ABSTRACT NO.: 001
Initial clinical experiences with bilateral phacoemulsification in captive Macarons (Eudyptes chrysophoils) and Southern Rockhopper (Eudyptes chrysocome) Penguins
GH Sila,* SM Aquino,* G Fuller,† S Allard‡ and SJ Woodhouse‡
*Department of Ophthalmology, BluePearl Veterinary Partners – Michigan; †Department of Animal Health and Nutrition, Detroit Zoological Society; ‡Center for Zoo Animal Welfare, Detroit Zoological Society
Purpose: To describe surgical technique and outcomes in 2 southern rockhopper and 1 macaroni pengui undergoing bilateral phacoemulsification. Methods: Avian penguins with hypermetropic cataracts were identified from a captive population. Combined rod-cone standard flack electoretinogram and ocular ultrasound were performed. Phacoemulsification was performed via a 1/2 mm incision using a one- or two-handed technique. Incisions were closed with 9-0 vicryl monoflament suture in a continuous or interrupted pattern. Topical and systemic anti-inflammatories and antibiotics were administered post-operatively. Slit-lamp biomicroscopy and rebound tonometry were performed at 1–2 week intervals until inflammation resolved and medications were discontinued. Behavioral data was collected for 4 individuals for 2 weeks pre and post surgery. Results: Aspiration through the phaco needle was sufficient to remove the majority of the lens material in all eyes. In 9 out of 10 eyes the lens capsule was completely luxated or severely subluxated and removed via the corneal incision. Postoperative uveitis was minimal in all eyes. Inflammation along the dorsolateral edge of the membrana nictitans (MN) developed in all eyes. Defects of the dorsal edge of the MN developed in 6 of 10 eyes during the first post-operative week. One MN also developed a full-thickness 5 mm central hole. MN healing correlated with suture dissolution and was complete within 8 weeks in all eyes. Behavioral data showed a significant increase in use of the habitat space (p < 0.05) and feeding behavior (p < 0.05) post surgery. Conclusions: Phacoemulsification carries a good prognosis in these species and is an improvement over current surgical level. MN defects may have been related to suture irritation and smaller suture gauge or alternative corneal closure methods should be considered for these species. None.

ABSTRACT NO.: 002
Use of N-butyl cyanoacrylate adhesive for the treatment of erosive lipid keratopathy in two Panamanian Golden Frogs (Atelopus zeteki)
SM Aquino,* WC Shellabarger† and M Vasallo‡
*Department of Ophthalmology, BluePearl Veterinary Partners, MI; †Veterinary Medical Center, Detroit Zoological Society; ‡Amphibian Department Keeper, Detroit Zoological Society
Purpose: Describe surgical technique and outcomes in 2 Panamanian Golden Frogs (Atelopus zeteki) suffering from erosive lipid keratopathy. Methods: Two PFGs were presented with bilateral corneal disease. Both had unilateral corneal rupture and contralateral deep stromal loss. Both corneas healed with suture dissolution and was complete within 8 weeks in all eyes. Behavioral data showed a significant increase in use of the habitat space (p < 0.05) and feeding behavior (p < 0.05) post surgery. Conclusions: Phacoemulsification carries a good prognosis in these species and is an improvement over current surgical level. MN defects may have been related to suture irritation and smaller suture gauge or alternative corneal closure methods should be considered for these species. None.

ABSTRACT NO.: 003
Penetrating corneal xenotransplantation of SPF pig corneas to a dog: a preliminary study
JH Bae,* JC Kim,†† DB Jii,‡ NS Kim§ and MS Kim∥
*College of Veterinary Medicine, Chonbuk National University; ††Ji Dong Beom Animal Hospital
Purpose: To examine the effectiveness of Yorkshire pig (Large-White X Landrace) cornea for full-thickness transplantation to a dog. Methods: Penetrating corneal xenotransplantation was performed using SPF Yorkshire pig cornea to a dog. Topical 2% cyclopentolate was applied three times daily for 4 weeks postoperatively. Xenograft was evaluated by slit lamp microscopy, ocular coherence tomography (OCT) and in vivo confocal corneal microscopy (IVCM) 3 months after surgery. Results: Characteristics of immune rejection of the xenograft with increased edema and progressive vascularization were seen on post-operative day 16. However, 60% of the xenograft area had improved transparency 3 months after surgery. Using OCT, part of the xenograft was thickened and irregular compared to the peripheral cornea. Using IVCM, the central cornea displayed loss of lamellar organization and Des- cemet’s membrane rupture. Conclusions: Clinical and histologic rejection of pig-to-dog penetrating corneal xenograft occurred, however, it achieved tectonic stability and 60% of xenograft had improved transparency by 1 months after surgery. None.

ABSTRACT NO.: 004
Intraocular mast cell tumors in dogs
B Beckwith-Cohen* and RR Dubielzig†
*VCA West Los Angeles Animal Hospital, Los Angeles, CA, USA; †The Comparative Ocular Pathology Laboratory of Wisconsin, School of Veterinary Medicine, University of Wisconsin, Madison, WI, USA
Purpose: To describe the morphology of intraocular mast cell tumors in dogs. Methods: The COPLow database was searched for intraocular mast cell tumors in dogs and cats. Histological slides were stained with mast cell-specific and inflammatory cells. None.

ABSTRACT NO.: 005
Normal bacterial conjunctival flora in the American Bison (Bison bison)
G Ben-Shlomo,* RJ Madison,† DE Fligg,‡ JM Kinyon,‡ T Frana∥ and S Olsen∗
*Department of Veterinary Clinical Sciences; †College of Veterinary Medicine, Iowa State University, Ames, IA, United States Department of Agriculture, Agricultural Research Service, National Animal Disease Center, Ames, IA, USA; ‡Veterinary Diagnostic Laboratory
Purpose: To describe the bacterial flora of the normal conjunctiva of the American Bison (Bison bison). Methods: Conjunctival swabs were collected from both eyes of 15 American bison, following a complete ophthalmic examination. The swabs were cultured for aerobic and anaerobic bacteria, and fungi. Identification was performed primarily using matrix-assisted laser desorption ionization time-of-flight (MALDI-TOF) mass spectrometry and subtyping with conventional methods. All 15 dogs were from the same herd. No significant lesions in the cornea were identified. The most frequent bacteria isolates were Arthrobacter spp and Acidobacter spp. Other bacteria included Pseudomonas spp, Pantoea spp, Staphylococcus spp, Enterococcus spp, Escherichia coli, Saccharothrix syringae, Juncus desertiflorus, Bacillus cereus, and Megasphaera keratanolysis. Conclusions: To the authors’ knowledge, this is the first report of the normal bacterial conjunctival flora in the American Bison (Bison bison). None.

ABSTRACT NO.: 006
Complex maxillary malformation with orbital zygomatic mucocle in a puppy: a case report
A Giral‡, M Rondena*, C Stefanello†,‡ RJ Madison,† DE Fligg,‡ JM Kinyon,‡ T Frana∥, R Romanelli‡ and G Bertolinii
*Clinica Veterinaria Privata San Marco, Padova, Italy; ‡Laboratorio d’Analisi Privato San Marco, Padova, Italy; †Dipartimento di Scienze Veterinarie, Università di Pisa, San Piero a Grado, Italy
Purpose: To describe a zygomatic gland mucocle and concomitant maxillary malformation in a dog. A 7-month-old, male, named breed dog had a recent-onset of unilateral esophagus with third eyelid protrusion and a gradually enlarged swelling in the right maxillary region. Methods: Physical and ophthalmic examinations, imaging, surgery and histology of the tumor were performed. Results: A right maxillary mucocle was clinically suspected and confirmed by ultrasound. Computed tomography revealed a large multiloculated cystic-like lesion of the right zygomatic gland projecting into the orbital space, displacing the eyeball. The ipsilateral molar part of the maxillary bone was underdeveloped with multiple abnormal unerupted mandibular crowded molar teeth in the premolar region. Modified lateral orotony and selective maxillary bone access were performed to provide ventral exposure of the orbit and dental extraction, while minimizing trauma to the globe and supporting structures. The pseudocyst was removed and the wall

© 2015 American College of Veterinary Ophthalmologists
Sampled for histology. Sections were characterized by acini of zygomatic gland embedded in a thick granulation tissue surrounded by a border of subcutaneous fat. Confocal microscopy confirmed that the pool of acini connected to the ductal system, with preservation of the acinous lobular structure. Conclusions: We described a complex case of adenoma due to zygomatic acinar in a canine with multiple exocrine manifestations. A possible relationship between these two conditions can be hypothesized on the basis of advanced imaging features. Early diagnosis and management prevented further ocular complications. None.

ABSTRACT NO.: 007

Establishing normals for and validating the Pentacam-HR® for anterior segment tomography in healthy feline eyes

AM Cleymaet, S Rao and KS Freeman
Department of Clinical Sciences, College of Veterinary Medicine, Colorado State University

Purpose: To measure central corneal thickness (CCT) and anterior segment parameters in healthy feline eyes with the Pentacam-HR®, a rotating Scheimpflug camera, and to compare these CCT values with those obtained with a spectral-domain optical coherence tomography (SD-OCT) device, the Opus® ivVue. Methods: Repeated CCT measurements were obtained from both eyes of 35 healthy domestic shorthaired cats using SD-OCT and Pentacam-HR®. Additional anterior segment parameters were evaluated with Pentacam-HR®. The continuous data on CCT and age were compared between the modalities and between eyes using linear regression analysis for association. Blind-Alman analysis was used to evaluate agreement between the imaging modalities for CCT. Results: Mean ± sd CCT was 591.1 ± 42.9 μm for OD and 586.9 ± 40.4 μm OS using SD-OCT, with no significant difference between eyes. Mean ± sd CCT was 604.1 ± 61.6 μm for OD and 603.7 ± 77.1 μm OS using Pentacam-HR®. There was no significant difference between eyes. Mean ± sd corneal curvature was 43.1 ± 7.12 diopters (D). Steepest keratometric value was 66.7 ± 317.1 D. Anterior chamber depth was 4.4 ± 1.0 mm and angle was 36.1 ± 19.6°. Corneal volume was 595 ± 200 mm³. Anterior chamber volume was 59.1 ± 21.4 μl. There was a significant difference between Pentacam and OCT values for CCT with OCT values on average 15.9 μm lower than Pentacam values (P < .0002). There was moderate agreement between modalities based on Blind-Alman. Conclusion: The Pentacam-HR® is an excellent alternative anterior segment biomicroscope in feline eyes. There is moderate agreement between modalities, with CCT SD-OCT readings an average of 15.9 μm lower than Pentacam-HR®. Supported in part by the Center for Companion Animal Studies at Colorado State University. None.

ABSTRACT NO.: 008

Single dose effect of topical ophthalmic dorzolamide hydrochloride 2%/timolol maleate 0.5% on intraocular pressure in normal dogs

ED Dolan, JP Herring and Y Vasilyev
Virginia-Maryland College of Veterinary Medicine

Purpose: To determine the effect of single dose topical ophthalmic dorzolamide hydrochloride 2%/timolol maleate 0.5% (DHTM) (Hi-Tech Pharmacal Co., Inc., Amityville, NY, USA) on IOP at 1, 3, and 6 h after administration. Peak effect was observed 6 h after treatment and significant IOP decrease compared to the control solution and baseline values at all time points. Conclusions: Successful treatment of glaucoma in dogs can be achieved with short-acting topical glaucoma medications. DHTM appears to be an effective therapeutic agent for the treatment of canine glaucoma. None.

ABSTRACT NO.: 009

In vivo confocal microscopy of cornal foreign bodies in dogs: a case series

AM Enders and EC Ledbetter
Department of Clinical Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY, USA

Purpose: To characterize the in vivo confocal microscopic features of dogs with macroscopic foreign bodies in the cornea. Methods: Seven clinical cases presented to the Cornell University Hospital for Animals (Ithaca, NY) with cornal foreign bodies detected on clinical examination or clinical findings consistent with foreign bodies were examined by confocal in vivo confocal microscopy. The diagnosis and type of cornal foreign body were confirmed by clinical examination or histopathology. All dogs received a complete ophthalmic examination prior to in vivo confocal microscopy that included slit-lamp biomicroscopy, indirect ophthalmoscopy, Schirmer 1 tear testing, applanation tonometry, and fluorescein stain. In vivo confocal microscopy was performed with a modified Heidelberg Retina Tomograph III and Retina Camera Module D while using a g x objective and 400 μm 4λ lens. Examinations were performed using only topical anesthesia and manual restraint. Following examination, descriptive photographs were analyzed for pathology. Results: In vivo confocal microscopy was helpful in all cases to establish a diagnosis and characterize cornal pathology. Analyzed images showed evidence of stromal leukocyte infiltration, anterior stromal dendrites, and posterior keratocyte proliferation and stromalization. Identified cornal foreign bodies included bone fragments, unidentifed plant material, a seed hull, metallic bullet fragments, and a piece of tape. All dogs made recovered following surgical and/or medical intervention. Conclusions: In vivo confocal microscopy provides an excellent diagnostic technique to detect and characterize superficial, deep, ulcerative, or non-ulcerative cornal lesions secondary to both organic and non-organic cornal foreign bodies in dogs. None.
ABSTRACT NO.: 013
Bilateral phacoemulsification followed by a cyclic foldable intraocular lens implantation in a 2.5 year-old Bengal Tigress (Panthera tigris tigris): case report
JA Kleiner,* E Watanabe1 and C Bettini1
1Vetech Oftalmologia Veterinária, Curitiba, Brazil; 2Prontodog Small Animal Hospital, Maringa – Pr
Purpose: This report intends to describe the preparation, technique and results obtained in a bilateral cataract surgery utilizing phacoemulsification and foldable cyclic intraocular lens in Bengal Tigress. Case report: A 2.5 year-old intact female Bengal Tigress was submitted due to severe visual deficit. After sedation a complete eye examination revealed a bilateral mature cataract. Ultrasonography, electroretinography, tonometry and complete blood work were performed before the surgery and were within the normal limits. Bimanual phacoemulsification technique was utilized. Both eyes operated at the same procedure. Intraocular custom made lenses specifications were: power of 30 D, overall length of 12 mm, 21.5 mm biconvex optical zone and haptic angulation of 0°. The capsulotomy was made in all cases. A complete eye examination was performed postoperatively on the 1st, 3rd, 7th and 14th day. The cornea was totally healed and a cloudiness of the cornea was present and no evidence of retinal diseases. No lens instability or clinically important lens-induced uveitis was noted. Cataract surgery was planned and performed at two different practices. The Alouatta fuscata was performed by one surgeon, one eye at a time and the Alouatta caraya by another surgeon with eyes at the same day. Intraocular lenses (IOLs) were implanted and no complications during the procedure were revealed. The intraocular custom lenses were custom made and their specifications calculated by ultrasonography and corneal curvature measurements. Results: All animals regained vision on the next day after the procedures and no major complications observed in one year followed up period. Conclusions: To the authors knowledge, this is the first report on phacoemulsification and IOL implantation in howler monkeys. These species are among endangered ones and considering the successful procedures and visual rehabilitation they were released into the wild. Commercial interest: None.

ABSTRACT NO.: 017
Noncontact specular microscopy following the use of intracameral acyclovir acid during phacoemulsification in dogs with senile cataract
IRM Padua,* TB Lima,† GP Valdetaro,* RM Crivelaro,* KK Kobashigawa,* CP Balthazar,‡ PES Silva,* M Aldrovani* and JL Lusaab†
‡Ophthalmology Unit, Department of Medicine and Surgery, Faculty of Agrarian and Veterinary Sciences, UNESP Jaboticabal, SP, Brazil
*Ophthalmology Unit, Department of Medicine and Surgery, Faculty of Agrarian and Veterinary Sciences, UNESP Jaboticabal, SP, Brazil; †Ocular Surface Advanced Center (CASO), Federal University of São Paulo, UNIFESP São Paulo, SP, Brazil
Purpose: Evaluate the antioxidant role of intracameral acyclovir acid on the corneal endothelium of dogs submitted to phacoemulsification. Methods: The eyes of 10 dogs with bilateral senile cataracts were used. Sterile acetic acid was added to the irrigation solution used during phacoemulsification to make a final aciclovir acid concentration of 0.001 M. Endothelial cell density (cells/mm²) and area (μm²), corneal thickness (μm), hexagonality (Hx) and the coefficient of variation of cell size were evaluated by noncontact specular microscopy (Topcon SP 300IP). Evaluations were conducted prior to the surgical procedure (Mm0) and after 30 min (Mm30), 1 h (Mh1), 4 h (Mh4), 12 h (Mh12), 24 h (Mh24), 3 days (Mh3d) and 7 days (Mh7d). Results: No significant differences were verified between PODs (p > 0.05). Conclusions: No significant losses in cellular number, corneal thickness, hexagonality and coefficient of variation were observed, with the addition of intracameral 0.001 M aciclovir acid in the irrigation solution used during phacoemulsification. An increase in cell area was only verified for M7. Supported by the CNPq (Proc. 300831/2010-5) and the FAPESP (Proc. 2011/20203-1). None.

