Curriculum vitae
Jennifer Geneviève Barrett

CONTACT INFORMATION

Marion duPont Scott Equine Medical Center
Virginia-Maryland College of Veterinary Medicine
Virginia Tech (Virginia Polytechnic Institute and State University)
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EDUCATION

Cornell University Ithaca, New York	Doctor of Veterinary Medicine (DVM)	May 2002
Yale University New Haven, Connecticut	Doctor of Philosophy (Ph.D.) Molecular Cellular and Developmental Biology	May 1999
Yale University New Haven, Connecticut	Master of Science (MS) Master of Philosophy (M.Phil.) Biology	May 1994 May 1994
Dartmouth College Hanover, New Hampshire	Bachelor of Arts (AB) Biology	May 1991

BOARD CERTIFICATIONS

2013	American College of Veterinary Sports Medicine and Rehabilitation Board Certified in Equine Sports Medicine and Rehabilitation
2008	American College of Veterinary Surgeons Board Certified in Large Animal Surgery

PROFESSIONAL EXPERIENCE

2013-present	Associate Professor of Equine Surgery Theodora Ayer Randolph Professor of Equine Surgery (2014-present) Marion duPont Scott Equine Medical Center Department of Large Animal Clinical Sciences Virginia-Maryland College of Veterinary Medicine Virginia Tech Leesburg, Virginia
2013-present	Affiliate Assistant Professor Bioengineering Department Volgenau School of Engineering George Mason University Fairfax, Virginia
2011-present	Adjunct Assistant Professor Wake Forest Institute for Regenerative Medicine

	Wake Forest University Winston-Salem, North Carolina
2007-2013	Assistant Professor of Equine Surgery Marion duPont Scott Equine Medical Center Department of Large Animal Clinical Sciences Virginia-Maryland College of Veterinary Medicine Virginia Tech Leesburg, Virginia
2004- 2007	Equine Surgery Resident Postdoctoral Research Assistant Allison A. Stewart, DVM, MS, Diplomate ACVS, Mentor Veterinary Teaching Hospital University of Illinois at Urbana-Champaign, Urbana, Illinois
2003-2004	Postdoctoral Research Associate Comparative Orthopaedics Research Laboratory Peter Muir, BVSc, PhD, Diplomate ACVS, Director University of Wisconsin-Madison School of Veterinary Medicine Madison, Wisconsin
2002-2003	Intern, Equine Medicine and Surgery Rood and Riddle Equine Hospital Lexington, Kentucky
1999-2001	Postdoctoral Research Assistant (Part-time and summers) Comparative Orthopaedics Laboratory Alan J. Nixon, BVSc, MS, Diplomate ACVS, Director Cornell University College of Veterinary Medicine Ithaca, New York

HONORS AND AWARDS

2015-17	Clinical Research Award, Loan Repayment Program National Institutes of Health
2014-present	Theodora Ayer Randolph Professorship in Equine Surgery, Virginia Tech
2013-15	Clinical Research Award, Loan Repayment Program National Institutes of Health
2010	Virginia Tech Scholar of the Week
2007	Mark S. Bloomberg Memorial Resident Research Award Veterinary Orthopedic Society Conference
2006	American Association of Equine Practitioners Foundation Research Fellow Scholarship
2006	American College of Veterinary Surgeons Veterinary Symposium Resident Poster Award, First Place

2005	American College of Veterinary Surgeons Veterinary Symposium Resident Research Presentation Award, First Place
2005	Phi Zeta Research Award, University of Illinois
2005	Phi Zeta Honor Society Induction
2002	American College of Veterinary Surgeons, Large Animal Surgery Award for a Graduating Student, Cornell University College of Veterinary Medicine
2002	American College of Veterinary Ophthalmologists, Ophthalmology Award for a Graduating Student, Cornell University College of Veterinary Medicine
2002	New York Veterinary Medical Society Senior Case Report Award, Cornell University College of Veterinary Medicine
2001	Francis H. Fox Scholarship Award for Aptitude in Clinical Diagnosis in Large Animal Medicine, Cornell University College of Veterinary Medicine
2000, 2001	Priscilla Maxwell Endicott Scholarship, Academic Merit, Cornell University College of Veterinary Medicine
1999	Tessa Ross Scholarship, Academic Merit, Cornell University College of Veterinary Medicine
1995	Society for Developmental Biology Poster Award, First Place Marine Biology Laboratory, Woods Hole, Massachusetts
1998	Dissertation Fellowship Award, Yale University

