

## CURRICULUM VITAE

### 1. Academic History

<b>Name:</b>	Spencer A. Johnston
<b>Present rank:</b>	Professor
<b>Tenure status:</b>	Tenured
<b>Highest degree:</b>	VMD, University of Pennsylvania, 1986
<b>Specialty certification:</b>	Diplomate, American College of Veterinary Surgeons, 1994
<b>Academic positions:</b>	
2011-present	Department Head, James and Marjorie Waggoner Professor, Department of Small Animal Medicine and Surgery, College of Veterinary Medicine, University of Georgia
2007–2011	Edward H. Gunst Professor of Small Animal Surgery, Department of Small Animal Medicine and Surgery, College of Veterinary Medicine, University of Georgia
2002–2003	Professor, Department of Small Animal Clinical Sciences, Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech
1996–2002	Associate Professor, Department of Small Animal Clinical Sciences, Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech
1990–1996	Assistant Professor, Department of Small Animal Clinical Sciences, Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech
<b>Post-graduate certificates:</b>	
1987-1990	Residency in Small Animal Surgery, Veterinary Hospital of Michigan State University
1986-1987	Internship in Small Animal Medicine and Surgery, Veterinary Hospital of the University of Georgia

#### Other professional employment:

2003–2007 Staff Surgeon, Upstate Veterinary Specialists, Greenville, SC

#### Membership in Professional and Scientific Societies:

American Veterinary Medical Association, American College of Veterinary Surgeons, Georgia Veterinary Medical Association, AOVET, Phi Beta Kappa, Phi Zeta.

#### Recognitions and Outstanding Achievements

2002 Teacher of the Year: Class of 2003. VA-MD Regional College of Veterinary Medicine  
2000 Veterinarian of the Year: St. Francis of Assisi Service Dog Organization  
1999 Distinguished Post-Doctoral Alumnus Award – Michigan State University  
1997 Wine Award Recipient (University Level Outstanding Teacher): Virginia Tech  
1995 Carl. J. Norden Distinguished Teacher Award  
1995 Teacher of the Year: Class of 1996, VA-MD Regional College of Veterinary Medicine  
1995 Teacher of the Year: Class of 1995, VA-MD Regional College of Veterinary Medicine  
1995 Graduation Speaker: Selected by the Class of 1995  
1994 Teacher of the Year: Class of 1995, VA-MD Regional College of Veterinary Medicine  
1993 Virginia Tech University Certificate of Teaching Excellence

1993	VA-MD Regional College of Veterinary Medicine College Teaching Award
1992	Teacher of the Year: Class of 1993, VA-MD Regional College of Veterinary Medicine
1986	<i>Summa cum laude</i> Graduate, University of Pennsylvania School of Veterinary Medicine
1986	Leonard J. Pearson Award (Outstanding Senior Student)
1986	Phi Zeta Award
1984	Phi Zeta Award for Student Research
1984-86	Dean's List, University of Pennsylvania School of Veterinary Medicine :
1982	<i>Cum laude</i> Graduate of Allegheny College
1982	Phi Beta Kappa
1979-82	Alden Scholar (Dean's List) of Allegheny College

## 2. Academic Service

### University of Georgia

2009-2012	University Council representative
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### University of Georgia College of Veterinary Medicine:

2011-present	Administrative Council
2010-2013	Veterinary Medical Learning Center – Executive Committee
2010	Harbor Lights Chair Search Committee
2009	Infectious Disease Committee
2008-present	Hospital Board
2007-2008	Admissions applicant reviewer
2007–2010	Pharmacy Committee

### University of Georgia Department of Small Animal Medicine and Surgery

2011-present	Department head
2010	Anesthesia Search Committee
2009	Clinical Practice Service Director Search Committee – 2 <sup>nd</sup> search (Chair)
2008-2011	Small Animal Surgery Chief of Staff
2008	Clinical Practice Service Director Search Committee (Chair)
2008	Strategic Plan Committee update
2007	Intermediate Care Committee
2007	Faculty Development Committee (Chair)
2007	Faculty Leadership Committee (ad hoc)

### Academic Committees at Virginia Tech

#### University:

1998-99, 2002	Wine Award Selection Committee
1996-1997	Faculty Senate Cabinet
1996-1997	Faculty Senator
1994-1996	Faculty Senate alternate

#### College:

1996-2003	Peer Teaching Evaluation Committee
1998–2003	Wine Award Nominating Committee (member)
1999, 2002	Wine Award Nominating Committee (Chair)
2001	Admissions: application review
1999-2000	President: Faculty Association
1999	Graduate Studies: Non-thesis Masters Committee (Chair)
1993-1999	Scholarship and Awards Committee

1995-1998	Curriculum Board
1996-1998	Design team leader (major curriculum revision)
1997	Associate Dean of Academic Affairs Search Committee
1993-1995	Research and Graduate Studies Committee Research subcommittee Residency subcommittee Graduate affairs subcommittee Graduate course ad hoc committee
1996	Post Tenure Review ad hoc Committee
1994,1995	Admissions Interview Team
1995	Committee on students with parental responsibilities

**Department:**

1991-2003	Internship Director
1991-2003	Resident and Intern Committee
1996-2003	Peer Teaching Evaluation Committee
2000-2002	Promotion and Tenure Committee
1998-2000	Promotion and Tenure Committee (Chair)
1999	Companion Animal Extension Search Committee
1998	Internal Medicine Search Committee
1994-1996	Dermatology Search Committee
1993	Cardiology Search Committee

**Teaching Hospital**

1992-1994	Pharmacy Committee
1991-1992	Morbidity and Mortality Committee

**External Academic and Administrative Service****American College of Veterinary Surgeons:**

2013-2016	Board of Regents
2013	Resident Training Working Group – ad hoc committee to evaluate the current and future role of resident training programs
2008-2010	ACVS Examination Committee representative to the European College of Veterinary Surgeons Examination Committee
2004-2008	Examination Committee
2004	Nominating Committee (Chair)
2003	Nominating Committee
2003	Annual Meeting: Orthopedics Topics Chair
2001	Annual Meeting: Resident's Forum Chair
1999-2001	Constitution and Bylaws Committee
1998-2000	Editorial Review Board, Veterinary Surgery
2000	Annual Meeting: Osteoarthritis Session Chair
1998	Annual Meeting: Abdominal Surgery Session Chair Osteoarthritis Session Chair
1997	Annual Meeting: Complex fracture Session Chair

**American Veterinary Medical Association**

2014-2020	Member, Council on Education Chair – Evaluation committee (2016)
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2013-2014 Council on Education Site Team Visitor

**North American Veterinary Conference:**

2003, 2004 Small Animal Surgery Program Chair  
2001-2002, 2005 Small Animal Surgery Program Co-Chair

**AOVET – AO North America**

2014 – 2017 AOVET North America Education Committee  
2012-present Program Chair - AO Veterinary Technician program

**Association of American Veterinary Medical Colleges**

2014-2018 Leadership Committee  
2016 - Melcher Award (DVM Leadership in Public Policy) Selection Subcommittee

### 3. Resident Instruction and Continuing Education

**Courses at the University of Georgia**

**Professional Curriculum**

SAMS 5430: Small Animal Orthopedics Rotation: 2007-present; credit hours: 3.9 per 3 week block (there are 17 blocks per year). Dr. Johnston was responsible for teaching this course 5-6 times (total 15-18 weeks) each year until 2011, and for 4-8 weeks per year since from 2011 to 2013. There are 2-5 students assigned to each block. The course involves receiving clinical patients with orthopedic problems on referral from specialist and generalist veterinarians. The faculty member is responsible for daily clinical rounds with students and house officers, as well as teaching and evaluating students' abilities in history taking, physical examination skills, technical and surgical skills, and surgical problem solving as demonstrated from the medical record and in the operating theater. The faculty member is responsible for the care of all animals seen by the service. Direct contact time is approximately 50-60 hours per week.

