Presenter Name :** Wu, Chi-Yen

**Author :** C. Wu, S. Ramos, T. Watanabe, M. Woodward, S. Dehghanpir, S. Rutherford, C. Pucheu-Haston

**Affiliation :** Departments of Veterinary Clinical Sciences (Wu, Ramos, Woodward, Dehghanpir, Rutherford, Pucheu-Haston) and Pathobiological Sciences (Watanabe), School of Vet Med, Louisiana State University

**Abstract :** Rationale: Canine acute eosinophilic dermatitis with edema (CAEDE) is an uncommon syndrome that is clinically characterized by erythematous macules, papules or plaques with edema, most often evident on the ventrum. Patients frequently also present with gastrointestinal (GI) signs. Glucocorticoids are typically required to induce remission. Methods: An 8-year-old 26-kg spayed female Labrador retriever was evaluated for cervical edema, erythematous papules, plaques and patches on the ventral neck, chest, axillae, extremities and abdomen that developed eight days after onset of vomiting and bloody diarrhea. Complete blood count, serum chemistry panel, fine needle aspiration of the popliteal lymph node, skin biopsy and ACTH stimulation were performed. Results: Blood work abnormalities included hypoalbuminemia, hypocholesterolemia, and an inflammatory leukogram. Fine needle aspiration cytologic findings of the popliteal lymph node revealed an increase in eosinophils as well as free melanin and hemosiderin pigment. Skin histopathology revealed acute, diffuse, eosinophilic dermatitis with edema and panniculitis. Conclusion: The clinical, hematologic and pathologic findings were consistent with a diagnosis of CAEDE. Pending histologic diagnosis, the dog was treated symptomatically for GI signs and pentoxifylline was started empirically for possible vasculitis. Glucocorticoid therapy was not started, as skin lesions were markedly improved in two days and fully resolved in twelve days. There was no evidence of relapse of skin lesions or GI signs six months after discharge. Significance: This case was unusual in that it resolved rapidly without the need for glucocorticoid therapy. CAEDE should be a differential for patients with gastrointestinal disease that develop erythematous plaques and edema.

**Poster Code : MC9DS**

**Poster Title : Perceived Incidence, Diagnosis, and Treatment of Anaphylaxis in Veterinary Medicine - A Practitioner Survey**

**Poster Category :** Clinical Research

**Poster SubCategory :** DVM Students

**Presenter Name :** France, Mary

**Author :** M France, MR Smith

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

**Abstract :** Background and Rationale: Anaphylaxis is a rapidly occurring, systemic, type I hypersensitivity reaction to an antigen such as drugs, food, and vaccines that may be life threatening and requires immediate treatment. Unfortunately, clinical signs of anaphylaxis are nonspecific in dogs and cats, which may result in delay of appropriate treatment. The most well-known first-line treatment for anaphylaxis is the administration of epinephrine which counteracts the pathologic cardiovascular changes. This treatment is largely extrapolated from humans, which may have very different presenting signs and organ system involvement compared to veterinary species. Additionally, there are discordant results as to the utility of epinephrine in veterinary patients. This study aims to provide valuable information on current veterinary practices that could contribute to a consensus on diagnosis and treatment protocols of anaphylaxis. Approach: A broad survey of practitioners will be performed to assess the perceived frequency of anaphylaxis cases, the approach to disease diagnosis, and the understanding of current therapeutic options for treatment of anaphylaxis. Conclusions/Implications: We concluded that most veterinarians would report a small number of cases and that those cases would be diagnosed based off clinical signs and history proving our first hypothesis correct. However, our hypothesis that ER and specialty doctors would report more cases of anaphylaxis than general practitioners was incorrect. Our hypothesis that epinephrine would be the treatment of choice was also incorrect; antihistamines, IV fluids, and corticosteroids are preferred to epinephrine. Additionally, about 17% of practitioners wrote in the administration of anti-emetics or anti-nausea drugs for patient comfort

**Poster Code : MC10CCRHOD**

**Poster Title : Clostridium difficile-associated, ulcerative typhlitis with cryptosporidiosis in a 13-day-old, reticulated giraffe**

**Poster Category :** Clinical Research

**Poster SubCategory :** Clinical Case Reports by House Officer and DVM Students

**Presenter Name :** Lee, Jeongha

**Author :** J.Lee, D.Paulsen

**Affiliation :** Department of Pathobiological Science, School of Veterinary Medicine, Louisiana State University, Louisiana Animal Disease Diagnostic Laboratory, Baton Rouge, LA, 70803

**Abstract :** Rationale: Clostridium difficile causes necrotizing enterocolitis in many species including humans. However, it is an uncommon cause of diarrhea in ruminants and, to our knowledge, has not been reported in a giraffe. Methods: A 13-day-old reticulated giraffe was submitted for necropsy to the Louisiana Animal Disease Diagnostic Laboratory with a history of acute lethargy and death. Postmortem and histopathologic examinations were performed. The ileum and its contents were submitted for aerobic and Salmonella cultures, as well as for Clostridium toxin ELISA. A gram stain was performed on the cecum. Results: On gross examination, there was fecal staining of the perineum and hindlimbs indicating diarrhea. The cecal mucosa had a focal, 3 x 1.5 cm area covered with a fibrinonecrotic membrane. On histopathology, the lesion consisted of coagulative necrosis extending from the mucosa to the inner circular muscularis. The affected tissues were infiltrated by numerous degenerate neutrophils and covered by a fibrinocellular exudate. In the small intestine, there were multiple 1-3 µm in diameter, round, basophilic protozoa attached to the apical surface of the crypt epithelial cells, consistent with Cryptosporidium sp. C. difficile toxin was detected by ELISA and no other pathogens were isolated by bacterial culture. Conclusions: This giraffe was diagnosed with focal ulcerative typhlitis. Clostridium difficile was the only pathogen detected that could have caused the cecal lesion, so it is the presumed etiology. The co-infection with Cryptosporidium affected the small intestine and likely contributed to the disease and ultimate death of this animal.

**Poster Code : MC11CCRHOD**

**Poster Title : Clostridium difficile-associated, ulcerative typhlitis with cryptosporidiosis in a 13-day-old, reticulated giraffe**

**Poster Category :** Clinical Research

**Poster SubCategory :** Clinical Case Reports by House Officer and DVM Students

**Presenter Name :** Lee, Jeongha

**Author :** J.Lee, D.Paulsen

**Affiliation :** Department of Pathobiological Science, School of Veterinary Medicine, Louisiana State University, Louisiana Animal Disease Diagnostic Laboratory, Baton Rouge, LA, 70803

**Abstract :** Rationale: Clostridium difficile causes necrotizing enterocolitis in many species including humans. However, it is an uncommon cause of diarrhea in ruminants and, to our knowledge, has not been reported in a giraffe. Methods: A 13-day-old reticulated giraffe was submitted for necropsy to the Louisiana Animal Disease Diagnostic Laboratory with a history of acute lethargy and death. Postmortem and histopathologic examinations were performed. The ileum and its contents were submitted for aerobic and Salmonella cultures, as well as for Clostridium toxin ELISA. A gram stain was performed on the cecum. Results: On gross examination, there was fecal staining of the perineum and hindlimbs indicating diarrhea. The cecal mucosa had a focal, 3 x 1.5 cm area covered with a fibrinonecrotic membrane. On histopathology, the lesion consisted of coagulative necrosis extending from the mucosa to the inner circular muscularis. The affected tissues were infiltrated by numerous degenerate neutrophils and covered by a fibrinocellular exudate. In the small intestine, there were multiple 1-3 µm in diameter, round, basophilic protozoa attached to the apical surface of the crypt epithelial cells, consistent with Cryptosporidium sp. C. difficile toxin was detected by ELISA and no other pathogens were isolated by bacterial culture. Conclusions: This giraffe was diagnosed with focal ulcerative typhlitis. Clostridium difficile was the only pathogen detected that could have caused the cecal lesion, so it is the presumed etiology. The co-infection with Cryptosporidium affected the small intestine and likely contributed to the disease and ultimate death of this animal.



**Poster Code : MC12MHRN**

**Poster Title : Effect of Multiple Head Positions on Intraocular Pressure in Healthy, Anesthetized Horses During Hoisting**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** Alling, Christopher

**Author :** C.R. Alling, J. Cremer, C. Liu, A.C. Lewin, M.P. Camacho-Luna, R.T. Carter

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

**Abstract :** Rationale: Intraocular pressure (IOP) variation during general anesthesia presents a risk to equine patients with fragile corneal lesions or glaucoma. This study investigated the effect of head positions and various cofactors on IOP in healthy, anesthetized horses during hoisting. Methods: Seventeen healthy adult horses without significant ocular abnormalities were studied. Subjects were administered intravenous xylazine/butorphanol premedication and ketamine /midazolam induction with additional xylazine/ketamine administered as needed for anesthetic maintenance. While hoisted, IOP was measured in triplicate for each eye via rebound tonometry (TonoVet®) at neutral neck position (i.e. eyes level with the withers) and at multiple 5 cm increments above and below neutral (-20 cm through +20 cm) using foam pads for head support. Results: IOP significantly decreased with head position elevated =+15 cm from neutral and significantly increased with head position lowered =-5 cm from neutral. Neck length significantly influenced IOP with linear regression indicating a median (range) increase of 0.244 (0.034 – 0.425) mmHg in IOP for every 1 cm increase in neck length. Age, sex, breed, body weight, body condition score, and eye measured (OD vs. OS) did not significantly influence IOP. IOP only varied significantly between eyes at +10 cm (OS > OD,  $1.7 \pm 0.6$  mmHg,  $p = 0.0044$ ). Conclusions: IOP in healthy, anesthetized horses varies with head position during hoisting; increased neck length may be associated with more pronounced changes in IOP during hoisting. Significance/Impact/Implications: Proper head positioning of anesthetized equine patients during hoisting may avoid ophthalmic complications like globe rupture or vision loss.

