ABSTRACT NO.: 01
Diode laser therapy of pigmented iris lesions in young dogs
I Allgower,* C Jandeck† and D Ottenberg‡
*Animal Eye Practice, Berlin, Germany; †Artemis Clinic, Frankfurt, Germany; ‡Department of Ophthalmology, Charité – Universitätsmedizin Berlin, Campus Benjamin Franklin, Humboldt-University Berlin

Purpose: To evaluate clinical results of diode laser therapy applied in seven dogs under 15 months of age for rapidly enlarging pigmented iris lesions. Methods: All dogs underwent a complete ophthalmologic examination prior to therapy including gonioscopy. The laser therapy was carried out under sedation via a laser indirect ophthalmoscope through a 20 diopter lens. The energy was applied starting with 200 mW increasing to effect over time until shrinkage of the iris lesion was noted. Postoperative therapy included topical atropine 0.5% immediately after the laser application and topical prednisolone acetate 1% TID for three weeks. Results: Case records were complete and the follow up time was over 3 years. Results: The breeds included Weimaraner (1) and Labrador (1), German Shepherd (2), and mixed (1). The age at first laser therapy was 2.5–15 months (mean 9.07 months). The energy applied ranged from 2100 to 1000 mW continuous laser mode for 30–90 seconds. All eyes showed side effects, but none of these side effects were noted as a slight discoloration of the cornea. Conclusions: Side effects of the therapy were minor and no serious adverse effects. The energy delivered was markedly lower than reported previously.

ABSTRACT NO.: 02
Hypocalcemic cataract
T Azoulay
Clinique Vétérinaire des Halles, Strasbourg, France

Purpose: A case of a hypocalcemic cataract with a 3 years follow up is characterized in a 6½ years old cross bred dog. Methods: A dog is presented with recurring seizures and muscle tremors. The owner is reporting episodes of stiff gait, behavioral change and gastrointestinal discomfort. A marked hypocalcemia is identified. An ophthalmologic exam is conducted to complete the physical exam: both eyes are showing a symmetric characteristic cataract with cuneating lamellar cortical opacities. The vision behavior is not impaired and the examination of the fundus is normal. The dog is successfully treated for acute hypocalcemia and sent home with oral vitamin D and calcium carbonate without recurrence of episodes during a period of 3 years. Results: The last examination is showing little progression of the cataract. The dog is still visually. Conclusion: The normalization of blood calcium in a hypocalcemic patient prevents from worsening the initial cataract.

ABSTRACT NO.: 03
Serum VEGF concentration in dogs diagnosed with chronic superficial keratitis
I Balicki and A Sobczynska-Rak
Department and Clinic of Animal Surgery, Faculty of Veterinary Medicine, University of Life Sciences in Lublin, Poland

Purpose: To measure the vascular endothelial growth factor (VEGF) levels in dogs diagnosed with chronic superficial keratitis (CSK). Methods: The study was performed on 25 German shepherds diagnosed with CSK. The VEGF levels were determined in blood serum using commercially available enzyme-linked immunosorbent assay – ELISA tests (R&D Systems). The test group of sick German shepherds was subdivided into two subgroups, based on the area of corneal neovascularisation. The first subgroup comprised dogs with neovascularisation observed in 1–2 quadrants of the right and left cornea, the second subgroup – in 3–4 quadrants. The patient is monitored during a period of 15 months of age for rapidly enlarging pigmented iris lesions.

ABSTRACT NO.: 04
Selection of efficient promoters for gene therapy targeting rods in the canine retina
WA Beltran,* SL Boye,† SE Boye,† VA Chihood,+ AS Lewin,+ WW Hauswirth+ and GD Aguirre*†
*Section of Ophthalmology, University of Pennsylvania, School of Veterinary Medicine, Philadelphia, PA, USA; †Department of Ophthalmology, University of Florida, Gainesville, FL, USA; ‡Department of Molecular Genetics and Microbiology, University of Florida, Gainesville, FL, USA

Purpose: A prerequisite for using corrective gene therapy to treat humans and dogs with inherited retinal degenerative diseases that affect primarily rods is to develop viral vectors that target specifically this population of photoreceptors, and use a rod-specific promoter to drive transgene expression. In this study we compared the effectiveness and cell-specificity of three promoters (hGRK1, mOP and CBA) in driving the expression of GFP in rods when packaged in a PAX7/2 vector, and delivered via subretinal injection to the canine eye. Methods: Retinas injected with different concentrations of the three viral vector constructs were processed for conventional histology and immunohistochemistry to assess location and intensity of GFP expression, as well as potential pathological alterations. Results: Photoreceptor specific promoters (mOP85, hGRK1) targeted robust GFP expression to rods, while the ubiquitously expressed CBA promoter led to transepithelial expression in the retinal pigment epithelium, rods, cones and rare Müller, horizontal and ganglion cells. Some degree of inflammation was observed in mice treated with mOP85 and hGRK1 constructs. In the CBA promoter group, only a minor inflammatory response was observed. Conclusions: CBA promoters were more effective in transducing rods, while mOP85 and hGRK1 promoters displayed comparable transduction efficiency in all retinal cell types.

ABSTRACT NO.: 05
Detection of Encephalitozoon cuniculi in the lens of cats
P Bens,* J Csoka,‡ A Fuchs-Baumgartinger,† I Schwendewen,* T Tichy‡ and B Nell*
*Department for Companion Animals and Horses, Veterinary University Vienna, Austria; †Department of Pathobiology, Veterinary University Vienna, Austria; ‡Department of Natural Sciences, Veterinary University Vienna, Austria

Purpose: To identify Encephalitozoon cuniculi (E. cuniculi) as a possible causative agent for cataracts in cats. Methods: From April 2008 to April 2010, a median age of 8.8 months and 4.4 years were included in the study. 6/8 cats had bilateral cataracts. 9/14 eyes showed the typical anterior cortical cataract and 5/14 eyes a totally mature cataract. All 6 cats had anterior uveitis with keratic precipitates. Creatinine was slightly elevated in 2/8 cats. All cats had a positive antibody titer (1:80–1:10000) for E. cuniculi. Encephalitozoon cuniculi DNA (strain II) was detected by PCR and sequencing in 14/14 lenses and in 8/14 aqueous samples. Only three tentative positive results were found on cyto logic examination. Spores were detected in 12/14 lens epithelial cells with histopathologic stainings. Only 2/14 phacoemulsified healthy cats showed a positive antibody titer for E. cuniculi. Conclusion: E. cuniculi (strain II) is a cause of focal anterior cortical cataract and anterior uveitis in cats.

ABSTRACT NO.: 06
Advanced imaging studies of ocular anatomy in chinchillas
A Boykova, I Nikitina and N Churina

“Oculus” – Center of ophthalmology, St. Petersburg, Russia

Purpose: The aim of this study was to study the intracranial anatomy of the chinchilla eye using advanced imaging techniques. Methods: The eyes of 10 chinchillas were studied. B-mode ultrasonography (Tomey Corporation, Japan) was used to measure intracranial dimensions. OCT (Visante, CarlZeiss, Germany) was used to study the cornea and iris/corneal angle. Retinal and retinal vessels. Results: Median age of the animals was 3.5 months (range 2–5 months). All eyes showed significantly higher intracranial pressure than that of corresponding normal eyes. The optic nerve head showed a slightly elliptical eye, with a very thin cornea and shallow anterior chamber. As in other species, ECE decreases with age. None

ABSTRACT NO.: 07
Results of ocular examination in 66 chinchillas
A Boykova, I Nikitina and N Churina

“Oculus” – Center of ophthalmology, St. Petersburg, Russia

Purpose: The aim of this study was to record opthalmic findings, and to determine baseline tear production (Schirmer Tear Test I, STT) and intraocular pressure (IOP) in a large population of chinchillas. Methods: Forty-five chinchillas under general anaesthesia underwent a complete ophthalmic examination. Tonometry (TonoPen Vet) was conducted before, and 60 min after, application of topical tropicamide. Blood glucose levels were measured with the intent of determining if they play a role in cataractogenesis. Results: Study population included 29 females and 37 males. Mean ± SD STT age was 2.7 ± 1.2 years (range 7 months–8 years, median 3.8 years). The axial length of the eye was 10.7 ± 0.5 mm, and the equatorial axis was 9.6 ± 0.4 mm in length. Mean corneal thickness was 232 ± 29 μm. Anterior chamber depth was 1.67 ± 0.4 mm. Age had no significant effect on any of these measurements, but was weakly negatively correlated with corneal endothelial cell count (ECC). Mean ECC was 2724 ± 62 cells/μm² in animals <1 year of age, and 1719 ± 94 cells/μm² in animals >1 year of age (P<0.05). Conclusions: Chinchillas have a slightly elliptical eye, with a very thin cornea and shallow anterior chamber. As in other species, ECE decreases with age. None

© 2010 American College of Veterinary Ophthalmologists
after installation of topical tropicamide mean IOP increased to 17.4 ± 4.2 mmHg (P < 0.01, paired Student’s T-test). Ophthalmic findings included eyelash disorders (n = 6), conjunctivitis (n = 2), corneal ulcer (n = 2), corneal drythropy (n = 1), corneal scarring (n = 1), glaucoma (n = 4), hypopyon (n = 5) and cataract (n = 5). Mean blood glucose levels were 7.3 ± 1 mU/mL in non cataractous animals and 10.7 ± 1.5 mU/mL in cataractous animals (P < 0.01). Conclusions: Our STT results are similar to those reported by Mauler et al at the 2009 ECVO meeting. Despite these values, the incidence of conjunctival and corneal disease is quite low, and additional mechanisms of tear film stability and ocular surface immunity in chinchillas appear to be associated with better adherence of the contact lenses. Differences may be due to the different tonometers used. Cataracts in chinchillas appear to be associated with elevated glucose levels. None.