SAMS 5372: Advanced Small Animal Surgery Laboratory: 2007-2014. credit hours: 1.7. Dr. Johnston was responsible for 7+ contact hours. This is a laboratory course. Each laboratory has a 1-hour pre-laboratory lecture for all participants, 3 laboratory sections (each on a separate day) with one-third of the class per section, and a 1-hour post laboratory session for all participants. Dr. Johnston was the primary instructor for 2 laboratories from 2007-2011. The course is taught in the fall every year.

SAMS 5345: Advanced Course Small Animal Orthopedics: 2007-present. credit hours: 1.4; Dr. Johnston is the course coordinator and responsible for 11-14 contact hours annually. This is an elective course in small animal musculoskeletal disease and management taught in the fall every year.

SAMS 5250: General Surgery Practicum 2007-present; credit hours: 1.0. Dr. Johnston assists for 5-8 contact hours in the surgery laboratory where students develop surgical skills through a spay/neuter program. This is a core course taught in the fall each year.

**Graduate Courses:**

SAMS 7610, 7620, 7630: Small Animal Residency; 15 credit hours/semester for each course. Dr. Johnston participates in this clinical training program, which provides training for qualification for specialty board certification in small animal surgery.

SAMS 7500: Small Animal Internship; 15 credit hours/semester. Dr. Johnston oversees the training of an intern in small animal orthopedic surgery each 3-week period that he is responsible for the small animal orthopedic surgery service.

SAMS 7650: Seminar in Small Animal Medicine and Surgery; 1 credit hour/semester. This is a seminar series presented by the graduate students in our certificate program under the direction of a faculty member. Faculty members attend the seminars, participate in discussion, and supervise 1-2 presentations/year.

SAMS 8010: Seminar in Medicine and Surgery; 1 credit hour/semester. This is an advanced literature review or case discussion session directed at interns or residents, who are graduate students in our department's certificate program.

### **Courses at the VA-MD Regional College of Veterinary Medicine (Virginia Tech) - Summary**

1990-2003: Dr. Johnston taught small animal general and orthopedic surgery to fourth year veterinary students, interns, and residents for approximately 15-18 weeks per year. This clinical course required approximately 55 hours per week of direct student contact with approximately 20 students per year.

1990-2003: Dr. Johnston taught in 6-7 courses with a total of 40-60 laboratory and 10-20 lecture contact hours, with 60-90 students per course. He also taught in 5 graduate courses with 5 lecture hours for 6-10 students.

### **Postdoctoral fellows and residents trained: Major involvement (including research project)**

#### **Graduate Committees:**

2002	Dr. Tisha Harper	Surgery resident, M.S. candidate
2001	Dr. Deborah Ward	Internal Medicine resident, M.S. candidate
2000	Mr. Tony Pease	DVM/MS candidate
1998	Dr. Henri Biannucci	Surgery resident, M.S. candidate

#### **Thesis Directed:**

2002-2005	Dr. Priti Karnik. Surgery resident. M.S. Thesis: The effect of epidural deracoxib on pain and lameness associated with chemically induced stifle synovitis in the dog.
2000-2003	Dr. Stephanie Hamilton. Anesthesia resident. M.S. Thesis: The ability of epidurally administered ketamine to mediate the effects of a chemically induced synovitis in the dog.
1998-2001	Dr. Loretta Bubenik. Surgery resident. M.S. Thesis: Comparison of arthrotomy and arthroscopy in surgical exploration of the canine cubital joint.
1996-1999	Dr. Sean Gallivan. Surgery resident. M.S. Thesis: Epidural use of NSAIDs in the dog.
1996-1999	Dr. Michele Reimer. Internal Medicine resident. M.S. Thesis: The gastroduodenal effects of buffered aspirin, etodolac, and carprofen in the dog.
1994-1997	Dr. Walter Renberg. Surgery resident. M.S. Thesis: Evaluation of a novel hip model of osteoarthritis using force plate analysis.
1991-1994	Dr. Charles Kuntz. Surgery resident. M.S. Thesis: The effect of controlled cross-circulation on the donor patient.

### **Residents and Interns Trained:**

#### **At the University of Georgia - (\*=resident advisor)**

2007-2008	Sara Burns, DVM, Surgery Resident
2007-2010	Mathieu Glassman, DVM, Surgery Resident
2007-2010	Wesley Roach, DVM, Surgery Resident*
2008-2011	Steven Cogar, DVM, Surgery Resident

2009-2012 Sherisse Sakals, DVM, Surgery Resident\*  
 2010-2013 Kevin Coleman, DVM, Surgery Resident  
 2011-2014 Natalia Andrade, DVM, Surgery Resident  
 2012-2015 Marko Stejskal, DVM, Surgery Resident  
 2012-2015 Desiree Roselli, DVM, Surgery Resident\*  
 2013-2016 Dr. Laura Barbur, DVM, Surgery Resident  
 2013-2016 Dr. Jamie Brown, DVM, Surgery Resident  
 2014-2017 Dr. Brett Gullledge, DVM, Surgery Resident  
 2015-2018 Dr. Nicola Volstad, DVM, Surgery Resident

2007-present 7 interns/year

#### At Virginia Tech

1990-2003 12 residents

1990-2003 44 interns

## 4. Scholarly Activities

### Publications

#### Books authored:

DeCamp CE, **Johnston SA**, Déjardin L, Schaefer SL. *Brinker, Piermattei, and Flo's Handbook of Small Animal Orthopedics and Fracture Repair*. 5<sup>th</sup> edition. 2016. 868 pages. ISBN 978-1-4377-2364-9.

**Johnston SA**, Biery DN. *Pfizer Atlas of Common Painful Conditions in Dogs and Cats*. Wilmington. Gloyd Group. 2003. ISBN 0-9678005-8-7.

#### Books edited:

**Johnston SA**, Tobias KM. *Veterinary Surgery: Small Animal*. St. Louis. Elsevier Saunders. 2<sup>nd</sup> edition. In press, projected publication date July 2017.

Tobias KM, **Johnston SA**. *Veterinary Surgery: Small Animal*. St. Louis. Elsevier Saunders. 2012. 2128 pages. ISBN 978-1-4377-0746-5.

**Johnston SA**. Osteoarthritis. *Vet Clin North Am Small Anim Pract*. 27(4);1997. 262 pages.

#### Chapters in books:

1. Benitez M, **Johnston SA**. Traumatic orthopedic emergencies. In: Drobatz KJ, Rozanski EA, Silverstein D, et al., eds. *Textbook of Small Animal Emergency Medicine*. Wiley and Sons. In press.
2. **Johnston SA**, von Pfeil DJF, Déjardin L, Weh M, Roe S. Internal Fracture Fixation. In: Johnston SA, Tobias KM, eds. *Veterinary Surgery: Small Animal*, 2<sup>nd</sup> edition. St. Louis. Elsevier Saunders. In press.
3. Rosselli DD, **Johnston SA**. Osteoarthritis. In: Etienne Cote's *Clinical Veterinary Advisor: Dogs and Cats*, 3rd edition. St. Louis. Elsevier. 2015, 735-736.
4. Glassman MM, **Johnston SA**. Hip Dysplasia. In: Etienne Cote's *Clinical Veterinary Advisor: Dogs and Cats*, 3rd edition. Elsevier. 2015, 487-489.
5. **Johnston SA**. Osteochondrosis. In: Tilley LP, Smith FWK Jr., eds. *Blackwell's 5-minute Veterinary Consultant: Canine and Feline*. 6<sup>th</sup> ed. Ames, Iowa. Blackwell Publishing Professional. 2015.