**Poster Code : MC13MHRN**

**Poster Title : Effects of a Supplement Containing CBD on Sedation, Ataxia, and Equine Health Parameters**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** St Blanc, Michael

**Author :** M. St. Blanc

**Affiliation :** Equine Health Studies Program, Department of Veterinary Clinical Sciences, Louisiana State University School of Veterinary Medicine

**Abstract :** Rationale: Equine supplements containing cannabidiol (CBD) are commercially available but data informing their use are lacking. The purpose of this study was to determine if administration of a supplement containing CBD would result in sedation or ataxia in horses, as well as to evaluate its effect on clinical health and blood parameters including indicators of hepatic and renal function. Methods: Twenty geldings from the LSU EHSP research herd were housed in stalls and randomly assigned to either the treatment (150 mg cannabidiol in supplement formulation) or control (inactive ingredients only) group. Supplements were fed once daily for 56 days. A complete blood count and serum biochemistry were performed on days 0, 28, and 56. Sedation and ataxia scores were assigned weekly by blinded investigators. A repeated-measures ANOVA with a mixed effects model was used to analyze the continuous variables with treatment, day and their interactions as the fixed effects and each animal as the random effect. Sedation and ataxia scores were analyzed within each day via Mann-Whitney test. The agreement between investigators was reported with % agreement. Significance was set at  $P < 0.05$ . Results: There were no treatment or treatment by day effects in blood parameters including bilirubin, ALP, and AST. There were no significant differences in ataxia or sedation scores between the treatment and control groups ( $p > 0.05$ ). Mean inter-observer agreement among investigators was 85% for sedation scores and 88% for ataxia scores. Conclusions/Significance: Treatment was well-tolerated, and our results support further investigation of CBD use in horses.

**Poster Code : MC14MHRN**

**Poster Title : "Aging does not affect the induction dose of propofol in dogs"**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** Desselle, Amber

**Author :** A. Dessellea; C.E. Hamptona; A. Favaro da Cunhab, P. Queiroz-Williamsa; E.H. Hofmeister c

**Affiliation :** a Department of Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA 70803 b Department of Specialty Medicine, Veterinary Medicine Midwestern U.

**Abstract :** Rationale: The dose of the anesthetic propofol (DOP) required to perform tracheal intubation decreases in elderly people. This study's objective was to determine if the DOP required to perform endotracheal intubation in dogs also decreases with age. Methods: Data from 1640 dogs anesthetized at the Louisiana State University veterinary teaching hospital between 2017 and 2020 qualified for inclusion in a retrospective case series study and analyzed with three multivariate linear regression models with backward elimination using a combination of either age, physiologic age, or life expectancy with various factors as the independent variables, and the DOP as the dependent variable. The DOP for each quartile of life expectancy (<25%, 25-50%, 50-75%, 75-100%, >100%) was compared using one-way ANOVA. Significance was set at  $\alpha=0.025$ . Results: Mean age was  $7.3\pm 4$  years, life expectancy  $0.61\pm 0.34\%$ , weight  $19\pm 14$  kg, and DOP  $3.6\pm 1.8$  mg/kg. The DOP by life age expectancy was  $3.9\pm 2.3$ ,  $3.7\pm 1.8$ ,  $3.7\pm 1.8$ ,  $3.6\pm 1.7$ , and  $3.5\pm 1.6$  for interquartiles 0-25%, 25%-50%, 50%-75%, 75%-100%, and >100%, respectively. There was no significant difference among quartiles for DOP ( $p=0.43$ ). Maltese, Chihuahua, and Yorkshire Terrier dogs required higher DOP (0.75, 0.73, and 1.3 mg/kg more, respectively). Weight, IM dexmedetomidine, and IV fentanyl inversely affected propofol dose ( $-0.037$ mg/kg per kg,  $-84$ mg/kg per mg of dexmedetomidine, and  $-60$ mg/kg per mg of fentanyl). Conclusions: In dogs, age does not alter the induction dose of propofol, whereas other factors such as breed, weight, and premedication drugs do. Significance: Adjustments to the induction dose of propofol in older dogs are unnecessary in clinical practice.

**Poster Code : MC15CCRHOD**

**Poster Title : Feline mesothelioma: A case report and comparison of cytologic, immunocytochemical, histopathologic, and immunohistochemical findings**

**Poster Category :** Clinical Research

**Poster SubCategory :** Clinical Case Reports by House Officer and DVM Students

**Presenter Name :** Cesar Menk Pinto Lima, Jose

**Author :** J.Lima, A.Schlueter, S.Dehghanpir, B.Boudreaux, C.Robinson, I.Langohr

**Affiliation :** Department of Pathobiological Sciences and Louisiana Animal Disease Diagnostic Laboratory; Department of Veterinary Clinical Sciences. School of Veterinary Medicine, Louisiana State University

**Abstract :** Rationale: Mesotheliomas can pose an antemortem diagnostic challenge, as the morphologic distinctions between reactive and neoplastic mesothelium are difficult to determine solely by cytological examination. Mesothelioma cells can express multiple cytokeratins and vimentin, similar to normal and reactive mesothelial cells. This case report highlights a case of feline mesothelioma and compares the cytologic, histologic and immunochemical characteristics of the tumor. Methods: A 10-year-old spayed female domestic shorthair cat was presented to the Oncology service at the Louisiana State University (LSU) Veterinary Teaching Hospital for evaluation of a large volume of abdominal effusion. Abdominal ultrasound revealed a hyperechoic and clumped omentum. Peritoneal fluid obtained antemortem was evaluated cytologically. A full postmortem examination with histopathology was performed. Cytological preparations and histology sections were submitted to immunochemical staining. Results: Peritoneal fluid analysis revealed clusters of moderately pleomorphic round to polygonal epithelioid cells. On necropsy, the omentum was contracted into a firm mass. Histopathology revealed nests of neoplastic polygonal cells effacing the omentum and serosal surfaces. There was variably strong immunolabelling of neoplastic cells for pancytokeratin (AE1/ AE3), vimentin and Wilms' tumor protein 1 (WT1) on immunocytochemistry and immunohistochemistry, indicating mesothelial origin. Conclusions/ significance: The majority of mesothelioma cells in this case exhibit strong cytoplasmic labeling with WT1. As other neoplastic cells may co-express cytokeratin and vimentin, notably feline bronchogenic adenocarcinoma, additional immunomarkers such as WT1 may further support mesothelial cell lineage and be a valuable aid in the diagnosis of mesothelioma in felines.

**Poster Code : MC16CCRHOD**

**Poster Title : Outbreak of Extraintestinal Pathogenic Escherichia coli Necrotizing Pneumonia in Dogs**

**Poster Category :** Clinical Research

**Poster SubCategory :** Clinical Case Reports by House Officer and DVM Students

**Presenter Name :** Sasaki, Emi

**Author :** E. Sasaki 1, 3, D. B. Paulsen 1, 3, M. R. Smith 2, V. A. Wurlod 2, F. Del Piero1, 3

**Affiliation :** Departments of 1Pathobiological Sciences and 2Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University; 3Louisiana Animal Disease Diagnostic Laboratory

**Abstract :** Background: Extraintestinal pathogenic Escherichia coli (ExPEC) causes significant human and animal morbidity and mortality affecting extraintestinal organs. ExPEC is a cause of fatal pneumonia in various animal species including dogs, cats, a horse and a tiger. Case Description: Within a month, five dogs of various ages and breeds were presented for acute respiratory distress due to pneumonia. The clinical course of the five dogs was rapidly progressive in spite of aggressive medical treatment. Primary postmortem findings were similar among all of the animals. Grossly, the lungs were diffusely dark red. Microscopic examinations revealed severe acute necrotizing pneumonia with gram-negative short bacilli. Hemolytic E. coli was isolated from the lung tissue of three dogs. Streptococcus canis and E. coli were isolated from one dog. Gram, Giemsa, and Steiner stains also visualized the bacteria. There was no bacterial growth in one of the dogs, but similar lung lesions were observed microscopically. No canine distemper morbillivirus, canine herpesvirus, and canine influenza orthomyxovirus antigens or nucleic acids were detected. All the isolates, genotyped by PCR, carried genes characteristic of ExPEC including cytotoxic necrotizing factor 1 (cnf-1), and did not express genes for shiga toxins, or heat stable or heat labile toxins. Summary: The lesions and microbiological findings from an outbreak of Escherichia coli ExPEC necrotizing pneumonia in dogs are documented.

**Poster Code : MC17MHRN**

**Poster Title : CT Myelography Technique and Morphometry in Healthy Yucatan Pigs**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** Barden, Lelia

**Author :** L. Barden, DVM; L. Gaschen, DVM, PhD; C. Hampton, DVM, MS; C. Takawira, MSC; A. Nourbakhsh, MD; L. Chin-Chi, MS, MApStat, PhD, M. Lopez, DVM, MS, PhD

**Affiliation :** Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University. WellStar Medical Group, Orthopedic Surgery, WellStar Health System, Inc.

**Abstract :** Rationale: Porcine models of spinal cord injury (SCI) play an important role in the development of therapies for people. CT myelography (CTM) is a sensitive method used to image the spinal cord. The goal of this study is to describe a CT-guided method of performing CTM in a porcine model and to establish morphometric reference values for future SCI studies in Yucatan pigs. Methods: Six healthy, 9-month-old, female, Yucatan pigs had a CTM performed. Morphometric and qualitative analysis were performed on all thoracic-lumbar vertebral segments. The following surface area ratios were calculated at each vertebral segment: spinal cord to vertebral canal (SC:VC), spinal cord to dural space (SC:DS), and dural space to vertebral canal (DS:VC). Statistical analysis included a Shapiro-Wilk, a coefficient of variance, and the Pearson's correlation coefficient. Results: Concentric filling occurred in all pigs except for the cranial thoracic vertebrae T1-5 in 3/6 pigs. Spinal cord surface area had the widest range of values and the greatest coefficient of variance (CV) amongst the six pigs while those parameters for the vertebral canal showed a low CV. Of the morphometric ratios, the DS:VC, had the strongest coefficient of variance (<15) while the spinal cord ratios to DS and VC had the worst (>30). Conclusions/Significance: CT-guided myelography can be performed consistently in Yucatan pigs. Reference values for spinal morphometry showed a low coefficient of variance for the vertebral canal surface area and the DS:VC ratio and may provide comparisons for future studies using porcine models of SCI.

