<table>
<thead>
<tr>
<th>Table of Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Committee List</td>
</tr>
<tr>
<td>ACVR Administration</td>
</tr>
<tr>
<td>Meeting and General Info</td>
</tr>
<tr>
<td>• Registration Desk hours</td>
</tr>
<tr>
<td>• Covid Information</td>
</tr>
<tr>
<td>• Transportation</td>
</tr>
<tr>
<td>Access the App – Wifi Info</td>
</tr>
<tr>
<td>Enduring Materials</td>
</tr>
<tr>
<td>Restaurants and Night Life</td>
</tr>
<tr>
<td>Special Activities</td>
</tr>
<tr>
<td>Hotel Property Map</td>
</tr>
<tr>
<td>Walking Directions</td>
</tr>
<tr>
<td>Schedule</td>
</tr>
<tr>
<td>Program Schedule by Day</td>
</tr>
<tr>
<td>Faculty/Speakers</td>
</tr>
<tr>
<td>Sponsor Page</td>
</tr>
<tr>
<td>Exhibitors</td>
</tr>
<tr>
<td>Onsite Abstracts</td>
</tr>
<tr>
<td>Enduring Abstracts</td>
</tr>
<tr>
<td>Save the Date</td>
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</table>
## Program Committee

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Tony Pease, Education Director</td>
<td>Dr. Michelle Turek Radiation Oncology Program Chair</td>
</tr>
<tr>
<td>Dr. Jessica Vallone, Chair 2022</td>
<td>Dr. Anthony Fischetti, Webmaster</td>
</tr>
<tr>
<td>Dr. Keely Brewer, Co-Chair 2022</td>
<td>Libby Dietrich, Ex-Officio, Executive Administrator</td>
</tr>
<tr>
<td>Dr. Jamie Rechy, Co-Chair 2022</td>
<td>Brendan Leahy, Ex-Officio, Deputy Executive Administrator</td>
</tr>
<tr>
<td>Dr. Natalie Rademacher, Past-Chair</td>
<td>Cyndi Powers, Ex-Officio, Meeting Manager</td>
</tr>
<tr>
<td>Dr. Robson Giglio, Image Interpretation Session</td>
<td>Janelle Witters, Ex-Officio, Meeting Manager</td>
</tr>
<tr>
<td>Dr. Jamie Sage, CT MRI Society</td>
<td>Allison Zwingenberger, Ex-Officio, ACVR President</td>
</tr>
<tr>
<td>Dr. Peter Noel, Ultrasound Society</td>
<td>Dr. Michelle Keyerleber, Ex-Officio, ACVR-RO President</td>
</tr>
<tr>
<td>Dr. Beth Biscoe, Nuclear Medicine Society</td>
<td>Dr. Tod Drost, Ex-Officio, ACVR Executive Director</td>
</tr>
<tr>
<td>Dr. Kate Wulster, Large Animal Diagnostic Imaging Society</td>
<td>Dr. Matt Cannon, Ex-Officio, ACVR Treasurer</td>
</tr>
<tr>
<td>Dr. Robson Giglio, Zoological Exotic &amp; Wildlife Diagnostic Imaging Society</td>
<td>Sarah Hunt, AVTDI</td>
</tr>
</tbody>
</table>

## Executive Council

### Officers/Directors (2022)

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Allison Zwingenberger, President</td>
<td>Dr. Tony Pease, Education Director</td>
</tr>
<tr>
<td>Dr. Federica Morandi, President-Past</td>
<td>Dr. Chris Warren-Smith, ECVDI President</td>
</tr>
<tr>
<td>Dr. Nate Nelson, Past-President</td>
<td>Dr. Tod Drost, Executive Director</td>
</tr>
<tr>
<td>Dr. Matthew Cannon, Treasurer</td>
<td></td>
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<tr>
<td>Dr. Leanne Magestro, Secretary</td>
<td></td>
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<tr>
<td>Dr. Anthony Fischetti, Webmaster</td>
<td></td>
</tr>
<tr>
<td>Dr. Michelle Keyerleber, President</td>
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<tr>
<td>Recognized Specialty of Radiation Oncology</td>
<td></td>
</tr>
<tr>
<td>Dr. Beth Biscoe, President, Recognized Specialty of Equine Diagnostic Imaging</td>
<td></td>
</tr>
<tr>
<td>Dr. Stephanie Nykamp, Radiology/EDI</td>
<td></td>
</tr>
<tr>
<td>Examination Director</td>
<td></td>
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<tr>
<td>Dr. Michael Kent, RO Examination Director</td>
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### Council Members (2022)

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
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</thead>
<tbody>
<tr>
<td>Dr. Elissa Randall</td>
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<tr>
<td>Dr. Ryan King</td>
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<tr>
<td>Dr. Jennifer Bouma</td>
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<tr>
<td>Dr. Lindsey Gilmour</td>
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<tr>
<td>Dr. Kemba Clapp</td>
<td></td>
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<tr>
<td>Dr. Eric Hostnik</td>
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## Recognized Specialty of Radiation Oncology Officers (2022)

<table>
<thead>
<tr>
<th>Role</th>
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<tbody>
<tr>
<td>Dr. Michelle Keyerleber, President</td>
<td>Dr. Beth Biscoe, President</td>
</tr>
<tr>
<td>Dr. Tracy Gieger, Past-President</td>
<td>Dr. Myra Barrett, Past President</td>
</tr>
<tr>
<td>Dr. Michelle Turek, President - Elect</td>
<td>Dr. Meghann Lustgarden, Secretary</td>
</tr>
<tr>
<td>Dr. Kelsey Ericksen-Pohlmann, Secretary</td>
<td></td>
</tr>
<tr>
<td>Dr. Michael Kent, RO Examination Director</td>
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## Recognized Specialty of Equine Diagnostic Imaging Officers (2022)

<table>
<thead>
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<tr>
<td>Dr. Michelle Keyerleber, President</td>
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<tr>
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<td>Dr. Myra Barrett, Past President</td>
</tr>
<tr>
<td>Dr. Michelle Turek, President - Elect</td>
<td>Dr. Meghann Lustgarden, Secretary</td>
</tr>
<tr>
<td>Dr. Kelsey Ericksen-Pohlmann, Secretary</td>
<td></td>
</tr>
<tr>
<td>Dr. Michael Kent, RO Examination Director</td>
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</tbody>
</table>
Annual Scientific Meeting Conference Registration:
Registration is located on the main floor, across the street from the Silver Legacy.

Hours:
- **Tuesday, October 18**
  6:00 pm – 8:00 pm
- **Wednesday, October 19**
  7:00 am – 5:00 pm
- **Thursday, October 20**
  7:00 am – 5:00 pm
- **Friday, October 21**
  7:00 am – 5:00 pm
- **Saturday, October 22**
  7:00 am – 1:00 pm

COVID Information:
ACVR encourages people to be vaccinated against COVID-19, but ACVR staff will not be checking the vaccination status of our attendees. Details laying out the updated protocols are below. Recent updates from the Centers for Disease Control and Prevention (updated COVID guidance on August 11, 2022) helped inform our decision.

Health and Safety Protocols
ACVR's leadership feels confident that our College can organize together in a healthy and safe manner at this year’s Annual Scientific Meeting. We appreciate your understanding and also understand that circumstances of each individual and their community, workplace, and family are unique.

With these factors in mind, we are pleased to offer in-person and enduring materials options to ensure that everyone has access to their preferred experience:

*Health and Safety Protocols are subject to change at any time. All such changes will be updated and communicated as quickly as possible with registered attendees. Additional details of our Health and Safety Protocols, including the details regarding the process of providing proof of vaccination, will be announced as we get closer to the event dates.*

**ACVR cannot control or require guests/staff of the Silver Legacy to wear masks or be vaccinated. By attending the event, all attendees accept that these protocols will not be in place outside of ACVR events. Venue regulations may change based on state guidelines.**

2. Enduring Materials: For a variety of reasons, you may simply feel like a virtual option is the better choice. ACVR will have enduring materials that can be viewed at your convenience.

Masks and forehead thermometers are available at the registration desk.

Saint Mary’s Regional Medical Center is located nearby, just a 10-minute walk from the venue.

**Saint Mary’s Regional Medical Center**
234 W 6th Street | Reno, NV 89503
775-770-3000

**Walking Directions:**
Start on N Sierra Street
0.25 miles take a left onto W 7th Street
590-feet take a left
110 feet, destination is on your left- 235 W 6th Street
Transportation Services: Silver Legacy- Reno, NV
Shuttle Service: Caesar’s offers a complimentary shuttle service that runs a loop between the (3) properties (El Dorado, Circus Circus, and Silver Legacy)

Shuttle Hours: 4:00 am-Midnight each day

Track Shuttle: www.therowshuttle.com

Uber: Readily available

Rental Cars: Option on site. Availability is currently low; reserve in advance

Get the App!

Download the “ACVR” app from the “App Store or Google Play store.

Find your event app by searching for “ACVR 2022” or find the event icon and click to open the app. Follow the login instructions provided by your event registration to begin using the app.

As long as you have an internet connection, you can access the app through your laptop via this link:

Download before you go! On-site Wifi service can affect the functionality of the app.

Wifi Information:
Wifi Network Name: Caesars_Resorts
No password needed-the browser will prompt attendee to enter an email address to access.
USING THE ACVR APP

Make the Most of Your Conference Experience with the
2022 ACVR Annual Scientific Meeting Mobile App!
Notetaking | Create & Share Schedules | Personal Summary | Social Features

1. Download the ACVR Events App

Scan the QR Code or go to the Apple App Store or Google Play and search for ACVR.

Install and open the event app.

Find your event in the Upcoming Events (bottom row).

Tap the event icon to launch your event’s app.

2. Login to the App

If this is your first time accessing the mobile app, please create an account by entering the event code ACVR2022 followed by your name and email address.

If you already have an account, please log in using the credentials that were emailed to you upon account creation.

3. App Tips

Download the app before you go! Wi-Fi connection on-site can affect the functionality of the app.

Browse the event information and create a personal schedule by tapping on the star next to presentations titles.
Following the meeting, access our online library!

Your in-person meeting registration also gains you access to the program’s 2022 Enduring Materials. These are recordings of scientific abstracts both presented here in Reno and recorded only, in addition to the CE sessions presented in Reno.

To Access:

• Log into your account at acvr.org
• Refer to the Dashboard look for the icon
• Click & open up the ACVR’s Focal Spot
• There you will find the Enduring Materials as a course

Questions? Please contact ACVR Staff at acvr@pamedsoc.org
Silver Legacy:

**Café Central**—Casual | Café Variety | $$
Enjoy All-American favorites, international delights and more. Open 24 hours, seven days a week. Café Central has a variety of burgers, steak sandwiches and more.

**Sips Coffee & Tea**—Quick Bites, Coffee | $
Start your day right and stop by SIPS Coffee and Tea. Located in the elegant hotel lobby, SIPS at Silver Legacy has a variety of gourmet coffee, teas, cappuccinos, espressos, lattes, mochas and the finest fresh-baked pastries and desserts.

**Spa Café & Bar**—Casual | Café Variety | $$
Located on the fourth floor of Silver Legacy at THE ROW, treat your wellness experience with a handcrafted cocktail at The Spa Café & Bar.

**Ruth's Chris Steakhouse**—Casual | Steakhouse | $$$
Enjoy the timeless Ruth's Chris Steak House at Silver Legacy, serving up its signature aged prime steaks, succulent seafood and delectable desserts.

**Starbucks**—Quick Bites | Coffee | $
Indulge in a familiar favorite. Visit Starbucks for high quality coffee, teas, pastries, smoothies and more.

**Canter’s Delicatessen**—Deli | $$

**Topgolf Swing Suite**—Food, Fun, Drinks | $$

**Pearl Oyster Bar & Grille**—Seafood | $$

Rum Bullions Island Bar—As Reno's only rum bar, Rum Bullions offers a tropical vibe and an extensive menu of rum-based drinks.

**Silver Baron Lounge**—Silver Baron Lounge offers live entertainment, game day action and awesome happy hour specials under a giant-sized mining rig.

Eldorado Restaurants:

**Millies**—Causal | American | $$
Wake up to Millies, serving classic breakfast and dinner foods that tastes like home.

**Starbucks**—Quick Bites | Coffee | $
Calling all coffee lovers. Starbucks is serving all your favorite beverages and quick bites.

**Ichiban Japanese Steak House**—Upscale | Japanese | $$$
Enjoy the artistry and showmanship of teppanyaki, where skilled chefs prepare entrées right at your table.

**La Strada**—Upscale | Italian | $$$
La Strada offers Reno’s most authentic Northern Italian cuisine.

**Sushi Sake**—Casual | Japanese | $$
Sushi Sake is perfect for exploring the finest sushi and exotic sake.

**Roxy**—Upscale | Steakhouse | $$$
Roxy offers the finest cuts of steaks and chops, seafood and soufflés. Let your night out begin here.

**Brew Brothers**—Brewpub | $$

**The Buffet**—Buffet | $$-$$$$

**Hidden Pizza**—Pizzeria | $$

Silver Legacy Nightlife:

**Aura Ultra Lounge**—Aura Ultra Lounge is the place for an elevated nightlife experience.

**Blender Bar**—Try exciting frozen and specialty drinks at Blender Bar, some in sizes up to 100 ounces made with up 10 shots.

**Comedy Bar**—Grab drinks before and after the show at the Comedy Bar.

**Drinx**—At Drinx, you’ll enjoy an extensive array of specialty martinis, wine and beer, while music videos play throughout.
**Eldorado Nightlife:**

**Bar Centro**—Experience all the action at this chic raised bar and lounge in the center of the casino.

**Cin Cin Bar and Lounge**—Cin Cin offers an extensive artisan cocktail menu unlike any other Reno nightclub.

**Millies Bar**—Pull up a barstool at Millies bar, a welcoming and quaint watering hole.

**Novi**—Take a sneak peak at Eldorado Resort Casino’s hippest nightspot.

**Ringside Bar**—Don’t miss a moment of the action. Ringside Bar serves your favorite drinks on the gaming floor.

**Roxy’s Bar and Lounge**—Sip on a martini or enjoy a glass of wine as you listen to live piano music.

**Showroom Bar**—Stop by Eldorado’s Showroom Bar before or after the show and enjoy a cocktail.

**Stadium Bar**—Stadium Bar provides a relaxed environment to kick back, have a drink with friends and watch your favorite sports.

**Vito’s Lounge**—Settle in with friends at Vito’s, where you’ll enjoy your favorite beers, wells and premium spirits.

**Circus Circus:**

**Circus Circus Food Court**—Quick Bites | Food Court | $
Serving up food the whole family will love. Visit the Food Court at Circus Circus for an affordable meal that’s delicious.

- **The Habit Burger Grill**—Burgers, Fries, Shakes | $
- **Panda Express**—Chinese | $
- **Piezetta Pizza**—Kitchen | Pizzeria | $

**El Jefe’s Cantina**—Casual | Mexican | $$
Get a festive taste of Mexico at El Jefe’s Cantina, with classic entrées and an excellent tequila selection.

**Madame Butterwork’s Curious Café’**—Casual | Café Variety | $$
Enjoy delicious breakfast items from omelettes to pancakes and French toast along with plenty of coffee, smoothies and mimosas.

**Sips Coffee & Tea**—Quick Bites | Coffee | $
Enjoy tea, coffee and baked treats to go at SIPS Coffee and Tea.

**Kanpi Sushi**—Sushi | $$$

**Yogurt Beach**—Frozen Yogurt | $

**Circus Circus Nightlife:**

**Blast Bar**—Enjoy five unique flavors of frozen goodness at Blast Bar.

**Sports Bar**—Kick back, have a drink with friends and keep tabs on all the big games. Conveniently located next to the Caesars Race & Sportsbook at Circus Circus Reno!

**Village Bar**—Kick back and relax with a drink on the main casino floor of Circus Circus Reno.
**SPECIAL ACTIVITIES**

**Tuesday, October 18**

**Welcome Reception**  
Everyone Welcome!  
7:00 pm-9:00 pm | Exhibit Hall (Reno Ballroom 1-5-6)

**Wednesday, October 19**

**MedVet/VetRad Sponsored Luncheon**  
Must register to attend  
12:30 pm-2:00 pm | Silver Baron D&E

**Med Vet: All Resident Happy Hour**  
Open to all residents  
4:30 pm-6:00 pm | Ruth Chris Steakhouse

**Honoring New & Established Diplomates Reception**  
Everyone Welcome!  
6:00 pm-7:30 pm | Silver Baron A&B

**Vital Rad Happy Hour**  
8:00 pm-10:00 pm | Rum Bullions Island Bar

**Thursday, October 20**

**Exhibit Hall Power Hour**  
Everyone Welcome!  
4:30 pm-6:00 pm | Exhibit Hall (Reno Ballroom 1-5-6)

**Varian Sponsored Lunch**  
Radiation Oncology registrants  
12:30 pm-2:00 pm | Concurrent Session Room (Reno Ballroom 2)

**Antech Sponsored Event**  
Everyone Welcome!  
6:30 pm-10:00 pm | Greater Nevada Field

**Vets Choice Radiology Social**  
9:00 pm-11:00 pm | Whitney Peak Hotel

**Friday, October 21**

**Meet the Residency Directors Shuffle**  
Registered attendees  
6:00 pm-8:00 pm | Reno Ballroom 5-6
AROUND RENO

1. THE ROW
   University of Nevada, Reno including Student Union, Mackay Stadium and Lawler Events Center
2. Reno Events Center
3. Reno Ballroom
4. National Bowling Stadium
5. The National Automobile Museum
6. Greater Nevada Field
7. Riverwalk, including Wingfield Park and Downtown Plaza
8. Rancho San Rafael
9. Reno Arch
10. Pioneer Theater
11. Midtown
12. Nevada Museum of Art
13. Discovery Museum
14. Train Station
15. Movie Theater
16. Kayak Park

TRAVEL TIMES

THE ROW ➤ Harrah’s & Harveys Lake Tahoe
   60 minute drive (60 miles)

THE ROW ➤ Reno-Tahoe Intl. Airport
   10 minute drive (5 miles)

THE ROW ➤ Reno Events Center
   5 minute walk (100 yards)

THE ROW ➤ University of Nevada Reno
   10 minute walk (0.5 miles)

THE ROW ➤ Carson City, NV
   26 minute drive (25 miles)

THE ROW ➤ Truckee, CA
   56 minute drive (32 miles)

THE ROW ➤ Virginia City, NV
   36 minute drive (26 miles)

THE ROW ➤ Sacramento, CA
   2 hour and 9 minute drive (132 miles)

THE ROW ➤ San Francisco, CA
   3 hour 34 minute drive (194 miles)

THE ROW ➤ San Jose, CA
   3 hour 57 minute drive (250 miles)

THE ROW ➤ Elko, NV
   4 hour 12 minute drive (289 miles)
Greater Nevada Field (Home of the Reno Aces)
Greater Nevada Field is a Minor League Baseball venue in the Western United States, located in Reno, Nevada. Opened on April 17, 2009, it is the home of the Triple-A Reno Aces of the Pacific Coast League. Greater Nevada Field is on the north bank of the Truckee River and welcomes over 500,000 ticketed fans per year.