6. **Johnston SA.** Antebrachial Growth Deformities. In: Tilley LP, Smith FWK Jr., eds. *Blackwell's 5-minute Veterinary Consultant: Canine and Feline*. 6<sup>th</sup> ed. Ames, Iowa. Blackwell Publishing Professional. 2015.
7. **Johnston SA.** Internal fixation for management of canine limb deformities. In: Marcellin-Little D, ed. *Advances in Management of Companion Animal Limb Deformities*. Ames, Iowa: Wiley-Blackwell, Submitted Nov 2014.
8. **Johnston SA,** von Pfeil DJF, Déjardin L, Weh M, Roe S. Internal Fracture Fixation. In: Tobias KM, Johnston SA, eds. *Veterinary Surgery: Small Animal*. St.Louis. Elsevier Saunders, 2012;576-607.
9. Sakals SA, **Johnston SA.** Septic Arthritis. In: Tilley LP, Smith FWK Jr., eds. *Blackwell's 5-minute Veterinary Consultant: Canine and Feline*. 5<sup>th</sup> ed. Ames, Iowa. Blackwell Publishing Professional, 2011.
10. Cogar SM, **Johnston SA.** Hypertrophic Osteodystrophy. In: Tilley LP, Smith FWK Jr., eds. *Blackwell's 5-minute Veterinary Consultant: Canine and Feline*. 5<sup>th</sup> ed. Ames, Iowa. Blackwell Publishing Professional, 2011.
11. Cogar SM, **Johnston SA.** Craniomandibular Osteopathy. In: Tilley LP, Smith FWK Jr., eds. *Blackwell's 5-minute Veterinary Consultant: Canine and Feline*. 5<sup>th</sup> ed. Ames, Iowa. Blackwell Publishing Professional, 2011, 796-797.
12. Roach WJ, **Johnston SA.** Osteochondrodysplasia. In: Tilley LP, Smith FWK Jr., eds. *Blackwell's 5-minute Veterinary Consultant: Canine and Feline*. 5<sup>th</sup> ed. Ames, Iowa. Blackwell Publishing Professional, 2011.
13. Roach WJ, **Johnston SA.** Osteoarthritis. In: Etienne Cote's *Clinical Veterinary Advisor: Dogs and Cats*, 2<sup>nd</sup> edition. St. Louis. Elsevier. 2010, 796-797.
14. Glassman MM, **Johnston SA.** Hip Dysplasia. In: Etienne Cote's *Clinical Veterinary Advisor: Dogs and Cats*, 2<sup>nd</sup> edition. Elsevier. 2010, 531-533.
15. **Johnston SA.** Septic Arthritis. In: Tilley LP, Smith FWK Jr., eds. *Blackwell's 5-minute Veterinary Consultant: Canine and Feline*. 4<sup>th</sup> ed. Ames, Iowa. Blackwell Publishing Professional, 2007; 106-107.
16. **Johnston SA.** Septic Arthritis. In: Tilley LP, Smith FWK Jr., eds. *The 5-minute Veterinary Consultant. Canine and Feline*. 3<sup>rd</sup> ed. Philadelphia. Lippincott Williams & Wilkins; 2004, 100-101.
17. **Johnston SA.** Osteoarthritis. In: Harari J, ed. *Small Animal Surgery Secrets*. 2<sup>nd</sup> ed. Philadelphia. Hanley & Belfus, 2004; 343-347.
18. **Johnston SA.** Fractures of the femur. In: Harari J, ed. *Small Animal Surgery Secrets*. 2<sup>nd</sup> ed. Philadelphia. Hanley & Belfus, 2004; 261-265.
19. **Johnston SA.** Fractures of the humerus. In: Harari J, ed. *Small Animal Surgery Secrets*. 2<sup>nd</sup> ed. Philadelphia. Hanley & Belfus, 2004; 247-251
20. Todhunter R, **Johnston SA.** Osteoarthritis. In: Slatter DH, ed. *Textbook of Small Animal Surgery*. 3<sup>rd</sup> ed. Philadelphia, W.B. Saunders Co, 2003; 2208-2246.
21. **Johnston SA.** Pain. In: Ettinger SJ, Feldman EC, eds. *Textbook of Veterinary Internal Medicine*. 5<sup>th</sup> ed. W.B.Saunders Co, 2000; 20-22.

22. **Johnston SA.** Femur fractures. In: Harari J, ed. *Small Animal Surgery Secrets*. Philadelphia. Hanley & Belfus, 2000; 227-231.
23. **Johnston SA.** Humeral fractures. In: Harari J, ed. *Small Animal Surgery Secrets*. Philadelphia. Hanley & Belfus, 2000; 214-217.
24. **Johnston SA.** Osteoarthritis. In: Harari J, ed. *Small Animal Surgery Secrets*. Philadelphia. Hanley & Belfus, 2000; 299-304.
25. **Johnston SA.** Joint and skeletal diseases. In: Leib MS, Monroe WE, eds. *Practical Small Animal Internal Medicine*. Philadelphia, W.B. Saunders Co, 1997; 1189-1208.
26. **Johnston SA.** Joints. In: Harari J, ed. *Small Animal Surgery*. Philadelphia. Williams & Wilkins, 1996; 237-258.
27. **Johnston SA,** Eyster GE. Patent ductus arteriosus. In: Bonagura JD, ed. *Kirk's Current Veterinary Therapy XII*, Philadelphia, W.B. Saunders Co, 1995; 830-3.
28. Probst CW, **Johnston SA.** Osteochondrosis. In: Slatter DH, ed. *Textbook of Small Animal Surgery*. 2nd ed. Philadelphia, W.B. Saunders Co, 1993; 1944-66.

**Journal articles (\*stringent editorial review; +denotes a student under direct supervision by Dr. Johnston)**

1. \*Budsberg SC, Stoker AM, **Johnston SA,** Liska W, Reno LR, Cook JL. In vitro effects of meloxicam on metabolism in articular chondrocytes from dogs with naturally occurring osteoarthritis. *Am J Vet Res* 2013;74:1198-205.
2. \*von Pfeil DJ, DeCamp CE, Ritter M, Probst CW, Déjardin LM, Priddy N, Hayashi K, **Johnston SA.** Minimally displaced tibial tuberosity avulsion fracture in nine skeletally immature large breed dogs. *Vet Comp Orthop Traumatol* 2012;25:524-31.
3. \*+Cathcart CJ, **Johnston SA,** Reynolds LR, Al-Nadaf S, Budsberg SC. Efficacy of ABT-116, a TRPV1 antagonist, in providing analgesia for dogs with chemically induced synovitis. *Am J Vet Res* 2012;73(1):19-26.
4. \*Glassman M, Hofmeister E, Weh J, Roach W, Torres B, **Johnston SA,** Budsberg SC. Reproducibility of distal tibial axis / proximal tibial axis angle measurement in 100 dogs with cranial cruciate ligament rupture. *Vet Surg* 2011;40:830-838.
5. **Johnston SA,** McLoughlin R, Budsberg SC. Medical management of osteoarthritis. *Vet Clin Small Anim* 2008;38:1449–1470.
6. \*+Karnik PS, **Johnston SA,** Ward D, Broadstone RV, Inzana K. The effects of epidural deracoxib on the ground reaction forces in an acute stifle synovitis model. *Vet Surg* 2006;35:34-42.
7. \*+Hamilton SM, **Johnston SA,** Broadstone RV. Evaluation of analgesia provided by the administration of epidural ketamine in dogs with a chemically induced synovitis. *Vet Anaesth Analg* 2005;32:30-9.
8. \*Ward DM, Leib MS, **Johnston SA,** Marini M. The effect of dosing interval on the efficacy of misoprostol in the prevention of aspirin-induced gastric injury. *J Vet Intern Med* 2003;17:282-90.



