

# **ACVS Veterinary Symposium 2012**

**National Harbor, Maryland, USA  
1-3 November 2012**

**ISBN: 978-1-62993-020-6**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2012) by the American College of Veterinary Surgeons  
All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact the American College of Veterinary Surgeons  
at the address below.

American College of Veterinary Surgeons  
19785 Crystal Rock Drive, Suite 305  
Germantown, Maryland 20874

Phone: (877) 217-2287  
Fax: (301) 916-2287

[acvs@acvs.org](mailto:acvs@acvs.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Table of Contents

## **LARGE ANIMAL PROCEEDINGS**

---

### **ADVANCES IN FOAL SURGERY**

<b>Preventing and Treating Adhesions in Foals</b>	<b>1</b>
Eric Mueller, DVM, PhD, DACVS, University of Georgia	
<b>Management of Fractures of the Forearm and Digit in the Foal</b>	<b>9</b>
Alan Ruggles, DVM, DACVS, Rood & Riddle Equine Hospital	
<b>Management of Gastric Outflow Obstruction in Foals</b>	<b>14</b>
Brett Woodie, DVM, MS, DACVS, Rood & Riddle Equine Hospital	

### **CUTTING EDGE IN MINIMALLY INVASIVE SOFT TISSUE SURGERY**

**Sponsored by: COVIDIEN Animal Health**  
***An ACVS Premier Sponsor***

<b>Benefits of Minimally Invasive Surgery Biopsy Techniques in the Chest and Abdomen</b>	<b>16</b>
Florent David, DVM, DECVS, MSc, DACVS-LA, University College of Dublin	
<b>How to Approach Uroliths from the Kidney to the Urethra</b>	<b>21</b>
Katja Duesterdieck-Zellmer, Dr.med.vet., MS, PhD, DACVS, Oregon State University	
<b>Minimally Invasive Surgery: Evidence Based Ligation and Hemostatic Techniques</b>	<b>24</b>
Dean Hendrickson, DVM, MS, DACVS, Colorado State University	

### **CUTTING EDGE MINIMALLY INVASIVE ORTHOPEDIC SURGERY**

**Sponsored by: AOVET North America**

<b>Computer-Assisted Fracture Repair Techniques</b>	<b>28</b>
Jorg Auer, DrMedVet, MS, DACVS, University of Zurich	
<b>Minimally Invasive Orthopedic Surgery: Is It Better?</b>	<b>32</b>
Timothy Lescun, BVSc, MS, DACVS, Purdue University	
<b>What is the Evidence Basis for Minimally Invasive Arthrodesis?</b>	<b>35</b>
Timothy Lescun, BVSc, MS, DACVS, Purdue University	
<b>CT Guided Fracture Fixation in the Foot</b>	<b>38</b>
Dean Richardson, DVM, DACVS, University of Pennsylvania	
<b>Mi Repair of Long Bone Fractures</b>	<b>42</b>
Dean Richardson, DVM, DACVS, University of Pennsylvania	

## **DECISION MAKING IN EQUINE ORTHOPEDIC SURGERY**

**Sponsored by: Pfizer Animal Health  
An ACVS Industry Partner**

<b>Update on Local Treatment of Orthopedic Infections</b>	<b>48</b>
Antonio Cruz, DVM, MVM, MSc, DACVS, Paton and Martin Veterinary Services	
<b>Medial Femoral Condyle - What and How To Treat</b>	<b>52</b>
Lisa Fortier, DVM, PhD, DACVS, Cornell University	
<b>Meniscal Injuries- Diagnosis and Management</b>	<b>54</b>
Jose Garcia-Lopez, VMD, DACVS, Tufts University	
<b>Evidence-Based Decision Making in Equine Orthopedics: Options for Anesthetic Recovery Systems</b>	<b>58</b>
Samantha Morello, DVM, DACVS-LA, University of Wisconsin-Madison	
<b>Dorsal Cortical Fractures - Screw, Drill or Both?</b>	<b>62</b>
Dean Richardson, DVM, DACVS, University of Pennsylvania	
<b>Third Carpal Bone Slab Fracture Repair Pathogenesis and Decision Making</b>	<b>67</b>
Michael Ross, DVM, DACVS, University of Pennsylvania	
<b>Superficial Digital Flexor Tenonitis - Is There Still a Role for Surgery?</b>	<b>71</b>
Michael Ross, DVM, DACVS, University of Pennsylvania	
<b>Tarsal Arthrodesis Techniques: What Makes Sense?</b>	<b>73</b>
Chad Zubrod, DVM, MS, DACVS-LA, Oakridge Equine Hospital	

## **DECISION MAKING IN GASTROINTESTINAL SURGERY**

<b>Evidence Based Medicine: Who cares?</b>	<b>77</b>
James Cook, DVM, PhD, DACVS, University of Missouri-Columbia	
<b>Jejunocolicostomy--Technique and Tips for Success</b>	<b>79</b>
David Freeman, MVB, PhD, DACVS, University of Florida	
<b>Repeat Celiotomy-When is it Indicated?</b>	<b>80</b>
David Freeman, MVB, PhD, DACVS, University of Florida	
<b>Peri-Operative Medications-Are We Over Doing It?</b>	<b>81</b>
Diana Hassel, DVM, DACVS, Colorado State University	
<b>A User's Guide to Large Colon Resection: Be Not Afraid</b>	<b>85</b>
Faith Hughes, DVM, DACVS, Peterson & Smith Equine Hospital	
<b>Equine Endotoxemia: Any New Therapies In The Horizon?</b>	<b>87</b>
Gal Kelmer, DVM, DACVS-LA, Hebrew University of Jerusalem	
<b>Difficult Intraoperative Decisions During Colic Surgery</b>	<b>92</b>
Leann Kuebelbeck, DVM, DACVS, Surgi Care Center for Horses	
<b>Review of Colic 2012</b>	<b>96</b>

