

# Proceedings of the 56th Annual ACVO® Scientific Conference



OFFICE@ACVO.ORG

American College of  
Veterinary Ophthalmologists®





**SNEAK PEEK**



**Two Nights at Baker Bay Retreat**  
Donated by Dr. Jen Welser



**Knit Hat with Cat Pattern**  
Donated by Dr. Sheryl Krohne



**Decorative Plates**  
Donated by Dr. Taemi Horikawa

**...And More!**

# SILENT AUCTION

## BIDDING OPEN

Wednesday, October 15 4pm CDT  
- Saturday, October 18 5pm CDT

Even if you aren't attending the Sequins & Spurs Soiree, you can still be part of the fun – anyone, anywhere can participate!

All items will be shipped to winning bidders after the ACVO Conference.

**SCAN TO PREVIEW  
AND BID**



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# Welcome to the 56th Annual Scientific Conference of the American College of Veterinary Ophthalmologists


Dear ACVO Conference Attendee,

Welcome to our **56th Annual Scientific Conference of the American College of Veterinary Ophthalmologists** and the city of Grapevine Texas. Nestled between Dallas and Fort Worth, Grapevine is a diverse Texas gem that offers small-town charm in a welcoming and relaxed atmosphere. Sitting on the shores of Lake Grapevine, the **Gaylord Resort** offers a unique opportunity to blend learning, outdoor activities, and reconnecting with colleagues and friends. Guests can explore the four-and-a-half acres of indoor garden atriums, four award-winning restaurants, bars, the world-class Relâche Spa and a state-of-the-art fitness center. Just a 5-minute taxi ride away, the beautifully preserved historic, walkable **Main Street of Grapevine** is filled with unique shops, restaurants, cafes and the tasting rooms of award-winning wineries. The Gaylord Resort and **Lake Grapevine** offer both family friendly and outdoor opportunities including the nearby LEGOLAND® Discovery Center and Cowboys Golf Club. Rent a boat on Lake Grapevine, jet-ski or kayak or simply stroll along the beautiful rolling shoreline and more than 9 miles of scenic wilderness trails. The Gaylord Resort and Grapevine offer the perfect blend of tradition and opportunity. We hope you'll find inspiration and relaxation in equal measure.

This year's meeting again brings together the very best in veterinary ophthalmology and we have attempted to incorporate many of your excellent suggestions from the post-meeting survey. Our carefully curated program offers the latest advancements in research and clinical practice; all designed to elevate your knowledge and enhance your clinical care and patient outcomes. I would like to personally thank the members of the Planning Committee, **Drs. Caroline Betbeze, Shannon Boveland, Paige Evans, Laura Proietto, and Connie Yeh, as well as Pam Kirby, RVT, AVOT liaison, and Joyce Bellavia, exhibitor liaison.** Their generosity with their time on this committee has been so appreciated. We also owe a huge debt of gratitude to **Stacey Daniel and Jason O'Brien**, who contributed countless hours executing our vision for this conference; so much goes into this planning, starting years in advance. As costs for food and beverage and AV support at these meetings continuously rises exponentially, Stacey and Jason's fierce ability to negotiate affordable contracts for us continues to astound.

I also want to thank the **session moderators, invited speakers, and resident manuscript award judges.** We value your time and dedication to the ACVO. We are also incredibly grateful to **our exhibitors and sponsors** who make the meeting possible. Please remember to visit the exhibitors during the **ACVO/AVOT Welcome Reception**, which kicks off the conference on Wednesday evening, as well as during our extended breaks on Thursday and Friday.

The conference will provide approximately 19 hours of continuing education for general conference attendees and an additional 4 hours of continuing education for the optional Sunday Masters' course. The solid scientific program includes 43 abstracts in our general and concurrent sessions with another 71 posters chosen for our poster sessions. Interactive sessions include a gamified **ACVO/OFA CAER session** hosted and moderated by the Genetics Committee on Thursday afternoon, and a second annual **Feline Forum** moderated by Drs. Ursula Dietrich and Michelle Willis on Friday afternoon in the General Session room. Drs. Brad Nadelstein and John Sapienza will host the **Vitreous Society Meeting** concurrently on Saturday afternoon, where there will be two podium presentations in addition to the in-depth discussions on all things Vitreous and Vitreo-Retinal.



# Welcome to the 56th Annual Scientific Conference of the American College of Veterinary Ophthalmologists

We are thrilled to welcome our **Keynote Speaker, Brian Hare, MD**. Dr. Hare is a world-renowned speaker and Professor of Evolutionary Anthropology and Cognitive Neuroscience at Duke University. His groundbreaking publications on canine cognition, behavior, and intelligence have led to his wide ranging and engaging keynote addresses and numerous documentaries for National Geographic. One of his multiple scientific labs at Duke is to seek to understand the flexibility and limitations of canine cognition and how it compares to other animals and primates. This research can help us understand how our own minds evolved, since over the past decade research has revealed that dog and human minds converge in astounding ways. In a second NIH funded lab, “the puppy kindergarten”, he works closely with service dogs in a longitudinal study to research how different rearing strategies impact their cognitive abilities. A dog’s visual acuity and visual processing abilities are crucial for various cognitive tasks, including object permanence, learning, and problem-solving. For example, their ability to understand that objects continue to exist even when out of sight is a key aspect of their cognitive development. Dogs can process and respond to visual cues, such as facial expressions, in a way that influences their social interactions with humans and other dogs. Their ability to recognize human emotions and respond accordingly is a testament to their sophisticated visual cognitive abilities. This is an area of growth and opportunity for us as veterinary ophthalmologists.

This year’s topics for the In-Depth Speaker Series begin with a dive into **Artificial Intelligence in Veterinary Diagnostics** and how that will impact us, with **Derick Whitley, DVM, DACVP**, a highly respected international expert who explores the way technology is shaping veterinary medicine. Second in the series brings our own world-renowned expert and award winning, ARVO Gold Fellow, former ACVO President, Editor-in-Chief of Veterinary Ophthalmology, 2024 Fulbright Senior Scholar, and winner of the 2015 Shaffer Prize for Innovative Glaucoma Research, **Andras Komáromy, DVM, PhD, DACVO, DECVO, FARVO** to speak about **new developments in glaucoma**. Dr. Komáromy epitomizes the translation of veterinary insights into human ophthalmology innovations—strengthening science across species while nurturing the next generation of researchers. This will be a “can’t miss” lecture. Finally, we are delighted to have **Courtney Campbell, DVM, DACVS**, speaking on Friday on **how we empower change, elevating veterinary mentorship for a brighter future**. Dr. Campbell is known for hosting and producing the veterinary news show, VetCandy’, and a popular podcast, ‘Anything is Pawsible’ on PetLife Radio. He is also a former co-host of Pet Talk on Nat Geo Wild, a recurring guest expert on The Rachael Ray Show, CBS’ The Doctors, Home and Family, and other daytime talk shows. Veterinary ophthalmology, with its technical demands and narrow field, benefits deeply from mentorship that is **intentional, inclusive, and evolving**. Elevating mentorship means investing not just in the training of individuals, but in the **long-term excellence and sustainability of our specialty**.

This seems like an opportune time to also highlight the incredible contributions **veterinary students, interns, and residents** make to the scientific content of the meeting. Whether it's retrospective or prospective clinical studies or bench research, they are contributing to the cumulative evidence which we use to make clinical decisions and improve our patients’ lives daily and we thank them for their efforts. **Our collective mentorship of these brave presenters should be a source of pride**. Our **Career Fair** will also be offered on Thursday morning for anyone searching for the perfect position as an intern, resident, or associate.

The **Residents’ Workshop** on Saturday morning focuses on patient safety and patient safety culture and will kick off with a session on “Veterinary patient safety, beyond ticking the box” with **Lydia Love, DVM, DACVAA**. This will be followed by a session on “The critical impact of medical error” with **Melinda Larson, DVM, DACVIM (SAIM)**. Drs. Love and Larson are both published experts on this topic and lead these efforts in their respective academic and private practice institutions. Following the lectures, the speakers will hold an open forum on patient safety culture and how implementing it can be fostered by the residents within their teams, encouraging leadership in driving cultural change. This program will be recorded should any of our attendees wish to access this material as well.



# Welcome to the 56th Annual Scientific Conference of the American College of Veterinary Ophthalmologists

The **Annual Meeting of Voting Members (AMVM)** will be held in person on Saturday morning, followed by the **ABVO Meeting**. The AMVM is an opportunity to catch up on the state of our College, for members to ask questions, voice concerns, and contribute to decision-making, and welcome the newest elected member of the Board of Regents. A seated breakfast will be provided on Saturday morning and a luncheon for all attendees following the keynote presentation.

Finally, you cannot miss the "optional" **Masters' Course Workshop on Ocular Surface Disease** being offered post-conference on Sunday. Featuring ocular surface experts **Dr. Brian Leonard**, DVM, PhD, DACVO (Is evaporative dry eye disease a thing in dogs), **Dr. Lionel Sebbag**, DVM, PhD, DACVO (Dry eye disease in cats: current knowledge and emerging insights), and **Dr. Hiroko Iwashita**, DVM, PhD (The importance of the tear film). The individual presentations will be followed by an exciting open panel discussion and opportunity for deep dives into this incredibly important topic.

Please also join us at one of several social events to catch up with friends and colleagues. This is what makes us truly great. Prior to the Welcome Reception, VAF is hosting a "**Apple of My Eye Family Gathering**" in the **Center Pre-Function from 4:30pm-5:30pm**. **Remember** to pick up a Basic Science Ribbon with your corresponding year by the registration desk. Check out the "Basic Science" chat group in the conference app to catch up with your colleagues.

Please support our AVOT team members during their **AVOT Pinning Ceremony** on Thursday at the conclusion of the AVOT session and concurrent with the **start of the ACVO/AVOT Happy Hour**. All conference attendees including our AVOT friends, mentors, and families of the new ACVO Diplomates are invited to attend the **New Diplomate Certificate Ceremony & Celebration**, where the newest ACVO members will receive their certificates and afterward, we will briefly toast them with champagne and sparkling cider from 4:45-5:15 on Friday afternoon! Don't miss your opportunity to 2-step at the annual fundraising event for the **Vision for Animals Foundation (VAF), the Sequins and Spurs Soiree**, from 6-9 pm at the Hilton Grapevine, a spectacular venue with its own western saloon! Runners, joggers, and walkers of all abilities are encouraged to participate in the annual **ACVO Fun Run** which will meet up at 6:30 am on Saturday morning.

On behalf of the Program Committee, enjoy the western hospitality of Grapevine Texas! I look forward to seeing all of you. I am personally deeply grateful to all of you and the American College of Veterinary Ophthalmologists for providing me not only with a lifelong career, but with a community of colleagues, a sense of purpose, and enduring professional fulfillment. The opportunities, mentorship, and friendships I have found through the ACVO have shaped my life in ways I could never have imagined, and I am privileged to represent you all on the Board of Regents. The Planning Committee is proud to provide a forum where ideas are exchanged respectfully and freely, innovations are celebrated, and the collective pursuit of excellence remains at the core of everything we do. Thank you for your commitment to our shared mission and for joining us in this exciting and enriching experience.



Sincerely,

Tammy Michau  
DVM, MS, MSpVM, DACVO, HPEC  
Chairperson, ACVO Program Committee

# FLOOR PLAN

## General Session

GRAPEVINE C

## Poster Session

CENTER PRE-FUNCTION

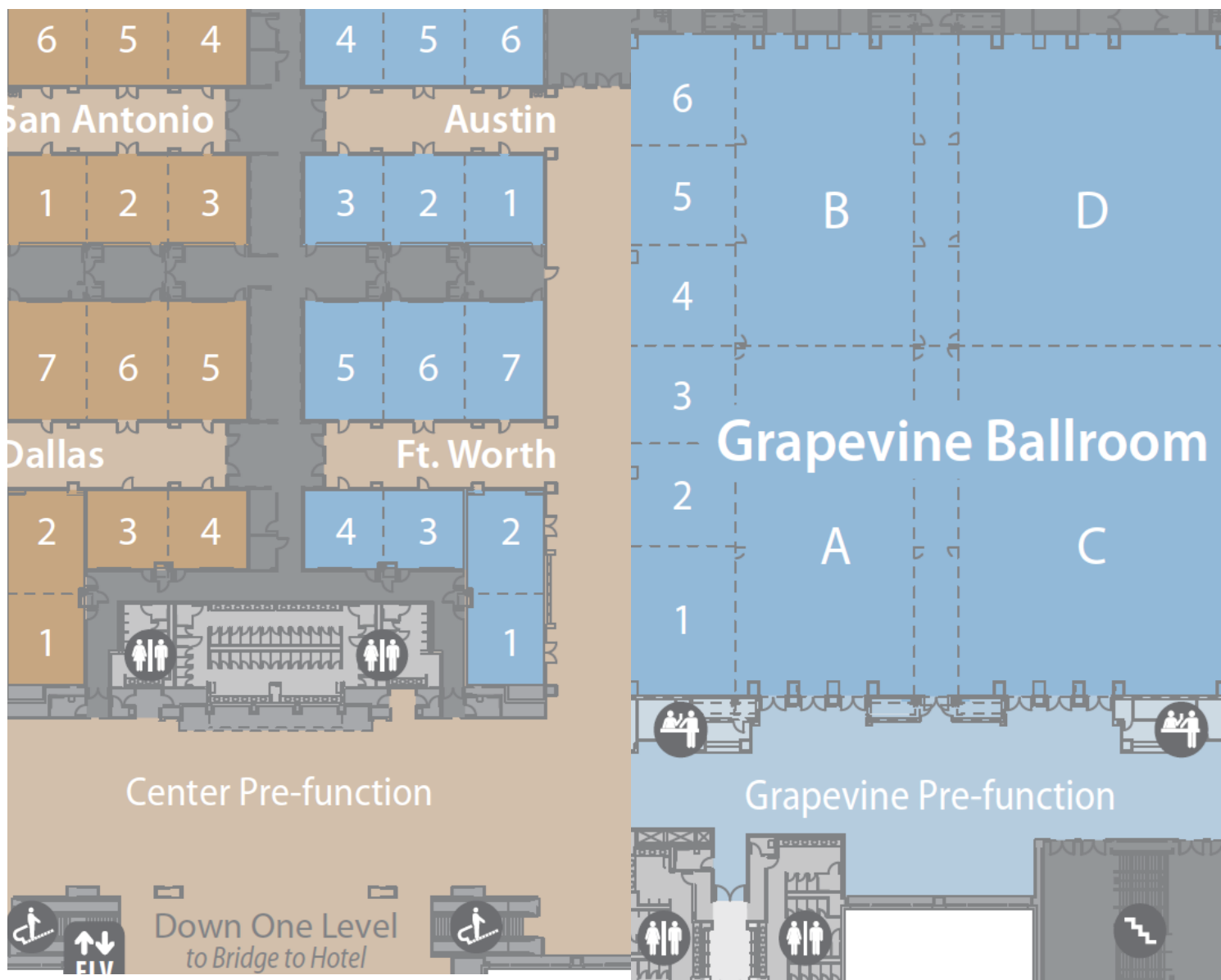
## Exhibit Hall

GRAPEVINE A

## Registration

CENTER PRE-FUNCTION

*Additional Gaylord floor plans are available on the conference app and website.*





# INFORMATION

**WEAR YOUR NAME BADGE** - Always wear your name badge to attend all ACVO events. This is your ticket into the general sessions, meals, exhibit hall, welcome reception and happy hour.

**SCHEDULE** - Please check the conference schedule for updated days and times for all ACVO meetings and events.

**ONSITE GUIDE** - Please visit [ACVOconference.org](https://acvoconference.org) or download the **ACVO Conference App** for the most up to date conference information.

#### **DIGITAL CE FORM**

The 2025 ACVO CE form will be accessible on [ACVOconference.org](https://acvoconference.org). Please make sure to save and print your CE form.

**FAMILIES ATTENDING?** The ACVO Vision for Animals Foundation (VAF)'s Apple of My Eye group plans activities at the annual ACVO conference to encourage camaraderie and family fun. Don't miss the kickoff event on Wednesday, October 15th from 4:30pm-5:30pm in the Center pre-function area.

**WELCOME RECEPTION** - Join us on Wednesday evening from 6:00pm-7:30pm for drinks in the Exhibit Hall. Your badge will be your drink ticket for the open bar of beer, wine and soft drinks.

*(The welcome reception will be serving drinks only, food will not be provided.)*

**GRAB & GO, LIGHT CONTINENTAL BREAKFASTS** will be served in the Exhibit Hall from 7:00am - 8:00am on Thursday and Friday.

**RESIDENT MANUSCRIPT AWARD WINNERS** will be announced at the Thursday General Session at 10:00 am. Please be present if you applied for consideration.

**THURSDAY HAPPY HOUR** will be hosted immediately following the conclusion of the Thursday General Session in the Center Pre-function area. Your badge will be your drink ticket for beer, wine and soft drinks.

**BASIC SCIENCE RIBBONS** - You may pick up a Basic Science Ribbon with your corresponding year of attendance by the registration desk. Check out the "Basic Science" chat group in the Conference App to catch up with your past BSC colleagues.

**NEW DIPLOMATE INDUCTION & CELEBRATION** - All conference attendees, including our AVOT friends, mentors, and families of the new ACVO Diplomates, are invited to attend the certificate awards and recognition ceremony. We will briefly toast them with hosted champagne and sparkling cider from 4:45-5:15 on Friday afternoon. The Induction Celebration will be in the General Session Room.

**ACVO ANNUAL MEETING OF THE VOTING MEMBERS** will be held on Saturday from 8:15am-9:15am in Grapevine A.

**ANNUAL ABVO DIPLOMATES MEETING** will be held on Saturday immediately following AMVM, from 9:15am-10:15am in Grapevine A.

Join the **ACVO VISION FOR ANIMALS FOUNDATION** for the VAF Sequins & Spurs Soiree on Friday, October 17 from 6-9 pm, at Austin Ranch in the Hilton Grapevine Hotel.



# WiFi

**If you are staying at the Gaylord, please use the WiFi login credentials associated with your sleeping room.**

If you are not staying at the Gaylord, the Grapevine Visitors and Convention Bureau has sponsored a limited number of WiFi login access. **Please only use this code if you are not staying at the Gaylord.**



**Network:** Gaylord Resort  
**Password:** grapevinecvb

## 2025 PLANNING COMMITTEE

**Dr. Tammy Michau**  
Program Chair, Regent

**Dr. Caroline Betbeze**  
Past Chair, Senior Regent

**Dr. Shannon Boveland**  
Junior Regent

**Dr. Paige Evans**  
Senior Diplomate Member

**Dr. Connie Yeh**  
Intermediate Diplomate Member

**Dr. Laura Proietto**  
Junior Diplomate Member

**Pamela K. Kirby**  
AVOT Representative

**Joyce Bellavia**  
Exhibitor/Sponsor Representative

Thank you to these diplomates who **volunteered** their time to help moderate the General Sessions, judge the Resident Manuscripts, and organize extra courses:

### ***Manuscript Judges***

Dr. Eric Ledbetter  
Dr. Paoul Martinez  
Dr. Taryn Overton  
Dr. Soohyun Kim  
Dr. Anna-Catherine Bowden  
Dr. Amy Baker  
Dr. Jessica McDonald  
Dr. Jessica Meekins

### ***Session Moderators***

Dr. Ann Metzler  
Dr. Rachel Allbaugh  
Dr. Elizabeth Guiliano  
Dr. Michelle Willis  
Dr. Ursula Dietrich  
Dr. Alex Sigmund  
Dr. Colleen Sheridan

### ***Special Course Organizers***

Dr. Caroline Betbeze  
Dr. Shannon Boveland  
Dr. Tammy Michau  
Dr. Ursula Dietrich  
Dr. Michelle Willis  
Diversity, Equity,  
and Inclusion Committee  
Genetics Committee



# SPONSORS

## PLATINUM



## BRONZE



# SPONSORS

## PLATINUM



## SILVER





# CONFERENCE SCHEDULE

## Tuesday, October 14, 2025

8:00 a.m. - 5:00 p.m.	BLUEBONNET BOARDROOM	<b>ABVO Board Meeting</b>
8:00 a.m. - 5:00 p.m.	PECOS 1	<b>ABVO Exam Committee</b> main room
8:00 a.m. - 5:00 p.m.	PECOS 2	<b>ABVO Exam Committee</b> room two
8:00 a.m. - 5:00 p.m.	PECOS 3	<b>ABVO Exam Committee</b> room three

## Wednesday, October 15, 2025

8:00 a.m. - 5:00 p.m.	BLUEBONNET BOARDROOM	<b>ACVO Board of Regents Meeting</b>
8:00 a.m. - 5:00 p.m.	AUSTIN 1	<b>ABVO Residency Committee</b>
8:00 a.m. - 5:00 p.m.	AUSTIN 2	<b>ACVO Genetics Committee</b>
8:00 a.m. - 5:00 p.m.	AUSTIN 6	<b>ACVO Diversity, Equity, and Inclusion Committee</b>
8:00 a.m. - 5:00 p.m.	PECOS 1	<b>ABVO Exam Committee</b> main room
8:00 a.m. - 5:00 p.m.	PECOS 2	<b>ABVO Exam Committee</b> room two
8:00 a.m. - 5:00 p.m.	PECOS 3	<b>ABVO Exam Committee</b> room three
11:00 a.m. - 4:00 p.m.	GRAPEVINE A	<b>Exhibit Hall Set-Up</b>
12:00 p.m. - 5:00 p.m.	AUSTIN 3	<b>ABVO Credentials Committee</b>
1:00 p.m. - 3:00 p.m.	RIVERWALK CANTINA	<b>AVOT Board Meeting</b>
2:00 p.m. - 5:00 p.m.	FORT WORTH 7	<b>ABVO MOC Committee</b>
3:00 p.m. - 7:30 p.m.	CENTER PRE-FUNCTION	<b>Registration Desk</b>
6:00 p.m. - 8:00 p.m.	GRAPEVINE A	<b>ACVO &amp; AVOT Welcome Reception</b>

# CONFERENCE SCHEDULE

## Thursday, October 16, 2025

7:00 a.m. - 8:00 a.m.	GRAPEVINE A	<b>Grab &amp; Go, Continental Breakfast in Exhibit Hall</b>
7:00 a.m. - 5:00 p.m.	CENTER PRE-FUNCTION	<b>Registration Desk</b>
7:00 a.m. - 5:00 p.m.	CENTER PRE-FUNCTION	<b>Poster Session</b>
7:00 a.m. - 5:00 p.m.	GRAPEVINE A	<b>Exhibit Hall</b>
8:00 a.m. - 5:00 p.m.	GRAPEVINE 4	<b>AVOT</b>
8:00 a.m. - 9:00 a.m.	GRAPEVINE C	<b>In-Depth, Derick Whitley, DVM, DACVP</b> Artificial Intelligence in Veterinary Diagnostics
9:00 a.m. - 10:15 a.m.	GRAPEVINE C	<b>General Session</b> Resident Manuscript Awards
10:15 a.m. - 11:00 a.m.	GRAPEVINE A	<b>Break with Exhibitors</b>
10:45 a.m. - 12:00 p.m.	CENTER PRE-FUNCTION	<b>ACVO Career Fair</b> All attendees welcome
11:00 a.m. - 12:00 p.m.	GRAPEVINE C	<b>General Session</b>
12:00 p.m. - 1:30 p.m.		<b>Attendees Lunch</b> on your own
12:00 p.m. - 1:00 p.m.	PECOS 4	<b>OFA/ACVO CAER Exam Orientation Luncheon</b> for New Diplomates by invitation
12:00 p.m. - 1:00 p.m.	FORT WORTH 7	<b>Journal Editorial Lunch</b> by invitation
1:30 p.m. - 2:30 p.m.	GRAPEVINE C	<b>In-Depth, András Komáromy, DVM, PhD, DACVO, DECVO, FARVO</b> New Developments in Glaucoma
2:30 p.m. - 3:15 p.m.	GRAPEVINE C	<b>General Session</b>
3:15 p.m. - 4:00 p.m.	GRAPEVINE A	<b>Break with Exhibitors</b> Visit Poster Presenters in the Foyer
4:00 p.m. - 5:00 p.m.	GRAPEVINE C	<b>General Session</b>
5:00 p.m. - 6:00 p.m.	CENTER PRE-FUNCTION	<b>Happy Hour</b>
6:30 p.m. - 8:00 p.m.	RIVERWALK CANTINA	<b>MedVet Resident Dinner</b> Pre-registration required



# CONFERENCE SCHEDULE

**Friday, October 17, 2025**

7:00 a.m. - 8:00 a.m.	GRAPEVINE A	<b>Grab &amp; Go, Continental Breakfast in Exhibit Hall</b>
7:00 a.m. - 5:00 p.m.	CENTER PRE-FUNCTION	<b>Registration Desk</b>
7:00 a.m. - 5:00 p.m.	CENTER PRE-FUNCTION	<b>Poster Session</b>
7:00 a.m. - 5:00 p.m.	GRAPEVINE A	<b>Exhibit Hall</b>
8:00 a.m. - 5:00 p.m.	GRAPEVINE 4	<b>AVOT</b>
8:00 a.m. - 10:15 a.m.	GRAPEVINE C	<b>General Session</b>
10:15 a.m. - 11:00 a.m.	GRAPEVINE A	<b>Break with Exhibitors</b> Visit Poster Presenters in the Foyer
11:00 a.m. - 12:00 p.m.	GRAPEVINE C	<b>In-Depth, Courtney Campbell DVM, DACVS-SA</b> Empowering Change: Elevating Veterinary Mentorship for a Brighter Future
12:00 p.m. - 1:30 p.m.		<b>Attendees Lunch</b> on your own
12:00 p.m. - 2:00 p.m.	FORT WORTH 3	<b>ACVO New Diplomate Lunch</b> by invitation
12:00 p.m. - 2:00 p.m.	FORT WORTH 5/6/7	<b>Basic Science Course Committee</b> by invitation
12:00 a.m. - 2:00 p.m.	YELLOW ROSE BALLROOM	<b>Epicur Pharma Resident Lunch</b> Pre-registration required
1:30 p.m. - 4:00 p.m.	GRAPEVINE C	<b>General Session</b>
4:00 p.m. - 4:45 p.m.	GRAPEVINE A	<b>LAST CHANCE TO VISIT THE EXHIBIT HALL</b>
4:45 p.m. - 5:15 p.m.	GRAPEVINE C	<b>New Diplomate Induction Celebration</b> All attendees & families welcome
6:00 p.m. - 9:00 p.m.	AUSTIN RANCH	<b>ACVO Vision for Animals Foundation (VAF)</b> <b>Sequins and Spurs Soiree</b> Pre-registration required

# CONFERENCE SCHEDULE

## Saturday, October 18, 2025

6:30 a.m. - 8:00 a.m.	CONVENTION CENTER CIRCLE DRIVE	<b>Fun Run &amp; Walk</b>
7:00 a.m. - 3:00 p.m.	CENTER PRE-FUNCTION	<b>Registration Desk</b>
7:00 a.m. - 8:00 a.m.	TEXAS BALLROOM	<b>Breakfast Buffet</b> Seating provided (All attendees welcome with badge)
7:00 a.m. - 5:00 p.m.	CENTER PRE-FUNCTION	<b>Poster Session</b>
8:00 a.m. - 10:45 a.m.	GRAPEVINE C	<b>Residents' Workshop</b>
8:00 a.m. - 12:00 p.m.	GRAPEVINE 4	<b>AVOT Advanced Session</b> Additional registration fee
8:15 a.m. - 9:15 a.m.	GRAPEVINE A	<b>ACVO Annual Meeting of Voting Members</b> ACVO Members Only
9:15 a.m. - 10:15 a.m.	GRAPEVINE A	<b>ABVO Diplomate Meeting</b> Immediately Following AMVM
10:15 a.m. - 11:00 a.m.	CENTER PRE-FUNCTION	<b>Break</b>
10:45 a.m. - 10:55 a.m.	GRAPEVINE C	<b>ACVO Memorial Slideshow</b> Silent
11:00 a.m. - 12:00 p.m.	GRAPEVINE C	<b>Keynote Presentation, Brian Hare, PhD</b> The Puppy Kindergarten: The New Science of Raising a Great Dog
12:00 p.m. - 1:00 p.m.	TEXAS BALLROOM	<b>Lunch Buffet</b> Seating provided (All attendees welcome with badge)
1:00 p.m. - 3:00 p.m.	GRAPEVINE C	<b>General Session</b> (concurrent session)
1:00 p.m. - 5:00 p.m.	GRAPEVINE 4	<b>Vitreous Society</b> (concurrent session)
3:00 p.m. - 3:15 p.m.	CENTER PRE-FUNCTION	<b>Break</b>
3:15 p.m. - 5:00 p.m.	GRAPEVINE C	<b>General Session</b>
5:00 p.m.		<b>Close of General Conference</b>

## Sunday, October 19, 2025

7:15 a.m. - 8:15 a.m.	GRAPEVINE C	<b>Masters' Course Breakfast</b> Additional registration fee
8:15 a.m. - 12:30 p.m.	GRAPEVINE C	<b>Masters' Course</b> Additional registration fee





# RESIDENT MANUSCRIPT AWARDS

**Thursday, October 16**

**10:00 am**

**Grapevine C**

The ACVO Resident Manuscript Awards is a chance for ABVO residents to showcase their research they completed in their residency and to encourage follow through to publication. There are four categories of award, Basic Science Research, Clinical Research, Case Report/Case Series and Review Manuscript. Each winner receives a crystal award and \$500!



# CAREER FAIR

**Thursday, October 16**

**10:45 am - 12:00 pm**

**Center Pre-Function**

The Career fair will provide a connection point for those seeking a residency, internship, or employment positions with those who are seeking to fill such positions. This event will provide an opportunity for ABVO-approved residency programs and employers that currently have an ACVO Member employed full time, to promote their opportunities to all attendees.



# THURSDAY HAPPY HOUR

**Thursday, October 16**

**5:00 pm - 6:00 pm**

**Center Pre-Function**

The ACVO Happy Hour will begin immediately following the conclusion of the Thursday General Session. Your badge will be your drink ticket for the open bar of beer, wine and soft drinks.

*(The Happy Hour will be serving beer, wine and soft drinks only)*

# NEW DIPLOMATE INDUCTION CELEBRATION

**Friday, October 17**

4:45 pm - 5:15 pm  
Grapevine C

All conference attendees including our AVOT friends, mentors, and families of the new ACVO Diplomates, are invited to attend the certificate awards and recognition ceremony and afterward, briefly toast them with hosted champagne and sparkling cider from 4:30pm-5:00pm on Friday afternoon. The Induction Celebration will be in the General Session Room.



## ACVO FUN RUN



**Saturday, October 18**

6:30 am

The ACVO Fun Run will begin at 6:30am on Saturday. Plan on meeting at the Convention Center Circle Drive, located by the Hertz rental car counter for a casual start. Light refreshments will be available after the event in the same area.

Maps are located on the conference App and website.

You may pick up your shirts any time Thursday, Friday, or Saturday at the main registration desk. Please note that the registration desk will not be open during the Fun Run

Co-Sponsored by:





# IN-DEPTH SPEAKER

**Thursday, October 16**

**8:00 am - 9:00 am**

**Grapevine C**

## ***Artificial Intelligence in Veterinary Diagnostics***

### **Derick Whitley, DVM, DACVP**

Dr. Derick Whitley, is a veterinary pathologist, innovative leader, and entrepreneur with a passion for advancing animal health through innovation. After beginning his career in private veterinary practice, Derick pursued specialized training at Texas A&M University, becoming a board-certified veterinary pathologist. During his 8.5 years at Antech Diagnostics, he played a pivotal role in leading the first large-scale digital pathology conversion in veterinary or human health, revolutionizing diagnostic capabilities. As the former Chief Medical Officer of Vidium Animal Health, Derick guided the company to a successful exit in 2024. His leadership extends into consulting for multiple animal health companies and serves as a venture partner at Vetted Capital.



Derick is deeply invested in exploring the transformative impact of artificial intelligence, genomics, and other cutting-edge advancements in veterinary medicine. In parallel, he maintains ongoing academic roles as adjunct faculty at both the Translational Genomics Institute and Oklahoma State University.

# IN-DEPTH SPEAKER

**Thursday, October 16**

**1:30 pm - 2:30 pm**

**Grapevine C**

## ***New Developments in Glaucoma***



### **András M. Komáromy DVM, PhD, DACVO, DECVO, FARVO**

Dr. András Komáromy is a Professor of Comparative Ophthalmology at Michigan State University (MSU). He received his veterinary degree from the University of Zurich (Switzerland). Following his internship in medicine and surgery at MSU, he performed his PhD graduate work (glaucoma) and clinical residency at the University of Florida. Dr. Komáromy is a Diplomate of the American and European Colleges of Veterinary Ophthalmologists (ACVO and ECVO) and a Gold Fellow of the Association for Research in Vision and Ophthalmology (ARVO). He was President of the ACVO and is the current Editor-in-Chief of Veterinary Ophthalmology. As a clinician-scientist, he is particularly interested in studying glaucoma and its disease mechanisms and developing novel, more effective therapies.

His laboratory is funded by government grants (U.S. & Australia), foundations, and the pharmaceutical industry. Dr. Komáromy authored over 120 clinical and scientific publications and book chapters. He served on several National Institutes of Health (NIH) study sections. He received numerous awards for his work, including the Shaffer Prize for Innovative Science (Glaucoma Research Foundation), the Carl Camras Translational Research Award (Association for Research in Vision and Ophthalmology ARVO Foundation/Pfizer Ophthalmics), the Zoetis Award for Veterinary Research Excellence, and the MSU Undergraduate Research Faculty Mentor of the Year Award.



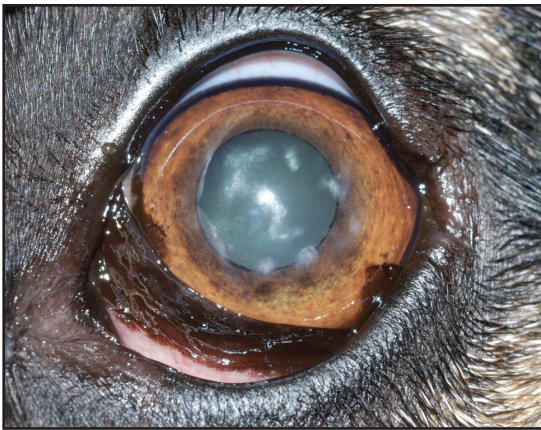
# ACVO CAER

**Thursday, October 16**

4:00 pm - 5:00 pm

Grapevine C

## *Interactive Session*



Join the **ACVO Genetics Committee** at the ACVO Conference for an interactive session about how to code lesions seen during ACVO CAER exams. Prizes will be awarded for the top three finishers and time will be allotted for discussion for each case.

Please submit photos from one of your ACVO CAER exams for inclusion at a future session: [ACVOGenetics@acvo.org](mailto:ACVOGenetics@acvo.org).

### **Goals of the session include:**

1. A fun, lively session to promote engagement in this subject from ACVO members and attendees.
2. To provide clarity and improve overall consistency in recording known or possible hereditary eye diseases in dogs.

*Audience participation/polling will be conducted via "Kahoot" and potential attendees are encouraged to download the free Kahoot app on their phones if they wish to participate that way: [kahoot.com/home/mobile-app/](https://kahoot.com/home/mobile-app/)*

# IN-DEPTH SPEAKER

**Friday, October 17**

11:00 am - 12:00 pm

Grapevine C

## ***Empowering Change: Elevating Veterinary Mentorship for a Brighter Future***

### **Courtney Campbell DVM, DACVS-SA**

Dr. Courtney A. Campbell, brimming with passion and an innovative attitude, Dr. Courtney A. Campbell, a board-certified veterinary surgeon, author, and TV veterinary medical correspondent, enjoys the beautiful triumvirate of the client, patient, and doctor relationship. Affectionately, referred to as just Dr. Courtney, Dr. Campbell marries his love for healing animals with his delectation for 'edutainment'. Though Dr. Courtney can discuss the latest in geopolitics, music, and pop culture, Dr. Courtney is extremely serious when it comes to pet health.



Many have asked where he finds his drive and his enthusiasm. Dr. Courtney was raised in the quaint town of Burlington, Connecticut. The rich diversity of wildlife in his hometown, along with the variety of pets he cared for growing up, jump-started his love for animals. On his tenth birthday, he received his first puppy and his dream of becoming a veterinarian was born.

When he's not in the office, Courtney can be found training for an eventual return to NPC physique competitions, cooking, studying Spanish, writing books, and enjoying speaking engagements.



# RESIDENTS' WORKSHOP

**Saturday, October 18**

**8:00 am - 10:45 am** (10:00 am - 10:45 am, Panel Discussion)

**Grapevine C**

**8:00 am - 9:00 am**

## ***Veterinary Patient Safety Beyond Ticking The Box***

What is patient safety culture, and what are the critical aspects, and how does it affect outcomes for both patients and veterinary team members? While exploring patient safety culture and its impacts on on patient and provider well-being, participants will learn to identify characteristics of positive safety cultures, understand the current state of veterinary patient safety, and apply human factors tools to enhance safety practices. This presentation emphasizes the importance of open communication, error learning, and psychological safety, aiming to foster an environment where everyone contributes to continuous improvement and safe care.



**Lydia Love**  
**DVM, DACVAA**

**9:00 am - 10:00 am**

## ***The Critical Impact of Medical Error***



**Melinda Larson**  
**DVM, DACIM (SAIM)**

Patient safety events such as medical errors impact not only our patients and their owners, but also healthcare providers. These events can cause emotional distress, feelings of guilt, and they can even impact how we care for future patients. The concept of "second victim syndrome" highlights the need for support systems to help healthcare providers cope with the wide range of emotions and consequences that can occur following medical errors. Peer support networks have proven effective in reducing feelings of isolation and fostering resilience. A strong safety culture that encourages open reporting and psychological safety can also improve patient outcomes, reduce burnout, and enhance continuous learning within teams. This presentation explores the significant impact the medical errors can have on our hospital teams, and we will discuss strategies to support one another and create a safer, more empathetic work environment.

**Residents' Workshop Sponsor:**



# KEYNOTE SPEAKER

**Saturday, October 18**

11:00 am - 12:00 pm

Grapevine C

## ***The Puppy Kindergarten: The New Science of Raising a Great Dog***

### **Brian Hare, PhD**

Dr. Brian Hare is a professor of Evolutionary Anthropology, Psychology and Neuroscience at Duke University in North Carolina and a core member of the Center for Cognitive Neuroscience. He received his Ph.D. from Harvard University, founded the Hominoid Psychology Research Group while at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, and subsequently created the Duke Canine Cognition Center when arriving at Duke University. He has co-authored four books and published over 100 scientific papers including in Science, Nature and PNAS. His research on dozens of different animal species has taken him everywhere from Siberia to the



Dr. Hare is a world renowned speaker and professor of Cognitive Neuroscience at Duke University. His ground-breaking publications on canine cognition, behavior, and intelligence have led to a TED talk and his appearance in numerous documentaries for National Geographic.

The goal of one of his labs at Duke is to understand the flexibility and limitations of canine cognition and how it compares to other animals, including our closest relatives, the great apes. Doing so can help us understand how our own minds evolved, since over the past decade, research has revealed that dog and human minds converge in astounding ways. In a second NIH funded lab, "the puppy kindergarten", he works very closely with service dogs in a longitudinal study to research how different rearing strategies impact their cognitive abilities.

A dog's visual acuity and visual processing abilities are crucial for various cognitive tasks, including object permanence, learning, and problem-solving. For example, their ability to understand that objects continue to exist even when out of sight is a key aspect of their cognitive development. Dogs can process and respond to visual cues, such as facial expressions, in a way that influences their social interactions with humans and other dogs. Their ability to recognize human emotions and respond accordingly is a testament to their sophisticated visual cognitive abilities.