ABSTRACT NO.: 018
Immunophenotypic patterns, chromatin functional states and amounts of DNA from limbal epithelial cells grown on synthetic versus human amniotic membrane
M Aldrovani,* KK Kobashigawa,* GP Valdetaro,* IRM Padua,* PC Cristovam,1 JAP Gomes* and JL Lusaab†
†Ophthalmology Unit, Department of Medicine and Surgery, Faculty of Agrarian and Veterinary Sciences, UNESP Jaboticabal, SP, Brazil; †Ocular Surface Advanced Center (CASO), Federal University of São Paulo, UNIFESP São Paulo, SP, Brazil
Purpose: Anionic membrane (AM) has been used for expanding limbal epithelial cells (LEC). There are, however, certain concerns with AM, including its structural heterogeneity and the potential for microbial contamination. Amniotic membranes have been proposed as replacements for AM. Evidence suggests that membranes from chitosan (Ch), alginate (Alg) and fucoidan (Fuc) are candidates for limbal therapy. This study evaluated immunophenotypic patterns, chromatin functional states and amounts of DNA from LECs grown on membrane from Alg-Ch-Fuc and AM. Methods: Ch-Alg-Fuc membranes were fabricated by ion and thermal reticulation. Cryopreserved (–80°C) intact human AM was obtained from the tissue bank of the CASO-UNIFESP. LECs were obtained from rabbit limbal explants and then cultured on Alg-Ch-Fuc membrane or AM for 14 days. Differentiated and progenitor immunophenotypic patterns of the cornea were studied with anti-kBkδ7 and anti-p65 antibodies. The Feulgen reaction was used to detect chromatin DNA. Samples were evaluated under optical microscope coupled with software for image analysis (Image J®). Optical density (OD) related to the functional states of chromatin and the amounts of DNA were quantified. Results: LECs cultured on Alg-Ch-Fuc membrane and AM showed no differences in the expression of kBkδ7 (p = 0.21). Expression of p65 was two-fold greater in samples grown on AM (6.21% vs. 3.1%, p < 0.01). The mean OD values were 0.57 ± 0.01 for LECs cultured on Alg-Ch-Fuc membrane and 0.54 ± 0.01 for cells grown on AM (p < 0.0001). Mean IOD values were higher for cells grown on Alg-Ch-Fuc membrane (21.46 ± 2.02 vs. 21.06 ± 1.12 on AM, p < 0.0001). Membrane from Alg-Ch-Fuc is a viable substrate for expanding LECs. The cells grown on this substrate presented higher no condensed chromatin and DNA than cells expanded on AM. Supported by the CNPq (Proc. 300831/2010-5 and 467289/2014-0) and the FAPESP (Proc. 2012/17308-5 and 2013/19494-7). None.

© 2015 American College of Veterinary Ophthalmologists, Veterinary Ophthalmology, 18, E17–E34
**ABSTRACT NO.: 019**

**Effects of the intraocular injection of preservative free 1% lidocaine, in the eyes of rabbits with experimental uveitis**

AAF Barros Sobrinho, *TB Lima, *KK Kobashigawa, R Renzo, *IRM Padua, *EGF Betile, M Aldrovani and *JL Laus

*Ophthalmology Unit, Department of Veterinary Clinical Medicine and Surgery, Faculty of Agrarian and Veterinary Sciences, UNESP Jaboticabal, SP, Brazil;* Ananthropology Unit, Department of Veterinary Clinical Medicine and Surgery, Faculty of Agrarian and Veterinary Sciences, UNESP Jaboticabal, SP, Brazil; *Laboratory of Pharmaceutical Technology, Faculty of Pharmacy of the Federal University of Minas Gerais, UFMG Belo Horizonte, MG, Brazil

Purpose: To evaluate the effects of 1% lidocaine in pupil diameter and corneal endothelial cell density parameters in rabbit eyes submitted to intracameral injection of the anterior chamber in the left eye of twenty rabbits. Twelve hours later ten rabbits received 0.2 ml of preservative-free 1% lidocaine through the same method (treated group-TG), the others, 0.2 ml of saline (non-treated group-NTG). The pupil diameter (PD) was evaluated by photometry for 60 min. Measurements were made at one minute intervals in the first ten minutes, five minutes from the tenth to the thirtieth minute and ten minutes from the thirtieth to the sixtieth minute. Endothelial cell density, coefficient of variation, corneal thickness and curvature were evaluated by non-contact specular microscopy before paracentesis (M0), 12 h after (M1) and 1 h (M2), 12 h (M3) and 24 (M4) of intracameral injection. Results: No results were found in PD between the TG and the NTG (p > 0.05). The parameters in specular microscopy, except corneal thickness did not differ between groups. In the TG, the mean value of corneal thickness in M3 (40 ± 0.01 mm) was different from M0 (36 ± 0.01 mm; p < 0.05). The NTG average value of corneal thickness in M4 (40 ± 0.01 mm) did not differ (p > 0.05), but did so in relation to M0 (36 ± 0.01 mm) and M4 (36 ± 0.01 mm) (p < 0.05). Conclusions: While the intraocular injection of 1% lidocaine did not modify PD and endothelial parameters, transient corneal edema occurred in the NTG. FAPES (121.0881/2010-5 and 131228/2012-6).
ABSTRACT NO.: 025
Intraocular pressure in dogs subjected to pneumoperitoneum or to the Trendelenburg position
KM Cardoso,* LT Nishimura, DO Garcia, MR Domiciano,* D Paulino-Jr,* E Mattos Jr,* PPM Teixeira,* MAM Silva,* AT Jorge,* HC Gia Dias,* MV Mamede,* and CS Honsho,*
*Prana University, UNIFRAN, Franca-Sp, Brazil;†Veterinary Clinic, Olmoffteo – Ribeirão Preto-Sp, Brazil.

Purpose: The aim of this study was to assess the influence of CO2 pneumoperitoneum of 10 mmHg and the Trendelenburg position on intraocular pressure (IOP), respiratory rate (RR), heart rate (HR), and peripheral oxygen saturation (SpO2). Eight adult Beagles were submitted to two surgical positioning regimens at different times. In group A, the pneumoperitoneum was induced using propofol and maintained with isoflurane. IOP, mean arterial pressure (MAP), respiratory rate (RR), and peripheral oxygen saturation (SpO2) were recorded before and after pneumoperitoneum for 60 minutes. In group B, the Trendelenburg position was maintained for 60 minutes at 10 mmHg and 10 °C. MAP was maintained at 60 (±6) mmHg and the median HR was 113 (±12) bpm.

Results: There was no difference in RR between groups. There was a significant decrease in SpO2 at 30, 45, and 60 minutes in group A compared to baseline. The Trendelenburg position at 10 mmHg had no significant influence on IOP, MAP, RR, or SpO2.

Conclusions: The pneumoperitoneum at 10 mmHg and the Trendelenburg position did not influence the PO2 and other respiratory variables in dogs anesthetized with isoflurane. Supported by PRONUP/CAPES.

ABSTRACT NO.: 026
Development of an ex vivo equine corneal model
TL Marlo,* EA Giuliano,* A Sharma,* and RR Moham**† ††
*Department of Veterinary Medicine and Surgery, College of Veterinary Medicine, University of Missouri, Columbia, Missouri;† Harry S. Truman Memorial Veterinary Hospital, Columbia, Missouri;‡ Mason Eye Institute, School of Medicine, University of Missouri, Columbia, Missouri.

Purpose: To determine the viability of an ex vivo equine corneal model. Methods: Equine corneas were obtained from horses undergoing humane euthanasia. The samples were processed within 2 hours after removal. Specifically, to assess the equine cornea’s extracellular matrix and cellularity after 7 days using two different culture techniques (either a) an air/liquid interface or b) immersion conditioned) to determine the best ex vivo equine corneal model. Results: Equine corneas with 2 mm of peripheral sclera are freshly harvested from horses undergoing humane euthanasia. One sclero-corneal ring (SCR) from each horse is placed in the a) air/liquid interface organ culture system (ALC), with the contralateral SCR being placed in the b) immersion conditioned (IC) organ culture system for 7 days. All SCR are evaluated using serial daily gross photography, histology, and IOP measurements. The IC system (b) results in more thickness, cellularity, and extracellular matrix than the ALC system (a) maintained with saline. Conclusions: The best ex vivo equine corneal model. All IC conditions (a) maintained the equine cornea’s cellular matrix and preserves corneal transparency, while the IC system (b) results in more thickness, cellularity, and extracellular matrix than the ALC system (a) maintained with saline.

ABSTRACT NO.: 027
Cataract removal and intraocular lens implantation in a falcon
RM Marison,* GA Messenger,* AF Alarjo,* FJ Rucker,* H Hofmann,* DO Mutti,* and CJ Murphy**
*Bird Veterinary Hospital, †Capital Area Veterinary Emergency Service and Veterinary Referral Center of New Hampshire;* Massachusetts College of Optometry, ‡Veterinary Ophthalmology, ††Veterinary Medicine, University of Wisconsin-Madison.

Purpose: To remove cataracts in a falcon. Methods: A four-year-old female falcon (Falco biarmicus) was presented with bilateral cataracts. Ophthalmic examination revealed the presence of bilateral cataracts with no other ocular pathology. Measurements of the anterior ocular components, including keratometry, were obtained with a noncontact ocular biomater (Lemstar LS 900, Haag-Streit AG, Konig, Switzerland), through a low-coherence interferometry technique. B-scan ultrasonography was performed to calculate intraocular lens power and size. Posterior vitreous reaction and vitreous chamber size were determined with the above information. Cataract removal was performed with an Acrivet phacoemulsification system used to remove lens contents, and the artificial lens was injected using a 10 mmHg pneumoperitoneum. Schirmer tear testing, tonometry (TonoVet/C226, Haag-Streit AG, Konig, Switzerland), through low-coherence interferometry technique, was performed on forty healthy alpacas (80 eyes). The IOP was 12.49 ± 2.81 mmHg OD, 12.51 ± 2.79 mmHg OS in comparison to applanation tonometry. IOP measurement was greater than that of dogs with entropion. Ocular surface disease is common in cats with entropion.

Purpose: To evaluate the means and ranges of intraocular pressure (IOP) estimates in eyes of healthy alpacas (Vicugna pacos) using rebound (TonoVet) and applanation (Tono-PenXL) tonometers. Rebound tonometry (TonoVet/C6, Rebound Technologies, LLC, Austin, TX, USA) was performed on forty healthy alpacas (80 eyes). Schirmer tear testing (STT) and IOP measurements using both TonoVet and TonoPenXL tonometers were obtained. Data were analyzed, using a doubly repeated-measures ANOVA and Student’s paired t-test, with p < 0.05 considered significant. Results: The STT values ± standard deviation (SD) were 20.80 ± 4.03 mm OD, 20.80 ± 4.13 mm OS, 20.84 ± 4.94 mm OU. The IOP values ± SD via rebound tonometry were 14.20 ± 2.58 mm OD, 14.21 ± 2.58 mm OS, 14.21 ± 2.79 mm OU. The IOP values ± SD via applanation tonometry were 12.49 ± 2.81 mmHg OD, 12.51 ± 2.79 mmHg OS, 12.51 ± 2.78 mmHg OU. There was a significant difference (p = 0.002) in the IOP obtained between the tonometries. The rebound tonometer underestimated the IOP by 0.58 ± 0.58 mmHg. Schirmer test readings and IOP measurements have a strong correlation (r = 0.886). Conclusions: IOP readings from the rebound tonometer were statistically higher than from the applanation tonometer, however, not considered clinically significant. Further studies comparing TonoVet and TonoPenXL with direct manometric measurements may be necessary to validate tonometry for routine clinical use in alpacas.

ABSTRACT NO.: 030
Feline entropion: a retrospective study of 126 cats (1995–2014)
AM Nicklin and A van der Wouwer
The Animal Medical Center, New York, NY, USA.

Purpose: To describe the presentation, surgical, and treatments recommendations in 126 cats with entropion. Methods: Data was collected from the medical record of 126 cats diagnosed with entropion. Breed, age, sex, presenting complaints, clinical signs, and surgical and medical treatments recommendations. The average age was 7.8 years with a range of 5 years to 18 years. Domestic Shorthairs were the most common breed (56.2%) followed by Persian cats (6.4%). The remaining 37.8% of cats comprised 12 different breeds. The most common presenting complaints were ocular discharge, squinting, and corneal ulceration. Entropion was present bilaterally in 38% of cats and uni- laterally in 62% of cats. The lower lid alone was affected in 94.9%. Of the 126 cats, 98.4% had a lower lid entropion. None of the 126 cats was lost to follow up.

Purpose: To describe the incidence of single-nucleotide polymorphisms of SRBD1 gene with glaucoma in Shiba-inu dog: a meta-analysis in six Japanese Veterinary Hospitals. M Ota,* N Kanemaki,† H Tsujiita,* Y Kobayashi,* M Abe,* Y Takimoto,** M Imayasu,* A Meguro† and N Mizuki‡
*Animal Eye Center; †Azabu University; ‡Veterinary Ophthalmology Specialized Clinic; ††Alice Animal Clinic; ‡‡Abe Animal Hospital; **Takimoto Animal Clinic; ††Nagoya City University; ‡‡Yokohama City University.

Purpose: To evaluate the relationship between IOP and the presence of intraocular lens implantation in a feline model. Methods: Intraocular pressure in 12 cats was recorded in the absence and presence of intraocular lens implantation, and the IOP was 2.79 mmHg OS, 12.51 ± 2.79 mmHg OS. In the IOP obtained between the tonometries. The rebound tonometer underestimated the IOP by 0.58 ± 0.58 mmHg. Schirmer test readings and IOP measurements have a strong correlation (r = 0.886). Conclusions: IOP readings from the rebound tonometer were statistically higher than from the applanation tonometer, however, not considered clinically significant. Further studies comparing TonoVet and TonoPenXL with direct manometric measurements may be necessary to validate tonometry for routine clinical use in alpacas.

None.
Purpose: We aimed to perform a meta-analysis to investigate the association between glaucoma and the single-nucleotide polymorphisms (SNPs) of glaucoma candidate gene, SRBD1. Methods: 152 Shiba-Inu dogs were recruited from six veterinary hospitals in Japan. 77 Shiba-Inu dogs were diagnosed as glaucoma (IOP > 25 mmHg) by tonometry. After purification of genomic DNA by buccal swabbing from glaucoma and normal dogs, three SNPs (rs8655283, rs2218513, rs2218531) in SRBD1 gene, which were selected as a candidate gene allele for glaucoma in Shiba-Inu, were analyzed by cycle- polymerase chain reaction (c-PCR). Results: Our meta-analysis showed that the risk of glaucoma in Shiba-Inu carrying T allele at rs865283 was 1.43 times compared to those C allele (odds ratio (OR) = 1.43, 95% confidence interval (CI): 0.85–2.41). Carrying G allele of rs2218513 was 1.99 times higher than C allele (OR = 1.99 (1.00–2.85)). The strongest association with glaucoma was found in G allele of rs22018513 having 2.09 times higher risk than A allele (OR = 2.09 (1.25–3.52), P = 0.00803). Conclusions: These results showed that SNPs of SRBD1 play an important role in the pathology of glaucoma in Shiba-Inu dog. We anticipated that the SNP genotyping data from this study can be used as a genetic testing to determine for the first time with precision whether a dog has glaucoma and to predict whether a dog will develop glaucoma. None.