ABSTRACT NO.: 08

Incidence of retinal detachment in cataractous Bichon Frise dogs in the UK

B K Braus,* C Heinrich, H Featherstone and P Renwick

Wellesley Referral Service, Highlands Road, Shirley Seldon West Midlands, B90 4NH, UK

Purpose: To evaluate whether the UK Bichon Frise dog population is at the same risk of developing retinal detachment (RD) as associated with cataracts lesionschanges and following phacoemulsification, as previously published US reports suggest.

Methods: Medical records of cataractous Bichon Frise dogs in which the retina could be assessed for the presence of RD either by ophthalmoscopy or ultrasonography were reviewed. The incidence of RD post phacoemulsification was also reviewed. Dogs with diabetic and non diabetic cataracts were included in the study.

Results: Forty-five eyes of 27 Bichon Frise dogs had cataracts. Cataracts were classified as incipient (n = 5), immature (n = 5) or hypermature (n = 5) and 19/35 were bilateral.

Retinal detachment was not detected using ophthalmoscopy or ultrasonography in any of the 45 eyes at initial presentation as warned. Phacoemulsification was performed on 34 eyes (20 dogs), 17/34 were treated for clinically evident lens induced uveitis before the procedure. Postoperative RD was detected ultrasonographically followed in 30/34 eyes; automated anterior vitrectomy was performed in 3/34 eyes. The mean follow up time was 16.6 months (range 1.5–73 months) and 31/34 were visual at the last examination. Thirty-six days (range 1–112 days) after phacoemulsification, RD rendered retinal detachment on OCT images of 19/30 eyes (n = 2) and secondary glaucoma (n = 1). There was no evidence of retinal detachment following phacoemulsification of any of the 14 eyes.

Conclusions: This study suggests that Bichon Frise dogs in the UK do not appear to have a predisposition for RD associated with cataracts and following cataract surgery. Prophylactic random transscleral laser retinopexy or transscleral cryopexy in these cases should not be indicated for Bichon Frise dogs in the UK.

ABSTRACT NO.: 09

The use of contrast enhanced ultrasonography to assess the patency of a persistent hyaloid artery in two dogs with multiple ocular defects

C Busse, A Holloway, JH Labrède and D Donaldson

Centre for Small Animal Studies, Animal Health Trust, Newmarket, UK

Purpose: To describe a novel diagnostic technique to assess the patency of a persistent hyaloid artery (PHA) in two dogs.

Methods: A 10 month old Labrador Retriever and 5 month old Cane Corso were presented with unilateral multiple ocular defects including microphthalmia, lens opacities. Ocular ultrasound of both affected eyes revealed a hyperchoic line extending from the posterior pole of the lens to the optic nerve head, consistent with a PHA. Patency of the PHA was assessed by: 1) direct ophthalmoscopy and indirect ophthalmoscopy (Heine Omega 2C (Austria)); 2) high-resolution ultrasound (Sonosite Titan 1800) and colour Doppler ultrasound; and 3) angiography (Heine Omega 2C (Austria)).

Results: Forty-five eyes of 27 Bichon Frise dogs had cataracts. Cataracts were classified as incipient (n = 5), immature (n = 5) or hypermature (n = 5) and 19/35 were bilateral.

Retinal detachment was not detected using ophthalmoscopy or ultrasonography in any of the 45 eyes at initial presentation as warned. Phacoemulsification was performed on 34 eyes (20 dogs), 17/34 were treated for clinically evident lens induced uveitis before the procedure. Postoperative RD was detected ultrasonographically followed in 30/34 eyes; automated anterior vitrectomy was performed in 3/34 eyes. The mean follow up time was 16.6 months (range 1.5–73 months) and 31/34 were visual at the last examination. Thirty-six days (range 1–112 days) after phacoemulsification, RD rendered retinal detachment on OCT images of 19/30 eyes (n = 2) and secondary glaucoma (n = 1). There was no evidence of retinal detachment following phacoemulsification of any of the 14 eyes.

Conclusions: This study suggests that Bichon Frise dogs in the UK do not appear to have a predisposition for RD associated with cataracts and following cataract surgery. Prophylactic random transscleral laser retinopexy or transscleral cryopexy in these cases should not be indicated for Bichon Frise dogs in the UK.

ABSTRACT NO.: 10

Bilateral phacoemulsification and IOL implantation for the treatment of bilateral congenital cataract in a young lioness

N D’Anna,* A Guandalini,† M Capasso,‡ M Nocerino§ and A Guerrieri,‡

*Clinica Veterinaria Roma Sud, Roma, Italy; †Centro Veterinario Specializzato, Roma, Italy; ‡Via Dante,† Prattamaggiore, Napoli, Italy; §Clinica Veterinaria Villa Felice, Pozzuoli, Napoli, Italy

Purpose: To describe a case of bilateral congenital cataract in a lioness treated with bilateral phacoemulsification and intraocular lens (IOL) implantation for this lioness. 2 months post surgery the patient, seemed to have a normal vision and her overall behavior improved dramatically.

ABSTRACT NO.: 11

Retinal hemorrhage and/or retinal detachment in cats with systemic hypertension

J Deutsch,** F Zeugswetter,*, A Tichy,† KM Hittmair,** M Markovic,* and B Nell†

*Department for Companion Animals and Horses, University of Veterinary Medicine Vienna, Austria; †Department of Natural Sciences, University of Veterinary Medicine Vienna, Austria

Purpose: To determine if ocular lesions caused by systemic hypertension may also be correlated to a primary disease, its duration, and the age of the cats.

Methods: Fifty-seven cats were presented with visual impairment and ocular hemorrhage and/or retinal detachment.

Diagnosis included a clinical and an ophthalmologic examination, indirect blood pressure measurement (using a Doppler oculometric device), full blood work (including serum thyroxine and aldosterone), ultrasound examination, abdominal ultrasonography, ultrasonography of the thyroid, electrocardiography, and a low-dose-dexamethasone test if indicated. Twenty-seven (27/57) cats were presented within 1–112 days after recognizing clinical signs. The most common diagnosis was chronic renal failure (n = 15; p < 5), primary hypertension (n = 5), Coon Syndrom (n = 2), hyperadrenocorticism (n = 1) and mepregrolactate intoxication (n = 1). No correlation was found between ocular lesions and the clinical diagnosis of the cat’s age and length of disease. Improved vision was noted in 10 of 113 eyes and vision was restored to seven eyes by the first follow-up examination. Conclusions: Most cats were presented at a late stage of the disease. No correlation between ocular lesions and a primary disease could be detected. Support: None.

ABSTRACT NO.: 12

Incidence of chorioretinitis of different etiologies in dogs

A Doniñás, A Muste and M Muste

University of Agricultural Sciences and Veterinary Medicine, Calca Mánatur 3-5 Cluj-Napoca, Romania, Switzerland

Purpose: To investigate chorioretinitis as associated with various diseases in dogs. Materials and methods: 12 adult dogs of different breeds, age and gender were examined and distributed in four groups: A – clinically healthy (n = 15), B – showing septic processes (n = 7), viral gangrenosis – 1, phlegmon – 1, suppurrative oitis – three, suppurative conjunctivitis, group C – urinary lithiasis, n = 5, and group D, respiratory diseases, n = 7. The fundus examinations were performed by indirect ophthalmoscopy and hypaque 2%. In the first group, three of the animals showed acute chorioretinitis, with edematous lesions of dark brown tum lucidum. The areas with chorioretinitis were dark-brown in color and of various shapes and sizes. The lesions were characterized by a mottled and hypofluorescent areas. In the second group, nine of the animals showed acute chorioretinitis, showing an organized inflammatory process, surrounded by retinal hemorrhages, and typical reflectivity of the tapetum lucidum. The areas with chorioretinitis were dark-brown in color and of various shapes and sizes. The lesions were characterized by a mottled and hypofluorescent areas. In the third group, three of the animals showed acute chorioretinitis, with edematous lesions of dark grey tum lucidum. One of the dogs presented bilateral, asymmetrical lesions. In one of the subjects retinal hemorrhages were subtle. Acute chorioretinitis were found in four animals from group 4, with grey or white edema by different size and blurred borders. Conclusions: The results indicated that in dogs showing suppurative processes, chorioretinitis was present in its chronic form, as an organized inflammation, while in other diseases, the process evolved in its acute edematous form.