**Sponsored by:**



# VITREOUS SOCIETY

**Saturday, October 18**

**1:30 pm - 5:00 pm**

**Grapevine 4**

(Concurrent Session)

Time	Presenting Author	Title
1:30pm-1:45pm	Brad Nadelstein DVM, DACVO  John Sapienza DVM, DACVO	INTRODUCTION AND WELCOME
1:45pm-2:00pm	Andres Botello DVM	RETINECTOMY AND SILICONE OIL TAMPONADE IN CANINE RETINAL DETACHMENT SURGERY: CLINICAL OUTCOMES AND COMPLICATIONS
2:00pm-2:15pm	Eric Storey DVM, MS, DACVO	ENDOSCOPIC ASSISTANCE AND TECHNIQUES FOR VITREO-RETINAL SURGERY
2:15pm-2:30pm	John Sapienza DVM, DACVO	RETINAL SLIPPAGE, HELP! THE RETINA IS SLIPPING, WHY?
2:30pm-2:45pm	Chris Dixon BVSC, CERTVOPHTHAL MRCVS	FLUID AIR EXCHANGE TECHNIQUES FOR VITREO-RETINAL SURGERY
2:45pm-3:00pm	Kelly Caruso VMD, DACVO	POSTERIOR VITREOUS DETACHMENTS - DO WE NEED TO DO THEM AND WHAT IS THE BEST WAY TO DO THEM?
3:00pm-3:15pm	Barrett Gift DVM, DACVO	RETINAL RE-ATTACHMENT IN APHAKIC PATIENTS
3:15pm-3:30pm	Brad Nadelstein DVM, DACVO	UNUSUAL/DIFFICULT RETINAL RE-ATTACHMENT CASES
3:30pm-3:45pm	Sunhyo Kim DVM, MS	COMBINED SULCUS FIXATION IOL AND RETINAL RE-ATTACHMENT SURGERY
<b>3:45pm-4:00pm BREAK</b>		
4:00pm-5:00pm	Brad Nadelstein DVM, DACVO  John Sapienza DVM, DACVO	MODERATED DISCUSSION OF THE FUTURE OF VITREORETINAL SURGERY TRAINING  WHERE WE HAVE BEEN AND WHERE WE ARE HEADED



# MASTERS' COURSE

**Sunday, October 19**

**8:15 am - 12:30 pm**

**7:15 am - 8:15 am** (Breakfast)

**Grapevine C**

*Separate registration required.  
Visit the registration desk to register.*

## *Ocular Surface Disease Workshop*

Time	Presenting Author	Title
8:15am-8:30am	Hiroko Iwashita DVM, PhD	HISTORY OF THE COMPARATIVE OCULAR SURFACE DISEASE WORKSHOP (COSDW)
8:30am-8:55am	Hiroko Iwashita DVM, PhD	CLINICAL: OCULAR SURFACE DIAGNOSTICS AND THERAPEUTIC APPROACHES
9:00am-9:25am	Brian Leonard DVM, PhD, DACVO	TRANSLATIONAL: OCULAR SURFACE ENDPOINTS AND NOVEL THERAPEUTIC APPROACHES
9:30am-10:00am		DISCUSSION: SMALL GROUPS WITH TARGETED QUESTIONS, GROUP DISCUSSION
10:00am-10:15am BREAK		
10:15am-10:30am	Benjamin Reynolds BVSc FCert, DACVO	DIAGNOSIS AND TREATMENT OF LIPID-DEFICIENT EVAPORATIVE DRY EYE DISEASE IN DOGS
10:30am-10:45am	Milan Piva DVM, MS, MPH	EFFECTS OF ORAL OMEGA-3 FATTY ACID SUPPLEMENTATION ON INTRAOCULAR PRESSURE AND TEAR FILM PARAMETERS IN HEALTHY DOGS
10:45am-11:00am	Nayone Lantyer-Araujo DVM, PhD	PHARMACOKINETICS, PHARMACODYNAMICS, AND MECHANISM OF ACTION OF A NOVEL SPECIES-INSPIRED LIPID THERAPY (RNPL593) FOR THE TREATMENT OF EVAPORATIVE DRY EYE DISEASE
11:00am-11:15am BREAK		
11:15pm-11:40am	Lionel Sebbag DVM, PhD, DACVO	CLINICAL: DRY EYE DISEASE IN CATS
11:45am-12:30pm		PANEL Q&A

# POSTER SESSION THURSDAY

Display	Presenting Author	Title	Page
1	Phillip Buckman BS	VALIDATION OF THE EYEMATE SUPRACHOROIDAL SENSOR FOR TELEMETRIC MEASUREMENT OF INTRAOCULAR PRESSURE IN NORMAL EX VIVO EQUINE AND CANINE GLOBES – PRELIMINARY RESULTS	54
2	Milan Piva DVM, MS, MPH	EFFECTS OF ORAL OMEGA-3 FATTY ACID SUPPLEMENTATION ON INTRAOCULAR PRESSURE AND TEAR FILM PARAMETERS IN HEALTHY DOGS	55
3	Emilia Starchvick BA	ONGOING RETROSPECTIVE ANALYSIS OF OPHTHALMIC DISORDERS IN FRENCH BULLDOGS PRESENTING TO AN OPHTHALMOLOGY SPECIALTY CLINIC IN SOUTHERN OREGON	56
4	Seonmi Kang DVM, MS, PhD, DAiCVO	CLINICAL EFFICACY OF NSAID-BASED THERAPY WITHOUT IMMUNOSUPPRESSANTS FOR THE TREATMENT OF CANINE MARGINAL BLEPHARITIS	57
5	Nancy Park-Doner VMD, DACVO, CVA	INTEGRATIVE THERAPY OPTIONS FOR TREATMENT OF BLEPHARITIS IN DOGS	58
6	Alexandra Bergen DVM	EXAMINATION OF RISK FACTORS ASSOCIATED WITH QUALITY OF ANESTHESIA RECOVERY AFTER OCULAR SURGERY IN DOGS AND CATS: A RETROSPECTIVE STUDY OF 288 CASES (2022-2024)	59
7	Catharina van Halderen BSc, DVM	RETROSPECTIVE ANALYSIS OF POST-TRANSPALPEBRAL ENUCLEATION COMPLICATIONS IN DOGS ASSOCIATED WITH THE USE OF PERIORBITAL LIPOSOMAL BUPIVACAINE AND SILICONE INTRAORBITAL IMPLANTS (245 EYES)	60
8	Marissa Mathews DVM	RESOLUTION OF DELAYED-ONSET POST-ENUCLEATION SELF-TRAUMA IN A CAT VIA LOCAL ANESTHETIC AND STEROIDS	61
9	Tracy Nguyen Jaggers DVM	A COMBINED MODIFIED GLABELLAR FLAP AND LATERAL CHEEK ROTATIONAL FLAP TO RECONSTRUCT THE MEDIAL CANTHUS IN A DOG WITH AN EYELID MAST CELL TUMOR	62
10	Donghee Kim DVM, MS	ULTRASOUND BIOMICROSCOPIC DETECTION OF LENS SUBLUXATION IN DOGS UNDERGOING PHACOEMULSIFICATION	63
11	Jiyi Hwang DVM	PRE- AND POSTOPERATIVE EVALUATION OF IRIDOCORNEAL ANGLE, CILIARY CLEFT, AND MUSCLE CHANGES IN CANINE INTUMESCENT CATARACTS USING ULTRASOUND BIOMICROSCOPY	64
12	Emma Kobitter DVM	POSTOPERATIVE COMPLICATIONS AND VISUAL OUTCOMES FOLLOWING PHACOEMULSIFICATION IN BRACHYCEPHALIC DOGS: A RETROSPECTIVE STUDY	65

# POSTER SESSION THURSDAY

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13	Joao Alfredo Kleiner DVM, MSc	ACRYLIC FOLDABLE INTRAOCULAR LENS EXPLANTATION USING THE "TWIST AND PULL" TECHNIQUE	66
14	Alex Zilberfarb DVM	KCS IS A SIGNIFICANT RISK FACTOR FOR A NEGATIVE VISUAL OUTCOME FOLLOWING CORNEAL PERFORATION IN DOGS	67
15	Benjamin Reynolds BVSc, FCert, DACVO	DIAGNOSIS AND TREATMENT OF LIPID-DEFICIENT EVAPORATIVE DRY EYE DISEASE IN DOGS	68
16	Nayone Lantyer-Araujo DVM, PhD	PHARMACOKINETICS, PHARMACODYNAMICS, AND MECHANISM OF ACTION OF A NOVEL SPECIES-INSPIRED LIPID THERAPY (RNPL593) FOR THE TREATMENT OF EVAPORATIVE DRY EYE DISEASE	69
17	Gabriela Madruga DVM, MSc, PhD	EFFECTS OF 0.2% CYCLOSPORINE A ON CONJUNCTIVAL TRANSFORMING GROWTH FACTOR B2 AND VASCULAR ENDOTHELIUM GROWTH FACTOR B2 IN DOGS WITH KERATOCONJUNCTIVITIS SICCA	70
18	Alexandra Bergen DVM	EFFICACY OF INTRAVITREAL CIDOFOVIR CHEMICAL CYCLOABLATION IN RABBITS WITH CHRONIC GLAUCOMA	71
19	Donghee Kim DVM, MS	QUANTITATIVE ASSESSMENT OF ANTERIOR CHAMBER STRUCTURAL CHANGES IN DOGS WITH PRIMARY ANGLE-CLOSURE GLAUCOMA USING ULTRASOUND BIOMICROSCOPY	72
20	Ji Seung Jung DVM	MORPHOMETRIC ANALYSIS OF THE CILIARY BODY IN A DIVERSE POPULATION OF CLINICALLY NORMAL DOGS USING TRANSVERSE ULTRASOUND BIOMICROSCOPY	73
21	Jacklin Pletcher DVM	COMPARISON OF INTRAOCULAR PRESSURE IN NON-GLAUCOMATOUS AND GLAUCOMATOUS DOGS USING REBOUND TONOMETRY IN DIFFERENT ENVIRONMENTAL SETTINGS	74
22	Kelsey Cornman DVM	EFFECT OF LIGHT INTENSITY ON CILIARY CLEFT PARAMETERS USING ULTRASOUND BIOMICROSCOPY IN NORMAL DOGS	75
23	Mirae Lee DVM	ULTRASOUND BIOMICROSCOPY OF 1% ATROPINE-INDUCED OCULAR CHANGES AND INTRAOCULAR PRESSURE IN DOGS	76
24	Sooyeon Lee DVM	ANTERIOR CHAMBER PARAMETERS IN SHIH TZU USING ULTRASOUND BIOMICROSCOPY AND ASSOCIATION WITH PRIMARY ANGLE CLOSURE GLAUCOMA SUSCEPTIBILITY	77
25	Melaney Mayes DVM	PRIMARY GLAUCOMA IN A LITTER OF LOP RABBITS	78



# GENERAL SESSION THURSDAY

8:00am-8:05am	Tammy Michau DVM, MS, MSpVM, DACVO, HPEC	PROGRAM COMMITTEE CHAIR WELCOME
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## IN-DEPTH SPEAKER

8:05am-9:00am	Derick Whitley DVM, DACVP	ARTIFICIAL INTELLIGENCE IN VETERINARY DIAGNOSTICS	18
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## GENERAL SESSION, SURGERY

9:00am-9:15am	Aaron Sieve DVM	MICROBIOTA ANALYSIS AND STANDARD CULTURE IDENTIFY BACTERIA IN OPHTHALMIC TRY PAN BLUE SOLUTION COMMONLY USED DURING CANINE CATARACT SURGERY	80
9:15am-9:30am	Caroline Treadwell DVM	ANTIMICROBIAL EFFECT OF ULTRAVIOLET C (UV-C) LIGHT COMPARED TO STANDARD POVIDONE-IODINE PROTOCOL FOR PREOPERATIVE DISINFECTION OF THE PERIOcular AREA	81
9:30am-9:45am	Rachel Davis DVM, MS, DACVO	POSTOPERATIVE BILATERAL PHACOEMULSIFICATION OUTCOMES IN DOGS RECEIVING SUBCONJUNCTIVAL TRIAMCINOLONE WITH OR WITHOUT TOPICAL ANTI-INFLAMMATORY THERAPY ("DROPLESS" CATARACT SURGERY)	82
9:45am-10:00am	Riley Aronson DVM	BRINGING 'BIG DATA' TO VETERINARY OPHTHALMOLOGY: PRELIMINARY REPORT OF A 19-INSTITUTION RETROSPECTIVE STUDY ON THE OUTCOMES, RISK FACTORS, AND RISK MITIGATORS OF PHACOEMULSIFICATION IN 5,660 EYES	83

Resident Manuscript Awards will be presented at 10:00am

10:15am-11:00am BREAK IN THE EXHIBIT HALL

# GENERAL SESSION THURSDAY

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## GENERAL SESSION, SURGERY

11:00am-11:15am	Haemi Seol DVM	EFFECTS OF CAPSULAR TENSION RING IMPLANTATION ON CILIARY BODY AND CILIARY CLEFT USING ULTRASOUND BIOMICROSCOPY	84
11:15am-11:30am	Alex Sigmund DVM, DACVO	NOVEL APPLICATION OF A FREE TARSOCONJUNCTIVAL EYELID GRAFT COMBINED WITH SUBCONJUNCTIVAL ENUCLEATION FOR MANAGING EYELID AGENESIS IN FOUR CATS	85
11:30am-11:45am	Carmen Colitz DVM, PhD, DACVO, CLOVE, MBA	RETROSPECTIVE EVALUATION OF SURGICAL CONJUNCTIVAL GRAFTING IN PINNIPEDS UNDER HUMAN CARE	86
11:45am-12:00pm	Sidney Ryan VMD	TREATMENT OUTCOMES OF SURGICAL VERSUS MEDICAL MANAGEMENT FOR CANINE CORNEAL FULL-THICKNESS PERFORATIONS: A RETROSPECTIVE STUDY	87

## 12:00pm-1:30pm LUNCH - ATTENDEES ARE ON THEIR OWN

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## IN-DEPTH SPEAKER

1:30pm-2:30pm	András Komáromy DVM, PhD, DACVO, DECVO, FARVO	NEW DEVELOPMENTS IN GLAUCOMA	19
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## GENERAL SESSION, GLAUCOMA

2:30pm-2:45pm	Sanskriti Potnis DVM	LONG TERM ( $\geq 1$ YEAR) OUTCOMES IN 38 CANINE EYES TREATED WITH COMBINED ENDOSCOPIC CYCLOPHOTOCOAGULATION AND AHMED VALVE IMPLANTATION FOR GLAUCOMA	88
2:45pm-3:00pm	Lisa Gibson DVM	THE EFFECT OF MODERATE-INTENSITY AEROBIC EXERCISE ON INTRAOCULAR PRESSURE IN DOGS WITH AND WITHOUT PRIMARY CLOSED ANGLE GLAUCOMA	89
3:00pm-3:15pm	Maria Ibañez Vilanova DVM	ACCURACY OF INTRAOCULAR PRESSURE (IOP) MEASUREMENT COLLECTED BY CLIENTS USING iCARE TONOVET® PET	90

## 3:15pm-4:00pm BREAK IN THE EXHIBIT HALL

## 3:15pm-4:00pm POSTER PRESENTERS WILL BE AVAILABLE FOR QUESTIONS BY THEIR POSTER

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4:00pm-5:00pm	Genetics Committee	ACVO CAER INTERACTIVE SESSION	20
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## 5:00pm-6:00pm HAPPY HOUR IN THE FOYER

# POSTER SESSION FRIDAY

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2	Hiroko Iwashita BVSc, PhD	DIFFERENTIAL EFFECTS OF ULTRAVIOLET A-INDUCED INJURY TO CORNEAL ENDOTHELIAL CELLS IN HEALTH AND DISEASE	93
3	Jaegook Lim DVM, PhD	CHARACTERIZATION OF A NOVEL BILATERAL CENTRAL CORNEAL STROMAL DYSTROPHY IN DOGS	94
4	Xiaochen Yuan BS	INSULIN-LIKE GROWTH FACTOR-1 (IGF-1) MODULATION OF MYC EXPRESSION IN THE CORNEAL EPITHELIUM ALTERS WOUND HEALING POTENTIAL	95
5	Petr Soukup DVM, PhD, DECVO	ARGON COLD PLASMA TREATMENT FOR CORNEAL DISEASE IN CLINICAL SETTING: SHORT-TERM AND LONG-TERM TOLERABILITY AND SAFETY OUTCOMES	96
6	Petr Soukup DVM, PhD, DECVO	ARGON COLD PLASMA TREATMENT SIGNIFICANTLY SHORTENS HEALING TIME OF SPONTANEOUS CHRONIC CORNEAL EPITHELIAL DEFECTS IN FRENCH BULLDOGS	97
7	Madeline Hughley DVM	ASSESSMENT OF SAFETY, EFFICACY, AND CORNEAL SEQUESTRUM DEVELOPMENT AFTER DIAMOND BURR KERATOTOMY IN FELINES	98
8	Gabriela Madruga DVM, MSc, PhD	EFFECTS OF 0.2% CYCLOSPORINE A ON CONJUNCTIVAL TRANSFORMING GROWTH FACTOR B2 AND VASCULAR ENDOTHELIUM GROWTH FACTOR B2 IN DOGS WITH KERATOCONJUNCTIVITIS SICCA	99
9	Nicki Doan DVM	INVASIVE AMELANOTIC MELANOMA AFFECTING THE IRIS AND CONJUNCTIVA IN A CAT	100
10	Dwiyale Lorquet BS	COMPARISON OF NOVEL AND ESTABLISHED BEHAVIORAL VISION TESTING METHODS IN DOMESTIC CATS	101
11	Natya Thirunagari BS	FELINE CORNEAL STROMAL INVASIVE SQUAMOUS CELL CARCINOMA	102
12	Ashley Mauer DVM	OPHTHALMIC MANIFESTATIONS OF FELINE HERPESVIRUS (FHV-1): A SURVEY OF THE GENERAL PRACTITIONER'S APPROACH TO TREATMENT AND MANAGEMENT	103
13	Junyeong Ahn DVM, MS	MANAGEMENT OF FELINE CORNEAL SEQUESTRUM WITH DIAMOND BURR DEBRIDEMENT AND BANDAGE CONTACT LENS: OUTCOMES IN 15 CASES	104
14	Rachel Wright DVM	FELINE OCULAR POST-TRAUMATIC SARCOMA SPINDLE CELL VARIANT WITH EXTRAOCULAR EXTENSION AND METASTASIS IN A CAT	105



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16	Elizabeth Gregorio VMD	IRIS HYPERPIGMENTATION IN CATS: PROGRESSION, GLOBE RETENTION AND LONG-TERM SURVIVAL	107
17	Younjin Han DVM	CORTICOSTEROID TREATMENT MAY BE A SIGNIFICANT RISK FACTOR FOR DEVELOPMENT OF ACUTE BULLOUS KERATOPATHY IN CATS	108
18	Allison Ludwig DVM, PhD	CLINICOPATHOLOGIC FEATURES AND RISK FACTORS ASSOCIATED WITH SNOWBANKING IN CATS WITH CHRONIC LYMPHOPLASMACYTIC UVEITIS	109
19	Kevin Fritz DVM, DACVO	RETROSPECTIVE STUDY ON THE SEROPREVALENCE OF INFECTIOUS DISEASES IN CANINES AND FELINES PRESENTING WITH UVEITIS IN CENTRAL/SOUTH TEXAS	110
20	Abigail Babbidge DVM	INITIAL STEPS TO STANDARDIZE OPHTHALMIC EVALUATION IN 150 EYES OF ROCKFISH (SEBASTES SP): A FRAMEWORK FOR AQUATIC SPECIES OCULAR HEALTH	111
21	Marianna Bacellar-Galdino DVM, MSc, PhD	LACRIMAL GLAND MEASUREMENTS IN MOST COMMON PRECLINICAL LABORATORY ANIMALS	112
22	Vanessa Raptis DVM	AN OCULAR MANIFESTATION OF A SYSTEMIC DISEASE WITH ENCEPHALITIZOON POGONAE IN A JUVENILE BEARDED DRAGON (POGONA VITTICEPS)	113
23	Ana Ripolles-Garcia DVM, PhD	FLAVOPROTEIN FLUORESCENCE IMAGING IN RHESUS MACAQUES: A TRANSLATIONAL TOOL FOR EARLY DETECTION OF OPTIC NEUROPATHIES IN VETERINARY PATIENTS	114
24	Cassidy Sproul DVM	UNILATERAL HYPERMATURE CATARACT WITH SUBSEQUENT LENS CAPSULE RUPTURE AND ANTERIOR NUCLEAR EXTRUSION IN A NORTH AMERICAN RIVER OTTER	115
25	Heitor Fioravanti DVM	OCULAR FINDINGS IN 30 GOLDFISH (CARASSIUS AURATUS) IN BRAZIL	116

# GENERAL SESSION FRIDAY

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8:15am-8:30am	Karin Handel DVM	DISEASE ONSET AND PROGRESSION IN AN EARLY ONSET MURINE MODEL OF FUCHS' ENDOTHELIAL CORNEAL DYSTROPHY (FECD)	119
8:30am-8:45am	Erin Hisey PhD	MUCIN 4 DEFICIENT MICE EXHIBIT ANATOMICAL AND FUNCTIONAL DECREASES IN THEIR CORNEAL BARRIER WITH REDUCED CORNEAL INNERVATION	120
8:45am-9:00am	Ellis Chase DVM	CORNEAL EPITHELIAL INCLUSION CYSTS IN DOGS: CLINICAL, HISTOPATHOLOGIC, AND IN VIVO CONFOCAL MICROSCOPIC FEATURES OF FOURTEEN CASES	121
9:00am-9:15am	Erinn Mills DVM	A PRELIMINARY STUDY INVESTIGATING THE QUANTIFICATION OF CORNEAL LEUKOCYTES BY FLOW CYTOMETRY IN AWAT2 KNOCKOUT MICE	122
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9:30am-9:45am	Niranjana Chandrasekaran PhD	CROSS-SECTIONAL INSIGHTS: COMPUTED TOMOGRAPHY AND ULTRASONOGRAPHY IN CANINE EYE DISEASE DIAGNOSIS	124
9:45am-10:00am	Meredith McClure DVM	TEAR FILM PHARMACOKINETICS OF PARENTERAL CEFOVECIN AND IN VITRO ANTIBACTERIAL ACTIVITY AGAINST COMMON CANINE OCULAR PATHOGENS	125
10:00am-10:15am	Samuel McCuskey DVM	INCIDENCE AND PROGRESSION OF OPHTHALMIC EXAMINATION FINDINGS IN HEALTHY, AGING COMPANION DOGS	126
10:15am-11:00am	<b>BREAK IN THE EXHIBIT HALL</b>		
10:15am-11:00am	<b>POSTER PRESENTERS WILL BE AVAILABLE FOR QUESTIONS BY THEIR POSTER</b>		

# GENERAL SESSION FRIDAY

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<b>IN-DEPTH SPEAKER</b>			
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<b>12:00pm-1:30pm LUNCH - ATTENDEES ARE ON THEIR OWN</b>			
Time	Presenting Author	Title	Page
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1:45pm-2:00pm	Benjamin Reynolds BVSc FCert(GeriatricMed) DACVO	FELINE ULCERATIVE KERATITIS ATTRIBUTED TO FELINE HERPESVIRUS-1: RISK FACTORS FOR PROLONGED CORNEAL ULCER DURATION, PROGRESSION TO CORNEAL SEQUESTRUM AND DEVELOPMENT OF CHRONIC STROMAL KERATITIS IN CLIENT-OWNED CATS	128
2:00pm-2:15pm	Ashley Bowyer DVM, MS	PHARMACOKINETICS AND ADVERSE EFFECTS OF VORICONAZOLE ADMINISTERED ORALLY Q72 HOURS IN HEALTHY CATS	129
2:15pm-2:30pm	Eric Ledbetter DVM, DACVO	EVALUATION OF TOPICAL OPHTHALMIC APPLICATION OF PENCICLOVIR CREAM IN CATS WITH EXPERIMENTAL OCULAR FELINE HERPESVIRUS-1 INFECTION	130
2:30pm-2:45pm	Lionel Sebbag DVM, PhD, DACVO	THE IMPACT OF A PREBIOTIC-ENRICHED GASTROINTESTINAL DIET ON HAWS SYNDROME IN CATS	131
2:45pm-3:00pm	Lionel Sebbag DVM, PhD, DACVO	VITAL DYE AND LIGHT MICROSCOPY EVALUATION OF THE CORNEAL ENDOTHELIUM IN FELINE EYES	132
3:00pm-4:00pm		FELINE FORUM PANEL DISCUSSION	
<b>4:00pm-4:45pm FINAL BREAK IN THE EXHIBIT HALL - THE EXHIBIT HALL WILL BE CLOSED ON SATURDAY</b>			
4:45pm-5:15pm	GRAPEVINE C (General Session Room)	NEW DIPLOMATE INDUCTION & CELEBRATION All Attendees and Families are Welcome	
6:00pm-9:00pm	AUSTIN RANCH	ACVO VISION FOR ANIMALS FOUNDATION (VAF) SEQUINS AND SPURS SOIREE	



# POSTER SESSION SATURDAY

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1	Olivia Rodts-Palenik DVM	CHANGES IN ANTIBIOTIC RESISTANCE IN HORSES AND DOGS WITH BACTERIAL ULCERATIVE KERATITIS 2013-2023	133
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5	Samantha Marzano DVM	TREATMENT OF EQUINE INTEGUMENTARY, OCULAR, AND PERIOcular NEOPLASIA WITH STANDING EXCISION AND PHOTODYNAMIC THERAPY: EFFICACY AND OWNER SATISFACTION	137
6	Christine Boles DVM	RETROSPECTIVE CASE SERIES: ADNEXAL MAST CELL TUMORS IN THE EQUINE	138
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8	Kathryn Diehl MS, DVM, DACVO	SHORT TERM DAILY ORAL ADMINISTRATION OF CANNABIDIOL (CBD) DOES NOT IMPACT REBOUND TONOMETRY INTRAOCULAR PRESSURE OR SCHIRMER TEAR TEST VALUES IN HEALTHY ADULT HORSES	140
9	Vanessa Raptis DVM	THE STERILITY OF A DISPOSABLE SPRAY CAP ADDED TO A TRADITIONAL EYE DROPPER BOTTLE USED IN AN EQUINE BARN ENVIRONMENT	141
10	Paula Galera DVM, MSc, PhD, DCLOVE, DCBOV	TEAR FERNING PATTERNS IN CLINICALLY HEALTHY BOVINE EYES: A STEPANIZER-BASED EVALUATION	142
11	Paula Galera DVM, MSc, PhD, DCLOVE, DCBOV	EVALUATION OF TEAR FERNING PATTERNS IN HEALTHY SHEEP EYES USING ROLANDO AND MASMALI SCALES	143
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15	Kathryn Diehl MS, DVM, DACVO	SKELETAL ABNORMALITIES IN TWO SHETLAND SHEEPDOGS HOMOZYGOUS FOR THE BBS2-PRA MUTATION	147
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21	Lionel Sebbag DVM, PhD, DACVO	"EYE OF THE BLAST": OCULAR TRAUMA FROM EXPLOSIVE AMMUNITION IN FOUR DOGS	153

# GENERAL SESSION SATURDAY

**7:00am-8:15am BREAKFAST BUFFET IN THE TEXAS BALLROOM**

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**RESIDENTS' WORKSHOP - GRAPEVINE C MEETING ROOM** (All Attendees Welcome)

8:00am-9:00am	Lydia love DVM, DACVAA	VETERINARY PATIENT SAFETY BEYOND TICKING THE BOX	22
9:00am-10:00am	Melinda Larson DVM, DACVIM (SAIM)	THE CRITICAL IMPACT OF MEDICAL ERROR	22
10:00am-10:45am		PANEL DISCUSSION	

Time	Location	Title	Page
8:15am-9:15am	Grapevine A	ACVO ANNUAL MEETING OF VOTING MEMBERS (AMVM) Agenda provided in email	
9:15am-10:15am	Grapevine A	ABVO DIPLOMATES MEETING Immediately following AMVM	

**10:15am-11:00am BREAK**

Time	Presenters	Title	Page
10:45am-10:55am	Grapevine C	ACVO MEMORIAL SLIDE SHOW (SILENT)	

**KEYNOTE PRESENTATION**

11:00am-12:00pm	Brian Hare PhD	THE PUPPY KINDERGARTEN: THE NEW SCIENCE OF RAISING A GREAT DOG	23
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**12:00pm-1:00pm LUNCH BUFFET IN THE TEXAS BALLROOM**



# GENERAL SESSION SATURDAY

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1:15pm-1:30pm	Jennifer Kwok Bsc (Hons), BVetMed, MRCVS	SERIAL ERG AND OCT REVEAL VARIABLE LONG-TERM PHENOTYPE OF CORD-PRA IN ENGLISH SPRINGER SPANIELS	156
1:30pm-1:45pm	Paul McCarthy BSc, DVM	EVALUATION OF HEARING IN DOGS WITH SUDDEN ACQUIRED RETINAL DEGENERATION SYNDROME (SARDS)	157
1:45pm-2:00pm	Sangwan Park DVM, PhD	CLIC6 DEFICIENCY TRIGGERS ABERRANT APICAL MICROVILLI IN RETINAL PIGMENT EPITHELIUM	158
2:00pm-2:15pm	Meredith McClure DVM	CHARACTERIZING PROGRESSION OF RETINAL DEGENERATION IN DOGS WITH PROGRESSIVE RETINAL ATROPHY DUE TO A PDE6A MUTATION – AN OPTICAL COHERENCE TOMOGRAPHY STUDY	159
2:15pm-2:30pm	Billie Beckwith-Cohen DVM, MBA, PhD, FAAO, DACVO	ANATOMICAL AND FUNCTIONAL DISCONNECT AND THE CHALLENGES IN REVERSING BLINDNESS IN A GUCY2D-LCA1 DOG MODEL	160
2:30pm-2:45pm	Zandrea Simpson DVM	CORNEAL COLLAGEN CROSSLINKING (CXL) AS ADJUNCTIVE TREATMENT FOR EQUINE CORNEAL ULCERS: A RETROSPECTIVE, DESCRIPTIVE STUDY	161
2:45pm-3:00pm	Nicole Scherrer DVM, DACVO	OCULAR FINDINGS IN 550 HORSES PRESENTED FOR NON-OPHTHALMIC ISSUES TO A REFERRAL HOSPITAL	162
3:00pm-3:15pm	<b>BREAK - POSTER PRESENTERS WILL BE AVAILABLE FOR QUESTIONS BY THEIR POSTER</b>		

# GENERAL SESSION SATURDAY

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3:30pm-3:45pm	Anna Catherine Bowden DVM, DACVO	HISTOLOGIC FINDINGS OF AMPHOTERICIN B INTRASTROMAL CORNEAL INJECTIONS IN HORSES	164
3:45pm-4:00pm	Emily Tucker-Retter DVM, PhD	TISSUE REACTING ANCHORING PHARMACEUTICAL (TRAP) WITH PACLITAXEL AS A NOVEL INTRATUMORAL TREATMENT FOR EYELID SQUAMOUS CELL CARCINOMA IN HORSES	165
4:00pm-4:15pm	Callie Rogers DVM	THE EFFECTS OF PHOTODYNAMIC THERAPY WITH EMUNDO® AND 810NM DIODE LASER ON THE HEALTHY EQUINE CORNEA	166
4:15pm-4:30pm	Troy Toddy DVM	TREATMENT OUTCOMES OF DEFINITELY DIAGNOSED EQUINE IMMUNE-MEDIATED KERATITIS	167
4:30pm-4:45pm	Kelly Knickelbein VMD, DACVO	THE EFFECTS OF ATROPINE 1% OPHTHALMIC SOLUTION ON THE MORPHOLOGY OF THE EQUINE IRIDOCORNEAL ANGLE AND CILIARY CLEFT ASSESSED BY ULTRASOUND BIOMICROSCOPY	168
4:45pm-5:00pm	Shenise Howard DVM	TEAR FILM PHARMACOKINETICS AND SAFETY EVALUATION OF INJECTABLE PLGA-BASED KETOTIFEN FUMARATE IMPLANTS IN HEALTHY HORSES	169
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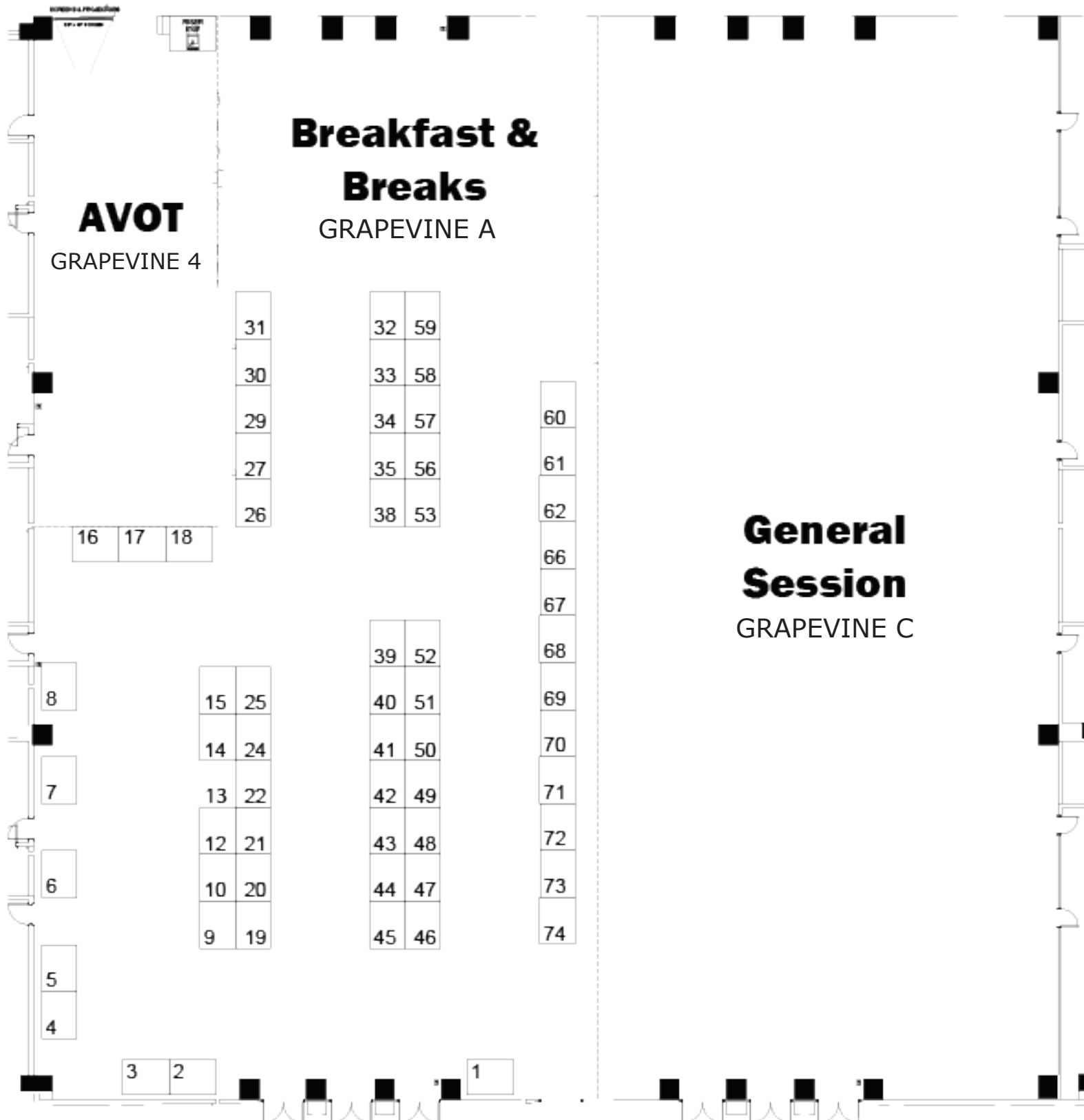
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# EXHIBIT HALL

WEDNESDAY	THURSDAY	FRIDAY
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	<b>AM Break</b> 10:15 am - 11:00 am	<b>AM Break</b> 10:15 am - 11:00 am
	<b>Lunch on own</b> 12:00 pm - 1:30 pm	<b>Lunch on own</b> 12:00 pm - 1:30 pm
	<b>PM Break</b> 3:15 pm - 4:00 pm	<b>PM Break</b> 4:00 pm - 4:45 pm

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# POSTER SESSION THURSDAY

VALIDATION OF THE EYEMATE SUPRACHOROIDAL SENSOR FOR TELEMETRIC MEASUREMENT OF INTRAOCULAR PRESSURE IN NORMAL EX VIVO EQUINE AND CANINE GLOBES – PRELIMINARY RESULTS (PN Buckman, AM Komáromy) Department of Small Animal Clinical Sciences, College of Veterinary Medicine, Michigan State University, East Lansing, MI, USA

**Purpose.** To determine the accuracy of the EYEMATE suprachoroidal sensor (EYEMATE-SC; Implants for Research) for telemetric measurement intraocular pressure (IOP) in horses and dogs using ex vivo equine and canine globes. **Methods.** The EYEMATE-SC sensor (7.8 mm x 3.8 mm x 1 mm) was implanted in the suprachoroidal space of two freshly enucleated normal equine eyes and four freshly enucleated normal canine eyes. The anterior chambers were cannulated and connected to a reservoir of Plasma-Lyte A and a manometer. Starting at a manometric IOP of 5 mmHg, the pressure was progressively increased to 80 mmHg by raising the reservoir. Triplicate IOP measurements were taken with the EYEMATE-SC using a portable reading device for telemetric pressure transmission via a radiofrequency band. These measurements were compared to manometric pressure by linear regression analysis. **Results.** A strong positive linear regression is observed between EYEMATE-SC and manometry IOPs in both equine and canine eyes (equine:  $r^2 = 0.99$ , canine:  $r^2 = 0.99$ ). The EYEMATE-SC was unable to measure pressures  $\geq 70$  mmHg in either species. **Conclusions.** Measuring equine and canine IOPs from the suprachoroidal space using the EYEMATE-SC provided accurate results over an extensive range of pressures in ex vivo globes. This telemetric sensor can assist with long-term, frequent tonometry by pet owners and clinicians. Although the sensor could not detect pressures above 70 mmHg, this flaw was not considered clinically relevant. Supported in part by NIH grant R01-EY032478. **None.**



# POSTER SESSION THURSDAY

EFFECTS OF ORAL OMEGA-3 FATTY ACID SUPPLEMENTATION ON INTRAOCULAR PRESSURE AND TEAR FILM PARAMETERS IN HEALTHY DOGS (ML Piva, 1 LM Freeman, 1,2 NR Matthan, 3 AH Lichtenstein, 3 ME Milewski, 1 CP Verling, 1 and VY Yang, 1) Department of Clinical Sciences, Cummings School of Veterinary Medicine at Tufts University;1 Friedman School of Nutrition Science and Policy;2 Jean Mayer USDA Human Nutrition Research Center on Aging.3

**Purpose.** To evaluate the effects of long-term oral omega-3 fatty acid supplementation on intraocular pressure (IOP) and tear film parameters in healthy dogs, utilizing both an omega-3 index (O3I) and erythrocyte fatty acid profile for a comprehensive assessment of fatty acid status. **Methods.** Prospective, randomized, double-blinded study of healthy staff- and student-owned dogs. Physical and ophthalmic examinations were performed at baseline and after 3 months of supplementation with 173mgx(kg<sup>0.75</sup>) fish oil capsules or olive oil control. Evaluations included Schirmer tear test-I (STT-I), tear film breakup time (TFBUT), and tonometry. Pre- and post-supplementation analysis of fatty acids and O3I was performed. Compliance was evaluated by capsule count. Results are reported as mean±SD or median (range). **Results.** Thirty-six dogs were enrolled with one drop-out for a total of 18 females and 17 males. A wide variety of dog breeds were represented. Age was 5.4 years (1.3-11.7), and body weight was 24.9±8.1 kg. Actual daily dose of fish oil was 181mg/kg<sup>0.75</sup> (153-275). Fifteen dogs have completed the study and capsules were administered for 92 days (89-98). Baseline IOP was 18±3 mmHg and post-supplementation was 173 mmHg. Baseline STT-1 was 20 mm/min (15-35), and post-supplementation was 20 mm/min (15-35). Baseline TFBUT was 13.01±4.05 sec and post-supplementation was 19.58±7.09 sec. Baseline O3I was 1.83% (0.30-4.82). Mean compliance rate was 93.7%. **Conclusions.** Oral omega-3 supplementation was well-tolerated. **None.**

# POSTER SESSION THURSDAY

ONGOING RETROSPECTIVE ANALYSIS OF OPHTHALMIC DISORDERS IN FRENCH BULLDOGS PRESENTING TO AN OPHTHALMOLOGY SPECIALTY CLINIC IN SOUTHERN OREGON (EL Starchvick, 1 AH Babbidge, 2 CD Bliss, 2 and CR White 2) Carlson College of Veterinary Medicine, Oregon State University; 1 Bliss Animal Eye Care, Medford, Oregon.2

**Purpose.** To identify the most common ophthalmic disorders in French Bulldogs on initial presentation to an ophthalmology specialty clinic. **Methods.** This initial retrospective study included 75 French Bulldog and French Bulldog mixes (148 eyes) presenting to Bliss Animal Eye Care in Medford, Oregon, USA, between January 1, 2024, and July 15, 2025 (data collection ongoing). Patient information was collected from electronic medical records, including signalment, intraocular pressure measurements, Schirmer tear test results, ophthalmic examination findings, and diagnoses. All patients were presenting for a new complaint, and no repeat diagnoses were included. All ocular examinations were performed by a Diplomate of the American College of Veterinary Ophthalmologists with slit lamp biomicroscopy, and indirect ophthalmoscopy. Microsoft EXCELL was used for data analysis and standard deviation calculations. **Results.** 40 out of the 148 eyes examined were normal. The remaining 108 eyes (72.9%) had at least one diagnosed ophthalmic disorder with a total of 166 diagnoses made. Out of the 166 disorders, the most common findings consisted of 18.0% superficial corneal ulcers, 9% cataracts, 7.8% keratoconjunctivitis sicca, 6% tear film abnormalities, 4.8% dermoids 4.2% keratitis, 3.6% glaucoma, and 3.6% prolapsed gland of the third eyelid. **Conclusions.** French Bulldogs are a brachycephalic breed which predisposes them to a multitude of ophthalmic disorders. This ongoing retrospective review is aimed at identifying the prevalence of various ophthalmic disorders in French Bulldogs with the goal of collaborating on enhancing preventative care, screening, and client education for this breed. **None.**

# POSTER SESSION THURSDAY

CLINICAL EFFICACY OF NSAID-BASED THERAPY WITHOUT IMMUNOSUPPRESSANTS FOR THE TREATMENT OF CANINE MARGINAL BLEPHARITIS (J Seo, 1 K Seo, 1 S Kang 1\*) Department of Veterinary Clinical Sciences, College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National University, Seoul, 08826, Korea.1

**Purpose.** To evaluate the clinical efficacy of oral carprofen and topical nonsteroidal anti-inflammatory drugs (NSAIDs), in the treatment of marginal blepharitis in dogs. **Methods.** Fourteen dogs diagnosed with marginal blepharitis were treated with oral carprofen (2 mg/kg BID) and topical eyedrops (TID) comprising 0.5% povidone-iodine solution, antibiotics, NSAIDs, and artificial tears, without immunosuppressive therapy. Clinical resolution was defined as complete disappearance of blepharedema, ulceration, and crusting. Topical steroids were subsequently used in cases with residual meibomitis. **Results.** The study included five Poodles, three Maltese, three Bichon Frise, and one each of Shih Tzu, Pomeranian, and Chihuahua (mean age 6.8; median 7.5; range 3–9 years). Eight of 14 dogs had a history of repeated immunosuppressive therapy at local clinics (mean duration 79.8; median 40; range 7–360 days). Oral carprofen was given for a mean of 18.3 (median 14; range 5–35) days, and topical NSAIDs for 20.4 (median 24; range 7–91) days. Clinical resolution occurred in 12 dogs, with a mean time to resolution of 20 (median 32; range 14–91) days. Four dogs received topical steroids, initiated at a mean of 42.5 days, for a mean of 20 (median 18; range 15–29) days. One dog required rescue immunosuppressive therapy, and one was excluded due to limited follow-up. Mean follow-up was 339.5 (median 321.5; range 14–986) days, with no recurrence. **Conclusions.** NSAID-based therapy effectively managed marginal blepharitis without immunosuppressive treatment and may be a viable option for recurrent cases with prior steroid-related adverse effects. **None.**

# POSTER SESSION THURSDAY

INTEGRATIVE THERAPY OPTIONS FOR TREATMENT OF BLEPHARITIS IN DOGS (N Park-Dorner).  
Integrative Ophthalmology For Pets, Los Angeles, CA.