ABSTRACT NO.: 032

Heat shock protein 70 expression in the equine cornea

CW Peterson,* EA Driskell,* DA Wilkie,* C Premanandan* and RE Hamor†
*University of Illinois, College of Veterinary Medicine, Urbana-Champaign, IL, USA; †The Ohio State University, College of Veterinary Medicine, Columbus, OH, USA

Purpose: Constrictive understanding of the 70 kDa heat shock protein (Hsp70) has been demonstrated in normal canine corneal epithelium and has been suggested to facilitate wound resolution through organized migration, proliferation, and adhesion. To broaden the understanding of corneal Hsp70 in other companion animal species, expression of Hsp70 was evaluated in normal and pathologic equine corneas to establish expression patterns and to determine whether Hsp70 expression is altered when targeted for wound healing. Methods: Fixed tissue from normal equine cornea (n = 11) and therapeutic keratoplasty (keratoectomy) – keratophathy keratoplasty (n = 9), were subject to immunohistochemistry for Hsp70. Results: Examinations of equine corneas exhibited strong constitutive expression of Hsp70 in the nuclei of basal and suprabasilar epithelial cells. Expression of Hsp70 in immunohistochemistry was weakly expressed in epithelial cells of basal epithelium of normal equine corneas, while expression in indolent ulcers was weak and diffuse in the cytoplasm of all epithelial cells, though staining expression was variable between samples. Conclusions: These findings suggest expression of Hsp70 in normal equine corneas and may be altered in sterile keratopathies, possibly contributing to their prolonged clinical course. Additional work is needed to better characterize expression of Hsp70 in sterile keratopathies, especially in the unaffected epithelial tissue. Supported by University of Illinois, College of Veterinary Medicine Faculty Start-up. None.

ABSTRACT NO.: 033

Recurrent adnexal lymphoma in a horse

BB Martabano,* DE Brooks,* RD Whitley,* LP Proietto,* JA Conway,* WM Zoll‡ and CE Plummer‡
*Department of Large Animal Clinical Sciences, University of Florida; †Department of Infectious Diseases and Pathology, Florida University

Purpose: To describe a case of recurrent adnexal lymphoma in a horse. Methods: A 20-year-old Quarter Horse gelding presented to the ophthalmology service at the University of Florida Veterinary Hospital (UFVH) for evaluation of a solitary conjunctival mass of the right eye. A focal, pink, fleshy mass associated with the dorsal conjunctival bulbar caruncle was noted. An exuberant biopsy was performed. Results: Histopathology revealed a T-cell rich, B-cell lymphoma (LSA) and clean margins. The client declined staging and further therapy. Conclusions: This is the first report of recurrent adnexal lymphoma in a horse. None.

ABSTRACT NO.: 034

Development and assessment of a novel ex vivo canine model of corneal epithelial wound healing

LR Proietto,* RD Whitley,* DE Brooks,* GE Schultz,* JB Gibson,* ME Salute,* WM Berkowski Jr* and CE Plummer‡
*Small and Large Animal Clinical Sciences, College of Veterinary Medicine, University of Florida; †Obstetrics, Gynecology, Wound Research Center, College of Medicine, University of Florida; ‡Small Animal Clinical Sciences, College of Veterinary Medicine, University of Florida

Purpose: To develop and validate a novel ex vivo canine model of corneal epithelial wound healing that maintains corneal clarity, integrity and limbic stem cell function in extended culture. Methods: Corneoscleral (CS) rims were excised 4 mm posterior to the limbus and placed on a novel corneal wound model. Corneal tissue was suspended in situ and cultured under static conditions with normal corneal epithelial integrity and bacterial infection up to 28 days in culture. In Part B, 8 coronas were wounded with the epithelium observed monitored for healing in the same culture conditions or a serum free protein equivalent media. Photographs were taken with standardized scale and cobalt filter every 6 h at the time of fluorescein stain and media change. Image J imaging software was used as used as a computerized area of basal epithelial thickness. Results: Epithelial wound were calculated and CS rims then fixed for immunohistochemistry (IHC) or electron microscopy (EM). Results: All corneas survived to endpoints as described in Part A with no infection or fluorescence indicative of compromise to the epithelium. Histologically, a normal epithelial layer appeared consistent with no epithelial deficiency appreciated until day 14. All corneas with epithelial wounds healed with a healing rate of 0.655 mm2/h. +0.06 and for further evaluation for surface stability exami- nation shows epithelial layer confluence and migrating epithelial cells of normal cellular morphology. Conclusions: This model is an appropriate and clinically relevant tool for assessment and modulation of epithelial wound healing in the canine. None.

ABSTRACT NO.: 035

Changes in antibiotics resistance in equine bacterial ulcerative keratitis (2011–2014)

RV Ramos,* CE Plummer,* BA Butler* and KE Lamb†
*Department of Small Animal Clinical Sciences, College of Veterinary Medicine, University of Florida; †Lamb Statistical Consulting, West Saint Paul, MN, USA

Purpose: To document changes in antibiotic resistance of organisms in cases of equine bacterial ulcerative keratitis over four years. Methods: Medical records of equine patients with bacterial ulcerative keratitis seen at the University of Florida’s Veterinary Hospital for the years 2011–2014 were reviewed. The results of microbial culture and susceptibility testing from those cases were examined. Isolated organisms were identified and subjected to Kirby-Bauer disk diffusion method sensitivity test. Antimicrobial agents used in the sensitivity tests included ampicillin, bacitracin, chloramphenicol, cefazolin, ciprofloxacin, enroflo- cin, gentamicin, neomycin, polymyxin B, tobramycin and trimethoprim-sulfis. Results: A total of 23 bacterial isolates were subjected to sensitivity testing and 11 antibiotics evaluated. Of these isolates, Streptococcus equi subsp zooepidemicus did not demonstrate resistance for ampi- cillin and cefazolin in either time period, while gentamicin indicated one instance of resis- tance in 2011–2012 but none in 2011–2014. A similar trend was observed for Pseudomonas aeruginosa, but only for ciprofloxacin. There were no occurrences of resistance to Staphylococ- cus catarrhalis and beta-lactamase for ciprofloxacin. However, all antibiotics demonstrated resistance in 2013–2014: Conclusions: Streptococcus equi subsp zooepidemicus, Pseudomonas aeruginosa, and Staphylo- coccus aureus beta-lactamase is While not statistically significant, primarily due to sample size, in the majority of the cases there is decrease in organism susceptibility. None (no financial interest or conflict).

ABSTRACT NO.: 036

Basal cell carcinoma of the nictitating membrane in a dog

RG Galara,* SM Shadr,* JW Koehler,* A Beyer,* PA Moore* and E Abarca†
*Department of Clinical Sciences; †Department of Pathobiology, College of Veterinary Medicine, Auburn University, Auburn, AL, USA

Purpose: To describe the clinical appearance and diagnosis of a basal cell carcinoma of the nictitating membrane in a dog. Methods: A 9-year-old female spayed Dachshund was presented to the Bailey Small Animal Teaching Hospital, Auburn University following a 2-3 week history of ocular discharge in the right eye (OD). Ophthalmic examination revealed an irregu- lar, pink, mass subepithelial mass arising from the nictitating membrane and medially adjacent to the right nictitating membrane. An incisional biopsy of mass was performed. Results: Histopathology of the incisional biopsy revealed a basal cell carcinoma. Conclusions: This is the first report of a basal cell carcinoma of the nictitating membrane in a dog. None (no financial interest or conflict).

ABSTRACT NO.: 037

Sutureless Acell® xenograft and cyanoacrylate tissue adhesive for corneal perforation in a pregnant mare

RG Rodriguez Galara,* SM Shadr,* JW Koehler,* A Beyer,* PA Moore,* AW Woodridge and E Abarca
Department of Clinical Sciences, College of Veterinary Medicine, Auburn University, Auburn, AL, USA

Purpose: To describe the use of sutureless Acell® xenograft and cyanoacrylate tissue adhesive (CTA) in a mare with a corneal perforation. Methods: An 8-year-old, American Quarter Horse, late-term pregnant mare presented to the VT Vaughan Large Animal Teaching Hospital at Auburn University for corneal perforation of the left eye. Ophthalmic examination revealed 4 corneal ulcers: three mid-stromal to deep corneal ulcers and a descemetocele. Due to general anesthesia risk to the foal, owners elected medic- al therapy consisting of topical antibiotics, antifungals and miotics, and systemic anti- microbial anti-inflammatory drugs. A Seidel test positive, 2 mm corneal perforation at the descemetocele site with a shallow anterior chamber was noted the following day. The peripheral of the corneal perforation was debrided and a 2 mm Acell xenograft was positioned over the fibrin clot and sealed with CTA 360° around the graft. The Acell xenograft and fibrin clot were monitored for at least 48 hours. Microbiologic and cytology examination (UBM) 10 and 40 days post-grafting: Results: There was prompt and permanent restora- tion of anterior chamber space and increased corneal thickness. Conclusions: The use of Acell® xenograft and cyanoacrylate tissue adhesive can be a viable treatment option for poor equine anesthetic candidates with small corneal perforations. None.

© 2015 American College of Veterinary Ophthalmologists, Veterinary Ophthalmology, 18, E17–E34
ABSTRACT NO.: 038
Retinal imaging using optical coherence tomography (OCT) in diabetic dogs
MBP Braga-Sa,* PSM Barros,* PJ Dongo,* PF Pacheco,* AA Bolzan* and AMV Safáti*†
*School of Veterinary Medicine, Sao Paulo University, Sao Paulo, Brazil, Laboratory of Experimental Comparative Ophthalmology
Purpose: Human and experimental animal studies have shown apoptosis of neural and glial cells in the retina in the very early stages of DR. The purpose of this study was to compare the retinal thickness between healthy controls and diabetic dogs using OCT.
Methods: SD-OCT (Stratus OCT, Heidelberg Engineering, CA, USA) was performed in 8 diabetic dogs (4 females and 4 males), aphakic dogs (n = 7) and pseudophakic dogs (n = 3). Different between diabetic vs. healthy control was compared to healthy controls (5 females and 4 males, 4.15 years old (mean ± 6.9), without ocular disorders. The selection of animals was based on routine and ophthalmic examination. OCT measurement was performed in the temporal and nasal superior retina using a manual caliper. RT was defined by the distance between the retinal nerve fiber layer and retinal pigment epithelium. Unpaired t-test was used (p < 0.05).
Results: There was a significant difference in the retinal thickness between diabetic vs. healthy control (p < 0.05). At the time point postcataract surgery was 11 months, and mean diabetes duration was 19 months. None showed changes in IOP and were not being medicated at the time of examination. The RTP was increased in diabetic dogs, we significant thinning of the total retina compared to healthy controls (198.0 ± 16.7 µm versus 220.2 ± 11.6 µm; p < 0.006), without visual impairment.
Conclusion: The results support the concept that early DR may be associated with a reduction in retinal thickness. OCT allows measurement of retinal thickness and monitoring of retinal damage in dogs with diabetes mellitus that have cataract surgery with excellent reproducibility. Supported: FAPESP grants no 2011/24099-8.

ABSTRACT NO.: 039
Ductular squamous metaplasia of the glans of the third eyelid in canines
GC Shaw, RR Dubielzig and LBC Teixeira
Comparative Ocular Pathology Laboratory of Wisconsin, School of Veterinary Medicine, Department of Pathobiological Sciences, University of Wisconsin-Madison
Purpose: Determine if ductular squamous metaplasia of the glans of the third eyelid in dogs is associated with particular signalment, clinical signs or histopathological lesions.
Methods: The COPLOW database was mined for cases of canine ductular squamous metaplasia of the glans of the third eyelid. Cases were reviewed, evaluated, and summarized. Results: Twenty-two cases of squamous metaplasia of the glans of the third eyelid in dogs were identified. There were 15 GSHP, 4 GWHP, and 3 unaffected (15 GSHP, 4 GWHP) dogs were examined using ultrasonic pachymetry (USP), confocal microscopy (IVCM). A two-sample t-test or Wilcoxon signed rank test were used to statistically compare values for affected versus unaffected dogs being 1006 (699–1358) cells/mm2 compared to 9 healthy control dogs (5 females and 4 males) and 3 pseudophakic dogs (3 females and 4 males). The age of the affected dogs was 14.4) years, respectively (females: 14.4 ± 2.0; males: 14.4 ± 2.1 years).
Conclusion: Ductular squamous metaplasia of the glans of the third eyelid is associated with squamous cell carcinoma presumed to arise from the ducts of the gland of the third eyelid in dogs were found. Affected dogs were an average of 11.8 years old and there were 6 males and 4 females.

ABSTRACT NO.: 040
Phenotypic characterization of cornal endothelial dystrophy using in vivo advanced corneal imaging OR Shull,* SM Thomasy,* LB Davis* and CJ Murphy*†
*Department of Surgical and Radiological Sciences, School of Veterinary Medicine, Veterinary Ophthalmology Specialized Clinic, Osaka, Japan
Purpose: We previously described a novel and simple primary epithelial cell toxicity assay of cornal explants that assesses the effects of single and short-duration instillations of eye drops to determine the safety of new ophthalmic products. The purpose of this study was to use this assay to evaluate the effects of commercially available eye drops, which have reported corneal epithelial toxicity. Methods: 360 sperm from three eye drops were examined: 0.1% sodium hyaluronate (SH) (TEARBALANCE® and Hylaeum®) and preservative-free 0.1% SH (Hylaeum®) (1%). The protocol of the primary epithelial cell toxicity assay was as follows: Circular punches (1.1 mm) were punched into the peripheral cornea of porcine eyes with 2-mm punch punches and placed on 6-well culture dishes. After incubation for 12 h, 50 µL of each eye drop was applied to each well for 2 min. After another 24 h, epithelial outgrowth was photographed and measured. The viable cell number was measured with a WST-8 assay. Results: Outgrowth rate was significantly increased with TEARBALANCE® and Hylaeum® compared to phosphate-buffered saline (PBS)-treated controls (p < 0.05). In contrast, outgrowth rate was significantly decreased with Hylaeum® compared to PBS-treated controls (p < 0.05). In addition, viable cell number showed a tendency for similar results as outgrowth rate. Conclusions: We previously described a novel primary epithelial cell toxicity assay of corneal explants is applicable for corneal wound healing assessments of eye drops. Further studies are needed to determine whether this assay is applicable as a model that reflects wound healing.

ABSTRACT NO.: 041
Persistent hyperplastic primary vitreous and persistent hyperplastic tunica vasculosa lenteis in three Great Dane littermates
KJ Spahn,* LS Wagner,* DD Dees† and CM Reilly‡
*South Texas Veterinary Ophthalmology; Veterinary Medical Teaching Hospital, University of California – Davis
Purpose: To describe the clinical signs and histopathology of three Great Danes with presumed inherited bilateral persistent hyperplastic primary vitreous and persistent hyperplastic tunica vasculosa lenteis (PVP/PHVTL). Methods: Three Great Dane littermates presented for evaluation of cloudy eyes and decreased vision. Complete ophthalmic examination was performed by a board-certified ophthalmologist before and after mydriasis. Ultrasonography was performed in all patients using topical anesthetic without sedation. Each affected dog was compared to the littermate and a non-affected (control) dog, respectively.
Results: All three patients were blind with negative menace responses, non-responsive mydriatic pupils, and wandering myasthenia. All had mild-moderate blepharospasm, conjunctival hyperemia, epithelial congestion, diffuse corneal edema, corneal fibrosis and pigmentation, and moderate buphthalmia OU. Ultrasound showed complete bullous retinal separation with subretinal fluid. A hyperreflective linear band was present from the optic nerve to the posterior pole of the lens OU. Histologically, all globes had complete, displaced retinal separation, severe intraretinal hemorrhage, and cataract. All had varying degrees of organizing hemorrhage, fibrovascular tissue, and wispy to dense matrix adjacent to the posterior lens. The matrix was intensely Alcian blue-positive, with regions of variable PAS-reactivity, was variable in weight by small vascular profiles. Secondary lesions included neovascular glaucoma, chronic uveitis, and keratitis with stromal pigmentation and fibrosis.
Conclusion: Three Great Dane littermates were diagnosed with bilateral persistent hyperplastic primary vitreous and persistent hyperplastic tunica vasculosa lenteis OU. PHVP/PHHTVL should be a differential for young Great Danes with blindness, cataracts, intraretinal hemorrhage, retinal separation, or glaucoma.