ABSTRACT NO.: 13

Diagnosis of asteroid hyalosis in dogs

A Doniñás, A Muse and M Muse

University of Agricultural Sciences and Veterinary Medicine, Calca Mánatur 3-5 Cluj-Napoca, Romania, Switzerland

Purpose: The study aimed to reveal the incidence of asteroid hyalosis in a randomly selected canine population. Material and method: A total of 114 adult dogs, of different breeds, ages and both genders, subject of medical examination for vaccinations and/or anti parasitic treatments. The presence or absence of asteroid hyalosis was investigated by use of an indirect ophthalmoscopy Heine Omega 2C (Austria). Results: Asteroid hyalosis was present in 4 of 114 dogs (3.5%). None of the female dogs showed blinded asteroid hyalosis. Asteroid hyalosis was positively diagnosed by the presence of shiny particles with substantial or mild reflection in the visual field. The reflectivity of the particles depended on the light beam. The particles were unevenly scattered in the vitreous humor, their movements being independent of eye movements. n = 2 with blood vessels showed signs of particle aggregation. The repeated ophthalmoscopy at random intervals did not show any changes in fundus general behavior of the animals. Conclusions: The results indicated a very low incidence of asteroid hyalosis in the examined canine population and the accidental character of the diagnosis. During the 2 year period of study, the asteroid hyalosis was not associated with visual changes and did not influence the general behavior of the animals.

© 2010 American College of Veterinary Ophthalmologists, Veterinary Ophthalmology, 14, 1–10.
ABSTRACT NO.: 14
Diagnostic imaging features of cystic lesions associated with the lacrimal system in five dogs
R Drees,* SA Pot,† E Bentley* and T Schwarz‡
*University of Wisconsin-Madison, †NTH Department of Surgical Sciences, 2015 Linden Dr, Madison, WI 53706, USA; ‡Department for Pathobiology, Veterinary Anatomy, Vetmeduni Vienna, Vienna, Austria; Zürich, Winterthurstrasse 260, CH-8057 Zürich, Switzerland; ‡Department of Veterinary Clinical Studies, Royal (Dick) School of Veterinary Studies, The University of Edinburgh, Easter Bush Veterinary Centre, Roslin, EH25 9RG, UK
Purpose: Cystic lesions associated with the lacrimal system arise from the lacrimal canaliculi (canalicular cysts) or nasolacrimal duct (dacyrocyst) and need to be differentiated from other periorbital cystic lesions such as periorbital epidermoid cysts, epithelial cysts of the maxillary bone and other cysts of the frontal sinus and nasal cavity. Knowledge of the diagnostic imaging features is essential in diagnosing this rare condition. Methods: Five dogs underwent diagnostic imaging (radiography, computed tomography or magnetic resonance tomography) of the head and a cystic lesion associated with the lacrimal system was diagnosed. Results: Radiographically, lesions were characterized as well demarcated round radio densities in the infraorbital area. Evaluation of CT and MRI images showed that lesions were located along the path of the lacrimal duct. The maxillary bone was thinned or partially absent medially and laterally to the lesion. There was no contrast enhancement of the cyst lumen in any case; in two cases mild enhancement of the cyst margin was noted. Conclusions: Lesions characterized by cystic radiolucencies in the infraorbital area should raise the suspicion of lacrimal duct cysts. MRI imaging is essential to determine the extent and association with the lacrimal system. Anatomical location remains the most important consideration for differential diagnosis of dacrocysts and canaliculcys. None.

ABSTRACT NO.: 15
The pathology of primary canine glaucoma with emphasis on early changes
RR Dubielzig
School of Veterinary Medicine, University of Wisconsin, Madison, WI, USA
Purpose: The study points out aspects of the morphologic changes seen in canine glaucoma associated with gonioscopy (primary glaucoma) with an emphasis on the changes seen in the first few days following the recognition of eye disease by the client. Methods: Case material from the Comparative Ocular Pathology Laboratory of Wisconsin is used. The collection contains 19,842 canine submissions with 1,654 cases of primary glaucoma. All cases are stained with hematoxylin and eosin and stained with Alcian Blue PAS or immunohistochemistry for GFAP, MHC class II and Neurofilament. Results: Compared to normal eyes, the second eye from a dog with glaucoma diagnosed in the contralateral eye but not yet in the sampled eye, the retina is edematous and glycogen is absent in the ganglion layer. Expression of MHC class II is seen in the ganglion layer. In addition, an expression of MHC class II staining phagocytic cells in the retina. In the first 48 h after the owner recognizes the red eye, there is a sharp loss of ganglion cells by a process of necrosis followed in 2–5 days by profound apoptosis and full-thickness retinal atrophy. Furthermore the optic nerve head shows acute necrosis followed by macular atrophy by about 3 days. Conclusions: These findings support the idea that there is a substantial and continuous retinal and optic nerve cell death that happens without the owner noticing, followed by a catastrophic event characterized by red eye, and ganglion cell necrosis. This early stage is followed by full thickness retinal apoptosis and optic nerve head atrophy. By 7 days after the owner recognizes a red eye, there is already end-stage retinal atrophy and optic nerve cupping.

ABSTRACT NO.: 16
Aqueous humor fibrinolytic activity in dogs with ocular disease
N Escañilla,† M Leiva,† MT Peña† and L Monreal†
†Servicio de Oftalmología Veterinaria, Departamento de Medicina i Cirugía Animals, Facultat de Veterinària, Universitat Autònoma de Barcelona, Barcelona, Spain; †Departamento de Medicina i Cirugía Animals, Facultat de Veterinària, Universitat Autònoma de Barcelona, Barcelona, Spain
Purpose: To investigate fibrinolytic activity in aqueous humor of healthy dogs with intraocular disease compared to dogs with systemic disease with and without ocular involvement. Animals: A total of 36 dogs were included in the study. Methods: Prospective observational clinical study. Bilateral aqueous humor and blood samples were simultaneously collected during intraocular surgery (16 dogs) or immediately after euthanasia for causes non related to the study (20 dogs). The sampled dogs were evaluated for ocular and systemic signs, laboratory findings and ancillary tests. According to the ocular and systemic diagnoses, animals were divided into three groups: healthy dogs with intraocular disease (nine dogs, 18 eyes), systemic and ocular signs suggestive of multiple chronic diseases (MGD) in humans (atrophy of the acini, dilatation, hyperkeratinization and retention of secretion in the meibomian glands) in 17/30, 56.7%. There was no age- or gender-relation. Results: Aqueous humor fibrinolytic activity in dogs with ocular disease (median 14.6 ng/mL; range 0–122.5 ng/mL) was significantly higher than in the other two groups (median 14.6 ng/mL; range 0–122.5 ng/mL) with 55 ng/mL; range 0–250 ng/mL). Conclusions: Fibrinolytic activity in aqueous humor of eyes with MGD (17/30, 56.7%). There was no age- or gender-relation. The purpose of this study was to explore the lipid species of meibum in healthy canine and to compare it with human one. Methods: Meibum specimens from dogs of different breeds were studied (1–9 years old, both genders, n = 10). Ophthalmic evaluation of the dogs using slit lamp biomicroscopy, interferometry, meibometry, Schirmer tear test and coagulation screening tests were assessed. Results: Comparison of coagulation screening tests revealed a double RPE layer (native and graft) firmly attached, both layers demonstrating normal chemical ionization HPLC-MSn and lipid mapping was performed by using a shotgun lipidomic approach. Results: An average sample size was 100–200 μg meibum per animal. The majority of meibum lipid content was very long chain fatty acids (C26:0, C26:1, C26:2 and C28:0) and sterols (O-acyl-omega-hydroxy fatty acids. Lipidomic analysis showed that the major individual lipid species found in canine meibum were structurally close to the compounds found in human meibum very long chain fatty acids and sterols with long C18 to extremely long C23. However, the canine samples displayed relatively high inter-breed variability in the ratio of detected lipid species, especially a generally a higher ratio of αs and triesters compared to the rest of the lipid pool. Conclusions: These preliminary results suggest that canine meibum closely resembles the human one, but there are some quantitative differences between the two. Further studies are hazardous and structural and quantitative studies of MGD are warranted. Support: The work of IAB was supported in part by an unrestricted grant from the Research to Prevent Blindness, Inc. (USA). None.