**Purpose.** To introduce an alternative treatment protocol sans corticosteroids (CCS) in dogs being treated for blepharitis. **Methods.** A retrospective assessment of 10 client-owned dogs. Data collected included signalment, medical history, diet history, and ophthalmic exam findings. Both Western and Eastern therapies were incorporated. The primary Eastern therapy utilized was an oral Chinese herbal medication, Haliotis. The primary Western therapy utilized was topical Cefazolin Fortified Tears (CFT). **Results.** The cases of 10 dogs were evaluated. Nine of 10 dogs were affected bilaterally and the remaining dog was only affected OS. In addition to oral and topical treatments, diet and/or husbandry adjustments were recommended. During the follow-up period (range: 10 days to 1 year) the blepharitis either resolved or noticeably improved. The 9 dogs affected bilaterally also had confirmed or suspected concurrent immune-mediated conditions. Haliotis did not result in gastrointestinal distress in any of the dogs. One dog had a reported topical reaction to CFT. **Conclusions.** Integration of Haliotis with other conventional prescription medications and non-prescription recommendations resulted in satisfactory outcomes in all dogs. Haliotis may be considered when formulating a treatment plan in dogs who cannot tolerate CCS, are unresponsive to CCS, or when there is simply a desire to avoid CCS. Given that blepharitis is considered an immune-mediated condition or steroid-responsive condition, the clinician should be cognizant of other concurrent immune-mediated conditions. A multipronged, long-term systemic treatment plan is warranted. **None.**



# POSTER SESSION THURSDAY

EXAMINATION OF RISK FACTORS ASSOCIATED WITH QUALITY OF ANESTHESIA RECOVERY AFTER OCULAR SURGERY IN DOGS AND CATS: A RETROSPECTIVE STUDY OF 288 CASES (2022-2024) (AE Bergen, 1 AM Sage, 2 JS Eaton, 2 and SJ Hetzel, 3) UW Veterinary Care, University of Wisconsin-Madison; 1 School of Veterinary Medicine, University of Wisconsin-Madison; 2 School of Medicine and Public Health, University of Wisconsin-Madison; 3

**Purpose.** This retrospective study investigated possible risk factors associated with the quality of recovery in dogs and cats undergoing general anesthesia for ophthalmic surgery at an academic institution.

**Methods.** Data on 249 dogs and 39 cats who underwent general anesthesia for ophthalmic procedures from September 2022 to May 2024 at the University of Wisconsin-Madison Veterinary Care hospital were analyzed. A comprehensive review of the electronic medical records was conducted, focusing on variables including sex, age, weight, type of ocular surgical procedure, American Society of Anesthesiologist (ASA) physical status, emergency status, pre-medication, induction, and maintenance anesthetic agents, local blocks, total anesthesia time, intra-operative analgesics, pre-recovery sedation, and post-operative pain score. Recovery quality (QoR) was categorized as “good” or “poor” based on a modified recovery scale.

**Results.** Most patients were categorized as having a good QoR (200/288; 69.4%). In felines, a young age was strongly associated with poor QoR ( $P = 0.005$ ). In both canines and felines, use of recovery sedation is a highly reliable marker of poor QoR ( $P < 0.001$ ). The remainder of factors analyzed did not show any difference between quality of recovery. **Conclusions.** Recovery from veterinary ocular surgery is multifactorial, influenced by the choice of anesthetic agents, sedative use, patient health status, and the skill of the veterinary team. A comprehensive understanding of these factors, supported by ongoing research and tailored to the specific needs of individual patients, can improve recovery outcomes in ophthalmic patients undergoing anesthetic events. **None.**

# POSTER SESSION THURSDAY

RETROSPECTIVE ANALYSIS OF POST-TRANSPALPEBRAL ENUCLEATION COMPLICATIONS IN DOGS ASSOCIATED WITH THE USE OF PERIORBITAL LIPOSOMAL BUPIVACAINE AND SILICONE INTRAORBITAL IMPLANTS (245 EYES) (CCR van Halderen, 1 T Nuhsbaum, 2,3 ME Climans, 4 T Michau, 2 GPS Kwong, 1,5 and BV Rosa 1) University of Calgary, Faculty of Veterinary Medicine; 1 Apex Veterinary Ophthalmology Specialists; 2 VRCC Veterinary Specialty & Emergency Hospital; 3 Comparative Ocular Pathology Laboratory of Wisconsin; 4 Department of Community Health Sciences, Cumming School of Medicine, University of Calgary. 5

**Purpose.** To evaluate the incidence of post-transpalpebral enucleation complications associated with the use of liposomal bupivacaine and silicone intraorbital implants in dogs. **Methods.** Retrospective analysis was performed of 207 records of canine patients that underwent transpalpebral enucleation (245 eyes) between January 2017 and December 2018. Clients gave consent for record use. The patients were categorized as follows: Group 1 received neither an implant nor liposomal bupivacaine, group 2 received only liposomal bupivacaine, group 3 received only an implant, and group 4 received both. Post-operative complications were defined as redness, rubbing, and/or pain on palpation of the previously healed enucleation site. Associations between complication incidence, group, and other patient characteristics (i.e., age, breed, other analgesics used) were assessed using Kruskal-Wallis tests for continuous variables or Chi-square/Fisher's exact tests for categorical variables. **Results.** A total of 55 (22.4%) of 245 eyes received both peri-operative liposomal bupivacaine and an intraorbital implant at the time of enucleation. Of these, 13 eyes (23.6%) experienced a complication necessitating removal of the implant. No other group experienced an adverse reaction ( $P < 0.0001$ ), and the use of periorbital liposomal bupivacaine or an intraorbital implant alone was not associated with increased complication risk. Histopathology of the reactive tissue was characterized by inflammation, epithelial cysts, and fibrosis. **Conclusions.** The concurrent use of an intraorbital implant and periorbitally injected liposomal bupivacaine increases the risk of complications from 0% to 23.6%, and the combination should be approached with caution. Supported by UCVM DVLC 4<sup>th</sup> Year Research Project Grant. **None.**

# POSTER SESSION THURSDAY

RESOLUTION OF DELAYED-ONSET POST-ENUCLEATION SELF-TRAUMA IN A CAT VIA LOCAL ANESTHETIC AND STEROIDS (MR Matthews, 1 C Korb, 1 DJ Haeussler Jr, 2 and R Spatola 3) The Animal Eye Institute of Charleston;1 The Animal Eye Institute of Cincinnati;2 The Animal Eye Institute of Northern Kentucky.3

**Case Description.** A 6-year-old male neutered domestic shorthair cat underwent enucleation OS following a penetrating corneal injury with resultant septic implantation syndrome. The patient later developed self-trauma of the left orbital area three months postoperatively. **Clinical Findings.** Periorbital dermatitis and focal alopecia along the lateral aspect of the left orbit developed secondary to self-trauma. The orbit was concave with no swelling, drainage, or pain on palpation. Postoperative neuropathic pain was suspected. No improvement in clinical signs was noted after treatment with oral gabapentin twice daily and topical mupirocin ointment. **Treatment and Outcome.** Bupivacaine HCl (5 mg/mL) 1 mg/kg and dexamethasone SP (4 mg/mL) 0.1 mg/kg were injected into the orbital space OS immediately below the dorsal orbital rim. The patient was discharged with oral gabapentin and prednisolone. By two weeks post-injection, the self-trauma and periorbital dermatitis had resolved. Gabapentin was discontinued, and prednisolone was tapered over a two-week period. Clinical signs remained resolved at the last known follow-up. **Clinical Relevance.** This report describes the successful treatment of delayed onset post-enucleation self-trauma in a cat with an orbital injection of bupivacaine and dexamethasone and an oral course of prednisolone. This treatment protocol provided resolution of clinical signs without the need for sedation or general anesthesia. **None.**

# POSTER SESSION THURSDAY

A COMBINED MODIFIED GLABELLAR FLAP AND LATERAL CHEEK ROTATIONAL FLAP TO RECONSTRUCT THE MEDIAL CANTHUS IN A DOG WITH AN EYELID MAST CELL TUMOR (T Nguyen Jagers 1, JL Sheahan 1, KM Chang 1, and RB Goldenberg 1) Veterinary Eye Clinic, Calabasas, California

**Purpose.** To describe and evaluate a novel surgical technique—combining a modified glabellar flap with a lateral cheek rotational flap—for medial canthal reconstruction following mast cell tumor (MCT) excision in a dog. This is the first reported use of this combination in veterinary medicine, adapting a method from human oculoplastic surgery to achieve functional and cosmetic restoration in a veterinary patient. **Methods.** A 14-year-old female Boxer with a 35 × 34 mm MCT involving both upper and lower eyelid margins of the right medial canthus underwent tumor excision. Reconstruction was achieved using a modified glabellar flap for the upper defect and a lateral cheek rotational flap for the lower eyelid. Postoperative outcomes were evaluated for eyelid function, tear production, cosmetic appearance, and tumor recurrence over a six-month follow-up period. Histopathology assessed tumor grade, mitotic count, and surgical margins. **Results.** Histopathology confirmed a high-grade MCT with a mitotic count of 16 per 10 high-power fields and surgical margins <1 mm. Despite not achieving 1 cm margins, the dog showed no recurrence at six months. Functional outcomes included normal blinking, full eyelid closure during sleep, normal tear production, and no epiphora, indicating effective reconstruction. **Conclusions.** This is the first report of a combined modified glabellar and lateral cheek rotational flap for medial canthal reconstruction in veterinary patients. The technique yielded favorable functional and cosmetic results, even with narrow surgical margins. Further studies are needed to validate its efficacy across breeds and tumor types. **None**



# POSTER SESSION THURSDAY

ULTRASOUND BIOMICROSCOPIC DETECTION OF LENS SUBLUXATION IN DOGS UNDERGOING PHACOEMULSIFICATION. (DH Kim, JS Jung, JY Hwang, MR Lee, SY Lee, HM Seol and KM Park\*), Laboratory of Veterinary Ophthalmology, School of Veterinary Medicine, Chungbuk National University Cheong-ju, Korea

**Purpose.** Lens subluxation in dogs may go undetected during routine preoperative examinations, potentially resulting in complications during phacoemulsification. This study aimed to evaluate the utility of ultrasound biomicroscopy (UBM) in identifying lens instability prior to cataract surgery. **Methods.** Six dogs (eight eyes) scheduled for phacoemulsification underwent standard ophthalmic examinations, which revealed no clinical evidence of lens subluxation. Lens instability was subsequently assessed intraoperatively and eyes were grouped into subluxation (n=4) and normal (n=4) categories. Preoperative UBM was performed under general anesthesia in the ventrodorsal position. Parameters measured included peripheral anterior chamber depth (p-ACD), angle opening distance (AOD), iridocorneal angle (ICA), distance between ciliary process and crystal equator and iris-ciliary processes distance (ICPD), and root-iris angle (RIA). **Results.** Compared to normal eyes, the subluxation group exhibited significantly greater ICPD (mean 0.99 mm vs. 0.65 mm;  $p < 0.001$ ) and p-ACD (mean 2.66 mm vs. 2.33 mm;  $p < 0.05$ ), and a significantly lower RIA (mean  $95.7^\circ$  vs.  $109.4^\circ$ ;  $p < 0.05$ ). No significant differences were found in AOD ( $p = 0.7914$ ) or ICA ( $p = 0.0506$ ). **Conclusions.** UBM allowed for the detection of subclinical lens subluxation that was not identified via standard ophthalmic examinations. Incorporating UBM into preoperative evaluations may improve surgical planning and reduce complications during phacoemulsification in dogs. Supported by the National Research Foundation of Korea (NRF) Grant (RS-2024-00344226). And also by the Korean Fund for Regenerative Medicine (KFRM) Grant No. 22A0101L1-11. **None.**

# POSTER SESSION THURSDAY

## PRE-AND POSTOPERATIVE EVALUATION OF IRIDOCORNEAL ANGLE, CILIARY CLEFT, AND MUSCLE CHANGES IN CANINE INTUMESCENT CATARACTS USING ULTRASOUND BIOMICROSCOPY

(JY Hwang,<sup>1</sup> DH Kim,<sup>1</sup> JS Jung, <sup>1</sup> and KM Park <sup>1</sup>) College of Veterinary Medicine, Chungbuk National University, South Korea; <sup>1</sup>

**Purpose.** This study aimed to evaluate morphological changes in the iridocorneal angle (ICA), ciliary cleft (CC), and ciliary muscle associated with canine intumescent cataracts, using ultrasound biomicroscopy (UBM), with a focus on evaluating the potential risk of secondary glaucoma. **Methods.** UBM examinations were conducted on 53 eyes from 34 dogs, categorized into three groups: normal-incipient cataract (n=16), mature cataract (n=20), and intumescent cataract (n=17). Quantitative parameters analyzed included angle opening distance (AOD), ICA, ciliary cleft width (CCW), ciliary cleft length (CCL), ciliary cleft area (CCA), ciliary body axial length (CBAXL), ciliary process-sclera angle (CPSA), and ciliary body thickness (CBT). **Results.** The intumescent cataract group exhibited significant narrower AOD and ICA, marked CC narrowing ( $p < 0.05$ ), and ciliary body contraction compared with other groups. Post-phacoemulsification removal of the intumescent lenses resulted in notable widening of AOD, ICA, and CC dimensions; however, anteriorly rotated ciliary body persisted postoperatively. **Conclusion.** Intumescent cataracts induce significant structural changes, including angle narrowing and CC narrowing, potentially elevating glaucoma risk of development. Surgical intervention can partially restore anterior segment morphology by widening the narrowed ICA and CC, but persistent postoperative alterations underline the necessity for timely diagnosis and early surgical management to minimize long-term complications. Supported by the National Research Foundation of Korea (NRF) Grant (RS-2024-00344226) and by the Korean Fund for Regenerative Medicine (KFRM) Grant No. (22A0101L1-11). **None.**

# POSTER SESSION THURSDAY

POSTOPERATIVE COMPLICATIONS AND VISUAL OUTCOMES FOLLOWING PHACOEMULSIFICATION IN BRACHYCEPHALIC DOGS: A RETROSPECTIVE STUDY (E Kobitter, 1 T Baldwin, 1 E Fernandez-Juricic, 2 and BA Moore, 3) BluePearl Pet Hospital; 1 Department of Biological Sciences, Purdue University; 2 College of Veterinary Medicine, University of Florida.3

**Purpose.** To evaluate postoperative complications and visual outcomes across brachycephalic dog breeds following phacoemulsification, and to assess the influence of comorbidities, cataract maturity, and breed group. **Methods.** A retrospective review was performed of medical records from 49 brachycephalic dogs (93 eyes) that underwent phacoemulsification at BluePearl Clearwater, Sarasota, and Tampa hospitals between 2012 and 2024. Perioperative data, postoperative complications, and visual outcomes were recorded, with follow-up continued to the present date or as long as the doctor-patient relationship was maintained. Variables analyzed included diabetic status, cataract maturity, AKC breed group (toy vs nonsporting), uveitis grade, intraocular pressure (IOP), and long-term visual outcome. Statistical analyses included descriptive and generalized linear mixed models. **Results.** One week post-operatively, higher uveitis scores were detected in toy breeds compared to nonsporting breeds ( $p < 0.05$ ), diabetic dogs compared to non-diabetics, and dogs with immature cataracts compared to mature cataracts ( $p < 0.05$ ). Diabetic dogs had significantly higher anterior chamber or intracapsular fibrin presence one week postoperatively, and elevated IOP at the second recheck ( $p < 0.05$ ). Non-diabetic dogs had a higher probability of a negative outcome (e.g. development of glaucoma, retinal detachment, or loss of vision) than diabetic dogs at last follow-up ( $p < 0.05$ ). Dogs with mature cataracts were more likely to have negative visual outcomes at last follow-up ( $p < 0.05$ ). **Conclusions.** Diabetes, cataract maturity, and breed group are significant predictors of postoperative inflammation and visual outcome in brachycephalic dogs. These findings underscore the importance of preoperative risk assessment and postoperative monitoring, particularly for toy breeds and diabetic patients. **None**

# POSTER SESSION THURSDAY

ACRYLIC FOLDABLE INTRAOCULAR LENS EXPLANTATION USING THE “TWIST AND PULL” TECHNIQUE ([JA Kleiner](#)) Vetweb Veterinary Ophthalmology. Curitiba – Brazil

**Purpose:** Cataract surgery by phacoemulsification followed by an acrylic foldable intraocular lens (IOL) implantation is the gold standard method to remove the opacified lens and restore the emmetropic state in all species. Complications with lens implantation can occur (fractures, dislocations) and sometimes implant removal is necessary. This article shows a method to remove the IOL through a small incision using the “Twist and pull” technique. **Methods:** A 1.2 mm port incision in the clear cornea, 1 mm anterior to the limbus at 2 o’clock position is created. After making a second clear cornea incision 3.2 mm wide, at 10 o’clock the anterior chamber is filled with cohesive viscoelastic (2.2% sodium hyaluronate) to create space and protect the corneal endothelium. If the IOL is adhered to its lens capsule because of fibrosis, viscodissection can be used to help mobilize it. Using an atraumatic lens forceps, the IOL is brought outside its lens capsule and above the iris. With the same forceps the IOL is fully grasped on its lateral aspect, maintaining it parallel to the iris plane. A lens manipulator is inserted crossing the IOL’s surface holding it in position and avoiding touching the cornea. Using the hand with the forceps, a counterclockwise wrist twist is made until the IOL is coiled removing it at the same time through the main incision. **Conclusions:** The twist and pull technique is very easy, safe and atraumatic way to explant an IOL. **None.**



# POSTER SESSION THURSDAY

KCS IS A SIGNIFICANT RISK FACTOR FOR A NEGATIVE VISUAL OUTCOME FOLLOWING CORNEAL PERFORATION IN DOGS (A Zilberfarb, 1 ME Lassaline, 1 and E Holt 1) School of Veterinary Medicine, University of Pennsylvania. 1

**Purpose.** To establish predictive features for visual outcome in dogs following corneal perforation. **Methods.** Medical records of 77 dogs presented to the University of Pennsylvania Veterinary Hospital with a corneal perforation from 2011-2024 were reviewed. Size, chronicity and cause of corneal perforation, treatment, presence of a menace response at last follow-up, skull conformation and comorbidities were noted. **Results.** Twenty-six of 77 dogs (34%) had an enucleation and were significantly older than those that did not have an enucleation, 10.37 versus 7.09 years ( $t=-3.14$ ,  $p=0.002$ ). Absent menace response was the only significant risk factor for enucleation (relative risk = 6.64,  $p=0.006$ ). Of the forty-four dogs that had follow-up available, 26 (59%) received corneal repair surgery. More dogs had a positive menace at last follow-up when surgery was performed, 24/26 (92%), than dogs treated medically, 13/18 (72%); this difference only approached significance ( $X^2=3.2$ ,  $p=0.07$ ). Dogs with a negative menace (7/44, 16%) were older, 11.00 versus 6.18 years ( $t=2.90$ ,  $p=0.006$ ). Seven dogs had KCS. KCS was a significant risk factor for vision loss at last follow-up (relative risk = 3.96,  $p=0.03$ ); 3/7 dogs (43%) with a negative menace had KCS, whereas only 4/37 dogs (11%) with a positive menace had KCS. **Conclusions.** A positive visual outcome may be more likely following surgical intervention. Increasing age and KCS may increase risk of vision loss following corneal perforation. **None.**

# POSTER SESSION THURSDAY

DIAGNOSIS AND TREATMENT OF LIPID-DEFICIENT EVAPORATIVE DRY EYE DISEASE IN DOGS (BD Reynolds, 1,2 CJ Whittaker, 1 KA Caruso, 1 JS Smith 1). Eye Clinic for Animals, Sydney, Australia; 2.) Las Vegas Veterinary Specialty Center.

**Purpose** To establish a guideline for the diagnosis of lipid-deficient evaporative dry eye disease in dogs and propose a treatment protocol. **Methods** A retrospective assessment of cases was performed. Cases were included who had a STT-1 >15mm/min, a tear film breakup time <20 seconds, a lipid layer thickness <30nm measured via tear film interferometry, and who underwent a minimum of 4 weeks of oral flaxseed oil (0.25mL/kg) PO SID and topical woolfat/paraffin BID therapy, and had a follow-up tear film breakup time performed. Patients were excluded if concurrent ophthalmic disorders or systemic disease that may influence tear film breakup time were present. **Results** 5 dogs (10 eyes) met the inclusion criteria. Mean pre-treatment tear film breakup time was 4.10+/-2.42 seconds, which was significantly shorter than the mean post-treatment tear film breakup time of 13.90+/-5.02 seconds ( $p = 0.0002$ ). In a single patient, bilateral follow-up interferometry was performed, with pre-treatment lipid layer thickness measured at 15-30nm, and post-treatment lipid layer thickness was >100nm. **Conclusions** Lipid-deficient evaporative dry eye disease is diagnosable in dogs, and treatment protocols containing oral flax-seed oil supplementation and topical lipid therapy may be beneficial in its treatment. **None.**

# POSTER SESSION THURSDAY

PHARMACOKINETICS, PHARMACODYNAMICS, AND MECHANISM OF ACTION OF A NOVEL SPECIES-INSPIRED LIPID THERAPY (RNPL593) FOR THE TREATMENT OF EVAPORATIVE DRY EYE DISEASE (N Lantyer-Araujo,<sup>1</sup> EA Hisey,<sup>1</sup> SM Thomasy,<sup>1,2</sup> M Camacho Ayala,<sup>3</sup> IA Butovich,<sup>4</sup> DM Albert,<sup>5,6</sup> CJ Murphy,<sup>6</sup> TR Gadek,<sup>6</sup> CA O'Neill,<sup>6</sup> BC Leonard<sup>1,2</sup>) Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California, Davis;<sup>1</sup> Department of Ophthalmology & Vision Science, School of Medicine, University of California, Davis;<sup>2</sup> Altasciences Preclinical;<sup>3</sup> Department of Ophthalmology, University of Texas Southwestern Medical Center;<sup>4</sup> MCAL Therapeutics;<sup>5</sup> Oregon Health & Science University.<sup>6</sup>

**Purpose.** This study investigated the pharmacokinetics (PK), pharmacodynamics (PD), and mechanism of action (MOA) of rabbit nonpolar lipid 593 (rNPL593), previously shown to prolong tear film breakup time (TFBUT) in healthy dogs. **Methods. PK-** Six Beagle dogs received a single dose of vehicle in both eyes, and tears were collected using dye-free Schirmer tear test strips at baseline, 0.25, 1, 3, 6, and 24-hours post-treatment. After a 48-hour washout, dogs were treated with rNPL593 (0.3 mg/mL, 35L) in both eyes, and tears were similarly collected. rNPL593 levels were quantified using LC-MS/MS. **PD-** Dogs were treated daily (35 $\mu$ L) for 22 days with vehicle (n=10), low-dose rNPL593 (0.42 mg/day, n=6), or high-dose rNPL593 (1.40 mg/day, n=10). TFBUT was measured at baseline and on day 22, 3-hours (left eye) and 6-hours (right eye) post-treatment. **MOA-** Canine meibum was spiked with rNPL593 in solution, and differential scanning calorimetry measured transition temperatures and cooperativity of melting. **Results.** rNPL593 peaked at 0.25-hours (624 ng/mL), decreased over 6-hours (108 ng/mL), and declined to near detection limits by 24-hours (41.7 ng/mL). At 3-hours post-dose, there was no increase in TFBUT. However, at 6-hours post-dose, TFBUT increased in the low-dose group (+2.6s), while it decreased (-1.2s) in the high-dose group. rNPL593 lowered meibum liquid-phase transition temperature from 72.4°C to 34.85°C, matching the ocular surface range (34-35 °C). **Conclusions.** rNPL593 prolongs tear film stability through sustained tear film retention and decreases meibum melting temperature in vitro, supporting the hypothesis that rNPL593 assures lateral dispersion of rNPL593 across the tear film surface. Support for BCL by the National Eye Institute (K08EY028199, P30EY012576, R01EY016134), SMT by the NEI (R01EY016134), EAH by the NEI F30 (EY035132), IAB (R01EY027349), and an unrestricted gift from MCAL Therapeutics. **NLA, EAH, SMT, MCA, and IAB (None), DMA, CJM, TRG, and CAO (code E), BCL (code C).**

# POSTER SESSION THURSDAY

EFFECTS OF 0.2% CYCLOSPORINE A ON CONJUNCTIVAL TRANSFORMING GROWTH FACTOR B2 AND VASCULAR ENDOTHELIUM GROWTH FACTOR B2 IN DOGS WITH KERATOCONJUNCTIVITIS SICCA (BE Rodrigues, 1 AP Ribeiro, 2 TB Lima, 2 AR Costa, 3 MP Lins, 4 GM Madruga) 1 College of Veterinary Medicine, Federal University of Mato Grosso, Cuiabá, Brazil; 2 College of Veterinary Medicine, State University of Maranhão; 3 College of Medicine, Federal University of Mato Grosso, Cuiabá, Brazil; 4 Anclivepa, São Paulo, Brazil.

**Purpose.** To determine the effects of 0.2% cyclosporine A (CsA) on transforming growth factor $\beta$ -2 (TGF $\beta$ -2) and vascular endothelial growth factor (VEGF $\beta$ -2) levels in dogs with keratoconjunctivitis sicca (KCS). **Methods.** Thirty-two dogs with Schirmer tear test (STT) < 15 mm/min and no prior treatment were selected. Conjunctival hyperemia (CH, score 0 to 3) and corneal vessel branches (CVB, ImageJ) were recorded at baseline (T0) and approximately 40–60 days after treatment (T1) with CsA every 12 h. Conjunctival biopsies were obtained at T0 and T1 to determine TGF $\beta$ -2 and VEGF- $\beta$ 2 levels (ELISA). The same procedures were performed in 10 healthy dogs used as controls. **Results.** From T0 to T1, STT increased from  $7.58 \pm 0.83$  to  $13.36 \pm 1.18$  mm/min ( $p < 0.01$ ). CH and CVB decreased from 2.0 to 1.0 (0.0 to 3.0) ( $p < 0.0001$ ) and from  $17 \pm 2.98$  to  $13 \pm 3.82$  ( $p = 0.93$ ), respectively. TGF $\beta$ -2 was higher in controls ( $80.57 \pm 28.99$ ), but no differences were observed between T0 ( $64.06 \pm 12.37$ ) and T1 ( $78.46 \pm 15.46$ ) ( $p = 0.73$ ). VEGF- $\beta$ 2 was higher in controls ( $20.30 \pm 1.68$ ) and T0 ( $22.26 \pm 1.30$ ), when compared to T1 ( $18.92 \pm 0.73$ ) ( $p = 0.02$ ). VEGF- $\beta$ 2 correlated with CVB ( $r = -0.50$ ,  $p = 0.02$ ) and TGF $\beta$ -2 ( $r = 0.32$ ,  $p = 0.008$ ). **Conclusions.** This study suggests that conjunctival TGF $\beta$ -2 decreased significantly after treatment with 0.2% CsA in dogs with KCS. CH and VEGF- $\beta$ 2 decreased after 0.2% CsA, but VEGF- $\beta$ 2 correlated only with CVB. The correlation between TGF $\beta$ -2 and VEGF- $\beta$ 2 suggests that both cytokines are involved in KCS pathogenesis. **None.**

# POSTER SESSION THURSDAY

EFFICACY OF INTRAVITREAL CIDOFOVIR CHEMICAL CYCLOABLATION IN RABBITS WITH CHRONIC GLAUCOMA (AE Bergen, 1 JS Sapienza, 1 JJ Gould, 1 K Kim, 1) Long Island Veterinary Specialists; 1.

**Purpose.** To evaluate the efficacy of intravitreal cidofovir injections in management of intraocular pressures (IOPs) in rabbits with blinding glaucoma. **Methods.** Medical records of eleven rabbits with chronic glaucoma that were treated with intravitreal cidofovir from 2018 to 2024 were retrospectively reviewed. Signalment, type of glaucoma (primary vs. secondary), age, affected eye, cidofovir dose, intraocular pressures (pre-injection and at various times post-injection), days follow-up, and associated complications were recorded. **Results.** Fifteen eyes (eleven rabbits) were included with a mean age of  $8.3 \pm 1.7$  years (range 6.1 - 11.5). There were five female-spayed rabbits and six male-neutered with a wide variety of breeds. Six left eyes, one right eye, and four bilateral cases were reported. Seven rabbits were diagnosed with primary glaucoma and four with secondary glaucoma. The average dose of cidofovir administered was  $635.3 \pm 109.6$   $\mu\text{g}$  with 15 eyes requiring a single dose, and 2 eyes requiring repeat doses. Post-intravitreal injection complications included anterior uveitis (n=2), hyphema (n=2), vitreal hemorrhage (n=2), uncontrolled IOP (n=1), incipient cataract (n=1) formation, and corneal ulceration (n=1). When comparing pre-injection IOP and final IOPs, the average difference was a 26.6% decrease, and 14 of the 15 treated eyes had IOPs <30 mmHg at last recheck. **Conclusion.** Intravitreal administration of cidofovir in rabbits with chronic glaucoma is an effective and safe method to lower IOPs. **None.**



# POSTER SESSION THURSDAY

QUANTITATIVE ASSESSMENT OF ANTERIOR CHAMBER STRUCTURAL CHANGES IN DOGS WITH PRIMARY ANGLE-CLOSURE GLAUCOMA USING ULTRASOUND BIOMICROSCOPY (DH Kim, JS Jung, JY Hwang, MR Lee, SY Lee, HM Seol and KM Park), Laboratory of Veterinary Ophthalmology, School of Veterinary Medicine, Chungbuk National University Cheong-ju, Korea

**Purpose.** This study aimed to quantitatively assess anterior chamber structures—including the iridocorneal angle (ICA), ciliary cleft (CC), and ciliary body (CB)—using ultrasound biomicroscopy (UBM), and to identify anatomical changes associated with primary angle-closure glaucoma (PACG). **Methods.** A total of 49 eyes from 27 dogs were classified into four groups: normal eyes (n=20), PACG eyes (n=6), fellow eyes (n=15; contralateral to PACG), and acute high-IOP eyes (n=8). UBM imaging was used to evaluate parameters including the ICA, angle-opening distance (AOD), CC width (CCW), length (CCL), area (CCA), and CB length (CBL), thickness (CBT), and area (CBA). **Results.** ICA values narrowed in the order of acute, PACG, fellow, and normal eyes. While AOD did not significantly differ between groups, the CC was entirely collapsed in both PACG and acute eyes and was significantly reduced in fellow eyes compared to normal eyes. CB parameters (CBL, CBT, CBA) were markedly decreased in both PACG and acute groups. **Conclusions.** This study demonstrated that in glaucomatous eyes, the CC was collapsed and the CB exhibited signs of atrophy. In fellow eyes, early narrowing of the CC was observed, suggesting preclinical anatomical changes preceding glaucoma development. Furthermore, the diagnostic utility of ICA and AOD appears to be limited. These findings underscore the value of UBM in detecting early structural alterations associated with glaucoma and support its utility in risk stratification and clinical management. Supported by the National Research Foundation of Korea Grant (RS-2024-00344226). And also by the Korean Fund for Regenerative Medicine Grant (22A0101L1-11). **None.**

# POSTER SESSION THURSDAY

MORPHOMETRIC ANALYSIS OF THE CILIARY BODY IN A DIVERSE POPULATION OF CLINICALLY NORMAL DOGS USING TRANSVERSE ULTRASOUND BIOMICROSCOPY (JS Jung, 1 DH Kim, 1 JY Hwang, 1 SY Lee, 1 MR Lee, 1 HM Seol, 1 and KM Park, 1) Laboratory of Veterinary Ophthalmology, School of Veterinary Medicine, Chungbuk National University, South Korea. 1

**Purpose.** To quantify ciliary body (CB) parameters using transverse ultrasound biomicroscopy (UBM) in clinically normal dogs and evaluate their association with demographic and physiological factors. **Methods.** Transverse UBM images were obtained from 117 eyes of 59 healthy dogs of various breeds. Two images per eye were selected based on lens line visibility,  $\geq 8$  ciliary processes, and absence of the anterior chamber. Six CB parameters were measured using Image J: CB thickness (CBT), CP length (CPL), CP density (CPD), CP area (CPA), CP thickness (CPT), and lens-CP distance (LCPD). Two-way ANOVA and post hoc tests were used to assess group differences; Pearson correlation and linear regression evaluated associations with age, body weight, and IOP. **Results.** CBT increased with weight ( $p = 0.002$ ). CPL and CPA were highest in Italian Greyhounds and decreased with age (both  $p < 0.001$ ); CPL also increased with weight ( $p = 0.010$ ). CPD was highest in Pomeranians and decreased with age ( $p < 0.001$ ); it was positively associated with IOP ( $p = 0.048$ ). CPT and LCPD increased with age ( $p < 0.001$  and  $0.034$ , respectively); LCPD was negatively correlated with IOP ( $p = 0.015$ ). CPA was lowest in Yorkshire Terriers. No CB parameters differed significantly by sex. **Conclusions.** These findings demonstrate that transverse UBM imaging enables group evaluation of the CP, providing refined reference values for clinical and research applications. Supported by RIS through the NRF of Korea funded by the MOE (2021 RIS-001) and the Basic Research Lab Program (2022R1A4A1025557) funded by the Ministry of Science and ICT. **None.**

# POSTER SESSION THURSDAY

COMPARISON OF INTRAOCULAR PRESSURE IN NON-GLAUCOMATOUS AND GLAUCOMATOUS DOGS USING REBOUND TONOMETRY IN DIFFERENT ENVIRONMENTAL SETTINGS (JS Pletcher, 1 KA Diehl, 1 CK Sheridan 1) College of Veterinary Medicine, University of Georgia. 1

**Purpose.** To compare intraocular pressure (IOP) in non-glaucomatous and glaucomatous dogs in different environmental settings and determine if there is an optimal environment for long-term IOP monitoring. **Methods.** Non-glaucomatous free of significant ocular disease and glaucomatous dogs were enrolled in the clinical research committee approved study. IOP was assessed by rebound tonometry (TonoVet®) in three different environmental settings: exam room away from owner (R), exam room with owner (O), and family vehicle with owner (V). Order of environmental setting and initial measurement of right versus left eye (if both eyes present) was randomized. Measurements were taken in triplicate and averaged. **Results.** Fifteen non-glaucomatous dogs (30 eyes) and fifteen glaucomatous dogs (28 eyes) met the inclusion criteria. Median age was 7.3 years (range 0.6-15.2 years). The majority of dogs, regardless of glaucoma status, had their lowest average IOP measurements recorded in the O setting (42.9% dogs; 9/21 dogs, 52.7% eyes, 29/55 eyes), while the majority of the highest average IOP measurements were recorded in the R setting (57.9% dogs, 11/19 dogs, 59.6% eyes, 31/52 eyes). The average difference between the lowest and highest IOP measurements was 3.62mmHg (range 0.6 – 6mmHg) for non-glaucomatous eyes and 3.59mmHg (0.3 – 14mmHg) for glaucomatous eyes. Twelve of 58 eyes (20%) had a difference of 5mmHg or greater. **Conclusions.** Intraocular pressure measurements in non-glaucomatous and glaucomatous dogs were lowest in the presence of the owner and highest in the exam room without the owner. These differences were clinically significant in 20% of cases. **None.**

# POSTER SESSION THURSDAY

## EFFECT OF LIGHT INTENSITY ON CILIARY CLEFT PARAMETERS USING ULTRASOUND

BIOMICROSCOPY IN NORMAL DOGS (KE Cornman<sup>1,1</sup> DV Hendrix<sup>1,1</sup> X Zhu<sup>2,2</sup> and BC Foote <sup>1</sup>)

College of Veterinary Medicine, University of Tennessee;<sup>1</sup> Office of Innovative Technologies, University of Tennessee<sup>2,2</sup>

**Purpose.** To evaluate the effect of varying light intensity on iridocorneal angle and ciliary cleft parameters using ultrasound biomicroscopy in normal canines. **Methods.** Twenty clinically normal adult purpose-bred Beagles underwent ultrasound biomicroscopy (UBM) of the ciliary cleft (CC) at two locations (dorsal and temporal) in each eye under dark (<1 lux), dim (40 lux), and bright (>1500 lux) light conditions. The following parameters were measured: geometric iridocorneal angle (ICA), width of the CC entrance, width of the mid-CC, and length of the CC. Digital color and infrared photographs were taken to allow for pupil diameter measurement under each light condition. The Shapiro-Wilk test confirmed normality of the data. A three-way repeated measures ANOVA was used to evaluate the effect of light intensity on CC parameters. **Results.** Increasing light intensity resulted in a significant decrease in the ICA (dark: 47.27°; dim: 40.48°; bright: 26.72°;  $p = 0.0001$ ) with no effect on the width of CC entrance, width of mid-CC, or length of CC. Regardless of light intensity, ICA and width of CC entrance were significantly greater dorsally ( $p = 0.0003$  each respectively) and CC length was significantly greater temporally ( $p = 0.00028$ ). **Conclusions.** Aside from the ICA, varying light intensity does not significantly impact CC measurements. Location of the probe impacts the CC measurements. The authors recommend performing UBM of the CC in dim light conditions as this is most applicable to clinical settings. Supported by the University of Tennessee College of Veterinary Medicine Companion Animal Fund. **None.**

# POSTER SESSION THURSDAY

ULTRASOUND BIOMICROSCOPY OF 1% ATROPINE-INDUCED OCULAR CHANGES AND INTRAOCULAR PRESSURE IN DOGS (MR Lee, DH Kim, JS Jung, JY Hwang, SY Lyee, HM Seol and KM Park) Laboratory of Veterinary Ophthalmology, School of Veterinary Medicine, Chungbuk National University; Cheongju, Korea

**Purpose.** This study evaluates the effects of 1% atropine eye drops on iris and ciliary body movement using ultrasound biomicroscopy (UBM), and their impact on the ciliary cleft and intraocular pressure (IOP).