ABSTRACT NO.: 042
Primitive neuroectodermal tumor as a cause for unilateral exophthalmos and bilateral blindness in a horse
TD Strong,* KL Tofflemire,* JS Haynes,* SW Wiechert,* AN Griggs,* RA Allbaugh* and G Ben Shlomo*
*Lloyd Veterinary Medical Center, Iowa State University
Purpose: To report a case of unilateral exophthalmos and bilateral blindness due to a primary neuroectodermal tumor in a horse. Methods: A donated 15-year-old Thoroughbred mare presented for progressive exophthalmos and blindness of the left eye (OS) of an old mare, as well as blindness of the right eye (OD). Physical examination, including ophthalmic and neurologic evaluation, electroretinography (ERG), and necropsy were performed. Results: Clinical findings included mydriasis and absent menace responses in both eyes (OU), as well as resistance to retroproptosis and mild conjunctival hyperemia OS. Additionally, there was a unilateral prominent facial vein on the left side. There were multifocal, fragmented areas in the right eye and normal findings OD. ERG results were normal OU. Neoplasia was confirmed by a large, well-demarcated, red to brown mass extending from the cribriform plate to the nasal cavity and through the ventral calvarium and ventromedial wall of the left orbit. The optic chiasm and optic tract were normal. Histologically, histological axonal degeneration and gliosis of the optic nerves, optic chiasm, and optic tracts were identified. The tumor was diagnosed as a primitive neuroectodermal tumor based on histopathological and immunohistochemical examination. A primitive neuroectodermal tumor resulted in a unilateral retrobulbar mass and bilateral optic nerve axonal degeneration. To our knowledge, this is the first described case of a primitive neuroectodermal tumor causing exophthalmos and bilateral blindness due to involvement of the optic pathways in a horse.

ABSTRACT NO.: 043
Assessment of the effects of eye drops on corneal wound healing with a novel primary epithelial cell toxicity assay
H Takahashi,*† K Tajima,* T Hattori* and H Goto*
*Department of Ophthalmology, Tokyo Medical University, Tokyo, Japan; †Veterinary Ophthalmology Specialized Clinic, Osaka, Japan
Purpose: We previously described a novel and simple primary epithelial cell toxicity assay of corneal explants that assesses the effects of single and short-duration instillations of eye drops. Methods: A donated 15-year-old Thoroughbred mare presented for progressive exophthalmos and blindness of the left eye (OS) of an old mare, as well as blindness of the right eye (OD). The following three eye drops were examined: 0.1% sodium hyaluronate (SH) (TEARBALANCE® and Hylaeum®) and preservative-free 0.1% SH (Hylaeum®) (1%). The protocol of the primary epithelial cell toxicity assay was as follows: Circular punches (1.1 mm) were punched into the peripheral cornea of porcine eyes with 2-mm punch punches and placed on 6-well culture dishes. After incubation for 12 h, 50 µL of each eye drop was applied to each well for 2 min. After another 24 h, epithelial outgrowth was photographed and measured. The viable cell number was measured with a WST-8 assay. Results: Outgrowth rate was significantly increased with TEARBALANCE® and Hylaeum® compared to phosphate-buffered saline (PBS)-treated controls (p < 0.05). This suggests that our novel primary epithelial cell toxicity assay of corneal explant is applicable for corneal wound healing assessments of eye drops. Further studies are needed to determine whether this assay is applicable as a model that reflects wound healing.

© 2015 American College of Veterinary Ophthalmologists, Veterinary Ophthalmology, 18, E17–E34
ABSTRACT NO.: 044
Evaluation of the influence of estrogen in the lacrimal production of female dogs in estrus or proestrus phases, after ovariohysterectomy
DY Trujillo,* JJ Rojas,† MY Pailla† and JJ Mesa*†
*College of Veterinary Medicine and Animal Science, Colombian Cooperative University, Bogotá, Colombia; †College of Veterinary Medicine, La Salle University, Bogotá, Colombia

Purpose: Evaluate the influence of the decline of estradiol levels consequent to ovariohysterectomy (OHE) in tear production in canine females in estrous phases. Methods: 20 canine females in proestrus or estrus, identified by exfoliative vaginal cytology and by the reabsorption of serum estradiol, were divided into two groups. Females who underwent OHE (G2) and females not subject to OHE (G1). In both groups, tear production was measured with Schirmer tear test (STT) at three moments: Day 0, 2 and 9. Before, two and nine days after the OHE in G1, and day 0, 2 and 9 after the onset of proestrum or estrus in G2. STT values were compared within each group and between groups. STT values and serum estradiol were analyzed to evaluate their correlation. ANOVA and Pearson Correlation techniques were employed for statistical analysis (P < 0.05). Results: The average of STT on day 0 were 23.6 (G1) and 21.6 mm/min (G2), on day 2 20.3 (G1) and 21.3 mm/min (G2) and on day 9 was 21.6 mm/min for both groups. STT values obtained in the two groups at different moments (P > 0.05). STT values and serum estradiol correlation was observed, but a negative type (correlation index < 0). Conclusions: Estrogens had no influence on the tear production of canine females, therefore, OHE was not a surgical procedure that predisposed patients to the presentation of keratoconjunctivitis sicca. Support: Condsi. None.

ABSTRACT NO.: 045
Schirmer Tear Test I values in normal horses with and without auriculopalpebral nerve blocks
HE Visser,* KA Diehl,*† RD Whitney† and KE Myrna†
*Department of Small Animal Medicine and Surgery, College of Veterinary Medicine, University of Georgia; †Department of Small Animal Clinical Sciences, College of Veterinary Medicine, University of Florida

Purpose: To compare Schirmer Tear Test I (STT I) values collected in horses with and without auriculopalpebral nerve block. Methods: STT I values were measured in 23 clinically normal research horses (40 eyes) with a mean age of 11 years and a median age of 12 years. The right and left eye were examined on 1 and 3 post intravenous injection with ACTH. (Corticosteroids, 5 µg/kg IV) Tears were collected by placing a glass capillary tube at the medial conjunctival fornix. Tear and serum cortisol concentrations were determined using a Salimetrics® salivary cortisol ELISA validated for use in canine tears and an IMMULITE® immunoassay respectively. Tear and serum cortisol concentrations were compared using one-tailed t-tests. The correlation was present in resting canine tears and serum at mean concentrations of 0.37 µg/dL and 3.13 µg/dL respectively. The concentration of cortisol in both tears and serum was significantly elevated one hour after ACTH stimulation (p-value <0.05) and was predictably reduced but remained significantly elevated two hours after ACTH stimulation (p-value <0.05). Conclusions: Correlation is present in canine tears and serum at rest. Cortisol concentrations in canine tears and serum increase significantly following stress simulated by intravenous administration of ACTH. The presence of cortisol in canine tears has the potential to adversely affect the outcome of canine ophthalmic disease. Support: The University of Georgia College of Veterinary Medicine Ocular Research Fund. None.

ABSTRACT NO.: 046
Endogenous cortisol concentration in canine tears and serum at rest and after a simulated stress event
BM Wynne,* NA Norton,** KA Diehl† and KE Myrna†
*College of Veterinary Medicine, University of Georgia; **Department of Small Animal Medicine and Surgery; †Department of Large Animal Medicine and Surgery

Purpose: To evaluate levels of endogenous free cortisol in normal canine tears and serum at rest and after a simulated stress event. Methods: Paired tear and serum samples were collected from 11 normal, adult dogs once daily, at the same time of day for 3 consecutive days. Paired tear and serum samples were then collected from 4 normal, adult dogs once before and at 1 and 2 h post intravenous injection with ACTH. Cortisol, 5 µg/kg IV) Tears were collected by placing a glass capillary tube at the medial conjunctival fornix. Tear and serum cortisol concentrations were determined using a Salimetrics® salivary cortisol ELISA validated for use in canine tears and an IMMULITE® immunoassay respectively. Tear and serum cortisol concentrations were compared using one-tailed t-tests. The correlation was present in resting canine tears and serum at mean concentrations of 0.37 µg/dL and 3.13 µg/dL respectively. The concentration of cortisol in both tears and serum was significantly elevated one hour after ACTH stimulation (p-value <0.05) and was predictably reduced but remained significantly elevated two hours after ACTH stimulation (p-value <0.05). Conclusions: Correlation is present in canine tears and serum at rest. Cortisol concentrations in canine tears and serum increase significantly following stress simulated by intravenous administration of ACTH. The presence of cortisol in canine tears has the potential to adversely affect the outcome of canine ophthalmic disease. Support: The University of Georgia College of Veterinary Medicine Ocular Research Fund. None.

ORAL ABSTRACTS

ABSTRACT NO.: 047
A retrospective analysis of environmental risk factors for the diagnosis of deep stromal abscess in 390 horses in north central Florida from 1991 to 2013
LR Proietto,* CE Plummer,* KM Maxwell,* KE Lamb† and DE Brooks†
*Departments of Large Animal and Small Animal Clinical Sciences, College of Veterinary Medicine, University of Florida; †Lamb Consulting, West St Paul, MN, USA

Purpose: To identify environmental risk factors for the diagnosis of equine deep stromal abscess in patients who presented to the University of Florida. Methods: A Medical Center (UFVMC). Methods: Cases included were selected from the UFVMC medical record and imaging database, and included all cases of equine DSA diagnosed during the period from December 1991 and December 2011 in patients residing in subtropical north central Florida. Atmospheric data were obtained for north central Florida for the corresponding date of diagnosis of each patient. Univariate and multivariate general linear models were generated testing effects and interactions between environmental conditions. Results: When year, sulfur dioxide (SO2) and wind were analyzed in the presence of each other, a 1 µ/h increase in wind (p = 0.005) significantly increased the number of DSA cases by 1.63 cases/year. When the influence of temperature was evaluated in conjunction with year and nitrogen dioxide (NO2), the number of cases decreased by 0.153/° per year for every degree °C increase in temperature (p = 0.039). Conclusions: Wind speed is the first identified significant atmospheric risk factor for DSA formation in the horse in subtropical north central Florida. The years of emitted turbulent mode of ventilation the evidence of DSA indicates that the pathogenesis of DNA formation is multifactorial and interdependent and further supports the micropuncture hypothesis of DNA formation. None.

ABSTRACT NO.: 048
Corneal fibrosarcoma in a cat
RA Allbaugh,* SE Tangeam,* TS Strong* and JS Haynes†
*Department of Veterinary Clinical Sciences, Iowa State University College of Veterinary Medicine, Ames, IA, USA; †Department of Veterinary Pathology, Iowa State University College of Veterinary Medicine, Ames, IA, USA

Purpose: To describe the first reported case of corneal fibrosarcoma in a cat. Methods: A 12 year old spayed female domestic shorthair cat with a history of sequestra 3 years prior was examined for a slowly enlarging pink mass on the left cornea. Examination, diagnostic imaging and surgical biopsy were performed. Results: Histological examination of the mass revealed fibrosarcoma with the diagnosis of sequestra. Conclusions: This case report highlights the importance of proper surgical margin surgical excision of corneal sequestra, as remnants appeared still present on ocular histopathology. Based on complete surgical clearance via enucleation the potential for metastasis is expected to be low and the term prognosis to be at least fair. The patient will be followed, and keratonic therapy is being considered. None.

ABSTRACT NO.: 049
The histopathological results of Trabecome® on the iridocorneal angle in enucleated goniodysgenic canine eyes
MD Parmour* and LB Teixeira†
*Eye Care for Animals, Leeburg, VA, USA; †School of Veterinary Medicine, University of Wisconsin, Madison, WI, USA

Purpose: To evaluate the effects of Trabecome® on the iridocorneal angle of goniodysgenic canine eyes directly following enucleation. Methods: Canine patients who presented for acute onset glaucoma and blindness were evaluated gonioscopically and diagnosed with goniodysgenic glaucoma. Following owner consent, patients underwent routine enucleation. Trabecome® was performed on a designated section of the goniodysgenic iridocorneal angle of enucleated eyes, and the globe was left intact. The globe was then enucleated and the trabecome® was excised. Results: Sections treated with Trabecome® indicate an opened iridocorneal angle characterized by an increase in the space of the ciliary cleft and expansion of the trabecular meshwork space. No tissue reaction was noted as expected on an ocular histopathology. Based on complete surgical clearance via enucleation the potential for metastasis is expected to be low and the term prognosis to be at least fair. The patient will be followed, and keratonic therapy is being considered. None.

© 2015 American College of Veterinary Ophthalmologists, Veterinary Ophthalmology, 18, E17–E24
ABSTRACT NO.: 050
Risk factors for sudden acquired retinal degeneration: 151 critically diagnosed cases within a reference population
CR Auten,* SM Thomasy* and DJ Maggs†
*Companion Animal Hospital, Mount Prospect, IL, USA; †Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California, Davis, CA, USA

Purpose: To determine risk factors for sudden acquired retinal degeneration (SARD) diagnosed by strict criteria within one referral population. Methods: Breed, age, gender, body weight (BW), and month/year of presentation were compared between dogs with ERU and SARD and those presented to the Veterinary Medical Teaching Hospital from 1991 to 2014. Results: SARD was diagnosed in 151 dogs (1.3% of dogs presented for ophthalmic disease). Although dogs of 41 pure breeds were affected, the dachshund (n = 31), schauzer (16), pug (11), Brittany (3), fawn apo (4), Alaskan malamute (2), bearded collie (1), red bone hound (1) and saluki (1) were over-represented, and the Labrador retriever (n = 2) and the Great Dane (n = 7) were over-represented to the reference population (P < 0.001). Median (range) age of affected dogs was 8.9 (3–20) years vs. 6.8 (0.1–26) years for the reference population. Middle-aged dogs were over-represented and young dogs were under-represented in the SARD population (P < 0.001). Median (range) BW of affected dogs was 12.9 (2.4–52.7) vs. 22.3 (0.1–40.0) kg for the reference population. Dogs between 10 and 20 kg were over-represented in the SARD population (P < 0.006). Spayed females (39%) of affected dogs were under-represented (P = 0.002). No significant difference in month or season of presentation was detected between the SARD and reference populations (P = 0.1 and 0.6, respectively). Conclusion: Smaller, middle-aged, spayed female dogs are at an increased risk of developing SARD. Increased risk of SARD in several breeds suggests a familial factor that should be investigated using molecular genetic techniques. Supported by NIH grant K08EY021142. None.

ABSTRACT NO.: 051
Blink patterns and kinematics of lid motion in normal horses
LJ Best, DVH Hendrix and DA Ward
College of Veterinary Medicine, University of Tennessee

Purpose: To determine blink patterns and establish kinematic parameters of lid motion in normal horses. Methods: Ten adult mares were filmed for 10 min using high resolution videography. The camera was positioned perpendicular to the right eye and the other was positioned perpendicular to the long axis of the horse. Five minutes of video footage was analyzed for mean blink rate/min, number of complete vs. incomplete blinks, and number of unilateral vs. bilateral blinks. Video of one representative complete blink from each horse was further analyzed with image analysis software to determine the area of corneal coverage as a function of time during the blink. Results: The mean ± SD blink rate was 18.9 ± 5.3 blinks/min. Blinks were subcategorized as complete (31 ± 13%), complete incomplete (2 ± 2%), incomplete incomplete (10 ± 7%), and incomplete complete (15 ± 9%). Blinks were unilateral 23% (OD 12 ± 9%, OS 11 ± 4%) of the time and bilateral 77 ± 10% of the time. The mean area of exposed cornea at the initiation of each blink was 5.89 ± 1.02 cm^2. Blink duration was 0.466 ± 0.071 s. Lid closure was significantly twice as rapid as lid opening (0.16 ± 0.3 s). Conclusions: The mean blink rate/min in the horse was similar to the blink rate reported in normal human subjects. Horses had relatively fewer complete blinks compared with normal human subjects (suggesting greater tear film stability) with closure being much more rapid than opening. Supported by the University of Tennessee Companion Animal Fund. None.