SUPPLEMENTAL SPECIALTY TRAINING

August 2012	Equine Tenoscopy and Bursoscopy Specialty Course Cornell University College of Veterinary Medicine
September 2008	Equine Stifle Arthroscopy Specialty Course Cornell University College of Veterinary Medicine
June 2007	Clinical Rotation in Magnetic Resonance Imaging North Carolina State University Anthony Pease, DVM, DACVR, Mentor
May 2007	AO/ASIF Advanced Equine Fracture Repair Course Columbus, Ohio
May 2006	AO/ASIF Principals of Equine Fracture Repair Course Columbus, Ohio
November 2004	Basic and Advanced Equine Arthroscopy Course Fort Collins, Colorado

PROFESSIONAL LICENSE FOR VETERINARY PRACTICE

2002-3	Kentucky

2003-4	Wisconsin
2004-7	Illinois-Institutional License, University of Illinois
2007-present	Virginia- Institutional License, Virginia Tech

PROFESSIONAL ASSOCIATIONS

North American Veterinary Regenerative Medicine Society, Director
Orthopedic Research Society
American College of Veterinary Surgeons
American College of Veterinary Sports Medicine and Rehabilitation
International Society of Stem Cell Research
Tissue Engineering and Regenerative Medicine International Society, Musculoskeletal TWiG
American Veterinary Medical Association
American Association of Equine Practitioners
Veterinary Orthopedic Society
Phi Zeta Honor Society

PATENT APPLICATIONS

Barrett JG, Youngstrom DW, Simmons D, 2014. Three-dimensional systems for stem cell therapeutics. U.S. Patent Application #62050792, filed September 2014. Patent Pending.

PUBLICATIONS (Principal Investigator denoted with asterisk)

1. Youngstrom DW, LaDow JE, **Barrett JG***. Engineering tendon: Scaffolds, bioreactors and models of regeneration. Review Article, *Stem Cells International*, in press.
2. Guo Z, DeVita R, Freeman JG, **Barrett JG***. Determination of damage criteria in medial collateral ligaments. *ASME Journal of Biomechanical Engineering*, in press.
3. Freeman KD, **Barrett JG***, Youngstrom DW, White NA. Microangiographic comparison of the effects of three-loop pulley and six-strand Savage tenorrhaphy techniques on the equine superficial digital flexor tendon. *Veterinary Surgery*, in press.
4. Youngstrom DW, Rajpar I, Kaplan DL, **Barrett JG***. A bioreactor system for *in vitro* tendon differentiation and tendon tissue engineering. *Journal of Orthopaedic Research*, ePub ahead of print, Feb 9, 2015. doi: 10.1002/jor.22848.
5. Lamb MM, **Barrett JG***, White NA, Werre SR. Accuracy of low-field magnetic resonance imaging versus radiography for guiding injection of equine distal interphalangeal joint collateral ligaments. *Veterinary Radiology and Ultrasonography.* 55(2):174–181, 2014. doi: 10.1111/vru.12109
6. Youngstrom DW, **Barrett JG***, Jose RR, Kaplan DL. Functional characterization of detergent-decellularized equine tendon extracellular matrix for tissue engineering applications. *PLOS ONE*. 8(5): e64151, 2013. doi: 10.1371/journal.pone.0064151
7. Krista KM, White NA*, **Barrett JG**, Furr MO, Buechner-Maxwell VA. Evaluation of neutrophil apoptosis in horses with acute abdominal disease. *American Journal of Veterinary Research*. 74(7):999-1004, 2013. doi: 10.2460/ajvr.74.7.999.
8. Frellstedt L, McKenzie HC, **Barrett JG**, Furr MO*. Induction and characterization of endotoxin tolerance in equine peripheral blood mononuclear cells *in vitro*. *Veterinary Immunology and Immunopathology*. 149: 97-102, 2012. doi: 10.1016/j.vetimm.2012.05.012
9. Hart SK, **Barrett JG***, Brown JA, Papich M, Powers B, Sullins KE. Elution of antimicrobials from a cross-linked dextran gel: *in vivo* quantification. *Equine Veterinary Journal.* 45(2):148-153, 2013. doi: 10.1111/j.2042-3306.2012.00633.x.