**Methods.** UBM was performed before and 30 minutes after 1% atropine instillation in 52 eyes of 27 normal dogs treated at the Veterinary Teaching Hospital of Chungbuk National University (Oct 2024–Mar 2025). Eyes were grouped by IOP change: high ( $\geq 4$  mmHg) or stable. Parameters measured included iridocorneal angle (ICA), angle-opening distance (AOD), ciliary cleft width, length, and area (CCW, CCL, CCA), ciliary body axial length (CBAXL), ciliary process-sclera angle (CPSA), and assessed ciliary muscle thickness: longitudinal (Lf-CMT) and combined longitudinal–radial fibers with choroid (LRf-CMT). **Results.** IOP increased ( $5.53 \pm 1.81$  mmHg) in the high group (15 eyes, 29%) and decreased ( $0.86 \pm 1.96$  mmHg) in the stable group (37 eyes, 71%). In stable eyes, CPSA ( $4.19 \pm 5.35$ ), Lf-CMT ( $0.04 \pm 0.04$ ), LRf-CMT ( $0.08 \pm 0.09$ ), and CCA ( $0.05 \pm 0.07$ ) increased, CBAXL ( $0.19 \pm 0.37$ ) decreased. In high eyes, CBAXL increased ( $0.16 \pm 0.20$ ), LRf-CMT ( $0.05 \pm 0.05$ ) and CCA ( $0.04 \pm 0.04$ ) decreased; all significant ( $p < 0.05$ ). CPSA and Lf-CMT also decreased ( $1.84 \pm 7.27$ ,  $0.01 \pm 0.04$ ) without significance. **Conclusions.** The stable group showed ciliary body relaxation and posterior outward movement increasing CCA, while the high group showed contraction and anterior inward movement decreasing it, suggesting susceptibility to IOP elevation. Supported by the National Research Foundation of Korea (RS-2024-00344226) and the Korean Fund for Regenerative Medicine (22A0101L1-11). **None.**



# POSTER SESSION THURSDAY

ANTERIOR CHAMBER PARAMETERS IN SHIH TZU USING ULTRASOUND BIOMICROSCOPY AND ASSOCIATION WITH PRIMARY ANGLE CLOSURE GLAUCOMA SUSCEPTIBILITY (SY Lee, DH Kim, JS jung, JY Hwang, MR Lee, HM Seol, KM Park\*), Laboratory of Veterinary Ophthalmology, School of Veterinary Medicine, Chungbuk National University Cheong-ju, Korea

**Purpose.** This study aimed to characterize and compare anterior segment anatomical differences between Shih tzu and non-predisposed dog breeds using ultrasound biomicroscopy (UBM). Shih Tzus are more predisposed to PACG than other breeds, with a potential genetic link to its development. **Methods.** Clinical data were obtained from 46 eyes of 23 normal Shih tzus and 118 eyes of 60 normal non-predisposed breeds treated at the Veterinary Medical Teaching Hospital of Chungbuk National University. UBM parameters analyzed included geometric iridocorneal angle (ICA), angle-opening distance (AOD), ciliary cleft width (CCW), length (CCL), and area (CCA), as well as the longitudinal fiber of ciliary muscle thickness (Lf-CMT) and longitudinal and radial fiber of ciliary muscle-choroid thickness (LRf-CMT). Iridolenticular contact (ILC) and iris deflection (ID) were also evaluated. **Results.** All dogs were confirmed to be normal based on a complete ophthalmic examination. Shih Tzus showed significantly smaller AOD, CCW, CCL, and CCA ( $p < 0.0001$ ), indicating a narrower outflow pathway. CBAXL, Lf-CMT, and LRf-CMT were also significantly reduced, while CPSA and ICA showed no difference. ILC was longer and ID more negative in Shih Tzus ( $p < 0.0001$ ), suggesting posterior iris bowing. No difference in intraocular pressure (IOP) was observed. **Conclusions.** Shih Tzus exhibited unique anterior segment morphology, including narrowed ciliary clefts and posterior iris bowing, which may contribute to PACG pathogenesis. Supported by the National Research Foundation of Korea (NRF) Grant (RS-2024-00344226). And also by the Korean Fund for Regenerative Medicine (KFRM) Grant No. 22A0101L1-11. **None.**

# POSTER SESSION THURSDAY

PRIMARY GLAUCOMA IN A LITTER OF LOP RABBITS (MM Mayes\*, 1 CM Howard\*, 2 EK Gratch, 3 JC Morrison, 3 KA Brakel, 2 and AM Komáromy 1) Department of Small Animal Clinical Sciences, College of Veterinary Medicine, Michigan State University, East Lansing, MI, USA;1 Veterinary Diagnostic Laboratory, Michigan State University, East Lansing, Michigan, USA;2 Capital Area Humane Society, Lansing, MI, USA.3 \*Contributed equally

**Purpose.** To describe pectinate ligament dysplasia and primary glaucoma in a surrendered litter of six adult Lop rabbits. **Methods.** Full ophthalmic exams were performed on all six animals, of which two males had clinically apparent ophthalmic disease. Gonioscopy and funduscopy were performed via Retcam Shuttle with 130° lens (Clarity Medical Systems, Inc.) on three unaffected females. The two affected males were humanely euthanized, and one albino female arrested and died during general anesthesia for ovariohysterectomy, resulting in submission of six eyes of three animals for routine histopathology. **Results.** The two affected males were diagnosed with chronic glaucoma in one or both eyes, exhibiting clinical signs including buphthalmia, corneal edema, mydriasis, and absent dazzle reflexes. The albino male was affected in both eyes, while the lightly pigmented male was clinically affected unilaterally. The albino female was clinically normal but had regions of iridocorneal angle narrowing on gonioscopy in both eyes. All six globes showed evidence of bilateral pectinate ligament dysplasia and abnormal to collapsed ciliary clefts of varying severity. The three glaucomatous eyes also exhibited segmental, inner to full retinal atrophy. **Conclusions.** To this author's knowledge, these are the first cases of pectinate ligament dysplasia and primary glaucoma described in Lop rabbits. Chronic glaucoma was diagnosed in two animals (three eyes total) and is presumed secondary to pectinate ligament dysplasia. Potential etiologies include genetic mutations and in utero exposure to infection, toxins, or nutritional deficiencies. This report also provides one of few documented images of the rabbit iridocorneal angle. Supported by NIH grant R01-EY032478 and BrightFocus Foundation grant G2022007S. **None.**

***GENERAL  
SCIENTIFIC  
SESSION***

# GENERAL SCIENTIFIC SESSION THURSDAY

MICROBIOTA ANALYSIS AND STANDARD CULTURE IDENTIFY BACTERIA IN OPHTHALMIC TRYPAN BLUE SOLUTION COMMONLY USED DURING CANINE CATARACT SURGERY (AC Sieve,<sup>1</sup> EA Giuliano,<sup>1</sup> ZL McAdams,<sup>2</sup> A Vientós-Plotts,<sup>1</sup> CR Reiner,<sup>1</sup> and AC Ericsson<sup>3</sup>) Department of Small Animal Medicine and Surgery, College of Veterinary Medicine, University of Missouri;<sup>1</sup> Veterinary Diagnostic Laboratory, University of Missouri;<sup>2</sup> Department of Veterinary Pathobiology, College of Veterinary Medicine, University of Missouri.<sup>3</sup>

**Purpose.** To identify bacterial communities and quantify endotoxin in ophthalmic trypan blue solution commonly used during canine cataract surgery. **Methods.** Samples from two production lots of three different manufacturers of trypan blue (30 samples total) and reagent controls were collected for DNA extraction, 16S rRNA sequencing, sequence analysis, and classification. All samples underwent conventional aerobic and capnophilic bacterial culture. Endotoxin detection was performed using commercially available fluorescent, kinetic chromogenic, and turbidimetric assay methods. Statistical analysis assessed DNA concentration, microbial richness, and alpha and beta diversity. **Results.** An-Blue (4/10), VisionBlue® (3/10), and MONOBLUE Saf-R (3/10) all cultured at least one organism from each lot number on enrichment broth. Genera cultured included *Staphylococcus* spp., *Lysinibacillus* spp., *Bacillus* spp., and *Micrococcus* spp. Analysis of sequencing data revealed no significant difference in alpha diversity but significant differences in weighted and unweighted measures of beta diversity (Bray-Curtis and Jaccard distances) between an-Blue and VisionBlue® samples. Differential abundance testing found *Halomonas* and *Saccharofermentans* to be genus-level biomarkers. Dominant families detected during sequencing included *Bifidobacteriaceae*, *Christensenellaceae*, *Clostridiaceae*, *Erysipelotrichaceae*, *Lachnospiraceae*, *Lactobacillaceae*, *Oscillospiraceae*, *Propionibacteriaceae*, and *Streptococcaceae*. Endotoxin quantification could not be performed at clinically relevant dilutions. **Conclusions.** Significant brand-specific differences in relative abundance of shared bacterial taxa were noted between an-Blue and VisionBlue® trypan blue samples with *Halomonas* and *Saccharofermentans* identified as genus-level biomarkers. This study adds to prior research investigating iatrogenic sources of bacteria capable of inducing a fibrin web after cataract surgery. Supported by the ACVO Vision for Animals Foundation grant VAF2024-6. **None.**

## GENERAL SCIENTIFIC SESSION THURSDAY

ANTIMICROBIAL EFFECT OF ULTRAVIOLET C (UV-C) LIGHT COMPARED TO STANDARD POVIDONE- IODINE PROTOCOL FOR PREOPERATIVE DISINFECTION OF THE PERIOULAR AREA (C Treadwell, 1 DK Sahoo, 1 JD Bujan, 1 RAAllbaugh, 1 CC Stinman, 2 and MA Kubai 1) Department of Veterinary Clinical Sciences, College of Veterinary Medicine, Iowa State University;1 Veterinary Diagnostic Laboratory, Iowa State University. 2

**Purpose.** To evaluate the antimicrobial effect of 275 nm wavelength ultraviolet C (UV-C) light on the periocular area of canine eyes for preoperative disinfection compared to standard 10% povidone-iodine solution preparation. **Methods.** The upper and lower eyelids of six research-bred beagles were divided into medial and lateral sections (4 treatment areas per eye). Each eyelid quadrant was randomly assigned to receive periocular cleansing with one of the following treatments 1) saline, 2) baby shampoo, 3) baby shampoo and povidone-iodine solution, or 4) baby shampoo and UV-C light therapy; all treatments were performed in triplicate. Routine aerobic bacterial culture swabs were used to collect samples from the designated areas thirty minutes after the respective treatments and submitted for routine culture/susceptibility testing. Data among different treatment groups were compared using one-way ANOVA followed by Tukey's multiple comparisons. P value <0.05 was considered statistically significant. **Results.** Bacterial counts were significantly higher in eyelids treated with saline compared to UV-C light and povidone-iodine treatments, respectively. The bacterial counts were significantly higher in the saline-treated eyelids compared to baby shampoo, povidone-iodine, and UV-C treatments in the upper medial eyelid location. The remainder of eyelid locations were not statistically significant between groups. One dog developed contact dermatitis after receiving povidone-iodine cleansing. **Conclusions.** UV-C light treatment is comparable to povidone-iodine solution in reducing the number of bacteria on the periocular surface, and no adverse eyelid effects were noted after UV-C light exposure. Supported by Iowa State University Veterinary Clinical Sciences Start up funds VCS FSU\_0000308. **None.**



# GENERAL SCIENTIFIC SESSION THURSDAY

POSTOPERATIVE BILATERAL PHACOEMULSIFICATION OUTCOMES IN DOGS RECEIVING SUBCONJUNCTIVAL TRIAMCINOLONE WITH OR WITHOUT TOPICAL ANTI-INFLAMMATORY THERAPY ("DROPLESS" CATARACT SURGERY) (RL Davis, EA Latham) Animal Eye Clinic, Indiana, USA

**Purpose.** To determine if postoperative topical anti-inflammatory therapy (pTAT) affects phacoemulsification outcomes in dogs receiving subconjunctival triamcinolone (ST). **Methods.** Dogs undergoing bilateral phacoemulsification were identified retrospectively. Age, sex, breed, injectable and oral anti-inflammatory therapy, diabetic status, fibrin formation, follow up times, visual outcomes, glaucoma ( $IOP > 24\text{mmHg}$ ) and need for pTAT rescue therapy if flare present postoperatively were compared between groups. Statistics were performed for all comparisons ( $p=0.05$ ). **Results.** 626 eyes were included. 525 eyes received pTAT (diclofenac BID and dexamethasone BID) and 101 eyes did not receive pTAT. All eyes received 4mg ST perioperatively. All dogs received postoperative oral carprofen (diabetics) or prednisone (non-diabetics). There was no difference in age, breed, sex, diabetic status, fibrin formation or follow up times between groups. In all eyes, the odds of glaucoma were 70% higher and the odds of vision were 78% lower with pTAT. In diabetics, the odds of glaucoma were 39% lower and the odds of vision were 70% higher than non-diabetics. In non-diabetic eyes, the odds of glaucoma were 240% higher and the odds of vision were 93% lower with pTAT. 40/101 (40%) of eyes needed rescue pTAT. **Conclusions.** In eyes receiving ST, pTAT after phacoemulsification may increase the risk of glaucoma and blindness. ST with oral and injectable anti-inflammatory therapy (dropless cataract surgery) controlled post-phacoemulsification uveitis in 61/101 (60%) of eyes. Because diabetics did not receive oral prednisone, further work is needed to determine if oral prednisone or diabetic status affects the risk of glaucoma and blindness. **None.**

# GENERAL SCIENTIFIC SESSION THURSDAY

BRINGING 'BIG DATA' TO VETERINARY OPHTHALMOLOGY: PRELIMINARY REPORT OF A 19-INSTITUTION RETROSPECTIVE STUDY ON THE OUTCOMES, RISK FACTORS, AND RISK MITIGATORS OF PHACOEMULSIFICATION IN 5,660 EYES (R Aronson, 1 AE Bergen, 1 KA Caruso, 2 C Darling, 3 S Dacanay-DeFebo, 4 J Dmiszewicki, 5 JS Eaton, 6 E Fernández-Juricic, 7 M Christine-Fischer, 8 BC Foote, 9 E Goods, 5 LM Hoard, 10 J Hughes, 5 AM Komaromy, 11 MA Kubai, 12 A Letourneau, 1 AC Lewin, 13 JM Meekins, 3 F Montiani-Ferreira, 14 GM Newbold, 4 SA Park, 10 N Plotsker, 15 SA Pumphrey, 16 V Raphtis, 11 RV Ramos, 5 AJ Rankin, 3 JK Roberts, 17 JS Sapienza, 18 EM Scott, 15 AB Sigmund, 9 K Spitznagel, 19 HD Westermeyer, 20 C Whittaker, 2 KL Wotman, 19 and BA Moore 1) Department of Small Animal Clinical Sciences, University of Florida; 1 Eye Clinic for Animals; 2 Department of Clinical Sciences, Kansas State University; 3 Department of Veterinary Clinical Sciences, The Ohio State University; 4 Department of Small Animal Clinical Sciences, Virginia Tech University; 5 Department of Surgical Sciences, University of Wisconsin; 6 Department of Biological Sciences, Purdue University; 7 Department of Ophthalmology, Royal Veterinary College; 8 College of Veterinary Medicine, University of Tennessee; 9 Department of Veterinary Clinical Sciences, Purdue University; 10 Department of Small Animal Clinical Sciences, Michigan State University; 11 Department of Veterinary Clinical Sciences, Iowa State University; 12 School of Veterinary Medicine, Louisiana State University; 13 Veterinary Medicine Department, Federal University of Parana; 14 Department of Clinical Sciences, Cornell University; 15 Department of Clinical Sciences, Tufts University; 16 Department of Veterinary Clinical Sciences, University of Minnesota; 17 Long Island Veterinary Specialists; 18 Department of Clinical Sciences, Colorado State University; 19 College of Veterinary Medicine, North Carolina State University.20

**Purpose.** To provide a preliminary report of the first 'big data' analysis in veterinary ophthalmology: phacoemulsification of 5660 eyes. **Methods.** A large-scale retrospective study collected medical records from 19 veterinary institutions worldwide, and a dataset of over 110 variables in 5,660 eyes that had undergone phacoemulsification was compiled from available patient records. **Results.** The present study revealed specific limitations in large-scale data collection including record-keeping systems and methodologies, data storage and handling, and together suggest a need for improved profession-wide standardization. Ongoing quantitative analyses using descriptive statistics and generalized linear mixed models will inform of associations and outcomes in veterinary phacoemulsification, including: 1) rate of success, complications, and risk factors; 2) determination of the most successful preoperative, intraoperative, and postoperative therapies for cataract surgery; and 3) for the first time, differences between institutions, training levels, species, and techniques. Additional meta-analyses of previously published studies will facilitate direct comparisons with existing literature. **Conclusions.** This study provides insight into how the veterinary profession can overcome the time constraints, financial limitations, and administrative challenges that often limit large-scale analyses, and encourages future collaborative studies. This database will be used to develop 8 to 10 different studies following the completion of analyses, from which areas of strength and weakness in clinical phacoemulsification will be identified, guiding the best directions for future prospective research. We strongly encourage greater collaboration on this initiative, and welcome further contribution to our dataset, as well as volunteers for additional analyses and manuscript preparation. Supported by the ACVO Vision for Animals Foundation grant VAF2023-23. **None.**

Thursday Presenting 9:45am

# GENERAL SCIENTIFIC SESSION THURSDAY

EFFECTS OF CAPSULAR TENSION RING IMPLANTATION ON CILIARY BODY AND CILIARY CLEFT USING ULTRASOUND BIOMICROSCOPY (HM Seo<sup>1</sup>, DH Kim, JY Hwang, JS Jung, MR Lee, SY Lee, and KM Park\*), Laboratory of Veterinary Ophthalmology, School of Veterinary Medicine, Chungbuk National University Cheong-ju, Korea

**Purpose.** This study aimed to evaluate the effects of capsular tension ring (CTR) implantation on the ciliary cleft and ciliary body after phacoemulsification using ultrasound biomicroscopy (UBM). **Methods.** Sixteen eyes from eleven dogs underwent phacoemulsification with intraocular lens (IOL) implantation. Measurements were conducted preoperatively and at 2 to 4 weeks postoperatively. The following parameters were measured using UBM: iridocorneal angle (ICA), angle-opening distance (AOD), ciliary cleft width (CCW), mid-ciliary cleft width (Mid-CCW), ciliary cleft length (CCL), ciliary cleft area (CCA), distance from the ciliary body apex to the uveoscleral interface (CBAXL), ciliary process-scleral angle (CPSA), ciliary body thickness (CBT), ciliary body area (CBA), thickness of the longitudinal fibers of the ciliary muscle (Lf-CMT), and thickness of the longitudinal and radial fibers of the ciliary muscle–choroid complex (LRf-CMT). **Results.** Seven eyes from five dogs received only an IOL, while nine eyes from eight dogs received both an IOL and a CTR. No significant preoperative differences were observed between the two groups. Postoperatively, CCA, CPSA, CBT, CBA, and LRf-CMT were significantly smaller in the CTR group compared to the IOL group. UBM images demonstrated compression of the ciliary body induced by the CTR. **Conclusions.** CTR implantation, compared to IOL implantation alone, results in compression of the ciliary body, leading to a narrower ciliary cleft, which may serve as a potential risk factor for increased intraocular pressure. Supported by the National Research Foundation of Korea (NRF) Grant (RS-2024-00344226). And also by the Korean Fund for Regenerative Medicine (KFRM) Grant No. 22A0101L1-11. **None.**

## GENERAL SCIENTIFIC SESSION THURSDAY

NOVEL APPLICATION OF A FREE TARSOCONJUNCTIVAL EYELID GRAFT COMBINED WITH SUBCONJUNCTIVAL ENUCLEATION FOR MANAGING EYELID AGENESIS IN FOUR CATS (AB Sigmund, 1,2 SE Andrew, 1) BluePearl Pet Hospital, Atlanta, GA; 1 Insight Veterinary Eye Care, Atlanta, GA.2

**Purpose.** To evaluate the use of a subconjunctival enucleation and free tarsoconjunctival eyelid graft as a novel surgical approach for managing eyelid agenesis in cats. **Methods.** Four domestic shorthair cats (four eyes) with congenital eyelid agenesis and anterior segment dysgenesis underwent surgical correction. A subconjunctival enucleation was performed on the blind, microphthalmic eye in each cat. A lower eyelid graft was harvested by making 5 mm vertical incisions at the medial and lateral canthi, connected by a partial-thickness incision using a #15 scalpel blade. The harvested eyelid and conjunctival tissue were preserved in saline-soaked gauze. For the visual eye, a full-thickness incision was made along the leading edge of the agenesis defect. Blunt dissection separated palpebral conjunctiva from overlying skin. The conjunctival portion of the graft was sutured to the recipient conjunctiva with 7-0 Vicryl (simple continuous pattern), and knots were tied subconjunctivally. The graft was rotated dorsally and sutured to the upper eyelid defect using 5-0 Vicryl (simple interrupted, cruciate, and figure-eight sutures at nasal and temporal eyelid margins). The ocular surface was continuously lubricated with balanced salt solution (BSS) throughout. **Results.** Postoperative swelling and discharge resolved over three weeks. By two months, the graft had fully integrated, leaving a non-haired margin separating haired skin from the cornea. One case required cryotherapy for persistent trichiasis, but no long-term complications were observed. **Conclusions.** This technique successfully combined enucleation with eyelid reconstruction using autologous lower eyelid tissue, reducing the risk of long-term complications in cats with eyelid agenesis. This approach offers a viable alternative to mucosal grafting techniques, specifically in cases requiring simultaneous enucleation. Funding: **None.** Conflict of Interest: **None.**

Thursday Presenting 11:15am

# GENERAL SCIENTIFIC SESSION THURSDAY

RETROSPECTIVE EVALUATION OF SURGICAL CONJUNCTIVAL GRAFTING IN PINNIPEDS UNDER HUMAN CARE (CMH Colitz, 1 LP Kane, 2 ) Marine Animal Eye Care, LLC; 1 Pittsburgh Zoo & Aquarium.2

**Purpose.** This retrospective study describes the clinical and surgical processes, outcomes, and complications of conjunctival grafting in pinnipeds with Pinniped Keratopathy (PK) under human care. **Methods.** Case records from 26 pinnipeds (n=39 eyes) in 13 zoos and aquaria that had undergone conjunctival grafting were reviewed. **Results.** Thirteen animals had unilateral and 13 animals had bilateral repairs. Prior to surgery, 14 had chronic PK with superficial nonadherent epithelial defects, 11 had anterior stromal loss ( $\leq 50\%$ ), 10 had deep stromal loss (50% to 95%), 6 had descemetoceles, and 4 had descemetoceles or perforated corneal ulcers. Specific repairs included conjunctival graft only (n=19), Vetrix®BioSIS (SISplus) with conjunctival graft (n=10), A-cell graft with conjunctival graft (n=1), Vetrix®BioSIS graft with overlying Vetrix®Amnion graft and conjunctival graft (n=5), and Vetrix®Amnion graft with conjunctival graft (n=4). Six animals (n=10 eyes) had conjunctival grafting with lensectomy. Complications included devitalization at the distal periphery (n=8), small area of dehiscence (n=2), and complete graft failure that healed with appropriate antibiotics based on culture/sensitivity and use of Vetrix® Amnion eye drops (n=4). Overall success rate was 100%. Ocular histopathology of one eye post-mortem, 6 years post surgery, revealed the conjunctival graft remained clearly separated from the underlying cornea. **Conclusions.** Due to the non-responsiveness to medical management, inability for nonadherent epithelial defects to heal without debridement and natural vascularization as well as overall poor healing capabilities, conjunctival graft surgical repair was successful in pinnipeds with various stages of PK to restore corneal integrity, improve vision, and alleviate discomfort, with excellent results. **None.**



# GENERAL SCIENTIFIC SESSION THURSDAY

TREATMENT OUTCOMES OF SURGICAL VERSUS MEDICAL MANAGEMENT FOR CANINE CORNEAL FULL-THICKNESS PERFORATIONS: A RETROSPECTIVE STUDY (S E Ryan, B J Holmberg) Animal Eye Center of NJ; Ethos Veterinary Health. Little Falls, NJ

**Purpose.** To evaluate medical versus surgical (conjunctival graft or enucleation) treatment options for canine full-thickness corneal perforations, time to healing, visual outcome, complication rates, and prognostic factors. **Methods.** Medical records from 2006-2024 were retrospectively reviewed to identify canine patients diagnosed with corneal perforation. Cases were grouped by treatment: medical management, conjunctival graft, or enucleation. Collected data included: breed, sex, age, affected eye, sealed versus active aqueous leakage, perforation location and size, presence of malacia and/or infection, uveitis grade and type, complications, and visual outcome. Healing was defined by slit lamp biomicroscopy and a negative fluorescein stain. A successful outcome was defined as a healed perforation and functional vision. Statistical analysis included Chi-square tests, ANOVA, and cox proportional hazards regression. **Results.** 549 eyes from 544 canine patients met inclusion criteria, with 344 medically managed, 116 conjunctival grafts, and 89 enucleations. Successful outcomes occurred in 181 cases (52.6%) medically managed and 110 (94.8%) conjunctival grafts ( $P<0.001$ ). Medically managed cases had significantly longer healing time than either surgical group ( $P<0.02$ ). A visual response was present in 176 (51.1%) medically managed cases and 105 (90.5%) conjunctival grafts ( $P<0.02$ ). Complication rates were higher for medically managed cases (68, 19.7%), than conjunctival grafts (6, 5.1%) or enucleation (1, 1.1%) ( $P<0.001$ ). For medically managed cases, a poor outcome was associated with location (axial vs other),  $> 1$  mm diameter, presence of malacia and/or infection, brachycephalic breed, high-grade uveitis (grade 3-4), and age  $>15$  years. **Conclusions.** Surgical intervention for corneal perforations is associated with a significantly better outcome than medical management. Medically managed cases have prolonged healing times, higher complication rates, and a greater risk of vision loss. **None.**

Thursday Presenting 11:45am

# GENERAL SCIENTIFIC SESSION THURSDAY

LONG TERM ( $\geq 1$  YEAR) OUTCOMES IN 38 CANINE EYES TREATED WITH COMBINED ENDOSCOPIC CYCLOPHOTOCOAGULATION AND AHMED VALVE IMPLANTATION FOR GLAUCOMA (SS Potnis, 1 KL Good, 2 JE Sheahan, 1 RB Goldenberg, 1 KM Chang, 1 SM Thomasy, 2,3) Veterinary Eye Clinic, Alhambra, CA, USA; 1 Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California, Davis, Davis, CA, USA; 2 Department of Ophthalmology & Vision Science, School of Medicine, University of California, Davis, Davis, CA, USA; 3

**Purpose.** To evaluate the long-term outcomes of vision and intraocular pressure (IOP) control in dogs with primary and secondary glaucoma undergoing combined endoscopic cyclophotocoagulation (ECP) and Ahmed valve gonioimplantation (AVG). **Methods.** Medical records between July 2020 and November 2023 were reviewed. Outcomes evaluated included IOP control ( $< 25$ mmHg), vision preservation (menace response, maze test), additional surgeries, and complications. Failure was defined as sudden vision loss, refractory IOP  $\geq 25$ mmHg after surgery, and/or upward trend in IOP over several weeks. **Results.** Median (range) follow up time for 38 eyes (30 dogs) was 21.5 (12-47) months. Following surgery, vision was preserved in 80.9%, 73.3%, 81.8%, and 60% of eyes at 12, 18, 24, and 30 months, respectively. IOP was controlled in 96.8%, 89.4%, 100%, and 100% of eyes at 12, 18, 24, and 30 months, respectively. At the 12-month interval, vision (100% and 70%) and IOP (91.7% and 81.8%) did not significantly differ between eyes with primary (n=16) or secondary (n=22) glaucoma ( $P=0.345$ ). Complications included IOP spikes (n=17), intraocular fibrin (n=10), corneal ulceration (n=8), and corneal edema (n=8). Failure necessitating repeat ECP + AGV was required in 9 patients, 6 eyes (37.5%) with primary glaucoma and 3 eyes (13.6%) with secondary glaucoma. Two eyes with primary glaucoma were enucleated while 5 eyes with secondary glaucoma were enucleated (n=4) or received ciliary body ablation (n=1). **Conclusions.** For primary and secondary glaucoma, combined ECP and AVG was successful in maintaining vision and controlling IOP for at least 1 year in canine patients. **None.**

# GENERAL SCIENTIFIC SESSION THURSDAY

THE EFFECT OF MODERATE-INTENSITY AEROBIC EXERCISE ON INTRAOCULAR PRESSURE IN DOGS WITH AND WITHOUT PRIMARY CLOSED ANGLE GLAUCOMA (LK Gibson, VY Yang, SA Pumphrey) Department of Clinical Sciences, Tufts University Cummings School of Veterinary Medicine

**Purpose.** To investigate the effect of moderate-intensity aerobic exercise on the intraocular pressure (IOP) of dogs with and without primary closed angle glaucoma (PCAG). **Methods.** Dogs with PCAG (PG; 15 dogs, 21 eyes), sedentary ophthalmologically normal dogs (SN (<20 minutes activity per day); 35 dogs, 69 eyes), and athletic ophthalmologically normal dogs (AN (daily high-intensity exercise or training for dog sports); 28 dogs, 56 eyes) were walked on leash for ten minutes at a brisk pace. IOP and heart rate were measured prior to the walk (T0), at the conclusion of the walk (T1), and 10 minutes after the conclusion of the walk (T2). **Results.** Baseline IOP was significantly higher in PG (21.6+/-16.5 mmHg) than in SN (14.3+/-3.8 mmHg) or AN (13.4+/-2.6 mmHg). IOP decreased insignificantly in all groups from T0 to T1. IOP decreased significantly in SN dogs from T0 to T2 (-1.4+/-3.6 mmHg, P=0.04). Changes in PG and AN from T0 to T2 were not significant. Compared with AN dogs, PG and SN dogs displayed a significantly greater decrease in IOP from T0 to T2 (PG -2.6+/-4.1 mmHg, P=0.01; SN -1.4+/-3.6 mmHg, P≤0.01) and from T1 to T2 (PG -1.3 mmHg+/-2.5 mmHg, P=0.01; SN -0.3+/-2.3mmHg, P=0.05). HR was significantly lower in AN compared to SN at T0 and T1. **Conclusions.** Moderate aerobic exercise was associated with slight but statistically insignificant decreases in intraocular pressure. IOP was less responsive to exercise in athletic dogs than in sedentary dogs or those with PCAG. Supported by the Companion Animal Health Fund. **None.**

# GENERAL SCIENTIFIC SESSION THURSDAY

ACCURACY OF INTRAOCULAR PRESSURE (IOP) MEASUREMENT COLLECTED BY CLIENTS USING iCARE TONOVET® PET (MD Ibañez Vilanova, D Bogart, and KR Vygantas) NorthStar VETS, Robbinsville, NJ, USA

**Purpose.** The TONOVET® Pet is a device developed for at home monitoring of intraocular pressures in dogs. The purpose of this study was to evaluate the accuracy and usability of the TONOVET® Pet tonometer when used by clients, compared to intraocular pressure (IOP) measurements collected by a veterinary ophthalmology intern using TONOVET® Plus. **Methods.** Forty-nine (ninety-eight eyes) client-owned dogs were enrolled. Each dog received an ophthalmic examination performed by a board-certified veterinary ophthalmologist. Clients were provided with a brief demonstration on how to use the TONOVET® Pet and then measured their dog's IOP using this device. These readings were followed by IOP measurements obtained by a veterinary intern using the TONOVET® Plus. Clients completed a survey evaluating the usability of the TONOVET® Pet. **Results.** Readings collected by clients (TONOVET® Pet) agreed with veterinarian's IOP measurements (TONOVET® Plus) in 67.8% of eyes. Allowing for a  $\leq 3$  mmHg deviation in reported IOPs resulted in 90.9% agreement between client's and veterinarian's measurements. Additionally, 95.9% of pet owners reported the device as user-friendly. **Conclusion.** These findings support the TONOVET® Pet's potential clinical utility in the monitoring of canine ocular conditions at home. Future studies should evaluate the effect of more comprehensive owner training and its performance in the evaluation of disease eyes. **None.**

***POSTER  
SESSION***



# POSTER SESSION FRIDAY

EVALUATION OF TOPICALLY APPLIED CANINE MESENCHYMAL STEM CELL EXOSOMES AS NOVEL TREATMENT FOR SPONTANEOUS CHRONIC CORNEAL EPITHELIAL DEFECTS IN DOGS (A Yoon, 1 L Chow, 1 J Kurihara, 1 F Hollinshead, 1 M Meyers, 1 SW Dow, 1 KL Wotman 1) Department of Clinical Sciences, College of Veterinary Medicine & Biomedical Sciences, Colorado State University; 1

**Purpose.** To investigate the safety and efficacy of topically applied canine mesenchymal stem cell exosomes on corneal epithelial wound healing. **Methods.** Immortalized mesenchymal stem cells generated from canine induced pluripotent stem cells were used to generate extracellular vesicles (EVs). *In vitro.* Corneal epithelial cells were cultured from canine corneas collected within 1 hour of euthanasia. Epithelial cell proliferation was measured after 24 hours by confluence using the Incucyte live cell analysis system. An apoptosis assay was performed with staurosporine as a control. Apoptotic cells were labeled with Incucyte® Caspase-3/7 Dye, and images were taken every 3 hours using the Incucyte live cell analysis system. *In vivo.* Six client-owned dogs diagnosed with a unilateral spontaneous chronic corneal epithelial defect were enrolled. Participants underwent a diamond burr debridement and were treated with topical EVs, Terramycin, and a 7-day course of oral NSAIDs. Patients were re-evaluated every 5 days until ulcer re-epithelization was achieved. Ulcer size was measured following fluorescein administration with Image J® software. **Results.** *In vitro.* Compared to the control, canine epithelial cells treated with MSC EVs had increased cell proliferation after 24 hours and increased cell survival at 15 hours. *In vivo.* 2/6 dogs healed by day 5, 1 dog healed by day 10, 1 dog healed by day 15, and 2 dogs were not healed by study conclusion. No local adverse effects were noted. **Conclusions.** Addition of MSC EVs improved corneal epithelial cell proliferation and survival *in vitro*. No overt local adverse effects were seen with topically applied EVs in dogs with SCCEDs. **None.**

DIFFERENTIAL EFFECTS OF ULTRAVIOLET A-INDUCED INJURY TO CORNEAL ENDOTHELIAL CELLS IN HEALTH AND DISEASE (H Iwashita,<sup>1</sup> N Echeverria,<sup>1</sup> A Raposo,<sup>1</sup> S Park,<sup>1</sup> M Ferneding,<sup>1</sup> LJ Young,<sup>1</sup> W Song,<sup>1</sup> M Do,<sup>1</sup> H Shevalye,<sup>2</sup> JM Skeie,<sup>2</sup> MA Greiner,<sup>2</sup> K Handel,<sup>1</sup> AR Garcia,<sup>1</sup> BC Leonard,<sup>1,3</sup> SM Thomasy,<sup>1,3</sup>) Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California, Davis;<sup>1</sup> Department of Ophthalmology and Visual Sciences, Carver College of Medicine, University of Iowa;<sup>2</sup> Department of Ophthalmology & Vision Sciences, School of Medicine, University of California, Davis, CA, USA.<sup>3</sup>

**Purpose.** Genetic mutations and ultraviolet A (UVA) are important causes of pathology to the corneal endothelium. A key model of early-onset Fuchs' endothelial corneal dystrophy is the *Col8a2*<sup>Q455K/Q455K</sup> (Q455K) mouse which demonstrates progressive guttae and corneal endothelial cell (CEnC) loss. We investigated the impact of UVA-induced injury in Q455K and wildtype (WT) mice with and without disease.