National Automobile Museum
The National Automobile Museum is one of the top Reno attractions with a “Wow!” factor you won’t want to miss. The Museum has more than 225 rare, one-of-a-kind, antique and collector cars with authentic street scenes and sounds that bring displays to life.

- 230 ft. take a left on W Fourth Street
- 0.2 miles take a right onto Lake Street
- 520 ft. walk over the Bridge
- 600 ft. continue straight in S Lake Street
- 460 ft. walk over the Bridge
- 300 ft. destination is on your left

National Bowling Stadium & King Pin Club (located on first floor)
Nicknamed the “Taj Mahal of Tenpins,” The National Bowling Stadium houses 78 state-of-the-art bowling lanes. The facility has attracted regional and national bowling tournaments over the years as it was the first of its kind to be solely dedicated to bowling competitions.

- 230 ft. take a left onto W Fourth Street
- 760 ft. take a right onto N Center Street
- 310 ft. Destination is on your left, First Floor of the building

Reno Arch
Located on “the row” just outside of El Dorado. It’s worth stopping to snap a picture if you’re in the area. The middle of the street is blocked off with fences which provided the perfect opportunity for a great photo.

Reno Riverwalk District
At the heart of Reno’s downtown urban renaissance is the one and only Riverwalk District, a sparkling medley of shops, bistros and cafés, lodging, bars, taverns, indoor and outdoor entertainment venues and even a whitewater park.

- 710 ft take a right onto W Third Street
- 0.3 miles take a left on Ralston Street
- 40 ft. walk over bridge
- 0.25 miles destination is on your left
# Schedule

## Tuesday, October 18th

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00 pm - 8:00 pm</td>
<td><strong>Conference Registration Opens</strong></td>
<td>Reno Ballroom Salon</td>
</tr>
<tr>
<td>7:00 pm - 9:00 pm</td>
<td><strong>Welcome Reception</strong></td>
<td>Reno Ballroom 1, 5 &amp; 6</td>
</tr>
</tbody>
</table>

## Wednesday, October 19th

<table>
<thead>
<tr>
<th>Time (PDT)</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am-5:00 pm</td>
<td><strong>Conference Registration – Reno Ballroom Salon</strong></td>
<td>Reno Ballroom Salon</td>
</tr>
<tr>
<td>7:00 am-8:00 am</td>
<td><strong>CT MR Society Business Meeting</strong></td>
<td>Reno Ballroom</td>
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<td><strong>STAT! Emergency Non-Manual Imaging Techniques for Unstable Patients</strong></td>
<td>Reno Ballroom 2</td>
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<tr>
<td></td>
<td><strong>Exhibit Hall OPENS</strong></td>
<td>Reno Ballroom 1-5-6</td>
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<tr>
<td>8:00 am-9:00 am</td>
<td><strong>Beyond the Biopsy: Therapeutic and Interventional Ultrasound</strong></td>
<td>Reno Ballroom</td>
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<td></td>
<td><strong>MRI Protocol and Positioning</strong></td>
<td>Reno Ballroom 2</td>
</tr>
<tr>
<td>9:00 am-10:00 am</td>
<td><strong>Paradigm for Orthopaedic CT Interpretation</strong></td>
<td>Reno Ballroom</td>
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<td></td>
<td><strong>You See What You Think.</strong></td>
<td>Reno Ballroom 2</td>
</tr>
<tr>
<td>10:00 am-10:30 am</td>
<td><strong>Break &amp; Visit with Sponsors &amp; Exhibitors – Reno Ballroom 1-5-6</strong></td>
<td>Reno Ballroom 1-5-6</td>
</tr>
<tr>
<td>10:30 am-11:30 am</td>
<td><strong>Brain MRI Paradigm</strong></td>
<td>Reno Ballroom 2</td>
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<td></td>
<td><strong>The Technical Guide to CT</strong></td>
<td>Reno Ballroom 2</td>
</tr>
<tr>
<td>11:30 am-12:30 pm</td>
<td><strong>Interpretive Paradigm of Spinal Cord MRI in the Small Animal Patient</strong></td>
<td>Reno Ballroom 2</td>
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<tr>
<td></td>
<td><strong>Rads to the Rescue:</strong></td>
<td>Reno Ballroom 2</td>
</tr>
<tr>
<td>12:30 pm-2:00 pm</td>
<td><strong>LUNCH</strong></td>
<td></td>
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<tr>
<td>12:30 pm-1:45 pm</td>
<td><strong>Sponsored Lunch MedVet/VetRad</strong></td>
<td>Silver Baron D-E</td>
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## SCHEDULE

### Wednesday, October 19th

<table>
<thead>
<tr>
<th>Time PDT</th>
<th>General Session</th>
<th>Concurrent Session</th>
<th>Exhibit Hall</th>
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<tbody>
<tr>
<td></td>
<td>Reno Ballroom</td>
<td>Technician Room</td>
<td>Reno Ballroom 1-5-6</td>
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</tbody>
</table>
| 2:00 pm-3:00 pm   | Portosystemic Shunts for Radiologists: An Interventionalist’s Perspective  
                   Chick Weisse, VDM, DAVCS   | Q&A Session with Current AVTDI Members for Future Applicants |             |
| 3:00 pm-3:30 pm   | Break & Visit with Sponsors & Exhibitors - Reno Ballroom 1-5-6 |                   |             |
| 3:30 pm-4:30 pm   | Canine Tracheal Collapse Syndrome for the Radiologist: What We Weren’t Taught in Vet School  
                   Chick Weisse, VMD, DAVCS |                   |             |
|                   | 3:00 pm-3:30 pm | Break & Visit with Sponsors & Exhibitors - Reno Ballroom 1-5-6 |             |
| 5:00 pm-6:00 pm   | **Med Vet: ALL Resident Happy Hour**  
                   Ruth Chris Steakhouse at the Silver Legacy | **Technician Board Meeting**  
                   Silver C-D |             |
| 6:00 pm-8:00 pm   | **Honoring New & Established Diplomates Reception**  
                   **Silver Baron A-B** |                   |             |
| 8:00 pm-10:00 pm  | **VitalRad Happy Hour**  
                   Rum Bullions Island Bar at the Silver Legacy |                   |             |
<table>
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<tr>
<th>Time PDT</th>
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<tbody>
<tr>
<td>7:00 am-5:00 pm</td>
<td><strong>Reno Ballroom 3-4 &amp; Foyer</strong></td>
<td><strong>Reno Ballroom 2</strong></td>
<td><strong>Reno Ballroom 1-5-6</strong></td>
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<tr>
<td>7:00 am-8:00 am</td>
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<tr>
<td>8:00 am-9:00 am</td>
<td><strong>Implementation of Novel Imaging Techniques in Pancreatic Imaging</strong></td>
<td><strong>Welcome Announcements Planning Competition &amp; Plan Discussion</strong></td>
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<td><em>Abraham (Fourie) Bezuidenhout, MD</em></td>
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<tr>
<td>9:00 am-10:00 am</td>
<td><strong>The Future of Canine Musculoskeletal Diagnostics: One Reflection at A Time</strong></td>
<td><strong>Abstracts:</strong></td>
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<td></td>
<td><em>Debra Canapp, DVM, CVA, CCRT, DACVSMR</em></td>
<td>9:10-9:25 am:</td>
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<td></td>
<td></td>
<td>Claire Faletti</td>
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<td>9:25-9:40 am:</td>
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<td>Theodore Chang</td>
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<td>9:40-9:55 am:</td>
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<tr>
<td>10:00 am-10:30 am</td>
<td><strong>Break &amp; Visit with Sponsors &amp; Exhibitors – Reno Ballroom 1-5-6</strong></td>
<td><strong>Abstracts:</strong></td>
<td></td>
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<tr>
<td>10:00 am-10:30 am</td>
<td><strong>Meet the Poster Presenter</strong></td>
<td>10:40-10:55 am:</td>
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<tr>
<td></td>
<td><em>Reno Ballroom 1-5-6</em></td>
<td><strong>Abstracts:</strong></td>
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<tr>
<td>10:30 am-12:30 pm</td>
<td><strong>Image Interpretation</strong></td>
<td>10:55-11:10 am:</td>
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<tr>
<td></td>
<td><em>Moderator: Robson Giglio DVM, MS, PhD</em></td>
<td><strong>Abstracts:</strong></td>
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<td></td>
<td>*Panelists: Billhymer, DVM, DACVR; Eric Hostnik, DVM, MS, DACVR; Matthew Winter,</td>
<td>11:00-11:25 am:</td>
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<tr>
<td></td>
<td>DVM, DACVR; Benjamin Young, DVM, MS, DACVR*</td>
<td><strong>VRTOG Meeting</strong></td>
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<td><em>Consensus Statement</em></td>
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<td></td>
<td><em>Valerie Poirier</em></td>
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<td>11:30 am-12:30 pm</td>
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<tr>
<td>12:30 pm-1:45 pm</td>
<td><strong>RO Luncheon Sponsored by Varian</strong></td>
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<tr>
<td>12:30 pm-2:00 pm</td>
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# SCHEDULE

## Thursday, October 20th

<table>
<thead>
<tr>
<th>Time PDT</th>
<th>General Session</th>
<th>Concurrent Session Radiation Oncology</th>
<th>Exhibit Hall</th>
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<tbody>
<tr>
<td>2:00 pm-3:00 pm</td>
<td><strong>ICE: Intercultural Competency Expanded</strong></td>
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<td></td>
<td>Latonia Craig, EdD</td>
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<tr>
<td>3:00 pm-3:30 pm</td>
<td><strong>Break &amp; Visit with Sponsors &amp; Exhibitors – Reno Ballroom 1-5-6</strong></td>
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<tr>
<td>3:30 pm-4:30 pm</td>
<td><strong>Abstracts:</strong></td>
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<td></td>
<td>3:40-3:55 pm:</td>
<td>3:40-3:55 pm:</td>
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<tr>
<td></td>
<td>Lauren von Stade</td>
<td>Leanne Magstro</td>
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<td></td>
<td>3:55-4:10 pm:</td>
<td>3:55-4:10 pm:</td>
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<td></td>
<td>Danielle Tran</td>
<td>Melanie Moore</td>
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<td>4:10-4:25 pm:</td>
<td>4:10-4:25 pm:</td>
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<td></td>
<td>Emily Brand</td>
<td>Valerie Poirier</td>
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<td>4:25-4:40 pm:</td>
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<td>Jonathan Cohen</td>
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<tr>
<td>4:45 pm-5:45 pm</td>
<td><strong>EDI Business Meeting</strong></td>
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<td>(EDI Diplomates only)</td>
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<tr>
<td>4:30 pm-6:00 pm</td>
<td><strong>Exhibit Hall POWER HOUR – Reno Ballroom 1-5-6</strong></td>
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<tr>
<td>6:30 pm-9:00 pm</td>
<td><strong>Antech Sponsored Event</strong></td>
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<tr>
<td>9:00 pm-11:00 pm</td>
<td><strong>Vets Choice Radiology Cocktail Reception</strong></td>
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## Schedule

### Friday, October 21, 2022

<table>
<thead>
<tr>
<th>Time PDT</th>
<th>General Session</th>
<th>Concurrent Session</th>
<th>Exhibit Hall</th>
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</thead>
<tbody>
<tr>
<td>7:00 am-5:00 pm</td>
<td>Conference Registration - Reno Ballroom Salon</td>
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<tr>
<td>7:00 am-7:50 am</td>
<td>Nuclear Medicine Business Meeting</td>
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<tr>
<td>8:00 am-10:00 am</td>
<td>Principles of Successfully Developing and Deploying AI-based Clinical Tools in Veterinary Radiology&lt;br&gt;&lt;i&gt;Michael Fitzke, M.Sc.&lt;/i&gt;</td>
<td>Multimodality Treatment of Local, Locally Advanced, and Metastatic Human Sarcomas&lt;br&gt;&lt;i&gt;Robert J. Canter MD; Arta Monir Monjazeb, MD, PhD&lt;/i&gt;</td>
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<tr>
<td>9:00 am-10:00 am</td>
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<td>RO Business Meeting&lt;br&gt;(RO Diplomates only)</td>
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<tr>
<td>10:00 am-10:30 am</td>
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<td>BREAK</td>
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<tr>
<td>10:30 am-12:30 pm</td>
<td>Conference Keynote: Interventional Radiology for the Radiologist: Indications, Devices, Techniques, and Identifying Problems&lt;br&gt;&lt;i&gt;Chick Weisse, VMD, DAVCS&lt;/i&gt;</td>
<td>Multimodality Treatment of Local, Locally Advanced, and Metastatic Human Sarcomas&lt;br&gt;&lt;i&gt;Robert J. Canter MD; Arta Monir Monjazeb, MD, PhD&lt;/i&gt;</td>
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<tr>
<td>12:30 pm-2:00 pm</td>
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<td>LUNCH</td>
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<tr>
<td>2:00 pm-3:30 pm</td>
<td>Diagnostic Imaging of Zoological Species from a Zoo Clinician Perspective&lt;br&gt;&lt;i&gt;Matthew Kinney, DVM, DACZM&lt;/i&gt;</td>
<td>Managing Motion Radiotherapy&lt;br&gt;&lt;i&gt;Kim Selting DVM; Nathaniel Van Asselt, DVM, ACVR(RO)&lt;/i&gt;</td>
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<tr>
<td>3:30 pm-4:00 pm</td>
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<td>BREAK</td>
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<tr>
<td>4:00 pm-4:30 pm</td>
<td>IVRA Announcement&lt;br&gt;&lt;i&gt;Séamus Hoey, MVB, DACVR, DipECVDI, MRCVS&lt;/i&gt;&lt;br&gt;Historian Update&lt;br&gt;&lt;i&gt;Richard Park, DVM, PhD, DACVR&lt;/i&gt;</td>
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<td>4:30 pm-5:30 pm</td>
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<td>ACVR Business Meeting&lt;br&gt;(ACVR Diplomates Only)&lt;br&gt;Reno Ballroom 3-4 &amp; Foyer</td>
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<tr>
<td>6:00 pm-8:00 pm</td>
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<td>Meet the Residency Program Directors Shuffle&lt;br&gt;Reno Ballroom 1-5-6</td>
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## Saturday, October 22

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<thead>
<tr>
<th>Time PDT</th>
<th>General Session</th>
<th>Concurrent Session</th>
<th>Exhibit Hall</th>
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</thead>
<tbody>
<tr>
<td>7:00 am-1:00 pm</td>
<td><strong>Conference Registration</strong> – Reno Ballroom Salon</td>
<td><strong>Reno Ballroom 2</strong></td>
<td><strong>Reno Ballroom 1-5-6</strong></td>
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<td>7:00 am-7:50 am</td>
<td>LADIS Business Meeting</td>
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</table>
| 8:00 am-9:00 am| Radiologic-Pathologic Correlation: The Village Approach to Accurate Diagnostic Interpretations  
Julie Engiles, VMD, DACVP |                                     |                    |
| 9:00 am-10:00 am | Musculoskeletal PET in Horses & Dogs  
Mathieu Spriet, DVM, MS, DACVR | Tips for Student/Intern/Resident Research Projects  
Jeryl Jones, PhD, DVM, DACVR |                    |
| 10:00 am-10:30 am | **BREAK** |                                     |                    |
| 10:30 am-12:30 pm | **Abstracts:**  
10:40-10:55 am: Alessandra Hamlin  
10:55-11:10 am: Rachel Lee  
11:10-11:25 am: Jocelyn Witchel  
11:25-11:40 am: Elizabeth Acutt  
11:40-11:55 am: Mathieu Spriet  
11:55-12:10 pm: Lynn Griffin  
12:10-12:25 pm: Nicole Yang |                                     |                    |
| 12:30 pm-12:45 pm | **CLOSING REMARKS** |                                     |                    |
## General Session (Reno Ballroom 3-4-Foyer)