9. \*Jehn CT, Perzak DE, Cook JL, **Johnston SA**, Todhunter RJ, Budsberg SC. Usefulness, completeness, and accuracy of Web sites providing information on osteoarthritis in dogs. *J Am Vet Med Assoc* 2003;223:1272-5.
10. \*Panciera DL, **Johnston SA**. Results of thyroid function tests and concentrations of plasma proteins in dogs administered etodolac. *Am J Vet Res* 2002;63:1492-5.
11. \*+Bubenik LJ, **Johnston SA**, Smith MM, Howard RD, Broadstone RV. Evaluation of lameness associated with arthroscopy and arthrotomy of the normal canine cubital joint. *Vet Surg* 2002;31:23-31.
12. **Johnston SA**. Overview of pain in the lame patient. *Vet Clin North Am Small Anim Pract* 2001;31:39-53.
13. \*+Renberg WC, **Johnston SA**, Carrig CB, Budsberg SC, Ye K, Veit HP. Evaluation of a method for experimental induction of osteoarthritis of the hip joints in dogs. *Am J Vet Res* 2000;61:484-91.
14. \*+Gallivan ST, **Johnston SA**, Broadstone RV, Jortner BS, Reimer M. The clinical, cerebrospinal fluid, and histopathologic effects of epidural ketorolac in dogs. *Vet Surg* 2000;29:436-41.
15. \*Budsberg S, **Johnston S**, Schwarz P, DeCamp C, Claxton R. Efficacy of etodolac for the treatment of osteoarthritis of the hip joints in dogs. *J Am Vet Med Assoc* 1999;214:206-210.
16. \*Allyn ME, Leib MS, Saunders GK, **Johnston SA**. Rectal ganglioneruoma in a dog. *J Am Anim Hosp Assoc* 1999;35:107-110.
17. \*Budsberg SC, Rytz U, **Johnston SA**. Effects of acceleration deceleration on ground reaction forces collected in healthy dogs at a trot. *Vet Comp Orthop Traumatol* 1999;12:215-219.
18. \*+Renberg WC, **Johnston SA**, Ye K, Budsberg SC. Comparison of stance time and velocity as control variables in force plate analysis of dogs. *Am J Vet Res* 1999;60:814-9.
19. \*+Reimer ME, **Johnston SA**, Leib MS, Duncan RB Jr, Reimer DC, Marini M, Gimbert K. The gastroduodenal effects of buffered aspirin, carprofen, and etodolac in healthy dogs. *J Vet Intern Med* 1999;13:472-7.
20. **Johnston SA**. Osteochondritis dissecans of the humeral head. *Vet Clin North Am Small Anim Pract* 1998;28:33-49.
21. \*+Davies C, Forrester SD, Troy GC, Saunders GK, Shell LG, **Johnston SA**. Effects of a prostaglandin E<sub>1</sub> analogue, misoprostol, on renal function in dogs receiving nephrotoxic doses of gentamicin. *Am J Vet Research* 1998;59:1048-1054.
22. **Johnston SA**. Osteoarthritis: pathology, physiology, and pathobiology. *Vet Clin North Am Sm Anim Pract* 1997;27::699-723.
23. **Johnston SA**, Budsberg SC. Nonsteroidal antiinflammatory drugs and corticosteroids for the management of osteoarthritis. *Vet Clin North Am Small Anim Pract* 1997;27:841-862.
24. McNamara PS, **Johnston SA**, Todhunter RJ. Slow-Acting, Disease-Modifying Osteoarthritis Agents. *Vet Clin North Am Small Anim Pract* 1997;27:863-881.
25. \***Johnston SA**, Fox SM. Mechanisms of action of anti-inflammatory medications used for the treatment of osteoarthritis. *J Am Vet Med Assoc* 1997;210:1486-1492.

26. \*Fox SM, **Johnston SA**. Use of carprofen for the treatment of pain and inflammation osteoarthritis in dogs. *J Am Vet Med Assoc* 1997;210:1493-1498.
27. \*Kuntz CA, **Johnston SA**, Jacobson J, et al. Controlled cross circulation in dogs: effects on donor hemodynamics. *Vet Surg* 1996;25:29-39.
28. \***Johnston SA**, Leib MS, Forrester SD. The effect of misoprostol on aspirin induced gastroduodenal lesions in the dog. *J Vet Int Med* 1995;9:32-8.
29. \*Campbell SL, Forrester SD, **Johnston SA**, Jacobson JD, Moon ML. Chylothorax associated with constrictive pericarditis in a dog. *J Am Vet Med Assoc* 1995;206:1561-64.
30. \***Johnston SA**. Articular fractures of the scapula in the dog: a clinical retrospective study of 26 cases. *J Am Anim Hosp Assoc* 1993;29:157-64.
31. \*Jevens DJ, **Johnston SA**, Jones CA, Anderson LK, Bergener DC, Eyster GE. Cor triatriatum dexter in two dogs. *J Am Anim Hosp Assoc* 1993;29:289-93.
32. \***Johnston SA**, Moon ML, Atkinson RN, Eyster GE. Pectus excavatum and endocardial cushion defect in a kitten. *J Sm An Pract* 1993;34:577-81.
33. \*DeCamp CE, Martinez SA, **Johnston SA**. Pantarsal arthrodesis in dogs and a cat: 11 cases (1983-1991). *J Am Vet Med Assoc* 1993;203:1705-7.
34. \*Dew TL, Kern DA, **Johnston SA**. Treatment of complicated femoral fractures with external skeletal fixation utilizing bone screws and polymethylmethacrylate. *Vet and Comp Orthopaed and Traumatol* 1992;5:170-5.
35. **Johnston SA**. Conservative and medical management of hip dysplasia. *Vet Clin North Am Small Anim Pract* 1992;22:595-606.
36. Leib MS, Fallin EA, **Johnston SA**. Endoscopy case of the month: abnormally shaped feces in a dog. *Vet Med* 1992;87:762-6.
37. \***Johnston SA**, Lancaster RL, Hubbard RP, Probst CW. A biomechanical comparison of 7-hole 3.5 mm broad and 5-hole 4.5 mm narrow dynamic compression plates. *Vet Surg* 1991;20:235-9.
38. \***Johnston SA**, Walshaw RA. Extended application of the caudal superficial epigastric axial pattern flap in the dog. *Vet and Comp Orthopaed and Traumatol* 1990;1:27-30.
39. \*Wortman JA, Alavi A, Attie M, Yudd AP, **Johnston SA**, Greenburg J. Quantitative autoradiography of parathyroid glands in rats with carbon-14-labeled amino acids. *J Nucl Med* 1987;28:1447-52.

#### Abstracts:

1. Budsberg S, Stoker A, **Johnston S**, Liska W, Reynolds L, Cook J. Ex-Vivo Effects of Meloxicam on Chondrocyte Metabolism in Osteoarthritic Canine Cartilage. *Vet Surg* 2011;40::E22.
2. Budsberg S, Stoker A, **Johnston S**, Liska W, Reynolds L, Cook J. Ex-Vivo effect of Meloxicam on Chondrocyte Metabolism in Osteoarthritic Canine Cartilage. *Osteoarthritis and Cartilage* 2011;19(suppl.1):S71.
3. Budsberg S, Stoker A, **Johnston S**, Liska W, Reynolds L, Cook J. Ex-Vivo Effects of Meloxicam on Chondrocyte Metabolism in Osteoarthritic Canine Cartilage. ORS 2011 Annual Meeting, Long Beach, California. January, 2011.

4. \*+Karnik PS, **Johnston SA**, Ward DL, et al. The effects of epidural deracoxib on the ground reaction forces in an acute synovitis model. *Vet Surg* 2004;33:E12.
5. \***Johnston SA**, Conzemius MG, Cross AR, et al. A multi-center clinical study of the effect of deracoxib, a COX-2 selective drug, on chronic pain in dogs with osteoarthritis. *Vet Surg* 2001;30:497.
6. \*+Bubenik LJ, **Johnston SA**, Smith MM, Howard RD, Broadstone RV. A comparison of arthroscopy and arthrotomy in surgical exploration of the canine cubital joint. *Vet Surg* 2000;29:457.
7. \*+Gallivan ST, **Johnston SA**, Broadstone RV, Jortner BS. The safety of epidurally administered ketorolac in dogs. *Vet Surg* 1999;28:393.
8. \*+Ward DM, Leib MS, **Johnston SA**, Marini M. Effect of dosing interval on the efficacy of misoprostol in the prevention of aspirin-induced gastric injury in the dog. *J Vet Intern Med* 1999;13:234.
9. \*+Renberg WC, **Johnston SA**, Ye K, Budsberg SC. Comparison of stance time and velocity as controls in force plate evaluation. *Vet Surg* 1997;26:425.
10. \***Johnston SA**, Leib MS, Marini M, et al. Endoscopic evaluation of the stomach and duodenum after administration of piroxicam to dogs. *J Vet Intern Med* 1997;11:117.
11. \*Budsberg S, **Johnston S**, Schwarz P, DeCamp C, Claxton R. Evaluation of etodolac for the treatment of osteoarthritis of the hip in dogs: a prospective multicenter study. *Vet Surg* 1996;25:420-1.
12. \*Kuntz CA, **Johnston SA**, Martin RA, et al. Controlled cross circulation in the dog: effects on donor hemodynamics. *Vet Surg* 1994;23:406.
13. \***Johnston SA**, Leib MS, Forrester SD. The effect of misoprostol on aspirin induced gastroduodenal lesions in dogs. *Vet Surg* 1993;22:385.
14. \***Johnston SA**, Leib MS, Forrester SD. Misoprostol prevents endoscopically detectable gastric and duodenal mucosal injury in dogs receiving aspirin. *J Vet Intern Med* 1993;7:132
15. **Johnston SA**, Lancaster RL, Hubbard RP, Probst CW. A biomechanical comparison of the \*7 hole 3.5 mm broad dynamic compression plate and the 5 hole 4.5 mm narrow dynamic compression plate. *Vet Surg* 1990;19:68-9.