**Methods.** Fifteen Q455K and eight WT mice were included in the study and one eye was exposed to 50, 75, 125, or 250 J/cm<sup>2</sup> of UVA at 42, 63, 105, and 210 s, respectively. The low energy group (50 and 75 J/cm<sup>2</sup>) included 5 Q455K and 4 WT mice while the high energy group (125 and 250 J/cm<sup>2</sup>) included 10 Q455K and 4 WT mice. The endothelial cell densities (ECD) and central corneal thicknesses (CCTs) were measured at multiple timepoints using in vivo confocal microscopy (IVCM) and optical coherence tomography, respectively. At 42 days post-UVA, immunohistochemistry with zonula-occludens 1 and DAPI (IHC) was performed and ECD quantified. **Results.** With IVCM, ECD significantly decreased in Q455K mice but did not significantly differ in WT mice over time following exposure to low UVA doses, while both Q455K and WT mice exhibited highly variable ECDs following high UVA doses ( $P < 0.05$ ). The CCT was not significantly different in the Q455K versus WT mice following post UV exposure. Consistent with IVCM, ECD as quantified from IHC did not significantly differ in Q455K ( $610 \pm 170$  cells/mm<sup>2</sup>) versus WT ( $1002 \pm 1043$  cells/mm<sup>2</sup>) mice at 42 days post-UVA at 125 J/cm<sup>2</sup> ( $P = 0.586$ ). **Conclusions.** In Q455K mice, UVA-induced injury at low doses results in profound decreases in ECD while WT mice demonstrate a complete recovery of normal CEnC density and morphology. Thus, UVA injury in Q455K mice may be useful for testing novel therapeutic interventions for FECD and corneal endothelial dystrophy in dogs. Supported by grants from the NIH (NIH R01EY016134, P30EY012576, T32GM135741). **None.**

# POSTER SESSION FRIDAY

CHARACTERIZATION OF A NOVEL BILATERAL CENTRAL CORNEAL STROMAL DYSTROPHY IN DOGS (J Lim, 1 AC Raposo, 1 M Ferneding, 1 BC Leonard, 1,2 and SM Thomasy 1,2) Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California, Davis, CA, USA; 1 Department of Ophthalmology & Vision Science, School of Medicine, University of California, Davis, CA, USA. 2

**Purpose.** To define a novel, bilateral, central corneal stromal dystrophy in dogs. **Methods.** Ten dogs ( $4.7 \pm 2.5$  years of age; 4 spayed females, 6 castrated males) of various breeds received a comprehensive ophthalmic examination including ultrasonic pachymetry, Fourier-domain optical coherence tomography (FD-OCT) and in vivo confocal microscopy (IVCM). Shapiro-Wilk test was used to assess data normality for central total corneal thickness (CCT), epithelial thickness (ET), stromal thickness (ST), lesion thickness (LT), Descemet's membrane-endothelial complex (DMET) and density of keratocytes in the anterior and posterior stroma, and the percentage of corneal involvement. Parameters were compared to eight healthy female Beagles ( $0.52 \pm 0.12$  years of age) using Student's *t*-test. Values from both eyes were averaged and reported as mean  $\pm$  standard deviation or median (interquartile range). **Results.** With FD-OCT, increased CCT ( $638.9 \pm 48.0$   $\mu\text{m}$  versus  $497.5 \pm 25.6$   $\mu\text{m}$ ;  $P < 0.0001$ ) and ET ( $75.3 \pm 5.0$   $\mu\text{m}$  versus  $52.4 \pm 5.9$   $\mu\text{m}$ ;  $P < 0.0001$ ) were observed in affected versus unaffected dogs. LT was  $303.5 \pm 50.1$   $\mu\text{m}$ . Lesions involved 12.2% (9.9–19.1%) of the cornea. A significantly lower anterior stromal keratocyte density ( $225.1 \pm 61.5$  versus  $993.4 \pm 93.4$  cells/ $\text{mm}^2$ ;  $P < 0.0001$ ) and posterior stromal keratocyte density ( $192.2 \pm 30.9$  versus  $789.4 \pm 65.1$  cells/ $\text{mm}^2$ ;  $P < 0.0001$ ) were observed in affected versus unaffected dogs with IVCM. **Conclusions.** Central bilateral stromal abnormalities were observed with reduced keratocyte populations. Quantification of lesion size and thickness provides objective criteria for longitudinal monitoring in future studies to determine disease progression. Supported by the National Eye Institute (R01EY016134, P30EY012576) and the Jane Lin Fong Ophthalmic Clinical Trial Support Fund. **None.**

# POSTER SESSION FRIDAY

INSULIN-LIKE GROWTH FACTOR-1 (IGF-1) MODULATION OF MYC EXPRESSION IN THE CORNEAL EPITHELIUM ALTERS WOUND HEALING POTENTIAL (X Yuan, and CW Peterson) Cummings School of Veterinary Medicine, Tufts University, Department of Comparative Pathobiology

**Purpose.** Corneal ulcers are common in both animals and humans. The insulin-like growth factor-1 (IGF-1) signaling (IS) pathway is crucial for cellular repair and regulating the expression of the *c-MYC* gene. *MYC* genes are proto-oncogenes essential for corneal epithelial maintenance and repair. This study investigated the relationship between IS and *MYC* expression during corneal wound healing.

**Methods.** *MYC* immunohistochemistry was performed on canine corneas with confirmed ulceration and non-ulcerated controls. *MYC* expression was also assessed in C57B6 murine corneas following topical trofinetide treatment, stimulating IS. In an *ex-vivo* human corneal wound model, cadaveric corneas received trofinetide, the IGF-1R antagonist PPP, or DMSO control following standardized epithelial debridement. Wound healing was evaluated using fluorescein staining and image analysis, and homogenized corneas were analyzed by Western blot and qPCR. Statistical differences in relative protein and transcript expression were evaluated using one-way ANOVAs with Dunnett's post hoc tests for multiple comparisons relative to controls. **Results.** *MYC* expression was upregulated in canine ulcers with concurrent keratitis. In mice, trofinetide treatment induced *MYC* immunolabeling in the corneal epithelium relative to vehicle-treated eyes. Trofinetide accelerated wound restitution, while PPP delayed wound closure in the *ex-vivo* model. Immunoblotting confirmed *MYC* upregulation following IGF-1 stimulation and *MYC* suppression following inhibition of the IGF-1R. Upregulation of *IGF-1R* and *MYC* were observed after IGF-1 stimulation, while IS inhibition suppressed expression of both transcripts. **Conclusions.** These findings suggest that the IGF-1-*MYC* axis may be a target for therapeutic intervention in corneal wound healing. Supported by NIH grant K01OD034451. **None.**

# POSTER SESSION FRIDAY

ARGON COLD PLASMA TREATMENT FOR CORNEAL DISEASE IN CLINICAL SETTING: SHORT-TERM AND LONG-TERM TOLERABILITY AND SAFETY OUTCOMES (P Soukup,<sup>1</sup> J Spornberger,<sup>1</sup> M Finneisen,<sup>1</sup> S Lettmann,<sup>1</sup> I Allgoewer,<sup>1</sup>) Animal Eye Practice, Berlin, Germany.<sup>1</sup>

**Purpose.** To evaluate argon cold plasma (ACP) treatment feasibility for corneal conditions in clinical setting and to identify potential short-term and long-term complications in dogs, cats and small mammals. **Methods.** ACP was performed on animals presenting with corneal disease using the kinPEN-VET (Neoplas GmbH, Greifswald, Germany) under topical anesthesia as an add-on therapy to standard treatment regimen. Early (<30 days) and long-term (>30 days) complications and concurrent ocular diseases were monitored. **Results.** 303 eyes in 281 animals were treated with ACP (263 dogs, 8 cats, 10 small mammals) with following conditions: spontaneous corneal chronic epithelial defects (SCCED, n=178), infected/stromal ulcer (n=76), melting ulcer (n=22) corneal perforation (n=20), others (n=7). Treatment under topical anesthesia was well tolerated with minority of animals having procedural distress (3.2%, 8 dogs, 1 cat). Average number of treatments per eye was  $3.5 \pm 1.74$  with median of 3 (1-9). The most common early adverse reaction observed were: epithelial tears after complete reepithelization incl. peripheral epithelial tears in not-yet healed SCCEDs (4.0%, n=12), development of stromal infiltrate (2.3%, n=7), emerging/continuing keratomalacia (2.0%, n=6) and punctate opacities direct after ACP treatment (1.3%, n=4). Long-term follow-up was on average 173.1 days with median of 117 (30-619) days. Most common long-term clinical findings in dataset were substantial corneal fibrosis and pigmentation (4.0%, n=12, mostly dry-eye cases). **Conclusions.** ACP is an emerging treatment modality for various corneal conditions. It is safe with a minimal number of adverse reactions on a long-term scale and can be easily implemented into clinical treatment protocols. **None.**



# POSTER SESSION FRIDAY

ARGON COLD PLASMA TREATMENT SIGNIFICANTLY SHORTENS HEALING TIME OF SPONTANEOUS CHRONIC CORNEAL EPITHELIAL DEFECTS IN FRENCH BULLDOGS (P Soukup,<sup>1</sup> J Spornberger,<sup>1</sup> M Finneisen,<sup>1</sup> S Lettmann,<sup>1</sup> I Allgoewer,<sup>1</sup>) Animal Eye Practice, Berlin, Germany.<sup>1</sup>

**Purpose.** To evaluate adjunctive argon cold plasma (ACP) treatment on healing time of spontaneous chronic corneal epithelial defects (SCCEDs) in French Bulldogs. **Methods.** French Bulldogs presenting with unilateral or bilateral SCCEDs were recruited. Dogs were treated with SCCED standard of care therapy including diamond burr debridement under topical anesthesia, antibiotic and lubricating eye drops, systemic nonsteroidals and e-collar. ACP was performed using the kinPEN-VET (Neoplas GmbH, Greifswald, Germany) directly after debridement as an add-on. Inclusion criterion was repeating ACP every 3-6 days until re-epithelization. Signalment, pretreatment duration, healing time (fluorescein negative), number of reassessments, presence of tear film disorders and results of bacterial culture were recorded. Control group of French Bulldogs was treated with SCCED standard of care therapy only. **Results.** Forty-five dogs (52 eyes) of median age of 7.4 years were included in the ACP group. Mean healing time ( $\pm$ SD; median) was 16.4 days ( $\pm$ 7.48; 15), median number of ACP treatments was 3 (1-8). The control group included 52 dogs (55 eyes) of median age of 7.7 years; mean healing time was 28.1 days ( $\pm$ 16.3; 24). Signalment, eye, pretreatment duration, as well as tear film disorders or bacterial burden (overall culture rate 79%) were similar in both groups and the differences not statistically significant. Healing time was significantly shorter in ACP group (linear regression model,  $p < 0.001$ ) and was 61.2% (CI: [50.2%, 74.8%]) of control group healing time. ACP treatment was well tolerated. **Conclusions.** Adjunctive ACP treatment significantly shortens healing time in conservatively treated SCCEDs in French Bulldogs. **None.**

# POSTER SESSION FRIDAY

ASSESSMENT OF SAFETY, EFFICACY, AND CORNEAL SEQUESTRUM DEVELOPMENT AFTER DIAMOND BURR KERATOTOMY IN FELINES (MM Hughley, R Keller Vaughan, and KR Gornik) BluePearl Emergency and Specialty Hospital Pittsburgh North, Ophthalmology Service.

**Purpose.** To evaluate the safety and efficacy of diamond burr keratotomy for the treatment of superficial corneal ulcers in felines as well as the prevalence of sequestrum development following diamond burr keratotomy. **Methods.** Retrospective evaluation of medical records from feline patients presenting for non-healing superficial corneal ulcers that had a diamond burr keratotomy performed between the years of 2017 to 2025. Diagnosis of superficial ulcer was based on slit-lamp examination with fluorescein stain by a board-certified ophthalmologist. Serial examinations following diamond burr procedure were performed. **Results.** 30 cats in total, ages 7 months to 18.5 years (median 10 years) had a diamond burr keratotomy for a superficial ulcer. Cats with adnexal disease or sequestrum at the time of ulcer diagnosis were excluded. Of these 30, 21 cats had no previous sequestrum formation or adnexal disease noted on ophthalmic exam prior to procedure. Corneal healing was achieved in 19 out of 21 cats (90.4%). 15 cats had no sequestrum before the procedure and healed with no noted sequestrum (71.4%). The follow up after healing was noted ranged from 3 weeks to 61 months. 6 out of 21 cats (28.6%) developed corneal sequestrum post-debridement. None of the cats developed malacia or worsening of the corneal ulcer post-debridement. **Conclusions.** Diamond burr keratotomy in cats can be a safe and effective means of treatment for indolent ulcerations in cats. Corneal sequestrum formation after diamond burr keratotomy occurs at similar rates to previously reported keratotomy procedures. **None.**

# POSTER SESSION FRIDAY

EFFECTS OF 0.2% CYCLOSPORINE A ON CONJUNCTIVAL TRANSFORMING GROWTH FACTOR B2 AND VASCULAR ENDOTHELIUM GROWTH FACTOR B2 IN DOGS WITH KERATOCONJUNCTIVITIS SICCA (BE Rodrigues, 1 AP Ribeiro, 2 TB Lima, 2 AR Costa, 3 MP Lins, 4 GM Madruga)<sup>1</sup> College of Veterinary Medicine, Federal University of Mato Grosso, Cuiabá, Brazil; 2 College of Veterinary Medicine, State University of Maranhão; 3 College of Medicine, Federal University of Mato Grosso, Cuiabá, Brazil; 4 Anclivepa, São Paulo, Brazil.

**Purpose.** To determine the effects of 0.2% cyclosporine A (CsA) on transforming growth factor $\beta$ -2 (TGF $\beta$ -2) and vascular endothelial growth factor (VEGF $\beta$ -2) levels in dogs with keratoconjunctivitis sicca (KCS).

**Methods.** Thirty-two dogs with Schirmer tear test (STT) < 15 mm/min and no prior treatment were selected. Conjunctival hyperemia (CH, score 0 to 3) and corneal vessel branches (CVB, ImageJ) were recorded at baseline (T0) and approximately 40–60 days after treatment (T1) with CsA every 12 h. Conjunctival biopsies were obtained at T0 and T1 to determine TGF $\beta$ -2 and VEGF- $\beta$ 2 levels (ELISA). The same procedures were performed in 10 healthy dogs used as controls. **Results.** From T0 to T1, STT increased from  $7.58 \pm 0.83$  to  $13.36 \pm 1.18$  mm/min ( $p < 0.01$ ). CH and CVB decreased from 2.0 to 1.0 (0.0 to 3.0) ( $p < 0.0001$ ) and from  $17 \pm 2.98$  to  $13 \pm 3.82$  ( $p = 0.93$ ), respectively. TGF $\beta$ -2 was higher in controls ( $80.57 \pm 28.99$ ), but no differences were observed between T0 ( $64.06 \pm 12.37$ ) and T1 ( $78.46 \pm 15.46$ ) ( $p = 0.73$ ). VEGF- $\beta$ 2 was higher in controls ( $20.30 \pm 1.68$ ) and T0 ( $22.26 \pm 1.30$ ), when compared to T1 ( $18.92 \pm 0.73$ ) ( $p = 0.02$ ). VEGF- $\beta$ 2 correlated with CVB ( $r = -0.50$ ,  $p = 0.02$ ) and TGF $\beta$ -2 ( $r = 0.32$ ,  $p = 0.008$ ). **Conclusions.** This study suggests that conjunctival TGF $\beta$ -2 decreased significantly after treatment with 0.2% CsA in dogs with KCS. CH and VEGF- $\beta$ 2 decreased after 0.2% CsA, but VEGF- $\beta$ 2 correlated only with CVB. The correlation between TGF $\beta$ -2 and VEGF- $\beta$ 2 suggests that both cytokines are involved in KCS pathogenesis. **None.**

# POSTER SESSION FRIDAY

INVASIVE AMELANOTIC MELANOMA AFFECTING THE IRIS AND CONJUNCTIVA IN A CAT (NN Doan,<sup>1</sup> KK Dowler,<sup>1</sup> GC Shaw,<sup>2</sup> KL Zimmerman<sup>1</sup>) Animal Eye Associates of St. Louis, St. Louis, Missouri. Comparative Ocular Pathology Laboratory of Wisconsin, Department of Pathobiological Sciences, School of Veterinary Medicine, University of Wisconsin-Madison, Madison, Wisconsin.

**CASE DESCRIPTION.** A 2-year-old female spayed domestic shorthair cat presented in 2018 for a diffuse and darker iris with multifocal areas of iris stromal thickening that was atypical of feline diffuse iris melanoma OD. It improved slightly on a course of neomycin-polymyxin B-dexamethasone ophthalmic ointment, and the patient was lost to follow-up. **CLINICAL FINDINGS.** Five years later, inferotemporal conjunctival swelling developed OD. Incisional biopsies were suggestive of xanthogranuloma. Although there was initial improvement, the swelling progressed to cause third eyelid protrusion. Deep incisional biopsies were suggestive of an atypical granular cell tumor (CD204 negative and pancytokeratin negative). Two months later, the conjunctival mass progressed in size and adhered to the globe. **TREATMENT AND OUTCOME.** Enucleation was performed. Histopathology revealed an extensive amelanotic uveal melanoma (PNL2 positive) with incomplete margins, involving the iris, limbal sclera, peripheral corneal stroma, episclera, and bulbar conjunctiva. PNL2 staining was more prominent within the conjunctival portion of the mass than the iridal portion. Further interventions and staging were declined. One year following enucleation, the cat developed stertor due to nasal occlusion from a pink cerebriform mass filling the right nare. Humane euthanasia and necropsy are planned when quality of life is affected. **CLINICAL RELEVANCE.** This is the first case report describing extensive amelanotic melanoma in a cat with confirmed iris and conjunctival involvement, and suspected ipsilateral sinonasal involvement. Although the initial clinical picture supports a primary iris neoplasm, based on histopathology, it is unclear if the melanoma originated in the iris or conjunctiva. **None.**

# POSTER SESSION FRIDAY

COMPARISON OF NOVEL AND ESTABLISHED BEHAVIORAL VISION TESTING METHODS IN DOMESTIC CATS (DS Lorquet, KE Myrna, RI Wright, CK Sheridan, JF White) University of Georgia, College of Veterinary Medicine, Department of Small Animal Medicine and Surgery

**Purpose.** This study evaluated the reliability of novel behavioral vision tests compared to the menace response in domestic cats in a clinical setting. **Methods.** Descriptive study. Thirty-two cats (29 sighted, 3 blind controls) of varying breeds underwent six vision tests: menace response, cotton ball tracking, visual placing, laser pointer tracking, wand toy tracking, and touchscreen tablet game. Each subject completed three randomized trial sessions (two attempts/test per trial) in a clinical exam room. Masked scoring was completed by reviewing video recordings. Positive responses were defined as consistent tracking or interaction. Pre-screening included neurologic, physical, and ophthalmic exams. **Results.** Menace response yielded the highest positive response (87.9%) but had a 12.1% false negative rate. Visual placing (79.9%) and cotton ball tracking (79.3%) demonstrated similar reliability, with corresponding false negative rates of 20.1% and 20.7%, respectively. Laser pointer and wand toy tracking had moderate response rates (49.4% and 46.0%), while the touchscreen tablet game was least effective (9.2%). Repeatability was greatest for menace response, visual placing, and cotton ball tracking. **Conclusions.** Although the menace response remains the standard, some false negatives still occur. Visual placing and cotton ball tracking also showed relatively high reliability and may serve as adjuncts to traditional vision testing in cats to improve overall accuracy. Further study is warranted in larger, diverse populations, especially for less consistent tests like the laser pointer, wand toy, and touchscreen tablet game. **None.**



# POSTER SESSION FRIDAY

FELINE CORNEAL STROMAL INVASIVE SQUAMOUS CELL CARCINOMA (N Thirunagari, 1 RP Taylor, 2 GC Shaw, 3 EM Scott, 1) Department of Clinical Sciences, College of Veterinary Medicine, Cornell University; 1 Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University; 2 Department of Pathobiological Sciences, School of Veterinary Medicine, University of Wisconsin-Madison; 3

**Purpose.** To describe the clinical presentation and histopathological features of corneal stromal invasive squamous cell carcinoma (CSI-SCC) in cats. **Methods.** Retrospective review of feline cases of CSI-SCC by the Comparative Ocular Pathology Laboratory of Wisconsin (COPLOW). Clinical data were obtained from referring veterinarian questionnaires and medical records. Microscopic features were summarized.

**Results.** Five cases of feline CSI-SCC were identified. All affected cats were domestic shorthairs with a history of chronic unresponsive keratitis and no clinical evidence of a corneal or conjunctival mass. The mean age at the time of enucleation/keratectomy was 10.4 years (median = 11; range 7-12). Histologically, neoplastic cells were arranged in cords and trabeculae and confined to the corneal stroma. Tumor infiltration was limited to the superficial-mid stroma in 4/5 cases, and one case had full-thickness stromal involvement. In 4/5 cases, neoplastic cells did not communicate with the corneal epithelium. All cases exhibited keratinization of neoplastic cells, though keratin pearl formation was absent. A mild to moderate neutrophilic and lymphoplasmacytic keratitis, and a scirrhous response was present in 3/5 cases.

**Conclusions.** Feline CSI-SCC demonstrates a distinct intrastromal growth pattern without the presence of an exophytic mass, closely resembling the presentation reported in horses. This neoplasia may be misdiagnosed as chronic stromal keratitis, highlighting the importance of histopathologic evaluation in atypical or non-responsive corneal disease. **None.**

## OPHTHALMIC MANIFESTATIONS OF FELINE HERPESVIRUS (FHV-1): A SURVEY OF THE GENERAL PRACTITIONER'S APPROACH TO TREATMENT AND MANAGEMENT (AN Mauer, 1 and TM Fife, 1) Eye Care for Animals – Tampa.1

**Purpose.** To gain insight on trending therapies recommended by general practitioners for feline patients with ophthalmic clinical signs suspected or confirmed to be due to feline herpesvirus (FHV-1). **Methods.** An electronic survey was distributed to general practice hospitals across the country who have a history of referring cases to corporate-owned, private practice ophthalmology clinics. The survey was developed following analysis of historical and currently available medical and supplemental treatments for felines with ophthalmic clinical signs suspected or confirmed to be due to feline herpesvirus (FHV-1). **Results.** Responses from 209 general practitioners were evaluated. Treatment recommendations when ulcerative keratitis was or was not present included stress management and household modifications (66% and 67.5% respectively), L-lysine supplementation (62.2% and 65.6% respectively) and topical antibiotics (96.7% and 61.7% respectively). The top three utilized topical antibiotics included Terramycin (26%), tobramycin (20.4%) and ofloxacin (19.9%). The incidence of oral and topical anti-viral use, with ulcerative keratitis was 30.1% and 24.9% respectively, and in cases without ulcerative keratitis was 23% and 23.9% respectively. Most general practitioners (53.6%) do not pursue referral to a veterinary ophthalmologist for these cases with commonly reported barriers to referral hospitals including limited client funds (36.6%), wait time for an appointment (24.2%) and distance to specialty services (13.6%). **Conclusions.** Anti-viral therapy is an underutilized tool in treating feline patients with ophthalmic signs suspected to be due to feline herpesvirus (FHV-1) infections. The incidence of topical antibiotic use is relatively common in patients without ulcerative keratitis. Supported by Eye Care for Animals. **None.**

# POSTER SESSION FRIDAY

MANAGEMENT OF FELINE CORNEAL SEQUESTRUM WITH DIAMOND BURR DEBRIDEMENT AND BANDAGE CONTACT LENS: OUTCOMES IN 15 CASES (J Ahn, 1 G Kim, 2 K Seo, 2 S Kang 2\*)  
Reborn Animal Medical Center, 194 Chungnyeol-daero, Dongnae-gu, Busan, 47815, Korea;1 Department of Veterinary Clinical Sciences, College of Veterinary Medicine and Research Institute for Veterinary Science, Seoul National University, Seoul, 08826, Korea.2

**Purpose.** To evaluate the clinical outcomes of diamond burr debridement (DBD) combined with a bandage contact lens (BCL) for feline corneal sequestrum (FCS). **Methods.** Fifteen client-owned cats (15 eyes) diagnosed with FCS and treated with DBD and BCL were retrospectively analyzed. DBD was performed under topical anesthesia using a handheld diamond burr, followed by BCL placement. Clinical assessments included lesion depth and width, epithelial healing, recurrence, and postoperative corneal opacity. Correlations between lesion characteristics and clinical outcomes were statistically analyzed using Spearman's rho correlation. **Results.** The mean age of the cats included in the study was 7.1 (range, 2–14) years, and 11/15 cats (73.3%) were brachycephalic breeds. Complete corneal epithelialization was achieved in 12/15 eyes by 2 weeks post-procedure, and in 3/15 eyes by 4 weeks. Blepharospasm, epiphora, and chemosis resolved in all cats. Recurrence was noted in four eyes (26.7%), one of which required repeated DBD. In two cats, the menace response was diminished prior to DBD but improved following DBD. Two weeks after DBD, corneal opacity was absent in 4 eyes, mild in 3, moderate in 3, and severe in 5. Lesion depth significantly correlated with postoperative opacity ( $p=0.7119$ ,  $P=0.0029$ ), and lesion width was significantly associated with recurrence ( $p=0.5753$ ,  $P=0.0249$ ). **Conclusions.** DBD with BCL was a safe, effective, and cost-efficient alternative to traditional surgical treatments for FCS, avoiding general anesthesia, minimizing complications, and yielding favorable outcomes. It may be considered a first-line option, particularly in early to moderate FCS cases where surgery is not feasible. **None.**

# POSTER SESSION FRIDAY

FELINE OCULAR POST-TRAUMATIC SARCOMA SPINDLE CELL VARIANT WITH EXTRAOCULAR EXTENSION AND METASTASIS IN A CAT (RI Wright,<sup>1</sup> KA Diehl,<sup>1</sup> GC Shaw,<sup>2</sup>) University of Georgia, College of Veterinary Medicine, Department of Small Animal Medicine and Surgery;<sup>1</sup> University of Wisconsin, School of Veterinary Medicine, Department of Pathobiological Sciences, Comparative Ocular Pathology Laboratory of Wisconsin.<sup>2</sup>

**CASE DESCRIPTION.** An 8-year-old neutered male domestic shorthair cat was evaluated for a mass affecting the right eye. Six years prior, the cat was diagnosed with a cataract, uveitis, and secondary glaucoma OD while treated for an ear polyp and otitis externa affecting the right ear. The cat was lost to follow up for 6 years between examinations. **CLINICAL FINDINGS.** Ophthalmic examination revealed a large pink, soft tissue mass occupying the palpebral fissure OD with no recognizable globe. OS was within normal limits. A CT scan was performed and showed a mass affecting the right globe and effacing the anterior segment of the eye, and a small, mineralized lens in the ventral posterior segment. There was also a soft tissue mass effacing the right parotid salivary gland. **TREATMENT AND OUTCOME.** The cat underwent an exenteration and the globe was submitted for histopathology which confirmed a spindle cell variant of feline ocular post-traumatic sarcoma (FOPTS), lymphoplasmacytic panuveitis, and lens capsule rupture with lens resorption. Orbital and optic nerve margins were dirty and there was intravascular invasion by the neoplastic cells. Punch biopsies of the mass within the parotid salivary gland were diagnosed as a sarcoma; morphologically consistent with the FOPTS affecting the globe. **CLINICAL RELEVANCE.** FOPTS is known to be locally invasive and aggressive in behavior. This is a histopathologically confirmed report of the spindle cell variant of FOPTS causing metastasis in addition to local tissue invasion. **None.**

# POSTER SESSION FRIDAY

ADVANCING OCULAR CARE IN ZOO MEDICINE: PHACOEMULSIFICATION WITH INTRAOCULAR LENS IMPLANTATION IN TWO FEMALE AFRICAN LION (PANTHERA LEO KRUGERI) (PM Evans, 1, C Bliss 2, B Alcantar 3) Animal Eye Specialty Clinic, Melbourne, FL; 1 Bliss Animal Eye Care, Medford, OR; 2 Wildlife Safari, Winston, OR 3

**Purpose.** To improve the care and quality of life of captive zoo animals by incorporating specialty medicine into their wellness examinations. **Methods.** Ophthalmic examinations were performed on two 12 year old female lions during their annual preventative care evaluations, after a zookeeper noticed cloudiness in their right eyes. After chemical restraint a slit lamp biomicroscopy, fundic exam, STT, rebound tonometry and fluorescein staining were performed in both eyes, by an ophthalmologist in addition to their annual examination and blood work. Adjunctively an electroretinogram and ocular ultrasound were performed to prepare for possible cataract surgery. Cataracts were confirmed OD and surgery was scheduled. Both lions were anesthetized and phacoemulsification with intraocular lens implantation was performed. **Results.** Surgery was successful for both female lions. **Conclusions.** When indicated, specialty medicine should be combined with routine evaluations of captive wild animals to address clinical problems that in the small animal population would otherwise be addressed separately. **None.**

IRIS HYPERPIGMENTATION IN CATS: PROGRESSION, GLOBE RETENTION AND LONG-TERM SURVIVAL (EN Gregorio, 1 ME Lassaline, 1 and E Holt 1) School of Veterinary Medicine, University of Pennsylvania.<sup>1</sup>

**Purpose.** To evaluate progression, globe retention and long-term survival in cats with iris hyperpigmentation.

**Methods.** Retrospective medical record review (2010-2022) provided clinical and morphologic diagnoses for cats presented with iris hyperpigmentation. Email survey of these cats' owners provided data regarding progression, globe retention for affected and contralateral eyes, and survival for affected cats.

**Results.** Ninety-two cats were included in medical record review. Records showed that 20/92 cats (22%) were enucleated. Histopathology confirmed feline diffuse iris melanoma in 100% of enucleated eyes. Survey sent to 92 clients to obtain follow-up data resulted in 36 responses. Median follow-up was 3.4 years. Of these 36 responses, 22 clients indicated that their cat had been enucleated, with 11/22 previously recorded from University of Pennsylvania medical record review, and 11/22 performed elsewhere. There was no difference in survival between enucleated cats, 16/22 (73%) and cats who were not enucleated, 9/14 (64%),  $X^2 = 0.29$ ,  $p=0.69$ . Eleven of 36 cats died (31%). There was no statistical difference in mean survival time between enucleated cats (6/11 cats, survival 3.1 yrs) and cats who were not enucleated (5/11 cats, survival 4.4 yrs), Kruskal-Wallis  $K = 0.533$ ,  $p=0.47$ . Owners reported that iris pigmentation increased slowly over years in 8/14 (57%) cats not enucleated. Four of 8 cats died, median age 14.0 years, with a median survival of two years following initial presentation. Hyperpigmentation was not noted in any contralateral eye. **Conclusions.** Long-term survival may not be different for cats enucleated for iris pigmentation and those not enucleated. **None.**



# POSTER SESSION FRIDAY

CORTICOSTEROID TREATMENT MAY BE A SIGNIFICANT RISK FACTOR FOR DEVELOPMENT OF ACUTE BULLOUS KERATOPATHY IN CATS (Y Han, 1 ME Lassaline, 1 and E Holt 1) School of Veterinary Medicine, University of Pennsylvania. 1

**Purpose.** To investigate the association between corticosteroid treatment and development of acute bullous keratopathy in cats. **Methods.** Medical records of 38,620 cats presented to the University of Pennsylvania Ryan Hospital from 2012-2024, were searched for patients that developed acute bullous keratopathy (ABK) and for any cat treated with prednisolone. For ABK cats, signalment, steroid dose, route of administration and number of episodes of ABK were recorded. Relative risk of developing ABK was calculated for cats treated with prednisolone. **Results.** Twenty-seven developed ABK, mean age of 7.7 years; 17/27 were Domestic Short Hair cats. Three thousand, seven hundred and thirty-six cats were treated with prednisolone, seventeen (0.005%) developed ABK; 10/34,857 (0.0003%) cats not treated with prednisolone developed ABK. Relative risk for ABK in cats treated with oral prednisolone was 10.62 (95% CI = 5.00-22.57,  $p < 0.0001$ ); the average steroid dose was 1.34mg/kg/day. For cats treated with either oral prednisolone or prednisolone acetate 1%, relative risk was 15.79 (95% CI = 7.24 – 34.47,  $p < 0.0001$ ). Cats treated with prednisolone, either through oral or topical ophthalmic routes, experienced more episodes of ABK than cats not treated with prednisolone (mean number 2.0 versus 1.2;  $t=2.5$ ,  $p=0.02$ ). **Conclusions.** Treatment with corticosteroids may put cats at risk for developing ABK. ABK may be more severe in cats treated with corticosteroids, Investigation into other risk factors is warranted to better understand ABK. **None.**

# POSTER SESSION FRIDAY

CLINICOPATHOLOGIC FEATURES AND RISK FACTORS ASSOCIATED WITH SNOWBANKING IN CATS WITH CHRONIC LYMPHOPLASMACYTIC UVEITIS (AL Ludwig,<sup>1</sup> E Bentley,<sup>1</sup> RR Dubielzig,<sup>2</sup> GC Shaw<sup>2</sup>) Department of Surgical Sciences, School of Veterinary Medicine, University of Wisconsin – Madison, Madison, WI, USA (1); Comparative Ocular Pathology Laboratory of Wisconsin (COPLOW), School of Veterinary Medicine, University of Wisconsin – Madison, Madison, WI, USA (2)

**Purpose.** To describe histologic features of snowbanking (SB) in feline lymphoplasmacytic uveitis (LPU) and identify risk factors associated with its presence in enucleated eyes. **Methods.** A retrospective review of the COPLOW database identified 3564 cases of feline LPU, including 337 globes with histopathologic features of snowbanking over a 33-year period (1989-2022). Signalment, geographic location, clinical data, and morphologic diagnoses were compared between groups (SB cases vs. non-SB LPU cases). A fixed effects multiple variable logistic regression model was used to identify statistically significant risk factors for snowbanking using R version 2023.06.2. **Results.** Snowbanking is histologically characterized by accumulation of granular, acellular, eosinophilic material posterior to the lens within the anterior vitreous. Males were overrepresented in both groups (81% of SB cases, n = 261; 63% of non-SB LPU cases, n = 1938). There was no significant association between snowbanking and age, location, or retroviral status. Risk factors associated with greater odds of snowbanking were identified, including cataracts (odds ratio [OR]: 2.4, confidence interval [CI]: 1.8-3.1), glaucoma (OR: 3.1, CI: 1.3-4.4), and bartonella seropositivity (OR: 3.3, CI: 1.3-7.6). Eyes with mild LP uveitis had significantly lower odds of snowbanking (OR: 0.3, CI: 0.2-0.5). **Conclusions.** Snowbanking is more prevalent among male cats and is associated with negative clinicopathologic outcomes including cataracts, glaucoma, and more severe LP uveitis. Exposure to infectious diseases including *Bartonella* spp. should be considered in addition to retroviral disease for cats with LP uveitis and snowbanking on clinical exam or histopathology. **Supported by** NIH Grant F30 EY031230 (AL). **None.**

# POSTER SESSION FRIDAY

RETROSPECTIVE STUDY ON THE SEROPREVALENCE OF INFECTIOUS DISEASES IN CANINES AND FELINES PRESENTING WITH UVEITIS IN CENTRAL/SOUTH TEXAS (P Dominguez and KJ Fritz 1) South Texas Veterinary Ophthalmology (STVO).<sup>1</sup>

**Purpose.** To investigate the seroprevalence of infectious diseases in canines and felines presenting with uveitis in Central/South Texas, with the goal of identifying the most common infectious agents in these populations. **Methods.** A retrospective analysis of the medical records of canine and felines diagnosed with uveitis from STVO was performed from January 2018 to December 2023. Data collected included signalment, clinical, clinicopathological, serological and/or PCR testing as well as any comorbidities and histopathological data. Serology and/or PCR was consistently completed for tick borne diseases, fungal diseases, feline viruses (FeLV, FIV, and FCoV), *Toxoplasma gondii*, and *Bartonella* spp. Exclusion criteria included confirmed neoplasia, idiopathic/autoimmune uveitis or absent serological and/or PCR testing. Frequency analysis was used to determine the most prevalent pathogens in each species. Statistical analysis was performed to assess patterns and significance in disease associations. **Results.** A total of 101 canines and 54 felines met the inclusion criteria. In the canine population (mean age  $7.4 \pm 3.9$  years), *Bartonella* spp. had the highest seroprevalence: *B. henselae* (20.75%), *B. koehlerae* (18.87%), and *B. vinsonii* (11.32%). In the feline population (mean age  $5.9 \pm 4.1$  years), Feline Coronavirus (FCoV) was most common with titers of 1:400 (67.39%) and 1:1600 (45.65%). *Bartonella* spp. also demonstrated high prevalence: *B. henselae* (56.41%), *B. vinsonii* (53.85%), and *B. koehlerae* (46.15%). **Conclusions.** Seropositivity for *Bartonella* species was the most prevalent in the study area. FCoV serology was the leading positive result in cats. *Coccidioides* and Histoplasmosis were the most common fungal organism detected in dogs and cats, respectively, but at a low frequency. **None.**

INITIAL STEPS TO STANDARDIZE OPHTHALMIC EVALUATION IN 168 EYES OF ROCKFISH (SEBASTES SP): A FRAMEWORK FOR AQUATIC SPECIES OCULAR HEALTH (AB Babbidge,<sup>1</sup> CD Bliss,<sup>1</sup> and TJ Miller-Morgan,<sup>2</sup>) <sup>1</sup>Bliss Animal Eye Care, Medford, Oregon; <sup>2</sup>Hatfield Marine Science Center, Carlson College of Veterinary Medicine/Division of Research and Innovation, Oregon State University, Newport, Oregon.

**Purpose.** To create a standardized protocol for performing ophthalmic evaluations and ocular diagnostic tests on aquatic species using eight Rockfish species to serve as a framework for further research into fish ophthalmology. **Methods.** Complete ophthalmic examinations including slit lamp biomicroscopy, indirect ophthalmoscopy, rebound tonometry, ultrasonic echobiometry, pachymetry and measurement of corneal diameter on 75 Rockfish were performed along with routine anesthetized physical exams. Animals included: eighteen Black (*S. melanops*), fifty-one Copper (*S. caurinus*), four Quillback (*S. maliger*), one China (*S. nebulosus*), two Yellowtail (*S. flavidus*), one Honeycomb (*S. umbrosus*), three Redbanded (*S. babcocki*), and four Shortspine Thornyhead (*Sebastolobus alascanus*) Rockfish on exhibit at the Hatfield Marine Science Center of Oregon State University and Oregon Coast Aquarium. To establish initial data, mean and standard deviation of ophthalmic tests of normal examined eyes were recorded and compared using a two-tailed paired t-test with significance at  $P < 0.05$ . Correlation between results with length and weight were assessed using Pearson's correlation coefficient. **Results.** Eighty-four fish (168 eyes) were examined. Abnormalities noted in 25 eyes with cataracts being the most common (~44%). The remaining 143 eyes were normal upon ophthalmic exam. **Conclusion.** Many lessons were learned during this initial project and will be pivotal in future publications leading to a better understanding of fish ocular health and early disease diagnosis. We hope by establishing a standard repeatable ocular evaluation for aquatic species, such as Rockfish, that this will open doors into future research. **None.**

# POSTER SESSION FRIDAY

LACRIMAL GLAND MEASUREMENTS IN MOST COMMON PRECLINICAL LABORATORY ANIMALS  
(M Bacellar-Galdino, 1 N Pappenhagen, 1 B Ossont 1 and S Iwabe 1) Altasciences Preclinical Scranton, PA

**Purpose.** This study aimed to localize and measure lacrimal glands (LG) from laboratory animals. **Methods.** LGs were collected from Sprague Dawley (SD) rats (n=12; exorbital and intraorbital), New Zealand White (NZW) rabbits (n=8), Beagle dogs (N=8) and Cynomolgus Macaques (CM) (n=20). LGs were dissected, weighed (mg) and measured (width x length in mm). **Results.** Exorbital LG in SD rats was localized over the masseter muscle, mean weight of  $117.4 \pm 3.1$  mg, and measured  $7.9 \text{ mm} \pm 0.14 \text{ mm}$  by  $12 \text{ mm} \pm 0.31 \text{ mm}$ . Intraorbital LG underneath the lower temporal part of the orbit, mean weight was  $13.5 \pm 1.9$  mg, and measured  $7.6 \text{ mm} \pm 0.27 \text{ mm}$  by  $3.3 \text{ mm} \pm 0.06 \text{ mm}$ . In NZW rabbits the LG was embedded posteriorly in the superotemporal part of the orbit, mean weight was  $328.4 \pm 23$  mg, and measured  $8.4 \text{ mm} \pm 0.17 \text{ mm}$  by  $20.2 \text{ mm} \pm 0.09 \text{ mm}$ . In Beagle dogs the LG was in the superotemporal aspect of the globe and underneath the orbital ligament, mean weight was  $337.9 \pm 89.5$  mg, and measured  $11.1 \text{ mm} \pm 0.16 \text{ mm}$  by  $4.59 \text{ mm} \pm 0.23 \text{ mm}$ . LG in CM were located superotemporal aspect of the globe and was easily assessed by rotating the eye nasally and elevating the superior palpebra. The mean weight was  $50.4 \pm 2.6$  mg and measured  $11.73 \text{ mm} \pm 0.41 \text{ mm}$  by  $4.25 \pm 0.12 \text{ mm}$ . **Conclusions.** LG location and measurements are essential information as new therapies and administration routes are being explored for treatment of dry eye disease. **E.**

# POSTER SESSION FRIDAY

AN OCULAR MANIFESTATION OF A SYSTEMIC DISEASE WITH *ENCEPHALITOZOON POGONAE* IN A JUVENILE BEARDED DRAGON (*POGONA VITTICEPS*) (VA Raptis 1, M Roeder 1, A Jimenez-Romero 2, K Chan 2, DM Meritet 2, SM Ozawa 1, MdL Henriksen 1) Department of Clinical Sciences, North Carolina State University, College of Veterinary Medicine 1; Department of Population Health and Pathobiology, North Carolina State University, College of Veterinary Medicine 2

**Case Description.** A 6-month-old male bearded dragon was referred for evaluation of a two-month history of 'eyelid swelling' OD, following no response to initial treatments (topical erythromycin and neomycin-polymyxin B-dexamethasone). **Clinical Findings.** Initial ophthalmic evaluation confirmed severe blepharoeidema obscuring visibility of OD. High-frequency ultrasound with a 48mHz transducer of OD revealed significant swelling of eyelid and conjunctiva, indistinct anterior segment margins, irregular anterior lens capsule, and lens changes suggestive of reabsorbing cataract. The posterior segment was within normal limits. The bearded dragon's systemic health and OS were otherwise normal. **Treatment and Outcome.** Topical ofloxacin, oral meloxicam, and oral ceftazidime were initiated for two weeks with no effect. Due to systemic health decline as well as no improvement in OD, a conjunctival cytology swab OD was performed which revealed extracellular and occasionally intracellular organisms, suggestive of spore-forming agents. A complete systemic work-up was recommended but the patient died from hemopericardium before this work-up was performed. Necropsy showed severe granulomatous inflammation and vasculitis in multiple organs, including ocular tissue (eyelids, conjunctiva, uvea, and lens), liver, and intestines, consistent with systemic microsporidiosis. The diagnosis of *Encephalitozoon pogonae* (*E. pogonae*) was confirmed with PCR analysis from conjunctival and liver tissue. **Clinical Relevance.** We are describing the first case of ocular manifestation of *E. pogonae* that was associated with systemic *E. pogonae* infection in a juvenile bearded dragon. *E. cuniculi* is known for cataract formation and phacoclastic uveitis in rabbits. We suggest adding *E. pogonae* to the list of differential diagnoses of refractory ocular diseases in bearded dragons. **None.**



# POSTER SESSION FRIDAY

FLAVOPROTEIN FLUORESCENCE IMAGING IN RHESUS MACAQUES: A TRANSLATIONAL TOOL FOR EARLY DETECTION OF OPTIC NEUROPATHIES IN VETERINARY PATIENTS (A Ripolles-Garcia, 1 A Raposo, 1 J Lim, 1 M J Motta, 1 C I Villafuerte Trisolini, 2, K Anderson, 3 N Habbas-Nimer, 4 C A Rich, 4 G Yiu, 2 A Moshiri, 2 S M Thomasy, 1,2,5) Dept. of Surgical & Radiological Sciences, School of Veterinary Medicine, University of California, Davis, Davis, CA, 1; Dept. of Ophthalmology & Vision Science, School of Medicine, University of California, Davis, Sacramento, CA, 2; Stoke Therapeutics Inc, Bedford, MA, 3; OcuSciences Inc., Ann Arbor, MI, 4; California National Primate Research Center, University of California, Davis, Davis, CA, 5.