**Wednesday, October 19, 2022**

Times: PDT

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:00 am-5:00 pm</td>
<td>Conference Registration</td>
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<tr>
<td>7:00 am-5:00 pm</td>
<td>Exhibit Hall Open</td>
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<tr>
<td>7:00 am-8:00 am</td>
<td>CT MRI Society Business Meeting</td>
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<tr>
<td>8:00 am-9:00 am</td>
<td>Beyond the Biopsy: Therapeutic and Interventional Ultrasound</td>
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<td><em>Ryan King, DVM, DACVR</em></td>
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<td>9:00 am-10:00 am</td>
<td>Paradigm for Orthopaedic CT Interpretation</td>
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<td><em>Manuel Pinilla, Dr.Med.Vet., CertVDI, DipECVDI, MRCVS, RCVS</em></td>
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<tr>
<td>10:00 am-10:30 am</td>
<td>Break &amp; Visit with Sponsors and Exhibitors</td>
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<td>10:30 am-11:30 am</td>
<td>Brain MRI Paradigm</td>
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<td><em>Chiara Briola, DVM, MRCVS, Dipl.ECVDI</em></td>
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<tr>
<td>11:30 am-12:30 pm</td>
<td>Interpretive Paradigm of Spinal Cord MRI in the Small Animal Patient</td>
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<td><em>Séamus Hoey, MVB, DACVR, DipECVDI, MRCVS</em></td>
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<td>12:30 pm-2:00 pm</td>
<td>LUNCH</td>
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<tr>
<td>12:30 pm-2:00 pm</td>
<td>Lunch: Sponsored: MedVet/VetRad</td>
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<td>Silver Baron D&amp;E—RSVP required</td>
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<tr>
<td>2:00 pm-3:00 pm</td>
<td>Portosystemic Shunts for Radiologists: An Interventionalist’s Perspective</td>
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<td><em>Chick Weisse, VMD, DACVS</em></td>
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<td>3:00 pm-3:30 pm</td>
<td>Break &amp; Visit with Sponsors and Exhibitors</td>
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<tr>
<td>3:30 pm-4:30 pm</td>
<td>Canine Tracheal Collapse Syndrome of the Radiologist: What We Weren’t Taught in Vet School</td>
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<td><em>Chick Weisse, VMD, DACVS</em></td>
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<tr>
<td>4:30 pm-6:00 pm</td>
<td>MedVet: All Resident Happy Hour</td>
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<td>Ruth Chris Steakhouse—RSVP required</td>
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<td>5:00 pm-6:00 pm</td>
<td>Technician Member/Board Meeting</td>
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<td>Silver Baron C&amp;D</td>
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<tr>
<td>6:00 pm-8:00 pm</td>
<td>Honoring New and Established Diplomates Reception</td>
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<td>Silver Baron A&amp;B</td>
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<tr>
<td>8:00 pm-10:00 pm</td>
<td>VitalRad Happy Hour</td>
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## TECHNICIAN SCHEDULE: Concurrent Session (Reno Ballroom 2)

**Wednesday, October 19, 2022**

Times: PDT

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>8:00 am-9:00 am</td>
<td><strong>STAT! Emergency Non-Manual Imagining Techniques for Unstable Patients</strong>&lt;br&gt;<strong>Amy Cardwell, AA, AS, CVT, VTSDI</strong></td>
</tr>
<tr>
<td>9:00 am-10:00 am</td>
<td><strong>MRI Protocol and Positioning</strong>&lt;br&gt;<strong>Jamie Sage, DVM, DACVR</strong></td>
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<tr>
<td>10:00 am-10:30 am</td>
<td><strong>Break &amp; Visit with Sponsors and Exhibitors</strong></td>
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<tr>
<td>10:30 am-11:30 am</td>
<td><strong>You See What You Think. Maximize the information you discover and present while performing an abdominal ultrasound.</strong>&lt;br&gt;<strong>John A. Feleciano, DVM, DACVR</strong></td>
</tr>
<tr>
<td>11:30 am-12:00 pm</td>
<td><strong>The Technical Guide to CT</strong>&lt;br&gt;How to set up and run a CT scan. The process behind the images and choices you make to obtain the perfect scan every time.&lt;br&gt;<strong>Tony Pease, DVM, DACVR</strong></td>
</tr>
<tr>
<td>12:00 pm-2:00 pm</td>
<td><strong>LUNCH</strong></td>
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<tr>
<td>2:00 pm-3:00 pm</td>
<td><strong>Rads to the Rescue: Ways to use radiographs to help get our patients the best care possible.</strong>&lt;br&gt;<strong>Heidi Mast, CVT, VTSDI</strong></td>
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<tr>
<td>3:00 pm-3:30 pm</td>
<td><strong>Break &amp; Visit with Sponsors and Exhibitors</strong></td>
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<tr>
<td>3:30 pm-4:30 pm</td>
<td><strong>Q&amp;A Session with Current AVTDI Members for Future Applicants</strong></td>
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</table>
**PROGRAM AT A GLANCE**

**General Session (Reno Ballroom 3-4-Foyer)**  
**Thursday, October 20, 2022**  
Times: PDT

<table>
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<th>Time</th>
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<tbody>
<tr>
<td>7:00 am-5:00 pm</td>
<td>Conference Registration</td>
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<td>7:00 am-5:30 pm</td>
<td>Exhibit Hall Open</td>
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</table>
| 8:00 am-9:00 am | **CT MRI Keynote**  
*Implementation of Novel Imaging Techniques in Pancreatic Imaging*  
*Abraham (Fourie) Bezuidenhout, MD* |
| 9:00 am-10:00 am | **Ultrasound Keynote**  
*The Future of Canine Musculoskeletal Diagnostics: One Reflection at a Time*  
*Debra Canapp, DVM, CVA, CCRT, DACVSMR* |
| 10:00 am-10:30 am | Break & Visit with Sponsors and Exhibitors                        |
| 10:00 am-10:30 am | Digital Poster Viewing  
Comfort Lounge: Exhibit Hall                                      |
| 10:30 am-12:30 pm | **Image Interpretation Session**  
*Moderator: Robson Giglio, DVM, MS, PhD*  
*Panelists: Audrey Billhymer, DVM, DACVR; Erik Hostnik, DVM, MS, DACVR;*  
*Matthew Winter, DVM, DACVR; Benjamin Young, DVM, MS, DACVR* |
| 12:30 pm-2:00 pm | **LUNCH**                                                          |
| 2:00 pm-3:00 pm | **Diversity & Inclusion Keynote**  
*ICE: Intercultural Competency Expanded*  
*Lato Craig, EdD* |
| 3:00 pm-3:30 pm | Break & Visit with Sponsors and Exhibitors                        |
| 3:30 pm-4:45 pm | **Abstracts**  
*3:40 pm-3:55 pm: Computed Tomographic Evaluation of Pancreatic Perfusion in Dogs with Acute Pancreatitis — Lauren von Stade*  
*3:55 pm-4:10 pm: CT Features of Rounded Atelectasis in Cats and Dogs — Danielle Tran*  
*4:10 pm-4:25 pm: Ultrasonographic Appearance of Retained Surgical Sponges and Gauzes in the Acute Post-Operative Period: A Cadaveric Study — Emily Brand*  
*4:25 pm-4:40 pm: Veterinary Radiologic Error as Determined by Necropsy — Jonathan Cohen* |
| 4:30 pm-6:00 pm | **Exhibit Hall POWER HOUR** — Sponsored by Vets Choice Radiology   |
| 4:45 pm-5:45 pm | **EDI Business Meeting** — (EDI Diplomates only)                   |
| 6:30 pm-9:00 pm | **Antech** — Off Site Event-Upstairs at Greater Nevada Field       |
| 9:00 pm-11:00 pm | **Vets Choice Radiology Cocktail Reception** —  
Offsite at Whitney Peak Hotel Ballroom                            |
### RO Schedule: Concurrent Session (Reno Ballroom 2)

**Thursday, October 20, 2022**

Times: PDT

| 8:00 am-9:00 am | **Welcome**  
Planning Competition Award & Plan Discussion |
|----------------|-----------------------------------------------|
| 9:00 am-10:00 am | **Abstracts:**  
9:25 am-9:40 am: Clinical Outcome of Canine Apocrine Gland Anal Sac Adenocarcinoma Patients with Inoperable Metastatic Lymph Nodes Treated with Stereotactic Radiation Therapy, *Theodore Chang*  
| 10:00 am-10:30 am | Break & Visit with Sponsors and Exhibitors |
| 10:30 am-11:30 pm | **Abstracts:**  
10:40 am-10:55 am: Contouring in the Optic Plane Improves Accuracy of Computed Tomography-Based Segmentation of the Optic Pathway, *Eric Walther*  
10:55 am-11:10 am: CT & MRI Imaging in Radiation Therapy Planning of Imaging-Diagnosed Canine Intracranial Meningioma Achieves Better Tumor Coverage Than CT Alone, *Eric Walther*  
11:10 am-11:25 am: Outcomes of Stereotactic Radiation for Canine Intracranial Suspected Choroid Plexus Tumors and Ependymomas, *Katherine Hansen* |
| 11:30 am-12:30 pm | **VRTOG Meeting**  
*Valerie Poirier* |
| 12:30 pm-2:00 pm | **LUNCH- Varian Sponsored Luncheon** |
| 2:00 pm-3:00 pm | **Diversity & Inclusion Keynote**  
ICE: Intercultural Competency Expanded General Session |
| 3:00 pm-3:30 pm | Break & Visit with Sponsors and Exhibitors |
| 3:30 pm-4:30 pm | **Abstracts**  
3:40 pm-3:55 pm: Safety & Efficacy of Low-Dose Radiation Therapy for the Management of Feline Chronic Rhinitis, *Leanne Magestro*  
3:55 pm-4:10 pm: Evaluating a Stereotactic Body Radiation Therapy Protocol Based on EQD2 Dosimetry to Treat Nonresectable Hepatocellular Carcinomas in Dogs, *Melanie Moore*  
4:10 pm-4:25 pm: Split Protocol of RT and CCNU for Canine Non-Visceral Histiocytic Sarcoma, *Valerie Poirier* |
| 4:30 pm-6:00 pm | **Exhibit Hall POWER HOUR** |
**General Session (Reno Ballroom 3-4-Foyer)**
**Friday, October 21, 2022**
**Times: PDT**

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<td>Nuclear Medicine Society Business Meeting</td>
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| 8:00 am-10:00 am | **Artificial Intelligence Keynote**  
Principles of Successfully Developing and Deploying AI Based Clinical Tools in Veterinary Radiology  
*Michael Fitzke, M.Sc.* |
| 10:00 am-10:30 am| Break                                                                                      |
| 10:30 am-12:30 pm| **Conference Keynote**  
Interventional Radiology for the Radiologist: Indications, Devices, Techniques, and Identifying Problems  
*Chick Weisse, VMD, DACVS* |
| 12:30 pm-2:00 pm | LUNCH                                                                                      |
| 2:00 pm-3:30 pm  | **ZEWDIS Keynote**  
Diagnostic Imaging of Zoological Species From a Zoo Clinician Perspective  
*Matt Kinney, DVM, DACZM* |
| 3:30 pm-4:00 pm  | Break                                                                                      |
| 3:45 pm-4:00 pm  | **IVRA Announcement**  
*Séamus Hoey, MVB, DACVR, DipECVDI, MRCVS*                                                    |
| 4:00 pm-4:15 pm  | **ACVR History Presentation**  
*Richard Park, DVM, PhD, DACVR*                                                                 |
| 4:15 pm-5:15 pm  | **ACVR Business Meeting**—(Diplomates only)                                                |
| 5:30 pm-7:00 pm  | Meet the Residency Director Shuffle                                                         |
**RO Schedule: Concurrent Session (Reno Ballroom 2)**  
**Friday, October 21, 2022**  
**Times: PDT**

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<tr>
<td>9:00 am-10:00 am</td>
<td><strong>RO Business Meeting</strong>—(RO Diplomates only)</td>
</tr>
<tr>
<td>10:00 am-10:30 am</td>
<td>Break</td>
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</tbody>
</table>
| 10:30 am-12:30 pm| **RO Keynote**  
Multimodality Treatment of Local, Locally Advanced, and Metastatic Human Sarcomas  
*Robert J. Canter, MD*  
*Arta Monir Monjazeb, MD, PhD* |
| 12:30 pm-2:00 pm | LUNCH                                                                |
| 2:00 pm-3:30 pm  | **Managing Motion in Radiotherapy Lectures**  
*Nathaniel Van Asselt, DVM, ACVR(RO)*  
*Kim Selting, DVM, MS, DACVR-RO* |
# General Session (Reno Ballroom 3-4-Foyer)
**Saturday, October 22, 2022**
**Times:** PDT

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00 am-1:00 pm</td>
<td>Conference Registration</td>
</tr>
<tr>
<td>7:00 am-7:50 am</td>
<td>LADIS Business Meeting</td>
</tr>
<tr>
<td>8:00 am-9:00 am</td>
<td><strong>LADIS Keynote</strong>&lt;br&gt;<strong>Radiologic-Pathologic Correlation: The Village Approach to Accurate Diagnostic Interpretations</strong>&lt;br&gt;<em>Julie Engiles, VMD, DACVP</em></td>
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<tr>
<td>9:00 am-10:00 am</td>
<td><strong>Nuclear Medicine Keynote</strong>&lt;br&gt;<strong>Musculoskeletal PET in Horses &amp; Dogs</strong>&lt;br&gt;<em>Mathieu Spriet, DVM, MS, DACVR, DECVDI, DACVR-EDI</em></td>
</tr>
<tr>
<td>10:00 am-10:30 am</td>
<td>Break</td>
</tr>
<tr>
<td>10:30 am-12:30 pm</td>
<td><strong>Abstracts</strong>&lt;br&gt;10:40 am-10:55 am: Administration of Furosemide Slightly Increases Accuracy of Ureteral Ectopia Diagnosis and Improves Confidence in Excluding Ureteral Ectopia Using Ultrasonography—<em>Alessandra Hamlin</em>&lt;br&gt;10:55 am-11:10 am: Radiographic Features of Cardiogenic Pulmonary Edema in Dogs with Dilated Cardiomyopathy—<em>Rachel Lee</em>&lt;br&gt;11:10 am-11:25 am: Computed Tomographic Anatomy and Topography of the Lower Respiratory System of the Blanding’s Turtle (Emydoidea blandingii)—<em>Jocelyn Wichtel</em>&lt;br&gt;11:25 am-11:40 am: Contrast-Enhanced Computed Tomography to Validate Ultrasound-Guided Injection Technique of the Cranial Tibial Artery in Horses—<em>Elizabeth Acutt</em>&lt;br&gt;11:40 am-11:55 am: Comparison of 18F-NaF PET and Staging LowField MRI of the Racehorse Fetlock: Prospective—<em>Mathieu Spriet</em>&lt;br&gt;11:55 am-12:10 pm: Serial 18F-FDG PET/CT to Assess SBRT Treatment of Appendicular Osteosarcoma—<em>Lynn Griffin</em>&lt;br&gt;12:10 pm-12:25 pm: Dual Tracer 18F-NaF / 18F-FDG PET Protocol for Musculoskeletal Imaging in Dogs—<em>Nicole Yang</em></td>
</tr>
<tr>
<td>12:30 pm-12:45 pm</td>
<td>Closing Remarks</td>
</tr>
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</table>

# Concurrent Session (Reno Ballroom 2)
**Saturday, October 22, 2022**
**Times:** PDT

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<tr>
<td>9:00 am-10:00 am</td>
<td><strong>Tips for Student/Intern/Resident Research Projects</strong>&lt;br&gt;<em>Jeryl Jones, PhD, DVM, DACVR</em></td>
</tr>
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Abraham Fourie Bezuidenhout, MD
Staff Radiologist, Beth Israel Deaconess Medical Center - Harvard Medical School
CT MRI Keynote

Dr Fourie Bezuidenhout completed medical school training at the University of Pretoria in South Africa and subsequently graduated from Stellenbosch University as a Diagnostic Radiologist in 2015. He moved to Boston in the USA for fellowship training at Beth Israel Deaconess Medical Center and Harvard Medical School, where he completed 3 years of fellowship training in Cardiothoracic, Neuro- and Abdominal Radiology. During his final year of fellowship training, he fell in love with the pancreas and joined the abdominal radiology section at Beth Israel Deaconess Medical Center where he focuses his research endeavors on the pancreaticobiliary system. He is part of a larger multidisciplinary team of radiologists, pancreatologists, gastroenterologists, endoscopists, oncologists and surgeons who share a common goal of improving the dismal outcome of pancreatic cancer with a focus on imaging biomarkers in early detection of pancreatic cancer. As a radiologist he plays an integral role in advancing imaging techniques and pushing the scientific frontiers of radiology by employing novel imaging techniques to contribute to diagnostics to address the current unmet needs in pancreatic imaging.