**Poster Code : MC18DS**

**Poster Title : Evaluating the Severity of Macrolide Resistant Rhodococcus equi in Foals**

**Poster Category :** Clinical Research

**Poster SubCategory :** DVM Students

**Presenter Name :** Free, Audrey

**Author :** A. Free, A. Chapman, and F. Andrews

**Affiliation :** Veterinary Clinical Sciences, Equine Health Studies Program, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

**Abstract :** Rhodococcus equi is a gram positive intracellular pathogen and is a major cause of pneumonia in foals. Many foals are sub-clinical and will spontaneously recover without treatment, however some will acquire a severe acute respiratory distress that will cause death if left untreated. The purpose of this retrospective study is to better understand the differences in the severity of the disease between macrolide resistant and sensitive strains. The hypotheses were that foals with macrolide resistant strains would have more clinical signs, and would also have a greater number of concurrent bacterial infections. Data on foals testing positive for R. equi at a horse breeding farm in Louisiana over the span of 2 years was evaluated. Each foal was given a clinical score out of 3 based on how many clinical signs they manifested, and the number of concurrent bacterial infections was recorded. Overall there were 29 foals that tested positive, 14 of which showed macrolide resistance to at least one drug. A comparison of the average clinical score between the resistant and sensitive strains showed the resistant strains to have a higher number of clinical signs. There was no significant difference between the average concurrent bacterial infections in each group. The results indicated that macrolide resistant strains manifested more clinical signs, however there is no correlation between macrolide resistance and number of concurrent bacterial infections. The results of this study can be used to create future controlled studies that will further evaluate the significance of macrolide resistance in R. equi

**Poster Code : MC19DS**

**Poster Title : Analyzing the Effects of Kisspeptin-10 on In Vitro Models of Equine Placental Development**

**Poster Category :** Clinical Research

**Poster SubCategory :** DVM Students

**Presenter Name :** Geels, Olivia

**Author :** O Geels<sup>1</sup>, VCL Gomes<sup>1</sup>, CC Liu<sup>1</sup>, E Oberhaus<sup>2</sup>, JL Sones<sup>1</sup>

**Affiliation :** 1 Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University 2 Animal Sciences, College of Agriculture, Louisiana State University

**Abstract :** Rationale: Adequate trophoblast cell invasion and remodeling of the maternal uterine tissue is a prerequisite for placenta formation in eutherian mammals. Kisspeptins (KP), a family of small peptides, have been shown to regulate cellular migration in several cell types. We hypothesized that the invasive equine chorionic girdle trophoblasts and fibroblasts cultured in an enriched KP-10 medium will have decreased cellular migration in a dose-dependent manner. Methods: Invasive equine chorionic girdle trophoblasts and fibroblast scratch migration assays were performed by having the cells cultured with serum enriched media and 0, 1, 10, or 100  $\mu$ M of exogenous KP-10. The cellular monolayer was scratched with a pipette and images were captured at various time points. Image J was used to determine the width of the scratch by measuring its area and dividing by its length. Data analyses was performed using JMP Pro 15.0.0. A 2-way mixed ANOVA with Tukey post hoc test was used to determine statistical differences between time and treatment. Results: Unlike findings in humans, dose-dependent KP-10 enhances invasive trophoblast cell migration in equine. These findings suggest that KP-10 has a differential function in equine invasive trophoblasts. At the highest concentration of exogenous KP-10 (100  $\mu$ M), there is a statistical inhibitory effect on equine fibroblasts. Conclusion: Because the maternal decidua is comprised of fibroblasts, these results demonstrate that KP-10 has different effects on maternal and fetal tissues. Further studies are warranted to investigate the effects of KP-10 on various cells that are critical to maintaining a successful pregnancy in equine.

**Poster Code : MC20DS**

**Poster Title : Survey of Perspectives on Veterinary Diagnosis and Management of Laminitis in the Field**

**Poster Category :** Clinical Research

**Poster SubCategory :** DVM Students

**Presenter Name :** Rumfola, Elizabeth

**Author :** E Rumfola, H Banse, J Ireland, C McGowan

**Affiliation :** Veterinary Clinical Sciences

**Abstract :** Rationale: Endocrinopathic laminitis is the leading cause of laminitis in general equine practice. Diagnosis and management of this condition differs from other causes of laminitis. Research in endocrinopathic laminitis is advancing, but there is little data available regarding practitioners incorporating research into diagnostics and treatment. Methods: A questionnaire, based on a previous UK survey, was distributed to equine veterinarians via AAEP's newsletter and social media. The survey included questions about veterinary education, current approach to diagnosis of laminitis, practical management, and changes in approach over time. The survey was open for 3 months through KwikSurvey. Results: Practitioners performed the following diagnostics in some or all cases' first examination: clinical examination (99%), radiographs (93%), basal ACTH (69%) complete blood count and biochemistry (68%), insulin (unfasted, 57%; fasted, 28%), dynamic ACTH (27%) or dynamic insulin testing (9%). 66% of practitioners indicated that diagnostic approach has changed since graduation. 60% percent reported that treatment for PPID improved time to laminitis resolution, while 70% reported that treatment for EMS improved time to resolution. Practitioners reported that treatment for PPID (99%) or EMS (100%) prevented further laminitic episodes. Conclusions: These results suggest that practitioners are aware of an association between endocrine disease and laminitis but may not be comprehensive in assessing endocrinopathy during the initial visit. Significance: Advances in diagnosis and treatment of endocrinopathic laminitis are promising for veterinarians and equine patients. It is critical that current practitioners incorporate endocrine testing into exams for laminitic patients in order to prevent recurrence of debilitating laminitic episodes.

**Poster Code : MC21MHRN**

**Poster Title : Retrospective Evaluation of Patients Undergoing Surgical Corneal Grafting Procedures at an Academic Referral Institution: 69 Cases**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** Chun, Yeji

**Author :** Y Chun, AC Lewin, RT Carter

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

**Abstract :** Purpose. Ulcerative keratitis is common in companion animals and surgical intervention is frequently required. Our purpose was to identify factors associated with positive outcomes following surgical corneal grafting procedures in dogs, cats, and horses. Methods. Electronic medical records were searched for various keywords including "conjunctival flap and corneal ulcer". Fifty-one client-owned dogs, six client-owned cats, and twelve client-owned horses that underwent conjunctival corneal graft surgery at Louisiana State University School of Veterinary Medicine from July 2018 to December 2020 were identified. Case details were recorded including: signalment, ulcer depth, medication, microorganism isolate, grafting techniques, and outcome. Following completion of data collection, statistical analysis will be performed to determine significance of the identified variables. Results. In dogs, Shih tzus were over-represented (34.4%) among the brachycephalic breeds. Of the 18 perforated globes in dogs, 4 required revision and 1 elected enucleation after the first graft procedure. No cases required revision or enucleation when a combination of conjunctival graft with ACell was used in cats and horses. In dogs, 3 of 9 globes required revision when ACell was utilized. Infectious agents were identified in 30% of cases in dogs and 75% of cases in horses. In dogs, cases involving *Curvularia*, Beta-haemolytic *Streptococcus*, and *Staphylococcus pseudintermedius* required surgical revisions. In horses, cases involving *Aspergillus*, *Fusarium* and *Ochrobactrum* required subsequent enucleations. Conclusions. The outcomes of vision and globe preservation were: 83.3% and 100% in cats; 89.2% and 96.4% in dogs; 83.3% and 83.3% in horses. None.

**Poster Code : MC22DS**

**Poster Title : Intra- and Inter-observer Variability of Current Methods Measuring Femoral Varus Angle Using Radiographs and Computed Tomography in an In Vitro Model.**

**Poster Category :** Clinical Research

**Poster SubCategory :** DVM Students

**Presenter Name :** Jones, Bailey

**Author :** B. Jones, K. S. Aulakh, A. Gines, K. Barnes, N. Rademacher, C. Liu, H. Aulakh

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

**Abstract :** Rationale: Femoral varus can be quantified by measuring the anatomic or mechanical lateral distal femoral angle (aLDFA or mLDFA). Our objective was to directly compare the intra- and inter-observer variability of aLDFA and mLDFA measurements between radiographic and two different CT image types. Our null hypothesis was that there would be no difference in intra- and inter-observer variability for aLDFA or mLDFA between radiographic and CT measurements. Methods: Radiograph and CT images of ten pelvic limbs from five mature canine cadavers were obtained. Five blinded observers independently measured aLDFA and mLDFA on radiographic and CT images on 2 separate occasions, one week apart. Both LDFAs were measured on two versions of the same CT images: an opaque 3-D bone image and a transparent 3-D bone image. Inter-observer and intra-observer measurement variability was investigated by using coefficients of variation (CV) and evaluated via mixed ANOVA models. Results: The mean inter-observer CV% ( $0.78 \pm 0.05\%$ ) for m-LDFA was significantly lower than a-LDFA ( $0.61 \pm 0.05\%$ ;  $p = .0098$ ), however this difference was very small (0.17%). The imaging modality had no effect on inter-observer CV%. The LDFA method and the imaging modality had no effect on intra-observer CV%, however, observer had significant effect ( $p < .0001$ ) on intra-observer CV% with a very low variability range from 0.33% to 1.09%. Conclusions: Regardless of the choice between radiographic and CT images, both type of LDFA measurements have very low inter-observer (high reproducibility) and intra-observer (high repeatability) variability. The noted intra-observer CV% based on observer is likely not clinically significant.