#### Other:

##### Symposium Proceedings

1. **Johnston SA**. Wedge recession trochleoplasty for treatment of patellar luxation. NAVC Clinicians Brief 2008;6:65-67
2. **Johnston SA**. Canine osteoarthritis – pathophysiology. NAVC Clinicians Brief (suppl 10), April 2005.
3. **Johnston SA**. Osteoarthritis: Pathophysiology and expectations for treatment. Proceedings of the Osteoarthritis Symposium, Oct 6, 1998; World Veterinary Congress, Buenos Aries. Veterinary Learning Systems, 1998.
4. Benson J, Dee J, Fox S, Hansen B, **Johnston S**, Sawyer D, Short C, Vasseur P. The no-ouch method of medicine. Veterinary Forum. March 1997:56-63.

5. **Johnston SA.** Physiology, mechanisms, and identification of pain. Proceedings of the Predicable Pain Management Symposium, January 14, 1996, Orlando. Veterinary Learning Systems, 1996: 5-11.
6. **Johnston SA.** Pathophysiology of Hip Dysplasia. Proceedings of the Canine Hip Dysplasia Symposium, Feb 27 1995; Las Vegas. Veterinary Learning Systems, 1995:5-11.

#### Reviews

**Johnston SA.** The effect of cephalothin on bleeding times in normal dogs (comment). Comment on: J Vet Int Med, 1993;7: 127. Advances in Small Animal Medicine and Surgery, 1993; 6(12): 7-8.

## 5. Research Funding

### Grants received

- 2009 Contract Funding – Pharmaceutical Co., \$143,805. Evaluation of ABT-116 in a urate crystal model in dogs. Principal Investigator
- 2008 Contract Funding – Pharmaceutical Co., \$243,023. Investigation of the effect of a NSAID on canine osteoarthritis cartilage metabolism. Co-investigator.
- 2007 Contract Funding – Pharmaceutical Co., \$53,150. Efficacy and safety of tramadol HCL extended release for the control of pain associated with osteoarthritis in dogs under clinical conditions. Co-investigator (Site).
- 2007 Contract Funding – Pharmaceutical Co, \$42,413. A multi-center clinical efficacy and safety study of 0.2 mg/ml rhBMP-2 on absorbable collagen sponges in dogs with diaphyseal fractures. Co-investigator. Contract extension 2008, 2009.
- 2004 Contract Funding – Pharmaceutical Co, \$37,354. A pilot study evaluating the safety and efficacy of an analgesic in the treatment of post-operative pain following cranial cruciate repair surgery in dogs. Principle investigator.
- 2002 Contract Funding – Pharmaceutical Co, \$40,411. Analgesic effects in dogs treated with A-285969 In a canine synovitis model. Principle investigator.
- 2002 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$5094. The evaluation of preemptive epidural ketamine in dogs with a chemically induced synovitis. Co-investigator, Faculty Sponsor
- 2002 Unrestricted funding from a Pharmaceutical Co, \$7000. The effect of an epidural NSAID on lameness in an induced synovitis lameness model in normal dogs. Principle investigator
- 2002 Veterinary School Foundation, \$4250. The ability of epidurally administered ketamine to mediate the effects of a chemically induced synovitis in the dog. Co-investigator
- 2001 Private Funding – Pharmaceutical Co.: 2001 (study revision/extension), \$117,762. Evaluation of clinical efficacy and safety of an investigational drug for the treatment of chronic pain associated with osteoarthritis secondary to hip dysplasia in dogs. Principle investigator (Site).
- 2000 Private Funding – Pharmaceutical Co. \$103,070. Evaluation of clinical efficacy and safety of a treatment of chronic pain associated with osteoarthritis secondary to hip dysplasia in dogs. Principle investigator (Site).

- 2000 Private Funding - Pharmaceutical Co.: \$166,969. A multicenter study to determine the effect of an investigational drug on chronic pain in dogs with osteoarthritis. Principle investigator (Site).
- 1999 Dept. of Small Animal Clinical Sciences Foundation, \$3700. Thyroid function in dogs administered etodolac. Co-investigator.
- 1998 Private Funding - Pharmaceutical Co. \$43000. A pilot multi-center clinical study using kinetic gait evaluation to determine the effect of docosohexanoic acid on joint inflammation and mobility in dogs with moderate osteoarthritis. Principle investigator (Site).
- 1998 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$7500. Assessment of force plate analysis and synovial fluid inflammatory mediator concentration after arthroscopy or arthrotomy of the normal canine elbow. Principle investigator.
- 1997 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$7500, A dose-efficacy study of misoprostol in dogs administered aspirin. Co-investigator
- 1997 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$5000. The gastroduodenal effects of buffered aspirin, etodolac, and carprofen in the dog. Co-investigator.
- 1997 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$3849. Epidural use of NSAIDs in the dog. Principle investigator
- 1996 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$5000. Plasma concentration and clinical pathological evaluation of a single dose and steady state administration of acetaminophen to dogs. Principle investigator
- 1996 Virginia-Maryland Regional College of Veterinary Medicine Internal Funding, \$2000. The effect of acetaminophen on modulation of ground reaction forces in an experimental model of canine hip dysplasia. Faculty sponsor of student research.
- 1995 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$5000. Evaluation of a novel hip model of osteoarthritis using force plate analysis. Principle investigator
- 1995 Private Funding – Pharmaceutical Co, \$39,000. Evaluation of the effects of LoFrin on modulating ground reaction forces in dogs with acute synovitis induced with carrageenan. Principle investigator (Site).
- 1994 Ft. Dodge Laboratories, \$76,600. A pivotal clinical study to determine an efficacious dose range of etodolac in dogs using a parallel dosing design. Principle investigator (Site).
- 1994 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$5000. Effects of a prostaglandin E1 analogue, misoprostol, on gentamicin-induced acute nephrotoxicosis. Co-Investigator
- 1994 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$5000. The gastroduodenal effects of misoprostol, piroxicam/misoprostol, and piroxicam in the dog. Principle Investigator.

- 1992 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$5000. Cross circulation in the dog. Principle Investigator
- 1991 Virginia-Maryland Regional College of Veterinary Medicine New Initiative Grant, \$5000. Cross circulation in the dog. Principle Investigator.
- 1991 Virginia Veterinary Medical Association/Virginia-Maryland Regional College of Veterinary Medicine Veterinary Memorial Fund, \$4951. Effects of misoprostol on aspirin induced gastric lesions in the dog. Principle Investigator
- 1991 Dept of Small Animal Clinical Sciences Quick Response Grant, \$206. Cardiac catheterization - clinical development. Principle Investigator
- 1990 Dept of Small Animal Clinical Sciences Quick Response Grant, \$265. Pectus excavatum in a kitten. Principle Investigator
- 1988 American College of Veterinary Surgeons Resident Research Fund (\$3146), Companion Animal Fund of Michigan State University (\$6156), and Synthes Corporation Inc., Wayne, PA (\$3156). A biomechanical comparison of the 7 Hole 3.5 mm broad dynamic compression plate and the 5 hole 4.5 mm narrow dynamic compression plate. Principle Investigator.
- 1988 Michigan State University Veterinary Clinical Center Research Fund: \$6000 The value of preoperative screening tests in otherwise healthy dogs. Principle investigator
- 1987 Comparative Medical Research Fund of the University of Georgia, \$426. Comparison of suturing and fibrin glue in skin laceration in the guinea pig. Principle investigator
- 1984 NIH Summer Research Fellowship Canine lumbar spine: biomechanical effects of decompression and internal fixation procedures.. Student research under the mentorship of Dr. Gail Smith, Section of Surgery, Veterinary Hospital of the University of Pennsylvania:
- 1983 NIH Summer Research Fellowship. Parathyroid gland imaging: a study of uptake of radiolabeled amino acids. Student research under the mentorship of Dr. Jeffrey Wortman, Section of Radiology, Veterinary Hospital of the University of Pennsylvania:

#### **Areas in which research is done**

Canine osteoarthritis, pain management, nonsteroidal anti-inflammatory drugs

#### **Supervision of veterinary and undergraduate student research**

1996: Nell Dalton, The effect of acetaminophen on modulation of ground reaction forces in an experimental model of canine hip dysplasia.