Audrey Billhymer, DVM
Clinical Assistant Professor, University of Illinois College of Veterinary Medicine
Technician Presenter

Dr. Billhymer is a clinical assistant professor at the University of Illinois College of Veterinary Medicine. She attended University of Illinois for veterinary school prior to completing a rotating internship at Friendship Hospital for Animals in Washington, D.C. She completed a diagnostic imaging residency at the University of Florida in 2020. In her free time, Dr. Billhymer works on various home remodeling projects and spends time with her husband and daughter.
Chiara Briola, DVM, MRVCS, dipl.ECVDI
Veterinary Orthopedic and Sports Medicine group (VOSM)
Canapp Sports Medicine (CSM)
Ultrasound Keynote

She graduated from the University of Parma (Italy) in November 2008 with an experimental thesis on Magnetic Resonance Imaging of brain tumours in dogs. Her passion for MRI pushed her further in the diagnostic imaging path and in July 2010 she moved to the Ospedale Veterinario San Michele (Lodi, Italy) where she worked for three years under the supervision of Dr Martin Konar Dipl.ECVDI. Parallel to her job as a veterinarian she developed a huge interest in the applicative and technical aspects of magnetic resonance imaging and in 2012 she started to work as a veterinary MRI application specialist. In May 2013 she moved to Rome (Italy) where she worked for four years at Clinica Veterinaria Roma Sud. In September 2016 she moved to Padova (Italy) where she joined the imaging team of Clinica Veterinaria San Marco. At the end of November 2016, she started her diagnostic imaging residency, with an alternative program, at Cambridge Veterinary University under the supervision of Prof. Michael Herrtage and in June 2021 she became a European Specialist in Veterinary Radiology. Currently, she is working as a radiologist at The Ralph veterinary referral centre in the UK, she is a consultant for VetCT and she is still working as an MRI application specialist.
Debra Canapp, DVM, CVA, CCRT, DACVSMR  
Clinical Assistant Professor, University of Illinois College of Veterinary Medicine  
Technician Presenter

Dr. Debra Canapp began her journey in sports medicine and rehabilitation with her certification in canine rehabilitation through the Canine Rehabilitation Institute in Loxahatchee, Florida in 2005. She has since continued an exclusive career working in small animal sports and rehabilitation medicine. In order to expand the rehabilitative services offered to VOSM’s patients, Dr. Canapp became certified in the art of traditional Chinese veterinary medicine and acupuncture by the International Veterinary Acupuncture Society in 2006. In 2007 she further enhanced VOSM’s rehabilitative portfolio when she received her certification in stem cell therapy, a practice that has shown promise in returning our injured canine companions and athletes to their prior function. In 2010-2011, Dr. Canapp pursued studies and advanced training in diagnostic musculoskeletal ultrasound and is currently utilizing this tool, as a leader in the small animal field, diagnostically and therapeutically through ultrasound-guided regenerative medicine injections.

In 2012, Dr. Canapp obtained the next level of expertise in her field by becoming board certified in the new American College of Veterinary Sports Medicine and Rehabilitation. For the past 8 years, Dr. Canapp’s exclusive area of interest, clinical work, lecturing and research has revolved around sports medicine and rehabilitation therapy, specifically canine sports-related injury, sport rehabilitation and performance. She has completed advanced courses in canine rehabilitation, hydrotherapy, field by becoming board certified in the new American College of Veterinary Sports Medicine and Rehabilitation. For the past 8 years, Dr. Canapp's exclusive area of interest, clinical work, lecturing and research has revolved around sports medicine and rehabilitation therapy, specifically canine sports-related injury, sport rehabilitation and performance. She has completed advanced courses in canine rehabilitation, hydrotherapy, acupuncture, sports medicine, orthopedics and stem cell therapy.

Currently she is practicing sports medicine, acupuncture, musculoskeletal ultrasound and rehabilitation at VOSM. Dr. Canapp is active in teaching rehabilitation medicine to visiting veterinary students, rehabilitation therapy certification candidates, and veterinarians. She is also engaged in several clinical trials involving sports medicine and rehabilitation and reviews for scientific veterinary journals and grant committees. Dr. Canapp has been published and lectures on the subjects of osteoarthritis, sports medicine, regenerative medicine, musculoskeletal ultrasound and rehabilitation therapy at national and international continuing education meetings. Dr. Debra Canapp, along with her husband, Dr. Sherman Canapp, currently lecture both domestically and abroad on the subjects of orthopedic injuries in the sporting/working dog and the current rehabilitation techniques used to treat them.
Robert Canter, MD
Professor of Surgery, UC Davis School of Medicine
RO Keynote

Dr. Canter is a Professor of Surgery and Surgical Oncologist at the UC Davis School of Medicine. His clinical focus is the surgical management of soft tissue sarcoma in people, and he runs a laboratory dedicated to the study of natural killer cell immunotherapy for sarcomas in both dogs and people.

Amy Cardwell, CVT, VTS(DI)
Radiology Veterinary Technician/Radiology Department Manager,
Ocean State Veterinary Specialists
Technician Presenter

Amy Cardwell, CVT, VTS(DI) graduated from Saint Petersburg's veterinary technology program in 1988. She worked in general practices with small animal, exotics and mixed animal from 1981 until she joined the Diagnostic Imaging Department at the University of Florida Veterinary Medical Teaching Hospital in 1990 with primary duties included performing radiography of small, large and exotic patients, fluoroscopic studies and nuclear medicine studies. She left in 2000, to join the Ocean State Veterinary Specialists practice. She is the Radiology Department Manager and the lead Radiology Technician. Her duties include radiography of small animal, performing Radiographs of small animal, exotic patients and small farm animals. Perform radiographic contrast studies and computed tomography studies. Care of radioactive iodine patients. Maintenance of paperwork required for x-ray license and radioactive materials license. Training hospital personnel (Technicians and Tech Assistants) in radiation safety and non-manual positioning techniques for radiographs. Assist the radiologist with ultrasound studies and training of interns and Residents.
Latonia Craig, EdD  
*Chief Diversity, Equity, and Inclusion Officer at the American Veterinary Medical Association, American Veterinary Medical Association (AVMA)*  
*Diversity & Inclusion Keynote*

Dr. Latonia Craig has recently been named the Inaugural Chief Diversity, Equity, and Inclusion Officer for the American Veterinary Medical Association (AVMA). Prior to this appointment, Dr. Craig led the Office of Diversity, Equity, and Inclusion at Purdue University's College of Veterinary Medicine. She has devoted most of her career to providing educational programs in social change and changing the conversation from diversity and inclusion to inclusive excellence. As Assistant Dean for Inclusive Excellence, she led the development of programming and initiatives, modeling innovative practices that introduce diversity into the College of Veterinary Medicine's systems, structure, and culture. Dr. Craig's work has focused on recruiting and retaining underrepresented students with intentionality by transitioning them from undergraduate to graduate school and attaining terminal degrees through her award-winning Vet Up! and “Check-in-and Connect” programs. Under Dr. Craig's leadership, Purdue University College of Veterinary Medicine is ranked by Insight to Diversity Magazine's Top College for Diversity and was recently named a Diversity Champion—the first distinction ever given to a Veterinary school.

Dr. Craig has been featured on the cover of Today's Woman Magazine and selected as a Top Forty Under 40 in Louisville Business First Magazine. She received a bachelor's degree in Political Science and a Master's degree in Pan-African Studies from the University of Louisville, a Master's degree in Educational Leadership from the University of Cincinnati, and her Doctorate in Leadership Education from Spalding University.

Julie Engiles, VMD, DACVP  
*Associate Professor of Pathology, University of Pennsylvania, School of Veterinary Medicine- New Bolton Center*  
*LADIS Keynote*

Julie Engiles is a board-certified veterinary anatomic pathologist from the University of Pennsylvania, School of Veterinary Medicine (PennVet). After receiving her VMD from PennVet in 2002 she completed a Surgical Internship (NJ Equine Clinic, 2003), followed by an Anatomic Pathology Residency (PennVet, 2006). Since her faculty appointment (PennVet, 2007), she has provided autopsy and biopsy services for New Bolton Center’s hospital and the Pennsylvania Animal Diagnostic Laboratory System (PADLS), where she employs a multi-disciplinary approach to pathology that correlates gross and histologic lesions with clinical and radiologic manifestations to improve diagnostic and prognostic accuracy and expand understanding of disease pathogenesis. Her expertise includes equine pathology and orthopedic pathology, including equine laminitis and translational animal models of musculoskeletal disease.
John Feleciano, DVM, DACVR
Director of Next Generation Technologies, Mars Inc.
Artificial Intelligence Keynote

Dr. Fitzke received a Bachelor's and Master's degree in mathematics from Technical University Darmstadt. He's been working in different data science roles building and deploying models e.g. forecasting systems in the Finance Industry or Quality Assessment models in Food. He taught Large Scale Machine Learning as a lecturer and joined Mars in 2016 where he lead the development of AI based product development and research.ing the use of veterinary technicians in diagnostic imaging.

Michael Fitzke, M.Sc.
Director of Next Generation Technologies, Mars Inc.
Artificial Intelligence Keynote

Dr. Fitzke received a Bachelor's and Master's degree in mathematics from Technical University Darmstadt. He's been working in different data science roles building and deploying models e.g. forecasting systems in the Finance Industry or Quality Assessment models in Food. He taught Large Scale Machine Learning as a lecturer and joined Mars in 2016 where he lead the development of AI based product development and research.

Séamus Hoey, MVB
Assistant Professor in Veterinary Diagnostic Imaging, University College Dublin, VetCT FORUM

Séamus Hoey is an American and European board certified veterinary radiologist. He is a consultant with VetCT and an assistant professor at the Veterinary School in Dublin. Séamus graduated from Dublin, did his joint ACVR and DipECVDI residency at the University of Wisconsin before taking a lecturer position at the University of Zürich. Since 2016 he has been at the Dublin Veterinary School and VetCT. He enjoys imaging of all species from horses to lizards and all in between, particularly musculoskeletal imaging and neuroimaging.
**Jeryl Jones, PhD, DVM, DACVR**  
*Professor, Animal & Veterinary Sciences, Clemson University*  
*VRU Keynote*

Dr. Jones is a veterinary radiologist and professor in the department of Animal and Veterinary Sciences at Clemson University. She moved to Clemson in the spring of 2015 from West Virginia University's Animal and Nutritional Sciences Division in Morgantown, WV. Dr. Jones completed her undergraduate degree in Pre-Professional Studies, Zoology from Clemson University. During her time at Clemson she worked as a research assistant for several projects and developed an interest in research. She went on to earn her Doctor of Veterinary Medicine (DVM) degree from the University of Georgia. Upon completing veterinary school, Dr. Jones worked in private veterinary practices in Syracuse, NY; Aiken, SC; and Barnwell, SC.

After 7 years in private practice, she entered a residency program at Auburn University to become a board-certified veterinary radiologist. During her residency program, she rediscovered her interest in research and went on to earn a Doctor of Philosophy degree in Biomedical Studies from Auburn University. Her research currently focuses on diagnostic imaging applications in natural animal and experimental animal models. Dr. Jones maintains connections with the Small Animal Clinical Sciences Department at the Virginia-Maryland College of Veterinary Medicine as an Adjunct Professor. Her role as the Editor-in-Chief of the scientific journal, Veterinary Radiology & Ultrasound, allows her to stay current in the field of veterinary radiology and provide valuable insights into scientific writing for students. Dr. Jones enjoys hiking; bird watching; traveling; and spending family time with her husband Bob, and dog Ellie.
Ryan King, DVM, DACVR
Radiologist, Tufts Veterinary Emergency Treatment and Specialties VetCT FORUM

Dr. King completed his radiology residency at Tufts Cummings School of Veterinary Medicine in 2006 and stayed on at Tufts both at the N. Grafton campus (teaching, and faculty radiologist) and the Tufts Walpole practice (staff radiologist). Dr. King has been an invited lecturer at the Veterinary Orthopedic society for the last 5 years and has authored multiple articles on musculoskeletal imaging.

Matthew Kinney, DVM, DACZM
Senior Veterinarian, San Diego Zoo Wildlife Alliance
ZEWDIS Keynote

Matthew E. Kinney is a senior veterinarian at the San Diego Zoo Wildlife Alliance where he provides medical and surgical care to animals at the San Diego Zoo Safari Park. He is a 2010 graduate from the University of Wisconsin and completed a residency in zoological medicine through a combined UC-Davis/San Diego Zoo Wildlife Alliance program in 2014. He has been practicing at the San Diego Zoo Safari Park since 2016 and his clinical interests include; field immobilizations, mega-vertebrate anesthesia, minimally invasive surgery, advanced imaging, and anything related to pelicans. In addition to his clinical responsibilities, he is on the American Association of Zoo Veterinarians scientific program committee, a member of the San Diego Zoo Wildlife Alliance diversity, equity, and inclusion committee, and the veterinary advisor for a number of species survival plans. He has a strong interest in mentorship and identifying barriers to entry into the field of zoological medicine and providing solutions to address these challenges. He led the effort to integrate cross-sectional imaging into practice at the San Diego Zoo Wildlife Alliance and has an ever-increasing interest in advancing the use of computed tomography in zoological medicine.
Arta Monir Monjazeb, MD, PhD  
Professor of Radiation Oncology, UC Davis Health  
RO Keynote

I am a clinician scientist in radiation oncology leading the clinical care of patients, a high-powered basic science research enterprise, and cutting-edge human clinical trials. In the clinic I specialize in the treatment of gastrointestinal malignancies and sarcomas. I hold national leadership positions and have published extensively on the management of these diseases. My research has two major themes. The first focuses on understanding mechanisms of resistance to cancer immunotherapy and exploring combinatorial strategies, including combined radiotherapy and immunotherapy, to overcome resistance. The second is understanding how aging and obesity affects inflammation and immunity in the context of cancer development, progression, and therapy. My research is truly translational in nature spanning from basic mechanistic studies to murine models to large animal companion canine clinical trials and human clinical trials. I am uniquely trained for this line of research with an honors thesis in immunology at the University of California, Berkeley, a PhD in Cancer Biology and Inflammation, a Holman pathway research fellowship in cancer immunology, board certification as a radiation oncologist, and training through the UC Davis K12 program in translational cancer immunotherapy. I have been asked to serve in leadership roles in cancer immunotherapy on an institutional and national level including leading the clinical immunotherapy efforts for the UC Davis Comprehensive Cancer Center, appointments to the CTEP Clinical Trial Design and Immuno-oncology Agent Working Group, the NCI PD-L1 development project team, and the NCI NRG oncology immunotherapy / immunomodulation committee. I have designed, initiated, and served as principal investigator for a number of novel institutional clinical trials testing combinatorial immunotherapy strategies as well as national multi-institutional clinical trials through the ETCTN and SWOG/NRG.

Heidi Mast, CVT, VTS(DI)  
Technician Supervisor, Treasure Valley Veterinary Hospital  
Technician Presenter

Heidi Mast is a Certified Veterinary Technician in the state of Idaho with a technician specialty in diagnostic imaging. She has been working in veterinary medicine for over 10 years and can't imagine doing anything else. Currently she is working at Idaho Veterinary Hospital in Nampa, ID. Heidi loves doing ultrasounds and helping find the answers with all different types of imaging for animals of all species and sizes. She was born and raised in Idaho and is now raising her two kids there with her husband. They currently have what they call “The Mast Family Farm” – chickens, dogs, cats, horses, and goats. Golden Retrievers are Heidi's favorite animal, and she plans on always having at least one in her family at all times!
**Tony Pease, DVM, MS, DACVR**  
*Chief Veterinary Medical Office, Viticus Group*  
*Technician Presenter*

I graduated from Virginia-Maryland Regional College of Veterinary Medicine. Then, after completed an equine internship at the Marion DuPont Scott Equine Medical Center in Virginia and a small animal internship at Affiliated Veterinary Specialists in Florida, I completed a diagnostic imaging residency at Cornell University. I became board certified by the American College of Veterinary Radiology (ACVR) and served as an assistant professor at North Carolina State University and a tenured Associate Professor at Michigan State University. I am a former President of ACVR, and currently their Director of Continuing Education for the ACVR. I currently serve as the Chief Veterinary Medical Officer for the Viticus Group (formerly known as WVC), which has 140,000 square feet of dedicated space used for continuing education of physicians and veterinarians. I lecture extensively on diagnostic imaging in small and large animal as well as supervising hands-on laboratories on small animal and equine imaging.

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**Manuel Pinilla, DVM, CertVDI, DipECVDI, MRVCS**  
*Senior Radiologist, VetCT*  
*FORUM*

Manuel studied veterinary medicine at Zaragoza, Spain and Lyon, France, graduating in 2002. He completed a small animal rotating internship at the university of Lyon followed by four years of work in general practice. He completed a residency in diagnostic imaging at University College Dublin in 2009 when he gained the European College of Veterinary Diagnostic Imaging Diploma. He has worked as a radiologist at Murdoch University in Australia, Queen's Veterinary Hospital in Cambridge, University College Dublin. More recently he was dividing his time between Davies Veterinary Specialists in Hertfordshire and an ultrasound/radiology service for first opinion and referral practitioners across Ireland.
Jamie Sage, DVM, DACVR
Chief Radiologist, Sage Veterinary Imaging/MRI Vets
Technician Presenter

Dr. Sage was born and raised in Round Rock, and received her veterinary training at Texas A&M. After completing a radiology residency, she received further training as an MRI specialist with Patrick Gavin, PhD, DACVR/RO who wrote the definitive textbook on the subject and is often cited as one of the early pioneers of Veterinary MRI. Dr. Sage is president of the CT/MRI society of the American College of Veterinary Radiology.

Dr. Sage has issued over 40,000 MRI reports over the past seventeen years and is frequently invited to lecture on the subject at meetings and conferences worldwide. Sage Veterinary Imaging currently has two outpatient imaging centers featuring 3T MRI, 128-slice CT, nuclear scintigraphy, ultrasound, neurosurgery services, in addition to an ACVR-accredited Radiology residency program and a Diagnostic Imaging Internship program.

Kim Selting, DVM, MS
Associate Professor, University of Illinois
RO-State of the Art Presenter

A native of Colorado, Dr. Kim Selting completed her undergraduate and veterinary studies at Colorado State University (CSU). Following a one year rotating small animal internship in medicine and surgery at the Animal Medical Center in New York City, she spent 4 years in private practice in St. Louis, MO. She then returned to the CSU Animal Cancer Center for a residency to become board-certified by the American College of Veterinary Internal Medicine in the specialty of medical Oncology. Dr. Selting then joined the faculty at the University of Missouri from 2002-2017. In 2013, she completed a modified residency in Radiation Oncology and achieved board certification by the American College of Veterinary Radiology.