**Poster Code : MC22MHRN**

**Poster Title : Osteomyelitis Associated With Bartonella Henselae Infection In A Cat**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** Hui, Jamie

**Author :** J. Hui; K. Ryan; E. Breitswerdt

**Affiliation :** Department of Veterinary Clinical Sciences, LSU School of Veterinary Medicine College of Veterinary Medicine, North Carolina State University, Raleigh, NC

**Abstract :** RATIONALE: Cats are the principal reservoir host for *Bartonella henselae* (Bh), *Bartonella koehlerae* (Bk) and *Bartonella clarridgeiae*. After infection of a host-adapted *Bartonella* species, otherwise healthy cats often establish a subclinical bacteremia that persists for months to years. Mild, transient fever and lymphadenopathy may occur. Serious disorders have been uncommonly reported, including combinations of endocarditis, myocarditis, uveitis, encephalitis and musculoskeletal abnormalities. METHODS / RESULTS: A 1-year-old male intact Domestic Shorthair cat was evaluated for acute non-weight-bearing left forelimb lameness and generalized peripheral lymphadenopathy. Computed tomography identified a monostotic aggressive bone lesion with an incomplete fracture of the left radial metaphysis. Bone aspirates yielded osteoblasts with minimal nuclear atypia. Abdominal ultrasound revealed a nodular spleen and lymphadenopathy; both contained lymphoid hyperplasia cytologically. Polymerase chain reaction of peripheral blood amplified Bh and *Mycoplasma haemominutum* DNA. Indirect immunofluorescence documented Bh immunoreactivity, with lower *Bartonella vinsonii* subsp. *berkhoffii* (Bvb) and Bk antibody titers. After doxycycline and pradofloxacin administration for suspected Bh-induced osteomyelitis, lameness resolved rapidly. Six-week post-treatment radiographs identified significant bone healing, and *Bartonella* enrichment blood culture was negative. Bh antibody titers decreased over one year (seroreversion). IMPACT: Reports of osteomyelitis as a manifestation of feline bartonellosis is previously limited to a case with a non-host adapted *Bartonella* species (Bvb). Documentation of seroreversion during antimicrobial treatment for feline bartonellosis is sparse. This report is the first to describe the findings and clinical outcome of osteomyelitis associated with Bh infection in a cat, including serologic trends over a 1-year follow-up period.

**Poster Code : MC23MHRN**

**Poster Title : Exploring the Association of Intratumoral Immune Cell Infiltrates with Histopathologic Grade in Canine Mast Cell Tumors**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** Costa, Victoria

**Author :** V. Costa

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

**Abstract :** Rationale: Canine mast cell tumors (cMCTs) vary in their biological behavior, treatment, and prognosis, based on their grade. Immune cell infiltration has been associated with prognosis and response to treatments in some human cancers, and immune-targeting therapeutics are increasingly being explored in veterinary oncology. However, currently little is known about the tumor microenvironment (TME) in cMCTs. Therefore, the objective of this study was to determine the prevalence of T lymphocytes, T regulatory lymphocytes, and macrophages in low- and high-grade cMCTs. Methods: The Louisiana Animal Disease Diagnostic Laboratory (LADDL) database was searched for cases of cMCTs. Thirty low-grade and 20 high-grade formalin-fixed paraffin-embedded samples were identified. Immunohistochemistry (IHC) was performed to detect CD3, FoxP3, and Iba1 on sequential sections. Three 400x fields with the highest numbers of CD3+ cells were identified for each tumor. The percentage of CD3+, FOXP3+, and Iba1+ cells was quantified in each field using ImageJ software. Results: Our results suggest T-lymphocyte infiltration is highly variable in high grade cMCT's, while being consistently low in low grade cMCT's. No statistically significant difference was noted in CD3 and FoxP3 expression between high and low grade cMCTs. Iba1 expression was noted to be statistically significantly greater in high grade cMCTs ( $p=0.046$ ). Increased Iba1 expression was noted in samples with multinucleation present. No other variables were found to be significantly associated with immune cell infiltrates. Conclusions/ significance: Increased immune infiltrates in high-grade tumors may indicate that the immune microenvironment plays a role in biologic behavior of high-grade canine mast cell tumors.

**Poster Code : MC24MHRN**

**Poster Title : An Ex Vivo Comparison of Metacarpophalangeal Joint Arthrodesis Techniques in the Horse**

**Poster Category :** Clinical Research

**Poster SubCategory :** Master (MS), House Officer, Residents, Non-DVM Undergraduates

**Presenter Name :** Riggs, Laura

**Author :** L. Kadic

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

**Abstract :** Introduction: No studies to date have compared arthrodesis constructs with both a locking compression plate (LCP) and stainless-steel cable to a solitary LCP to evaluate the efficacy, strength and mechanical properties of the applied tension band at the palmar/plantar aspect of the joint. The study objective was to compare the biomechanical characteristics of two arthrodesis techniques for the equine metacarpophalangeal joint using either a 10-hole 5.5 mm LCP alone or in combination with a 2.0 mm stainless-steel cerclage cable. Materials and methods: 5 forelimb pairs were collected from adult horses euthanized for reasons unrelated to orthopedic disease. Right and left forelimbs from the same horse were randomly selected for the construct with both the LCP and stainless-steel cable or the LCP without cable. The two groups of constructs were placed in a load cell and compared over the course of a non-destructive cyclic loading protocol (#3600 cycles) followed by single cycle to failure. Results: In cyclic loading, the difference in position between 250 and 1000N is significantly higher with cable ( $p<.0001$ ). In single cycle to failure testing, failure occurred by plate bending regardless of group. There was a significantly higher load at failure for the LCP plus cable group compared to LCP alone. ( $p=0.04$ ) Discussion/conclusion: The addition of the 2.0mm cerclage cable appears to increase the strength of the construct and should be considered when arthrodesis of the fetlock joint is performed in cases where the suspensory apparatus is affected.

**Poster Code : FP1FAC**

**Poster Title : Histone Deacetylase 3 associates with key regulators of Toll-like Receptor Signaling in lung epithelial cells**

**Poster Category :** Faculty(Non-Competitive)

**Poster SubCategory :** Faculty

**Presenter Name :** Stanfield, Brent

**Author :** B. Stanfield

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

**Abstract :** Background and Rationale: Histone Deacetylases (HDACs) are a family of proteins known to regulate gene expression via deacetylation of target histones. HDAC3 is primarily located in the nucleus, however it can also be found in the cytoplasm. We have previously demonstrated the role of HDAC3 in the inflammatory response in Lipopolysaccharide (LPS)-stimulated alveolar macrophages: regulating the secretion of pro inflammatory mediators. With the current project, we aim to identify novel HDAC3 substrates in LPS-stimulated pulmonary epithelial cells (A549), the first immune defense to pathogens invading the lungs. Approach: A549 cells were transfected with a BioID2-tagged HDAC3 expression plasmid, and divided into three groups: a. Untreated, b. stimulated with LPS, and c. stimulated with LPS and treated with Entinostat (MS275, a HDAC3 inhibitor). Cells were lysed, and labeled proteins were submitted for quantitative Liquid Chromatography/Mass Spectrometry analysis. Data were searched against the Swiss Protein Human database, and False Discovery Rate (FDR) was set at 1%. Results: The dataset yielded 395,776 peptide matches. After peptide sequencing by database searching and validation, and FDR exclusion, we identified 2,666 proteins. Of these, 33 have been annotated to function in the NF- $\kappa$ B signaling pathway and/or NF- $\kappa$ B-regulated transcriptional activity. Conclusions/Implications: Protein acetylation is a reversible post-translational modification that is known to stabilize protein structure and modify function and localization. With the current project we have identified novel HDAC3 substrates and described new regulatory functions of HDAC3 in lung epithelial cells.

**Poster Code : Phd1PHD**

**Poster Title : Effects of Maternal Calorie Restriction on Inflammatory White Adipose Tissue in Male Offspring of Preeclamptic-like BPH/5 mice**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Beckers, Kalie

**Author :** K. F. Beckers, V. C. L. Gomes, A. Garcia, C. Liu, , J. L. Sones

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

**Abstract :** Rationale: Preeclampsia (PE) is characterized by maternal hypertension along with other signs, including proteinuria. Women with obesity have 3-fold increased risk of developing PE. The long-term impact of the maternal obesogenic/preeclamptic environment on offspring is unknown. To investigate this, we utilize obese female BPH/5 mice, which spontaneously develops severe hypertension in pregnancy. We hypothesized that pair-feeding (PF) BPH/5 dams during pregnancy will attenuate cardiometabolic outcomes in adult BPH/5 males. Method: Adult (8-16 week old) ad libitum fed male BPH/5 and control C57 had daily food intake and body weight recorded, serum collection for measuring leptin by ELISA and white adipose tissue (WAT) to measure pro-inflammatory cytokines (TNF $\alpha$ , Ptg $\alpha$ -2) mRNA expression by real time PCR. Using C57 female mice as controls, BPH/5 were PF during gestation and male offspring were analyzed at adulthood as above. Statistical significance at  $p < 0.05$ . Results: BPH/5 adult male mice have similar body weights, daily food intake, and circulating leptin as control mice. This was unaltered by PF. Adult BPH/5 males have significantly increased subcutaneous WAT mass with increased Ptg $\alpha$ -2 expression, and increased peri-renal WAT mass with increased TNF $\alpha$  expression. Adult male offspring of BPH/5 PF dams had significantly decreased peri-renal WAT mass and TNF $\alpha$ , and decreased subcutaneous WAT mass and Ptg $\alpha$ -2. Conclusions: Reduction in the maternal obesogenic environment may play an important role in offspring pregnancy outcomes. Our data suggests that fetal programming from an adverse maternal environment could promote a pro-inflammatory response in males contributing to the development of cardiometabolic disease in PE offspring.



**Poster Code : PhD2PHD**

**Poster Title : Sexually Dimorphic Kiss1/Kiss1r Dysregulation in the Reproductive White Adipose Tissue of BPH/5 Mice, A Model of Preeclampsia**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Leite Gomes, Viviane

**Author :** V.Gomes, K.Crissman, K.Beckers, A.Garcia, J.Sones

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

**Abstract :** Rationale: The preeclamptic-like BPH/5 mouse has a sexually dimorphic phenotype, as only the females present hyperphagia, increased reproductive white adipose tissue (rWAT) mass and body weight (BW). Kisspeptin/receptor (Kiss1/Kiss1r) are expressed in rWAT and have a sex-specific role in metabolism. Kiss1r-knockout female mice have reduced energy expenditure, increased adiposity and BW, while males have similar BW as wild-type littermates. We hypothesized that rWAT Kiss1/Kiss1r mRNA expression is lower in BPH/5 vs. C57 females, but not different in males. Feeding a calorie restricted (CR) diet to BPH/5 females was expected to attenuate Kiss1/Kiss1r dysregulation. Methods: rWAT samples were collected from ad-libitum-fed (ad-Lib) BPH/5 and C57 males and females (n = 3-6/group), and BPH/5 females after 7 days of 25% CR (n = 5-6). Kiss1/Kiss1r mRNA were measured using RT-PCR and compared using independent samples t-test. Results: ad-Lib BPH/5 females had 55- and 1.5-fold lower rWAT Kiss1 and Kiss1r, respectively, than C57 (p < 0.05). Kiss1/Kiss1r were not different between BPH/5 and C57 males (p > 0.05). There was no difference in Kiss1r in ad-Lib vs CR BPH/5 females (p > 0.05). However, rWAT Kiss1 expression was 16-fold higher in CR than ad-Lib BPH/5 females (p < 0.05). Conclusion: There is a sexual dimorphism in rWAT Kiss1/Kiss1r expression in BPH/5 mice, with lower levels in the obese females. When fed a CR diet, rWAT Kiss1 levels increase in females, concurrently with reduction in BW and adiposity. Further studies are needed to investigate the potential roles of Kisspeptin in obesity and preeclampsia.