#### **Editorship or editorial board member of journals or other learned publications:**

Dr. Johnston has reviewed articles or served on the editorial review boards for Veterinary Surgery, Journal of the American Veterinary Medical Association, American Journal of Veterinary Research, Veterinary Therapeutics, Journal of the American Animal Hospital Association, NAVC Clinicians Update, Veterinary Orthopaedics and Clinical Traumatology..

#### **Invited Research Presentations**

1. Multi-center, controlled, randomized, single-blind clinical trial of diaphyseal fracture repair in dogs using recombinant human bone morphogenetic protein-2 delivered on an absorbable collagen sponge (rhBMP-2/ACS; TruScient™. Presentation for the TruScient Study Group. TruScient European First to Know Meeting. Bologna, Italy. September 11, 2012.

2. Osteoarthritis pathophysiology. Hill's Canine j/d Symposium. Orlando, FL. January 2005, 1 hr.
3. A multi-center clinical study of the effect of deracoxib, a COX-2 selective drug, on chronic pain in dogs with osteoarthritis. A multi-center clinical study of the effect of deracoxib, a COX-2 selective drug, on chronic pain in dogs with osteoarthritis. Veterinary Orthopedic Society, Park City, UT. March 7, 2002. 0.3 hrs.
4. A multi-center clinical study of the effect of deracoxib, a COX-2 selective drug, on chronic pain in dogs with osteoarthritis. 11<sup>th</sup> annual American College of Veterinary Surgeons Symposium, Chicago, IL October 12, 2001. 0.3 hrs.
5. Geriatric dogs and osteoarthritis. Virginia-Maryland Regional College of Veterinary Medicine 12<sup>th</sup> Annual Research Symposium – Symposium on Gerontology. Blacksburg, VA, June 8, 2000. 0.5 hrs.
6. Management of pain - Roundtable discussion. Veterinary Forum – Pfizer Animal Health. Dallas, Texas. November 21, 1996.
7. Medical management of hip dysplasia. Cornell University - James A. Baker Institute for Animal Health. International Symposium on Hip Dysplasia and Osteoarthritis in Dogs. Ithaca, New York. August 3-5, 1996. 0.5 hrs.
8. Aspirin roundtable discussion. Pfizer Animal Health. Philadelphia, PA. May 1996
9. The effect of misoprostol on aspirin induced gastroduodenal lesions in dogs. 3<sup>rd</sup> annual American College of Veterinary Surgeons Veterinary Symposium. San Francisco, CA. October, 1993
10. Articular fractures of the scapula in the dog. Southeastern Veterinary Surgical Society, Lake Lanier, GA. June, 1991. 0.3 hrs.
11. A biomechanical comparison of the 7 Hole 3.5 mm broad dynamic compression plate and the 5 hole 4.5 mm narrow dynamic compression plate. American College of Veterinary Surgeons 25<sup>th</sup> Annual Meeting - Resident's Forum. New Orleans, LA. February, 1990. 0.3 hrs.

## 6. Public Service

**Veterinary Licensure:** Georgia (faculty license), Michigan

### Hospital Service

2007-2011: Orthopedic Surgery Service, University of Georgia, 5-6 blocks (15-18 weeks) of full-time clinical duty per year (50-60 hours per week), 5 blocks secondary duty.

1990-2003: Orthopedic and General Surgery Service VA-MD Regional College of Veterinary Medicine. Approximately 15-18 weeks of full time clinical duty per year (50-60 hours per week).

### Continuing Education Programs Provided to Veterinarians.

#### International Meetings

1. Bone development under stable and unstable conditions; Assessment of fracture healing; Introduction to articular fractures; Introduction to corrective osteotomy. AOVET Course – Principles in Small Animal Fracture Management. Yokohama, Japan. May 29-31, 2014.
2. Management of intra-articular fractures; Complex fractures of the shoulder; Decision making in management of pelvic fractures; tarsal luxation and arthrodesis in dogs; Interlocking nailing of complex shaft fractures; Locking compression plate principle; Placement of the osteotomy for tibial plateau leveling osteotomy (TPLO). AOVET Course – Advances in Small Animal Fracture Management. Zagreb, Croatia. April 25-28, 2014.

3. Principles of treatment of diaphyseal fractures; Principles and clinical applications of rod and plate; Principles and clinical applications of interlocking nails; Case presentation: compression/neutralization/buttress plates; Fractures of the elbow joint; Osteomyelitis: Pathophysiology and treatment; Post-operative assessment of fracture fixation; Post-operative evaluation and management of fracture patients. AOVET Course – Principles in Small Animal Fracture Management. Zagreb, Croatia. April 25-28, 2014.
4. *Principles of bone screw function: plate screw, position screw, and lag screw; principles and clinical application of neutralization plate stabilization; Principles and clinical application of buttress/bridge plate and “plate and rod technique”; Fractures of the pelvis and acetabulum; Post-operative assessment of fracture fixation; Principles of joint fracture treatment; Principles and clinical application of cancellous grafting and bone graft substitutes.* AO Principles of Small Animal Fracture Management. Taipei, Taiwan. November 2011.
5. *Osteoarthritis pathophysiology and treatment.* Hill’s Pet Nutrition, Inc., Speaking Tour: Sweden – Stockholm, Gothenberg and Uppsala; Denmark - Vejle, Copenhagen (2x); Norway – Oslo (2x); Switzerland – Zurich. September 25-October 2, 2005, 3 hrs.
6. *The chondrodystrophoid dog – a surgeon’s nightmare; Treatment of shoulder lameness in dogs; Osteoarthritis – is it the same in small and large breed dogs?* CVNSPA-AFVAC (French National Meeting), Paris, France. November 9, 2002, 3 hrs.
7. *The relationship of nutrition to developmental skeletal disease in young large breed dogs.* Hill’s Pet Nutrition, Inc., Speaking Tour: Finland – Helsinki; Sweden - Stockholm and Gothenberg; Poland- Warsaw; Denmark - Vejle, Koge, Copenhagen; Norway - Oslo. June 2-11, 1998, 3 hrs.
8. *Osteoarthritis: Pathophysiology and expectations for treatment; Panel discussion of medical management of osteoarthritis.* The World Veterinary Congress. Buenos Aries, Argentina. October 1998, 1 hr.

#### **National Meetings**

1. *Clinical application of compression plating, fractures of the elbow joint.* AOVET Principles of Small Animal Fracture Management. Orlando, FL. September 8-11, 2016.
2. *Complex shoulder fractures; Nonunion of fractures: old and new; Fractures of the carpal bones.* AO Advanced Techniques in Small Animal Fracture Repair. Columbus OH. April 7-10, 2016.
3. *Normal radial and ulnar axes, joint orientation lines, and joint reference angles; Workbook exercise 4: determining joint orientation lines, axes, and joint angles of the radius and ulna; Workbook exercise 5: homework assignment clinical case – radial/ulnar angular limb deformity; Correction of elbow joint incongruity associated with angular limb deformities.* AOVET Masters Course on Advanced Osteotomy-Small Animal. LaJolla, CA. September 24-27, 2015.
4. *Complex shoulder fractures; Complex fractures of the proximal ulna; Complex fractures of the carpus.* AO Advanced Techniques in Small Animal Fracture Repair. Columbus Ohio. April 16-19, 2015.
5. *Correction of elbow joint incongruity; Normal radial and ulnar angles; Workbook exercise 4 – anatomic and joint reference lines for the radius; Workbook exercise 5 – homework assignments for angular deformity of the radius and ulna.* AOVET Masters Course on Advanced Osteotomy-Small Animal. Columbus, OH. April 10-13, 2014.