## **DECISION MAKING IN RESPIRATORY SURGERY**

**Sponsored by: OPTOMED**

<b>Evidence Based Approach to Surgery for Recurrent Laryngeal Neuropathy (RLN)</b>	<b>100</b>
Safia Barakzai, BVSc, MSc, DESTS, DECVS, The University of Edinburgh	
<b>Decision Making in Guttural Pouch Mycosis</b>	<b>105</b>
David Freeman, MVB, PhD, DACVS, University of Florida	
<b>Use of Ultrasound and MRI in Laryngeal Disease</b>	<b>106</b>
Katherine Garrett, DVM, DACVS-LA, Rood & Riddle Equine Hospital	
<b>Sinus Anatomy and Imaging: Tools for Decision Making</b>	<b>110</b>
Mat Gerard, BVSc, PhD, DACVS, North Carolina State University	
<b>Decision Making in Epiglottic Disease</b>	<b>114</b>
Eric Parente, DVM, DACVS, University of Pennsylvania	
<b>Dynamic Exercising Endoscopy: Longitudinal studies</b>	<b>115</b>
Patrick Pollock, BVMS, University of Glasgow	
<b>Decision Making In Surgery Of The Equine Paranasal Sinuses</b>	<b>120</b>
Henry Tremaine, BVM, MP, University of Bristol	

## **EVIDENCE BASED LAMENESS THERAPY**

**Sponsored by: Luitpold Animal Health**

<b>Suspensory Ligament Desmitis: Where Are We Now?</b>	<b>123</b>
Jennifer Barrett, DVM, PhD, DACVS-LA, Marion duPont Scott Equine Med Ctr	
<b>Current Evidence on Treatments of Joint Disease</b>	<b>125</b>
David Frisbie, DVM, PhD, DACVS, Colorado State University	
<b>Objective Measures of Lameness Evaluation</b>	<b>127</b>
Kevin Keegan, DVM, DACVS, University of Missouri-Columbia	
<b>Making Sense of Pastern Arthrodesis Approaches</b>	<b>132</b>
Ashlee Watts, DVM, DACVS-LA, Texas A&M University	

## **INNOVATIVE LAMENESS AND DIAGNOSTIC IMAGING**

<b>Advanced Imaging: Do You Really Need It?</b>	<b>137</b>
Katherine Garrett, DVM, DACVS-LA, Rood & Riddle Equine Hospital	
<b>The Stifle – Scan it or Scope it</b>	<b>141</b>
Laurie Goodrich, DVM, PhD, MS, DACVS, Colorado State University	
<b>MRI of Fetlock Region</b>	<b>144</b>
Rich Redding, DVM, MS, DACVS, North Carolina State University	
<b>Intra-Operative Use of CT in Fracture Repair</b>	<b>146</b>