**Poster Code : PhD3PHD**

**Poster Title : Novel Methods to Promote Tendon Neotissue Formation by Equine Adipose Tissue-Derived Stem Cells**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Taguchi, Takashi

**Author :** T. Taguchi, M. Lopez

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

**Abstract :** Rationale: Tendon injuries are a leading cause of equine lameness. Current knowledge supports that neotendon recruits and directs tenoblasts to regenerate healthy tissue. The hypothesis tested in this study was that collagen type I templates populated with adipose-derived multipotent stromal cells (ASCs) cultured in tenogenic medium form viable neotendon, and cyclic tensioning accelerates the process. Methods: Collagen sponge templates were loaded with ASCs and cultured with dynamic perfusion in stromal or tenogenic medium with or without cyclic tensioning. Cell proliferation was evaluated with viability stain and with resazurin reduction, tendon-specific gene expression with RT-PCR, cell and extracellular matrix (ECM) morphology with light- and electron-microscopy after 7, 14, and 21 culture days. Results: Most cells were viable and cell number remained consistent among media and culture times without cyclic tension. Expression of Scx, Egr1, LOX, Col1a1, Col3a1, Eln, and Bgn were upregulated at day 7, Tnc at day 7 and 21, and Mx and CTGF in tenogenic medium at all time points without cyclic tension. Cells proliferated and deposited abundant, homogeneous ECM without cyclic tension, while cells deposited more fibrous ECM with cyclic tension both in tenogenic medium at day 21. Conclusions: Neotendon formed in tenogenic medium is not only a platform to deliver abundant tenoblasts, but also a viable healing tissue actively depositing ECM. Cyclic tension may improve elasticity of neotendon by forming more fibrous architecture. Significance/Impact/Implications: Culture of viable tendon neotissue may significantly augment current therapeutic options for equine tendonopathies.

**Poster Code : PhD4PHD**

**Poster Title : Optimization of cell deposition and cellulose nanofiber/alginate bioinks to improve cell survival and proliferation in cell-free 3D-bioprinting**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Li, Zhongqiang

**Author :** Z Li, A Ramos, S Yao, and J Xu

**Affiliation :** Division of Electrical and Computer Engineering, Louisiana State University Department of Comparative Biomedical Science, Louisiana State University

**Abstract :** Rationale: Cell-laden printing is commonly used in 3D-bioprinting. However, the extrusion pressure during the printing causes cell damage and death. To overcome this drawback, cell-free 3D-printing, in which cells are loaded after printing, has been developed. And efficient and homogeneous cell loading is essential in cell-free printing. Our objectives were to improve cell loading and optimize bioink with extracellular matrix (ECM), hyaluronic acid (HA), and collagens for cell-free 3D-printing. Methods: We prepared basic bioink by mixing cellulose nanofiber and alginate (NFA) at the ratios of 20:10 (NFA20/10) and 20:02 (NFA20/02). The bioink was optimized by adding ECM, HA and collagens namely, NFA20/02-ECM, NFA20/02-HA, NFA20/02-COL-I/III, and NFA20/02-COL-II, and then was used to print scaffolds with dual-porous (DP) and Inherent-porous (IP) designs. hFOB cells were loaded to the scaffolds with self-absorbent (SA) deposition. Cell survival and proliferation were assessed by alamarBlue assay. Result: NFA bioink showed excellent printability and shape fidelity. Loading cells with SA deposition achieved homogenous cell distribution in scaffolds. Scaffolds printed with NFA20/02 had better cell viability than NFA20/10. Cell survival and proliferation were greatly improved by adding ECM, HA, and collagens to the bioink. The alamarBlue assay indicated that many cells reside in the scaffolds after 30-days of culture. We found DP scaffolds supported cell proliferation better than IP scaffolds, and NFA20/02-COL-II was optimal for cell viability. Conclusion: NFA20/02-COL-II is an excellent bioink for cell-free 3D-bioprinting. SA deposition can efficiently and homogeneously load cells to 3D-printed scaffolds. Significance: The results are important toward improvement of 3D-bioprinting for bio-fabrication.

**Poster Code : PhD5PHD**

**Poster Title : Examination of Rickettsial Effector Proteins and their Putative Functions in Pathogenesis**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Yutzy, Lane

**Author :** L.Yutzy, P.Allen, J.Martinez

**Affiliation :** Vector-Borne Diseases Laboratory, Department of Pathobiological Sciences, LSU SVM

**Abstract :** Background/Rationale: It has become apparent that some intracellular bacterial pathogens manipulate host cell signaling through the use of secreted and membrane-associated proteins termed "effectors". Examining the function(s) of Rickettsial effector proteins, specifically those shown to be upregulated during in vivo and in vitro infection (A1G\_00070, A1G\_01760, A1G\_02960), will help elucidate host cell pathways that are involved in pathogenesis. Approach: Putative effector protein sequences from *Rickettsia rickettsii* strain "Sheila Smith" were cloned into mammalian cell pEGFP-C1 expression vectors and then transfected into HEK-293 cells to examine localization within the host using immunofluorescence microscopy analyses. Potential interactions between effectors and putative target host cell proteins were isolated and identified using immunoprecipitation against the GFP tag followed by Tandem Mass Spectroscopy protein sequencing. Additionally, recombinant effector proteins were cloned into pet28b-SUMO and expressed in *E.coli* (BL21) for the generation of soluble recombinant effector proteins, which will be utilized to generate monospecific rabbit polyclonal antibodies. Results: Immunofluorescence microscopy revealed possible nuclear and cytoplasmic localization within the host cell for putative effector A1G\_02960. Mass Spectroscopy analysis revealed that A1G\_02960 may interact with host proteins nucleolin and creatine kinase B (CKB). Antibody generation confirmed that A1G\_00070 is induced during infection and appears to be membrane bound. Conclusions/Implications: Rickettsial effector A1G\_02960 was shown to distribute across the cell and may interact with host proteins nucleolin and CKB. Rickettsial effector A1G\_00070 is expressed during infection and appears to be membrane-bound. Further investigation into the function(s) of these effectors will elucidate how *Rickettsia* establish infection in humans.

**Poster Code : PhD6PHD**

**Poster Title : Rickettsia conorii Growth in THP-1 Macrophages Requires Host Lipid Catabolism and Lipid Droplet Modulation**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Allen, Paige

**Author :** P. Allen, R. Noland, J. Martinez

**Affiliation :** Department of Pathobiological Sciences

**Abstract :** Rationale: *R. conorii* has adapted mechanisms to grow in macrophages during mammalian infection. Infection of these phagocytes shifts the host cell's overall metabolism towards an anti-inflammatory M2 response, defined by an increase in host lipid metabolism and oxidative phosphorylation. Lipid metabolism has more recently been identified as a key regulator of host homeostasis through modulation of immune signaling, and mitochondrial function and metabolism. Intracellular pathogens have adapted mechanisms of hijacking these host pathways for various functions required for growth and survival. Methods: In the present study, the modulation of host lipid metabolism during *R. conorii* infection of macrophages was assessed to define processes that are required for bacterial growth and survival. Pharmacological inhibitors were utilized to determine necessity of lipid catabolic pathways for infection. A key source of lipids for these catabolic pathways, lipid droplets (LDs), were also visualized during infection. Results: Herein, we determined that host lipid catabolism and LD modulation early in the infection process are essential for efficient bacterial survival. *R. conorii* infection of THP-1 cells led to a significant decrease in lipid droplets, suggesting the liberation and use of lipids within LDs are important for rickettsial growth in macrophages. However, the modulation of these LDs is independent of PPAR $\alpha$  signaling. Conclusions: Together, these results strongly suggest that the modulation of lipids in cells infected by *R. conorii* is an important and underappreciated aspect of the infection process.

**Poster Code : PhD7PHD**

**Poster Title : Knockdown of Cysteine-rich Secretory Protein LCCL Domain Containing 2 (CRISPLD2) Affects Differentiation of Human Mesenchymal Stem Cells**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Rong, Weiqiong

**Author :** W.Rong, C.Rome, S.Yao

**Affiliation :** Department of Comparative Biomedical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA 70803, USA

**Abstract :** Background: Human mesenchymal stem cells (hMSCs) possess multilineage differentiation potential, a valuable property for tissue regeneration and regenerative medicine. Long-term in vitro expansion of hMSCs is necessary to obtain sufficient cells for their therapeutic applications; however, such expansion leads to impaired multipotency of hMSCs, which is a major roadblock for their applications. This study aims to elucidate the molecular mechanism causing impairment of multipotency of hMSCs during expansion. Methods: The differentially expressed genes between early and late passages of hMSCs were identified by RNA-sequencing and qRT-PCR. Knockdown of CRISPLD2 was achieved by transfection of hMSCs with siRNA. Osteogenic and adipogenic differentiation of hMSCs were induced by culturing cells in osteogenic and adipogenic medium followed by Alizarin Red staining and Oil Red O staining, respectively. Cell proliferation was evaluated using alamarBlue assay. Senescence-associated  $\beta$ -galactosidase (SA- $\beta$ -gal) staining was used to detect senescence. Results: We found 25 downregulated genes shared by late passage hMSCs, hASCs, and hDPSCs. Of them, CRISPLD2 was the most downregulated, with over 90% decrease in passage 11 compared to passage 3 cells. Knockdown of CRISPLD2 resulted in impaired osteogenic differentiation of hMSCs but increased adipogenic differentiation. This finding agreed with literature reporting that molecular regulation of osteogenic differentiation is opposite to adipogenic differentiation. Furthermore, we determined that CRISPLD2 knockdown did not affect cell proliferation or trigger cell senescence. Conclusions: CRISPLD2 plays a vital role in maintaining the homeostasis of hMSCs multipotency. Decreased CRISPLD2 expression in hMSCs during in vitro expansion can cause the cells to lose osteogenic differentiation ability.