6. *Ununited anconeal process: why not just take it out?; Decision making in the management of pelvic fractures; Patella Luxation: conventional methods of correction; Patella luxation and cranial cruciate ligament rupture or angular deformity; Angular limb deformities; Lessons learned from technical errors.* Western Veterinary Conference, Las Vegas, NV. February 2012, 2013.
7. *Interactive case: Radius/ulna angular limb deformity.* 2011 ACVS Veterinary Symposium. Chicago, IL. November 4, 2011.
8. *Coxofemoral luxation; Patella luxation; Hip dysplasia treatment; Cranial cruciate ligament rupture and repair.* Practical Orthopedics of the hind limb. Western Veterinary Conference. Two-day lecture and laboratory course providing 16 hours of continuing education. Oquendo Center, Las Vegas, NV June 2011, 2012, 2013, 2014, 2015, 2016
9. *Complex shoulder fractures; Principles of treatment of diaphyseal fractures; Decision Making in Orthopaedics - Panel Discussion of Fracture with Complications.* AO Principles of Small Animal Fracture Management, AO Advanced Techniques in Small Animal Fracture Repair. Columbus Ohio. April 2011, 2012, 2013
10. *Principles of cerclage and tension band wiring; Postoperative assessment of fracture fixation.* AOVET North America Veterinary Technician's Course. Presented in conjunction with American College of Veterinary Surgeons annual meeting. Seattle, WA 2010; Chicago, IL 2011; San Antonio, TX, 2013; San Diego, CA, 2014; Nashville, TN, 2015; Seattle, WA, 2016.
11. *Patella luxation – conventional methods; Patella luxation with cruciate rupture/angular deformity; Ununited anconeal process; Angular limb deformities.* 2010 AVMA Annual Convention. Atlanta, GA. August 3, 2010, 4 hrs.
12. *Complex shoulder fractures; Assessment of postoperative fracture repair; Panel discussion of fracture management.* AO Principles of Small Animal Fracture Management, AO Advanced Techniques in Small Animal Fracture Repair. Columbus Ohio. April 22-25, 2010.
13. *Normal radial and ulnar joint angle; Fractures of the elbow; Workbook exercise 6.* AO Masters Course on Advanced Osteotomy-Small Animal, AO Principles of Small Animal Fracture Management. LaJolla, CA. September 2009, 2010, 2011, 2012
14. *Complex shoulder fractures; Assessment of postoperative fracture repair; Panel discussion of fracture management.* AO Principles of Small Animal Fracture Management, AO Advanced Techniques in Small Animal Fracture Repair. Columbus Ohio. April 15-19, 2009; April 22-25, 2010.
15. *Principles of articular fracture management; Technical errors.* AO Principles of Small Animal Fracture Management. Columbus Ohio. May 15-18, 2008, 1 hr.
16. *Fracture management – interactive case discussion.* 2005 American College of Veterinary Surgeons Symposium. San Diego, CA. October 27, 2005, 1 hr.
17. *How I treat post-op pain with epidurals; Cementless total hip replacement; Treatment of osteoarthritis; Fracture management – the Next Level.* The North American Veterinary Conference. Orlando, FL. January 8-12 2005, 5 hrs.
18. *Use and misuse of NSAIDs; Osteoarthritis and treatment options; Chondrodystrophic dogs: an orthopedist's nightmare;; Fracture management – the Next Level.* The North American Veterinary Conference. Orlando, FL. January 17-21, 2004, 5 hrs.

19. *NSAID advances – comparing moderate pain control options.* Central Veterinary Conference / Novartis Animal Health. Kansas City, MO. August 25, 2003, 1 hr.
20. *Chronic and Orthopedic Pain Control - Ensuring Long Term Comfort.* 21<sup>st</sup> Annual American College of Veterinary Internal Medicine Forum / Novartis Animal Health. Charlotte, NC. June 5, 2003, 1 hr.
21. *Treatment of osteoarthritis; Decision making in long bone fracture repair; Fracture management – the Next Level.* The North American Veterinary Conference, Orlando, FL. January 20-22, 2003, 5 hrs.
22. *Use of NSAIDs for the treatment of osteoarthritis.* AAHA – National Audio Conference on Pain Management. June 26, 2002, 1 hr.
23. *Canine shoulder lameness; Interlocking nail fracture stabilization; Analgesia via indwelling epidural catheters; Osteoarthritis – What is it?; Multilevel pain control for osteoarthritis; Use of NSAIDs for the treatment of osteoarthritis; What, when, why, and how to use a carpal sling; Identification of pain in the surgical patient.* Western States Veterinary Conference, Las Vegas, NV. February 13-14, 2002, 8 hrs.
24. *Use of a carpal sling for the treatment of forelimb injuries; Osteoarthritis: What is it and why does it hurt?; Treatment of joint luxations; Practical use of epidurals in postoperative pain management; Use of NSAIDs for the treatment of osteoarthritis; Practical use of interlocking nails for fracture treatment; Use of indwelling epidural catheters for pain management; Fracture management – the Next Level; Understanding the side effects of NSAIDs.* The North American Veterinary Conference. Orlando, FL. January 12-16, 2002, 9 hrs.
25. *Lateral fabellar suture: tips for making the procedure easier; How I treat patellar luxation; The use of NSAIDs for the treatment of osteoarthritis; Should I learn how to use interlocking nails?; Practical use of epidurals; Use of indwelling epidural catheters for pain management; Management of nonunion and delayed union fractures; How do I know if my patient is experiencing pain?; Orthopedic surgery: Contributing to an effective operating team.* The North American Veterinary Conference, Orlando, FL. January 13-17, 2001, 9 hrs.
26. *Anti-inflammatory drugs in the management of osteoarthritis.* 2000 American College of Veterinary Surgeons Symposium, Arlington, VA. September 21, 2000, 1 hr.
27. *Osteoarthritis – pathophysiology and treatment; NSAIDs for the management of osteoarthritis; Management of delayed and nonunion fractures.* 9<sup>th</sup> annual American College of Veterinary Surgeons Symposium, San Francisco, California. October, 1999, 3 hrs.
28. *Should I learn how to use interlocking nails?; How do I know if my patient is experiencing pain?; Osteoarthritis: What is it and why does it cause lameness?; Medical management of osteoarthritis; Surgical management of osteoarthritis; Indwelling epidural catheters in the polytraumatized orthopedic patient.* The North American Veterinary Conference, Orlando, FL. January 9-13, 1999, 6 hrs.+
29. *NSAIDs: The GI connection; NSAIDs for the management of osteoarthritis.* 8<sup>th</sup> annual American College of Veterinary Surgeons Symposium. Chicago, IL. October 1998, 2 hrs.
30. *Joint structure and function; The 3.5 mm broad dynamic compression plate; Hip dysplasia - an overview; Principles of articular fracture treatment.* AO/ASIF Veterinary Course in Fracture Fixation. Columbus, Ohio. May 14-17, 1998, 2 hrs.

31. *Joint structure and function; Pathophysiology of osteoarthritis; The 3.5 mm broad dynamic compression plate; Fractures of the scapula and shoulder.* AO/ASIF Veterinary Course in Fracture Fixation. Columbus, Ohio. April 24-27, 1997, 2 hrs.
32. *Pathophysiology of pain; Medical management of osteoarthritis.* Virginia Veterinary Medical Association Annual Meeting. Roanoke, Virginia. February, 1996, 2 hrs.
33. *Basic pain physiology, mechanisms, and identification.* North American Veterinary Conference and Pfizer Animal Health Pain Management Symposium. Orlando, Florida. January, 1996, 1 hr.
34. *Management of complex humeral fractures.* 5<sup>th</sup> annual American College of Veterinary Surgeons Symposium. Chicago, Illinois. October, 1995, 1 hr.
35. *Pathophysiology of hip dysplasia.* Western Veterinary Conference and Pfizer Animal Health: Canine Hip Dysplasia Symposium. Las Vegas, Nevada. February 27, 1995, 1 hr.
36. *Medical management of hip dysplasia.* AAHA 61st Annual Meeting American College of Veterinary Nutrition & American Academy of Veterinary Nutrition Specialty Program. Boston, Massachusetts. March 5, 1994, 1 hr.