Dean Richardson, DVM, DACVS, University of Pennsylvania

**Advanced Imaging: Do You Really Need It?** 149

Alan Ruggles, DVM, DACVS, Rood & Riddle Equine Hospital

**The Stifle – Scan it or Scope it** 153

Natasha Werpy, DVM, Colorado State University

**New Perspectives in Suspensory Ligament Ultrasound** 156

Natasha Werpy, DVM, Colorado State University

**MRI - The Thrill of Victory and the Agony of Defeat** 159

Natasha Werpy, DVM, Colorado State University

**REHABILITATION AND NON-TRADITIONAL THERAPIES**

**Equine Rehabilitation - Status of the Discipline** 164

Steve Adair, DVM, MS, DACVS, University of Tennessee

**Formulation of a Rehabilitation Treatment Plan** 168

Steve Adair, DVM, MS, DACVS, University of Tennessee

**The Role of Therapeutic Exercise in Rehabilitation of the Equine** 170

Jennifer Brooks, PT, CERP, Equine Rehab Services, LLC

**Functional Assessment and Rehabilitation of the Equine Axial Skeleton** 175

Kevin Haussler, DVM, DC, PhD, Colorado State University

**Thermal Therapy in Rehabilitation of the Equine Patient** 185

Andy Kaneps, DVM, PhD, DACVS, New England Equine Medical & Surgical Center

**SMALL ANIMAL**

---

**ABDOMINAL  
SURGERY**

**Sponsored by: COVIDIEN Animal Health *An ACVS Premier Sponsor***

**Jejunostomy Tubes – Through Gastrostomy or Nasal** 186

Ryan Cavanaugh, DVM, DACVS-SA, VCA Alameda East Veterinary Hospital

**Vacuum-Assisted Peritoneal Drainage** 191

Karen Cornell, DVM, PhD, DACVS, University of Georgia

**Stenting of the Gastrointestinal Tract** 194

William Culp, VMD, DACVS-SA, University of California - Davis

**Surgical Management of Fungal GI Disease** 198

Katrin Saile, DVM, MS, DACVS-SA, Louisiana State University

**Alternate Approaches to Adrenal Surgery** 201

Chad Schmiedt, DVM, DACVS-SA, University of Georgia

## ADVANCED MIS

**Sponsored by: COVIDIEN Animal Health**  
***An ACVS Premier Sponsor***

<b>NOTES: What Is Possible?</b>	<b>203</b>
Lynetta Freeman, DVM, MS, DACVS, Purdue University	
<b>Laparoscopy: What Is Possible?</b>	<b>208</b>
Philipp Mayhew, BVMS, MRCVS, DACVS-SA, University of California-Davis	
<b>Single Incision Laparoscopy: What Is Possible?</b>	<b>212</b>
Eric Monnet, DVM, PhD, DACVS, Colorado State University	
<b>Thoracoscopy: What Is Possible?</b>	<b>214</b>
Eric Monnet, DVM, PhD, DACVS, Colorado State University	

## CLINICAL DECISION MAKING - A CASE-BASED SESSION ON OUTCOMES

<b>Clinical Outcome Measures Program Measuring Your Surgical Outcomes in a Busy Practice</b>	<b>219</b>
Dorothy Brown, DVM, MSCE, DACVS, University of Pennsylvania	
<b>The Biceps Tendon - Just Cut 'em All!</b>	<b>222</b>
James Cook, DVM, PhD, DACVS, University of Missouri-Columbia	
<b>Limb Salvage: What Your Mother Never Told You</b>	<b>224</b>
Nicole Ehrhart, VMD, MS, DACVS, Colorado State University	
<b>Real Life Cases = Real Life Data</b>	<b>227</b>
Rich Evans, DVM, MS, PhD, University of Illinois	
<b>Managing Meniscal Injuries - Release, Resect, or Reject</b>	<b>228</b>
John Innes, BVSc, PhD, DSAS, University of Liverpool	
<b>Ulna Osteotomies for Medial Compartment Disease of the Elbow-One Surgery Fits All?</b>	<b>230</b>
Amy Kapatkin, DVM, MS, DACVS, University of California-Davis	
<b>Equine Athletic Injuries: Management and Expectations</b>	<b>231</b>
Chris Kawcak, DVM, PhD, DACVS, Colorado State University	
<b>Juvenile Hip Dysplasia, Making Sense Of Confusion</b>	<b>233</b>
Kurt Schulz, DVM, MS, DACVS, Peak Veterinary Referral Center	

## DISTAL EXTREMITY

<b>Orthopedic Devices for Carpal and Tarsal Injury</b>	<b>234</b>
Sherman Canapp, DVM, MS, DACVS-SA, Veterinary Ortho & Sports Med Grp	
<b>Advanced Diagnostics for Lower Extremity Injury</b>	<b>236</b>
Cristi Cook, DVM, MS, University of Missouri	
<b>Distal Extremity Injuries</b>	<b>238</b>
Noel Fitzpatrick, DUniv, MVB, CertSAO, CertVR, Fitzpatrick Referrals Limited	

<b>Wrist and Ankle Injuries: The Human Perspective</b>	<b>242</b>
Victor Ibrahim, MD, MedStar Health Research Institute	

**FRACTURES**                      **Sponsored by: Pfizer Animal Health *An ACVS Industry Partner***

<b>Trauma Vet Locking System</b>	<b>244</b>
Don Hulse, DVM, DACVS, DECVS, Texas A&M University	
<b>ALPS Locking Plate System – Introduction &amp; Application</b>	<b>246</b>
Geoff Hutchinson, DVM, DACVS-SA, Boundary Bay Veterinary Specialty Hospital	
<b>Synthes Locking Compression Plate (LCP) System</b>	<b>248</b>
Michael Kowaleski, DVM, DACVS, DECVS, Tufts University	
<b>The SOP Locking Plate System</b>	<b>253</b>
Karl Krause, DVM, MS, DACVS, Iowa State University	

**Sponsored by: Boehringer Ingelheim Vetmedica, Inc. *An ACVS Industry Partner***  
**HEAD AND NECK SURGERY**

<b>Tie-back Complication – All in the Approach?</b>	<b>254</b>
Kyle Mathews, DVM, MS, DACVS, North Carolina State University	
<b>Evaluating the Lar-Par Patient - More to Swallow than Realized?</b>	<b>255</b>
Bryden Stanley, BVMS, MVetSc, DACVS, Michigan State University	
<b>Potential Interventional and Ablation Therapies for Head and Neck Tumors</b>	<b>259</b>
Chick Weisse, VMD, DACVS, The Animal Medical Center	
<b>Laryngeal Collapse – Can We Save Any of Them?</b>	<b>263</b>
Dick White, BVetMed, PhD, DACVS, Dick White Referrals	