ABSTRACT NO.: 19
Retinal Pigment Epithelium (RPE) graft autotransplantation in the pig
F Gómez-Bueno,* JM Gonzalo-Orden,* M Regueiro-Purriños,* M Parrado,* D Hileto,* E Rodriguez de la Rua* and JC Pastor,*†* IBIOMED, University of León, Spain; †IBIOMED, University of León, Spain
Purpose: RPE transplantation is considered a hopeful treatment for age-related macular degeneration (AMD). The purpose of this study is to improve a RPE autotransplantation technique, previously described by Van Meurs, in pig eyes, in order to use it as a control group in future stem cells transplantation studies. Methods: Eleven pigs (11 eyes) were operated on. In brief, a 5 × 5 mm G 4 pars plana vitrectomy was performed. The donor RPE graft was obtained from the donor nasal retina by bimanual technique using vitreous forceps and scissors. The graft was centered in the retinal sub-retinal using binocular technique using vitreous forceps and scissors. RPE graft was then placed under the central retina using a Van Meurs’ forces through a retinotomized area, where silicone oil was filled. The pig eyes were explanted at 1 month. Histological and immunohistochemical studies were performed after surgery and 15 days and 1 month follow up. Donor and transplant sections were evaluated in H&E and PAS. Immunohistochemistry using antibodies against GFAP and CRALBP were also performed. Results: The graft remained in place after follow up, but a proliferative vitreoretinopathy (PVR) developed. Histologic evaluation revealed severe RPE layer firm adhesion, degeneration of preserved cell polarity and uniform pigment pattern. Immunostaining revealed reactive © 2010 American College of Veterinary Ophthalmologists, Veterinary Ophthalmology, 14, 1–10
glosses in the PVR regions and a double functional RPE CRALBP+ at 15 days after surgery.

Conclusions: RPE transplantation in porcine eyes shows promising results and remarkable potential, but the development of PVR is a major problem. However, this study serve to show histologic evidence of cells attachment between recipient bed and RPE graft, preserving Bruch's membrane, cell polarity and pigment distribution. Supported by Cajías de Ahorros de Castilla y León. None.

ABSTRACT NO.: 20
Conjunctival impression cytology from healthy cats
PD Galera, LM Higawa and VS Mustafa
College of Veterinary Medicine, University of Brasilia Brazil

Purpose: The aim of this study was to standardize the use of cellulose strips for conjunctival impression cytology from healthy cats to recognize and quantify the conjunctival bulbar cells from them and pattern recognition of this technique. Methods: Thirty-two samples from 16 FIV and FeLV negative cats were obtained by using impression cytography with Millipore filter with a pore size of 0.45 μm. Anesthetic drops were used to facilitate sampling. The strips were left for 5 sec on the bulbar conjunctiva and removed with a peeling motion. The samples were fixed with 95% ethyl alcohol between two to 48 h, stained with periodic acid-Schiff (with some modifications) and with hematoxylin. In each sample 300 cells were quantified and characterized on light microscopy. Results: Keratinized epithelial intermediate and superficial cells were observed in all the samples in different amounts. The same was observed with basal epithelial cells, which were detected in 84% from the samples. Goblet cells were identified in 47% of all samples, leukocytes in 25%, metaplasia in 15% and lymphocytes in 12.5% of them. Conclusions: Conjunctival impression cytology is feasible to perform; however, the variability of cells makes a standardized morphologic characterization difficult and additional studies are needed. None.

ABSTRACT NO.: 21
Lacrimal function and intraocular pressure evaluation in retrobulbar anasthesia with 0.5% bupivacaine or 0.75% ropivacaine in dogs
PD Vaz, ANG Paciﬁeren‡ and LB Cardozo†
†College of Veterinary Medicine, University of Brasilia, Brazil; ‡College of Medicine, University of Sao Paulo, Brazil

Purpose: To compare the effects on intraocular pressure and tear production in clinically healthy dogs (during the operative period) in the peri operative period after retrobulbar block with either 0.75% ropivacaine or 0.5% bupivacaine. Methods: Fifteen male adult dogs were randomly assigned into three groups with five animals each: C- control group, received saline solution; B – administration of 0.5% bupivacaine and R – administration of 0.75% ropivacaine. All groups received retrobulbar injection. Animals were sedated with a combination of intramuscular 0.2% acepromazine (0.05 mg/kg) and 5% tramadol (2 mg/kg) and anesthesia. Intra-ocular pressure (IOP) was measured using Tonopen (C211, 1–10 /C211) ·2010 American College of Veterinary Ophthalmologists, Inc.) after corneal desensitization with anesthetic eye-drop (proxaminatexm). Physiologic parameters were recorded in seven distinct times: before block (T0), 10 min after anesthetization (T1), 20 min after anesthetization (T2), 2 (T3), 4 (T4) and 24 h after block (T5). Schirmer tear test (STT) was performed in T0, T1, T5 and T6. Data were evaluated by Duncans Multiple Range Test, through GLM (General Linear Model) and a P-value < 0.05 was considered statistically significant. Results: Mean values of all seven moments were compared, showing a decrease in IOP 10 min after sedation (T1), but showed no significant difference between groups B and R. STT showed a decrease in all groups after the block, with the highest group R. Conclusions: retrobulbar block with 0.75% ropivacaine was considered more adequate for this technique as it showed a down-regulation of the corneal response and decrease IOP more impressed histopathologically, including thyineopaedia, in addition, motor blockade had short duration, allowing blinking and ocular moving faster than the other two groups, resulting in minor influence in STT values. Supported by CNPq grants. None.

ABSTRACT NO.: 22
Investigations on conjunctival goblet cells and on the characteristics of glands associated with the eye in the guinea pig
K Gasser,∗A Fuchs-Baumgartinger,† A Tichy‡ and B Nell∗
∗Clinic for Surgery, Dentistry and Ophthalmology, University of Veterinary Medicine Vienna; †Institute for Pathology and Forensic veterinary medicine, University of Veterinary Medicine, Vienna, Austria; ‡Platform Biostatistics, University of Veterinary Medicine, Vienna, Austria

Purpose: To investigate the distribution and density of conjunctival goblet cells (GC) and to analyze the glands associated with the eye in the guinea pig using semiquantitatively and morphologically. Methods: A total of 24 guinea pigs were used. Meibomian gland openings were counted by biomicroscopy; conjunctiva, eyelids and glands were embedded in glycolmethacrylate and paraffin, sections were stained with hematoxylin and eosin (HE), periodic acid Schiff's reaction (PAS) and Alcian blue (AB), and analyzed by light microscopy. Results: Highest GC densities were found in the bulbar conjunctival area with 25.7 ± 2.3 in the upper lid and 25.7 ± 2.3 in the lower lid. Difference between upper and lower lid was significant (P = 0.037). There are two big sebaceous glands lying subconjunctival in the temporal canthus of each eye. The Harderian gland in the guinea pig is almost the size of the meibomian gland showed these three gland cell types and specific staining patterns when treated with PAS and AB. Conclusions: GC densities are lower in dogs and horses, while corresponding values in GC in the guinea pig could be also detected in the film-stained GC sections of the conjunctival glands and thebulbar conjunctival epithelium. The large hardenarian gland and the special sebaceous glands described here, which have not yet been described in the English literature, both produce lipids and might contribute to the lipid layer of the tear film, thus reducing evaporation of the aqueous layer and increasing tear film stability. None. (271 Wörter ohne Überschrift)

ABSTRACT NO.: 23
A case of eosinophilic keratitis in a rabbit
P Grinninger,∗ IM Kraijer-Huvet,† WJ Ktsiatsar,† NJ Schoenemaker,‡ GCN Grimski‡ and MH Boeve∗
∗Ophthalmology section, Department of Clinical Sciences of Companion Animals; ‡Division of Zoological Medicine, Department of Pathobiology, Faculty of Veterinary Medicine Utrecht, the Netherlands

Purpose: The purpose of this case report is to describe eosinophilic keratitis in a rabbit. Methods: Complete physical and ophthalmic examination of the rabbit as well as a CT scan of the head were performed. A biopsy of the affected eye was examined and additional Luna staining, after lamellar keratectomy. Results: The physical examination revealed no abnormalities except of the absence of the left eye. The initial ophthalmic examination revealed some mucous ocular discharge, keratitis, a large corneal plaque and nuclear sclerosis. Symptomatic therapy consisting of cycloplegic eye drops, acetylcysteine eye drops and prednisolone eye drops was administered. The CT scan revealed an inflammatory lesion of the left eye with signs of dacryocystitis which could have explained the ocular signs. Due to rapid deterioration indicated by severe blepharitis, purulent ocular discharge, a fluorescein positive corneal ulcer and keratitis, the right eye was enucleated. Conclusions: Lamellar keratectomy was performed 18 days after the first presentation. Histopathological examination and additional Luna staining of the removed eye revealed a chronic eosinophilic keratitis without a known underlying cause. Based on this result discathectomy of 0.1% eye drops was initiated. Improvement was seen rapidly. Conclusion: Eosinophilic keratitis should be considered a differential diagnostic possibility in rabbits with inflammatory lesions of the cornea. None.