In July 2017, Dr. Selting accepted a position as Associate Professor at the University of Illinois to develop a radiation oncology program. Current research interests include biomarkers of cancer and of chemotherapy toxicity, novel anticancer drugs, and effects of radiation on the tumor microenvironment. Dr. Selting is the immediate Past President of the Veterinary Cancer Society (VCS), the past President of the Veterinary Cooperative Oncology Group and past member-at-large for VCS, and past Chair of the American College of Veterinary Internal Medicine (ACVIM) Oncology Certifying Examination Committee. Dr. Selting currently serves as a Member-At-Large for the American College of Veterinary Radiology (Radiation Oncology subspecialty, ACVR-RO) and is on the examination committee for ACVR-RO.
Mathieu Spriet, DVM, MS, DACVR
Professor of Diagnostic Imaging, School of Veterinary Medicine
University of California, Davis
Nuclear Medicine Keynote

Dr. Mathieu Spriet is a Professor of Diagnostic Imaging at the School of Veterinary Medicine at the University of California, Davis. He obtained his DVM degree from the National Veterinary School of Lyon (France) in 2002 and a Master Degree from the University of Montreal (Canada) in 2004. He has been a diplomate of both the American College of Veterinary Radiology and the European College of Veterinary Diagnostic Imaging since 2007, after completing his radiology residency at the University of Pennsylvania. Dr Spriet joined UC Davis as a faculty member in 2007. He became a diplomate of the newly created ACVR- Equine Diagnostic Imaging specialty in 2019. He has over 65 peer-reviewed publications and is a frequent speaker at national and international conferences. His main area of interest is equine musculoskeletal imaging. He has recently pioneered the use of positron emission tomography in horses, leading to the development of a scanner specifically designed to image standing horses.

Nathaniel Van Asselt, DVM, ACVR(RO)
Clinical Assistant Professor, University of Wisconsin School of Veterinary Medicine
RO-State of the Art Presenter

After earning his DVM at St. George's University School of Veterinary Medicine in Grenada, Dr. Van Asselt completed a rotating internship at VCA Aurora in the Chicago suburbs. He completed is radiation oncology residency at University of Wisconsin-Madison and has since stayed on as a clinical assistant at the university. Dr. Van Asselt’s main area of research is motion management using the real-time predictive motion management platform Synchrony.
Chick Weisse, VMD, DACVS
Staff Surgeon, Director of Interventional Radiology Service, Animal Medical Center
FORUM; Conference Keynote

Chick Weisse, VMD, DACVS completed his small animal surgical residency training at the Veterinary Hospital of the University of Pennsylvania in 2002 and then pursued advanced training through a customized fellowship in Interventional Radiology at the (human) Hospital of the University of Pennsylvania in 2003. He held dual appointments in surgery and radiology as an Assistant Professor at both the veterinary and human hospitals, respectively (Univ. of Pennsylvania) before coming to the Animal Medical Center in New York City in 2009 as staff surgeon and Director of Interventional Radiology Services. Educational interests include expanding minimally-invasive veterinary interventional radiology (IR) techniques through describing new procedures and training veterinarians. Research interests include IR techniques for non-resectable and metastatic cancers, palliative stenting for malignant obstructions, vascular anomalies such as portosystemic shunts and AVMs, and stenting for tracheal collapse.

Matthew Winter, DVM, DACVR
Chief Veterinary Medical Officer, VetCT Clinical Associate Professor, University of Florida
Veterinary Consultants in Telemedicine University of Florida College of Veterinary Medicine
Image Interpretation

Dr. Matthew Winter is a diplomate of the American College of Veterinary Radiology. Matt graduated from the Cornell University College of Veterinary Medicine in 1998. After 3 years of dairy, equine and small animal practice, he completed a residency in Diagnostic Imaging at the Cummings School of Veterinary Medicine at Tufts University. As faculty at the Iowa State University (2004-2007) and the University of Florida (2007-present), Matt has a demonstrated passion for teaching and for veterinary education. He won the Gentle Doctor Award at Iowa State, the Superior Accomplishment Award at the University of Florida where he also served as medical director, and numerous teaching awards for basic science and clinical instruction. From 2016-17, he served as the Executive Vice President of Veterinary Education at the North American Veterinary Community (NAVC). Matt is currently the Chief Veterinary Medical Officer for Veterinary Consultants in Telemedicine, a global teleradiology and telemedicine company, and continues to serve as Clinical Associate Professor of Diagnostic Imaging at the University of Florida College of Veterinary Medicine. Matt lives in Florida with his amazing wife Brandy, his intermittently amazing kids Mia and Damian, and his troublesome dogs, Marvin (the Martian) and Wookiee.
Benjamin Young, DVM, MS  
Radiologist, VCA Alameda East Veterinary Hospital  
Image Interpretation  

Dr. Young completed his Bachelor’s degree, Doctor of Veterinary Medicine degree, and an internship at Colorado State University. Following two additional years as a lecturer at CSU, he then completed a residency in radiology and Master’s degree at the Ohio State University. Dr. Young then joined the radiology faculty at Texas A&M University in 2006. He served as the section Chief of radiology there from 2009-2014. Dr. Young has been a staff radiologist at VCA Alameda East Veterinary Hospital in Denver since 2014. His special research interests centered on MRI of the dog brain and spine.
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BRONZE

- bluepearl
  specialty + emergency pet hospital
<table>
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<tr>
<th>Welcome Reception</th>
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<td><strong>AIS</strong> ANTECH IMAGING SERVICES</td>
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<tr>
<th>Specialty Coffee Cart</th>
<th>Nuclear Medicine Keynote &amp; LADIS Keynote</th>
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<tbody>
<tr>
<td>IDEXX Telemedicine Consultants</td>
<td><strong>LONG MILE</strong> Veterinary PET Imaging</td>
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<td><strong>MEDVET</strong> Leading Specialty Healthcare for Pets</td>
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<tr>
<th>Refreshment Break &amp; Specialty Dessert</th>
<th>Radiation Oncology Luncheon Sponsor</th>
<th>Meet the Residency Directors Shuffle</th>
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<td><strong>varian</strong> A Siemens Healthineers Company</td>
<td><strong>VETERINARY EMERGENCY GROUP</strong></td>
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<th>Comfort Lounge</th>
<th>Exhibit Hall Power Hour</th>
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<td><strong>vca animal hospitals</strong></td>
<td><strong>VIN</strong></td>
<td><strong>VetsChoice RADIOLOGY</strong></td>
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Antech Imaging Services
17620 Mt. Herrmann Street
Fountain Valley, CA 92708
https://antechimagingservices.com/antechweb/

Services
Booth # 215

Antech Imaging Services (AIS) provides telemedicine services to clinics around the world, with more than 150 specialists. AIS also partners with private clinics and Universities in the US and Europe to sponsor more than 40 residents.

Asteris
7405 Rte Transcanadienne #100
Saint-Laurent, Quebec H4T 1Z2
Canada
https://www.asteris.com/

Services
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Tampa, FL 33614
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Specialty & Emergency Services/Pet Hospitals
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Equipment
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Equipment
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https://www.elekta.com/

Equipment
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http://longmilevet.com

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Los Angeles, CA 90065
https://laaser.vet/

Recruiting
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Worthington, OH 43085
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https://mie-scintron.com/

Equipment
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https://www.mxrimaging.com/

Equipment
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Recruiting
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https://www.sageveterinary.com/  

**Services**  
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Danvers, MA 1923
https://www.samsunghealthcare.com

Equipment
Booth # 103

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Carlsbad, CA 92010
https://soundvet.com/

Equipment
Booth # 109

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Recruiting
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Charlottetown, Prince Edward Island  
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**Recruiting**
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**Equipment**
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https://www.varian.com/products/veterinary-oncology#vetontreatmentdelivery

Equipment
Booth # 207

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VCA Animal Hospitals
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Los Angeles, CA 90064
https://vcahospitals.com/

Recruiting
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VCA is taking care of the future of veterinary medicine. We are determined to positively impact pets, people, and our communities. #lifeatvca

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Imaging, veterinary orthopedic products, education
Booth # 306

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https://www.vetrocket.com/

Services
Booth # 309

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Cambridge, CB3 0FA
United Kingdom
https://www.vet-ct.com/gb/

Recruiting
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https://www.veteldiagnostics.com/

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Davis, CA 95616
https://www.vin.com/vin/

Services
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https://vetology.ai/

Services
Booth # 414

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Worthington, OH 43085
https://www.vet-rad.com/

Recruiting
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Vets Choice Radiology
3000 DUNDEE RD, Ste 207
Northbrook, IL 60062
https://www.vetschoiceradiology.com/

Services
Booth # 102

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Austin, TX 78701
https://vitalrads.com/

Services
Booth # 115

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2333 Waukegan Road, Suite 245
Bannockburn, IL 60015
https://petcureoncology.com/

Services

PetCure Oncology manages a national network of radiation therapy treatment centers that has treated over 6,000 pets since 2015. All 8 locations feature radiation oncology departments overseen by a PCO affiliated board-certified radiation oncologist with access to medical oncology and other cancer supporting services on site. PetCure Oncology's backbone is the PROS (PetCure Radiation Oncology Specialists) team, a group of 13 veterinary oncologists with additional board certifications in internal medicine and nutrition.
Computed Tomographic Evaluation of Pancreatic Perfusion in Dogs with Acute Pancreatitis

Presenting Author: Lauren von Stade, DVM - Colorado State University
Co-Author: Angela J. Marolf, DVM, DACVR - Colorado State University
Co-Author: Sangeeta Rao, BVSc, MVSc, Ph.D. - Colorado State University

Abstract: Severe canine acute pancreatitis can be fatal; imaging features that can predict the clinical course of disease are useful for clinicians. On computed tomography (CT), heterogeneous contrast enhancement and portal vein thrombosis have been correlated with poorer outcome. Perfusion CT is used in people to evaluate the pancreatic microcirculation to predict the future development of severe sequela to pancreatitis, but this technology has not yet been explored in dogs with acute pancreatitis. The objective of this study is to evaluate pancreatic perfusion using contrast-enhanced CT in dogs with acute pancreatitis and compare to previously established values obtained in healthy dogs. Ten client-owned dogs preliminarily diagnosed with acute pancreatitis received an abdominal ultrasound, spec cPL, and perfusion CT. Computer software calculated perfusion, peak enhancement index, time to peak enhancement, and blood volume for both 3-mm and reformatted 6-mm slices. Values for 3-mm slices were not significantly different to those of 6-mm slices (p >0.05). Dogs with acute pancreatitis had overall higher perfusion, faster time to peak enhancement, and greater blood volume than healthy dogs. Dogs with acute pancreatitis and homogeneous pancreatic enhancement had significantly higher perfusion, lower time to peak enhancement, and higher blood volume compared to healthy dogs and dogs with acute pancreatitis and heterogeneous pancreatic enhancement (p=/< 0.05). Pancreatic perfusion decreased with severity of pancreatitis indicating perfusion deficits. No correlation was identified between spec cPL values and any of the pancreatic perfusion values (p >0.05). These findings preliminarily support the use of perfusion CT in dogs with acute pancreatitis.
Computed Tomography Features of Rounded Atelectasis in Chronic Inflammatory Pleural Effusions in Cats and Dogs

Presenting Author: Danielle T. Tran, DVM - The Schwarzman Animal Medical Center

Co-Author: Taryn A. Donovan, DVM, DACVP - The Schwarzman Animal Medical Center

Co-Author: Alexandre B. Le Roux, DVM, MS, DECVDI, DACVR - The Schwarzman Animal Medical Center

Abstract: Rounded atelectasis is well described in human medicine as focal lung deformation and collapse secondary to inflammatory pleural effusion and pleuritis. Specific computed tomography (CT) features (round to ovoid soft tissue nodular attenuations within the pulmonary parenchyma that abut and create an acute angle with the visceral pleura and have perinodular comet tail signs) support the diagnosis of rounded atelectasis in humans so that further diagnostic workup is not necessary in defining the nodules. In this retrospective case series, we described the CT characteristics of rounded atelectasis in 8 cats and 3 dogs diagnosed with restrictive pleuritis secondary to either chylothorax or pyothorax. Thirty-six soft tissue attenuating pulmonary nodular lesions were identified on CT. Comet tail signs, consisting of bundles of bronchi and vessels coalescing into the pulmonary nodules, were associated with 92% of the nodules (33/36), and 92% of the nodules abutted and created an acute angle with the adjacent pleura (33/36). Other prevalent features included location in gravity-dependent regions of the lung lobes (33/36, 92%), blurred hilar margins with sharper pleural margins of the nodules (33/36, 92%), presence of air bronchograms (30/36, 83%), homogeneous contrast-enhancement (23/36, 64%), and volume loss of the affected lung lobe (22/36, 61%). Pulmonary neoplasms were not found cytologically (6/11 patients) or histologically (5/11 patients). To avoid a misdiagnosis of neoplasia, veterinary radiologists should be aware of the CT features of rounded atelectasis and consider it as a differential for pulmonary nodular lesions in patients with concurrent inflammatory pleural effusion and pleuritis.
Ultrasonographic Appearance of Retained Surgical Sponges and Gauzes in the Acute Post-operative Period: A Cadaveric Study

**Presenting Author:** Emily M. Brand, DVM, MS, DACVR, DipECVDI - Animal Emergency and Specialty Center

**Co-Author:** Kenneth Brand, DVM, MS, DACVS-SA - Animal Emergency and Specialty Center

**Co-Author:** Jessica Ogden, DVM, DACVS-SA - Purdue University

**Co-Author:** Chee Kin Lim, DVM, BVSc(Hons), MMedVet (Diag Im), FMCVS (Vet Imaging), DipECVDI - VetCT

**Co-Author:** Hock Gan Heng, DACVR, DipECVDI - VetCT

**Abstract: Purpose:** To describe the previously uncharacterized ultrasonographic appearance of retained surgical sponges and gauzes following exploratory laparotomy in an acute post-operative period (24-48 hours) model.

**Methods:** The cadavers were sourced from an exploratory laparotomy teaching laboratory. Three types of gauzes and sponges were evaluated: woven gauze with a radiopaque marker (radiopaque gauze), a woven gauze with no marker (non-radiopaque gauze), and a laparotomy sponge with a radiopaque marker (radiopaque sponge). A total of 23 gauzes and sponges were placed within the peritoneal cavity of 20 cadavers in one of three randomized locations during the laboratory. The cadavers were imaged with ultrasonography 17 hours later; still images and video clips were retrospectively reviewed.

**Results:** All (23/23, 100%) of the retained surgical sponges and gauzes displayed a single hyperechoic layer of variable thickness and distal acoustic shadowing. In 95.6% (22/23) retained sponges and gauzes, there was an additional thin hypoechoic layer noted superficially to the hyperechoic layer.

**Discussion:** Ultrasonography is frequently selected as an abdominal imaging modality in post-operative patients and not all veterinary practitioners utilize sponges and gauzes with markers which could be identified radiographically. Knowledge of the ultrasonographic appearance of retained sponges or gauzes in the acute post-operative period may assist in the identification of these objects.
Administration of Furosemide Slightly Increases Accuracy of Ureteral Ectopia Diagnosis and Improves Confidence in Excluding Ureteral Ectopia Using Ultrasonography

Presenting Author: Alessandra N. Hamlin, DVM - North Carolina State University
Co-Author: Gabriela Seiler, Dr. Med. Vet., DECVDI, DACVR - North Carolina State University
Co-Author: Eli B. Cohen, DVM, DACVR - North Carolina State University
Co-Author: Allison Kendall, DVM, MS, DACVIM - North Carolina State University
Co-Author: Shelly Vaden, DVM, PhD, DACVIM - North Carolina State University

Abstract: Ultrasonography is frequently used in patients with urinary incontinence to exclude ureteral ectopia. Furosemide is often administered, as it improves ultrasonographic ureteral jet visibility. This prospective study evaluated whether furosemide administration increases accuracy and confidence in diagnosing ureteral ectopia ultrasonographically, and if low urine specific gravity decreases furosemide efficacy in increasing ureteral jet visibility ultrasonographically. Ultrasound was performed in 30 dogs (59 ureters) with urinary incontinence, and six dogs with hyposthenuria or isosthenuria. The presence of ureteral ectopia and degree of confidence of diagnosis were recorded before and after furosemide administration. Pre-furosemide, 22/59 (37%) ureters were diagnosed as ectopic and 36/59 (61%) as orthotopic. Post-furosemide, 21/59 (36%) ureters were diagnosed as ectopic and 38/59 (64%) as orthotopic. Of 21 ureters diagnosed as ectopic on ultrasound, administration of furosemide did not change degree of confidence in 11/21 (52%), and increased confidence in 10/21 (37%). Of 38 ureters diagnosed orthotopic on ultrasound, furosemide did not change degree of confidence in 20/38 (53%), increased confidence in 17/38 (45%), and reduced confidence in 1/38 (2%). Sensitivity, specificity, and accuracy of ultrasound pre-furosemide were 86.3%, 91.7%, and 89.7%, and post-furosemide 90.9%, 97.3%, and 95%, respectively. Urine specific gravity as low as 1.006 did not reduce ureteral jet visibility ultrasonographically. This study demonstrates that furosemide administration slightly increases accuracy of ectopic ureter diagnosis, and increases confidence in excluding ureteral ectopia using ultrasound. Low urine specific gravity did not reduce ureteral jet visibility.
Radiographic Features of Cardiogenic Pulmonary Edema in Dogs with Dilated Cardiomyopathy

Presenting Author: Rachel P. Lee, DVM - University of Florida
Co-Author: Elodie E. Huguet, DVM, DACVR - University of Florida
Co-Author: Darcy B. Adin, DVM, ACVIM - Cardiology - University of Florida
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Abstract: Dilated cardiomyopathy (DCM) is one of the most common causes of acquired cardiac disorder in large-breed dogs and can present with left-sided congestive heart failure (CHF), as supported by the presence of cardiogenic pulmonary edema on thoracic radiographs. This study aimed to describe the radiographic features of cardiogenic pulmonary edema in dogs with DCM and hypothesized that a ventrally distributed unstructured interstitial to alveolar pulmonary pattern and/or a bronchial pattern would be most prevalent. We identified 52 dogs with left-sided CHF due to DCM that met the inclusion criteria. Thoracic radiographs were retrospectively reviewed by two radiologists using a survey to assess the distribution, severity and characteristics of the pulmonary pattern, as well as to identify the presence of pleural effusion and degree of cardiomegaly. Results of the study suggest that the predominant pulmonary pattern is a mild to moderate, unstructured interstitial, diffuse, and predominantly ventrally-distributed pulmonary pattern. A subset of dogs had diffusely distributed linear soft tissue opacities throughout all lung lobes considered to represent pulmonary vascular congestion, bronchial cuffing and/or thickening of the bronchi. The presence of lobar pulmonary venous enlargement was an expected finding in a large number of dogs associated with left-sided CHF. A little over half of the dogs had pleural fissure lines, possibly representing scant to mild pleural effusion. Recognition of these radiographic findings to support a diagnosis of left-sided CHF is important to guide medical recommendations in dogs with DCM.
Veterinary Radiologic Error as Determined by Necropsy

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Abstract: Diagnostic imaging cannot match the ability of necropsy to directly and microscopically visualize internal organs. This inherent limitation in combination with human error arising from the interpretation of such studies makes variability in diagnostic accuracy inevitable. A large-scale post-mortem survey auditing of antemortem diagnostic imaging has yet to be accomplished in veterinary medicine.