ABSTRACT NO.: 052
Complications of a retrospective study of 30 cases
C Boss,† NC La Croix,† DA Willie,‡ F Maggio,§ KT Wiggans,‡ K Kaser,§ JS Sapienza,§ K Kim,§ R Strauss,§ A van der Woerdt* and GM Schmidt†
*The Veterinary Medical Center of Long Island, West Islip, NY, USA; †The Ohio State University, Columbus, OH, USA; §Tufts VETS, Walpole, MA, USA; ‡The Veterinary Teaching Hospital, University of California, Davis, CA, USA; §Animal Eye Clinic of Spokane, Spokane, WA, USA; †Long Island Veterinary Specialists, Plainview, NY, USA; §Animal Medical Center, New York, NY, USA; §Animal Eye Clinic, Denmark, WI, USA

Purpose: To review the prevalence of postoperative complications and visualize concurrent and subsequent phacoemulsification in Pugs. Methods: Medical records of 34 eyes of 30 pugs that underwent phacoemulsification in seven clinical centers were reviewed. All cases were monitored for a minimum of 6 months following cataract surgery. Results: Median (range) age at presentation was 8.5 (4.0–12.7) years, with 20 neutered males, 2 intact males, and 8 spayed females represented in the study. Postoperative findings included phacodonesis (22/30), diabetes (21/30), intraocular pressures <10 mmHg (23/30), corneal ulcerations (2/30), and Schirmer’s tear test results <10 mm/min (5/30). Conclusion: While no statistically significant differences were found in this study, the prevalence of diabetes mellitus was significantly higher in phacoemulsification cases. None.

ABSTRACT NO.: 053
The effect of trypan blue on posterior capsule opacification in an ex vivo canine model
BM Brash, DA Willie, AJ Gemensky-Metzler and HL Chandler
Department of Veterinary Clinical Sciences, The Ohio State University

Purpose: To determine if trypan blue (TB) reduces lens epithelial (LEC) or corneal epithelial (CEC) viability. Methods: 132 pug lenses were harvested from seven pug cadavers. Cultured LECs were treated with TB at 0, 0.05, 0.1, 0.2, or 0.1% for 10, 60, or 120 s. CEC morphology was compared with a control solution (0% TB) and an LDH viability assay performed. Cultured LECs were treated with 0 and 0.1% TB for 120 s and an apoptosis assay was performed to assess caspase-3 activity. To evaluate the effects of TB on ex vivo PCO, following mock cataract surgery, lenses were capsulotomized and the anterior half of the peripheral corneal epithelium cells were treated with 0.1% TB for 120 s. Results: TB did not significantly reduce LEC density. While TB-treated LECs demonstrated higher rates of cell death compared with controls, the difference in cell density was not statistically significant. Trypan blue was found in TB-treated LEC cultures. Ex vivo PCO formation was not significantly different in any treatment group. Endothelial cells treated with TB or vehicle showed no significant difference in cell density. Conclusions: TB induced low levels of LEC death via apoptotic signaling cascades but was not effective in reducing ex vivo PCO formation. TB did not reduce endothelial cell death. Funded by ACVO Vision for Animals Foundation grant (VAF2014-01). Trypan blue provided by Activet. None.

ABSTRACT NO.: 054
Outcome of intravitreal gentamicin injections in 26 glaucomatous canine eyes
BK Brius
Department for Companion Animals and Horses, University of Veterinary Medicine, Vienna, Austria

Purpose: To assess the long term outcome of intravitreal gentamicin injection on glaucomatous canine eyes. Methods: Following vitreal aspiration, 25 mg of gentamicin was injected intravitreally into 26 blind and/or visually impaired dogs. Results: Although a reference population was not used here, comparisons were made with normal eyes. Median (range) BW of affected dogs was 20 (10–60) months at which time 20.4% of eyes (11/54 eyes) were blind in 23.3% (12/54 eyes) of affected eyes. Within 3 months following phacoemulsification, 13.0% (7/54) of eyes developed corneal oedema such as keratic precipitates, hyphaema, and 10 mmHg (range 2–72 mmHg) vs. 22.3 (0.1–40.0) kg for the reference population. Dogs between 10 and 20 kg were over-represented in the SARD population (P < 0.006). Spayed females (39%) of affected dogs were under-represented (P = 0.002). No significant difference in month or season of presentation was detected between the SARD and reference populations (P = 0.1 and 0.6, respectively). Conclusion: Smaller, middle-aged, spayed female dogs are at an increased risk of developing SARD. Increased risk of SARD in several breeds suggests a familial factor that should be investigated using molecular genetic techniques. Supported by NIH grant K08EY021142. None.

ABSTRACT NO.: 055
Targeting plasma membrane repair in corneal wound healing
HL Chandler, RF Wehrman, AJ Gemensky-Metzler, T Tan, J Ma and H Zhu
The Ohio State University

Purpose: To evaluate the protective role that MG53, an essential gene for cell membrane repair, plays in corneal wound healing. Methods: Western blots were used to determine MG53 expression in normal canine corneal epithelial cells (hCEC), human tears, and canine aqueous humor indicating a potential role of MG53 in corneal wound healing. To evaluate the protective role that MG53, an essential gene for cell membrane repair, plays in corneal wound healing. Methods: Western blots were used to determine MG53 expression in normal human corneal epithelial cells (hCEC), human tears, and canine aqueous humor. Membrane repair was evaluated using microelectrode penetration in green fluorescent protein (GFP-MG53) hCECs and subsequent corneal wound healing. Additionally, hCEC undergraethabead damage was measured by treatment with recombinant human (rhMG53) and LDH analysis. No significant influence between primary and secondary glaucoma was evident. In 20/27 (74%) eyes, the surgery resulted in a blind but comfortable eye with no need of further treatment. Conclusions: In- travitreal gentamicin injection resulted in significant IOP reduction in all glaucomatous eyes post-surgery. However, all eyes showed varying degrees of uveitis following the procedure and failure leading to emuncturation or euthanasia occurred in 26% of the patients. Support and Conflicts of interest: None.

ABSTRACT NO.: 056
Cytokine profiles of aqueous humor and serum in horses with uveitis measured using multiplex bead immunoassay analysis
E Curto, KM Messenger, BA Salmon and BC Gilger
College of Veterinary Medicine, North Carolina State University

Purpose: To determine whether horses with clinically diagnosed Equine Recurrent Uveitis (ERU) have a specific cytokine profile in their aqueous humor (AH) and serum that differs from horses with uveitis secondary to other inflammatory processes and from horses without uveitis. Methods: Samples of AH and serum were obtained from horses with ERU, uveitis secondary to other inflammatory ocular disease, non-recurrent uveitis (UV), and normal eyes (N) presenting to North Carolina State University. Samples were analyzed using a multiplex bead immunoassay.
postoperatively in one case. All eyes maintained vision with no evidence of tumor recurrence.

Complications included eyelid margin depigmentation (n = 9). Medical management consisted of topical anti-inflammatory medications. Postoperative STT measurements with a longer filament length eliciting a blink response at a lower humidity.

Fifty-six cases in 49 dogs were identified, and 40 of those cases were treated with a corticosteroid treatment group. A prospective, randomized, masked, crossover study of 18 healthy, non-brachycephalic dogs was performed. For Phase I, the study drug was instilled every 5 min for five doses, and corneal sensitivity for the control and treated eye was evaluated prior to drug instillation and every 15 min post-instillation for 60 min. For Phase II, the study drug was instilled every 12 h for 10 days, and corneal sensitivity for the control and treated eye was evaluated prior to drug instillation on days 0 and 30. A washout period of at least 30 days occurred between drug crossover and phases. Temperature and humidity were measured throughout data collection.

Purpose: To describe a novel globe sparing procedure for canine iridociliary masses via surgical debulking and adjunctive endoscopically guided transscleral cryotherapy with or without diode endolaser photocoagulation.

To describe the technique and utility of 3D printing for orbital and peri-orbital masses.

Purpose: To discuss the diagnosis and treatment of an orbital lacrimal gland adenocarcinoma in a cat.

A 14.5-year old castrated male domestic shorthair cat was evaluated for a 2 week history of a swollen left upper eyelid that was unresponsive to systemic antibiotic therapy. Upon examination, a dorsal orbital mass was identified and noted to move independent of the left globe (OS). Mild ventral strabismus was present, but no other abnormalities were noted OS. The mass was excised and submitted for histopathology. Histopathology confirmed an adenocarcinoma, and special stainings for mucin, CD10, and CD20 were negative. The mass was submitted for immunohistochemistry. The patient was treated with 5 weeks of post-surgery therapy. Post-operative treatment consisted of neocytol/cyclosporine three times daily OS for 4 weeks and 3 mg of robenacoxib by mouth once daily for 2 weeks. Mild, non-threatening keratoconjunctivitis sicca (KCS) was noted in both eyes.

Conclusions: Surgical debulking of canine iridociliary masses with adjunctive endoscopically guided transscleral cryotherapy plus or minus diode endolaser photocoagulation is a viable therapeutic option to preserve vision. None.

The use of topical corticosteroids in the management of vascularized canine spontaneous chronic corneal epithelial defects (SCCED)

KA Diehl
Department of Small Animal Medicine and Surgery, College of Veterinary Medicine, University of Georgia

Purpose: To determine if the use of topical corticosteroid anti-inflammation in vascularized canine SCCED impacts healing rate, frequency or type of complications.

Methodology: Twelve randomisation period were conducted to identify the primary SCCED cases with notable corneal vascularization and follow up information. Cases were treated with 0.1% dexamethasone or 0.03% flurbiprofen. Time to healing non-corticosteroid treated group was compared via two-tailed, unpaired student t test (significance level: P < 0.05). Type and type of complications were noted for both groups.

Results: Fifty-six cases in 49 dogs were identified, and 40 of those cases were treated with a topical corticosteroid treatment. Time to healing in the non-corticosteroid treatment group was 26.5 days versus 23.1 days in the corticosteroid treatment group. This difference was not statistically significant (P = 0.48).

None.
ABSTRACT NO.: 063
Assessment of a smartphone-based camera for fundus imaging in animals
T. Dulaurent, A. Russo, J. P. I. Szard, I. Mathision, F. Serrano1 and O. Balland1
1CH/SM, Saint-Martin Belœll; 2Department of Medicine and Surgery, University of Brescia; 3Eyevet References, Sutton Weaver; 4Lauren, Nancy

Purpose: To assess the use of a smartphone-based camera for imaging the fundus in animals. Methods: Images obtained using the D-EYE (NIH S.P.A., Padova, Italy) were compared to those taken using more traditional equipment (Smartscope and digitally converted Kowa RC-2 fundus camera). The pupils of dogs, cats, and horses were dilated using tropicamide and their fundi were then photographed. All images were taken in a dark environment. Ease of use, field of view, focus, exposure, and white balance were subjectively compared. Video sequences were also recorded and evaluated. Results: The D-EYE/smartphone combination was considered light, compact, convenient, and easy to use on conscious and unanesthetized animals. With regard to handling, the D-EYE was similar to traditional direct ophthalmoscopy. The viewing angle was approximately 20°. The focus and white balance were considered acceptable on all the devices tested. The tapetum lucidum was sometimes partially overexposed with both the D-EYE and the Smartscope, probably because of the small size of the sensors and their relatively poor ability to manage the wide variations of animals’ fundi. This hyper-reflective artifact must not be mistaken for pathological tapetal hyper-reflectivity secondary to retinal atrophy. Video sequences were considered efficient in the evaluation of fundi in all animals examined. Conclusions: The D-EYE assessed appears to be an affordable means of easily imaging the fundus in animals. A Russo (P) is the inventor of the D-EYE. The other co-authors have no conflict of interest to declare.

ABSTRACT NO.: 064
Perioperative administration of topical dorzolamide hydrochloride/timolol maleate reduces postoperative ocular hypertension in dogs undergoing cataract surgery
RB Matsusow,* JP Herrian,* JP Pickett, N Hano-Guerrero* and SR Were†
*Department of Small Animal Clinical Sciences, Virginia-Maryland College of Veterinary Medicine; †Laboratory for Study Design and Statistical Analysis, Virginia-Maryland College of Veterinary Medicine

Purpose: To test the hypothesis that perioperative topical ophthalmic dorzolamide hydrochloride 2%/timolol maleate 0.5% (DHTM, Hi-Tech Pharma Co., Inc., Amityville, NY, USA) reduces the prevalence and/or severity of postoperative ocular hypertension (POH). Methods: Medical records of horses presenting to the NCSU-VHC Equine Ophthalmology Service were reviewed. Horses, aged 3-41 years, were included in the study if they underwent cataract surgery and 8 am the following morning. IOP was defined as IOP >25 mmHg; intervention consisted of latanoprost 0.005% (Akorn, Inc., Lake Forest, IL, USA) if IOP rose to 25-35 mmHg or surgery treatment of choice if >35 mmHg. Results: DHTM significantly reduced the prevalence of POH in comparison with BC (26% vs. 49% of eyes, OR = 0.36, 95% CI = 0.62% vs. 62% of dogs, OR = 0.32). There was also a trend toward reduction of POH severity in DHTM-treated eyes developing POH were significantly more likely to respond favorably (1 h post-treatment IOP <25 mmHg) to treatment with latanoprost (OR = 4.55 vs. 1%, OR = 1.87). Conclusions: In dogs undergoing PE, multi-dose perioperative administration of DHTM reduces the risk of POH and improves POH treatment responsiveness. Supported by the Virginia-Maryland College of Veterinary Medicine Veterinary Memorial Fund. None.

ABSTRACT NO.: 065
Autologous platelet rich plasma treatment for canine indolent corneal ulcers
ML Edelman,* JJ Wasklag,* HO Mohammed* and EC Ledbetter†
*Department of Clinical Sciences, College of Veterinary Medicine, Cornell University; †Department of Pathobiology, Veterinary Diagnostics, College of Veterinary Medicine, Cornell University, Ithaca, NY, USA

Purpose: To test the hypothesis that perioperative topical ophthalmic dorzolamide hydrochloride 2%/timolol maleate 0.5% (DHTM, Hi-Tech Pharma Co., Inc., Amityville, NY, USA) reduces the prevalence and/or severity of postoperative ocular hypertension (POH). Methods: Medical records of horses presenting to the NCSU-VHC Equine Ophthalmology Service were reviewed. Horses, aged 3-41 years, were included in the study if they underwent cataract surgery and 8 am the following morning. IOP was defined as IOP >25 mmHg; intervention consisted of latanoprost 0.005% (Akorn, Inc., Lake Forest, IL, USA) if IOP rose to 25-35 mmHg or surgery treatment of choice if >35 mmHg. Results: DHTM significantly reduced the prevalence of POH in comparison with BC (26% vs. 49% of eyes, OR = 0.36, 95% CI = 0.62% vs. 62% of dogs, OR = 0.32). There was also a trend toward reduction of POH severity in DHTM-treated eyes developing POH were significantly more likely to respond favorably (1 h post-treatment IOP <25 mmHg) to treatment with latanoprost (OR = 4.55 vs. 1%, OR = 1.87). Conclusions: In dogs undergoing PE, multi-dose perioperative administration of DHTM reduces the risk of POH and improves POH treatment responsiveness. Supported by the Virginia-Maryland College of Veterinary Medicine Veterinary Memorial Fund. None.

ABSTRACT NO.: 066
Feline diffuse iris melanoma vs. melanosis: a retrospective case series
S Edwards,* A Metzler,‡ P Jalaja-Schultz,§ C Premanandan† and K Montgomery†
*College of Veterinary Medicine, University of California, Davis; ‡College of Veterinary Medicine, The Ohio State University; †College of Veterinary Medicine, North Carolina State University

Purpose: To compare clinical characteristics and survival time of feline iridal melanoma and melanosis cases and evaluate prognostic value of histopathology for feline melanomas. Methods: Medical records of feline patients with iridal melanoma from 2003 to 2013 were reviewed. Inclusion required clinical diagnosis of feline melanosis or histologic diagnosis of feline melanoma. Results: Thirty-two cats (14 globes) were included. Melanosis was diagnosed histologically at an average age of 13.6 years (range 1.5–23 years), while feline melanomas were diagnosed at an average age of 7.2 years (range 2.4–14 years). Thirty-one cases were diagnosed at 180°. Linear regression showed that age was a significant predictor of survival for feline melanomas (P = 0.001). Conclusions: The impact of ERU on the equine industry is attributed to common complications including blindness, economic loss, and reduced performance. ERU decreased the estimated number of affected horses and their owners by evaluating the signalment, treatment, and outcome. All four cats that died, tumors were heavily pigmented and moderately differentiated. Melanomas may be associated with decreased survivability. None.