10. Everett E, **Barrett JG***, Morelli J, DeVita R. Biomechanical Testing of a Novel Suture Pattern for Repair of Equine Tendon Lacerations. *Veterinary Surgery.* 41(2):278–285, 2012. doi: 10.1111/j.1532-950X.2011.00905.x.
11. Stewart AA; **Barrett JG*;** Byron CR; Yates AC; Durgam SS; Evans RB; Stewart MC. Comparison of equine tendon-, muscle-, and bone marrow–derived cells cultured on tendon matrix. *American Journal of Veterinary Research*. 70(6):750-7, 2009. doi: 10.2460/ajvr.70.6.750.
12. **Barrett, JG**, Sample SJ, Prokuski L, Benz-Dean J, Muir P*. Effect of short-term treatment with alendronate on ulnar bone adaptation to cyclic fatigue loading in rats. *Journal of Orthopaedic Research*. 25(8):1070-7, 2007. doi: 10.1002/jor.20395
13. Muir P*, Sample SJ, **Barrett JG**, McCarthy J, Vanderby R, Markel MD, Prokuski LJ, Kalscheur VL Effect of fatigue loading and associated matrix microdamage on bone blood flow and interstitial fluid flow. *Bone*. 40(4):948-56, 2007. doi: 10.1016/j.bone.2006.11.012
14. **Barrett JG**, Manley PA, Colopy SA, Hao Z, Graf BK, Muir P*. Inflammatory changes in ruptured canine cranial and human anterior cruciate ligaments. *American Journal of Veterinary Research*. 66(12):2073-2080, 2005. doi: 10.2460/ajvr.2005.66.2073
15. Da Costa Gomez TM**, Barrett JG**, Sample SJ, Radtke CL, Kalscheur VL, Lu Y, Markel MD, Santschi EM, Scollay MC, Muir P*. Up-regulation of site-specific remodeling without accumulation of microcracking and loss of osteocytes. *Bone*. 37(1):16-24, 2005. doi: 10.1016/j.bone.2004.12.016
16. Colopy SA, Benz-Dean J, **Barrett JG**, Sample SJ, Lu Y, Danova NA, Kalscheur VL, Vanderby R Jr, Markel MD, Muir P*. Response of the osteocyte syncytium adjacent to and distant from linear microcracks during adaptation to cyclic fatigue loading. *Bone*. 35(4):881-91, 2004. doi: 10.1016/j.bone.2004.05.024
17. Schatzberg SJ*, Cutter-Schatzberg K, Nydam D, **Barrett J**, Penn R, Flanders J, deLahunta A, Lin L, Mignot E. The effect of hypocretin replacement therapy in a 3-year-old Weimaraner with narcolepsy. *Journal of Veterinary Internal Medicine*. 18(4):586-8, 2004. doi: 10.1111/j.1939-1676.2004.tb02590.x
18. **Barrett JG**, Manning BD, Snyder M*. The Kar3p kinesin-related protein forms a novel heterodimeric structure with its associated protein Cik1p. *Molecular Biology of the Cell.* 11(7):2373-2385, 2000. doi: 10.1091/mbc.11.7.2373
19. Manning BD, **Barrett JG**, Wallace JA, Granok H, Snyder M*. Differential regulation of the Kar3p kinesin-related protein by two associated proteins, Cik1p and Vik1p. *Journal of Cell Biology*. 144(6):1219-1233, 1999. doi: 10.1083/jcb.144.6.1219