Necropsy reports for patients of XXXX were collected over a one-year period. Each necropsy diagnosis was determined to be either correctly diagnosed by or discrepant with its corresponding antemortem diagnostic imaging, and discrepancies were categorized. The radiologic error rate was calculated to include only clinically significant missed diagnoses and misinterpretations. Other discrepancies, such as temporal limitations, microscopic limitations, sensitivity limitations, and study-type limitations were not classified as interpretive errors.

1104 necropsy diagnoses had corresponding antemortem imaging. 452 diagnoses were correctly identified by antemortem imaging, while 652 were discrepant. 27 clinically significant discrepancies were diagnoses missed or misinterpreted by the radiologist, for a calculated error rate of 5.6%.

From 2020-2021, over half of all abnormalities noted at necropsy went undetected by antemortem imaging, though the vast majority of discrepancies owed to factors other than radiologist error. The veterinary radiologic error rate of 5.6% is comparable with day-to-day error rates of 3-5% described in human radiology literature. Identifying common patterns of misdiagnosis and discrepancy will help radiologists refine their analysis of imaging studies to reduce interpretive error.
Computed Tomographic Anatomy and Topography of the Lower Respiratory System of the Blandling’s Turtle (Emydoidea Blandingii)

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Abstract: Despite conservation efforts, semi-aquatic turtles continue to experience population instability due to anthropocentric causes and often, respiratory disease. Chelonians have unique airway anatomy dissimilar to mammals such that normal anatomy is easily mistaken for pathology. The goal of this study is to provide objective airway CT parameters in a large population of wild healthy Blandling's turtles (BT; Emydoidea blandingii). In this prospective analytical cross-sectional study, 95 wild BT were opportunistically collected and underwent full-body helical CT scans. Comprehensive airway measurements were obtained and morphometric ratios were reviewed to assess for allometric growth patterns. The lungs were finely reticulated and multicameral. There was a bimodal distribution for carapace and plastron size; likely a reflection of age. The plastron length to coelomic height had the greatest correlation to allometric data (R-squared = 0.96); no significant difference was found between groups. From cranial to caudal, lung size became smaller and occupied less overall coelomic height. The caudal central bronchus was dilated relative to the rest of the intrapulmonary bronchus. The lungs of smaller turtles occupied a significantly smaller proportion of the coelom in the dorsoventral plane compared to larger turtles. Airway measurements between sides were symmetric. This study supports the use of CT in the antemortem assessment of chelonian respiratory anatomy and provides a set of objective measurements to guide clinicians when physical exam is limited and unique airway anatomy makes interpretation challenging.
Contrast-enhanced Computed Tomography to Validate Ultrasound-guided Injection Technique of the Cranial Tibial Artery in Horses

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Abstract: Delivery of therapeutic agents, such as mesenchymal stem cells (MSC) via intra-vascular techniques to treat diffuse and/or inaccessible soft tissue injuries has grown in popularity. A recent study described a technique for ultrasound-guided injection of the cranial tibial artery for MSC delivery to the distal hindlimb.1 The purpose of the current study was to utilize computed tomography (CT) to validate this novel technique and provide additional evidence to support its use for injectate delivery to specific soft tissue structures. Of particular interest was the proximal suspensory ligament, which presents a challenging injection target.

Six adult horses without lameness underwent CT of the distal hindlimbs. Sequences were obtained prior to ultrasound-guided catheterization of the cranial tibial artery, in addition to arterial-, venous- and delayed (3 and 5 minutes) -phase sequences acquired following intra-arterial contrast administration. Scans were assessed for soft tissue visibility and pathology. Region of interest analysis of the superficial and deep digital flexor tendons and suspensory ligament was used to measure contrast enhancement within these structures. Linear mixed models were used to determine statistical significance.

Significant (p < 0.05) mean contrast enhancement was seen at almost all post-injection time points in all soft tissue structures of interest. This indicates that ultrasound-guided injection of the cranial tibial artery results in perfusion of injectate throughout the major soft tissue structures of the metatarsus. This provides further support for this technique as a method of MSC delivery to multifocal or inaccessible injury of these structures, including the proximal suspensory ligament.
Comparison of 18f-naf PET and Standing Low-field MRI for Imaging of the Racehorse Fetlock: Prospective Study in 25 Horses

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Abstract: The goals of this prospective study were to compare magnetic resonance imaging (MRI) and positron emission tomography (PET) findings of the fetlock in an active racehorse population. Horses were imaged with standing low-field MRI and 18F-NaF PET within 2 weeks of each other. Twenty-five horses with clinical signs related to the fetlock were included. PET and MRI images were reviewed independently for abnormalities of the palmar/plantar metacarpal/metatarsal condyles and the proximal sesamoid bones. PET images were assessed for increased radiopharmaceutical uptake, whereas MRI images were assessed for sclerosis, presence of fluid in the trabecular bone and evidence of palmar osteochondral disease (POD). Significant correlations were found between the PET IRU grades and all MRI grades. For the condyles, the strongest associations with PET IRU grades were with MRI fluid grades (R²=0.46, P< 0.0001) and sclerosis grades (R²=0.43, P< 0.0001), whereas the association with MRI POD scores was weaker (R²=0.31, P< 0.0001). However, all 7 condyles with an MRI POD score of 2 or 3, also had an IRU grade of 2 or 3. All 28 condyles with an MRI fluid score different from 0, also had IRU on PET. The associations between PET IRU grades and MRI grades were significant but weaker for the proximal sesamoid bones with R² of 0.14 and 0.18 for MRI sclerosis and fluid scores respectively. In conclusion, PET and MRI lead to similar results for assessment of the condyles in racehorses in active training, but provide different information when assessing the proximal sesamoid bones.
Serial 18f-fdg PET/CT Imaging to Assess Stereotactic Body Radiation Therapy Treatment of Appendicular Osteosarcoma

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Abstract: Fluorine-18 fluorodeoxyglucose (18F-FDG) positron emission tomography computed tomography (PET/CT) is a form of advanced imaging that is commonly used to non-invasively image cancer. 18F-FDG PET/CT's allow for quantitative assessment of tumor metabolism by measuring numbers such as maximum standard uptake value (SUVmax), metabolic tumor volumes (MTV) and total lesion glycolysis (TLG). Recent publications have used follow up 18F-FDG PET/CT's to assess response in treatment by calculating the percentage change in these numbers with varying levels of sensitivity and specificity.

The purpose of this prospective pilot study is to compare pre and post therapy 18F-FDG PET/CT's to assess the effectiveness of stereotactic body radiation therapy (SBRT) in dogs with naturally occurring appendicular osteosarcoma. Percentage change in SUVmax, MTV2.5, TLG2.5 and will be calculated between PET1 and EoT PET and PERCIST criteria applied to determine response to therapy.

Of the 4 dogs that have completed the imaging portion of the study at the time of submission there was an overall median percentage decrease in the SUVmax, MTV (2.5) and TLG (2.5) of 46.2%, 99.9% and 99.9% respectively. Serial 18F-FDG PET/CT imaging on dogs with appendicular OSA that have been treated with SBRT is effective for assessing a therapeutic response via PERCIST criteria. This is the first example of a non-invasive imaging modality that can accurately assess response to SBRT in dogs afflicted with appendicular OSA.
Dual Tracer 18f-naf / 18f-fdg PET Protocol for Musculoskeletal Imaging in Dogs

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Abstract: Positron Emission Tomography (PET) has recently been reported for musculoskeletal imaging in dogs with either 18F-Fluorodeoxyglucose (18F-FDG) for soft tissue imaging or 18F-Sodium Fluoride (18F-NaF) for bone imaging. As involvement of both osseous and soft tissue structures is common, a dual tracer protocol could be useful. The goals of this prospective analytical study, using 8 dogs with nonspecific pelvic limb lameness, were to determine the most pertinent order of tracer injection and to assess dynamic uptake to minimize time under general anesthesia. In 4 dogs, 18F-NaF was injected first and 18F-FDG second, resulting in sets of 18F-NaF images and dual tracer images. In the other 4 dogs, the order was reversed, producing sets of 18F-FDG images and dual tracer images. Dynamic studies over the course of 30 and 45 minutes were acquired for 18F-NaF and 18F-FDG respectively. All specific sites of increased radiopharmaceutical uptake (IRU) identified on the 18F-NaF images (n=12) were recognized on the dual tracer images. However, only 6 of the 14 sites of IRU observed on the 18F-FDG images were identified on the dual-tracer images. There were no significant differences in the uptake of the sites of 18F-FDG IRU after 25 minutes, whereas differences remained present up to 30 minutes for 18F-NaF. In conclusion, 18F-FDG should be the first radiopharmaceutical tracer administered. Acquiring images up to 25 and 30 minutes post-injection for 18F-FDG and 18F-NaF respectively would likely be sufficient in identifying all sites of IRU, while keeping the total acquisition time less than one hour.
ON DEMAND ENDURING MATERIALS ABSTRACTS
Residual Extruded Disc Material and Spinal Cord Compression Measured on Post-operative MRI Does Not Correlate with Neurological Outcome in Dogs

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Abstract: Intervertebral disc extrusion (IVDE) in dogs associated with significant neurological deficits and/or pain usually requires surgery. Magnetic resonance imaging (MRI) can be performed post-operatively to determine whether surgical decompression is achieved, but no quantitative criteria exist to objectively assess this. This study sought to quantify the post-operative volume of residual extradural material (VREM) and residual maximal spinal cord compression (RSCC), and investigate the correlation between VREM or RSCC and neurological outcome. Dogs included in this unicentric retrospective study underwent surgery for IVDE, were imaged pre and immediately postoperatively by MRI and had a neurological follow-up 2- to 5-weeks postoperatively. Each patient was assigned a pre- and post-operative neurological grade. Two observers blindly measured the volume of extradural material and the area of maximal spinal cord compression pre- and post-operatively, and the area of the spinal cord at an intervertebral space without compression. Nineteen cases were included. Thirteen dogs had an improvement of their neurological grade on follow-up (positive outcome group) while 6 had either a static or worsened grade (negative outcome group). Inter-observer variability was good to excellent (ICC 0.77-0.97). Mean volume of pre-operative extradural material was 203.6 mm³ and mean VREM was 53.7 mm³. Mean pre-operative maximal spinal cord compression was 51% and mean RSCC was 33%. Mean VREM and RSCC were not statistically different between neurological recovery groups (p=0.81 and p=0.47 respectively). Post-operative MRI can be used to validate spinal cord decompression, but no objective quantitative criteria could be established to better assess successful surgical decompression.
Computed Tomographic Features of Exocrine Pancreatic Carcinomas in Dogs and Cats

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Abstract: The purpose of this retrospective, multi-institutional, descriptive study was to characterize the computed tomographic (CT) features of exocrine pancreatic carcinomas in dogs and cats. Exocrine pancreatic carcinomas are uncommon in veterinary medicine, with limited research available. The CTs of 18 dogs and 12 cats with 30 exocrine pancreatic carcinomas, diagnosed by cytology or histopathology, were evaluated by a board-certified radiologist and radiology resident. Ultrasound images were evaluated when available. The CT features seen with exocrine pancreatic carcinomas included contrast enhancement in 27/30 (90%), with heterogeneous enhancement in 22/30 (73%). 40% (12/30) of the cases had a distinct, thick rim contrast-enhancing pattern present. Other common intra-abdominal findings included peripancreatic fat-stranding in 19/30 (63%), lymphadenopathy in 16/30 (53%), and peritoneal effusion in 10/30 (33%). The masses were in the right lobe of the pancreas in 14/30 (47%), the left lobe in 10/30 (33%), the body in 4/30 (13%) and 2/30 (6%) had diffuse change. Six cases presented with extra-hepatic biliary duct obstruction, with 5/6 (83%) of the masses located in the right lobe of the pancreas. Pancreatic duct dilation was more likely to be seen with increased height of the masses, with this feature approaching statistical significance (p-value 0.0549). When comparing the imaging features of masses between dogs and cats, few differences were identified. There was a statistically significant difference in the height, with dogs having larger masses (p-value 0.0028). Cats were significantly older than dogs (p-value 0.0355). Dogs and cats with pancreatic exocrine carcinomas may have similar CT imaging features.
Computed Tomographic Hepatic Volumetry in Dogs with Confirmed Cirrhosis

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Abstract: Cirrhosis is defined histopathologically as a diffuse hepatic change characterized by a combination of fibrosis, regenerative nodules, and portal-central vascular anastomosis. Clinically, cirrhosis represents the end stage of chronic liver disease. Microhepatia is one of the morphological changes identified by diagnostic imaging modalities in patients with cirrhosis. Computed tomographic (CT) hepatic volumetry is known to provide accurate measurements of liver volume and reference hepatic volumes in healthy dogs have been recently reported. The purpose of this multi-institutional retrospective study was to assess hepatic volumes in dogs with cirrhosis using CT hepatic volumetry and compare these volumes to the established normal reference range. Medical records from four hospitals were searched from January 1, 2015 through April 1, 2021 for dogs that had an abdominal CT and a histopathological diagnosis of cirrhosis. CT images were reviewed by a board-certified radiologist and CT hepatic volumetry was performed by a veterinarian under radiologist supervision. Eight dogs met the inclusion criteria. The mean liver volume (±SD) was 593.1 ± 410 cm³ and the mean liver volume normalized to body weight was 16.5 ± 4.5 cm³/kg. Other CT findings of peritoneal effusion, irregular liver margins, presence of nodules, and acquired portosystemic shunts were present in three, three, four, and two dogs, respectively. As anticipated, mean normalized hepatic volume in dogs with cirrhosis was smaller than the previously established mean normalized volume in dogs without liver disease. Interestingly, however, CT changes typically associated with cirrhosis were not present in some cases.
Computed Tomographic Hepatic Volumetry in Dogs with Congenital Portosystemic Shunts.

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Abstract: Computed tomographic hepatic volumetry (CTHV) is a noninvasive and highly accurate volumetry method in humans. CTHV in dogs with extrahepatic portosystemic shunts (PSS) has been previously described. However, CTHV with different types of PSS have not been investigated. The purpose of this study was to compare hepatic volumes in dogs with different types of PSS. A retrospective medical record search was performed to identify dogs with PSS. Dogs were categorized into intrahepatic (IH), extrahepatic-portocaval (EHPC), extrahepatic-portoazygos (EHPA), or extrahepatic-portophrenic (EHPP) groups. CTHV with manual drawing region-of-interest (ROI) was performed and normalized using total-body-weight. Normalized hepatic volumes (NHV) across different age brackets (< 12 month-old, 13-24 month-old, and >25 month-old) were recorded. 45 dogs were included: 15 IH; 14 EHPC; 9 EHPA; and 7 EHPP. NHVs (mean±SD) for each group were as follows: EHPC 17.6±5.2 cm³/kg; EHPA 16.2±8.2 cm³/kg; EHPP 18.0±5.5 cm³/kg; IH 18.2±6.0 cm³/kg. The range of NHV for each age bracket were as follows: 9.3-36.9 cm³/kg in < 12 month-old (n=28); 11.1-37.4 cm³/kg in 13-24 month-old (n=4); and 10.2-22.8 cm³/kg in >25 month-old (n=13). The NHV in dogs with PSS (17.6±6.0 cm³/kg) was smaller than the reported NHV in dogs without liver disease (22.1±4.6 cm³/kg) but similar to the reported pre-operative NHV in dogs with PSS (18.2 cm³/kg). There was no significant difference in NHV among dogs with different shunt types. The dogs with PSS commonly have microhepatia but some dogs may have larger liver, thus absence of microhepatia does not preclude the presence of a PSS.
Abstract: Hind limb proximal suspensory desmopathy (PSD) is a common cause of equine lameness, often associated with a compartment-like syndrome of the plantar fascia and accompanying neuropathy. The primary objective of this study was to optimize an MRI-based diffusion tensor imaging (DTI) protocol for imaging the plantar tarsal nerves in normal equine limbs. We hypothesize that quantitative DTI values of fractional anisotropy (FA) and apparent diffusion coefficient (ADC) can be obtained for the tibial and lateral plantar nerves in the horse.