**Purpose.** To establish normative flavoprotein fluorescence (FPF) intensity values, a noninvasive marker of mitochondrial oxidative stress, in the Optic Nerve Head (ONH) of normal rhesus macaques and assess the effects of age, sex, and regional variation. Then, compare these values to a cohort of rhesus macaques with an *OPA1A8S* mutation that serve as a model of optic neuropathy. **Methods.** Seventy-three normal rhesus macaques (age range: 0.58–28.95 years) were imaged using the OcuMet Beacon® device (OcuSciences, Inc.). FPF was quantified globally and by quadrant (superior, inferior, temporal, nasal). A subset of 16 adult *OPA1* heterozygotes (age range: 5.58-17.42 years) was also assessed. **Results.** Global FPF intensity values correlated significantly with age ( $R=0.27$ ,  $P=0.027$ ), while sex had no significant effect. The temporal quadrant consistently exhibited significantly higher FPF values in infant & juvenile ( $7.48 \pm 0.89$  dB), adult ( $8.50 \pm 1.97$  dB), and geriatric ( $8.97 \pm 1.69$  dB) groups compared to the nasal (infant & juvenile:  $6.49 \pm 1.15$  dB, adult:  $7.12 \pm 1.94$  dB, geriatric:  $7.51 \pm 1.82$  dB), superior (infant & juvenile:  $5.07 \pm 1.13$  dB, adult:  $5.52 \pm 1.58$  dB, geriatric:  $5.57 \pm 2.03$  dB), and inferior (infant & juvenile:  $5.50 \pm 1.16$  dB, adult:  $5.54 \pm 1.50$  dB, geriatric:  $5.53 \pm 1.83$  dB) quadrants. *OPA1* heterozygous macaques showed elevated FPF, consistent with mitochondrial dysfunction, with 81.25% (13/16) of the animals having global FPF values above normal limits (abnormal range: 7.45-8.5 dB; normal range: 6.10-7.25 dB). **Conclusions.** This study establishes the first normative FPF dataset in rhesus macaques, validating this metabolic imaging modality. FPF imaging offers a noninvasive assessment of early oxidative stress in optic neuropathies and is readily applicable to other veterinary species. Supported by the NIH under grants U24EY029904, R01EY033733, R01EY033733-S1, P30EY012576, and T35OD010956, as well as the CNPRC Base Grant from the NIH Office of the Director (OD011107) and a contract from Stoke Therapeutics. Karen Anderson (E, Stoke Therapeutics); Sara M Thomasy (C, Stoke Therapeutics); Nadeen Habbas-Nimer (E, OcuSciences Inc.); Collin A Rich (E, OcuSciences Inc.); All other authors **(None)**.

# POSTER SESSION FRIDAY

UNILATERAL HYPERMATURE CATARACT WITH SUBSEQUENT LENS CAPSULE RUPTURE AND ANTERIOR NUCLEAR EXTRUSION IN A NORTH AMERICAN RIVER OTTER (CL Sproul,<sup>1</sup> CL Pinard,<sup>1</sup> MM Ford,<sup>1</sup> BP Wilcock,<sup>2</sup> and E Okruhlik<sup>3</sup>) Ontario Veterinary College, University of Guelph;<sup>1</sup> Histovet Surgical Pathology;<sup>2</sup> Wildlife Health Department, Toronto Zoo;<sup>3</sup> Wildlife Care Department, Toronto Zoo.<sup>3</sup>

**CASE DESCRIPTION.** A 10-year-old intact male North American river otter (*Lontra canadensis*) presented for ophthalmic evaluation due to a 1-month history of ocular changes in the right eye. **CLINICAL FINDINGS.** The right eye revealed focal ventral corneal vascularization, hypermature cataract with an equatorial capsular tear with extruding lens fibers, and an opaque lens nucleus within the ventral anterior chamber. Neither the vitreous nor fundus could be visualized. The left eye was unremarkable. **TREATMENT AND OUTCOME.** Enucleation of the right eye was performed due to the concern for potential secondary glaucoma development and the necessity for daily ophthalmic medications. Histopathology revealed the following anomalies: phacolytic uveitis, lens epithelium migration, and lens capsule wrinkling; processing had removed the extruded lens material that was originally within the anterior chamber. **CLINICAL RELEVANCE.** This report identifies a unique case of both a unilateral hypermature cataract and anterior lens nucleus extrusion without a known history of underlying metabolic disease or trauma in a river otter. There are minimal reports in literature regarding lens nucleus extrusion. It is proposed that the mechanism of action was the precise and rapid constrictive movements of the otter's unique ciliary body and iris which caused the weakened, thinned lens capsule to rupture. The cause of the unilateral hypermature cataract remains unclear. **None.**

# POSTER SESSION FRIDAY

OCULAR FINDINGS IN 30 GOLDFISH (*CARASSIUS AURATUS*) IN BRAZIL (HF Fioravanti,1 RG Concato,1 PF Ferreira,1 AMV Safatle,2) Dr. Niva Veterinary Clinic. Itu – SP – Brazil;1 VetMasters Veterinary Clinic, Sao Paulo – Brazil.2

**Purpose.** Fish ophthalmology is becoming increasingly common in exotic medicine. The purpose of this study was to describe the clinical ocular findings in 30 goldfish (*Carassius auratus*) in Brazil. **Methods.** Thirty goldfish, sixty eyes, 180 g of weight, adults, unknown sex, with no previous disease history, and any navigation or feeding problems living in an outdoor tank were included. Ophthalmic examination was performed along with slit lamp examination, fluorescein staining and intraocular pressure (IOP) via rebound tonometry (TONOVET<sup>®</sup> Pro, canine mode, ICare Finland Oy, Vantaa, Finland). **Results.** Ocular diagnostic testing was promptly performed in all individuals. The IOP assessed was  $4.85 \pm 1.85$  mmHg. Ocular alterations were identified in 76.6% of the group (23/30). The most common findings on biomicroscopy examination included: chronic keratitis (5/30), unilateral cataract (5/30), bilateral cataract (4/30), divergent strabismus (3/30), anisocoria (2/30), anophthalmia (2/30), cicatricial leukoma (2/30), corneal perforation (1/30), hyphema (1/30), iris coloboma (1/30), lens luxation (1/30) and posterior synechiae (1/30). **Conclusions.** This study revealed a high prevalence of ocular abnormalities in adult goldfish in Brazil. Cataract and pigmentary chronic keratitis occurrence may be associated with prolonged exposure to high levels of sun radiation, typical of tropical environments. To the author's knowledge, this is the first report describing ocular findings in *Carassius auratus*, an important worldwide pet fish species. **None.**

***GENERAL  
SCIENTIFIC  
SESSION***

# GENERAL SCIENTIFIC SESSION FRIDAY

MOBILE SMARTPHONE-BASED IMAGING OF EX VIVO PORCINE CORNEAL ENDOTHELIUM USING SPECULAR REFLECTION FROM A SLIT-LAMP BIOMICROSCOPE (YJ Kim, 1 SM Kang, 1 and KM Seo 1) College of Veterinary Medicine, Seoul National University.1

**Purpose.** To visualize corneal endothelial cells in enucleated porcine eyes using slit-lamp imaging with a mobile smartphone (SLiM) system, determine optimal illumination conditions, and validate the effectiveness of SLiM. **Methods.** Twelve enucleated porcine eyes were imaged using specular reflection with SLiM while varying the angle between the illumination and microscope units (AIM), slit width (SW), and light intensity (LI). The visible area of hexagonal endothelial cells relative to the illuminated field was graded as follows: Grade-3 (75–100%), Grade-2 (50–75%), Grade-1 (25–50%), and Grade-0 (0–25%). Immediately after imaging, the corneal endothelium was stained with a vital dye. Endothelial cell density (ECD), percentage of hexagonal cells (HEX), and coefficient of variation in cell area (CV) were compared between SLiM images and vital dye-stained reference images. Illumination effects were analyzed using cumulative link mixed models with post-hoc pairwise comparisons, and equivalence of ECD, HEX, and CV was tested using the two one-sided t tests (TOST) procedure with a 10% margin. **Results.** SLiM imaging quality was significantly influenced by AIM, SW, and LI ( $P<0.001$ ), with the highest Grade observed at 60°, 3 mm, and high brightness. AIM 60° yielded higher Grades than both 40° and 80° ( $P<0.001$ ). Lower Grades were observed with 7 mm width ( $P<0.001$ ) and low brightness ( $P<0.001$ ), respectively. SLiM showed no significant difference from vital dye staining. **Conclusions.** SLiM reliably visualized porcine corneal endothelium, suggesting a highly effective approach for corneal endothelial imaging. Supported by the Research Institute for Veterinary Science, Seoul National University. **None.**

# GENERAL SCIENTIFIC SESSION FRIDAY

DISEASE ONSET AND PROGRESSION IN AN EARLY ONSET MURINE MODEL OF FUCHS' ENDOTHELIAL CORNEAL DYSTROPHY (FECD) (K W Handel, 1 N Echeverria, 1 S Park, 1 J Lim, 1 M Ferneding, 1 S Khan, 1 M Khan, 1 K P Roszak, 1 G Donovan, 1 M Iwamoto, 1 J Shim, 1 L J Young, 1 M Ardon, 1 S Le, 1 J Skeie, 2 M Greiner, 2 B C Leonard, 1 and S M Thomasy, 1,3) Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California, Davis;1 Department of Ophthalmology and Visual Sciences, Carver College of Medicine, University of Iowa;2 Department of Ophthalmology & Vision Science, School of Medicine, University of California, Davis, CA, USA; 3.

**Purpose.** To develop novel treatments for FECD in humans and corneal endothelial dystrophy in dogs, accurate murine models are essential. Mice homozygous for a mutation in *Col8a2* (Q455K) exhibit decreased endothelial cell density (ECD) and increased guttae formation, modelling early-onset FECD. This study characterizes corneal disease progression in Q455K and wild-type (WT) mice using in vivo imaging and histology. **Methods.** Fifty-six Q455K and 56 WT mice were evaluated every 3 months from 3 to 24 months of age using in vivo confocal microscopy, Fourier-domain optical coherence tomography (FD-OCT), and slit-lamp biomicroscopy. ECD and polymegathism, and guttae were semi-automatically quantified; central corneal thickness (CCT) was measured from FD-OCT. Immunohistochemistry was performed for zonula occludens-1 (ZO-1) and Na<sup>+</sup>/K<sup>+</sup> ATPase) at 3, 6, 12 and >18 months of age. A two-way ANOVA followed by Tukey's multiple comparisons test was performed for each variable. Data are presented as mean ± SD. **Results.** While ECD significantly declined in both groups from 3 to 24 months of age, it was more marked in Q455K (2285 ± 317 to 1012 ± 58 cells/mm<sup>2</sup>) versus WTs (2714 ± 139 to 2057 ± 149 cells/mm<sup>2</sup>, *P*<0.0001). Similar changes in polymegathism were observed in Q455K (29.3% ± 7.6% to 64% ± 8.6%) versus WTs (16.7% ± 1.4% to 28.2% ± 4%, *P*<0.0001). Guttae were only observed in Q455K and increased significantly from 3 to 24 months of age (33.3 ± 21.9 to 267.4 ± 27.9 guttae/mm<sup>2</sup>, *P*=0.0003) while CCT demonstrated no significant difference over time or between groups (*P*>0.07). Finally, ZO-1 staining revealed decreased hexagonality and polymegathism with upregulated Na<sup>+</sup>/K<sup>+</sup>-ATPase expression in Q455K ≥6 months of age. **Conclusion.** The Q455K mice demonstrated clinical disease at 3 months of age which progressed over time thus providing a valuable model for evaluating potential therapies prior to clinical trials in dogs and humans. Supported by NIH grants R01EY016134, R01EY037135, R01EY036440, P30EY012576, T32GM13574. **None.**



# GENERAL SCIENTIFIC SESSION FRIDAY

MUCIN 4 DEFICIENT MICE EXHIBIT ANATOMICAL AND FUNCTIONAL DECREASES IN THEIR CORNEAL BARRIER WITH REDUCED CORNEAL INNERVATION (EA Hisey,<sup>1</sup> A Sandoval-Castellanos,<sup>2</sup> S Ghosh,<sup>3</sup> MH Ferneding,<sup>1</sup> S Park,<sup>1</sup> N Araujo,<sup>1</sup> K Sandberg,<sup>1</sup> I Lai,<sup>1</sup> SA Adelman,<sup>1</sup> SM Thomasy,<sup>1,2</sup> P Argueso,<sup>4</sup> M Zhao,<sup>2,5</sup> MA Stepp,<sup>3,6</sup> BC Leonard<sup>1,2</sup>) Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California, Davis;<sup>1</sup> Department of Ophthalmology & Vision Science, School of Medicine, University of California, Davis;<sup>2</sup> Department of Anatomy and Cell Biology, School of Medicine and Health Sciences, George Washington University;<sup>3</sup> Department of Ophthalmology, Tufts Medical Center, Tufts University School of Medicine;<sup>4</sup> Department of Dermatology, School of Medicine, University of California Davis;<sup>5</sup> Department of Ophthalmology, School of Medicine and Health Sciences, George Washington University.<sup>6</sup>

**Purpose** . This study aimed to investigate the impact of a Mucin 4 (Muc4) deficiency on corneal barrier function and corneal nerve health in mice. **Methods**. Young adult (4-5 mos) or adult (9-10 mos) wildtype (n= 8-16) and *Muc4* knockout (KO) mice (n= 8-18) were used. Slit lamp biomicroscopy examinations were performed. The corneal barrier was structurally investigated with zonula occludens-1 (ZO-1) immunofluorescent staining of whole mount corneas and functionally assessed using transepithelial potential (TEP) difference of *ex vivo* globes. The subbasal corneal nerves were functionally investigated with corneal touch sensitivity (CTS) and morphologically evaluated using *in vivo* confocal microscopy (IVCM) and beta-3 tubulin immunofluorescent staining of whole mount corneas. Results were compared between genotypes using a Mann-Whitney or unpaired t-tests. **Results**. No clinically apparent corneal changes were identified in the *Muc4* KO mice. The *Muc4* KO mice showed less distinct ZO-1 expression at the apical corneal cell-cell junctions. Functional testing revealed a trend towards a reduced TEP difference in the adult *Muc4* KO mice ( $P=0.0578$ ). No significant differences were identified using CTS ( $P>0.8152$ ). However, IVCM image analysis identified significant alterations *Muc4* KO subbasal nerves ( $P<0.0407$ ). Additionally, a significant decrease in central corneal nerve density was identified in whole mount immunofluorescence images from adult *Muc4* KO mice ( $P=0.0091$ ). **Conclusions**. Mucin 4 KO mice exhibit decreased barrier function and decreased central subbasal corneal nerve density in the absence of clinically identifiable pathology. Further work is necessary to investigate the temporal relationship between the barrier dysfunction and the reduced corneal innervation. Supported by NIH grants K08EY028199, F30EY035132, R01EY016134 and P30EY012576. **None**.

# GENERAL SCIENTIFIC SESSION FRIDAY

CORNEAL EPITHELIAL INCLUSION CYSTS IN DOGS: CLINICAL, HISTOPATHOLOGIC, AND *IN VIVO* CONFOCAL MICROSCOPIC FEATURES OF FOURTEEN CASES (EC Chase,<sup>1</sup> KE Knickelbein,<sup>1</sup> EM Scott,<sup>1</sup> EC Ledbetter,<sup>1</sup>) Department of Clinical Sciences, College of Veterinary Medicine, Cornell University, Ithaca NY.)

**Purpose.** To describe the appearance of corneal epithelial inclusion cysts using *in vivo* confocal microscopy (IVCM). **Methods.** Fourteen dogs diagnosed with unilateral corneal epithelial inclusion cysts had IVCM performed using a modified Heidelberg Retina tomograph and Rostock Cornea Module. The IVCM findings were then correlated with clinical details and diagnostic test results, including corneal histopathology. **Results.** The corneal epithelial inclusion cysts appeared as a multilayered epithelium that completely encircled a hyporeflective cavity within the corneal stroma. In some cases, the epithelium lining the cysts formed highly organized sheets of cells that closely resembled the normal superficial-intermediate epithelial cells of the cornea. In other cysts, the epithelial lining was disorganized and cells were often arranged in whorl patterns. All cysts possessed a hyporeflective lumen that contained amorphous hyperreflective material believed to represent sloughed epithelial cells, cellular debris, and potentially leukocytes. Small numbers of leukocytes and antigen presenting cells were found within the stroma surrounding the cysts. When comparing IVCM findings to histopathology, there was a notable similarity in the cyst appearance in all cases. **Conclusions.** There was a high level of concordance demonstrated between IVCM and histopathological findings. IVCM could be a valuable tool for real-time, accurate diagnosis of corneal epithelial inclusion cysts in dogs. In some cases, this could eliminate the need for additional diagnostics or invasive biopsy with submission for histopathology. **None.**

# GENERAL SCIENTIFIC SESSION FRIDAY

A PRELIMINARY STUDY INVESTIGATING THE QUANTIFICATION OF CORNEAL LEUKOCYTES BY FLOW CYTOMETRY IN *AWAT2* KNOCKOUT MICE (EP Mills, <sup>1</sup> EA Hisey, <sup>2</sup> N Araujo, <sup>2</sup> SM Thomasy, <sup>2,3</sup> HP Savage, <sup>4</sup> BC Leonard, <sup>2,3</sup>) William R. Pritchard Veterinary Medical Teaching Hospital, School of Veterinary Medicine, University of California, Davis, Davis, CA, 95616, USA; <sup>1</sup> Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California Davis, Davis, CA, 95616, USA; <sup>2</sup> Department of Ophthalmology and Vision Science, School of Medicine, University of California Davis, Davis, CA, 95616, USA; <sup>3</sup> Department of Medical Microbiology and Immunology, University of California Davis, Davis, CA, 95616, USA; <sup>4</sup>

**Purpose.** Mice lacking the acyl-CoA wax alcohol acyltransferase 2 (*Awat2*) gene are an animal model of evaporative dry eye disease. The purpose of this study was to use flow cytometry to assess corneal inflammation by identifying changes in corneal leukocytes between *Awat2* knockout (KO) and wildtype (WT) mice, and by quantifying corneal leukocyte population differences in KO mice treated with topical prednisolone compared to untreated mice. **Methods.** Corneas (n = 4/group) from 13-month-old *Awat2* KO or WT mice were digested and labeled with a CD45 (all leukocytes) antibody. KO mice were treated with topical prednisolone 4 times daily or untreated (n = 4/group) for 5 days. Clinical scoring was completed at baseline and day 5. Stromal cells were labeled for CD45, CD3, CD19, Ly6G, CD11b, CD11c, and F480. Flow cytometry was performed. **Results.** There was a 50% increase in the CD45<sup>+</sup> leukocytes in KO corneas compared to WT. KO mice treated with topical prednisolone had decreased clinical scores compared to untreated mice. There was a 3-fold reduction in macrophages and neutrophils between prednisolone-treated and untreated animals. **Conclusions.** This data supports that *Awat2* KO mice have increased corneal inflammation in comparison to WT mice. These results show that our multiplex flow cytometry panel can quantify changes in corneal leukocyte populations between *Awat2* KO and WT mice and between prednisolone-treated and untreated mice. This methodology can be used to explore anti-inflammatory properties of novel therapeutics for evaporative dry eye disease. Supported by Alcon Young Investigator Award, VAF grant VAF2024-4, and NEI grants K08EY028199, R01EY016134, and P30EY12576. **None.**

# GENERAL SCIENTIFIC SESSION FRIDAY

APPLICATION OF GELATINIZED CORNEA-DERIVED EXTRACELLULAR MATRIX (GELCODE®) FOR ULCERATIVE KERATITIS: PRELIMINARY RESULTS (L Allgoewer,1 P Soukup,1) Animal Eye Practice, Berlin, Germany.1

**Purpose.** To describe clinical use, feasibility and incorporation of gelatinized cornea-derived extracellular matrix (GelCode®, Biobricks, South Korea) in a small series of dogs with ulcerative keratitis. **Methods.** Canine deep corneal defects and spontaneous chronic corneal epithelial defect (SCCED) cases were included. Exclusion criteria were corneal infections and/or stromal infiltrates. Corneal ulcerations underwent keratectomy for stromal defects and diamond burr debridement for SCCEDs under general anesthesia. Subsequently, liquid GelCode® was applied and polymerized by blue light irradiation (475nm, 5.0 lumens) (BPI 50 Precision Illuminator®, RetinoGraphics, USA) for 3 min. An Xtensa® bandage contact lens (An-Vision, Germany) and a temporary tarsorrhaphy (Silk®, Ethicon, USA) were applied. Postoperative treatment consisted topical ofloxacin, oral carprofen and an E-collar. The tarsorrhaphy was removed on day 10-14. Optical coherence tomography (OCT) (Optoview iView 2, Visionix, USA; Casia2, Tomey, Japan) was performed before GelCode® application and after epithelialization. The study was performed with owners' informed consent and approved by the responsible authority (StN 0039/24). **Results.** A total of thirteen dogs were included. Nine dogs had deep stromal defects and four dogs were diagnosed with SCCED. GelCode® application was straight forward and healing was prompt. One SCCED case showed stromal infiltration (infection could not be confirmed) one week after GelCode® application and had a prolonged healing time. Upon OCT, GelCode® was integrated into the cornea and there was no noticeable GelCode® adverse reaction. **Conclusions.** GelCode® is a promising extracellular matrix which promotes healing in deep stromal defects as well as in SCCEDs. A larger prospective study is underway. **None.** Biobricks, South Korea, provided GelCode®.

# GENERAL SCIENTIFIC SESSION FRIDAY

CROSS-SECTIONAL INSIGHTS: COMPUTED TOMOGRAPHY AND ULTRASONOGRAPHY IN CANINE EYE DISEASE DIAGNOSIS (C Niranjana, 1 M Shafiuzama, 1 C Ramani, 1 N Pazhanivel, 2 and K Jeyaraj, 3) Department of Veterinary Surgery and Radiology, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, India; 1 Department of Veterinary Pathology, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, India; 2 Department of Veterinary Medicine, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, India. 3

**Purpose.** To assess the efficacy of computed tomography and ultrasonography in diagnosing various ophthalmic lesions in dogs and to study the effectiveness of Hounsfield unit (HU) in accurate diagnosis of ophthalmic diseases in dog. **Methods.** 43 dogs of different breeds (86 eyes), with retrobulbar tumours, eye ball lesions, extraocular and intraocular lesions, retinal detachment, optic disc lesions and amaurosis were subjected to detailed ophthalmic examination. A 38 mm linear array transducer of 6-18 MHz was used for ultrasonography. Computed tomographic scan under general anaesthesia with slice thickness of 1 mm using 16-slice CT scanner were performed. The parameters were analysed using one-way Analysis of variance for Hounsfield unit of normal eye and ophthalmic diseases. **Results.** The percentages of ophthalmic diseases diagnosed using ultrasonography and computed tomography were 54.65% (n=47) and 91.86% (n=79) respectively. Statistically highly significant difference ( $P \leq 0.01$ ) was found between the Hounsfield Unit of normal value and hyphema, hypopyon, tumour, cataract and vitreous haemorrhage. Various ophthalmic lesions were also confirmed through cytology and histopathological evaluation. **Conclusion.** Expansion in the diagnostic horizon in the field of small animal ophthalmology was possible with the help of computed tomography. Early accurate diagnosis with advanced diagnostic methods using computed tomography has increased the efficiency of treatment. **None.**

# GENERAL SCIENTIFIC SESSION FRIDAY

TEAR FILM PHARMACOKINETICS OF PARENTERAL CEFOVEGIN AND IN VITRO ANTIBACTERIAL ACTIVITY AGAINST COMMON CANINE OCULAR PATHOGENS (MR McClure,<sup>1</sup> DJ Borts,<sup>2</sup> L Sebbag,<sup>1,3</sup> RA Allbaugh,<sup>1</sup> MA Kubai<sup>1</sup>)  
<sup>1</sup> Department of Veterinary Clinical Sciences, College of Veterinary Medicine, Iowa State University; <sup>2</sup> Department of Veterinary Diagnostic and Production Animal Medicine, Veterinary Diagnostic Laboratory, Iowa State University; <sup>3</sup> Koret School of Veterinary Medicine, Hebrew University of Jerusalem.

**Purpose.** To characterize the tear film pharmacokinetics of parenterally administered cefovecin (Convenia®) and compare concentrations to the minimal inhibitory concentrations (MICs) of common ocular pathogens. **Methods.** Six healthy Beagle dogs received a single subcutaneous injection of cefovecin (8 mg/kg) following blood-tear barrier disruption induced by histamine-mediated conjunctivitis. Tear fluid was collected using Schirmer strips at sequential timepoints up to 336 hours and analyzed by liquid chromatography-mass spectrometry. No significant differences were observed between right and left eyes at any timepoint ( $P \geq 0.10$ ); thus, tear concentrations from both eyes were averaged for analysis. MIC<sub>90</sub> values were determined for *Staphylococcus pseudintermedius*, *Streptococcus canis*, and *Pseudomonas aeruginosa* (n=10 isolates/species). **Results.** In a pilot experiment (one dog), tear cefovecin concentrations were 1.5–430-fold higher in the conjunctivitis eye compared to the healthy eye at all but one timepoint. Across all dogs, tear concentrations ranged from 68 to 73,035 ng/mL and remained detectable for the full 336-hour study period. Mean  $\pm$  SD pharmacokinetic parameters included: C<sub>max</sub> 27,230  $\pm$  27,740 ng/mL, T<sub>max</sub> 61  $\pm$  83 hours, AUC 2,734,035  $\pm$  2,562,686 ng·h/mL, and t<sub>1/2</sub> 64  $\pm$  46 hours. Tear concentrations exceeded the MIC<sub>90</sub> of *Streptococcus* (640 ng/mL) for 336 hours and the MIC of *Staphylococcus* (10,240 ng/mL) between 48 and 120 hours but remained below the MIC<sub>90</sub> for *Pseudomonas*. **Conclusions.** Parenteral cefovecin achieved prolonged tear concentrations sufficient to inhibit susceptible *Streptococcus* and *Staphylococcus* isolates *in vitro*. Larger pharmacokinetic and clinical studies are warranted to validate these findings and assess potential clinical application for managing bacterial keratitis in dogs. **None.** **Funding:** Supported by an Iowa State University Veterinary Clinical Sciences (ISU VCS) Incentive Grant and ISU VCS Start-up Funds.



# GENERAL SCIENTIFIC SESSION FRIDAY

INCIDENCE AND PROGRESSION OF OPHTHALMIC EXAMINATION FINDINGS IN HEALTHY, AGING COMPANION DOGS (SR McCuskey,<sup>1</sup> AL Smith,<sup>1</sup> MM Salzman,<sup>1</sup> FM Mowat,<sup>1,2</sup>) Dept. Surgical Sciences, School of Veterinary Medicine, University of Wisconsin-Madison;<sup>1</sup> Dept. Ophthalmology and Visual Sciences, School of Medicine and Public Health, University of Wisconsin-Madison.<sup>2</sup>

**Purpose.** The cross-sectional prevalence of age-associated ophthalmic findings has previously been documented. We aimed to investigate the progression and new onset of ophthalmic examination findings in healthy companion dogs via longitudinal analysis. **Methods.** Work was performed with institutional approval and owner consent. Healthy companion dogs (n=43 dogs) underwent standardized ophthalmic examination by a board-certified ophthalmologist at baseline (BL) and after 2-years (2Y). Dogs at baseline were separated into younger (<8 years, n = 31) and older (≥8 years, n =12) groups. The relative frequency of onset or progression of ophthalmic examination findings between BL and 2Y was determined for each group. **Results.** Onset of corneal degeneration only occurred in older dogs (27%). Onset of nuclear sclerosis occurred with the highest frequency in younger dogs (26%). However, only 19% of younger dogs with nuclear sclerosis progressed in severity by one grade compared to 50% in the older group. New onset of cataracts occurred more frequently in older dogs (42%) compared to younger dogs (13%). Similarly, new onset vitreal degeneration occurred more frequently in older dogs (18%) compared to younger dogs (6%). Changes in refractive error >1 diopter occurred more frequently in younger dogs (32%) compared to older dogs (17%). **Conclusions.** Younger vs. older dogs experienced different susceptibility to changes in ophthalmic examination findings over a 2-year period. While most of these changes were mild, some changes, particularly those in the lens might be predicted to contribute to age-associated visual dysfunction. Supported by Morris Animal foundation D23CA-510 and NIH R01AG082907. **None.**

# FELINE OPHTHALMOLOGY FORUM

THE ROLE OF TRACE ELEMENTS IN THE FORMATION OF FELINE CORNEAL SEQUESTRUM (R Ofri, 1 L Sebbag, 1 and O Pe'er, 1) Koret School of Veterinary Medicine, Hebrew University of Jerusalem, Rehovot, Israel. 1

**Objective.** Investigate the trace element composition of feline corneal sequestra (FCS) to enhance understanding of its pathophysiology and potential clinical implications. **Methods.** Eleven cats diagnosed with FCS and treated by lamellar keratectomy were included, alongside control samples collected from four cats euthanized for reasons unrelated to the study. Corneal samples were preserved at  $-80^{\circ}\text{C}$  and subjected to elemental analysis using the Particle-Induced X-ray Emission (PIXE) technique with a 1.7 MV Pelletron accelerator. Trace elements differences between groups were analyzed using Mann-Whitney tests. Units were recorded as peak area. **Results.** The control group included one female and three males (mean age:  $7.0 \pm 4.1$  years; median: 5.5 years). The FCS group comprised two females and nine males (mean age:  $4.5 \pm 4.1$  years; median: 3 years). Lesion sizes ranged from 1-8 mm, with depths between 20% and 70%; seven cases were unilateral, and two cases were bilateral. Three lesions were avascular. Median  $\pm$  SEM trace element levels for FCS and control corneas were highest for chloride ( $749,293 \pm 78,396$  and  $597,509 \pm 160,633$ , respectively) and sulfur ( $443,782 \pm 334,365$  and  $334,365 \pm 21,849$ , respectively), followed by phosphorus, potassium, sodium, calcium, magnesium, zinc, iron and bromide. Iron ( $751 \pm 336$  vs  $0 \pm 0$ ;  $p=0.047$ ) and bromide levels ( $110 \pm 50$  vs  $0 \pm 0$ ;  $p=0.004$ ) were significantly elevated in FCS samples compared to controls. **Conclusion.** Iron and bromide are found in sequestra but not in healthy corneas, and may play a role in the pathophysiology of FCS. These findings provide novel insights into the biochemical environment associated with sequestrum formation, underscoring the importance of trace elements in understanding feline corneal health. **None**

# FELINE OPHTHALMOLOGY FORUM

FELINE ULCERATIVE KERATITIS ATTRIBUTED TO FELINE HERPESVIRUS-1: RISK FACTORS FOR PROLONGED CORNEAL ULCER DURATION, PROGRESSION TO CORNEAL SEQUESTRUM AND DEVELOPMENT OF CHRONIC STROMAL KERATITIS IN CLIENT-OWNED CATS. (BD Reynolds, 1,2 PG McCarthy, 1 WM Irving, 1 WL Weinstein, 2 CJ Whittaker, 1 KA Caruso 1 and JS Smith 1) 1) Eye Clinic for Animals, Sydney, Australia, 2064. 2) Las Vegas Veterinary Specialty Center, Las Vegas, Nevada, 89147.

**Purpose.** To investigate clinical factors that may influence feline ulcerative keratitis attributed to feline herpesvirus-1 to undergo prolonged ulcer duration, development of a corneal sequestrum, or progression to chronic stromal keratitis. **Methods.** Hospital records of cases of feline ulcerative keratitis attributed to feline herpesvirus-1 were retrospectively reviewed, with 71 corneal ulcers in 68 cats included. Patient signalment, medications utilized, medication frequencies and additional therapeutics were reviewed with their relationship with prolonged progression, development of a corneal sequestrum or progression to chronic stromal keratitis via univariate analysis. **Results.** Corneal ulcers had significantly greater odds of a prolonged healing time if  $\geq 15$  medication events occurred per day ( $p = 0.04$ ), or if chemosis was observed on clinical examination ( $p = 0.04$ ). Corneal ulcers had significantly greater odds of developing a corneal sequestrum if a therapeutic cotton bud epithelial debridement occurred ( $OR = 4.09$ ,  $p = 0.03$ ), or if corneal faint brunescence was observed prior ( $OR = 5.0$ ,  $p = 0.01$ ), and these developed after significantly more time than the time taken for ulcers to resolve ( $p = 0.007$ ). Chronic stromal keratitis had greater odds of occurring if corneal vascularization was identified during corneal ulceration ( $OR = 8.57$ ,  $p = 0.01$ ), and in Persian cats ( $OR = 7.25$ ,  $p = 0.02$ ). **Conclusions.** A total of 35/71 (49.30%) of feline ulcerative keratitis cases attributable to FHV-1 encountered either prolonged ulcer duration, development of a corneal sequestrum or progression to chronic stromal keratitis. It is recommended that clinicians utilize treatment protocols with  $\leq 14$  medication events per day, avoid therapeutic cotton bud epithelial debridement, and consider utilizing adjunctive interventions previously reported to hasten corneal ulcer healing to prevent sequestrum formation. **None.**

# FELINE OPHTHALMOLOGY FORUM

PHARMACOKINETICS AND ADVERSE EFFECTS OF VORICONAZOLE ADMINISTERED ORALLY Q72 HOURS IN HEALTHY CATS (AN Bowyer,<sup>1</sup> B KuKanich,<sup>1</sup> AJ Rankin,<sup>1</sup> KS KuKanich,<sup>1</sup> JM Meekins,<sup>1</sup> MG Papich<sup>2</sup>) College of Veterinary Medicine, Kansas State University;<sup>1</sup> College of Veterinary Medicine, North Carolina State University.<sup>2</sup>

**Purpose.** Some cats with systemic fungal disease fail to respond to itraconazole and fluconazole, thus this study aimed to investigate pharmacokinetics and adverse effects of voriconazole in cats with an extended dosing protocol. **Methods.** Nine healthy cats were administered voriconazole at a loading dose of 25 mg/cat PO followed by 12.5 mg/cat PO every 72 hours for 16 days. Plasma voriconazole concentration was measured: 4, 8, and 12 hours after voriconazole administration on days 0 and 15; on days 3, 6, 9, 12, and 15 before drug administration; and every 48 hours for 6 days after the last dose. Pre- and post-treatment physical examination, electroretinography (ERG), electrocardiography (ECG), complete blood count, serum chemistry, and urinalysis were performed. **Results.** Plasma trough concentration 72 hours after the first dose was  $1.80 \pm 0.48$  µg/mL, increasing to  $4.53 \pm 1.05$  µg/mL immediately prior to the last dose ( $P < .001$ ). Half-life also significantly increased from day 0 ( $5.5 \pm 1.4$  days) to day 15 ( $11.9 \pm 5.2$  days) ( $P = .001$ ). Adverse effects included weight loss (mean = 0.24 kg in 8/9 cats), vomiting (4/9), and sporadic miosis (3/9). The mean ERG b-wave amplitude decreased from 317 to 213 µV with treatment ( $P < .001$ ). No clinical vision deficits were appreciated. **Conclusions.** Voriconazole had a long half-life and continued accumulation in cats when administered orally at 72-hour intervals. Further research is needed to determine the optimum dosage and whether decreased ERG b-wave amplitude is a clinically significant effect. Supported by VAF grant 2024-1 and the KSU Department of Clinical Sciences. **None.**

# FELINE OPHTHALMOLOGY FORUM

EVALUATION OF TOPICAL OPHTHALMIC APPLICATION OF PENCICLOVIR CREAM IN CATS WITH EXPERIMENTAL OCULAR FELINE HERPESVIRUS-1 INFECTION (EC Ledbetter,<sup>1</sup> AM Ramos-Bartolomei,<sup>1</sup> FLC Brito,<sup>2</sup> VV Bassani,<sup>1</sup> GC Hansen,<sup>1</sup> MK Moravek,<sup>1</sup> KM Rassnick,<sup>1</sup> IL Raux,<sup>1</sup> K Yockey,<sup>1</sup> RM Harman,<sup>3</sup> GR Van de Walle,<sup>3</sup> U Krotscheck<sup>1</sup>) Department of Clinical Sciences, Cornell University, Ithaca NY;<sup>1</sup> Department of Ophthalmology, Faculty Qualittas, São Paulo, Brazil;<sup>2</sup> Baker Institute for Animal Health, Cornell University, Ithaca NY.<sup>3</sup>

**Purpose.** To determine the efficacy of topical application of a penciclovir cream for the treatment of cats with experimentally-induced ocular feline herpesvirus-1 (FHV-1) infection. **Methods.** A randomized, placebo-controlled trial was performed using 10 nonvaccinated specific-pathogen-free cats with experimental FHV-1 infection induced by topical ocular inoculation. Cats received topical penciclovir 1% cream (1/4" strip three times daily, n=6 cats) or a placebo topical artificial tear gel (1 drop three times daily, n=4 cats) for 14 days. Cats were monitored after inoculation for a total of 30 days. Ophthalmic examinations were performed every two days and ocular disease scores calculated. *In vivo* confocal microscopy examinations were performed and corneal leukocyte infiltrates quantified. Ocular samples for FHV-1 qPCR and virus isolation assays were collected every 3 days. Hemograms and serum biochemistry panels were performed at 15-day intervals. **Results.** No significant differences in clinical ocular disease scores were observed between the penciclovir and placebo groups during the majority of the study period; however, penciclovir treated cat scores declined more rapidly after study day 14. No significant differences were detected in corneal leukocyte infiltrates between study groups. Ocular viral loads were significantly lower in the penciclovir group on study day 3, but were similar on all other sampling days. Hemogram and serum biochemistry values were unremarkable in all cats. **Conclusions.** The topical application of penciclovir 1% cream three times daily was well tolerated and modestly reduced ocular viral shedding, but had limited effects on clinical ocular disease in cats with experimental ocular FHV-1 infection. **None.**