**HEPATOBILIARY SURGERY**

<b>Open Surgical Management of Liver Tumours</b>	<b>264</b>
Daniel Brockman, BVSc, CVR, CSAO, DACVS, Royal Veterinary College, Small Animal Surg	
<b>Feline Shunts: How Do They Differ?</b>	<b>268</b>
Victoria Lipscomb, MA, VetMB, CSAS, DECVS, MRCVS, The Royal Veterinary College	
<b>A Minimally Invasive Approach to Liver Surgery</b>	<b>271</b>
Chick Weisse, VMD, DACVS, The Animal Medical Center	
<b>Diagnostic Imaging of Non-Shunt Liver Disease</b>	<b>276</b>
Matt Winter, BA, DVM, DACVR, University of Florida	

**INTERACTIVE CASES**



<b>Cancer Reconstruive Surgery</b>	<b>280</b>
Christopher Adin, DVM, DACVS, The Ohio State University	

## NOVEL CANCER THERAPIES

<b>Sterotatic Radiosurgery in the Sunshine State</b>	<b>288</b>
Nicholas Bacon, VetMB, MRCVS, DACVS-SA, University of Florida	
<b>Emerging Treatment Options: Interventional Oncology</b>	<b>293</b>
William Culp, VMD, DACVS-SA, University of California - Davis	
<b>The Use of Laparoscopy and Thoracoscopy in the Staging of Neoplasia</b>	<b>299</b>
Eric Monnet, DVM, PhD, DACVS, Colorado State University	
<b>Musings of a Surgical Oncologist</b>	<b>301</b>
Stephen Withrow, DVM, DACVS, Colorado State University	

## REGENERATIVE MEDICINE

<b>Regenerative Medicine for Tendinopathies in the Canine</b>	<b>302</b>
Sherman Canapp, DVM, MS, DACVS-SA, Veterinary Ortho & Sports Med Grp	
<b>Adult Stem Cells for Treatment of OA in the Dog: Data To and From the Clinic</b>	<b>304</b>
Mike Conzemius, DVM, PhD, DACVS, University of Minnesota	
<b>New Insights into the Mechanism of Platlet Rich Plasma</b>	<b>307</b>
Lisa Fortier, DVM, PhD, DACVS, Cornell University	
<b>The Use of Intraarticular Stem Cells in Horses</b>	<b>309</b>
David Frisbie, DVM, PhD, DACVS, Colorado State University	
<b>Adult Stem Cells And Bone: The What, Where, And When</b>	<b>312</b>
Mandi Lopez, DVM, MS, PhD, DACVS, Louisiana State University	
<b>Autologous Adipose Derived Mesenchymal Stem Cells for Treatment of Osteoarthritis and Renal Disease</b>	<b>315</b>
Pamela Schwartz, DVM, DACVS-SA, The Animal Medical Center	

## Sponsored by: Boehringer Ingelheim Vetmedica, Inc. *An ACVS Industry Partner* SPINAL SURGERY

<b>Cervical Disc Arthroplasty In 14 Dogs Affected by Disc Associated Wobbler Syndrome: Preliminary Results</b>	<b>316</b>
Filippe Adamo, DVM, DECVN, University of Wisconsin-Madison	
<b>Decision-Making in Surgery for Degenerative Lumbosacral Stenosis Syndrome</b>	<b>317</b>
Nick Jeffery, BVSc, PhD, DECVIM, Iowa State University	
<b>Thoracolumbar Spinal Cord Injury and Role of Corpectomy</b>	<b>319</b>
Nick Jeffery, BVSc, PhD, DECVIM, Iowa State University	

<b>Using Cell Transplants in Spinal Surgery</b>	<b>321</b>
Nick Jeffery, BVSc, PhD, DECVIM, Iowa State University	
<b>Neuroprotection in Spinal Cord Injury</b>	<b>323</b>
John Levine, DVM, DACVIM, Texas A&M University	

## **STIFLE SURGERY**

**Sponsored by: Pfizer Animal Health  
An ACVS Industry Partner**

<b>Aetiology and Biomarkers of Canine CCL Disease</b>	<b>324</b>
John Innes, BVSc, PhD, DSAS, University of Liverpool	
<b>Outcome Measures in Canine CCL Disease</b>	<b>327</b>
John Innes, BVSc, PhD, DSAS, University of Liverpool	
<b>Canine Meniscus Update</b>	<b>330</b>
Antonio Pozzi, DVM, MS, DACVS-SA, University of Florida	
<b>Paradigm Shift: Re-Evaluating Medical Management of Cranial Cruciate Ligament</b>	<b>332</b>
Vicki Wilke, DVM, DACVS-SA, University of Minnesota	

## **THORACIC SURGERY**

<b>Pyothorax in Dogs: Treatment and Outcome</b>	<b>333</b>
Harry Boothe, DVM, MS, DACVS, Auburn University	
<b>Surgical Management of Tetralogy of Fallot</b>	<b>335</b>
Daniel Brockman, BVSc, CVR, CSAO, DACVS, Royal Veterinary College, Small Animal Surg	
<b>Surgical Management of Chest Wall Tumors</b>	<b>338</b>
Julius Liptak, BVSc, MVCS, FACVSc, DACVS, DECVS, Alta Vista Animal Hospital	
<b>Diaphragmatic Hernia: Repair and Prognosis</b>	<b>342</b>
Brent Reimer, DVM, DACVS-SA, Iowa Veterinary Specialties	