ABSTRACT NO.: 24
Repair of a scleral defect with an autogenous fascia lata graft
RA Grondon, C Hardman and RG Stanley
Animal Eye Care, Melbourne, Victoria, Australia

Purpose: To investigate the use of fascia lata as a graft to repair a trauma-induced scleral defect. Methods: Autogenous fascia lata was used to cover a scleral defect created in the left temporal canthus of each eye. The Harderian gland in the guinea pig is almost the size of the meibomian gland showed these three gland cell types and specific staining patterns when treated with PAS and AB. Conclusions: GC densities are lower in dogs and horses, while corresponding values in GC in the guinea pig could be also detected in the film-stained GC sections of the conjunctival glands and thebulbar conjunctival epithelium. The large hardenarian gland and the special sebaceous glands described here, which have not yet been described in the English literature, both produce lipids and might contribute to the lipid layer of the tear film, thus reducing evaporation of the aqueous layer and increasing tear film stability. None. (271 Wörter ohne Überschrift)

ABSTRACT NO.: 25
Color-doppler imaging of suspected ocular and retrobulbar tumors – preliminary results
IC Hoffmann,∗ S Reese‡ and EH Schaefer‡
∗Tierärztliche Praxis für Augenheilkunde, Nuremberg, Germany; ‡Department of Veterinary Ophthalmology, Ludwig Maximilians University, Munich, Germany, †Veterinary Pathology Lab, Munich, Germany

Purpose: To investigate the possibility of using color Doppler imaging (CDI) in diagnosing tumors in dog and cat eyes with suspected masses. The diagnosis made with this imaging modality is in agreement with histologic specimens. Material and methods: A total of 17 dogs and 14 cats with the presumptive diagnosis of an intra- or extracranal tumor from 2000 to 2009 were retrieved for this retrospective study. Only patients with biopsies or histology results were included. A tumor was presumed if a swelling of a mixed echogenity was seen in the normal sonogram. With CDI the area was classified as a-, normo-, hyper- and neovascular. Results: In dogs, most structures, identified as tumors in histopathology, had a hyper- or neovascular appearance. A hypervascular pattern was also observed around non neoplastic lesions. In all structures not be of cancerous origin avascularity was the typical sign. Diffuse iridal melanomas provided the largest number of cases (5/14) in the feline group. Although signifi- cantly enlarged, the scanned iridal sections were normovascular. On the contrary, malignant lymphoma (6/14), like the rest of the other tumors, presented with either a hyper- or neovascular pattern. Conclusions: Although CDI allowed rapid detection of vessels, it has its limitations. Well-vascularised tumours seemed to be easily visualised while also well-vascularised disease structures might cause a diagnostic problem. Magnification of a moving imaging (MRI) should be uti- lized in these cases. Further studies are needed to compare ultrasonic and MRI and to confirm if the results can be transfused to the entire population of canine and feline patients. None.

ABSTRACT NO.: 26
Topical Kinostat™ ameliorates the clinical development and progression of cataracts in dogs with Diabetes Mellitus
PF Kadoor,† TR Webb,‡ ID Brass,§ K Keating,§ and MW Wyman‡
†Therapeutic Vision Inc., Ontario, CA; ‡College of Pharmacy, University of Nebraska Medical Center, Omaha, NE, USA; §All Animal Eye Clinic, Cincinnati, OH, USA; *College of Veterinary Medicine, The Ohio State University, OH, USA

© 2010 American College of Veterinary Ophthalmologists, Veterinary Ophthalmology, 14, 1–10
Purpose: To study spontaneously occurring, slowly progressive rod-cone degeneration (SPRCD) in related Shetland Sheepdogs (Shelties) in Sweden. Methods: Shelties were routinely screened for hereditary eye diseases in a hospital environment. The examination included direct and retroillumination ophthalmoscopy and scanning laser ophthalmoscopy with optical coherence tomography (OCT). Electron microscopy was performed on selected eyes. Results: Ophthalmoscopic examination revealed bilateral, greyish, hyporeflective areas in the peripheral retina with either subretinally located peripheral vessels or slightly attenuated peripheral vessels in 40 related Shelties (17 males, 23 females; aged 2.5–13 years) between 2001 and 2010. The hyporeflective areas were asymmetrically distributed between the eyes. Re-examination of 15 dogs after 6 months to 4 years showed that the ophthalmoscopic changes slowly spread across the central parts of the tapetal fundus, but did not progress to obvious neuroretinal thinning presenting as tapetal hyperreflectivity and retinal vessel changes. ERGs in old dogs clearly show that this is different from prod/PRA. The condition is likely to be inherited given the close kinship between the affected dogs. Support: Financial support was received from Agria Animal Insurance Company.

ABSTRACT NO.: 27

Septic implantation syndrome into the lens: a case report in a black and white ruffled lemur (variegata variegata) C Kafarkin,* J Stewart,† NJ Masters,‡ I Wise,§ C Hartley* and D Donaldson†

*Ophthalmology Department, Clinic of Small Animal Sciences, Animal Health Trust, Nezizmuk, UK; †Pathology Department, Animal Health Trust, Nezizmuk, UK; ‡Stenhammar Animal Group, Kiryat, UK; §Anaesthesia Department, Clinic of Small Animal Sciences, Animal Health Trust, Nezizmuk, UK

Purpose: To present a case of septic implantation syndrome and septic implantation into the lens in a lemur.

Methods: A 12-year-old, female, black and white ruffed lemur was presented with a one-week history of periocular swelling, epiphora, blepharospasm and visual impairment in the left eye. The history could not rule out trauma, particularly of recurrent, aggressive, dominant behaviour within the lemur group. A randomised, prospective, double-masked placebo control pilot study was conducted with 40 dogs newly diagnosed with DM and with no or minimal lens changes. In the study 28 dogs received Kinston± and 12 dogs received placebo. Both agents were administered OU: 1% for 1 year with compliance monitored by owner recorded log sheets. Clinical ophthalmic examinations were performed at the time of enrollment and 1, 2, 3, 6, 9, and 12 months after treatment. Results: After 1 year of treatment, cataract formation was observed by ophthalmic examination with seven dogs developing mature cataracts, two developing cortical opacities and one developing equatorial vacuoles. Significantly less (P = 0.0016) cataract formation was observed in the Kinston± treated group with 13/28 (46%) developing cataracts, 13/28 (46%) showing no evidence of cataract development. Of the Kinston± treated dogs, seven developed anterior equatorial vacuoles, two developed incipient anterior cortical cataracts, and four developed mature cataracts. At HbA1C (46%) of dogs developing cataracts and 15/28 (54%) showing no evidence of cataract development.

Conclusions: The use of Kinston± in the treatment of canine diabetes mellitus has been shown to be effective in reducing cataract formation.
**ABSTRACT NO.: 32**

**Leishmania ssp causing nodular granulomatous episcleritis in dogs**

Leiva M,* Fondevila D,† Naranjo C,* Vitale V† and Peña T†

†Servei d’Oftalmologia Veterinaria, Departament de Medicina i Cirurgia Animals, Facultat de Veterinària, Universitat Autònoma de Barcelona, Barcelona, Spain; †Departament de Medicina i Cirurgia Animals, Facultat de Veterinària, Universitat Autònoma de Barcelona, Barcelona, Spain

**Purpose:** To describe leishmaniosis as an etiology for nodular granulomatous episcleritis (NGE), and to compare the sclerocorneal junction lesions in these cases to those in dogs diagnosed with idiopathic NGE.

**Results:** A 6-year-old male Boxer dog revealed an incidental bilateral focal derangement of the fundus. The lesion was examined for progression and/or change every six months. In addition, the patient was repeatedly investigated by hematology, urin analysis, blood pressure measurement, and retinal examination. At 11 years the dog was euthanized because of renal failure. An autopsy was performed and eyes, kidneys, liver and spleen were investigated by histopathology. The initial ophthalmoscopic feature of the retinal lesion was a bilateral perivascular discoloration in the peripheral tapetum. Over the following years, the light brown discoloration around the vessels progressed to dark brown areas with hyperreflexion. Areas became larger and eventually coalesced. Intraretinal work up showed astigmatism and opticologic signs of chronic nephropathy. No visual impairment resulted during the dogs lifetime. Postmortem histopathology of the bulls showed focal atrophy of all retinal layers and no inflammatory response. Moderate perivascular fibrosis and small focal mineralization were diagnosed. Pathology of the kidneys was consistent with ‘end stage kidney’ showing signs of chronic interstitial nephritis. Liver and spleen were histologically unremarkable. The first author has observed two more Boxers and a cross breed Boxer with similar bilateral and typical ophthalmoscopic findings, two of them having concurrent renal disease. These dogs are still alive or were not available for autopsy after death, respectively.