**Poster Code : PhD8PHD**

**Poster Title : Identification of Cell-Type Responsible for the Increased Responsiveness of Females to Ozone**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Singamsetty, Dhruthi

**Author :** D. Singamsetty, T. Vo, R. Lamichhane, I. Choudhary, K.R. Paudel, S. Patial, Y. Saini

**Affiliation :** Department of Comparative Biomedical Sciences

**Abstract :** Background/Rationale: Ozone exposure is known to cause lung injury and increased immune cell recruitment into the lung airspaces. Prior studies have shown that ozone-exposed female mice exhibit exaggerated inflammatory responses as compared to ozone-exposed male mice. Cells of hematopoietic as well as non-hematopoietic lineage respond to ozone inhalation via altered morphology, survival and functioning. While it is likely that the differential hormonal compositions in females influence their responsiveness to ozone, it remains unclear whether the genomic differences in female versus males account for sex-associated differential responses in ozone-exposed males versus females. Methods: We irradiated 10-11 weeks old C57 mice (n=40), which then received bone marrow obtained from donor mice by tail vein injections, 4 hours post-irradiation. The chimera mice were housed in a sterile environment for 8 weeks. Post 8 weeks, the 40 C57 chimera mice were subjected to sub chronic exposure to 800ppb ozone (4h/day, 14 consecutive weekdays) and were necropsied 24 hours after the last ozone exposure. BALF and lung tissues were analyzed. Results: The male C57 chimera mice that received hematopoietic cells from the female donors showed increased cell infiltration compared to those that received hematopoietic cells from male donors. The female C57 chimera mice that received hematopoietic cells from the male donors had significantly reduced immune cell recruitment as compared to the female C57 chimera mice that received hematopoietic cells from the female donors. Conclusion: These data indicate that the cells of hematopoietic lineage determine the exaggerated responsiveness of females to the inhaled ozone.

**Poster Code : PhD9PHD**

**Poster Title : Molecular Fingerprinting of Intracellular Calcium Signals for Determination of Spermatozoa Function in Live-bearing Fishes**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Sharma, Amit

**Author :** A. Sharma<sup>1</sup>, T. Tiersch<sup>2</sup>, H. Cheng<sup>1</sup>

**Affiliation :** <sup>1</sup>Department of Comparative Biomedical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA 70803; <sup>2</sup>LSU School of Renewable Natural Resources, AGGRC

**Abstract :** Background and Rationale: Currently, there is evidence that cryopreservation causes spermatozoa damage at the molecular level. Our goal is to develop a methodology to study intracellular calcium signals in sperm from *Xiphophorus helleri*. Once established, we will compare calcium signals in damaged vs non-damaged cells. The frequency and amplitude of these signals could be used as molecular markers "fingerprints" to determine spermatozoa viability. Methods: Fura-2 acetoxymethyl ester (Fura-2AM) loading time (15-60 min) and concentration (0.1-5  $\mu$ M) were determined using a real-time imaging system (TILL-Photonics, Germany). qPCR analysis was used for calcium channel gene expression. Sub-optimal (damaging) and optimal cryopreservation conditions were accomplished with slow (5°C/min), optimal (20°C/min) and fast (45°C/min) freezing rates. Results: Fura-2AM (2  $\mu$ M) and 30 min loading (RT) was optimal for intracellular calcium signaling recording. Extracellular alkalization and elevated calcium concentrations stimulated intracellular calcium signals. The increases in extracellular calcium induced calcium signals in a concentration-dependent manner. qPCR analysis identified potential calcium channels (melastatin (M7), canonical (C4), voltage-dependent (P/Q), vallinoid (V1), crac (Orai1), ankyrin (A1), polycystic (P2) and mucolipin (ML1)) involved in calcium signaling. Cryopreserved sperm cells revealed higher post-thaw motility with optimal freezing compared to suboptimal conditions. Conclusions/Significance: We developed a protocol for investigating intracellular calcium signals in *X. helleri* sperm cells. Elevated extracellular calcium and alkalization stimulated calcium signals. We also identified several calcium channel genes. These findings will form the molecular basis to characterize calcium signals controlling sperm cell activation and motility required for fertilization and to evaluate sperm cell damage resulting from cryopreservation.

**Poster Code : Phd10PHD**

**Poster Title : Role of CXCL2 in Host Defense against Staphylococcus Aureus-Induced Pneumonia**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Shan, Xiaoqian

**Author :** X Shan<sup>1</sup>, D Bhattarai<sup>1</sup>, B Dhakal<sup>1</sup>, and S Jeyaseelan<sup>1,2</sup>

**Affiliation :** 1Department of Pathobiological Sciences and 2Center for Lung Biology and Disease, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA 70803

**Abstract :** Rationale: Although neutralization of chemokine (C-X-C motif) ligand 2 (CXCL2) has been shown to attenuate neutrophil recruitment and bacterial clearance in mice infected with a Gram-negative pathogen *Klebsiella pneumoniae*, its role in Gram-positive bacterial pneumonia is not known. In this study, we investigated the role of CXCL2 in host defense against the Gram-positive bacterium *Staphylococcus aureus* in a model of bacteria-induced pneumonia. Methods: We infected both wild-type (WT) and CXCL2-deficient mice with a lethal (2x10<sup>8</sup> CFU/mouse by i.t) or sublethal (5x10<sup>7</sup> CFU/mouse) dose of *S. aureus* (USA 300). We monitored survival as well as performed bronchoalveolar lavage fluid (BALF) cell phenotyping and bacterial burden in the lungs and in extrapulmonary organs. We also quantified ROS and cytokines/chemokines in BALF. Moreover, we investigated the intracellular bacterial killing of *S. aureus* by WT and CXCL2-deficient bone marrow-derived neutrophils (BMDN). Results: Compared to WT counterparts, CXCL2-deficient mice showed increased survival following pulmonary *S. aureus* infection, which was associated with enhanced bacterial clearance in the lungs and in extrapulmonary organs. In addition, CXCL2-deficient mice displayed enhanced leukocytes influx as well as increased levels of ROS and cytokines/chemokines, including the monocyte/neutrophil chemoattractant, MCP-1, in BALF following infection. Furthermore, CXCL2-deficient neutrophils demonstrated augmented intracellular bacterial killing when compared to WT BMDN. Conclusions: These new findings revealed that CXCL2 is a negative regulator of pulmonary host defense during Gram-positive bacterial pneumonia through modulating neutrophil recruitment and function. Future studies are required to demonstrate if CXCL2 is a negative regulator of other Gram-positive bacterial infections.

**Poster Code : Phd11PHD**

**Poster Title : The Inactivation Of Sars-CoV-2 By Broad-spectrum UV Radiation**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Turner, Erik

**Author :** E.Turner

**Affiliation :** Department of Pathobiological Sciences

**Abstract :** Background: The novel coronavirus SARS-CoV-2, is a pressing concern worldwide. There is a need for rapid and highly effective methods of disinfecting liquids that have been potentially contaminated with SARS-CoV-2. We investigated the efficacy of a proprietary broad-spectrum UV light product as a method of inactivating SARS-CoV-2 in liquid. Methods: We established a viral culture of SARS-CoV-2 isolated from a discarded, known-positive clinical sample. The virus was passaged twice through Vero cells and titered via plaque assay. This viral stock was used to infect a monolayer of Vero cells and the supernatant collected. The supernatant was split into treatment and control aliquots, and the treatment group exposed to the UV light for 300 seconds. New Vero cells were then inoculated from these aliquots. Collections from the supernatants were taken at 0,1,3,5,7 dpi, and viral growth was measure via qRT-PCR. Results: Positive viral growth was established by a decrease in the CT value over time. No growth was defined as no change in CT value. We found no growth of Sars-CoV-2 in the UV treated group when compared to the control group, as well as no significant difference between the UV treated group and zero change, indicating that the UV radiation treatment inactivated the virus. We did however still recover viral RNA. Conclusions/ Implications: This study suggests that the use of this broad-spectrum UV bulb to inactivate SARS-CoV-2 is an effective method of inactivating the virus. It is also suggested that viral RNA identified by qRT-PCR is not necessarily infectious.

**Poster Code : PhD12PHD**

**Poster Title : Investigation of Shoe Type Effect on The Third Phalanx Motion in Normal Versus Laminitic Equine Hooves.**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Aoun, Rita

**Author :** R. Aoun and M. Lopez

**Affiliation :** Laboratory for Equine & Comparative Orthopedic Research Department of Veterinary Clinical Sciences Louisiana State University, School of Veterinary Medicine

**Abstract :** Rationale: Laminitis damages equine hoof laminae and causes rotation/sinking of the third phalanx (P3) which is usually treated with therapeutic heart-bar and egg-bar shoes. In this study, a physiologic force, representing the ground reaction curve during walking, was applied to normal and laminitic hooves using a mechanical testing system. The hypothesis is that the therapeutic shoes affect P3 displacement differently in laminitic versus normal hooves. Methods: The proximal phalanx of six equine disarticulated forelimbs was embedded in resin within a fixture designed to reproduce the stance fetlock angle after internal fixation of the proximal interphalangeal joint. Infra-red markers connected to a real-time motion detection system, recorded 3D Cartesian coordinates of hoof landmarks. Distances between the dorsal hoof wall (HW), coronary band (CB), solar margin (SM) and P3 were calculated and compared with a repeated measurement analysis with and without standard, heart-bar and egg-bar shoes. Results: Displacements of P3, DW, CB, and SM increased with load. Displacement of P3 was higher in laminitic than normal hooves under all shoeing conditions. Egg-bar shoes did not reduce P3 displacement in normal or laminitic hooves. Heart-bar and standard shoes significantly decreased P3 displacement in normal hooves, but not laminitic hooves. Conclusion: Preliminary results suggest that P3 displacement was affected by both shoe configuration and laminitis, and that therapeutic shoes affect P3 motion differently in normal versus tissue weakened by laminitis. Significance/Impact/Implications: Understanding the effect of horseshoes on P3 mobility in laminitic hooves is crucial to identify the proper shoe type for the most benefit.