## **URINARY SURGERY**

<b>Ureteral Surgery- To Stent or To Cut?</b>	<b>344</b>
Lilly Aronson, VMD, DACVS, University of Pennsylvania	
<b>Ureteral Replacement Techniques</b>	<b>349</b>
Jeff Brouman, DVM, MS, DACVS, WestVet Emergency & Specialty Ctr	
<b>Problem Urinary Tract Infections</b>	<b>351</b>
Dennis Chew, DVM, The Ohio State University	
<b>Variations of Ureteral Ectopia in Dogs – Lessons Learned</b>	<b>363</b>
Dennis Chew, DVM, The Ohio State University	
<b>Variations of Ureteral Ectopia in Dogs – Lessons Learned</b>	<b>372</b>
Mary McLoughlin, DVM, MS, DACVS, The Ohio State University	

<b>Ureteral Surgery- Tips for the Toyless</b>	<b>381</b>
Karen Tobias, DVM, MS, DACVS, University of Tennessee	
<b>Urethral Surgery- Thinking Outside the Box</b>	<b>384</b>
Karen Tobias, DVM, MS, DACVS, University of Tennessee	

## **VSSO SURGICAL ONCOLOGY SESSION: FOCUS ON ENDOCRINE NEOPLASIA**

<b>Advances in Canine Insulinoma</b>	<b>387</b>
Jolle Kirpensteijn, DVM, PhD, DACVS, Utrecht University	
<b>Laparoscopic Adrenalectomy: A New Standard of Care?</b>	<b>389</b>
Philipp Mayhew, BVMS, MRCVS, DACVS-SA, University of California-Davis	
<b>Perioperative Medical Management of Adrenal Neoplasia</b>	<b>394</b>
Carrie Palm, DVM, DACVIM, University of California-Davis	
<b>Cross Sectional Imaging of the Canine Adrenal Glands and Pancreas: An Overview of US, CT and MR Characteristics of Adrenal and Pancreatic Tumors</b>	<b>398</b>
Matt Winter, BA, DVM, DACVR, University of Florida	

## **WOUND MANAGEMENT & RECONSTRUCTION**

<b>The Science Behind Negative Pressure Wound Therapy</b>	<b>404</b>
Bonnie Campbell, DVM, PhD, DACVS, Washington State University	
<b>Pad Repair and Reconstruction</b>	<b>405</b>
Daniel Smeak, DVM, DACVS, Colorado State University	
<b>Taming Tension in Wound Closure</b>	<b>411</b>
Bryden Stanley, BVMS, MVetSc, DACVS, Michigan State University	
<b>Oxygen and Wound Healing</b>	<b>416</b>
Karen Tobias, DVM, MS, DACVS, University of Tennessee	

## **SPECIAL SESSION**

---

### **ADVANCES IN SMALL ANIMAL TOTAL JOINT REPLACEMENT**      **Sponsored by: BioMedtrix, LLC Presented by the ACVS Foundation**

<b>Biomechanical Considerations for Total Knee Arthroplasty</b>	<b>421</b>
Matthew Allen, VetMB, PhD, The Ohio State University	
<b>Biomechanical Considerations for Total Hip Replacement</b>	<b>425</b>
Michael Kowaleski, DVM, DACVS, DECVS, Tufts University	
<b>Custom Prostheses</b>	<b>430</b>

Denis Marcellin-Little, DEDV, DACVS, North Carolina State University

**Emerging Arthroplasties 435**

Jeffrey Peck, DVM, DACVS, Affiliated Veterinary Specialists

**Biomechanical Considerations for Elbow Replacement 437**

Greg Van Der Meulen, DVM

**AMERICAN COLLEGE OF VETERINARY SPORTS MEDICINE AND REHABILITATION**      **Sponsored by: Nutramax Laboratories, Inc.**

**Supraspinatus Tendinopathies in Dogs 441**

Sherman Canapp, DVM, MS, DACVS-SA, Veterinary Ortho & Sports Med Grp

**Cartilage Injury and Treatment: Veterinary Perspective 444**

James Cook, DVM, PhD, DACVS, University of Missouri-Columbia

**Conditioning and Training in the Canine Athlete 445**

Robert Gillette, DVM, MSE, Auburn University

**Diagnostic Musculoskeletal Ultrasound in Dogs 449**

Carol Gillis, DVM, PhD, DACVSMR

**Cartilage Injury and Treatment: A Human Perspective 452**

John Klimkiewicz, MD, Georgetown University Hospital

**Physiology of Exercise 455**

Erica McKenzie, DVM, Oregon State University

**Nutrition for Canine Performance 458**

Joseph Wakshlag, MS, DVM, PhD, Cornell University

**Introductions to Canine Sports and Sports Related Injuries 459**

Chris Zink, DVM, PhD, Johns Hopkins University

**American College of Veterinary Sports Medicine and Rehabilitation – Equine**      **Sponsored by: Nutramax Laboratories, Inc.**