ABSTRACT NO.: 067
Development of an ex vivo model of canine corneal fibrosis
MK Fink, EA Giuliano, TL Marlo, A Sharma and RR Mohan
College of Veterinary Medicine, University of Missouri, Columbia, Missouri

Purpose: To develop an ex vivo model of canine corneal fibrosis that maintains normal canine corneal anatomy. Methods: Canine corneas, harvested from dogs euthanized for reasons unrelated to corneal surgery, were cultured ex vivo at the air-liquid interface in minimal essential media supplemented with 10% fetal bovine serum. Corneal wounds were made with 1 N NaOH and exposed to 10 ng/ml transforming growth factor beta (TGF-B) to induce the transdifferentiation of keratocytes to myofibroblasts, producing an ex vivo model of corneal fibrosis. The efficacy of TGF-B application to induce corneal fibrosis in naïve and wounded corneas cultured in vitro was evaluated through apoptosis assays, photography, histology, immunohistochemistry, and quantification of biochemical markers of fibrosis with immunoblotting and RT-PCR. Results: Treatment of corneas cultured ex vivo at the air-liquid interface with TGF-B1 significantly increased sSMA expression in NaOH-wounded corneas (P < 0.001). Corneal anatomy was not adversely affected by culture. Conclusions: Canine corneas cultured ex vivo at the air-liquid interface are susceptible to TGF-B1-induced fibrotic change. TGF-B1 application induces myofibroblast transdifferentiation in wounded canine corneas to yield an ex vivo model of canine corneal fibrosis free of significant atrophic change. Cultured canine corneas can be maintained ex vivo at the air-liquid interface following NaOH-wounding for at least 2 weeks. Supported in part by a University of Missouri College of Veterinary Medicine Ph D Zeta Research Award, NIH Postdoctoral Training Grant in Comparative Medicine RR02020, and Roth M Kraeuchi Endowed Funds. None.

ABSTRACT NO.: 068
Prognosis and impact of equine recurrent uveitis
JC Gerding and BC Gilger
College of Veterinary Medicine, North Carolina State University, Raleigh, NC, USA

Purpose: The purpose of this study was to assess the prognosis and impact of ERU on affected horses and their owners. Methods: Medical records of horses presenting to the NGU-VHC Equine Ophthalmology Service with a diagnosis of ERU between March 1999 and October 2014 were reviewed. Signalment, clinical signs, ophthalmic examination findings, diagnostics, treatments, and outcomes were evaluated. Owner questionnaires were completed regarding vision, job role, monetary value, diagnosis and treatment costs, concurrent illness, and outcomes. Results: Records of 224 horses were diagnosed with ERU; horse data would be very useful in educating veterinarians and owners on disease progression, associated diagnostic and treatment costs, and to prioritize and justify further pathologic and therapeutic research for ERU. Methods: Retrospective Impact Study. Medical records of horses presenting to the NGU-VHC Equine Ophthalmology Service with a diagnosis of ERU between March 1999 and October 2014 were reviewed and an owner questionnaire was completed regarding ERU. Owner questionnaires revealed that 91 horses (46.9%) were reported blind in the affected eye at the end of this study. Fifty-seven horses (29.4%) did not return to their previous jobs/role due to ERU, while 61 (31.4%) performed at a reduced level. ERU decreased the estimated number of horses (84.5%), Twenty-nine horses (14.9%) were euthanized and another 11 (5.7%) underwent vitreous for vision improvement. Conclusions: The impact of ERU on the equine industry is attributed to common complications including blindness, economic loss, and loss of function. Euthanasia and change of ownership are common sequelae to the progressive nature of ERU. These factors, along with immense financial costs of the disease, have a significant impact on affected horses and their owners. Supported by Zoetis animal health.
ABSTRACT NO.: 069
Intracapsular delivery of cyclosporine as a using a biodegradable thermosensitive hydrogel polymer reduces ex vivo PCO formation
KJ Gervais, HL Chandler, DA Willie and AJ Gemenisky-Metzler
The Ohio State University College of Veterinary Medicine
Purpose: To use a thermosensitive hydrogel (thermogel) polymer to achieve sustained intracapsular release of cyclosporine (CA) for reduction of ex vivo posterior capsule opacification (PCO). Methods: A PLGA-PEG-PLGA thermogel polymer was formulated to release CA (100 mg/ml) of vehicle (CaSO4). Extracapsular dog cataract extraction and 10L placement were performed in 24 canine calabar globes. Lens capsule explants with residual lens epithelial cells (LEC) were treated with 200 μl of CA-eluting (n=12) or vehicle-eluting (n=12) thermogel and maintained in culture. Posterior capsule coverage by LEC was graded following 7 (n=8), 14 (n=6), or 28 (n=10) days of treatment. LEC were manually quantified via light microscopy from capsules in the 28-day treatment group. CA concentration in culture media was quantified by LC-MS at each time point. Percent in percent posterior capsule coverage and LEC counts were analyzed by student's t-test with Welch's correction. Results: Posterior capsule coverage by LEC was significantly reduced in CA-thermogel treated capsules compared to vehicle-treated capsules. Percent posterior capsule coverage (mean ± SEM) for CA-treated vs. vehicle-treated capsules was 0 vs. 33 ± 5.47 at day 7 (P < 0.05), 15 ± 4.41 vs. 45 ± 3.87 at day 14 (P < 0.0001), and 30 ± 6.35 vs. 96.6 ± 2.45 at day 28 (P < 0.0001). Histologic LEC counts were significantly lower in CA-thermogel treated capsules (88 ± 2.65 cells) compared to vehicle-thermogel treated capsules (207 ± 6 ± 33.38 cells; P < 0.05). Cumulative CA release from the thermogel was >10 mg/ml over a minimum of 7 days. Conclusions: Use of a CA-thermogel polymer may be a viable pharmacologic method for reducing PCO. Higher eluted CA concentrations will likely be necessary to prevent PCO formation entirely. Supported by American Society of Cataract and Refractive Surgery. None.

ABSTRACT NO.: 070
Evaluation of tear osmolarity in healthy canines using a novel osmolarity system
MD Armour* and ME Gibson†
*Eye Care for Animals, Leesburg, VA, USA; †Hope Advanced Veterinary Center, Vienna, VA, USA
Purpose: To establish a reference range for normal tear osmolarity in healthy dogs using I-Pen Tear Osmolarity System (C226). Novel osmolarity system was used to evaluate the tear osmolarity in healthy canines. The data was compared to the previously published data. Methods: Fifty healthy Beagle dogs (n=25) were included in this study. No medications were given as per study protocol. The dogs were allowed to fast for 30 minutes and were not allowed to eat or drink at least 12 hours prior to the procedure. Grade 1 punctate keratopathy was considered normal in all patients. Tear osmolarity was assessed using the I-Pen Osmolarity System. Further studies are indicated for the role of the I-Pen in diagnosis and monitoring of patients with tear film disorders. None.

ABSTRACT NO.: 071
Therapeutic potential of the anti-fibrotic drug suberanilohydroxamic acid (SAHA) in dogs
KM Gronkiewicz,* EA Giuliano,† K Kuroki,* F Bynak† and RR Mohan‡*†
*College of Veterinary Medicine, University of Missouri; †Department of Computer Science, University of Missouri; ‡Harry S Truman VA Hospital, Columbia, Missouri; †Mason Eye Institute, University of Missouri
Purpose: To assess the ability of SAHA to inhibit canine corneal fibrosis utilizing a novel pro-fibrotic in vivo model. Methods: Seven 9–12 month Beagle dogs were used to establish corneal opacity. Baseline optical coherence tomography (OCT) was performed. An axial corneal alkali burn was obtained using 1 N NaOH. Six dogs were randomly and equally assigned to two groups: (A) vehicle (DMSO, 2 ml/kg); (B) anti-fibrotic treatment (50 μM SAHA). Degree of corneal opacity, ocular health and efficacy of SAHA were determined using the I-Pen Tear Osmolarity System over six serial measurements per eye. Fluorescein stain was negative for uptake in all patients following the I-Pen evaluation. SAS V9 software was used for obtaining estimates of the reference interval for healthy dogs. Results: Mean tear osmolarity was 317.3 ± 21.6 mOsms/l. The estimated reference limits (mean ± 2SD) for healthy dogs were 251 to 382 mOsms/l. Ocular health was assessed using the I-Pen Tear Osmolarity System. Further studies are indicated for the role of the I-Pen in diagnosis and monitoring of patients with tear film disorders. None.

ABSTRACT NO.: 072
Utility of tear ferning as an adjunctive measure of tear film quality in brachycephalic dogs
KK Hsu, AM Sheehan Gaerg and SG Sisler
Eye Care for Animals, Wheeling, IL, USA
Purpose: To investigate the utility of tear ferning (TF) as an adjunctive diagnostic for evaluating tear film quality in brachycephalic dogs. Methods: Schirmer Tear Test-1 (S TT), tear film-break-up time (TFBUT), TF and slit-lamp biomicroscopy were performed on 54 brachycephalic dogs with corneal dry eye. Results: Twenty-eight dogs with severe keratoconjunctivitis sicca (BCTL) and 18 non-keratoconjunctivitis sicca (MCTL) dogs were treated, respectively. The canine corneal alkali burn was well tolerated, performed without damaging the limbus, and generated significant corneal opacity as evidenced by histopathology, TEM and OCT findings. None. Significant difference in fibrinogen characteristics, underlying corneal disease, topical therapies, debridement treatments, time to healing and complications were investigated for statistical associations. Results: Corneal fibrinogen characteristics of dogs that were treated (n=70) or not treated (n=36) with Diflucan (Akorn Inc., Lake Forest, IL, USA) or Fluorin (Bausch & Lomb Inc., Tampa, FL, USA) There was no association between breed, sex, lesion location, or comorbidities and time to healing or complications. Comorbidities included KCS, endothelial degeneration, pseudophakia, Cushings disease and diabetes mellitus. Increased age was associated with longer healing time (P < 0.0208). NSAID use was associated with delayed time to healing, however, this effect disappeared once age was factored out. There was no difference in complications between groups, which included infection, keratitis, and corneal perforation. Dogs treated with a larger number of medications had a longer time to healing and increased complication risk (P < 0.005). Conclusions: The use of topical NSAID for the treatment of superficial non-healing corneal ulcers was not found to prolong, nor expedite, healing time or increase the risk for complications. None.

ABSTRACT NO.: 073
The effects of nsaid use in treatment of superficial non-healing corneal ulcers: a retrospective study of 106 dogs
AV Keenan, KA Diehl and KE Myrna
College of Veterinary Medicine, University of Georgia
Purpose: To determine if there was an association between NSAID use and delayed healing times using complications in the treatment of superficial non-healing corneal ulcers in dogs. Methods: Records of 106 (113 eyes) dogs treated for superficial non-healing corneal ulcers with or without NSAID between 2009 and 2015 were reviewed. Successful outcome was defined as complete, comfortable eye without bilater at the last examination. All cases met criteria. Seroprevalence of FeLV (27.6%), FIV (7.1%), FCoV (14.7%), T. gondii (21.7%), and Bartonella spp. (41.2%) was observed with a combined seroprevalence of 58.2%. Nineteen cats (15.1%) were diagnosed with FIP based on a combination of clinical, hematological, serological, and necropsy characteristics, while seropositivity was higher than predicted. This may be due to improved diagnostic capabilities or that cats with infectious disease were more likely to be referred for specialty care. Because of the high prevalence of FIP, young cats should have bloodwork to evaluate for hypergammaglobulinaemia and FCoV serology as minimal diagnostic tests. None.

ABSTRACT NO.: 074
Bilateral corneal stromal loss in friesian horses: candidate gene sequencing
M Zbiral,* S Drijzw,* MJ Mamedowskl‡ and RR Bellows†
*Department of Surgical & Radiological Sciences, University of California, Davis, CA, USA; †Veterinary Genetics Laboratory, Department of Population Health & Reproduction, University of California, Davis, CA, USA; ‡Department of Animal Science, University of California, Davis, CA, USA
Purpose: To determine if there was an association between NSAID use and delayed healing times using complications in the treatment of superficial non-healing corneal ulcers in dogs. Methods: Records of 106 (123 eyes) dogs treated for superficial non-healing corneal ulcers with or without NSAID between 2009 and 2015 were reviewed. Successful outcome was defined as complete, comfortable eye without bilater at the last examination. All cases met criteria. Seroprevalence of FeLV (27.6%), FIV (7.1%), FCoV (14.7%), T. gondii (21.7%), and Bartonella spp. (41.2%) was observed with a combined seroprevalence of 58.2%. Nineteen cats (15.1%) were diagnosed with FIP based on a combination of clinical, hematological, serological, and necropsy characteristics, while seropositivity was higher than predicted. This may be due to improved diagnostic capabilities or that cats with infectious disease were more likely to be referred for specialty care. Because of the high prevalence of FIP, young cats should have bloodwork to evaluate for hypergammaglobulinaemia and FCoV serology as minimal diagnostic tests. None.
Bilateral corneal stromal loss (BCSL) is a corneal disease observed in Friesian horses that can be associated with progressive corneal stromal loss and requires prompt treatment to prevent vision loss. Methods: A 6-year-old neutered male Friesian horse was referred for bilateral blisters on the left cornea with visual acuity outside of the patient’s pain threshold. Complete ophthalmic examination revealed left eye opacity and corneal thinning in the inferonasal ciliary body. Left eyelid entropion was also identified. Imaging using the previously described adaptor system and imaging sequence was performed. A single intravitreal dose of 0.01 mg/kg of ranibizumab (Lucentis, Genentech, Inc., South San Francisco, CA, USA) was administered. Images were collected using the previously described adaptor system and imaging sequence. Results: Ten minutes after the bolus of ranibizumab, a distinct hypofluorescent area was present in both eyes. The area of hypofluorescence corresponded to the left corneal thinning. The area was surrounded by a hyperfluorescent ring. The diameter of the hyperfluorescent ring was greater than the area of hypofluorescence. Conclusion: Intravitreal injection of ranibizumab may be an effective treatment for corneal thickening in horses with bilateral corneal stromal loss (BCSL). Further research is needed to confirm the effectiveness of this treatment.
0.5 endotoxin units/eye (EU/eye, USP standard). An initial range-finding study established a concentration range of 0.03–0.5 EU/eye for a larger definitive study with four treated groups (n = 5 eyes per group). Animals were monitored for up to 1 week post dose via slit-lamp biomicroscopy. Specular photometry and confocal scanning laser ophthalmoscopy (SUN) Working Group Grading Scheme to score aqueous cell and flare. Laser flare photometry was performed to quantitatively measure aqueous flare concurrent with meshwork (TM). Our objectives were to develop AAV vectors for canine TM targeting and to perform AAV10.5 gene therapy to prevent/reverse intraocular pressure (IOP) elevation in POAG-Beagles. Methods: Using the constitutive small chicken lysozyme promoter and constructs for canine TM targeting, we performed a SAR expression study in a canine model. Results: Four dogs with a null mutation in the gene that encodes the lysosomal enzyme tripeptidyl peptidase 1 (TPP1) were used. Autologous bone marrow cells were isolated and grown in culture to enrich for mesenchymal stem cells (MSCs). Passage 3 MSCs were transduced with rAAV-TTP1 vectors to produce secreted TTP1 enzyme. Transduced MSCs were injected into the vitreous 1 week prior to the first of two laser procedures. The contralateral eye served as a control. Quantitative CLN2 disease-related retinal lesion area analysis, optical coherence tomography (OCT) and electroretinography (ERG) were evaluated as visual biomarkers. Results: At ages younger than 9 months (Y9), all eyes were assessed by spectral-domain OCT. Thereafter, fundus photographs and macular OCT images were obtained. Conclusions: Intravitreal ex vivo gene therapy delays progression of retinal disease in a canine model of CLN2 disease. Approaches for extending the window of the therapeutic benefit by gene delivery remain. Supported by The United States National Institutes of Health R01EY019269.
ABSTRACT NO.: 087
Use of a nictitating membrane flap for treatment of feline acute bullous keratopathy – 20 eyes
SL Pederson,* TM Michau,* S Pizzirani,§ S Andrew§ and D Pate†
*BluePearl Veterinary Partners, Tampa, FL, USA; †Cumming School of Veterinary Medicine, Tufts University, North Grafton, MA, USA; §Georgia Veterinary Specialists, Atlanta, GA, USA; §Upstate Veterinary Specialists, Greenville, SC, USA

Purpose: To evaluate the clinical findings, possible contributing factors, visual outcome, and effectiveness of the use of a nictitating membrane (NM) flap as therapy in 18 cats (20 eyes) with acute bullous keratopathy (ABK).