**Poster Code : PhD13PHD**

**Poster Title : Short-Term Aerosol Exposures to Flavored JUUL and 3rd Generation E-cigs affect Redox Signaling and Regulation of Inflammation Markers in Mouse Macrophages Exposed at the Air Liquid**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Pinkston, Rakeysa

**Author :** R. Pinkston<sup>1,2</sup>, A. Penn<sup>2</sup>, A. Noël<sup>2</sup>

**Affiliation :** 1Department of Environmental Toxicology, Southern University and A & M College, Baton Rouge, LA 70813; 2Department of Comparative Biomedical Sciences, School of Veterinary Medicine, Louisiana State Uni

**Abstract :** Rationale: More than 5 million youth in the U.S. use electronic nicotine delivery system (ENDS) devices, including e-cigarettes (e-cigs) and JUUL. While redox signaling is crucial to macrophage function and aberrant activation or suppression can impair respiratory homeostasis, mechanistic viewpoints by which ENDS alter immune function are limited. The aim of this study was to evaluate the toxicity of three popular ENDS flavors (crème brûlée (CB), mango and menthol) in vitro. Methods: Mouse macrophages (RAW 264.7) were exposed to JUUL or e-cig aerosols at the air-liquid interface (ALI) for 1 hour. Cytotoxicity, reactive oxygen species (ROS), nitric oxide (NO) production, and gene expression were assessed. Results: Menthol-flavored JUUL exposure decreased cell viability = 30% and increased LDH levels = 50%, while CB- and mango-flavored JUUL and e-cig aerosol exposures did not affect cytotoxicity. Further, JUUL menthol elicited = 50% increase in ROS and NO production, while CB- and mango-flavored JUUL and e-cig aerosols produced = 50% reduction in NO. Moreover, CB-flavored aerosols from both devices upregulated the expression of  $\alpha 7nAChR$ , Cyp1a1, Ahr, Tgf- $\beta$  and Mmp12, while down-regulating Ifn- $\gamma$  and Il-6. Exposure to mango-flavored aerosols from both devices upregulated the expression of  $\alpha 7nAChR$ , while down-regulating Il-6 and Cyp1b1. Only e-cig mango exposures resulted in up-regulation of Cyp1a1 and down-regulation of Ahr, while only JUUL mango exposures downregulated Tgf- $\beta$ . Conclusion: These results suggest that ENDS effects on macrophages are flavor-sensitive rather than device-specific. Also, short-term aerosol exposures of macrophages alter redox signaling, which may translate into impaired lung immune responses.

**Poster Code : PhD14PHD**

**Poster Title : Postnatal Ozone Exposure Disrupts Alveolar Development, Exaggerates Mucoinflammatory Responses, and Suppresses Bacterial Clearance in Developing Scnn1b-Tg+ Mice Lungs**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Choudhary, Ishita

**Author :** I. Choudhary, T. Vo, K. Paudel, R. Yadav, Y. Mao, S. Patial, and Y. Saini

**Affiliation :** Department of Comparative Biomedical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA 70803, USA.

**Abstract :** Rationale: Increased levels of ambient ozone, one of the six criteria air pollutants, result in the respiratory tract injury and worsening of ongoing lung diseases. However, the effect of ozone exposure on the respiratory tract undergoing active lung development and simultaneously experiencing mucoinflammatory lung diseases such as cystic fibrosis (CF) remains unclear. Methods: To address these questions, we exposed sodium channel non-voltage gated 1, beta subunit overexpressing transgenic mice (Scnn1b-Tg+), a mouse model of CF-like lung disease, and littermate wild type (WT) mice to ozone from postnatal day (PND) 3-20 and examined the lung phenotypes at PND21. Results: As compared to filtered air (FA)-exposed WT mice, the ozone-exposed WT mice exhibited marked alveolar space enlargement, in addition to significant eosinophilic infiltration, type-2 inflammation, and mucous cell metaplasia. Ozone-exposed Scnn1b-Tg+ mice also exhibited significantly increased alveolar space enlargement, which was also accompanied by exaggerated granulocytic infiltration, type-2 inflammation, and greater degree of mucoobstruction. The alveolar space enlargement in ozone-exposed WT, and ozone-exposed Scnn1b-Tg+ mice was accompanied by elevated levels of MMP12 protein in macrophages and Mmp12 mRNA in the lung homogenates. Finally, while bacterial burden was largely resolved by PND21 in FA-exposed Scnn1b-Tg+ mice, ozone-exposed Scnn1b-Tg+ mice exhibited compromised bacterial clearance which was also associated with increased levels of IL-10, an immunosuppressive cytokine, and marked mucoobstruction. Conclusions: Taken together, our data show that ozone exposure results in alveolar space remodeling during active phases of lung development and markedly exaggerates the developmental history of an ongoing mucoinflammatory pediatric onset lung disease.

**Poster Code : PhD15PHD**

**Poster Title : Myeloid Cell Specific IL-4Ra Deletion Protects Against Allergen Induced Lung Injury**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Choudhary, Ishita

**Author :** I. Choudhary, Y. Mao, K. Paudel, D. Singamsetty, T. Vo, S. Patial, Y. Saini

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

**Abstract :** Rationale: Interleukins 4 (IL-4) and 13 (IL-13) are known to play an essential role in the pathogenicity of allergic asthma via common receptor, i.e., Interleukin-4 receptor alpha (IL-4Ra). However, the myeloid cell-type specific role of IL-4Ra-mediated signaling in allergic asthma has remained unclear. We hypothesized that myeloid cell-specific IL-4Ra signaling is essential for recruitment of eosinophils and manifestation of allergic asthma-relevant outcomes. Methods: We generated myeloid cell-specific IL-4Ra knockout mice (LysMCre<sup>+/+</sup>/IL-4Ra flox/flox) mice and control mice (LysMCre<sup>+/+</sup>/IL-4Ra<sup>WT/WT</sup>) by mating myeloid-specific promoter Lysozyme M (LysM)-regulated cre recombinase (cre) -LysMCre<sup>+/+</sup> mice with IL-4Ra flox/flox mice and LysMCre<sup>+/+</sup> mice with IL-4Ra<sup>WT/WT</sup> mice, respectively. Myeloid cell-specific IL-4Ra knockout and control mice were exposed to allergens and total cell counts, differential cell counts were performed on bronchoalveolar lavage fluid. Unlavaged left lung lobes were fixed in 10% formalin and used for lung pathology assessment. Results: In contrast to allergen-exposed control mice, allergen-exposed myeloid cell-specific IL-4Ra knockout mice had higher body weight gain, and significant reduction in total immune cell infiltration into the airspaces. While allergen exposed control mice had abundant macrophages, neutrophils, eosinophils, and lymphocytes, myeloid-specific IL-4Ra deletion resulted in significantly reduced macrophage, eosinophils, and lymphocyte population. Allergen exposed control mice exhibited pronounced inflammation and consolidation which were alleviated in myeloid-specific IL-4Ra knock out mice. Conclusion: Collectively, our data show that myeloid-specific IL-4Ra plays an important role in the immune cell recruitment specifically eosinophils after allergen exposure and its deletion protects against allergen induced lung injury.

**Poster Code : PhD16PHD**

**Poster Title : Identification of Cellular Source of HMGB1 in the Airspaces of Murine Lungs with Mucoobstructive Lung Disease**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Mao, Yun

**Author :** Y. Mao, I. Choudhary, S. Patial, Y. Saini

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

**Abstract :** Rationale: Mucoobstructive lung diseases are characterized by defective mucociliary clearance and associated mucin hypersecretion and mucoobstruction. The role of high mobility group box 1 protein (HMGB1) in Th2 inflammation in mucoobstructive lung diseases remains poorly understood. The objective of this study is to identify the cellular source of HMGB1 in the airspaces and its role in the pathogenesis of mucoobstructive lung diseases in Scnn1b-Tg+ lung disease. The sodium channel nonvoltage-gated 1, beta subunit transgenic (Scnn1b-Tg+) mice exhibit mucoobstructive lung disease features of human cystic fibrosis (CF) disease. Here, we hypothesized that myeloid cell-specific HMGB1 acts as proinflammatory mediator in the Scnn1b-Tg+ lungs. Methods: We generated myeloid-specific HMGB1 knockout mice (LysM-Cre<sup>+/+</sup>/Hmgb1<sup>flox/flox</sup>/ Scnn1b-Tg+) mice by interbreeding three mice strains, i.e., floxed Hmgb1 (Hmgb1<sup>flox/flox</sup>) mice, Lysozyme M-regulated Cre recombinase (LysM-Cre) mice, Scnn1b-Tg+ mice. LysM-Cre<sup>+/+</sup>/Hmgb1<sup>WT/WT</sup>/Scnn1b-Tg+ (LysM-Cre control), LysM-Cre<sup>-/-</sup>/Hmgb1<sup>flox/flox</sup>/Scnn1b-Tg+ (flox control), were used as controls. The cell specific HMGB1 knockout and control mice were evaluated to determine the bronchoalveolar lavage fluid (BALF) levels of HMGB1 (western blotting) and intracellular expression (immunohistochemistry). Results: In Scnn1b-Tg+ mice, HMGB1 was highly expressed in myeloid cell compared with WT mice. We have generated and characterized myeloid cell-specific HMGB1 knockout mice. Myeloid cell-specific HMGB1-deficient mice have elevated number of granulocytes in BALF and have exaggerated mucoinflammation. Conclusion: Myeloid cell are among the important cellular sources of HMGB1 in the airspaces of CF-like mucoinflammatory lung disease.