**Equine Rehabilitative Exercise: What's the Evidence? 464**

Hilary Clayton, BVMS, PhD, Michigan State University

**Management of Quarter Horse Lameness at Competitions 466**

David Frisbie, DVM, PhD, DACVS, Colorado State University

**Nutrition for the Sport Horse 467**

Ray Geor, DVM, PhD, Kentucky Equine Research

**Response of Equine Bone to Exercise 469**

Chris Kawcak, DVM, PhD, DACVS, Colorado State University

**Response of Equine Muscle to Exercise 471**

Erica McKenzie, DVM, Oregon State University

## **ANESTHESIA - ACVA**

<b>Mechanical Ventilation in Small Animal Patients: Understanding Ventilatory Support</b>	<b>473</b>
Carolyn Kerr, DVM, DVSc, PhD, DACVA, University of Guelph	
<b>Mechanical Ventilation in Small Animal Patients: Common Problems and Solutions</b>	<b>475</b>
Carolyn Kerr, DVM, DVSc, PhD, DACVA, University of Guelph	
<b>Balanced Anesthesia in Small Animal Patients: Incorporating CRI's</b>	<b>477</b>
Carolyn Kerr, DVM, DVSc, PhD, DACVA, University of Guelph	
<b>Balanced Anesthesia in Small Animal Patients: Incorporating Local and Regional Analgesic Techniques</b>	<b>479</b>
Carolyn Kerr, DVM, DVSc, PhD, DACVA, University of Guelph	
<b>Tramadol: What Do We Really Know?</b>	<b>481</b>
Sandie Perkowski, VMD, PhD, DACVA, University of Pennsylvania	
<b>Management of Intra-Operative Hypotension</b>	<b>483</b>
Lesley Smith, DVM, DACVA, University of Wisconsin-Madison	
<b>Update on Novel Analgesic Formulations</b>	<b>489</b>
Lesley Smith, DVM, DACVA, University of Wisconsin-Madison	
<b>Breed Considerations and Myths and Misconceptions in Small Animal Anesthesia</b>	<b>493</b>
Lesley Smith, DVM, DACVA, University of Wisconsin-Madison	

## **EQUINE DENTISTRY**

<b>Minimally Invasive Approaches to Cheek Tooth Extraction</b>	<b>498</b>
Jack Easley, DVM, MS, DABVP, Easley Equine Dentistry	
<b>Equine Orthodontic Techniques for Management of Incisor Malocclusions</b>	<b>501</b>
Jack Easley, DVM, MS, DABVP, Easley Equine Dentistry	
<b>Repair of Incisor Avulsion Fractures</b>	<b>508</b>
Jack Easley, DVM, MS, DABVP, Easley Equine Dentistry	
<b>Imaging Oral Pathology: From Exam to Computed Tomography</b>	<b>512</b>
Jennifer Rawlinson, DVM, Cornell University	
<b>Regional Nerve Blocks for Dental Extraction</b>	<b>516</b>
Jennifer Rawlinson, DVM, Cornell University	
<b>Surgical Approach to Cheek Tooth Extraction</b>	<b>522</b>
Jennifer Rawlinson, DVM, Cornell University	
<b>Equine Odontoclastic Tooth Resorption and Hypercementosis: Techniques for Extraction of Canine and Incisor Teeth</b>	<b>528</b>
Jennifer Rawlinson, DVM, Cornell University	

## **INTERVENTIONAL RADIOLOGY**

**Sponsored by: Infiniti Medical**

<b>How to Build a Successful IR Clinic</b>	<b>533</b>
Matthew Beal, DVM, DACVECC, Michigan State University	
<b>Non-Oncologic Vascular Interventions</b>	<b>536</b>
William Culp, VMD, DACVS-SA, University of California - Davis	
<b>Using Vascular Plugs for Guttural Pouch Hemorrhage</b>	<b>539</b>
Jan Hawkins, DVM, DACVS, Purdue University	
<b>Interventional Cardiology</b>	<b>542</b>
John Rush, DVM, MS, DACVECC, DACVIM, Tufts University	
<b>Update On Interventional Oncology: The 4th Pillar</b>	<b>547</b>
Chick Weisse, VMD, DACVS, The Animal Medical Center	

## **JOINT DISEASE: SIMILARITIES & DIFFERENCES BETWEEN HORSES AND DOGS**

<b>The Human, Equine and Canine Stifle</b>	<b>550</b>
James Cook, DVM, PhD, DACVS, University of Missouri-Columbia	
<b>Gene Therapy for Osteoarthritis</b>	<b>551</b>
David Frisbie, DVM, PhD, DACVS, Colorado State University	
<b>Joint Resurfacing: Orthobiologics and Tissue Engineering</b>	<b>553</b>
Mark Hurtig, DVM, DACVS, University of Guelph	
<b>Osteoarthritis Across the Species</b>	<b>556</b>
Sheila Laverty, MVB, DACVS, Universite de Montreal	
<b>Medical and Nutritional Therapies for OA</b>	<b>561</b>
Bertrand Lussier, DMV, MSc, DACVS, Universite de Montreal	
<b>Osteoarthritis as an Organ Disease</b>	<b>567</b>
Peter Muir, BVSc, PhD, DACVS, University of Wisconsin-Madison	