Six, fresh disarticulated hind limbs from horses euthanized for unrelated purposes and without previous diagnosis of PSD were imaged with a 3T MR system (Philips) using both standard clinical proximal metatarsal MRI and DTI sequences. Preliminary data were processed with proprietary software (FiberTrak) and length and number of fiber tracts as well as FA and ADC values were recorded, but data collection is ongoing.

Preliminary data (n=4) shows segmental tracts ranging from 10.8 to 35.32 mm in length (mean 22.640 mm) in the region of the tibial and lateral plantar nerves (Figure 1). These tracts demonstrate FA values ranging from 0.220 to 0.627 (mean 0.410) and ADC values in the range of 0.758 to 1.269 * 10-3 mm2/s (mean 0.912 mm2/s).

Our findings suggest that DTI of the tibial and lateral plantar nerves is possible, with quantitative FA and ADC values providing objective parameters for evaluation of neural structures. These may be used as a basis for future comparison to neuropathies that may occur secondary to pathology such as PSD.
Positive Pressure Ventilation Computed Tomography in Dogs with Recurrent Spontaneous Pneumothorax

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Abstract: The most common cause of spontaneous pneumothorax in dogs is rupture of air-filled lesions (bullae or blebs). The utility of CT in detection of air-filled lesions in dogs with spontaneous pneumothorax is considered limited due to reported low sensitivity. This is a prospective study with a cross-sectional analysis. Eight dogs had recurrent pneumothorax with surgical confirmation of the cause of spontaneous pneumothorax. Thoracic radiographs were taken before and the day following the CT studies. Initially a CT study was performed without positive pressure ventilation (pre-PPV CT). After evacuation of pneumothorax a second CT study was performed with positive pressure ventilation (post-PPV CT) of 15 cmH2O. If lung atelectasis persisted in the post-PPV CT study, positive pressure ventilation was continued and an additional CT study was performed (re-PPV CT). The pre-PPV CT, post-PPV CT and re-PPV CT images were anonymized and reviewed by two board-certified radiologists. Presence of a air-filled lesion and morphology of the air-filled lesions were evaluated on all images. Surgical findings were recorded and compared to the CT findings. Air-filled lesions were detected in 5 dogs (5/8) in the pre-PPV CT studies and 8 dogs (8/8) in re-PPV CT studies. CT findings of air-filled lesions were all consistent with surgical findings. None of dogs showed increased severity of pneumothorax in radiographs taken the day following the CT studies. Positive pressure ventilation during CT studies is feasible and improved detection of air-filled lesions in dogs with recurrent spontaneous pneumothorax which may allow for improved surgical planning.
Comparison of the Detection Rate of Retained Surgical Sponges Using Radiography, Ultrasonography, and Computed Tomography: A Cadaveric Study

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Abstract: Introduction: The purpose of this study was to compare the detection rate of retained surgical sponges/gauzes (RSS) in cadavers using radiography, ultrasonography, and CT to detect three types of RSS: woven gauze with radiopaque marker (radiopaque gauze), woven gauze with no marker (non-radiopaque gauze), and laparotomy sponge with radiopaque marker (radiopaque sponge).

Methods: Thirty-two cadavers were randomized into cases (RSS present) and controls (no RSS). Each case cadaver had 1-2 RSS placed in the abdomen at three separate sites: cranial to the right liver, mid-abdomen, and caudal abdomen. All cadavers were imaged with radiography first, CT second, and ultrasonography third. The radiographs and CTs were reviewed by two blinded radiologists for a consensus of findings: RSS presence, type, and location. Ultrasonography was performed real-time for the presence and location of RSS. The sensitivity, specificity, and accuracy were calculated for each modality.

Results: The detection rate of RSS using radiography was 72.2% sensitivity, 75% specificity, and 72.7% accuracy. The detection rate using CT was 86.1% sensitivity, 100% specificity, and 88.6% accuracy. For both radiography and CT, when an RSS with a radiographic marker was present, it was always detected. The overall detection rate of RSS using ultrasonography was 47.2% sensitivity, 58.3% specificity, and 50.0% accuracy.

Conclusion: CT is the modality that best detected RSS followed by radiography and ultrasonography. The use of a surgical sponge or gauze with a radiopaque marker is recommended for ease of detection. CT or radiographs are recommended for the best accuracy of detection of an RSS.
Retrospective Evaluation of Sonographic Findings in Dogs Diagnosed with Diabetic Ketoacidosis

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Abstract: Diabetic ketoacidosis (DKA) is a life-threatening disease in dogs with uncontrolled diabetes mellitus that is associated with the presence of metabolic acidosis, ketonemia, glycosuria and ketonuria. The purpose of this multi-institutional retrospective study was to describe and quantify abdominal ultrasonographic findings in dogs with DKA and to determine the observer agreement between radiologists. Sonographic abnormalities to the pancreas were hypothesized to be prevalent and identified with good interobserver agreement. Sonographic images of 74 patients were included without signalment and physical examination restrictions, with biochemical testing and sonographic evaluations performed within 48 hours of diagnosis. Images were reviewed by two board certified radiologists and two diagnostic imaging residents. Initial findings indicate that on average, 52% of patients had a hypoechoic pancreas and 34.7% had focally hyperechoic mesentery surrounding the pancreas, suggestive of acute pancreatitis. Interobserver agreement for pancreatic hypoechoigencity was overall good to very good between all observers (k=0.661-0.88). Interobserver agreement for focally hyperechoic mesentery was overall good (k=0.64-0.74). Other common findings included hyperechoic liver (91.4%), moderate non-mineralized urinary sedimentation (25%), and scant anechoic effusion (26.7%). Such findings are useful for clinicians in guiding treatment plans in dogs with DKA. Findings of this study support the use of ultrasound to identify comorbidities commonly found in dogs with diabetic ketoacidosis.
Comparison of Whole Body Radiographs to Collimated Thoracic Radiographs in Dogs and Cats

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Abstract: Standard radiographic techniques are traditionally collimated to the area of interest, as in analog imaging, including other tissues outside the area of interest results in decreased diagnostic quality. The aim of this study is to assess the authors' hypothesis that with digital radiology there is no decrease in diagnostic quality of a study and, by association, that the final assessment of a whole body study will not differ from that of a collimated study. Forty patients were recruited and underwent both collimated thoracic and whole body radiographic examinations. Three radiologists and three general practitioners were asked to answer a 15-question survey on these studies and responses were analyzed for associations between each predictor and response combination. Additionally, a logistic regression model was used to test the diagnostic confidence between the general practitioners and radiologists. There was no statistically significant difference between whole body and collimated thoracic studies given to either the radiologists or general practitioners. A significant difference in the image's interpretation by radiologists against the general practitioners was found in 5 of 15 findings. This study suggests that the assessment of multiple thoracic abnormalities is no different when a reader is presented with a whole body versus a collimated thoracic study. Differences between radiologists and general practitioner findings are thought to be associated with the level of confidence and training of the readers. These findings support the practice of using whole body radiographs, as they appear to be as diagnostic as collimated thoracic studies.
Assessment of an Ultrasound Skill Simulator in Teaching Ultrasound-guided Centesis

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Abstract: Ultrasound guidance during centesis is recommended to improve success rate, reduce the risk of serious complications, and to choose appropriate sampling locations and equipment. The aim of this study was to develop an accessible and reusable ultrasound skill simulator for ultrasound guided centesis (USGC). Fifty second year veterinary students reviewed an instructional video prior to performing two USGC skill tests on the simulator, separated by a period of practice. Following practice there was a significant improvement in score (p < 0.0001), and average score and time improved by 8.6% and 163.3 seconds respectively. The proportion of successful hits improved by 9%, with 34.7% (17/49) participants improving their skill rank on the second test, and 57.1% (28/49) retaining their original skill rank. Most post-session survey feedback was positive, and none was negative. Thirty-five of 49 participants (71%) indicated they would prefer learning this skill with the simulator or in combination with individual practice and/or observation. Ninety-eight percent (48/49) strongly agreed that “this training simulator should be incorporated into the veterinary curriculum”, and 94% (46/49) with “I would use this training simulator again to practice basic ultrasound skills”. Eighty-four percent (41/49) strongly agreed their skills and knowledge improved using the simulator and 82% (40/49) agreed with gaining confidence with ultrasound using the simulator. The authors suggest this is an effective and well-received simulator for teaching USGC and recommend incorporation into veterinary curriculum for basic ultrasound skill training.
Assessment of an Ultrasound Skill Simulator in Teaching Ultrasound-guided Needle Placement

Presenting Author: Marissa McGaffey, HBSc, DVM - Ontario Veterinary College
Co-Author: Alex zur Linden, DVM, DACVR - Ontario Veterinary College
Co-Author: Gabrielle Monteith, BSc - Ontario Veterinary College

Abstract: The increasing use of ultrasound in veterinary private practice and demand for skilled operators at graduation has placed an increased burden on the ever-dwindling number of academic radiologists. Simulation based medical education can reduce this burden while allowing for the acquisition of clinical skills. Ultrasound guided fine needle placement is the foundation for more advanced interventions such as ultrasound guided fine needle aspirates and paracenteses. A reusable novel ultrasound skill simulator was created to teach ultrasound guided fine needle placement. Forty-seven second year veterinary students watched an instructional video and performed two ultrasound guided fine needle placement skill tests on the simulator with a period of practice between. Significant improvement in time to task completion (p = 0.0021) was noted after the period of practice. Skill level ranking revealed 51% (24/47) of students improved their ranking after the period of practice. The majority of student feedback was positive with 89% (42/47) indicating they would use the simulator again to practice and that it should be incorporated into the curriculum, 74% (35/37) indicating their basic skills, knowledge, and confidence using ultrasound improved using the simulator, and 55% (26/47) indicating they could now teach this skill to a peer.
Renal Ectopia and Fusion in 13 Cats

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Abstract: Renal fusion is a rare condition in veterinary medicine. The three main types described in the human literature include horseshoe kidneys, crossed fused renal ectopia (CFRE), and fused pelvic kidney (pancake kidney). Renal fusion is often asymptomatic but has been reported in association with other congenital malformations and may predispose to several complications (e.g., urinary tract infections). Thirteen feline patients with a median age of nine years old (range 1-13 years old) were included in this multicentric retrospective study. There were nine castrated males and four spayed females. Seven different breeds were represented in this population. Ultrasound was available in 12/13, radiographs in 4/13, and computed tomography in 3/13 cases. Seven of thirteen cases were left to right fusions, 4/13 were right to left fusions, one was on midline, and one in the pelvic inlet. There were five lump kidneys, four disc kidneys, one horseshoe kidney, one caudal ectopia, one L-shaped kidney, and one pancake kidney. In 2/13 cases, additional congenital malformations were noted including an azygous continuation of the caudal vena cava and a peritoneal-pericardial diaphragmatic hernia. This study provides further description of the imaging findings in feline patients with fused renal ectopia. The morphologic characteristics of the fused kidneys in cats appears similar as to what is published in the human literature. Renal fusion might be an incidental finding in cats, but further investigations are necessary to determine their clinical relevance.
Evaluation of Advanced and Standard MRI Sequences for Detection of Naturally Occurring Cartilage Lesions of the Equine DIP Joint

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Abstract: Articular cartilage damage of the distal interphalangeal (DIP) joint and subsequent degenerative joint disease is a common cause of lameness in the horse. Standard magnetic resonance imaging (MRI) sequences (PD, 2DT1w, 2D T2w) have limited sensitivity in detecting cartilage lesions. Advanced sequences have been used in humans and in research settings for improved detection of cartilage lesions. We hypothesized that the advanced MRI sequences DESS (dual echo steady state - both interpolated and non-interpolated), UTE (ultrashort TE), SWI (susceptibility weighted imaging) and high-resolution VIBE (volumetric interpolated breath-hold examination) will each individually detect more cartilage lesions in the DIP joint of horses when compared to our current standard protocol (PD [proton density] and low-resolution VIBE). Following a pilot study for sequence optimization, 10 cadaver limbs were imaged with both standard and advanced sequences before gross dissection and histopathology. There were a total of 100 regions of altered signal intensity across all 7 sequences, 46 at a repeatable region of the palmar distal phalanx. Of the remaining 54 lesions, 38 corresponded to gross cartilage lesions and 10/33 gross lesions were seen on MRI. The majority of MRI lesions were hypointense. The advanced sequences (DESS, SWI and hi-res VIBE) identified more lesions than the standard sequences. Some focal signal intensity changes without a corresponding gross lesion were also not seen histopathologically but gross lesions showed histopathological change. High field advanced MRI sequences of higher resolution are able to detect more articular cartilage lesions than a standard MRI imaging protocol.
Ultrasound Examination of Laryngeal Chondritis in Texel Sheep

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**Abstract:** Laryngeal chondritis is a disease affecting the laryngeal cartilages, with the Texel breed of sheep showing a predisposition. Laryngeal chondritis can be most commonly be seen clinically as severe dyspnoea in 18 to 24 month old purebred rams during the late summer and autumn months. Chronic laryngeal chondritis is described as incurable, however early treatment has been reported to be curative. This study aimed to describe the antemortem ultrasound protocol for examination of the arytenoid cartilages in adult Texel sheep, and to describe the ultrasound findings and compare the findings to post mortem gross pathology findings.

Ultrasound examinations of 17 clinically affected Texel sheep, presented for euthanasia were performed under sedation. The recorded ultrasound still and cineloop images were compared to post mortem findings. Ultrasound showed marked changes in the size and shape of the arytenoid cartilages, with frequent bulging and extension into the airway. There were multiple hyperechoic lesions within the cartilage and heterogeneous peripheral soft tissue between the arytenoid and thyroid cartilages in these affected animals.

Laryngeal chondritis is a disease mainly seen in Texel sheep, associated with financial losses for producers as well as adversely affecting animal welfare. Previous studies have described CT and MRI imaging in the assessment of the ovine larynx. A simple, cost-effective and repeatable ultrasound examination easily performed in the field is described, with lesions confirmed at gross pathology.
Description Of 18f-fluorodeoxyglucose (FDG) Positron Emission Tomography (PET)/Magnetic Resonance Imaging (MRI) Characteristics in Presumed Intracranial Meningiomas in 3 Dogs

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Abstract: 18F-Fluorodeoxyglucose (FDG) positron emission tomography (PET) is a valuable tool in the diagnosis, differentiation, grading, and prognostication of brain tumors in humans but remains relatively novel in veterinary medicine. This study aims to describe FDG PET/magnetic resonance imaging (MRI) characteristics of presumed intracranial meningiomas in dogs. FDG PET/MRI was performed in dogs diagnosed with presumed intracranial meningiomas based on prior MRI features. Tumor, cerebral cortical gray matter, and cerebral white matter maximum SUV (SUVmax) were measured by region-of-interest (ROI) analysis. Tumor-to-white matter (T:W) and tumor-to-gray matter (T:G) SUVmax ratios were calculated. Three client-owned dogs underwent simultaneous FDG PET/MRI. All presumed meningiomas were FDG avid, with a mean SUVmax of 6.0 (range 5.6-6.2), and hypermetabolic relative to normal cerebral white matter. Mean T:W was 1.5 (range 1.4-1.5) and T:G was 1.1 (range 0.9-1.4). One dog was euthanized and a meningioma was confirmed on post-mortem histopathologic examination. This study describes the feasibility and application of FDG PET/MRI in dogs with presumed intracranial meningiomas. FDG PET/MRI of meningiomas may be a useful tool in the evaluation of tumor metabolic activity, tumor grading, and potential differentiation of neoplasm type in dogs. Incorporation of this imaging modality into clinical practice may improve the diagnostic accuracy, prognostication, and development of targeted therapeutic approaches in canine brain tumor patients.
Clinical Outcome of Canine Apocrine Gland Anal Sac Adenocarcinoma Patients with Inoperable Metastatic Lymph Nodes Treated with Stereotactic Radiation Therapy

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Abstract: Canine apocrine gland anal sac adenocarcinoma (AGASACA) is a malignant tumor of the anal sac and glands with high locoregional metastatic rate (36-96%). The purpose of this study is to determine the outcome of treating inoperable metastatic lymph nodes of canine AGASACA patients with stereotactic body radiation therapy (SBRT).

Signalment, clinical signs, tumor profile, laboratory data, SBRT dosimetry profile, clinical response, survival time, treatment toxicity, and reason for death were collected from the medical record of a single institution (2016-2021) and follow-up calls with the owners and/or primary veterinarians. Kaplan Meier curves and log-rank tests were performed on the survival analysis.

Eleven dogs were included in this study. All dogs had surgical removal of primary tumor before or immediately after SBRT. Six patients received three daily fraction SBRT and five patients received five daily fraction SBRT to their metastatic lymph nodes. Six patients received adjuvant chemotherapy. Median progression-free survival (PFS) and survival time (MST) were 302 days and 451 days respectively. No prognostic factors except sex (Male MST 614 days vs Female MST 200 days, p=0.0086) had statistically significant impact on MST. No acute radiation side effects were observed. Three dogs had advanced tumor recurrence however, exacerbation by radiation late side effects could not be ruled out.