**Poster Code : PhD17PHD**

**Poster Title : Characterization of a novel mouse model for deletion of floxed gene in alternatively activated macrophages (M2).**

**Poster Category :** PhD Student

**Poster SubCategory :** Phd

**Presenter Name :** Vo, Thao

**Author :** T.Vo, I.Choudhary, K.Paudel, D.Singamsetty, R.Lamichhane, S.Patial, Y.Saini

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

**Abstract :** Rationale: Cre-Lox mediated gene deletion in pulmonary macrophages has remained challenging because the known myeloid specific promoters including Lysozyme M (LysM) and CD11c are also express in non-macrophage cell types. V-maf musculoaponeurotic fibrosarcoma oncogene family, protein B (MafB) promoter has been identified as macrophage-specific promoter but it has never been characterized for pulmonary macrophages. Therefore, we hypothesized that MafB-driven Cre Recombinase expression will allow recombination in alveolar macrophages that contain floxed alleles. Methods: We generated MafB-Cre<sup>+/+</sup>/Rosa-mTOMFlox/flox/mEGFP (MafB-EGFP) mice by crossbreeding MafB-Cre<sup>+/+</sup> and Rosa-mTOMFlox/flox/mEGFP parents. To determine the extent of macrophage-specific gene recombination, we performed bronchoalveolar lavage, fluorescent microscopy, and flow cytometry on BALF and lung digest of 42 days old MafB-EGFP mice. In addition, we assess the beneficial effect of in vitro and in vivo macrophage activation on recombination efficiency. Results: Flow cytometry analyses on macrophages from MafB-EGFP offspring revealed that: 1) only 30-40% of the alveolar macrophages are amenable to the Cre-Lox mediated recombination, 2) majority of bone marrow-derived macrophages are amenable to the Cre-Lox mediated recombination. Classical activation status did not affect the Cre-Lox recombination efficiency in freshly cultured alveolar macrophages. However, the alternative activation increased the recombination efficiency to ~80-90% in cultured alveolar macrophages. Intratracheal IL-33 treatment of MafB-EGFP mice also increased Cre-Lox mediated recombination of alveolar macrophages to ~80%. Conclusion: Our data suggest that while MafB-EGFP mice do not allow Cre-Lox recombination in the homeostatic lung and inflamed lungs with classically activated macrophages, these mice allow significant recombination in alternatively activated macrophages.



**Poster Code : PD1PD**

**Poster Title : HSV-1 ICP22 Maintains Transcriptionally Active RNA Polymerase II On The Viral Genome During Lytic Infection**

**Poster Category :** Post Doc

**Poster SubCategory :** Post-doc

**Presenter Name :** Birkenheuer, Claire

**Author :** C. Birkenheuer, J. Baines

**Affiliation :** PBS Department, Louisiana State University School of Veterinary Medicine

**Abstract :** Herpes Simplex Virus-1 (HSV-1), and all viruses in Herpesviridae, require shuttling of cellular RNA polymerase II (RNAPII) from the cellular genome to the viral DNA for viral gene expression. Infected cell protein 22 (ICP22) is one of five HSV-1 proteins expressed within one hour post infection (hpi), and chromatin immunoprecipitation (ChIP) suggest that ICP22 modulates the RNAPII phosphorylation state on the viral genome. Methods: Precision Nuclear Run-on (PRO-seq) maps the location of transcribing RNAPII with a strand-specific, nucleotide resolution that overcomes many limitations of ChIP. We created and compared PRO-seq maps of active RNAPII in human epithelial type 2 (HeP-2) cells at 3 and 6 hpi with either an ICP22-lacking HSV-1 virus (?ICP22), or a control virus with a genetically restored ICP22 (Repair). Results: At 3hpi, the ?ICP22 infection had less RNAPII on the viral alpha genes 0 and 4 when compared to the Repair infection. RNAPII levels on the other seventy-eight viral genes were lower than the alphas, but not different from the Repair infection. By 6 hpi, RNAPII returned to the host genome in the ?ICP22 infection while the Repair infection showed dramatic recruitment of RNAPII to all viral genes, and a concomitant decrease in RNAPII levels on the host genome. Conclusions: ICP22 is required for RNAPII occupancy on the viral alpha genes 0 and 4, and at 6hpi ICP22 ensures robust occupancy on all viral genes at the expense of the cellular genome. Implications: This suggests ICP22 is a viable drug target for treating Herpesviridae infections.

**Poster Code : PD2PD**

**Poster Title : NLRP3 regulates autophagy to control neutrophil extracellular trap formation in sepsis**

**Poster Category :** Post Doc

**Poster SubCategory :** Post-doc

**Presenter Name :** Jin, Liliang

**Author :** Liliang Jin, and Samithamby Jeyaseelan

**Affiliation :** 1Department of Pathobiological Sciences and Center for Lung Biology and Disease, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA

**Abstract :** Rationale: NLRP3 inflammasome is an important player in innate immunity during sepsis. Formation of Neutrophil Extracellular Traps (NETs) termed NETosis, is a novel mechanism by which neutrophils trap and kill extracellular bacterial pathogens. Autophagy is an intracellular mechanism responsible for destruction of intracellular pathogens. While the mechanisms-associated with NETosis is largely unknown, studies have suggested that autophagy is involved in NETosis. However, the role of NLRP3 in inducing NETosis through autophagy during sepsis remains elusive. Methods: We compared the NETosis between neutrophils isolated from wild-type (WT) and NLRP3 gene-deficient mice as well as human neutrophils treated with or without NLRP3 inhibitor in vitro. NETosis, autophagy activation markers, ROS, Citrullinated histone 3 and PAD4 were analyzed in NLRP3 -deficient and WT neutrophils stimulated in vitro with E. coli and in vivo after sepsis. Autophagy markers LC3 and ATG7 were determined by Western blotting and NETosis was compared using autophagy inhibitor and autophagy inducer. Results: Our results shows that NLRP3 is required for NETosis and NET-mediated killing of E. coli and S. aureus by both human and mouse neutrophils in vivo and in vitro. In addition, NLRP3 is important for autophagy during E. coli infection in neutrophils. We also showed that attenuated NETosis in NLRP3 -deficient neutrophils correlated with an impaired autophagy both in vitro and in vivo. Using an inhibitor as well as an inducer of autophagy, our data indicate that autophagy regulates NETosis during E. coli infection. Conclusions: NLRP3 regulates NETosis through autophagy during sepsis.

**Poster Code : PD3PD**

**Poster Title : NLRC4 Deficiency Improves Host Protection in Sepsis through Macrophage and T-Cell Responses**

**Poster Category :** Post Doc

**Poster SubCategory :** Post-doc

**Presenter Name :** Bhattarai, Dinesh

**Author :** D. Bhattarai<sup>1</sup>, S. Paudel<sup>2</sup>, L. Ghimire<sup>3</sup>, L. Jin<sup>1</sup> and S. Jeyaseelan<sup>1, 4</sup>

**Affiliation :** 1Department of Pathobiological Sciences and 4Center for Lung Biology and Disease, Louisiana State University, Baton Rouge, LA; 2Merck Exploratory Science Center, Cambridge, MA; 3Boston Children's Hosp

**Abstract :** Rationale: Sepsis is a leading cause of death in non-coronary intensive care units worldwide. Innate immunity is a protective mechanism against sepsis. Although NLRC4 inflammasome has been shown to be a critical component of host defense against systemic pathogens, its role in modulating both innate and adaptive immune responses in sepsis remains elusive. Methods: We used NLRC4 gene-deficient and wild-type (WT) mice to study sepsis by cecal ligation and puncture (CLP). Survival, bacterial burden in the lung and extra-pulmonary organs, and leukocyte influx to the peritoneal lavage fluid (PF) were analyzed. Chemokines and cytokines in PF were quantified using ELISA. Mice were also subjected to CLP-induced sepsis with or without chlorinate-mediated macrophage depletion. Flow cytometric analysis was performed to compare the T-cell population. Mice were co-housed to compare the gut microbiota's effect on bacterial-burden. Results: NLRC4 deficiency improves survival and bacterial clearance in mice with CLP-induced sepsis. We found higher recruitment of macrophages but lower levels of cytokines and chemokines in PF following sepsis in NLRC4 gene-deficient mice. Co-housing of WT and KO mice suggests that NLRC4 regulates host defense in CLP-induced sepsis independently of gut microbiota. Moreover, macrophage depletion experiments demonstrate that NLRC4 deficiency protects macrophages from sepsis-induced immune dysfunction. Flow cytometric analysis revealed higher CD4<sup>+</sup>, CD8<sup>+</sup>, INF- $\gamma$ +CD8<sup>+</sup> T cells, and NK cells in the spleen of NLRC4-deficient mice following sepsis. Conclusion: NLRC4 activation has a detrimental role in sepsis through hyper-inflammation and T cell exhaustion. Therefore, inhibition of NLRC4 inflammasome can be therapeutically beneficial in septic patients.

**Poster Code : PD4PD**

**Poster Title : Canine Coxofemoral Joint Extension Alter Radiographic Joint Volume**

**Poster Category :** Post Doc

**Poster SubCategory :** Post-doc

**Presenter Name :** Takawira, Catherine

**Author :** Catherine Takawira, Kathryn P. Spivey, Takashi Taguchi, Michelle L. Osborn, Mandi J. Lopez

**Affiliation :** Veterinary Clinical Sciences

**Abstract :** Rationale: Canine hip dysplasia (CHD) and resulting osteoarthritis (OA) is a leading cause of lameness affecting up to 70% of canine companions. The standard method of diagnosis is radiographic evidence of abnormal joint articulation with and without osteoarthritic changes when the coxofemoral joint (CFJ) is extended. This study was designed to quantify and compare the three-dimensional joint space and distance between the acetabulum and femoral head to test the hypothesis that the distance between the femoral head and the acetabulum and the joint space volume are with the CFJ extended versus in a flexed standing angle with or without weight bearing. Methods: Computed tomography (CT) reconstructions of 11 dogs with varying degrees of coxofemoral joint OA were analyzed using commercially available software in three views: dorsal recumbency with hip extended (Extended), dorsal recumbency with hip flexed but non-weight bearing (NWB), and ventral recumbency with hip flexed while weight bearing (WB). Results: Joint space volume was consistently higher in Extended compared to NWB and WB positions. In joints with severe OA, joint space volume was greater in Extended and NWB positions compared to WB. Conclusions: Joint space volume and distance are comparable between non-weight bearing and weight bearing flexed hip positions, while hip-extended position may create unnatural hip laxity. Significance: Developing criteria to identify normal versus abnormal articulation metrics in a WB position may augment current methods to identify dogs predisposed to CHD.