# FELINE OPHTHALMOLOGY FORUM

THE IMPACT OF A PREBIOTIC-ENRICHED GASTROINTESTINAL DIET ON HAWS SYNDROME IN CATS (Sebbag L, Fruchter B, Soueid Y, Pe'er O, Ofri R, Kuzi S) Koret School of Veterinary Medicine, Rehovot, Israel

**Purpose.** Haws syndrome (HS) in cats is characterized by bilateral protrusion of the third eyelid and ptosis, often accompanied by gastrointestinal (GI) symptoms such as diarrhea. Emerging evidence suggests disruption of the gut-brain axis, linked to GI microbiota dysbiosis, may play a role in HS development. We describe the clinical features and outcomes of five cats with HS managed with a gastrointestinal diet targeting presumed dysbiosis. **Methods.** This study included five cats diagnosed with spontaneous HS. Each cat underwent ophthalmic and physical exams, as well as fecal testing for Giardia and pharmacological testing with 1% phenylephrine. All cats were solely managed with Hill's® Gastrointestinal Biome diet for three months, without antiparasitic therapy. **Results.** Ocular signs transiently resolved following topical 1% phenylephrine, indicating sympathetic neuropathy. Physical examinations were unremarkable, except for diarrhea in 3 of 5 cats. Fecal tests for Giardia were initially positive in 4 of 5 cats and became negative in 3 upon recheck. GI symptoms resolved within 4 to 14 days in 2 of the 3 cats with diarrhea, although only partial improvement was noted in one. Ocular signs resolved within 11 to 39 days and did not recur during the follow-up period of 277 to 388 days. **Conclusions.** The improvement in ocular and GI signs following dietary management with a prebiotic-enriched gastrointestinal diet suggests that this approach may be beneficial for cats with HS, potentially by addressing underlying GI microbiota dysbiosis. However, it may be insufficient in refractory cases or when GI symptoms do not fully resolve. **None.**



# FELINE OPHTHALMOLOGY FORUM

VITAL DYE AND LIGHT MICROSCOPY EVALUATION OF THE CORNEAL ENDOTHELIUM IN FELINE EYES (Sebbag L, Soueid Y, Aaron N, Fruchter B, Cremer N) Koret School of Veterinary Medicine, Rehovot, Israel

**Purpose.** The feline corneal endothelium plays a critical role in maintaining corneal clarity, yet little is known about its baseline morphology and age-related changes. This study aimed to assess endothelial morphology *ex vivo* using a vital dye-based imaging technique, offering a practical tool for assessing endothelial health in settings where *in vivo* imaging may be impractical or unavailable. **Methods.** Central corneal buttons (8-mm) were collected post-mortem from 50 cats (100 eyes), processed within 24 hours of death or euthanasia. The endothelium was stained with 0.25% trypan blue and 0.5% alizarin red (pH 4.2), and imaged using light microscopy at 20× magnification. Morphometric analysis included mean cell density (MCD), mean cell area (MCA), polymegathism (coefficient of variation of cell area), and pleomorphism (% hexagonality). Statistical analyses assessed differences by age (<10 vs. ≥10 years) and sex, with correlations to age explored via Spearman testing. **Results.** Median values (± SEM; range) across all eyes were: MCA  $352 \pm 10 \mu\text{m}^2$  (104–458), MCD  $2,766 \pm 196 \text{ cells/mm}^2$  (2,250–10,183), polymegathism  $14 \pm 0.3\%$  (11–20), and pleomorphism  $85 \pm 0.8\%$  (60–94). Older cats had significantly larger MCA (367 vs. 330  $\mu\text{m}^2$ ;  $P < 0.001$ ), lower MCD (2,625 vs. 2,970  $\text{cells/mm}^2$ ;  $P < 0.001$ ), and higher pleomorphism (86% vs. 82%;  $P = 0.014$ ). Spearman analysis revealed strong correlations between age and MCD ( $r = -0.653$ ,  $P < 0.001$ ) and MCA ( $r = 0.593$ ,  $P < 0.001$ ). **Conclusions.** This *ex vivo* approach enables detailed evaluation of feline corneal endothelial morphology, revealing clear age-related trends. The technique is practical and cost-effective for veterinary and translational research, with potential to support studies of endothelial health and dysfunction across species. **None.**

# POSTER SESSION SATURDAY

CHANGES IN ANTIBIOTIC RESISTANCE IN HORSES AND DOGS WITH BACTERIAL ULCERATIVE KERATITIS 2013-2023 (OE RODTS-PALENIK 1, PS MARTINEZ 1, RV Ramos 2, J Colee, CE PLUMMER 1) Department of Small Animal Clinical Sciences, College of Veterinary Medicine, University of Florida 1; Department of Small Animal Clinical Sciences, Virginia-Maryland College of Veterinary Medicine 2

**Purpose.** To assess changes in corneal bacterial susceptibility to commonly used topical antibiotics in dogs and horses over the last decade. Secondly, to compare bacterial resistance in brachycephalic dogs versus non-brachycephalic dogs. **Methods.** Retrospective data from 407 canine and 236 equine corneal bacterial isolates with ulcerative keratitis between 2013 and 2023 were reviewed. Susceptibility profiles for amikacin, bacitracin, cefazolin, chloramphenicol, ciprofloxacin, erythromycin, gentamicin, neomycin, ofloxacin, oxytetracycline, polymyxin b, tobramycin, trimethoprim, and TMS from two 5-year time periods (2013-2017 and 2018-2023) were compared using Chi-square analysis. Brachycephalic dogs were compared to non-brachycephalic dogs over the same time periods using chi-square analysis. **Results.** *Staphylococcus sp.*, *Streptococcus sp.* and *Pseudomonas aeruginosa* were the most common isolates in both species. Canine bacterial isolates were statistically more resistant to cefazolin ( $p=0.001$ ), chloramphenicol ( $p=0.04$ ), and polymyxin B ( $p=0.001$ ) in the later period compared to the earlier. Isolates were statistically more susceptible to tobramycin ( $p=0.001$ ) in the later period compared to the early period for canines. Brachycephalics showed a statistically greater resistance to cefazolin ( $p=0.04$ ) and chloramphenicol ( $p=0.03$ ) than non-brachycephalic dogs. Equine bacterial isolates were statistically more resistant to cefazolin ( $p=0.001$ ), polymyxin B ( $p=0.001$ ), and oxytetracycline ( $p=0.04$ ). **Conclusions.** An increased resistance to cefazolin, chloramphenicol, oxytetracycline, and polymyxin B over a 10-year period was identified in this study for canine and equine patients in Florida. Tobramycin may be a better empirical antibiotic to treat canine bacterial ulcerative keratitis than cefazolin in Florida. With changes in susceptibility observed, judicious use of effective antibiotics must be considered. **None.**

# POSTER SESSION SATURDAY

EQUINE ANTERIOR UVEAL MELANOCYTIC TUMORS WITH PIGMENTED CORNEAL STRIAE: A CASE SERIES (V Adamchick-Galindo, RT Carter, P Camacho-Luna, CK Sheridan, LP Guarneri, IM Langohr, MA Dorsch, M Carossino) School of Veterinary Medicine, Louisiana State University; 1 Departments of Pathobiological Sciences and Veterinary Clinical Sciences; 2 Louisiana Animal Disease Diagnostic Laboratory (LADDL). 3

**Case Description.** This case series describes three horses with anterior uveal tumors of melanocytic origin, focusing on clinical presentation and their associated complications including uveitis, glaucoma and the appearance of pigmented Haab's Striae. The cases involved: a 16-year-old blue roan Quarter Horse mare; a 10-year-old gray Thoroughbred gelding; and a 6-year-old gray Thoroughbred broodmare. Two cases were confirmed melanocytomas by histopathology and one was suspected. **Clinical Findings.** In all three cases, horses presented with pigmented Haab's Striae, likely due to melanin pigment and melanin-laden cells from the neoplastic cells. All exhibited corneal edema and uveitis, including varying degrees of aqueous flare and pigmented cells. Additional findings, not presented in all cases, included buphthalmia, blepharospasm, and miosis. The iridial mass was observed in two cases. In case 2, mass was not visible on ophthalmic exam but confirmed with histopathology. In case 3, a pigmented iris mass invading the iridocorneal angle was seen on exam. Chronic secondary glaucoma was suspected in all cases. No dermal melanocytic tumors were reported. **Treatment and Outcome.** Enucleation was recommended in all cases. In cases 1 and 2, standing enucleation was performed due to severity of disease, with histopathology confirming melanocytoma. Case 3, initially managed medically for glaucoma and uveitis, required enucleation a year later due to persistent pain and blindness. Histopathology was not performed. **Clinical Relevance.** This series highlights the novel association of pigmented Haab's Striae with anterior uveal melanocytic tumors in horses, emphasizing the importance of early detection and further research to correlate histopathology classification with clinical behavior. **None.**

# POSTER SESSION SATURDAY

COMPLICATIONS FOLLOWING THIRD EYELID REMOVAL IN HORSES (T Wu, 1 NM Scherrer 1)  
Department of Clinical Sciences and Advanced Medicine, School of Veterinary Medicine, University of Pennsylvania.1

**Purpose.** This study intends to evaluate complications following third eyelid removal in horses.  
**Methods.** Horses that underwent third eyelid removal at University of Pennsylvania New Bolton Center (Feb 2015–Jun 2024) and had  $\geq 1$  month follow-up were included. Data were collected from medical records and interviews. Complications were described as immediate ( $< 5$  days, resolved), short-term (5 days–3 months, resolved) or long-term ( $> 3$  months, unresolved). Statistical analyses included Spearman rank pairwise correlation, logistic univariate analysis, and Firth logistic regression (significance  $p < 0.05$ ).  
**Results.** Eighty-three horses (92 eyes) were included. SCC was the most frequent diagnosis. Overall complication rate was 33.7% (31/92). Due to loss to follow-up, denominators differed for each group of complication rates: immediate (14%, 13/92), short-term (2.2%, 2/91), and long-term (20%, 18/90). The most common complication was epiphora (immediate  $n=8$ , long-term  $n=12$ ), then recurrence (short-term  $n=1$ , long-term  $n=5$ ), fat prolapse ( $n=3$ ), hemorrhage ( $n=1$ ), inflammation ( $n=2$ ) and corneal ulcer ( $n=1$ ). SCC affecting multiple locations was associated with higher odds of long-term complications ( $r=0.2$ ,  $OR=3.0$ , 95%  $CI=1.0–8.7$ ,  $p=0.04$ ). Procedures performed with standing sedation ( $n=85$ ) had fewer short-term complications ( $r=-0.2$ ,  $p=0.04$ ) and a 92% decrease in likelihood of long-term complications versus those under general anesthesia ( $n=7$ ) ( $OR=0.08$ , 95%  $CI=0.007–0.9$ ,  $p=0.04$ ). It is suspected that cases with general anesthesia had more severe ocular disease.  
**Conclusions.** Overall, most complications were mild and resolved. Chronic epiphora should be discussed as a potential complication. Horses with SCC in multiple locations or undergoing general anesthesia may have increased risk for long-term complications.  
**None.**

# POSTER SESSION SATURDAY

USE OF INTRAOCULAR FLUID ANALYSIS TO INVESTIGATE THE ROLE OF LEPTOSPIROSIS IN HORSES WITH CHRONIC EQUINE RECURRENT UVEITIS (ERU) ( T Presley, P Camacho-Luna, R T Carter) School of Veterinary Medicine, Louisiana State University, Department of Veterinary Clinical Sciences.

**Purpose.** To determine if ocular fluid sampling from horses with equine recurrent uveitis (ERU) will identify a subset of horses in Louisiana with evidence *Leptospira*-associated uveitis. This information is important for improving diagnostic and treatment strategies for patient management. **Methods.** Twelve horses (19 eyes) with chronic ERU were evaluated. Serology for six *Leptospira* serovars (Bratislava, Canicola, Grippotyphosa, Hardjo, Icterohaemorrhagiae, Pomona) was performed. Aqueous and vitreous aspirates were analyzed via RT-PCR and microscopic agglutination testing (MAT). Goldmann-Witmer coefficients (C-values = aqueous or vitreous/serum titer) were calculated to assess intraocular antibody production. **Results.** Serology was positive in 10/12 horses (83%). Aqueous MAT was positive in 74% of eyes (14/19), and vitreous MAT in 72% (13/19). C-values  $\geq 4$  were identified in aqueous samples from 8 eyes and in vitreous in 7 eyes for multiple serovars, particularly Pomona and Icterohaemorrhagiae. Two horses were RT-PCR positive in both aqueous and vitreous fluid. No significant difference between aqueous and vitreous sampling for positive eyes using non-parametric McNemar statistical analysis. Agreement between aqueous and vitreous sampling was perfect (kappa = 1.000), and moderate for the number of serovars identified (kappa = 0.479). **Conclusions.** Results support that a subset of Louisiana horses have *Leptospira*-associated uveitis. Aqueous sampling, which is less invasive, may be used diagnostically due to its high agreement with vitreous results. Intravitreal gentamicin may be a beneficial treatment for confirmed cases. Supported by Louisiana State University Cusimano Equine Grant. **None.**

# POSTER SESSION SATURDAY

TREATMENT OF EQUINE INTEGUMENTARY, OCULAR, AND PERIOcular NEOPLASIA WITH STANDING EXCISION AND PHOTODYNAMIC THERAPY: EFFICACY AND OWNER SATISFACTION (SL MARZANO,<sup>1</sup> RL FONTENOT,<sup>2</sup> CM BETBEZE,<sup>1</sup> ) Department of Clinical Sciences <sup>1</sup> Department of Pathobiology and Population Medicine <sup>2</sup> College of Veterinary Medicine, Mississippi State University

**Purpose.** To determine efficacy and client satisfaction following excision and indocyanine green photodynamic therapy (IG-PDT) for equine ocular, periocular and integumentary neoplasms. **Methods.** Equine medical records were reviewed for the above mentioned neoplasms treated with excision and IG-PDT with diode laser from January 2020 – August 2024. Signalment, tumor type, size, location, joules per location, indocyanine green volume, histopathology, and outcome were recorded. Client satisfaction was assessed through email/phone contact with clients and primary veterinarians. **Results.** Twenty-two equids (12 mares, 9 geldings, and 1 mare mule) met the inclusion criteria, with forty-nine tumors treated. Breeds included ten American Quarter Horses, four American Paint Horses, two American Saddle Horses, and five others. The mean age was 15.5 years (range, 4 - 25 years). On histopathology (44/49 specimens), there were nineteen squamous cell carcinomas (SCC) (9 periocular/ocular, 10 integumentary), eighteen sarcoids (6 periocular, 12 integumentary), one hemangiosarcoma (ocular), and one basosquamous carcinoma (periocular); five were non-cancerous. Follow-up information was obtained for 15/22 equids (39/49 tumors). SCC had a 10% (2/19) recurrence rate. One vulvar and one periocular SCC recurred at 1.3 and 2.5 years post-operatively, respectively. Sarcoids had a 56% recurrence rate (10/18) at 3 months (6/10), 7 months (3/10), and 10 months (1/10) post-operatively on the pinna (5), eyelid (4), and axilla (1). The conjunctival hemangiosarcoma recurred after 10 months. Client satisfaction with outcomes was 73% (11/15). **Conclusions.** Excision with IG-PDT prevented SCC recurrence for most horses with all SCC clients being satisfied with outcomes. IG-PDT may be a valuable adjunctive therapy for SCC. **None.**



# POSTER SESSION SATURDAY

RETROSPECTIVE CASE SERIES: ADNEXAL MAST CELL TUMORS IN THE EQUINE (C Boles,<sup>1</sup> A Gemensky-Metzler,<sup>1</sup> M Matas Riera,<sup>2</sup> B Foote,<sup>3</sup> B Müller,<sup>4</sup> MdL Henriksen,<sup>5</sup> A Knollinger,<sup>6</sup> G Newbold,<sup>1</sup>) College of Veterinary Medicine, The Ohio State University;<sup>1</sup> AHT/Newmarket/UK and Memvet/Mallorca/Spain; <sup>2</sup> College of Veterinary Medicine, University of Tennessee; <sup>3</sup> Tieraugenzentrum am Neckar, Dossenheim; <sup>4</sup> College of Veterinary Medicine, North Carolina State University; <sup>5</sup> South Valley Equine. <sup>6</sup>

**CASE DESCRIPTION.** Retrospective case series describing adnexal mast cell tumor (MCT) diagnosis, treatment and prognosis in 13 horses. **CLINICAL FINDINGS.** Clinical records of horses with ocular and periocular MCT were collected utilizing a listserv of veterinary ophthalmologists. Location of adnexal MCT included conjunctiva (5) and eyelid (8). All but one case presented during June-September. Clinical signs of conjunctival MCT included acute conjunctival swelling/mass effect, pale colored caseous and granular material, blepharospasm, mucoid ocular discharge, epiphora, and conjunctival hyperemia. Eyelid MCT presented with mucoid ocular discharge and ulceration of the skin. Two cases had a superficial corneal ulcer. Initial diagnostic tests included fine needle aspirates (8), excisional biopsy (4), and incisional biopsy (1). In all but one case, the initial diagnostic test confirmed MCT. **TREATMENT AND OUTCOME.** Treatment included excision or surgical debulking in all cases. Adjunctive treatment included cryotherapy (2), perilesional triamcinolone injection (2) and photodynamic therapy (1). Tumor recurred in two cases within 2 weeks after initial debulking with incomplete margins; however, none recurred after a second surgical procedure with adjunctive therapy by time of last follow-up. Mean follow-up time was 20.9 months. **CLINICAL RELEVANCE.** Equine adnexal mast cell tumors are uncommonly documented with few reports describing treatment and outcome. In this case series, eyelid and palpebral conjunctival MCT are the most common ocular forms. Mass excision or surgical debulking results in resolution of clinical disease with a low recurrence rate. Adjunctive therapy may be beneficial in select cases. **None.**

# POSTER SESSION SATURDAY

COMPARISON OF CRYOTHERAPY AND KERATECTOMY OUTCOMES FOR EQUINE KERATOMYCOSIS: A RETROSPECTIVE ANALYSIS (KW Walsh, SP Collins) Ophthalmology Service, Veterinary Medical Teaching Hospital, Texas A&M University, College Station, TX 77845

**Purpose.** To evaluate and compare clinical outcomes following cryotherapy or keratectomy for the treatment of equine keratomycosis in addition to medical therapy. **Methods.** Medical records from horses diagnosed with keratomycosis and treated with either cryotherapy or keratectomy 2015 and 2025 were retrospectively reviewed. Information collected included breed, age, lesion characteristics, culture, histopathology, and/or cytology results, treatment modality, time to healing, recurrence rates of clinical signs or infection, globe preservation, and final visual function of preserved globes. Horses were assigned to treatment groups based on the primary surgical intervention. Outcome measures were compared between groups. **Results.** A total of 13 horses met inclusion criteria, with 6 receiving cryotherapy and 7 undergoing keratectomy. Globe preservation was achieved in 83% of cryotherapy cases and 71% of keratectomy cases. Visual function was retained in 100% of horses with preserved globes treated with cryotherapy or keratectomy. Horses undergoing cryotherapy had a higher recurrence rate of clinical signs or infection but exhibited slightly shorter healing times compared to the keratectomy group. **Conclusions.** Both cryotherapy and keratectomy provided effective management options for equine keratomycosis. Keratectomy may reduce the risk of fungal recurrence, while cryotherapy may facilitate faster healing times. Tailoring treatment choice based on lesion severity, depth, and practitioner experience may optimize visual outcomes in affected horses. **None.**

# POSTER SESSION SATURDAY

SHORT TERM DAILY ORAL ADMINISTRATION OF CANNABIDIOL (CBD) DOES NOT IMPACT REBOUND TONOMETRY INTRAOCULAR PRESSURE OR SCHIRMER TEAR TEST VALUES IN HEALTHY ADULT HORSES ([KA Diehl](#), 1 CK Sheridan, 1 RA Reed 2) University of Georgia College of Veterinary Medicine, Department of Small Animal Medicine and Surgery; 1 Department of Large Animal Medicine and Surgery 2.

**Purpose.** To assess the effect of orally administered cannabidiol (CBD) on TonoVet<sup>®</sup> measured intraocular pressure (IOP) in horses. **Methods.** Six healthy adult horses in an IACUC approved, masked, randomized, balanced cross-over design were given 3mg/kg CBD or placebo (sesame oil) orally every twenty-four hours for three days. Day before and morning of first treatment administration baselines, then 4, 12 and 24 hours post treatment IOPs were measured daily for three days. Schirmer tear test I (STT) values were also measured at both baselines and 24 hours after the final treatment. After a two week wash out period, each horse received the alternate treatment, and measurements were repeated as above. Linear mixed models were used to test for effects of CBD on IOP and STT. **Results.** Mean IOP was significantly ( $p=0.046$ ), but not clinically relevantly ( $<4.6\text{mmHg}$ ) lower at the last time point in the CBD versus placebo group. Irrespective of treatment, IOPs overall were significantly ( $p=0.009$ ) lower in the first versus second treatment round and this may have contributed to the one significant difference timepoint above. There was no significant difference in STT in the CBD versus placebo group. **Conclusions.** Oral CBD administration in healthy horses does not impact rebound tonometry measurement or STT. Supported by USDA Animal Health Capacity Grant. **None.**

# POSTER SESSION SATURDAY

THE STERILITY OF A DISPOSABLE SPRAY CAP ADDED TO A TRADITIONAL EYE DROPPER BOTTLE USED IN AN EQUINE BARN ENVIRONMENT ([VA Raphtis 1](#), [E Barr 1](#), [BC Gilger 1](#), [MdL Henriksen 1](#)). Department of Clinical Sciences, North Carolina State University, College of Veterinary Medicine 1.

**Purpose.** The purpose of this study was to evaluate the sterility of commonly used topical ophthalmic medications when administered using a disposable spray cap (Gulden Ophthalmics) in an equine barn environment. **Methods.** Ophthalmic diclofenac 0.1% solution and neomycin-polymyxin B-dexamethasone 0.1% suspension were evaluated, either with the traditional dropper or with the spray cap (each n=5). Each spray cap was separately sterilized with vaporized hydrogen peroxide for one hour (Steris VHP MD140X), prior to use. The bottles were kept and dispensed in an equine veterinary hospital barn. For 21 consecutive days, each bottle had the medication dispensed via a single spray or drop onto a piece of gauze. A sample (0.1 ml) of drug from each vial was collected at baseline (Day 0) and again on Day 21. Each sample was analyzed using next-generation DNA sequencing (NGS) (Novogene Corporation Inc.) to identify microbial contaminants. **Results.** NGS revealed a negative result for all 40 drug samples, indicating no detectable microbial contamination. **Conclusion.** This study investigated the sterility of a disposable spray cap as an alternative to conventional dropper bottles. The study found that the disposable spray cap kept the drug sterile throughout the 21-day study. Clinical studies are underway to determine if the spray cap may be a feasible alternative to eye dropper vials to administer ocular medication to horses. **None.**

# POSTER SESSION SATURDAY

TEAR FERNING PATTERNS IN CLINICALLY HEALTHY BOVINE EYES: A STEPANIZER-BASED EVALUATION (BM Ferreira,<sup>1</sup> AS Carvalho,<sup>1</sup> PS Sampaio,<sup>1</sup> and PD Galera <sup>1</sup>) College of Veterinary Medicine, University of Brasília.<sup>1</sup>

**Purpose.** To compare qualitative tear ferning grading scales (Rolando and Masmali) with quantitative analysis using STEPanizer software in clinically healthy Holstein cattle. **Methods.** Tear samples were collected from both eyes of 25 pasture-raised Holstein cattle (50 eyes) at Fazenda Água Limpa (FAL), University of Brasília. After ophthalmic examination, samples were air-dried on slides and examined under light microscopy. Patterns were graded using Rolando (1984) and Masmali et al. (2014) scales. Quantitative analysis was performed using STEPanizer, which counts crystal intersections. The Shapiro–Wilk test assessed normality. Paired t-tests compared STEPanizer scores between eyes. Spearman’s test evaluated correlations between STEPanizer scores and ferning grades. Linear regression modeled predictive relationships. Significance was set at  $p < 0.05$ . This study was approved by the Ethics Committee on Animal Use of the University of Brasília (23106.068874/2024-67). **Results.** Negative correlations were found between STEPanizer scores and ferning grades in both scales and eyes. For Rolando:  $r = -0.62$  OD ( $p < 0.001$ ),  $-0.55$  OS ( $p = 0.0043$ ). For Masmali:  $r = -0.68$  OD,  $-0.795$  OS ( $p < 0.0001$ ). Regression models: Rolando—TFT =  $3.667 - 0.06392POINTS$  ( $R^2 = 0.45$ , OD),  $3.694 - 0.06410POINTS$  ( $R^2 = 0.3851$ , OS); Masmali—TFT =  $3.805 - 0.1032POINTS$  ( $R^2 = 0.49$ , OD),  $4.003 - 0.1432POINTS$  ( $R^2 = 0.68$ , OS). **Conclusions.** Despite low regression explanations, STEPanizer showed potential as a tool for tear ferning evaluation in cattle. Further studies under different conditions are needed to validate its applicability. **None.**

# POSTER SESSION SATURDAY

EVALUTATION OF TEAR FERNING PATTERNS IN HEALTHY SHEEP EYES USING ROLANDO AND MASMALI SCALES (AS Carvalho, 1 BM Ferreira, 1 PS Sampaio, 1 and PD Galera 1) College of Veterinary Medicine, University of Brasília. 1

**Purpose.** To describe tear ferning patterns in clinically healthy mixed-breed sheep using two grading methods. **Methods.** Seventeen healthy mixed-breed sheep from Fazenda Água Limpa (University of Brasília) were evaluated under natural conditions. After ophthalmic exams, tear samples were collected from both eyes, air-dried on slides in a controlled environment, and examined under light microscopy. Patterns were graded by three observers using the Rolando (1984) and Masmali et al. (2014) scales. Frequencies were calculated per eye and scale. Kendall's coefficient assessed interobserver agreement ( $p < 0.05$ ). The study was approved by the Animal Ethics Committee of the University of Brasília (23106.068874/2024-67). **Results.** On the Rolando scale, grade 3 was most frequent: 50% in right eyes (OD) and 38.2% in left eyes (OS). In OD, grades 1 and 2 were observed in 20.6%, and grade 4 in 8.8%. In OS, grades 1, 2, and 4 occurred in 20.6%, 17.6%, and 23.5%, respectively. On the Masmali scale, grade 3 predominated in both eyes (38.2% OD, 41.2% OS). In OD, grades 2 and 0 appeared in 35.3% and 14.7%, while grades 1 and 4 were least frequent (5.9%). In OS, grades 2, 0, 1, and 4 occurred in 23.5%, 14.7%, 11.8%, and 8.8%, respectively. Grade 4 in Rolando was higher in OS, suggesting inter-eye variation. No age correlation was found. Interobserver agreement was acceptable. **Conclusions.** Clinically healthy mixed-breed sheep exhibited mostly intermediate tear ferning patterns. Findings suggest unsatisfactory tear quality, possibly due to sun and bedding-dust exposure. **None.**



# POSTER SESSION SATURDAY

OCULAR AND ORBITAL ULTRASONOGRAPHY FINDINGS IN A CASE OF BILATERAL CONVERGENT STRABISMUS WITH EXOPHTHALMOS IN A JERSEY STEER (AM Reid,<sup>1</sup> M Cercone,<sup>1</sup> LH Javiscas,<sup>2</sup> KE Knickelbein <sup>1</sup>) Department of Clinical Sciences, College of Veterinary Medicine, Cornell University;<sup>1</sup> Rhinebeck Equine.<sup>2</sup>

**CASE DESCRIPTION.** A 4-year-old sanctuary-housed Jersey steer was presented for evaluation of progressive exophthalmos over 6-months. **CLINICAL FINDINGS.** The patient was systemically well with a body condition score of 4/5. There was symmetrical mild to moderate exophthalmos and medial strabismus of both eyes (OU). Globe retropulsion was normal OU. Aside from strabismus, the neuro-ophthalmic examination, including vestibulo-ocular reflexes, was normal and the patient was visual OU. Both eyes were apparently comfortable with mild epiphora. The eyelids, conjunctiva, cornea, anterior chamber, iris, lens, vitreous, and fundus were normal OU. Transpalpebral ocular and orbital ultrasound (US) were performed bilaterally. Axial globe length was 3.25cm, consistent with published standards for the breed. No orbital space occupying lesions nor abnormalities of the extraocular muscles or optic nerve were identified. A Bovine Leukosis Virus ELISA was negative. **TREATMENT AND OUTCOME.** Given the signalment and absence of identifiable orbital disease causing the globe displacement, a clinical diagnosis of bilateral convergent strabismus with exophthalmos (BCSE) was made. Monitoring the steer for lagophthalmos and reducing body fat was recommended. The steer was re-examined 23-months later revealing significant progression of both exophthalmos and medial strabismus. Ocular and orbital US findings remained normal. **CLINICAL RELEVANCE.** BCSE is a bilateral late-onset progressive genetic disease affecting globe position in cattle. This report is the first to describe ocular and orbital imaging findings in BCSE and indicates that US can be used to readily differentiate BCSE from orbital space-occupying lesions.

# POSTER SESSION SATURDAY

OCULAR ABNORMALITIES IN PET AND SANCTUARY-HOUSED PORCINES (*SUS SCROFA DOMESTICUS*) – RETROSPECTIVE EVALUATION OF 36 CASES (K Chan, 1 NL Irby, 2 and KE Knickelbein 2) Veterinary Medical Center of Central New York, Syracuse, NY; 1 Department of Clinical Sciences, College of Veterinary Medicine, Cornell University. 2

**Purpose.** To describe ocular abnormalities of pet and sanctuary-housed domestic pigs presented to an academic veterinary hospital. **Methods.** Electronic medical records at the Cornell University Hospital for Animals were searched for pigs having undergone a complete ophthalmic examination by a Diplomate of the American College of Veterinary Ophthalmologists between 2011-2024. Signalment, examination findings, diagnoses, and treatments were reviewed. **Results.** Thirty-six pigs met inclusion criteria. A variety of breeds were represented including Vietnamese Pot-Bellied (22/36), American Miniature (4/36), Yorkshire (2/36), Berkshire (1/36), mixed (2/36) and unknown (5/36). The majority of ocular abnormalities were adnexal with the following abnormalities diagnosed: excessive periocular fat (8/36), corneal ulceration (8/36), blepharitis/periocular dermatitis (7/36), conjunctivitis (7/36), entropion (3/36), and eyelid neoplasia (melanoma) (1/36). Cataracts were diagnosed in 2 (3 eyes) of 36 pigs. **Conclusions.** A wide range of ocular disease impacts pet and sanctuary owned pigs. Vision-threatening ophthalmic disease appears to be rare aside from functional blindness associated with excessive periocular fat. **None.**

# POSTER SESSION SATURDAY

OPTIC NERVE AND CHIASMAL HISTIOCYTIC SARCOMA MASQUERADING AS OPTIC NEURITIS IN A PEMBROKE WELSH CORGI (RI Wright,<sup>1</sup> CK Sheridan,<sup>1</sup> JF White,<sup>2</sup> DG Haas,<sup>3</sup> DA Sebastian Pineda,<sup>4</sup> CC Brown,<sup>4</sup> KP Carmichael,<sup>4</sup>) University of Georgia, College of Veterinary Medicine, Department of Ophthalmology;<sup>1</sup> Department of Neurology; <sup>2</sup>, Department of Small Animal Internal Medicine; <sup>3</sup> Department of Pathology.<sup>4</sup>

**CASE DESCRIPTION.** A 6-year-old spayed female Pembroke Welsh Corgi was evaluated for a 7-day history of lethargy, elevated third eyelids, blepharospasm, and light sensitivity OU. **CLINICAL FINDINGS.** Initial ophthalmic examination revealed mydriatic pupils, sluggish and incomplete PLRs, intact vision, and photophobia OU. Examination the following day showed vision deficits OS and slight elevation of the optic nerve OS. Electroretinogram was normal OU. MRI was consistent with bilateral optic neuritis. CSF was normal. Infectious disease testing was negative. **TREATMENT AND OUTCOME.** The dog was treated with systemic prednisone and mycophenolate, and vision returned, but was lost OS when tapering prednisone. Vision was again restored on systemic prednisone and cyclosporine but lost OS when tapering prednisone. The dog developed cluster seizures 2.5 months after initial presentation with poor control on anticonvulsants. Additional testing and imaging were declined. The dog was euthanized and underwent post-mortem MRI which showed a mass within the optic chiasm and left optic nerve, which was not appreciated on initial MRI. Necropsy and histopathology confirmed a histiocytic sarcoma affecting the meninges around optic chiasm and invading neuroparenchyma of the frontal lobe and ventral aspect of the thalamus. The neoplasm tracked rostrally around both optic nerves, extending to the level of the lamina cribrosa OS. **CLINICAL RELEVANCE.** This dog's histiocytic sarcoma caused both clinical signs and MRI findings that mimicked optic neuritis. Histiocytic sarcoma and other neoplasms should be considered in cases of optic neuritis that do not respond to traditional therapy and re-imaging is recommended in those cases. **None.**

# POSTER SESSION SATURDAY

SKELETAL ABNORMALITIES IN TWO SHETLAND SHEEPDOGS HOMOZYGOUS FOR THE BBS2-PRA MUTATION (KA Diehl, C Chen, MB Mahaffey) College of Veterinary Medicine, University of Georgia.

**Purpose.** Describe skeletal abnormalities in Shetland sheepdogs homozygous for BBS2-PRA mutation.

**Methods.** Cases were submitted via voluntary owner survey regarding affected dogs distributed through breed related networks. **Results.** Two affected littermates were detected via DNA testing. At two months old, the male pup already had visual deficits, particularly in scotopic conditions, but an otherwise normal ophthalmic examination. The female had a normal ophthalmic examination at five months and has not yet developed visual deficits. Both had upturned noses and “dished” faces before a year . By four months, the male had bilateral elbow pain and left forelimb lameness due to physeal/metaphyseal anomalies of the distal radius and ulna with ulnar shortening resulting in elbow subluxation. He underwent ulnar ostectomy. The female was not lame but forelimb radiographs at six months showed similar but milder findings to those of the male. Additional radiographs of the hindlimbs of both dogs showed minor distal cura physeal/metaphyseal changes. **Conclusions.** This is first description of homozygous BBS2-PRA shelties less than one year, and of limb abnormalities in affected dogs. Radiographs of additional young, affected dogs could confirm that orthopedic changes found in these dogs are associated with the condition in addition to previously described progressive retinal atrophy and blindness, concave dorsal aspect of the maxilla (upturned nose/”dished” face), wavy coat texture, possible dental abnormalities, and possible renal disease. Given that maxillae are consistently affected in homozygous dogs, other growth plates likely are too. Correlates of all these abnormalities are seen in humans with Bardet-Biedl syndrome. **None.**

# POSTER SESSION SATURDAY

GEOGRAPHIC RETINAL DYSPLASIA IN A CAVALIER KING CHARLES SPANIEL. (SM Gehrke,<sup>1</sup> CD Harman,<sup>1</sup> AL Jacobson,<sup>1</sup> G McRae,<sup>2</sup> and AM Komáromy,<sup>1</sup>) College of Veterinary Medicine, Michigan State University;<sup>1</sup> Leader Dogs for the Blind. <sup>2</sup>

**PURPOSE.** To utilize optical coherence tomography (OCT) and OCT angiography (OCTA) for the evaluation of unilateral geographic retinal dysplasia in a Cavalier King Charles Spaniel (CKCS) and to compare findings with geographic retinal dysplasia in a Labrador Retriever. **METHODS.** Comprehensive ophthalmic examinations, including slit lamp biomicroscopy and indirect ophthalmoscopy, were performed. Advanced imaging under general anesthesia was conducted using the Heidelberg Spectralis® system, incorporating confocal scanning laser ophthalmoscopy (cSLO) in multiple modes, OCT, and OCTA. **RESULTS.** Imaging identified focal geographic retinal dysplastic lesions in the tapetal fundus dorsal to the optic nerve head in both CKCS and Labrador Retriever. cSLO revealed increased autofluorescence over the geographic lesions in both dogs. In the CKCS, additional increased autofluorescence was observed in the nasal non-tapetal fundus of the contralateral eye. Both cases demonstrated plaques and rosettes within the retinal lesions; however, the CKCS uniquely exhibited multifocal hypoechoic lesions within the plaques, not observed in the Labrador Retriever. OCTA detected multifocal vascular anomalies, consistent with suspected aneurysms, in both cases. **CONCLUSIONS.** This report provides the first detailed description of advanced imaging findings in geographic retinal dysplasia in a CKCS. There are many similarities with the same condition previously described in the Labrador Retriever. OCTA identified microvascular lesions associated with geographic retinal dysplasia in both breeds, while cSLO highlighted focal dorsal retinal lesions with plaques and rosettes, as well as a unique non-tapetal lesion in the CKCS. Supported by NIH grant R01-EY032478 and BrightFocus Foundation grant G2022007S. **None.**

# POSTER SESSION SATURDAY

## OCULAR HISTOPATHOLOGIC FINDINGS OF RETINAL DISEASE IN CAPTIVE RED WOLVES

(CANIS RUFUS) (JC Kwok,<sup>1</sup> GC Shaw,<sup>2</sup> FP Giorgio,<sup>3</sup> E Droste,<sup>3</sup> S Kennedy-Stoskopf,<sup>3</sup> RD Ring,<sup>4</sup> FM Mowat,<sup>1,5</sup>) Department of Surgical Sciences, School of Veterinary Medicine, University of Wisconsin-Madison;<sup>1</sup> Comparative Ocular Pathology Laboratory of Wisconsin, University of Wisconsin-Madison;<sup>2</sup> Department of Clinical Sciences, North Carolina State University;<sup>3</sup> Animal Ophthalmology Clinic, Dallas, TX;<sup>4</sup> Department of Ophthalmology and Visual Sciences, University of Wisconsin-Madison.<sup>5</sup>

**Purpose.** To report progressive retinal atrophy of a critically endangered red wolf (*Canis rufus*) population in captivity. The population was established in the 1970s from 14 founders. **Methods.** Formalin fixed, paraffin embedded globes from 10 wolves were examined using light microscopy. Prior clinical examination had been performed on 6/10 wolves and based on dilated fundus examination findings  $\pm$  electroretinography, 3/6 were designated as affected with PRA (diffuse tapetal hyper-reflectivity and vascular attenuation, median age 2.1 years), 1/6 was equivocal and 2/6 were normal (median age 13 years). Histologic analysis was performed without knowledge of clinical status. An ocular pathologist (GS) reviewed slides and ONL counts, and retinal layer thicknesses were measured using ImageJ and results analyzed using a 2-way ANOVA. **Results.** Clinically affected wolves had a thin outer nuclear layer and shortened inner and outer segments with minimal evidence of intraretinal inflammation. Compared with wolves with normal/equivocal findings, clinically PRA-affected wolf eyes had significantly thinner retinal layers, predominantly affecting the outer retina (P value range from 0.17 INL to  $<0.0001$  ONL) and fewer ONL nuclei ( $P<0.0001$ ). **Conclusions.** Masked histological review identified a predominantly outer retinal atrophy in wolves with clinically evident retinal atrophy. Further evaluation of related red wolves is necessary to establish if this disorder has a heritable basis. Supported by the Sarah K. DeCoizart TENTH Perpetual Charitable Trust **None.**



# POSTER SESSION SATURDAY

ZYGOMATIC SIALADENTITIS: A RARE CAUSE OF EXOPHTHALMOS IN A DOG (KEV Jones, 1 HD Westermeyer, 1) College of Veterinary Medicine, University of North Carolina, Raleigh, North Carolina.1

**Case Description.** A 10-year-old spayed female Cavalier King Charles Spaniel presented for evaluation of acute-onset right-sided exophthalmos following a recent dental procedure involving 15 extractions. Progressive periocular swelling and vision loss developed over several days. Initial ophthalmic examination revealed marked exophthalmos, pain on opening of the mouth, lagophthalmos, and superficial corneal ulceration. **Clinical Findings.** Computed tomography (CT) of the orbit identified a tubular, fluid-filled structure consistent with a retrobulbar abscess and right-sided zygomatic sialadenitis. Cytologic aspirates revealed septic suppurative inflammation. Histopathologic examination of the excised zygomatic gland confirmed subacute sialadenitis with associated cellulitis. Microbial culture identified *Bacteroides pyogenes*, an anaerobe not typically associated with antimicrobial resistance. **Treatment and Outcome.** Initial management included IV fluids, broad-spectrum systemic antibiotics, analgesics, topical antibiotics and ocular anti-hypertensive medications. Due to lack of clinical improvement and loss of vision a transpalpebral exenteration and zygomatic sialoadenectomy were carried out. Postoperative recovery was uneventful, and the patient showed complete resolution of swelling and pain on follow-up examination. **Clinical relevance.** This case highlights zygomatic sialadenitis as a rare but important differential diagnosis for retrobulbar disease in dogs, particularly when cases are refractory to medical management. In this case salivary secretions likely contributed to the persistence of clinical signs. Advanced imaging was critical for accurate diagnosis, and surgical removal of the affected gland was necessary for resolution.