**Conclusions:** A bilateral retinal change in Boxer dogs is described, that is characterized by a retinal focal derangement presenting with brown discoloration with hyperreflexion. This change is apparently yet undescribed, and is apparently rare, taking into account that the retinal changes by a multifocal to coalescing perivascular brown discoloration with hyperreflexion. This change was highly reproducible. Mean RNFL thickness in adult PCG cats (54.12 ± 2.46 µm) was excluded, while in normal cats only 1.3% of scans were excluded from analysis. Segmental differences in IHC pattern infiltrate were observed. Mycobacterial and fungal organisms were ruled out in all the samples. Immunohistochemistry for Leishmania spp. was positive in eight dogs (8/10, 80%), while Leishmania serology detected the parasite only in seven of these cases (7/8, 87.5%). Ehrlichia serology was negative in all the tested dogs (0/6).

**Purpose:** To describe the first report of a case of apocrine cystadenoma in a Siamese cat.

**Results:** A 6-year-old, intact male, Siamese cat, was presented for the evaluation of a pigmented, palpable mass evolving for 6 months in the right eye. No pain or pruritus has been observed by the owner. Ophthalmic examination revealed a 10 mm diameter, pigmented cutaneous nodule, adjacent to the medial canthus of the lower lid, without involvement of the free lid margin. The lesion was soft, smooth, round, and fluctuant, and the overlying skin was thin, pigmented and alopecic. A fine needle aspiration of the filled nodule was performed, but cytologic examination was not informative. A surgical excision of the mass was carried out. Histologic examination revealed a well-circumscribed multinodular neoplasm. Cysts presented a large central lumen surrounded by multiple glandular structures. The lumen of the cysts was lined by a single layer of cuboidal to prismatic epithelial cells, forming numerous papillary projections. Glandular structures sometimes contained amorphous eosinophilic proteinaceous material. Epithelial cells showed apical blushing; anisocytosis and anisocaryosis were mild. Diagnosis of cystadenoma arising from the palpebral apocrine sweat glands (Moll’s glands) was established. Two months after the initial presentation, the cat presented a recurrence of the cystic benign tumor at the same location. A new surgical excision associated with a topical cryo application was planned. Conclusions: A 1 in 200,000 chance of the first report of an apocrine cystadenoma of the sweat glands of Moll described in the Siamese breed.

**ABSTRACT NO.: 33**

**Perivascular retinal atrophy – case report**

J Linke,* AD Gruber† and L Mecklenburg‡

†Tierärztliche Spezialisten – veterinary speciality practice, Hamburg, Germany; ‡Department of Veterinary Pathology, Freie Universität Berlin, Berlin, Germany; †Veterinary Pathology Consultant, Hamburg, Germany

**Purpose:** Presentation of a presumed retinal vasculopathy in the Boxer. Methods: Ophthalmological examination of a 6-year-old male Boxer dog revealed an incidental bilateral focal derangement of the fundus. The lesion was examined for progression and/or change every six months. In addition, the patient was repeatedly investigated by hematology, urin analysis, blood pressure measurement, and retinal examination. The dog was euthanized at 11 years because of renal failure. An autopsy was performed and eyes, kidneys, liver and spleen were investigated by histopathology. The initial ophthalmoscopic feature of the retinal lesion was a bilateral perivascular discoloration in the peripheral tapetum. Over the following years, the light brown discoloration around the vessels progressed to dark brown areas with hyperreflexion. Areas became larger and eventually coalesced. Intraretinal work up showed astigmatism and opticologic signs of chronic nephropathy. No visual impairment resulted during the dogs lifetime. Postmortem histopathology of the bulls showed focal atrophy of all retinal layers and no inflammatory response. Moderate perivascular fibrosis and small focal mineralization were diagnosed. Pathology of the kidneys was consistent with ‘end stage kidney’ showing signs of chronic interstitial nephritis. Liver and spleen were histologically unremarkable. The first author has observed two more Boxers and a cross breed Boxer with similar bilateral and typical ophthalmoscopic findings, two of them having concurrent renal disease. These dogs are still alive or were not available for autopsy after death, respectively. Conclusions: A bilateral retinal change in Boxer dogs is described, that is characterized by a retinal focal derangement presenting with brown discoloration with hyperreflexion. This change is apparently yet undescribed, and is apparently rare, taking into account that the retinal changes by a multifocal to coalescing perivascular brown discoloration with hyperreflexion. This change was highly reproducible. Mean RNFL thickness in adult PCG cats (54.12 ± 2.46 µm) was excluded, while in normal cats only 1.3% of scans were excluded from analysis. Segmental differences in IHC pattern infiltrate were observed. Mycobacterial and fungal organisms were ruled out in all the samples. Immunohistochemistry for Leishmania spp. was positive in eight dogs (8/10, 80%), while Leishmania serology detected the parasite only in seven of these cases (7/8, 87.5%). Ehrlichia serology was negative in all the tested dogs (0/6).

**Conclusion:** In certain areas, Leishmania spp. should be included in the differential diagnosis for NGE. Immunohistochemistry for Leishmania spp. was positive in eight dogs (8/10, 80%), while Leishmania serology detected the parasite only in seven of these cases (7/8, 87.5%). Ehrlichia serology was negative in all the tested dogs (0/6).
A novel retinal degenerative disease of bengal cats
K 19, D. O. 1, S. O. 2, J. D. O. 3, J. D. O. 4, J. D. O. 5
1College of Veterinary Medicine, University of Missouri-Columbia, MO, USA;
2School of Veterinary Medicine, University of California-Davis, CA, USA;
3Animal Hospital of Malmo, Sweden; 4School of Medicine, University of California-Davis, CA
Purpose: To genetically, clinically, electrophysiologically and morphologically characterize a retinal degeneration of Bengal cats. Methods: 26 (12% ) confirmed cases were part of a large population of domestic cats. Results: Affected cats showed a severe retinal degeneration characterized by degeneration of the rod photoreceptors. The disease is a recessively inherited early onset photoreceptor disorder with a rapid progression, leading to visual impairment in approximately one year. Conclusion: The disease is a rare but important cause of blindness in Bengal cats.

Intravitreal voriconazole for treatment of blastomycotic ocular disease
L. D. T. O. 1, J. D. O. 2, J. D. O. 3, J. D. O. 4
1Islington Animal Clinic, Toronto, ON, Canada
Purpose: To describe clinical signs and treatment of blastomycotic ocular disease in cats and dogs. Methods: 20 cats and 2 dogs were diagnosed with blastomycosis. All-antifungal treatment was implemented in 18/22 cases (82%). Treatment was successful in 13/18 cases (72%). Conclusion: Intravitreal voriconazole is a valuable treatment option for blastomycosis of the eye in cats and dogs.

A novel retinal degenerative disease of bengal cats
K 19, D. O. 1, S. O. 2, J. D. O. 3, J. D. O. 4, J. D. O. 5
1College of Veterinary Medicine, University of Missouri-Columbia, MO, USA;
2School of Veterinary Medicine, University of California-Davis, CA, USA;
3Animal Hospital of Malmo, Sweden; 4School of Medicine, University of California-Davis, CA
Purpose: To genetically, clinically, electrophysiologically and morphologically characterize a retinal degeneration of Bengal cats. Methods: 26 (12% ) confirmed cases were part of a large population of domestic cats. Results: Affected cats showed a severe retinal degeneration characterized by degeneration of the rod photoreceptors. The disease is a recessively inherited early onset photoreceptor disorder with a rapid progression, leading to visual impairment in approximately one year. Conclusion: The disease is a rare but important cause of blindness in Bengal cats.

Intravitreal voriconazole for treatment of blastomycotic ocular disease
L. D. T. O. 1, J. D. O. 2, J. D. O. 3, J. D. O. 4
1Islington Animal Clinic, Toronto, ON, Canada
Purpose: To describe clinical signs and treatment of blastomycotic ocular disease in cats and dogs. Methods: 20 cats and 2 dogs were diagnosed with blastomycosis. All-antifungal treatment was implemented in 18/22 cases (82%). Treatment was successful in 13/18 cases (72%). Conclusion: Intravitreal voriconazole is a valuable treatment option for blastomycosis of the eye in cats and dogs.

A novel retinal degenerative disease of bengal cats
K 19, D. O. 1, S. O. 2, J. D. O. 3, J. D. O. 4, J. D. O. 5
1College of Veterinary Medicine, University of Missouri-Columbia, MO, USA;
2School of Veterinary Medicine, University of California-Davis, CA, USA;
3Animal Hospital of Malmo, Sweden; 4School of Medicine, University of California-Davis, CA
Purpose: To genetically, clinically, electrophysiologically and morphologically characterize a retinal degeneration of Bengal cats. Methods: 26 (12% ) confirmed cases were part of a large population of domestic cats. Results: Affected cats showed a severe retinal degeneration characterized by degeneration of the rod photoreceptors. The disease is a recessively inherited early onset photoreceptor disorder with a rapid progression, leading to visual impairment in approximately one year. Conclusion: The disease is a rare but important cause of blindness in Bengal cats.