## **LARGE ANIMAL TECHNICIANS' PROGRAM**

<b>Ruminant Surgical Cases</b>	<b>572</b>
David Anderson, DVM, MS, DACVS, Kansas State University	
<b>Large Ruminant Anesthesia</b>	<b>575</b>
David Anderson, DVM, MS, DACVS, Kansas State University	
<b>Small Ruminant Anesthesia</b>	<b>579</b>
Sharon Klingler, RVT, VTS (Anesthesia and EVN), Premier Equine Veterinary Services	
<b>Beyond Triple Drip: Clinical Anesthesia in Private Practice</b>	<b>583</b>
Sharon Klingler, RVT, VTS (Anesthesia and EVN), Premier Equine Veterinary Services	
<b>Monitoring the Anesthetized Patient: How Much is Enough?</b>	<b>587</b>
Sharon Klingler, RVT, VTS (Anesthesia and EVN), Premier Equine Veterinary Services	

<b>Pre-Anesthetic Work Up and Patient Stabilization for the Equine Surgical Patient</b>	<b>590</b>
Sharon Klingler, RVT, VTS (Anesthesia and EVN), Premier Equine Veterinary Services	

**PAIN MANAGEMENT IN SMALL ANIMALS – IVAPM**      **Sponsored by: Pfizer Animal Health *An ACVS Industry Partner***

<b>Intravenous and Intra-Wound Local Anesthesia</b>	<b>593</b>
Alicia Karas, DVM, DACVA, Tufts University	
<b>Challenges of Perioperative Feline Pain Management</b>	<b>598</b>
Alicia Karas, DVM, DACVA, Tufts University	

**SMALL ANIMAL TECHNICIANS' PROGRAM**      **Sponsored by: Hill's Pet Nutrition, Inc. *An ACVS Industry Partner***

<b>Stem Cell Therapy for Small Animal Clinical Use</b>	<b>603</b>
Tara Britt, VMD, DACVS-SA, Pet Emergency Treatment Service of Northern Colorado	
<b>Veterinary Technicians in Research</b>	<b>605</b>
Michele Fritz, LVT, BS, Michigan State University	
<b>Interventional Radiology – A Technician's Perspective of this Newly Emerging Modality</b>	<b>609</b>
Tamara Hyjek Stokley, CVT, VCA Alameda East Veterinary Hospital	
<b>Collection, Culture And Preparation Of Bone Marrow-Derived Stem Cells For Clinical Use In Small Animals</b>	<b>612</b>
T.K. Pope, BS, MS, Advanced Regenerative Therapies	
<b>Interventional Radiography, Catheter Placement and Care and Cardiology</b>	<b>614</b>
John Rush, DVM, MS, DACVECC, DACVIM, Tufts University	
<b>Update on GOLPP (LAR PAR) Characterization Study</b>	<b>618</b>
Bryden Stanley, BVMS, MVetSc, DACVS, Michigan State University	
<b>Vacuum Assisted Wound Closure</b>	<b>621</b>
Patricia Sura, DVM, DACVS-SA, University of Tennessee	

**SURGERY FOR ADVANCED PRACTITIONERS**

<b>Surgical Management of Splenic and Liver Masses</b>	<b>62,</b>
John Berg, DVM, MS, DACVS, Tufts University	
<b>Surgical Management of Small Intestinal Masses</b>	<b>62(</b>
John Berg, DVM, MS, DACVS, Tufts University	
<b>Medial Patellar Luxation: Optimizing Outcome</b>	<b>632</b>
Michael Kowaleski, DVM, DACVS, DECVS, Tufts University	
<b>Incorporating Arthroscopy into your Practice</b>	<b>638</b>
Michael Kowaleski, DVM, DACVS, DECVS, Tufts University	

<b>Gastric Dilatation-Volvulus: Lactate Clearance and Prognosis</b>	<b>641</b>
Raymond Kudej, DVM, PhD, DACVS, Tufts University	
<b>Management of Challenging Wounds: Moist Wound Healing</b>	<b>646</b>
Raymond Kudej, DVM, PhD, DACVS, Tufts University	
<b>Orthobiologics: Improving on Bone Autograft?</b>	<b>651</b>
Michael Weh, DVM, DACVS-SA, Canada West Veterinary Specialists	
<b>Management of Acute Spinal Cord Injury: Fractures and Luxations</b>	<b>654</b>
Michael Weh, DVM, DACVS-SA, Canada West Veterinary Specialists	

**TECHNICIANS' PROGRAM**      **Sponsored by: Hill's Pet Nutrition, Inc. *An ACVS Industry Partner***

<b>Patient Prep Techniques</b>	<b>659</b>
Danielle Browning, LVT, The University of Tennessee	
<b>Decontamination of Surgical Instruments</b>	<b>661</b>
David Jagrosse, CRCST, Middlesex Hospital	
<b>Assembly, Inspection and Sterilization of Surgical Instruments</b>	<b>663</b>
David Jagrosse, CRCST, Middlesex Hospital	
<b>Care and Handling of Surgical Instruments and Supplies</b>	<b>665</b>
David Jagrosse, CRCST, Middlesex Hospital	
<b>Ethylene Oxide and Plasma Sterilization</b>	<b>666</b>
David Jagrosse, CRCST, Middlesex Hospital	
<b>Arthroscopy Equipment Maintenance</b>	<b>667</b>
Kevin McAbee, DVM, DACVS-SA, VCA Alameda East Veterinary Hospita	
<b>Oh, Sew Easy': Understanding Suture Materials</b>	<b>670</b>
Heidi Reuss-Lamky, LVT, VTS, Academy of Veterinary Surgical Technicians	
<b>Updates on Antimicrobial Resistance</b>	<b>676</b>
Louise Southwood, BVSc, PhD, DACVS, DACVECC, University of Pennsylvania	