#### **Regional Meetings**

1. *Use on indwelling epidural catheters for pain control in orthopedic surgery; Use of NSAIDs for the treatment of osteoarthritis.* Kansas State 64<sup>th</sup> Annual Conference for Veterinarians. Manhattan, KS. June 3, 2003, 3 hrs.
2. *The general orthopedic examination; Patellar luxation – treatment considerations; Cranial cruciate ligament – the lateral fabellar suture; Osteoarthritis pathophysiology; Use of NSAIDs for the treatment of osteoarthritis; Conservative management of osteoarthritis.* Michigan Veterinary Medical Association, Lansing, MI. March 11, 2003, 8 hrs.
3. *Causes of front limb lameness – shoulder and elbow.* Virginia Veterinary Medical Association Annual Meeting, Roanoke, VA. February 7, 2003, 1 hr.
4. *Osteoarthritis: What is it and why does it cause pain?; The use of NSAIDs for the treatment of osteoarthritis; Practical use of epidurals; Should I learn how to use interlocking nails?; Lateral fabellar suture: tips for making the procedure easier.* North Carolina Academy of Veterinary Medicine, Wrightsville Beach, North Carolina. May 7, 2001, 6 hrs.
5. *Osteoarthritis: What is it and why does it cause pain?; The use of NSAIDs for the treatment of osteoarthritis; Practical use of epidurals; Should I learn how to use interlocking nails?; Lateral fabellar suture: tips for making the procedure easier.* Virginia Academy of Veterinary Medicine. Weyers Cave, Virginia. March 1, 2001, 6 hrs.
6. *Cruciate ligament injury and repair.* Virginia Veterinary Medical Association Annual Meeting. Roanoke, VA. February 8-9, 2002, 1 hr.
7. *Pathophysiology and management of osteoarthritis.* Massachusetts Veterinary Medical Association Annual Meeting. Boston, Massachusetts. February 7, 1998, 3 hrs.

#### **Local Meetings**

1. *Osteoarthritis and treatment with NSAIDs.* Roanoke Valley Veterinary Association. May 29, 2003, 1.5 hrs.
2. *PennHIP radiographic evaluation of hip dysplasia.* Roanoke Kennel Club. Roanoke, Virginia. November 5, 1997, 1.5 hrs.

3. *PennHIP radiographic evaluation of hip dysplasia.* New River Valley Kennel Club. Blacksburg, Virginia. September 9, 1997, 1.5 hrs.
4. *Use of PennHIP evaluation for detection of hip dysplasia.* St. Francis of Assisi Service Dog Foundation. Roanoke, Virginia. July 15, 1997, 1.5 hrs.
5. Canine hip dysplasia. Roanoke Kennel Club. Roanoke, Virginia. March 5, 1997, 1.5 hrs.
6. *PennHIP evaluation of hip dysplasia; Medical management of hip dysplasia; Surgical management of hip dysplasia; Case examples of dogs presenting with hindlimb lameness.* Tidewater Veterinary Academy. Virginia Beach, Virginia. October 9, 1996, 6 hrs.
7. *Pathophysiology of hip dysplasia; PennHIP evaluation of hip dysplasia; Medical management of hip dysplasia; Surgical management of hip dysplasia; Conditions mimicking hip dysplasia.* Tri-Cities Veterinary Association, Bristol, Tennessee. October 6, 1996, 6 hrs.
8. *Surgical management of stifle injuries.* Central Virginia Veterinary Medical Association, Richmond, Virginia. March 16, 1995, 1.5 hrs.
9. *Canine hip dysplasia.* Roanoke Kennel Club, Roanoke, Virginia. March 5, 1995, 1.5 hrs.
10. *A pivotal clinical study to determine an efficacious dose range of etodolac in dogs using a parallel dosing design.* Southwest Virginia Veterinary Medical Association, Christiansburg, Virginia. November 17, 1994, 1 hr.
11. *Management of canine osteoarthritis.* Southwest Michigan Veterinary Medical Association, Battle Creek, Michigan. May 20, 1993, 1.5 hrs.
12. *Conservative and medical management of hip dysplasia.* Blue Ridge Veterinary Association, Staunton, Virginia. March 9, 1993, 1.5 hrs.
13. *Surgical management of congenital heart disease.* Lynchburg Veterinary Medical Association, Lynchburg, Virginia. November, 1990, 1 hr.

**College Sponsored Continuing Education (all courses had a corresponding 4-hour laboratory unless otherwise noted)**

*Canine Orthopedic Series* (condensed version). Five consecutive 8-hour days of select orthopedic problems presented to veterinarians along with a corresponding laboratory. Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, Virginia.

May 19-23, 2003

December 9-13, 2002

May 20-24, 2002

December 10-14, 2001

April 30-May 4, 2001

April 10-14, 2000

December 4-8, 2000

April 12-16, 1999

*Hip dysplasia; Cruciate ligament injury - extracapsular repair; Patellar luxation; Radiographic review session.* Virginia-Maryland Regional College of Veterinary Medicine. Orthopedic Surgery of the Hindlimb - A Short Course for Veterinarians, Blacksburg, Virginia. 4 hrs.

September 29-30, 2000

November 16-17, 2001

November 19-20, 1999

May 1-2, 1998

*Mechanisms of action of antiinflammatory medications; Antiinflammatory medications for the treatment of canine osteoarthritis.* Virginia-Maryland Regional College of Veterinary Medicine and Pfizer Animal Health - Symposium on Patient Pain Management, Roanoke, Virginia, November 21, 1997. No laboratory session. 2 hrs.

*Fractures of the scapula and shoulder; Shoulder OCD; Soft tissue abnormalities of the shoulder; Radiographic review session.* Virginia-Maryland Regional College of Veterinary Medicine. Orthopedic Surgery of the Front limb - A Short Course for Veterinarians, Blacksburg, Virginia. September 5-6, 1997, 3 hrs.

*Cruciate ligament injury - extracapsular repair; Patellar luxation.* Virginia-Maryland Regional College of Veterinary Medicine. Orthopedic Surgery of the Stifle - A Short Course for Veterinarians, Blacksburg, Virginia, January, 1997, 2 hrs.

*Canine soft tissue series.* Five 6-hour days of select soft tissue problems presented to veterinarians along with a corresponding laboratory. Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, Virginia. September-December, 1992, August-December, 1993 – 1995.

*Canine orthopedic series.* Five 6-hour days of select orthopedic problems presented to veterinarians along with a corresponding laboratory. Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, Virginia. January-June, 1992 – 1996.

*Hemilaminectomy.* Virginia-Maryland Regional College of Veterinary Medicine. Canine Neurosurgery - A Short Course for Veterinarians. Blacksburg, Virginia. March 1992.

*Approach to the shoulder, OCD, and shoulder luxation; Fractures of the radius and ulna.* Virginia-Maryland Regional College of Veterinary Medicine. Orthopedic Surgery of the Front Limb - A Short Course for Veterinarians, Blacksburg, Virginia. April, 1991, 3 hrs.

*Abdominal exploratory; Peritonitis.* Virginia-Maryland Regional College of Veterinary Medicine. Acute Abdomen - A Short Course for Veterinarians. Blacksburg, Virginia, 2 hrs. December, 1990, 1992, 1994

*Cruciate ligament injury.* Virginia-Maryland Regional College of Veterinary Medicine. Orthopedic Surgery of the Hind Limb - A Short Course for Veterinarians, Blacksburg, Virginia, 1 hr. November, 1993 - 1995

*Patella luxation.* Virginia-Maryland Regional College of Veterinary Medicine. Orthopedic Surgery of the Hind Limb - A Short Course for Veterinarians, Blacksburg, Virginia, 1 hr. November, 1990 - 1995