Intravitreal voriconazole for treatment of blastomycotic ocular disease
L. D. T. O. 1, J. D. O. 2, J. D. O. 3, J. D. O. 4
1Islington Animal Clinic, Toronto, ON, Canada
Purpose: To describe clinical signs and treatment of blastomycotic ocular disease in cats and dogs. Methods: 20 cats and 2 dogs were diagnosed with blastomycosis. All-antifungal treatment was implemented in 18/22 cases (82%). Treatment was successful in 13/18 cases (72%). Conclusion: Intravitreal voriconazole is a valuable treatment option for blastomycosis of the eye in cats and dogs.

A novel retinal degenerative disease of bengal cats
K 19, D. O. 1, S. O. 2, J. D. O. 3, J. D. O. 4, J. D. O. 5
1College of Veterinary Medicine, University of Missouri-Columbia, MO, USA;
2School of Veterinary Medicine, University of California-Davis, CA, USA;
3Animal Hospital of Malmo, Sweden; 4School of Medicine, University of California-Davis, CA
Purpose: To genetically, clinically, electrophysiologically and morphologically characterize a retinal degeneration of Bengal cats. Methods: 26 (12% ) confirmed cases were part of a large population of domestic cats. Results: Affected cats showed a severe retinal degeneration characterized by degeneration of the rod photoreceptors. The disease is a recessively inherited early onset photoreceptor disorder with a rapid progression, leading to visual impairment in approximately one year. Conclusion: The disease is a rare but important cause of blindness in Bengal cats.

Intravitreal voriconazole for treatment of blastomycotic ocular disease
L. D. T. O. 1, J. D. O. 2, J. D. O. 3, J. D. O. 4
1Islington Animal Clinic, Toronto, ON, Canada
Purpose: To describe clinical signs and treatment of blastomycotic ocular disease in cats and dogs. Methods: 20 cats and 2 dogs were diagnosed with blastomycosis. All-antifungal treatment was implemented in 18/22 cases (82%). Treatment was successful in 13/18 cases (72%). Conclusion: Intravitreal voriconazole is a valuable treatment option for blastomycosis of the eye in cats and dogs.
ABSTRACT NO.: 45

Perilimbal pocket technique for surgical replacement of prolapsed nictitans gland in the dog

JE Premont*, SJ Monclint† and M Grawels‡

*Clinique Vétérinaire Universitaire, Faculté de médecine Vétérinaire, Université de Liège, Belgium; †Rutland House Referrals, St Helens, UK

ABSTRACT NO.: 46

Parotid duct transposition: a retrospective review of 56 dogs (92 eyes) from 1999 to 2009

M Rhodes*, C Heinrich, H Featherstone and P Renwick

*Willows Referral Service, Highlands Road, Shirley, Solihull, West Midlands, B90 4NH, UK

ABSTRACT NO.: 47

Use of combination Cyclosporine/prednisolone therapy to treat Uveodermatologic Sindrome in three dogs

M Rhodes, C Heinrich, H Featherstone and P Renwick

Willows Referral Service, Highlands Road, Shirley, Solihull, West Midlands, B90 4NH, UK

ABSTRACT NO.: 48

MATRIX METALLOPROTEINASE-1, -9, AND TYPE IV COLLAGEN EXPRESSION IN CORNEAS TREATED WITH 1% MORPHINE SULFATE

AP Ribeiro,* ML Silva,* RA Lopes,† R Thiesen* and JL Laos*

*College of Veterinary Medicine and Agricultural Sciences – Sao Paulo State University, Jaboticabal, Brazil; †College of Veterinary Medicine and Animal Sciences – Sao Paulo State University, Botucatu, Brazil

Purpose: To study the effects of topical 1% morphine sulfate on corneal repair, matrix metalloproteinase-1, -9, and type IV collagen expression in rabbits treated with topical cyclosporine and/or corticosteroids.

Methods: Twenty-four New Zealand White rabbits were randomly divided into three groups: Group A, which received 1% morphine sulfate (MG) for 12 days; Group B, which received 0.9% saline (CG) for 12 days; and Group C, which served as control and received saline for 12 days.

Results: There were no statistically significant differences in corneal scarring or proliferation among the three groups.

Conclusion: Topical 1% morphine sulfate demonstrated antinociceptive effects without impairing corneal wound healing.

ABSTRACT NO.: 49

AFTER LAMELLAR KERATECTOMY IN RABBITS

AP Ribeiro,* ML Silva,* RA Lopes,‡ R Thiesen* and JL Laos*

*College of Veterinary Medicine and Agricultural Sciences – Sao Paulo State University, Jaboticabal, Brazil; †College of Veterinary Medicine and Animal Sciences – Sao Paulo State University, Botucatu, Brazil

Purpose: To describe the use of systemic cyclosporine (CsA)/prednisolone combination therapy for lamellar keratectomy in rabbits.

Methods: Three rabbits were diagnosed with UDS based on ocular and clinical presentation (n = 3) and histopathology (n = 3). One rabbit received systemic CsA/prednisolone (0.25–2 mg/kg q12–48 h) and the other with topical CsA/prednisolone (0.25–2 mg/kg q12–24 h). Adjunctive therapy included systemic ketoconazole (0.25 mg/kg q24–48 h) and topical timolol (0.5%). Corneal wetness and vision postoperatively were evaluated.

Results: Both rabbits were discharged with CsA/prednisolone combination therapy. At 12 months postoperatively, both rabbits were visually normal, and the CsA was well tolerated in all cases with gingival hyperplasia being the only documented adverse effect.

Conclusion: Oral CsA/prednisolone is an effective alternative for the treatment of canine UDS. An important limiting factor is cost, which can lead to poor owner compliance.
ABSTRACT NO.: 49
Effects of preservative free 0.5% ketorolac tromethamine in alkali burned rabbit corneas. AP Ribeiro,* LF Conceição,* ML Silva,* IM Padua,* AL Andrade,† MCR Livzdoto† and JL Laux*

†College of Veterinary Medicine and Agricultural Sciences – São Paulo State University, Jaboticabal, Brazil; †College of Ophthalmology and Veterinary Medicine of São Paulo State University, Araçatuba, Brazil

Purpose: To study antiinflammatory, analgesic, and epithelial toxic effects of a preservative free 0.5% ketorolac tromethamine solution, in rabbit corneas burned with sodium hydroxide (NaOH) 20 mL/L Solution. Methods: Two groups were formed (n = 12), and were randomly chosen to receive either 0.5% of 0.5% ketorolac tromethamine solution (KG) or 0.9 saline (SG). Treatments started immediately after corneal burn (6 mm), and were repeated every 6 h until corneal lesions became minimal, and negative. Blepharospasm and conjunctival hyperemia were scored as absent (0), mild (1), moderate (2), and severe (3); corneal touch threshold (CTT) was assessed with a Cochet-Bonnet aesthesiometer. At the end of each evaluation, density of microvilli was obtained (Image J). Results: Significant decrease in both groups was recorded at day 6 (P < 0.02), and there were no CTT changes at 24 h (P > 0.05). Microvilli density in both groups was scored as 2.5 at day 6, and there were no significant differences at 24 h (P > 0.05). Conclusion: The use of a preservative free 0.5% ketorolac tromethamine is recommended. Support: FAPESP (protocols #07/06309-7 and # 07/58783-0).

ABSTRACT NO.: 50
Ophthalmic findings in captured African Brush-tailed Porcupines (Atherurus africanus), a preliminary report. FO Reichert,* R Kopfliech,* CA Szentiks,* A Ochs,* AD Greenwood,* G Romkes* and JC Eule†

*Ophthalmology Faculty of Veterinary Medicine, Free University Berlin; †Department of Veterinary Pathology, Faculty of Veterinary Medicine, Free University Berlin; †Leibniz Institute for Zoo- and Wildtierforschung (IZW), Berlin; †Zoologischer Garten AG, Berlin Germany

Purpose: The aim of the presentation of preliminary findings is to inform international ophthalmologists about ocular alterations observed in the group of African Brush-tailed Porcupines (Atherurus africanus) living at the Zoo of Berlin, Germany and to ask for international collaboration in the examination of free-living and/or captive animals of this species. Methods: Clinical observation and ophthalmological examination using slit lamp biomicroscopy (SLI-15, Kowa) in a specially fabricated restraining device of all seven adult animals. Results: All animals were clinically blinded, showed negative reflexes, corneal opacities, corneal erosions, irregular pupils, and different forms of cataracts. Histology examination of the eyes of the stillborn porcupine revealed a vascularized cornea and a relatively large lens, but otherwise normally developed globes. Histology examination of the euthanized, 19 year old animal revealed bilateral paracentral conjunctivitis, erosive keratitis, calcification of the Descemet, large lenses with immature cataracts, activated and proliferative anterior lent epithelium, and signs of uveitis. Discussion: Within further research additional examinations of captive and free-living animals, testing for viruses and investigation of the influence of nutrition and housing are planned. Ophthalmologists having access to wild or captive African Brush-tailed Porcupines are kindly asked to contact our group. (http://www.vetmed.fu-berlin.de/einrichtungen/kliniken/w20.at/ateliers/ophthalmologie/index.html) None.