**TECHNICIANS' PROGRAM – SATURDAY**      **Sponsored by: Hill's Pet Nutrition, Inc. *An ACVS Industry Partner***

<b>Anesthesia and Surgery in Ferrets</b>	<b>678</b>
Susan Holland, LVT, VTS, Animal Cancer & Imaging Center	
<b>ICU Ventilators</b>	<b>681</b>
Paula Plummer, RVT, VTS, Texas A & M University	
<b>Using Blood Gases to Help Manage Ventilator Cases</b>	<b>683</b>
Paula Plummer, RVT, VTS, Texas A & M University	
<b>Preoperative and Postoperative Care for the Portosystemic Shunt Patient</b>	<b>685</b>



Paula Plummer, RVT, VTS, Texas A & M University

**Traumatic Brain Injury Patient Care** 687

Paula Plummer, RVT, VTS, Texas A & M University

**The Care and Use of Anesthesia Ventilators** 689

Katy Waddell, RVT, VTS (ECC, Anesthesia), Texas A&M University

**Anesthesia Concerns for Patients with Portosystemic Shunts** 691

Katy Waddell, RVT, VTS (ECC, Anesthesia), Texas A&M University

**Anesthesia Concerns for Patients with Adrenal Dysfunction** 694

Katy Waddell, RVT, VTS (ECC, Anesthesia), Texas A&M University

**Anesthesia Concerns for Hyperthyroid Cats** 696

Katy Waddell, RVT, VTS (ECC, Anesthesia), Texas A&M University

**Developing a Safe Anesthesia Plan for a Traumatic Brain Injury Patient** 698

Katy Waddell, RVT, VTS (ECC, Anesthesia), Texas A&M University

**Sponsored by: Boehringer Ingelheim Vetmedica, Inc. An ACVS Industry Partner**  
**TOTAL JOINT REPLACEMENT**

**Should I do a TATE or Inject Stem Cells?** 701

Mike Conzemius, DVM, PhD, DACVS, University of Minnesota

**The First 2 Years of CUE - Is Unicompartmental Elbow Resurfacing Working?** 704

James Cook, DVM, PhD, DACVS, University of Missouri-Columbia

**Total Elbow Replacement in Dogs** 705

Loic Dejardin, DVM, MS, DACVS, Michigan State University

**Should I Do a Total Knee Replacement or a Tibial Osteotomy?** 710

Melvyn Pond, BVMS, DACVS

**Preoperative Total Hip Replacement Difficulty Score** 712

Antonio Pozzi, DVM, MS, DACVS-SA, University of Florida

## **FARM ANIMAL**

---

### **FARM ANIMAL – FRIDAY**

**External Skeletal Fixation in Ruminants** 714

David Anderson, DVM, MS, DACVS, Kansas State University

**Surgical Management of Septic Arthritis in the Proximal Limb of Ruminants** 717

Andre Desrochers, DMV, MS, DACVS, University of Montreal

**Stifle Disorders in Camelid** 721

Michael Huber, DVM, MS, DACVS, Oregon State University

<b>Surgical Management of Dental Disorders in Llamas and Alpacas</b>	<b>723</b>
Andrew Niehaus, DVM, MS, DACVS-LA, The Ohio State University	

## **FARM ANIMAL – SATURDAY**

<b>Advanced Concepts Regarding limb Prosthesis in Ruminants</b>	<b>727</b>
David Anderson, DVM, MS, DACVS, Kansas State University	
<b>Bone Grafting in Ruminants - Indications and Techniques</b>	<b>730</b>
Sabrina Brounts, DVM, MS, DACVS-LA, University of Wisconsin-Madison	
<b>Management of Urinary Obstructions in Small Ruminants</b>	<b>731</b>
Sabrina Brounts, DVM, MS, DACVS-LA, University of Wisconsin-Madison	
<b>Internal Fixation of Fractures in Llamas and Alpacas</b>	<b>732</b>
Sabrina Brounts, DVM, MS, DACVS-LA, University of Wisconsin-Madison	
<b>Surgical Techniques for Limb Amputation in Ruminants</b>	<b>733</b>
Andre Desrochers, DMV, MS, DACVS, University of Montreal	
<b>Rhinostomy and Tracheostomy in Llamas and Alpacas</b>	<b>736</b>
Michael Huber, DVM, MS, DACVS, Oregon State University	
<b>Surgical Management of Disorders of the Sinuses in Cattle</b>	<b>737</b>
Pierre-Yves Mulon, DMV, DACVS-LA, Hopital Vétérinaire Lachute	
<b>Diagnostic and Operative Arthroscopy in Ruminants</b>	<b>739</b>
Sylvain Nichols, DMV, MS, DACVS-LA, Colorado State University	
<b>Upper Respiratory Surgery in Cattle</b>	<b>741</b>
Sylvain Nichols, DMV, MS, DACVS-LA, Colorado State University	
<b>Surgical Management of Scapulohumeral Joint Instability in Llamas and Alpacas</b>	<b>743</b>
Andrew Niehaus, DVM, MS, DACVS-LA, The Ohio State University	