Based on described clinical outcome, one can assert that SBRT treatment of inoperable metastatic lymph nodes in canine AGASACA patients can be an effective treatment modality with low risk of toxicities.
Use of a Clinically Validated “liquid Biopsy” Test for Cancer Evaluation in Cases Referred Based on Suspicious Findings from Imaging

**Abstract:** Cancer is caused by abnormalities in DNA. As normal and cancer cells die, fragments of DNA ("cell-free DNA") are released into the bloodstream and can be extracted from plasma, sequenced, and analyzed, forming the basis of “liquid biopsy” (LB) testing. The presence of somatic genomic alterations in blood indicates the likely presence of cancer in the body. Recently, a novel blood-based LB test was clinically validated in a study of over 1,000 dogs for use as a cancer screening tool and aid-in-diagnosis. In an all-comers cohort of cancer-diagnosed subjects, LB was able to detect 30 distinct cancer types. The detection rate for eight of the most common canine cancers (lymphoma, hemangiosarcoma, osteosarcoma, mast cell tumor, soft tissue sarcoma, anal sac adenocarcinoma, mammary gland carcinoma, and malignant melanoma) was 62%; and, importantly, the false positive rate of the test was 1.5%. When used clinically as an aid-in-diagnosis, LB may be helpful in assessing suspicious masses for malignancy, particularly in cases where these masses occur in anatomical locations that are challenging or risky to access using traditional diagnostic approaches (aspirate or surgical biopsy). Presented here is a case series demonstrating how LB has helped to shorten the path to diagnosis: by confirming suspicion of cancer in a case where cytology was unrewarding; by helping to establish a management plan for a patient with a mass in a difficult-to-access location; by providing prediction of a specific cancer type which helped convince a hesitant owner to pursue immediate referral to a specialist.
Stereotactic Radiotherapy for Advanced Canine Anal Sac Adenocarcinoma: A Pilot Study

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Co-Author: NATHANIEL VAN ASSELT, DVM dacvr(ro) - UW Veterinary School

Abstract: Locoregional control is the most critical aspect of canine anal sac adenocarcinoma (ASAC). Metastasis to intra-abdominal and pelvic lymph nodes occurs early in disease course and death is usually related to locoregional progression. Surgical excision is the treatment of choice, but may not always be possible in advanced cases. Dogs treated with RT in the gross disease setting showed a 38-75% overall response rate, but there is significant risk of radiation side effects to organs at risk in this area (especially colon, bladder, spinal cord). Stereotactic radiation therapy (SRT) utilizes highly conformal IMRT with rapid dose fall off and high doses per fraction. SRT may help to reduce risk of late side effects of radiation, while also creating a larger biologic effect on the tumor. We conducted a prospective pilot study to determine the safety and tolerability of an SRT protocol for canine ASAC, using objective and subjective measures to monitor acute and late side effects. The secondary aim was to collect data on the anti-tumor response of the SRT protocol using CT 3- and 6-months post-treatment. Five dogs completed the radiation protocol. Three have had follow-up imaging demonstrating complete response (1) and partial response (2). Overall, this protocol has been well-tolerated with minimal acute side effects. Despite some large tumor volumes, constraints for OAR have been achieved in all but the spinal cord for one patient. This pilot study thus far shows SRT is well-tolerated and effective in reducing primary tumor and metastatic lymph node size for canine ASAC.
Outcomes with Stereotactic Radiation for Canine Intracranial Suspected Choroid Plexus Tumors and Ependymomas

Presenting Author: Katherine Hansen, DVM, DACVR (RO) - UC Davis

Co-Author: Michael S. Kent, DVM, MAS, DACVIM, DACVR - UC Davis

Abstract: Published results of radiation treatment for intraventricular tumors, such as suspected choroid plexus tumors (CPT) and ependymomas in dogs, are limited. In this retrospective longitudinal study spanning from 9/2011-9/2020, nine dogs suspected to have CPT or ependymomas on magnetic resonance (MR) imaging were included. Dogs were treated stereotactically with either 15 Gy X 1 fraction (4) or 8 Gy X 3 (5) with a Varian Clinac 2100C™ or Truebeam™.

Tumor locations were as follows: lateral ventricle (1), third ventricle (3), lateral and third ventricle (2), fourth ventricle (2), and cerebellopontine angle (1). Pathology data ultimately was available for 6/9 cases, revealing one ependymoma, two choroid plexus carcinomas, and three choroid plexus papillomas. The remaining three dogs were imaging-diagnosed as CPT vs. ependymoma.

All dogs had neurological signs refebrable to their intracranial masses. There were no radiotherapy protocol deviations. After treatment, 7/8 dogs with follow-up data showed clinical improvement; however, the improvement lasted < 1 month for two dogs, and one dog never improved after radiation. At analysis, 8/9 dogs were deceased, and one dog was lost to follow-up 679 days post-treatment. The median overall survival (OS) from first treatment was 406 days (95% CI 24-953 d [range 24-1593 d]). The survivals for single fraction vs. 3-fraction protocols were not statistically different (p = 0.90) in this small data set.

This study provides preliminary evidence that radiotherapy outcomes with suspect CPT and ependymomas are variable, and that stereotactic radiotherapy may play a role in management of these tumors.
Safety and Efficacy of Low-dose Radiation Therapy for the Management of Feline Chronic Rhinitis

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Co-Author: Lauren Kustasz, DVM - Michigan State University

Co-Author: Elizabeth Jackson, n/a - Michigan State University

Co-Author: Stephan A. Carey, DVM, PhD, DACVIM - Michigan State University

Abstract: Lymphoplasmacytic rhinitis is a common nasal disease of cats with unknown etiology. Treatment options are limited and the disease is considered incurable. Given the inherent radiosensitivity of lymphocytes to ionizing radiation, low-dose radiation therapy was considered as a treatment option for cats with refractory disease. Objectives of the study were to 1) determine whether the use of low-dose radiation therapy causes a reduction in owner-reported clinical signs of chronic rhinitis, and 2) determine whether low-dose radiation therapy can be administered to patients without the development of short and long-term radiation therapy associated adverse effects. An ongoing prospective clinical study has recruited 7 of planned 14 cats with a diagnosis of chronic lymphoplasmacytic rhinitis defined via clinical history, CT, rhinoscopy, and histopathology. Cats enrolled completed a 2 Gy x 3 course on consecutive days. Clinical efficacy was evaluated via owner-reported assessment using a severity of nasal inflammatory disease (SNIFLD) questionnaire modified for use in feline chronic rhinitis. Adverse effects were documented via examinations following each radiation treatment, owner follow-up, and recheck examinations at 1, 3, 6 and 12 months post radiation therapy. Seven cats have been enrolled in the study and all have successfully completed the treatment protocol. No cats exhibited acute adverse effects, and 1 cat has developed subtle leukotrichia approximately 6-months post treatment. Of the 5 cats with follow-up, 4/5 have shown improvement of owner-reported quality of life scores and clinical signs at 1 month post treatment. Final results are promising but
Evaluating a Stereotactic Body Radiation Therapy Protocol Based on EQD2 Dosimetry to Treat Nonresectable Hepatocellular Carcinomas in Dogs

Presenting Author: Melanie Moore, BVM&S, MRCVS, DACVR(RO) - Michigan State University College of Veterinary Medicine

Abstract: Hepatocellular carcinoma, a spontaneous malignancy of the canine liver, carries a worse prognosis when complete histological resection is not possible. Currently there is little data on alternative therapies for dogs with nonresectable hepatocellular carcinomas. In human medicine, SBRT has become more common for treating both early stage and nonresectable hepatocellular carcinomas with EQD2 being an important factor in tumor response. The aim of this case series is to evaluate a SBRT protocol utilizing EQD2 data for the treatment of canine hepatocellular carcinomas. Dogs with nonresectable hepatocellular carcinomas were treated with a base dose of 27Gy given in 3 fractions over one week. CT simulation scans occurred in inspiration and expiration to account for GTV positioning. Core dose elevation was determined by EQD2 and organ-at-risk constraints. Two dogs with nonresectable, histologically confirmed, hepatocellular carcinomas underwent SBRT. Both dogs had a transient elevation in ALT, a common radiation induced liver disease noted in humans, with no other adverse effects reported. One dog had a 95% decrease in tumor volume post radiation, the other had stable disease. Both dogs are still alive at 28 and 17 months post radiation. The current results from these dogs supports further investigation into this protocol since conservative management alone had a MST of only 9 months. Mirroring techniques and dosing parameters from human medicine offers better quality of life and longer survival times for canine patients, while also providing opportunities for further comparative research.
Split Protocol of RT and CCNU for Canine Non-visceral Histiocytic Sarcoma

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Co-Author: Ryan Appleby, DVM - University of Guelph

Abstract: The aim of this study is to evaluate the imaging characteristics of response and pattern of failure in dogs with non-visceral histiocytic sarcoma (HS) treated with a split protocol of RT and CCNU chemotherapy. Included dogs were treated with RT (5 x 4 Gy) to primary and regional lymph nodes (LN) +/- distant metastasis followed by 4 doses of CCNU then a second RT protocol (5 x 4 Gy). Thirteen dogs were included. Three were post-surgery, 7 were peri-articular and 4 had evidence of bone lysis. At presentation, 8 (62%) had LN metastasis, 5 (38%) of which also had distant metastasis (spleen [n=2], bone [n=2], lung [n=1]). A second RT planning CT, CBCT or MRI was available in 10 dogs. All showed response, both clinically and on imaging. However, despite a good response, the primary tumors were still ill defined and the second clinical target volume (CTV) was based on the original CTV in 90% of re-imaged dogs. During follow-up: 1 developed recurrence within the RT treated area, 8 developed metastasis and 3 died without clear evidence of recurrence or metastasis of HS. The median overall survival was 521 days (95%CI: 283-678 days). The split RT and CCNU protocol is reasonable for treatment of HS. Based on imaging characteristics of this population, it is possible to use the original RT set-up for the second RT protocol as they are usually ill defined, and the CTV could be readjusted based on the 1st cone beam CT of the second protocol.
CT and MRI Imaging in Radiation Therapy Planning of Imaging-diagnosed Canine Intracranial Meningioma Achieves Better Tumor Coverage Than CT Alone

Presenting Author: Eric Walther, DVM - Western College of Veterinary Medicine

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Abstract: The aim of this study was to quantify the dosimetric impact of the lack of interobserver agreement on GTV delineation for canine meningioma. This study used a previously reported population of 13 dogs with GTVs contoured on CT alone and on registered CT-MR by 18 radiation oncologists. The ‘true’ GTV was generated for each dog using a STAPLE algorithm, and ‘true’ brain was defined as whole brain minus true GTV. Treatment plans were generated for each dog and observer combination, using criteria applied to the observer’s GTV and brain contours. Plans were then categorized as a pass (met all planning criteria for true GTV and brain) or fail. A mixed-effects linear regression was performed to examine differences in metrics between CT and CT-MR plans, and mixed-effects logistic regression was performed to examine differences in percentages of pass/fail between CT and CT-MRI plans. The mean percent coverage of true GTV by prescribed dose was higher for CT-MR plans than for CT plans (mean difference 5.9%, 95% CI 3.7 to 8.0, p < 0.001). There was no difference in mean volume of true brain receiving ≥ 24 Gy and in maximum true brain dose between CT plans and CT-MR plans (p ≥ 0.198). CT-MR plans were significantly more likely to pass criteria for true GTV and brain than CT plans (OR 1.75, 95% CI 1.02 to 3.01, p = 0.044). This study demonstrated significant dosimetric impact when GTV contouring was performed on CT alone compared to CT-MR.
Contouring in the Optic Plane Improves Accuracy of Computed Tomography-based Segmentation of the Optic Pathway

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Co-Author: Monique N. Mayer, DVM, MS, DACVR (RO) - Western College of Veterinary Medicine

Abstract: Canine optic pathway organs at risk are often contoured on CT alone despite the optic pathway being difficult to visualize using standard CT planes. The purpose of this study was to examine accuracy of optic pathway contouring by radiation oncologists (ROs) before and after training guidelines were provided on use of an optic plane. Expert consensus contours were delineated on registered CT and MRI for eight dogs. Twenty-one ROs contoured the optic pathway on CT using their preferred method, and again after being provided with an atlas and video demonstrating creation of and contouring on the optic plane. The Dice similarity coefficient (DSC) was used to compare contour accuracy. A multilevel mixed model with random effects to account for repeated measures was used to examine the difference in the DSC before and after training. The median DSC before training was 0.31 (5th and 95th percentile, 0.06, 0.48) and the median DSC after training was 0.41 (0.18, 0.53). The mean DSC was significantly higher after training than before training (mean difference = 0.10, 95% CI 0.08 to 0.12, p < 0.001) on average across all observers and patients. DSC values were comparable to those reported (0.4-0.5) for segmentation of the optic chiasm and nerves in humans. Contour accuracy was improved after training but remained low potentially due to the small segmentation volumes inherent to optic pathway structures. When registered CT-MRI images are not available, our study supports routine use of an optic plane with specific window settings to improve segmentation accuracy.
Contouring in the Optic Plane Improves Accuracy of Computed Tomography-based Segmentation of the Optic Pathway

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Radiographic Characterization and Establishment of a Grading System for Tibial Avulsion Fractures in Dogs

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Co-Author: Jorge A. Hernandez, PhD, DVM - University of Florida

Abstract: Proximal tibial apophyseal avulsion fractures are the most common avulsion fracture in dogs. One previously proposed classification system for proximal tibial apophyseal fractures in dogs is similar to the Watson-Jones classification system in humans. This canine study however did not include fracture types described by Ryu et al. and Ogden et al. in humans. The authors propose a new classification system of proximal tibial apophyseal fractures in dogs. This is a retrospective and observational study. Radiographic and CT images of dogs admitted to a veterinary teaching hospital were assessed twice in a randomized order two weeks apart by a first-year diagnostic imaging resident and a DACVR. The fracture type, subject age, sex, neuter status, body weight, limb of fracture, comminution, and presence of concurrent fibular fracture were recorded. The intra- and interobserver agreement for fracture classification was calculated using the Cohen's kappa. The fracture type distribution was: type 1 (33/49), type 2 (1/49), type 3 (0/49), type 4 (2/49), and type 5 (13/49). Dogs that had a concurrent fibular fracture had a type 4 or type 5 tibial avulsion fracture (p < 0.01). The intra-observer agreement for Observer 1 (kappa= 0.80) and Observer 2 (kappa= 0.88) was strong. The inter-observer agreement was moderate (kappa= 0.71-0.72). This study describes two new tibial apophyseal fracture conformations in dogs (type 4 and 5). The use of the proposed classification system is recommended in the description of tibial apophyseal avulsion fractures in dogs, as it might assist surgeons in patient management and surgical planning.
Kinetic Evaluation of the Hypoxia Radiotracers [18f]fluoromisonidazole and [18f] fluoroazomycin-arabinoside Using Dynamic PET/CT Imaging in Dogs with Spontaneous Tumors

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Abstract: Positron emission tomography (PET) can provide non-invasive assessment of the presence and distribution of tumor hypoxia. The aim of this study was to evaluate the kinetics of the hypoxia PET radiotracers, [18F]fluoromisonidazole ([18F]FMISO) and [18F]fluoroazomycin-arabinoside ([18F]FAZA), for tumor hypoxia detection and to assess the correlation of hypoxic kinetic parameters with static imaging measures in canine spontaneous tumors. Sixteen anesthetized dogs with spontaneous tumors underwent a 150-min dynamic PET/CT scan using either [18F]FMISO or [18F]FAZA (N=8 for each). The maximum tumor-to-muscle ratio (TMRxmax) > 1.4 on the last image frame was used as the standard threshold to determine tumor hypoxia. The TMRxmax was compared with radiotracer trapping rate (k3) and influx rate (Ki) for [18F]FMISO and distribution volume (VT) for [18F]FAZA. Tumor hypoxia was detected in 7/8 tumors in the [18F]FMISO group and 4/8 tumors in the [18F]FAZA group. All hypoxic tumors were detected at > 120 min with [18F]FMISO and at > 60 min with [18F]FAZA. TMRxmax was strongly correlated with both k3 and Ki for [18F]FMISO at > 90 min and with VT for [18F]FAZA at > 120 min. Our results showed that [18F]FAZA provided a promising alternative radiotracer to [18F]FMISO, with detecting the presence of tumor hypoxia at an earlier time (60 min), consistent with its faster kinetics. The strong correlation between TMRxmax over the 90-150 min and 120-150 min timeframes with [18F]FMISO and [18F]FAZA, respectively, with kinetic parameters associated with tumor hypoxia for each radiotracer, suggest that TMRxmax is a good alternative to
Imaging Characteristics of Retrobulbar Meningiomas in 15 Dogs

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Abstract: Optic nerve meningiomas are a rare form of canine meningioma that arise from neoplastic transformation of the arachnoid cap cells within the optic nerve sheath or from extension of a primary intracranial tumor. The goal of this retrospective case series is to describe the CT and MRI features of confirmed meningiomas within the retrobulbar space of dogs. Medical records from multiple institutions were searched for canine patients with CT and/or MRI imaging of a cytologically or histologically confirmed retrobulbar meningioma. Fifteen dogs met the inclusion criteria. Retrobulbar meningiomas appeared as a relatively well-defined ovoid to conical mass within the retrobulbar space, most often, but not always, centered on the optic nerve and expanding the extraocular musculature. On CT masses were predominantly soft tissue attenuating and variably contrast enhancing. While MR features were variable, moderate to strong contrast enhancement was seen in all cases. Many of the tumors had evidence of partial mineralization, best appreciated on CT in nine patients, but also suspected based on susceptibility artifact in three MRI cases, one of which was confirmed on CT. Regional osteolysis was a rare finding, noted in three cases, but was often accompanied by intracalvarial extension (2/3). Intracalvarial extension was also seen in the absence of regional osteolysis, confirmed in a total of six patients. The findings of this case series are similar to previous gross and histologic descriptions of retrobulbar meningiomas and can aid in the prioritization of retrobulbar meningioma as a differential for a retrobulbar mass.
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