Methods: Medical records from 18 cats diagnosed with FABK and treated with a NM flap were retrospectively evaluated. Information collected included signalment, medical history, therapy, and outcome.

Results: Patient breeds included 12 DSH, 2 exotic shorthairs, 2 Maine Coon, 3 Persian, and 1 DMH. Two cats were bilaterally affected. Median age of cats was 1.2 years (range 0.26–11.5 years). Ten patients were affected for more than 30 days, six were affected for 1601 days (median 113 days). A corneal perforation occurred in 1 (0.05%) eye, and was successfully repaired. Enucleation due to glaucoma (unrelated to bulla) was performed in another eye. Eighteen of the 20 eyes resolved without complications. Gauze and vision were retained in 19 (95%) eyes.

Conclusions: A NM flap successfully treated 90% of FABK eyes (88% of patients). Funding: None.

ABSTRACT NO.: 088
Post-phacoemulsification retinal detachment rate of bichon frises
SL Pederson,* TM Michau,* S Carastro§ and S Andrew§
*BluePearl Veterinary Partners, Tampa, FL, USA; §Animal Eye Specialty Clinic, Deerfield and West Palm Beach, FL, USA; §Georgia Veterinary Specialists, Atlanta, GA, USA

Objective: The Bichon Frise is reported to have a high post-phacoemulsification retinal detachment rate (PPRDR) compared to other breeds. The purpose of this study was to determine the PPRDR in Bichons from the Southeastern United States, and compares this to the PPRDR in other breeds. This study evaluated the PPRDR for the Bichon Frise (168 dogs, 163 eyes from 163 owners) post-phacoemulsification were evaluated. Additional post-operative records from 11 Boston Terriers, 21 Shih Tzu, 18 Labrador Retrievers, and 40 Schnauzers were collected. Information collected included: signalment, medical history, concurrent diabetes mellitus, ocular findings at presentation, diabetes mellitus at presentation, concurrent diabetes mellitus at presentation, concurrent diabetes mellitus at presentation, concurrent diabetes mellitus at presentation, concurrent diabetes mellitus at presentation, concurrent diabetes mellitus at presentation, concurrent diabetes mellitus at presentation.

Results: The PPRDR for the Bichon Frise 14% in 265 eyes, affecting 18% of 168 dogs. The PPRDR for the Boston Terrier was 14% in 265 eyes, affecting 18% of 168 dogs. Comparative PPRDR in the Bichon Frise was 14% in 265 eyes, affecting 18% of 168 dogs. The PPRDR for the Boston Terrier was 14% in 265 eyes, affecting 18% of 168 dogs.

Conclusions: The PPRDR for the Bichon Frise was 14% in 265 eyes, affecting 18% of 168 dogs. The PPRDR for the Boston Terrier was 14% in 265 eyes, affecting 18% of 168 dogs. The PPRDR for the Bichon Frise was 14% in 265 eyes, affecting 18% of 168 dogs. The PPRDR for the Boston Terrier was 14% in 265 eyes, affecting 18% of 168 dogs. The PPRDR for the Bichon Frise was 14% in 265 eyes, affecting 18% of 168 dogs. The PPRDR for the Boston Terrier was 14% in 265 eyes, affecting 18% of 168 dogs. The PPRDR for the Bichon Frise was 14% in 265 eyes, affecting 18% of 168 dogs. The PPRDR for the Boston Terrier was 14% in 265 eyes, affecting 18% of 168 dogs.

Funding: None.

ABSTRACT NO.: 089
Extracellular matrix fibronectin is a potential mechanoregulator during corneal stromal wound healing
SA Pot,*† L Zhe,*§ JY Shiu* and V Vogel*
*Laboratory of Applied Mechanobiology, Department Health Sciences and Technology, ETH Zurich, Zurich, Switzerland; †Equine Department, Vetsuisse Faculty, University of Zurich, Zurich, Switzerland

Purpose: Mechanoregulation during corneal wound healing is required for tissue regeneration and extracellular matrix (ECM) production and conformation modulation. Techniques employed included fluorescence microscopy, force measurement and Fluorescence Resonance Energy Transfer (FRET) assays. Wild-type and fibronectin-knockout fibroblasts were used to investigate the influence of the presence and molecular conformation of fibronectin on the mechanobiological differentiation of TGF-β1-stimulated keratocytes. Results: Growth factor stimulation upregulated cell-generated traction forces and activated fibronectin fibrillogenesis. This effect of growth factor stimulation required the presence of functional fibronectin in the ECM. The strain of assembled ECM fibronectin fibrils positively correlated with cell-generated traction force. Growth factor, but not serum-stimulated cell-generated traction force were significantly increased for the flunixin meglumine versus phenylbutazone: 10 and 4.75 days, respectively. Time to fibrin resolution was significantly increased for those ponies that received phenylbutazone versus flunixin meglumine. Clinical presentation was similar to other etiologies of feline uveitis. The role of flunixin and potential Bartonella co-infection in this cat was unknown. In this group of ponies aqueocentesis was performed. Aquous samples were analyzed for prolaglandin (PGE2) levels. Blinded observers performed subjective scoring for 3 days following aqueocentesis. One observer (NS) examined each pony twice daily until fibrin resolution.

Conclusions: There was a significant increase in PGE2 when comparing the first aqueocentesis to the second (P = 0.011). There was a trend (P = 0.05) toward higher graft scores on days 1 compared to aqueocentesis. This trend was not observed for the PGE2 concentrations at the second aqueocentesis when compared to the phenylbutazone group (P = 0.094). Time to fibrin resolution was significantly increased for those ponies that received flunixin meglumine versus those that received phenylbutazone: 10 and 4.75 days, respectively (P = 0.0256). Subjective fibrin scores were also significantly increased for the flunixin meglumine versus phenylbutazone treatment groups (P = 0.02). For every 1% increase in PGE2 concentration, there was a 1.66 increase in days to fibrin resolution (P = 0.024). Conclusions: In this group of ponies aqueocentesis was performed via prolaglandin E2 (PGE2) concentrations and clinical examination. Intraocular fibrin resolved in a shorter period of time following phenylbutazone versus flunixin meglumine administration. If atrophen administration was necessary, time to fibrin resolution was increased.

Funding: None.
ABSTRACT NO.: 093

In vitro and in vivo effect of voriconazole exposure on the equine cornea: a pilot study
KM Smith, MA Breshers, 1, LK Maxwell, 1, AW Cohen, 1 and MA Gilmour 1
*Department of Veterinary Clinical Sciences, Center for Veterinary Health Sciences, Oklahoma State University; 1Department of Veterinary Pathobiology, Center for Veterinary Health Sciences, Oklahoma State University; 2Department of Physiological Sciences, Center for Veterinary Health Sciences, Oklahoma State University

Purpose: To determine the effect of (1) intrastromal injection of voriconazole in the nor-
mal equine eye and (2) systemically induced exposure on equine keratocytes. Methods: Five horses, immediately post-euthanasia, underwent intrastromal injection of 1% voriconazole (Vendri, Pfizer Pharmaceuticals, New York, NY, USA) in one eye and 3% in the other eye. A sixth horse, which had injection of sterile water in both eyes as a control. Following injection, aqueouscentesis was performed and the samples analyzed for voriconazole concentration using high performance liquid chromatography (HPLC). Cell cultures were euthanized with half of each eye analyzed by histopathology and half by scanning electron microscopy (SEM). In a separate experiment, toxicity from voriconazole exposure on primary culture equine keratocy-
cocytes was measured. Results: Vitamin K1 and vitamin K2 were used to correct coagula-
tion problems following injection of 1% voriconazole. Continuous in vitro exposure to vori-
canolose showed no difference between in 1 and 5% solutions. SEM evaluation detected minimal cell formation with 5% solution whereas the area of affected cornea was larger with 1% solution. HPLC revealed maximum aqueous humor voriconazole concentration following injection of 1% voriconazole. Continuous in vitro exposure of ker-
ratocytes to voriconazole resulted in total cell death at a concentration of 4 µg/ml after 2 h. Conclusions: Injection of 1 and 5% voriconazole results in comparable alteration of corneal morphology immediately post-injection. The highest intrastromal drug exposure occurs fol-
lowing injection of 1% voriconazole. Both drug concentrations exceed that which causes complete in vitro toxicity to keratocytes after 12 h of continuous exposure. Supported by OSU RAC grant. None.

ABSTRACT NO.: 094

Effects of topical sirolimus on tear production in normal dogs and dogs with refractory dry eye
RA Spatala, B Nadelstein, A Berdoulay, RV English, AK Weigt and AC Leber
Animal Eye Care Associates

Purpose: To evaluate the effects of topical sirolimus on tear production in normal dogs, and dogs with refractory dry eye. Methods: Eighteen normal eyes and 12 eyes of refractory dry eye dogs. The right eyes of normal dogs received aqueous 0.02% sirolimus topically, and the left eye a vehicle control, twice daily for 4 weeks. Baseline tear production (Schirmer tear test 1) was measured on days 0, 7, 14, 21, and 28 following injection of 1% voriconazole. Median CHV-1 shedding duration was determined by using the time to reach 200 000 copies/mL CHV-1 PCR (C226, Pfizer Inc., New York, NY, USA) in the serum. Results: There were no differences between the control and treatment groups. Conclusions: In vitro and in vivo toxicity to keratocytes after 12 h of continuous exposure. Supported by OSU RAC grant. None.

ABSTRACT NO.: 095

Effects of topical ophthalmic trifluridine in dogs with experimental recurrent ocular canine herpesvirus-1 infection
CB Speratus, *HO Mohammed1 and EC Ledbetter2
*Department of Clinical Sciences, College of Veterinary Medicine, Cornell University, Ithaca NY; 1Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University, Ithaca NY

Purpose: To determine the effects of frequent topical ophthalmic application of 1% trifluridine solution in dogs with experimentally-induced recurrent ocular canine herpesvirus-1 (CHV-1) infection. Methods: A randomized, masked, placebo-controlled, 30 day trial was performed using mature laboratory beagles with latent CHV-1 infection. Recurrent ocular CHV-1 infection was experimentally-induced by administration of systemic prednisolone for 7 days, followed by recieves of 0.5% solution (Chirotrin) (Viostra®; Pfizer Inc., New York, NY, USA) or artificial tears (placebo) topically, in both eyes, three times daily for 2 days, starting on day 0 of prednisolone administration. Treatments were continued four times daily for the fol-
lowing 12 days. Clinical ophthalmic examinations were performed regularly and ocular dis-
ease scores were calculated. Ocular swab samples for CHV-1 polymerase chain reaction analysis were performed, blood for hematocrit, serum biochemistry panels, and CHV-1 serum neutralization antibody titers were collected regularly. Results: Conjunctivitis was detected in all dogs by study day 6. Mean and total clinical ocular disease scores were significantly lower in the treated group compared to the placebo group. The trifluridine group had a significa-
cantly shorter median CHV-1 shedding duration compared to the placebo group. Both groups demonstrated an increasing CHV-1 serum neutralization antibody titer trend over time, but no significant differences between dogs were present on any sampling day. Hemogram and serum biochemistry panel values were unremarkable throughout the study. Clinical ocular application of 1% trifluridine was well tolerated and effective at reducing clinical scores and CHV-1 shedding duration. Trifluridine therapy requires owner compliance with a frequent administration schedule. None.

ABSTRACT NO.: 096

MRI visualisation of anesthetic fluid distribution and comparison of two different volumes following sub-
tenon injection in equine cadaver eyes
S Stadler, *M Denlner, 1 K Voelter, 1 B Spies, 1 U Hetzel2 and S Pot* 1
1Department of Ophthalmology, Vetsuisse Faculty, University of Zurich; 1Department of Diagnostic Imaging, Vetsuisse Faculty, University of Zurich; 2Department of Pathology, Vetsuisse Faculty, University of Zurich

Purpose: To visualize the localization and macroscopic distribution of two different anes-
thetic fluid volumes to find an appropriate volume for a single subtenon injection in equine eyes. Methods: A single subtenon injection of 2% bupivacaine was performed in a single equine cadaver head (16 eyes) with two different volumes (7 ml on one side, 10 ml on the opposite side). Besides subjective quantification of reflux, the posterior migration and circular distribution of the anesthetic was characterized by 3D T2(*)- and transverse MRI (T1W- TSE) sequences. Circular distribution was quantified and compared between groups via paired t-test. Results: In all injections, the anesthetic expanded from the injection site superiorly and the temporal and superior rectus muscle bellies into the intracranal retrostellar space and did not migrate inferiorly. There was no fluid accumulation directly surrounding the optic nerve. Circular distribution of the anesthetic was not significantly different between groups (P = 1.000). Subjectively the higher dose caused more retrograde leakage of the anes-
thetic. Conclusions: MRI can detect the distribution of anesthetic fluid of a single sub-
tenon injection. Apart from increased reflux of anesthetic with the 10 ml injection volume, no difference in distribution of anesthetic was observed, between groups. A 7 ml injection volume could therefore be suitable as local anesthesia alternative for ophthalmic surgeries in equines. Further in vivo studies have to be performed to evaluate the clinical effect of this single injection strategy. None.

ABSTRACT NO.: 097

Investigation of a tass outbreak in canine cataract surgery patients
J Stiles and WM Townsend
Purdue University College of Veterinary Medicine

Purpose: To describe the steps undertaken to investigate the cause of a toxic anterior seg-
ment syndrome (TASS) outbreak in canine cataract surgery patients at a veterinary teaching hospital. Methods: Medical records of 32 dogs that had cataract surgery in a 9 month per-
od were reviewed. Additional investigations included bacterial cultures of instruments and operating room surfaces, endotoxin testing of water sources, IOLs, intracocular irrigation fluid and viscoelastic, review of surgical prepping protocol and instrument cleaning proto-
cols. Results: Thirteen of the 32 dogs were considered to have TASS. No factors found in medical records or surgery reports contributed to TASS from unaffected dogs. Endotoxin levels were high (0.7–2.0 EU/ml) in water sources used for instrument cleaning but negative or very low in water sources tested for autoclave handpieces, operating room surfaces and from aqueous humor of one dog. Cleaning of cannu-
lated instruments was determined to be inadequate. Implementation of more vigorous instru-
ment cleaning protocols, as well as use of only disposable IA handpieces and endotoxin free water resolved the problem. Conclusions: The two factors considered most likely to have contributed to the TASS outbreak were high levels of endotoxin in water sources and inade-
quate cleaning of cannulated instruments. None.

ABSTRACT NO.: 098

Use of an ophthalmic formulation of megestrol acetate for treatment of eosinophilic proliferative keratitis in cats
J Stiles* and M Coster†
*Purdue University College of Veterinary Medicine; †Angell Animal Medical Center

Purpose: To investigate the use of a compounded 0.5% ophthalmic suspension formula-
tion of the drug megestrol acetate (MA) as a treatment for eosinophilic proliferative kerat-
tis in cats. Methods: Cats with eosinophilic proliferative keratitis but without suggestion of active herpetic disease were eligible for the study. Use of topical anti-inflammatory or anti-
 viral drugs in the preceding 2 weeks, or oral MA in the preceding 2 months, elimi-
nated cats from the study. All diagnoses were confirmed with cytology. A compounded 0.5% MA suspension was prescribed 2–3 times daily depending on lesion severity. At least 1 recheck examination was required for study inclusion. Blood glucose was measured in 10/ 17 cats during treatment. Results: Seventeen cats participated in the study, 13 with uni-
lateral and 4 with bilateral disease. Fifteen cats responded well and 2 had no response to treatment. Fourteen cats had improvement at the first recheck. Follow up ranged from 4.3 to 13 months (mean 10 months). No adverse effects were noted and blood glucose levels remained in the reference range for all cats tested. Most cats required ongoing treatment with frequency of one to two times weekly to maintain disease remission. Con-
clusions: Topical 0.5% MA suspension is a viable option for treating eosinophilic proliferative keratitis in cats. None.