ABSTRACT NO.: 51
Ocular consequences of blunt trauma in two species of nocturnal raptors (Athene noctua and Otus scops). MC M-D. Torres and J-M. Closa

Dept. of Medicine i Cirugia Animals – Hospital Clinic Veterinari, Facultat de Veterinaria, Universitat Autonoma de Barcelona, Barcelona, Spain; †Centre de Recuperacio de fauna Salvatge de Torreferrussa, Barcelona, Spain

Purpose: To determine the type and frequency of ocular lesions in free-living little owls (Athene noctua) and scops owls (Otus scops) injured by blunt trauma. Methods: A total of 125 little owls (LO) and 84 scops owls (SO) with blunt trauma were admitted to the Recovery Center of Veterinary Medicine of Barcelona from October 2004 to February 2007. These birds were submitted to a complete physical examination. Among these, 13 LO and 23 SO showed ocular lesions and were referred to the Veterinary Teaching Hospital of Autonomous University of Barcelona for further ophthalmic examination. Results: The diameter of corneal ulcers and corneal epithelial surface were analyzed (Image J), and the den- harvested for histological and scanning electron microscopy (SEM) (5,000x a 15 Kv) evaluation. Diameter of corneal ulcers and corneal epithelial surface were analyzed (Image J), and the den-

ABSTRACT NO.: 52
Qualitative changes of precorneal tear film in dogs with keratoconjunctivitis sicca associated with canine leishmaniosis (Leishmania infantum) and idiopathic disease: a comparative study. ANL Thomas,* AT Komenon,* V Karampatas,† LS Leontidis† and AF Koutinas†

*Faculty of Veterinary Medicine, Aristotle University of Thessaloniki, Greece; †Faculty of Medicine, Aristotle University of Thessaloniki, Greece; †Faculty of Veterinary Medicine, University of Thessaly, Greece

Purpose: In this study the qualitative changes of precorneal tear film (PTF) in KCs that is associated with canine leishmaniosis with idiopathic causes were investigated and compared. Methods: Study population consisted of 21 dogs with clinical leishmaniosis and KCs (group B) and 20 dogs with idiopathic KCs (group A). All dogs were examined and anesthetized. Results: Ocular tear film production was first measured with Schirmers tear strip (SST), followed by measurement of the breakup time (BT), and by measurement of the number ofblink per minute (NBM). Results: The mean NBM values for group A and B were 2.9 and 2.7, respectively (P > 0.05). The corresponding values for group C were 18/10 (60%) and 12/40 (30%) animals. In the comparisons made between groups A and B and C and significant differences were not found. Conclusion: The BUT and NBM values were not significantly different for SST I and CTT I could be found in all the comparisons made between the three groups. Discussion: The KCs associated with canine leishmaniosis, as well as in idiopathic KC, the alterations of PTF changes are mainly qualitative (lipid layer deficiency) most likely due to decreased melonecan gland secretion activity. None.

ABSTRACT NO.: 53
Nicotinic membrane accessory gland adenocarcinoma with suspected retrobulbar extension in a dog. surgical approach by lateral orbitotomy. M-D. Torres and J-M. Closa

Ars Veterinaria Hospital, Barcelona, Spain

A 12-year-old female Longhaired Dachshund was presented with a two month progression of ocular discomfort, 3-4 Mhz probe measurements of the forward margin of the mass, complete blood count and biochemical panel results were within reference ranges. Ophthalmic examination showed altered retrobulbar relocation of left eye with anterior exudative uveitis. Ocular echography (4-7 MHz) showed increased retrobulbar mass. Magnetic resonance imaging (MRI) showed extraconal retrobulbar affectation. The retrobulbar mass was excised by lateral orbitotomy. Magnetic resonance imaging (MRI) showed extraconal retrobulbar affectation with a bioluminated ‘hourglass’ image, displaying the globe rostrally. Concurrently, an access-

© 2010 American College of Veterinary Ophthalmologists, Veterinary Ophthalmology, 14, 1–10

A B S T R A C T S 9
ABSTRACT NO.: 54
Survey of inherited eye diseases in Labrador Retriever breed in Slovakia
M Mihalova and A Trbolova
Small Animals Clinic, University of Veterinary Medicine and Pharmacy in Kosice, Slovak Republic

Purpose: The objective of the survey was to detect variety and prevalence of eye diseases considered to be hereditary in Labrador Retrievers in their population in the Slovakia. Methods: Labrador Retrievers included in the breeding were examined for hereditary eye diseases in the years 2006–2009. The examinations were performed in accordance with ophthalmological protocol set by the ECVO. The prevalence of inherited eye diseases and their features were defined. Results: 75 Labrador Retrievers were examined. Their gender ratio was 1:1.6. Their age range was from 1 year to 7 years, with mean age 2.26 ± 1.413 years. Inherited eye diseases were found in 10 dogs (13.33% prevalence). The prevalence of hereditary cataract (HC) was 6.67%. In all cases there was bilateral posterior polar subcapsular cataract. The minimum age of HC affected dogs was 1.5 years, the maximum age was 6 years. The mean age was 2.9 years. The prevalence of inherited retinal dysplasia (RD) was 6.67%. There were cases of multifocal and geographic form of RD. The minimum age of RD affected dogs was 1 year, maximum age was 3 years, mean age was 1.5 years. None of examined Labrador Retrievers was positive for progressive retinal atrophy (PRA). Conclusions: In recent years, Labrador Retrievers became very popular in Slovakia, and their breeding grew up. Although checking for hereditary eye diseases is not obligatory for dogs of that breed in Slovakia, many of the breeders demand eye examination. Hereditary eye diseases findings of the survey revealed benefit of eventual commitment of ophthalmoscopic checking.

ABSTRACT NO.: 55
The use of Intraocular Pressure Curves in the management of canine glaucoma, a preliminary study
MJ Vieira da Silva and RF Sanchez
NKR Veterinary Specialists, Warren Road, Blue Bell Hill, Kent, ME5 9RD, UK

Objectives: To establish if sequential intraocular pressure curves (IOPCs) are useful in the clinical management of dogs suffering from primary or secondary glaucoma, to establish a protocol and recommendations for their use and report the findings of this preliminary study.

Material and methods: seven dogs (11 eyes) were included, three dogs (five eyes) with primary glaucoma, four dogs (six eyes) with secondary glaucoma, of which three dogs (four eyes) had undergone intracapsular lens extraction and one dog (two eyes) cataract surgery. 20–30 h IOPCs were plotted before or after commencing topical antihypertensives and readings were taken every 2–3 h. Results: Management of glaucoma was changed in 3 out of 11 eyes after the first curve, in 3 out of 5 eyes after the second and in 0 out of 1 eyes after the third as pressures outside of the target range (>35 mmHg) were identified. A second curve was recommended within days if the treatment regime had been changed based on the results of the first curve. Subsequent curves were recommended for follow up at later times and when pressure spikes were suspected to have occurred. Complications encountered were corneal abrasions in 1 out of 13 eyes and the disruption of the curve due to increased IOP (>35 mmHg) in 1/13 eyes. Conclusions: IOPCs could be a useful tool in the management of some forms of canine glaucoma and further study is indicated to establish if they should be recommended to aid in the long term monitoring and medicament adjustment of these patients. Supported in part by residency funding by NKR Veterinary Specialists. None.

ABSTRACT NO.: 56
Bilateral optic nerve hypoplasia in a captive cheetah (Acinonyx jubatus)
L Walser-Reinhardt,* MB Wernick,† JM Hatt† and BM Spiess*
*Equine Department, Section of Ophthalmology, Vetsuisse Faculty, University of Zurich, Switzerland; †Clinic for Zoo Animals, Exotic Pets and Wildlife, Vetsuisse Faculty, University of Zurich, Switzerland

Purpose: The following case report describes a 1-year old female cheetah (Acinonyx jubatus) with bilateral blindness and unresponsive pupils in both eyes. For comparison a healthy 2.5-year old male cheetah without visual deficits was examined. Methods: Both cheetahs underwent a complete physical and ophthalmologic examination including slitlamp biomicroscopy, indirect ophthalmoscopy and tonometry. In addition, electroretinography, and blood hematology and chemistry were performed. Results: The young female cheetah showed no menace response, no direct or indirect pupillary light reflex, and no dazzle reflex. The fundus color was green/turquoise/yellow with multiple hyperpigmented linear lesions in the tapetal area around the optic nerve. The optic nerve head was dark grey and about half the normal size suggesting bilateral optic nerve hypoplasia. The ERG was nonrecordable in the right eye but appeared normal in the left eye compared with the male cheetah. Blood levels did not suggest plasma taurine deficiency. Conclusions: Bilateral optic nerve hypoplasia is a rare anomaly in cats and has not yet been described in a cheetah. Supported by Section of Ophthalmology, Vetsuisse Faculty Zurich. None.