# POSTER SESSION SATURDAY

OUT WITH OLD, IN WITH THE NUN: COMPARING THE QUALITY OF FUNDIC PHOTOGRAPHS  
(SW Cochran, 1 NJ Millichamp) Eye Care for Animals, Houston, Texas

**Purpose.** Evaluate the quality of fundic photographs according to their clinical utility between the Kowa RC-2 Handheld Fundus Camera, Genesis-D Portable Retinal Camera, and the NUN Ophthalmoscope.  
**Methods.** An online questionnaire ("Google Forms" Google Inc) was sent to a veterinary ophthalmology Listserv. The questionnaire asked participants to rank fundic photographs according to their clinical utility – e.g. if a confident diagnosis could be made based on the photo. Participants ranked individual photos, and also compared image quality from each camera. **Results.** A total of 77 completed surveys (n=606 answers) were received. A spectrum of various clinical conditions were presented for relative comparison. Of the responses 107/606 (17.6%) preferred the Kowa RC-2, 134/606 (22.1%) the Genesis-D, 96/606 (15.8%) the NUN, and 269/606 (44.3%) thought all images were of equivalent diagnostic quality. **Conclusions.** The majority of participants found the fundic images from the different cameras to be of equivalent diagnostic quality. The NUN is an affordable smart phone-based technology that is capable of taking diagnostically useful fundic photographs. **None.**

# POSTER SESSION SATURDAY

RELIABILITY AND REPEATABILITY OF BEHAVIORAL TESTS OF VISION IN UNTRAINED, MINIMALLY RESTRAINED COMPANION DOGS (KA Rosenau,<sup>1</sup> MM Salzman,<sup>1</sup> N Larsen,<sup>1</sup> A Miller,<sup>1</sup> J Saffran,<sup>2</sup> FM Mowat,<sup>1,3</sup>) <sup>1</sup>)Department of Surgical Sciences, School of Veterinary Medicine, <sup>2</sup>) Department of Psychology, <sup>3</sup>) Department of Ophthalmology and Visual Sciences, School of Medicine and Public Health, University of Wisconsin-Madison.

**Purpose.** There are multiple validated tests of human vision, but there are limited options to test dog vision. Obstacle courses used for dog vision assessment in a research setting are space and time consuming, and the menace response used in clinical veterinary practice is insensitive. We have developed a behavioral method of vision assessment in untrained dogs using video engagement. We hypothesized that our novel clinical tests of dog visual function are repeatable, reliable, and valid. **Methods.** Dogs were assessed for behavioral engagement with videos of animals presented on a screen in both high and low luminance. Masked observers reviewed video recordings of dog reactions and assessed the direction of the dog's looking. Reliability was determined by comparing outcomes from the same dog's tests assessed by two different trained observers. Repeatability was determined by analyzing videos of dogs tested on two separate occasions. Validity analysis is ongoing and will be determined by comparing the dog's test outcomes to electroretinography performed on the same day. Pearson's correlation analysis was used for statistical analysis. **Results.** Reliability of the tests indicated a good level of agreement between observers; correlation coefficients were 0.8 or higher ( $P < 0.0001$ ). Preliminary results show that correlation coefficients for repeatability range between 0.37 to 0.55 ( $P = 0.0006 - 0.20$ ). **Conclusions.** Our novel vision tests are engaging to dogs and methodology is reliable and moderately repeatable. Future work will assess if outcomes can detect age- or disease-associated visual dysfunction, and could be applied to research and clinical settings. Supported by Morris Animal Foundation D23CA-510, NIH R01AG082907, UW-Madison SVM Companion Animal Fund. **None.**

# POSTER SESSION SATURDAY

“EYE OF THE BLAST”: OCULAR TRAUMA FROM EXPLOSIVE AMMUNITION IN FOUR DOGS  
(L Sebbag, 1 KW Handel, 1 R Ofri, 1 R Alroye, 1 E Kelmer, 1 N Oppenheimer, 1 D Peery, 1 S Klainbart 1, O Pe’er 1) Koret School of Veterinary Medicine, Hebrew University of Jerusalem, Rehovot, Israel. 1

**Purpose.** To describe the clinical presentation, management, and outcomes of dogs with ocular blast injuries secondary to explosive ammunition. **Methods.** Four dogs – three military working dogs injured during active combat and one companion dog wounded in a domestic explosion – were treated between October 2023 and January 2024. All patients received intensive care unit support, detailed ophthalmic evaluation, and advanced imaging to assess the extent of injury. **Results.** All dogs presented in severely compromised systemic condition due to multisystem trauma, including thoracic injuries, embedded shrapnel, and penetrating soft tissue wounds. Each sustained serious ocular trauma with intraocular and periorbital shrapnel. Two dogs underwent conjunctival pedicle flap surgery to manage unilateral corneal perforations; one exhibited complete retinal detachment, the other sectorial detachment. A third dog had massive corneal perforation and retinal detachment in one eye, and multiple minor fibrin-sealed perforations in the fellow eye, managed conservatively. The fourth dog sustained bilateral globe avulsion. Two dogs lost vision in at least one eye, and one became bilaterally blind. All dogs survived to hospital discharge with varying degrees of ocular and systemic recovery. **Conclusions.** This case series is the first to document ocular blast trauma in dogs resulting from explosive ammunition in a wartime context. Injuries were catastrophic, involving not only the eyes but multiple organ systems. Early imaging, rapid ophthalmic intervention, and coordinated multidisciplinary care were critical to survival. These cases highlight the devastating toll of blast trauma on working and companion animals, demanding vigilance, expertise, and teamwork for optimal outcomes. **None.**

***GENERAL  
SCIENTIFIC  
SESSION***

## GENERAL SCIENTIFIC SESSION SATURDAY

REFRACTIVE ERROR MEASUREMENT COMPARISON BETWEEN TWO TECHNIQUES, HANDYREF-K HANDHELD REFRACTOMETER VERSUS STREAK RETINOSCOPY, IN NORMAL DOGS (TE Leite, M Kaminsky, P Gordon-Ross, J Brinkis, A Dubin, K Adams). Eye Care for Animals, Tustin, California, USA.

**Purpose.** To compare NIDEK's HandyRef-K autorefractometer (HRK) to manual streak retinoscopy (SR) in normal dogs. **Methods.** The refractive error (RE) of each eye was determined in 22 normal dogs, median age of 6.18 (range 1.5 to 12.5) years, utilizing both SR and HRK. Techniques were performed by an expert (boarded ophthalmologist) and a novice (ophthalmology resident) examiner before and after cycloplegia with Tropicamide 1%. Pre and post RE measurements were compared using paired *t*-tests (two-tailed). Results were reported in mean  $\pm$  SD. **Results.** Non-cycloplegic RE measured by expert HRK ( $0.665 \pm 1.380$ ) was statistically significantly different ( $p < 0.001$ ) from expert SR ( $-0.176 \pm 1.573$ ). Non-cycloplegic novice HRK RE ( $0.511 \pm 1.686$ ) was statistically significantly different ( $p < 0.001$ ) when compared to novice SR RE ( $-0.131 \pm 1.612$ ). Following cycloplegia, there was a statistically significant difference ( $p < 0.001$ ) between expert HRK RE ( $0.835 \pm 1.2424$ ) and expert SR RE ( $-0.119 \pm 1.652$ ). Novice HRK RE ( $0.830 \pm 1.354$ ) was statistically significantly different ( $p < 0.001$ ) from the novice SR RE ( $-0.018 \pm 1.674$ ) following cycloplegia. Expert's non-cycloplegic vs cycloplegic, RE measurements were not statistically different (HRK  $p = 0.235$ , SR  $p = 0.379$ ) for either technique. **Conclusion.** HRK tended to overestimate hyperopia pre and post cycloplegia for both expert and novice examiners. Cycloplegia did not affect RE values in SR nor HRK in dogs. **None.**

Saturday Presenting 1:00pm



## GENERAL SCIENTIFIC SESSION SATURDAY

SERIAL ERG AND OCT REVEAL VARIABLE LONG-TERM PHENOTYPE OF CORD-PRA IN ENGLISH SPRINGER SPANIELS (JC Kwok<sup>1</sup>, Y Sato<sup>1,2</sup>, JK Niggel<sup>3</sup>, L Murgiano<sup>3</sup>, K Miyadera<sup>1,4</sup>) Department of Clinical Sciences & Advanced Medicine, School of Veterinary Medicine, University of Pennsylvania <sup>1</sup>; Department of Small Animal Clinical Sciences, College of Veterinary Medicine, University of Florida <sup>2</sup>; Sylvia M. Van Sloun Laboratory for Canine Genomic Analysis, School of Veterinary Medicine, University of Pennsylvania <sup>3</sup>; Department of Small Animal Clinical Sciences, College of Veterinary Medicine, Michigan State University <sup>4</sup>

**Purpose.** To characterize the extended phenotype of cone-rod dystrophy 1 (cord1) type progressive retinal atrophy (PRA) in English Springer Spaniels (ESSs) affected by the *RPGRIP1* variant. **Methods.** Two families of ESS dogs were examined between 2019 and 2025. In Family 1, there were 7 affected (3 males, 4 females) and 4 unaffected (2 males, 2 females) dogs that underwent electroretinography (ERG) and optical coherence tomography (OCT) repeated annually. OCT b-scans were used to measure the retinal layers while near-infrared scanning laser ophthalmoscopic and RetCam fundus images were employed to evaluate atrophic retinal lesions. Family 2 consisted of 3 affected (all males) and 8 unaffected (1 male, 7 females) dogs, which received ERG and fundus photography for five consecutive years. **Results.** Across all time points examined, photopic ERG amplitudes were consistently lower in the affected dogs compared to age-matched unaffected dogs. Among the affected dogs, cone ERG amplitudes variability decreased in which dogs from Family 1 exhibiting a steeper reduction than those of Family 2. Initial attenuation of the photoreceptor layer was evident in the superior and inferior periphery. Funduscopic changes typically started as subtle tapetal hyporeflectivity in the dorsal peripherally, expanding centripetally with increasing reflectivity in some dogs, while manifesting more diffusely at later stages. **Conclusions.** Cord1-PRA in ESSs leads to variable structural and functional progression in the retina. This suggests that modifiers may influence the disease phenotype in dogs genetically affected by the *RPGRIP1* variant. Supported by grants from the English Springer Spaniel Field Trial Association Foundation through the AKC-Canine Health Foundation (grant# 02572-MOU) and NEI/NIH (grant # R01 EY-006855). **None.**

## GENERAL SCIENTIFIC SESSION SATURDAY

EVALUATION OF HEARING IN DOGS WITH SUDDEN ACQUIRED RETINAL DEGENERATION SYNDROME (SARDS) (PM McCarthy 1 SM Thomasy 2 C Whittaker, 1 E Hall, 3 W Irving, 1 K Caruso, 1 FM Mowat, 4) Eye Clinic for Animals, Sydney, New South Wales, Australia;1 Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California Davis, Davis, CA, 95616 USA;2 The University of Sydney, Camden, New South Wales, Australia;3 Department of Surgical Sciences, School of Veterinary Medicine, University of Wisconsin-Madison, Madison, Wisconsin, USA;4

**Purpose.** To evaluate hearing in dogs with sudden acquired retinal degeneration syndrome (SARDS). **Methods.** A prospective cohort study comparing minimum hearing thresholds (MHT) obtained using brainstem auditory evoked responses (BAER) and owner hearing questionnaire surveys in dogs with SARDS (n=17), and a life-stage matched healthy reference population (n=85/238). Eligibility for inclusion was a diagnosis of SARDS with a less than eight-week history of vision loss, a temperament suitable for un-sedated testing, and at least one healthy ear. Patients were excluded if they had a history of ototoxic drug intoxication, chronic or severe otitis or a previously diagnosed hearing impairment. Additional digital questionnaires were shared with a further 40 owners of dogs with a historical SARDS diagnosis at Eye Clinic for Animals. Dogs were recruited between 01/12/2023 and 04/11/2025. **Results.** Seventeen dogs met eligibility criteria for BAER MHT assessment. Two dogs (12%) had MHTs exceeding cutoff criterion (>22.5 Db nHL); but results were appropriate for their life-stage. In 11/17 (65%) and 6/17 (35%) of cases, MHTs were better than or expected for their life-stage, respectively. In 11/17 of the cases (65%) that received BAER and the owners returned correctly completed hearing questionnaires, all indicated normal hearing. Owners of an additional 14/40 (35%) SARDS dogs returned a questionnaire, and all indicated normal hearing. **Conclusions.** Dogs with SARDS have appropriate hearing based on their life stage when measured by MHT and owner hearing questionnaire. Supported by VAF grant VAF2024-3 and Morris Animal Foundation D23CA-510. **None.**

Saturday Presenting 1:30pm

## GENERAL SCIENTIFIC SESSION SATURDAY

CLIC6 DEFICIENCY TRIGGERS ABERRANT APICAL MICROVILLI IN RETINAL PIGMENT EPITHELIUM (S Park,<sup>1</sup> N Suvarnpradip,<sup>2</sup> N Kasiri,<sup>2</sup> G Yiu,<sup>2</sup> SM Thomasy,<sup>1,2</sup> DM Imai-Leonard,<sup>3</sup> KK Lloyd,<sup>4,5</sup> BC Leonard,<sup>1,2</sup> A Moshiri,<sup>2</sup>) Department of Surgical & Radiological Sciences, School of Veterinary Medicine, UC Davis, Davis, CA, USA;<sup>1</sup> Department of Ophthalmology & Vision Science, School of Medicine, UC Davis, Sacramento, CA, USA;<sup>2</sup> Comparative Pathology Laboratory, School of Veterinary Medicine, UC Davis, Davis, California, USA;<sup>3</sup> Mouse Biology Program, UC Davis, Davis, California, USA;<sup>4</sup> Department of Surgery, School of Medicine, UC Davis, Sacramento, California, USA.<sup>5</sup>

**Purpose.** To demonstrate the impact of *Clic6* deficiency in the retina and retinal pigment epithelium (RPE) of C57BL/6N mice homozygous for the *Crb1*<sup>rd8</sup> mutation. **Methods.** Six *Clic6*<sup>-/-</sup> and age-matched six wildtype mice were used. Ophthalmic examination, electroretinogram (ERG), and retinal optical coherence tomography (OCT) were performed for clinical phenotyping. The mice were euthanized, and the eyes were processed for hematoxylin and eosin (H&E) stain, immunohistochemistry (IHC), and transmission electron microscopy (TEM). Additionally, adult non-human primate (NHP) and fetal human retinas were used for IHC. **Results.** Both *Clic6*<sup>-/-</sup> and wildtype mice showed retinal lamination defects on OCT and H&E stain with significantly greater number of lesions identified in *Clic6*<sup>-/-</sup> mice. No significant differences in ERG parameters were identified between genotypes. The expression of ezrin/radixin/moesin (ERM) appeared flat and blunted at the apical RPE surface in *Clic6*<sup>-/-</sup> versus wildtype mice. On TEM, *Clic6*<sup>-/-</sup> mice showed broadened and stout RPE microvilli with a significantly decreased apical microvilli height and significantly increased width of each RPE microvillus. While the height of the RPE cells and basal infoldings and pigment granule density did not significantly differ, phagosome density was significantly greater in *Clic6*<sup>-/-</sup> mice. Both CLIC6 and ERM were expressed in the adult NHP and fetal human RPE. **Conclusions.** *Clic6* deficiency induced aberrant RPE microvilli leading to a reduced intimacy between RPE and photoreceptors and worsened the *Crb1*<sup>rd8</sup> mutation phenotype that was inherent in C57BL/6N mice. CLIC6 may have a potential role in RPE dysfunction across species including humans. Supported by NIH grants R01EY033733 and P30EY12576. **None.**

## GENERAL SCIENTIFIC SESSION SATURDAY

CHARACTERIZING PROGRESSION OF RETINAL DEGENERATION IN DOGS WITH PROGRESSIVE RETINAL ATROPHY DUE TO A PDE6A MUTATION – AN OPTICAL COHERENCE TOMOGRAPHY STUDY (MR McClure,<sup>1</sup> PA Winkler,<sup>1</sup> LM Occelli,<sup>1</sup> SE Klewicki,<sup>1</sup> SM Petersen-Jones,<sup>1</sup>) Department of Small Animal Clinical Sciences, College of Veterinary Medicine, Michigan State University.<sup>1</sup>

**Purpose.** To characterize changes in retinal layer thicknesses in dogs with progressive retinal atrophy due to a PDE6A mutation over the first 20 weeks of age. **Methods.** Spectral domain optical coherence tomography was performed on 28 PDE6A<sup>-/-</sup> and 4 control dogs from 6 to 20 weeks of age. Measurements of layer thicknesses were taken from the dorsal, ventral, temporal and nasal quadrants and the area centralis. **Results.** Total retinal thickness of PDE6A<sup>-/-</sup> dogs at 6 weeks of age was ~88% of controls and decreased to ~72% of controls by 20 weeks of age. The Receptor-plus (REC+) measurement (representing the entire length of photoreceptors) was 67% that of controls at 6 weeks of age and decreased to 45% of controls by 20 weeks of age. REC+ at the area centralis was slower to thin, such that by 8 weeks of age, it was only reduced to 69% of normal. PDE6A<sup>-/-</sup> dogs inner retinal layer thickness increased and was 27% thicker at 6 weeks and 9% thicker than controls at 20 weeks of age. **Conclusions.** Photoreceptor loss (thinning of the REC+ layer) was demonstrated early in disease progression, with decreased thickness already present at 6 weeks of age. There was a relatively slower thinning at the area centralis compared to other retinal regions. The inner retinal layer was found to increase in thickness as the outer retina thinned. This data will aid in future studies of PDE6A-targeted gene therapy. Supported by grants from the Tistou and Charlotte Kerstan Stiftung and the RD-Cure consortium, and the Myers-Dunlap Endowment for Canine Health. **None.**

Saturday Presenting 2:00pm

## GENERAL SCIENTIFIC SESSION SATURDAY

ANATOMICAL AND FUNCTIONAL DISCONNECT AND THE CHALLENGES IN REVERSING BLINDNESS IN A *GUCY2D*-LCA1 DOG MODEL (B Beckwith-Cohen,<sup>1</sup> PA Winkler,<sup>1</sup> K Sun,<sup>1</sup> LM Occelli,<sup>1</sup> M Bortolini,<sup>2</sup> F Montiani-Ferrera,<sup>2</sup> and SM Petersen-Jones<sup>1</sup>) Department of Small Animal Clinical Sciences, Michigan State University, East Lansing, MI, United States;<sup>1</sup> Universidade Federal do Paraná, Curitiba, PR, Brazil. <sup>2</sup>

**Purpose.** To describe unique features of *GUCY2D*-associated Leber's Congenital Amaurosis type 1 (*GUCY2D*-LCA1). **Methods.** Eleven dogs diagnosed with a homozygous null mutation in *GUCY2D* were treated with unilateral gene augmentation therapy at four age groups. Wild-type or heterozygous animals served as controls. Affected and treated animals underwent functional and structural evaluation using extensive electroretinography (ERG), optical coherence tomography (OCT), vision testing and histology. **Results.** *GUCY2D* dogs were congenitally blind, despite anatomic retinal integrity, supporting a functional and structural disconnect in this disease. Treatment with gene augmentation therapy resulted in recovery of the scotopic and photopic ERGs, though scotopic recovery was superior. Retinal morphology seen on OCT was largely normal in affected dogs, apart from a loss of definition of the bands representing photoreceptor inner and outer segments (ELM, EZ, IZ), and transient retinal bullae which are a characteristic of some canine retinal degenerations. Following therapy, the definition of the OCT outer retinal bands was restored. Histology of treated retina localized the RetGC1 protein produced by the *GUCY2D* gene to its normal location in photoreceptor outer segments. Vision behavior testing showed improvement in visual function in scotopic and photopic conditions in treated animals however, vision impairment persisted. **Conclusions.** Age at treatment may be an important factor in treating this severe form of LCA. Reversing cone associated vision loss is challenging even in cases of anatomic retinal preservation and normalization of abnormal retinal features. Supported by Myers Dunlap Endowment for Canine Health, NIH grant NEI EY027285, CVM Endowed Research Funds. **None.**

# GENERAL SCIENTIFIC SESSION SATURDAY

CORNEAL COLLAGEN CROSSLINKING (CXL) AS ADJUNCTIVE TREATMENT FOR EQUINE CORNEAL ULCERS: A RETROSPECTIVE, DESCRIPTIVE STUDY (ZA Simpson, 1 RE Merideth, 1,2 LE Quiroz, 2 RL Wittman, 2 and SS Erlichman 1,2) Southern Arizona Veterinary Specialty and Emergency Center of Tucson;1 Eye Care for Animals, Tucson AZ.2

**Purpose.** The purpose of this study is to describe Corneal Collagen Crosslinking (CXL) as an adjunctive treatment for corneal stromal ulceration in equine patients using standing sedation. **Methods.** Records from April 2018 to March 2025 at Eye Care for Animals in Tucson, Arizona were retrospectively analyzed with descriptive statistics for 18 equine patients (20 eyes) with corneal stromal ulceration examined by a boarded ophthalmologist (DACVO) and adjunctively treated with CXL using Peschke Velvet 345 Crosslinking unit (360+/-10nm UVA) and Peschke Riboflavin D. Ulcers were characterized by size, percent stromal loss, degree of keratomalacia and corneal edema, and degree of blepharospasm. Time to epithelialization, resolution of keratomalacia and corneal edema, and resolution of blepharospasm were analyzed. **Results.** Geldings (75%) and Quarter Horses (65%) were overrepresented. The average age was 18.9 years. Three patients had underlying systemic disease, with two having pituitary pars intermedia dysfunction. At the time of CXL, ulcer size averaged 8.2mm (2-12mm) and percent stromal loss averaged 63% (25-85%). Ulcer resolution was achieved in 18/20 eyes (90%), with average time to epithelialization of 52 days (14-177). Comfort was restored in 17/18 eyes (94%), with average time to blepharospasm resolution of 23 days (5-48). Keratomalacia and edema resolved in 17/17 (100%) and 17/18 (94%) eyes, respectively, with average time of 19 (3-42) and 42.9 days (13-83). **Conclusion.** Equine CXL under standing sedation aided in stromal ulcer healing by promoting epithelialization, resolving keratomalacia and corneal edema, and restoring ocular comfort. **None.**

Saturday Presenting 2:30pm



# GENERAL SCIENTIFIC SESSION SATURDAY

OCULAR FINDINGS IN 550 HORSES PRESENTED FOR NON-OPHTHALMIC ISSUES TO A REFERRAL HOSPITAL. (N Scherrer 1, Klaus Hopster 1) Department of Clinical Sciences, School of Veterinary Medicine, University of Pennsylvania 1.

**Purpose.** Ophthalmic abnormalities are present in many groups of horses. Based on the literature, ophthalmic abnormalities may be more commonly seen in geriatric horses. The goal of this study was to examine a large population of horses presented to a referral hospital for non-ophthalmic issues and describe the ophthalmic findings. **Methods.** Ophthalmic examinations were performed on horses presented to New Bolton Center for non-ophthalmic issues between April 2021 and December 2023. Statistical analysis was performed to determine if signalment was associated with a higher risk of ocular abnormalities. **Results.** Of the horses examined, 27% had ocular abnormalities in at least one eye. The most common ophthalmic abnormalities seen were cataracts (13.5%) and corpora nigra cysts (8.3%). The presence of these abnormalities was more likely with increasing age (cataract  $p = 0.02$ ; corpora nigra cyst  $p = 0.04$ ). Of the horses affected 91.5% had unilateral abnormalities and 8.5% had abnormalities in both eyes. **Conclusions.** Ocular abnormalities are present in a group of horses that owners suspected to be ophthalmologically normal. Most ocular abnormalities were unilateral and affected anterior segment structures. These findings underscore the need for routine ophthalmic evaluation, especially in older horses. **None.**

# GENERAL SCIENTIFIC SESSION SATURDAY

PHOTODYNAMIC THERAPY FOR THE TREATMENT OF EQUINE NEOPLASIA: A RETROSPECTIVE REVIEW OF THIRTY-THREE EQUIDS (AR Letourneau 1 PS Martinez, 1 N De La Torre, 1 JC Colee,<sup>2</sup> and CE Plummer 1) College of Veterinary Medicine, University of Florida; 1 Institute of Food and Agricultural Science; 2

**Purpose.** To obtain long-term follow-up data on horses treated with Photodynamic Therapy (PDT) for squamous cell carcinoma (SCC), sarcoid, peripheral nerve sheath tumor (PNST), and soft tissue sarcomas (STS). **Methods.** Retrospective data from thirty-three equids with neoplastic lesions treated with PDT was reviewed. Follow-up data was collected from medical records dated between July 2010 and March 2025 from the University of Florida, referring veterinarians, and owner updates. **Results.** Thirty-three equids (38 total neoplastic lesions) were included in this study. SCC was the most common tumor type treated (n=28) followed by sarcoids (n=4), PNST (n=4), STS (n=2). Average follow up time was 55.5 months. Overall, recurrence occurred in 14 of the 38 lesions (37%). Recurrence rate within 12 months was 24%, within 36 months was 29%, and within 60 months was 32%. For those cases that recurred, 64% were within 12 months. Recurrence was not significantly associated with breed (p=0.38), coat color (p=0.27), tumor location (p=0.52), prior treatment (p=0.54), or tumor type (p=0.38). Notably, neither of the two STS cases recurred within 70 months. Recurrence was significantly more likely in mares (p=0.02). **Conclusions.** PDT is a viable, long term treatment option for equine neoplasia and may reduce recurrence rates when compared to surgical excision alone. Mares are more likely to have recurrence following treatment which may indicate a hormonal influence. **None.**

Saturday Presenting 3:15pm

# GENERAL SCIENTIFIC SESSION SATURDAY

HISTOLOGIC FINDINGS OF AMPHOTERICIN B INTRASTROMAL CORNEAL INJECTIONS IN HORSES (AC Bowden, 1 E Hefner, 2 RM Rodriguez Galarza, 2 J Lambert, 3 PA Moore, 1 RT Neto, 3) Auburn University College of Veterinary Medicine, Department of Clinical Sciences; 1 Animal Eye Care of the Lowcountry; 2 Auburn University College of Veterinary Medicine, Department of Pathobiology; 3

**Purpose.** To describe the histologic findings of 3 equine eyes from 3 clinical patients and 2 equine cadaver eyes following corneal intrastromal injections (ISIs) of 1-5 mg/ml Amphotericin B (AMB). **Methods.** Histology from 1 clinical patient injected with 5 mg/ml AMB, 2 clinical patients with a 1 mg/ml solution, and from 2 equine cadaver eyes injected with 1 mg/ml and 5 mg/ml solutions, respectively, was performed with hematoxylin and eosin staining and polarizing filters. Clinical patients were treated with AMB ISIs for corneal stromal abscesses with a presumed or diagnosed fungal component. **Results.** The main clinical complication from the AMB ISIs was yellow-green staining of the cornea post-ISI that faded with time. Histology showed crystalline, yellow, birefringent drug precipitates in eyes injected with 1 mg/ml and 5 mg/ml solutions, with more crystals in the 5 mg/ml injections. Precipitates decreased profoundly by 3 days post-injection, and none were appreciated by 4 days post-injection in 2 enucleated eyes. The crystals did not fluoresce with a DAPI filter (355-405 nm) but did with a Green Fluorescent Protein filter (450-490 nm). **Conclusion.** Amphotericin B creates crystalline drug precipitates that are more prominent with higher drug concentrations and correlate with clinically appreciable corneal color changes post-injection. These are potentially caused by AMB falling out of solution after combination with endogenous corneal electrolytes such as sodium, potassium, and chloride. These appear comfortable and fade with time. **None.**

## GENERAL SCIENTIFIC SESSION SATURDAY

TISSUE REACTING ANCHORING PHARMACEUTICAL (TRAP) WITH PACLITAXEL AS A NOVEL INTRATUMORAL TREATMENT FOR EYELID SQUAMOUS CELL CARCINOMA IN HORSES (EK Tucker-Retter, 1 D Abner, 1 R Chinthapatla 2, Y Brudno, 2 A Oh, 1) Department of Clinical Sciences, College of Veterinary Medicine, North Carolina State University;1 Laboratory for Molecular Pharmacoengineering, Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill.2

**Purpose.** Eyelid squamous cell carcinoma (eSCC), the most common equine adnexal tumor, has a high recurrence rate and poor prognosis. Surgical excision and adjunctive therapy are recommended for treatment of eSCC. Tissue reacting anchoring pharmaceutical (TRAP) is a materials-free system that creates intratumoral depots of a drug. This pilot study examines the effectiveness of TRAP linked with paclitaxel (TRAP-PTX), a chemotherapeutic agent, for use in horses with eSCC. **Methods.** Seven horses with eSCC received 1-3 injections of TRAP-PTX (20 mg/mL). After the first injection, subsequent doses were based on response to treatment. Adverse events were classified according to Veterinary Cooperative Oncology Group criteria and response to treatment was determined using RESIST guidelines as having complete response (CR), partial response (PR), static disease (SD), or progressive disease (PD). Horses were monitored for recurrence of eSCC for at least 1 year. **Results.** Seven measurable masses were included (median ellipsoid volume 0.105 cm<sup>3</sup>, range 0.031-2.264 cm<sup>3</sup>). The median injected volume of TRAP-PTX was 1.3 mL (0.4-5.5 mL). Grade 1-2 edema and skin ulceration were common, and local tissue reactions occurred in 3 horses. Two masses were debulked prior and one was debulked after treatment with TRAP-PTX. Currently, 4 masses have CR, 1 has SD, and 2 have PD. One horse with PD exited the study for enucleation. **Conclusions.** TRAP-PTX shows promise as an intratumoral therapy for equine eSCC, particularly as an adjunctive treatment before or after debulking. Supported by NCSU CMI Ideation Award and CMI/CSC New Faculty Clinical Research Award. **None.**

Saturday Presenting 3:45pm

## GENERAL SCIENTIFIC SESSION SATURDAY

THE EFFECTS OF PHOTODYNAMIC THERAPY WITH EMUNDO® AND 810NM DIODE LASER ON THE HEALTHY EQUINE CORNEA (CM Rogers, 1 EC Ledbetter, 1 A Reid, 1 EM Scott, 1, R Taylor, 2 KE Knickelbein 1) Department of Clinical Sciences, College of Veterinary Medicine, Cornell University; 1 Department of Population Medicine and Diagnostic Sciences, College of Veterinary Medicine, Cornell University. 2

**Purpose.** To investigate the morphologic effects and safety of photodynamic therapy (PDT) on healthy equine corneas. **Methods.** One eye of 6 normal university-owned horses underwent corneal PDT with intrastromal EmunDo® and photoactivation with an 810nm diode laser (500mW for 2.5 min = 75 Joules). Complete ophthalmic examinations, clinical scoring, digital and infrared photography, ocular thermography, in vivo confocal microscopy (IVCM), and ultrasound biomicroscopy (UBM) were performed pre- and post-treatment on study day 1 and on days 5, 15, 33 and 103. **Results.** Corneal PDT treatment resulted in delayed corneal ulceration in all treated eyes (n=6, 100%). Post-treatment corneal thickness measured with UBM was significantly increased compared to pre-treatment on days 1, 5, 15 and 33 ( $P<0.004$ ). IVCM identified destroyed keratocytes immediately post-treatment, and stromal keratitis and endotheliitis on days 5, 15, and 33 (n=6, 100%). A dramatic reduction in visible keratocytes was observed within treated regions of the stroma on day 5, followed by slow repopulation. Activated stromal keratocytes and rare inflammatory cells remained present on day 103 in all horses. There was no significant difference in mean clinical scores on days 1, 5, 15, 33, or 103 ( $P>0.3$ ). EmunDo® remained visible in the cornea on study day 103 in 5/6 horses. All horses cleared the dye by 6 months post-treatment. No horses developed blinding complications. **Conclusions.** Corneal ulceration should be expected following corneal PDT. Corneal PDT induces keratocyte depopulation and prolonged stromal keratitis. Prolonged corneal dye retention should be expected in non-vascularized corneas. Supported by ACVO VAF2024-5. **None.**

# GENERAL SCIENTIFIC SESSION SATURDAY

TREATMENT OUTCOMES OF DEFINITELY DIAGNOSED EQUINE IMMUNE-MEDIATED KERATITIS (TN Toddy,1 EC Ledbetter,1 KE Knickelbein 1) Department of Clinical Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY, USA.1

**Purpose.** To describe treatment outcomes of horses definitively diagnosed with epithelial or stromal immune-mediated keratitis (IMMK) using *in vivo* confocal microscopy (IVCM) and/or histopathology. **Methods.** Medical records of horses presented to the Cornell Equine Hospital and definitively diagnosed with epithelial or stromal IMMK using IVCM and/or histopathology between 2020-2025 were included. Patient signalment, affected eye(s), diagnostics, treatments, and outcomes were assessed. **Results.** Twenty-one horses met inclusion criteria including 4 Quarter Horses, 3 Warmbloods, 3 Standardbreds, 3 Thoroughbreds, 2 Tennessee Walking Horses, 2 Welsh Ponies, 1 Paint Horse, and 3 crossbred or unspecified breeds. The median age was 15 years (range 4-33). There were 16 geldings and 5 mares included. Eighteen horses were unilaterally affected (10 right eye, 8 left eye) and 3 bilaterally affected. Nineteen horses underwent IVCM of which 7 had histopathology following standing superficial keratectomy with agreement in diagnosis. Two horses had corneal histopathology without IVCM. Seven horses were managed medically with ophthalmic cyclosporine, diclofenac, or both with minimal follow-up information available. Seven horses underwent episcleral cyclosporine implantation of which 3 were controlled at last follow up (36-48 months) and 4 required additional treatment between 2-12 months post-implantation. Standing superficial keratectomy was performed in 9 cases with IMMK controlled without medications in 8/9 horses at last follow up (3-41 months). Recurrence was documented in one horse 12 months post-keratectomy. **Conclusions.** IVCM allows for rapid non-invasive diagnosis of equine IMMK that correlates with histopathology. Standing superficial keratectomy is a successful diagnostic and therapeutic option for equine immune-mediated keratitis. **None.**

Saturday Presenting 4:15pm



## GENERAL SCIENTIFIC SESSION SATURDAY

THE EFFECTS OF ATROPINE 1% OPHTHALMIC SOLUTION ON THE MORPHOLOGY OF THE EQUINE IRIDOCORNEAL ANGLE AND CILIARY CLEFT ASSESSED BY ULTRASOUND BIOMICROSCOPY (KE Knickelbein, 1 and VC Priester 1) Department of Clinical Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY, USA.1

**Purpose.** To describe the effects of atropine on the morphology of the iridocorneal angle (ICA) and ciliary cleft (CC) of the normal equine eye using ultrasound biomicroscopy (UBM). **Methods.** Twelve adult horses with normal eyes were sedated and an auriculopalpebral block and topical anesthetic administered to both eyes. Intraocular pressures (IOP), vertical and horizontal pupil diameters (PD) and triplicate images of the superior, temporal, inferior, and nasal ICA were obtained using a 50 MHz UBM probe (ABSOLU®, Lumibird Medical). Atropine 1% ophthalmic solution was then applied to both eyes of each horse. Two hours following atropine administration, IOPs, vertical and horizontal PDs and triplicate images of the same ICA locations were obtained. ICA measurements including pectinate ligament distance, CC length, height of opening distance, CC area, and angle of the pectinate ligament were performed on each of the pre- and post-dilation images using the ABSOLU® software. **Results.** There were no significant differences in pre- or post-dilation UBM measurements in the nasal or temporal quadrants. There was a significant decrease in CC length (superior  $P=0.045$ ), CC area (superior  $P=0.002$ ), pectinate ligament distance (inferior  $P=0.021$ ), height of opening distance (superior  $P=0.004$ , inferior  $P=0.010$ ), and pectinate ligament angle (superior  $P=0.005$ , inferior  $P=0.02$ ) between pre- and post-atropine measurements. Intraocular pressure significantly decreased ( $P=0.029$ ) following atropine administration and both vertical and horizontal pupillary diameter significantly increased ( $P<0.001$ ). **Conclusions.** Atropine causes segmental narrowing of the equine ICA and CC in the superior and inferior quadrants, sparing the nasal and temporal quadrants. **None.**

## GENERAL SCIENTIFIC SESSION SATURDAY

TEAR FILM PHARMACOKINETICS AND SAFETY EVALUATION OF INJECTABLE PLGA-BASED KETOTIFEN FUMARATE IMPLANTS IN HEALTHY HORSES (SL Howard 1 N Mita, 2 J Ramapuram, 2 T Passler, 1 J Stockler, 1 RJ McMullen Jr, 1,3 AC Bowden, 1) Department of Clinical Sciences, JT Vaughan Large Animal Teaching Hospital, College of Veterinary Medicine, Auburn University, Auburn, Alabama, USA; 1 Department of Drug Discovery and Development, Harrison College of Pharmacy, Auburn University, AL 36849, USA; 2 Vetsuisse Faculty, University of Zurich, Switzerland; 3

**Purpose.** Determine tear film concentrations and safety of Poly(dl-lactide-co-glycolide) (PLGA)-based ketotifen fumarate implants in horses by (1) quantifying tear film concentrations of ketotifen over 102 days by HPLC, and (2) assessing the clinical effects of the implant using the semi-quantitative preclinical ocular toxicology scoring (SPOTS) system. **Methods.** Ten healthy teaching herd horses received complete ophthalmic and physical exams prior to sedation and randomly selected (coin toss) subconjunctival ketotifen implant injections. A blank implant (PLGA only, no drug) was injected in the contralateral (control) eye. Tears were collected at 8, 14, and 18 hours on days 0-7, and at 14, 28, 35, 42, 72, and 102 days post-injection. Data for days 35-102 is under review at the time of submission. SPOTS and ocular images were obtained on collection days. Statistical analyses were performed using SAS 9.4 (Cary, NC). **Results.** Day 0 mean ketotifen concentrations rapidly decreased at 8, 14, and 18 hours (19.10, 3.79, and 1.87  $\mu\text{g/mL}$ , respectively) in treated eyes. Average drug concentrations in the treated and placebo eyes were  $0.23 \pm 0.09 \mu\text{g/mL}$  and  $0.12 \pm 0.08 \mu\text{g/mL}$ , respectively, through day 28. The mean drug concentration in ketotifen-treated eyes was 0.19  $\mu\text{g/mL}$  on day 28. The mean placebo eye ketotifen drug concentration was 0.06  $\mu\text{g/mL}$ , but was only detectable through day 2. Mild injection site hyperemia (resolved within 72 hours) was the only observed adverse clinical sign. **Conclusion.** This extended-release implant had no long-term adverse effects and could improve owner compliance. Supported by AU-CVM-AHDR grant. **None.**

Saturday Presenting 4:45pm

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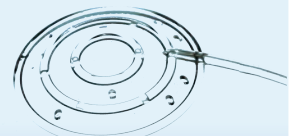
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