ABSTRACT NO.: 099

Post-traumatic open angle glaucoma in cats
LBC Teixeira, T Linder and RR Dubielzig
Comparative Ocular Pathology Laboratory of Wisconsin (COPELOW) University of Wisconsin-Madison

Purpose: Characterize the clinicopathological features of feline open angle glaucoma. Thirty-three cases of feline open angle glaucoma (FOAG) were identified in COPLOW’s database. Case inclusion was based on clinical history, histologically normal iridocorneal angle (ICA) and glaucoma without secondary cause. Patient data, clinical his-
tory, and any group information were recorded. Enucleated eyes were formalin-fixed-paraf-
in-embedded, stained with HE/E, alcin blue/PAS and Mason’s trichrome and analyzed by light and electron-microscopy and histomorphometry. Results: Median age of animals was...
101 years. Females represented 68% of cases. No breed predisposition was found. Average IOP of injection device (#1 injection device: 15.7–16.1 mmHg; #2 injection device: 16.3–16.8 mmHg). Disease was bilateral in 57% and unilateral in 43% of cases. Average time to-glaucoma in the second eye was 399 days (0–1,795 days). Fifty-five percent of bilateral cases developed glaucoma on the contralateral eye in <1 year and 27.2% first presented with bilateral glaucoma. Histologically all cases presented open ICA, normal ciliary cleft and trabecular meshwork, ganglion cell loss and optic cup narrowing.

Methods: A randomized, masked crossover design was used with 12 normal adult horses (8 mares, 4 geldings). For arm 1, horses were divided into the following groups for treatment in one randomly selected eye once a day: Group D (n = 6, 0.2 ml lactoferin and 0.2 ml dexamethasone), Group L (n = 6, 0.2 ml lactoferin and 0.2 ml diclofenac). Intracameral treatments were performed 4 times daily on days 1 and 2 (baseline), days 3 and 4 (treatment). For arm 2, horses from Group D and L were placed into Group DL (n = 6, 0.2 ml lactoferin and 0.2 ml dexamethasone, 0.85% saline solution alone and in combination with diclofenac 0.1%). IOP measurements were performed on Golden Retrievers without uveal cysts, with uveal cysts, or with pigmentary uveitis (PU).

Conclusions: FOAM is an appropriate ocular anesthetic in adult horses and results suggest a potential obstruction of aqueous outflow by deposition of myxomatous matrix around collecting channels and intrascleral veins. Pathophysiology is still poorly understood and future investigations might further the understanding of human FOAM and post-trabeculectomy glaucoma.

None.

ABSTRACT NO.: 100

Effect of topical ophthalmic latanoprost 0.005% solution alone and in combination with dexamethasone 0.1% solution in normal horses
KL Toffetlin,* RD Whitley,† G Ben-Shlomo,* RA Allbaugh,* AN Griggs,* TS Strong* and EM Whitley‡

Purdue University, West Lafayette, IN, USA; †University of Florida, College of Veterinary Medicine, Davis College of Veterinary Medicine, University of Florida; ‡Pathogenesis LLC

Purpose: To evaluate the effect of topical ophthalmic 0.005% latanoprost alone and in combination with 0.1% dexamethasone in normal horses.

Methods: A randomized, masked crossover design was used with 12 normal adult horses (8 mares, 4 geldings). For arm 1, horses were divided into the following groups for treatment in one randomly selected eye once a day: Group D (n = 6, 0.2 ml lactoferin and 0.2 ml dexamethasone), Group L (n = 6, 0.2 ml lactoferin and 0.2 ml diclofenac). Intracameral treatments were performed 4 times daily on days 1 and 2 (baseline), days 3 and 4 (treatment). For arm 2, horses from Group D and L were placed into Group DL (n = 6, 0.2 ml lactoferin and 0.2 ml dexamethasone, 0.85% saline solution alone and in combination with diclofenac 0.1%). IOP measurements were performed on Golden Retrievers without uveal cysts, with uveal cysts, or with pigmentary uveitis (PU).

Conclusions: FOAM is an appropriate ocular anesthetic in adult horses and results suggest a potential obstruction of aqueous outflow by deposition of myxomatous matrix around collecting channels and intrascleral veins. Pathophysiology is still poorly understood and future investigations might further the understanding of human FOAM and post-trabeculectomy glaucoma.

None.

ABSTRACT NO.: 101

Intraocular pressures in eyes of golden retrievers without uveal cysts, with uveal cysts, and with pigmentary uveitis
WM Townsend

College of Veterinary Medicine, Purdue University

Purpose: To compare the intraocular pressures (IOP) in eyes of Golden Retrievers without uveal cysts, with uveal cysts, and with pigmentary uveitis (PU).

Methods: Dilated ophthalmic examinations were performed on Golden Retrievers. The IOP was measured using a Tono-pen®. The presence or absence of PU was determined based on clinical signs (blepharitis, chemosis, conjunctivitis, episcleritis, episcleral injection, and variation of burr tips

None.

ABSTRACT NO.: 102

Uveodermatomatoid syndrome in dogs: 50 cases (1985–2013)
CA Tulsner,* M Zarfoss,† PH Kass,‡ K Montgomery,* CL Lim† and SM ThomasyΔ

*Department of Surgical and Radiological Sciences, UC Davis School of Veterinary Medicine; †Animal Eye Specialists El Cerrito, CA, USA; ‡Department of Population Health and Reproduction, UC Davis School of Veterinary Medicine; †Department of Clinical Sciences, North Carolina State University; ‡Department of Veterinary Clinical Sciences, University of Minnesota

Purpose: To evaluate signalment, clinical signs, treatment, and factors affecting visual prognosis in dogs with uveodermatomatoid syndrome (UDS). Methods: Medical record review was performed at the ophthalmology clinics using the search terms ‘VKH’, ‘Vogt- Koyanagi-Harada’ and ‘uveodermatologic’. The following data were recorded: clinical signs and duration, signalment, biopsy results, medications and dosage, side effects, presence or absence of blindness and glaucoma, and follow-up. Results: Fifty dogs (17 Akita with clinical or biopsy diagnosis and 13 biopsied non-Akitas) with UDS were identified. All dogs weighed 19 kg or greater and 66% were male. The most common ophthalmic clinical signs were conjunctival injection and chemosis (85% retinal detachment (46%), and choroidal degeneration or retinal infarcts (20%). Sex, age, breed, specific oral immunosuppressants, and clinical signs were not statistically significant to affect glaucoma or visual prognosis. Eight dogs had no follow-up, median (range) duration of follow-up was 5 (0.3–59) months in 42 dogs. At presentation, 18/30 (60%) of dogs were diagnosed with glaucoma and 4/30 (13%) of dogs were blind in both eyes. For 32 dogs that were blind at presentation or regained vision during follow-up, 25 (78%) were visual at the last documented examination, and 7 (22%) regained vision during follow-up.

Conclusions: Specific factors affecting visual prognosis could not be identified; however, dogs that present to an ophthalmologist with UDS and some vision can be effectively managed long-term. Supported by NIH grants K08 EY21142 and P30 EY12576.

None.

ABSTRACT NO.: 103

Evaluation of the corneal anesthetic effect and ocular tolerance of 3.5% viscous lidocaine hydrochloride in comparison to 0.5% aqueous proparacaine hydrochloride and 0.5% viscous tetracaine hydrochloride in normal canines
FL Venturi,* D Dees,‡ T Blocker,* J Dodds,* J Brinkis† and R Maden‡

*Eye Care for Animals, USA; †Hemopet, Garden Grove, CA, USA; ‡Department of Biostatistics, University of Missouri, Columbia, MO, USA

Purpose: To compare a viscous ophthalmic lidocaine hydrochloride preparation to two commonly used ophthalmic anesthetic preparations for the degree and duration of corneal anesthesia and the ocular tolerance of the way of corneal anesthesia was obtained. The following data were recorded: clinical, pathogenesis, and variation of burr tips

None.

ABSTRACT NO.: 104

Histological evaluation of corneal wounds experimentally created using diamond burr debridement in canine eyes: comparison of duration of debridement and variation of burr tips
HE Visser,* LB Teixeira† and CD Budelsky‡

*VA Advanced Veterinary Care Center; †Comparative Ocular Pathology Lab, Wisconsin School of Veterinary Medicine, University of Wisconsin-Madison, Madison, WI, USA

Purpose: To histologically evaluate depth and width of corneal wounds after diamond burr debridement in canine eyes at different durations of time using three commercially available burr tips. Methods: Ten clinically normal canine eyes were obtained from five client-owned dogs. The diameter of each wound was measured with a 4 μl of sterile formalin at the limbus to maintain intraocular pressure and normal corneal curvature. Pathological examination was performed by the staff at the Veterinary Medical Center, Iowa State University, in the Department of Pathology. Results: There was no difference between the regrowth of the corneal wound after each burr tip. The eyes were frozen at −20 °C and 0.09 mm. Conclusions: Tetracaine provided a significantly longer duration of corneal anesthesia than proparacaine or lidocaine. Tetracaine and lidocaine were associated with more ocular side effects than proparacaine, although these were mild and transient.

None.

ABSTRACT NO.: 105

Feasibility and use of a novel precision ocular injection device for intracorneal and suprachoroidal injections
KT Walsh, DW Hickingbotham and BC Gilger

Department of Clinical Sciences, College of Veterinary Medicine, North Carolina State University, Raleigh, NC, USA

Purpose: To evaluate a novel precision ocular injection device and determine the needle length necessary for intracorneal and suprachoroidal injections in the pig and horse eye. Methods: Freshly enucleated normal pig and horse eyes were used. Using the novel injection device (model 100-100 al of trypan blue was injected into central cornea or suprachoroidal space at the 12 o'clock position 5 or 10 mm posterior to the limbus for the pig and horse, respectively, using progressively longer needles. The eyes were frozen at −80 °C for 24 h and then sectioned sagittally. Photographs of the corneal injections were taken, and then the internal corneal structures were removed to view and photograph the suprachoroidal space. Length of the needle was correlated to location of injection for each animal species. Results: Ten pig and six horse eyes were injected intracoronally and suprachoroidally. Mund to deep stromal
intrasomal injections were achieved at 650 μm needle length for the pig eyes and 650–750 μm in the horse eyes. Use of a needle length >650 μm caused the dye to leak from the bevel of the needle. For both the pig and horse eyes, 1200 μm was the most consistent needle length for effective injection of dye into the suprachoroidal space. Conclusions: Ocular injections using a precision ocular injection device was feasible and consistent. With appropriate needle lengths known, further evaluation in vivo is warranted. None (KW); P (DH, BG).

ABSTRACT NO.: 106

Objective evaluation of the systemic effects of topically applied 1% atropine in the horse
RF Wehrman, AF Gemensky-Metzler, AE Zibura, AB Stull and HL Chandler
The Ohio State University, Columbus, OH, USA

Purpose: To determine the safety of topical atropine in healthy horses by objectively measuring gastrointestinal motility. Methods: Phase 1: Three horses were randomly assigned to receive topical 1% atropine (Bausch and Lomb, Tampa, FL, USA) OS QID (group A), while three horses were treated with artificial tears OS QID (group B). After 24 h of treatment, horses were administered 200 non-toxic beads via nasogastric intubation and ophthalmic treatments were decreased to BID and continued for a total of 5 days. At every topical administration time point, PLRs, presence of mydriasis, heart rate, and intestinal motility (assessed via fecal bead passage, girth measurements, auscultable gut sounds, fecal weights, clinical signs of abdominal pain) were monitored. Following a 4-week washout period, Phase 2 began in which the protocol was repeated except group A received artificial tears and group B received 1% atropine. Results: No horses experienced signs of colic, ileus or decreased fecal output, during any time point of the study. Heart rate, girth measurements, and auscultable gut sounds remained consistent throughout the study. Complete mydriasis with absence of PLR was seen OS in 5/6 horses within 6 h of the first atropine dose and in 6/6 horses within 12 h of initial atropine administration. One horse experienced complete mydriasis in the untreated OD by day 5 of atropine treatment. Conclusions: Topical application of atropine did not induce signs of ileus in normal horses. Topical administration of atropine in clinically appropriate dosages should be safe in a healthy horse. Funded by the Ohio Animal Health Foundation. None.

ABSTRACT NO.: 107

A ResolvinE1 analog reduces lens epithelial viability and decreases ex vivo posterior capsule opacification
RF Wehrman and HL Chandler
The Ohio State University, Columbus, OH, USA

Purpose: To determine the mechanism by which a novel ResolvinE1 analog reduces lens epithelial cell (LEC) viability and delays posterior capsule opacification (PCO) in vitro. Methods: In vitro models using cultured canine LEC were used to determine if ResolvinE1 (0.0, 0.1, or 0.5% concentrations) altered LEC viability. A scratch was created in confluent cultures and cellular ingrowth was monitored over 24 h. Concurrently, sub-confluent cultures underwent ResolvinE1 treatment; time to achieve confluence was evaluated up to 48 h. Cellular viability was assessed using an LDH assay and a caspase-3/7 enzymatic ELISA was used to determine induction of apoptosis in ResolvinE1 treated LEC. Ex vivo PCO formation was modeled by performing mock cataract surgery on canine cadaver eyes. Lens capsules were subsequently treated with 0.0, 0.1, or 0.5% ResolvinE1 for 7 days prior to histologic evaluation. Results: Both concentrations of ResolvinE1 inhibited restoration of the cellular monolayer following scratch formation and prevented sub-confluent LEC from obtaining confluence. Cellular viability was significantly reduced and caspase-3/7 activity was increased within 24 h of ResolvinE1 treatment. Compared to controls, ex vivo PCO formation was delayed with 7 days of exposure to ResolvinE1. Conclusions: Intracapsular exposure to this novel ResolvinE1 analog reduced PCO formation. Induction of cell death, rather than inhibition of cellular migration, is the likely mechanism of effect. These results warrant further evaluation of this promising compound for treatment of PCO. Supported by Auen Therapeutics. None.

ABSTRACT NO.: 108

Evaluation of vitreous degeneration as a potential predisposing factor for retinal detachment after phacoemulsification in dogs
MC West, GH Sila, SM Aquino and MD Rose
BluePearl Veterinary Partners, Southfield, MI, USA

Purpose: To evaluate vitreous degeneration as a potential predisposing factor for retinal detachment following phacoemulsification surgery in dogs. Methods: Records of 70 dogs (111 eyes) that had preoperative ocular ultrasound and phacoemulsification between September 28, 2006 and May 1, 2014 at a private practice were reviewed. Ultrasound images were reviewed by two observers independently and vitreous echogenicity was graded based on a previously established grading scheme. The following factors were compared between eyes with and without retinal detachment: signalment, operated eye, presence of diabetes mellitus, stage of cataract, presence of lens-induced uveitis, preoperative ocular hypertension, cataract stage of cataract, presence of lens-induced uveitis, preoperative ocular hypertension, preoperative anterior vitreous presentation, preoperative or intraoperative lens instability, operating surgeon, preoperative or concurrent retinopexy, posterior or equatorial capsular tears, radial tears, phacoemulsification time, use of vitrectomy, placement of an artificial lens, and brand and type of artificial lens. Follow up time was recorded. Presence and time from surgery to onset of postoperative complications including blindness, retinal detachment, glaucoma and endophthalmitis were recorded. Retinal detachment was diagnosed based on observation via indirect ophthalmoscopy, ocular ultrasound, or based on supportive findings such as diffuse hyphema. Results: There was no statistically significant correlation between vitreous degeneration and postoperative retinal detachment. There was no statistically significant correlation between postoperative retinal detachment and any evaluated factors. Retinal detachment was confirmed in 17 eyes (6.1%). Vitreous degeneration was observed via ultrasound by at least one observer in 77 eyes (69.17%). Conclusions: Ultrasonically identifiable vitreous degeneration does not correlate with increased risk of retinal detachment following phacoemulsification. None.