MANUSCRIPTS IN PROGRESS

20. White NA*, **Barrett JG***. MRI guided regenerative medical treatment of deep digital flexor tendon and distal interphalangeal collateral ligament injuries in the equine foot. *Equine Veterinary Journal*. Manuscript in review.
21. Youngstrom DW, LaDow JE, **Barrett JG***. Tenogenesis of bone marrow-, adipose- and tendon-derived stem cells in a dynamic bioreactor. *Connective Tissue Research*, Manuscript in review.
22. **Barrett JG***. "Veterinary Regenerative Medicine" in *Canine Musculoskeletal Ultrasonography*, Book Chapter, Wiley-Blackwell, Manuscript in preparation.

RESEARCH PRESENTATIONS/ ABSTRACTS

1. LaDow JE, Youngstrom DW, **Barrett JG**. Comparison of tenogenic differentiation of equine bone marrow-, adipose-, and tendon-derived stem cell seed decellularized tendon constructs in a

dynamic bioreactor. Tissue Engineering and Regenerative Medicine International Society Conference - World Congress. Boston, MA. September 2015. (Poster Presentation)

2. White NA, **Barrett JG**. MRI-guided regenerative medical treatment of soft tissue injuries in the equine foot.. North American Veterinary Regenerative Medicine Association Conference. Pacific Grove, CA. June 2015. (Podium Presentation)
3. LaDow JE, Youngstrom DW, **Barrett JG**. Tendon stem cells outperform bone marrow and adipose in a bioreactor model of tenogenesis. North American Veterinary Regenerative Medicine Association Conference. Pacific Grove, CA. June 2015. (Podium Presentation)
4. Popielarczyk TL, Nain AS, **Barrett JG**. Nanofiber scaffolds direct the tenocytic differentiation of mesenchymal stem cells. North American Veterinary Regenerative Medicine Association Conference. Pacific Grove, CA. June 2015. (Poster Presentation)
5. Rajpar I, Ma Z, **Barrett JG**. Platelet rich plasma for soft tissue regeneration: Optimization of cellular attributes directly correlated to superior therapeutic efficacy. North American Veterinary Regenerative Medicine Association Conference. Pacific Grove, CA. June 2015. (Poster Presentation)
6. Popielarczyk TL, Nain AS, **Barrett JG**. The influence of topographical environment on mesenchymal stem cell behavior. American Society for Cell Biology Conference. Philadelphia, PA. December, 2014. (Poster Presentation)
7. Youngstrom DW, **Barrett JG**, Rajpar I, Kaplan DL. Cultivation of functional tendon graft material in a novel bioreactor. Tissue Engineering and Regenerative Medicine International Society Conference. Washington, DC. November 2014. (Podium presentation)
8. Popielarczyk TL, Nain AS, **Barrett JG**. The influence of suspended and aligned fibrous topographical environment on mesenchymal stem cell behavior. Tissue Engineering and Regenerative Medicine International Society Conference. Washington, DC. November 2014. (Poster Presentation)
9. Bogers SH, **Barrett JG**, White NA, Furr MO. Three-dimensional culture of equine mesenchymal stem cells. 2014 ACVS Veterinary Symposium. San Diego, CA. October 2014. (Podium presentation)
10. Freeman KD, **Barrett JG**, Youngstrom DW, White NA. Microangiographic comparison of the effects of three-loop pulley and six-strand savage tenorrhaphy techniques on equine superficial digital flexor tendon. 2013 ACVS Veterinary Symposium. San Antonio, TX. October 2013. (Residents Forum Podium presentation)
11. Dahlgren LA, Stewart SL, Donnini E, Apple SM, Nichols AC, **Barrett JG**, Huckle WG, Eyestone WH. Equine adipose-derived cells as trophic mediators of tendon regeneration. North American Veterinary Regenerative Medicine Association Conference. Savannah, GA. November 2012. (Podium presentation)
12. Dahlgren LA, Stewart SL, Donnini E, **Barrett JG**, Huckle WG, Eyestone WH. Adipose-derived adult stem cells as trophic mediators for tissue repair. Veterinary Orthopedic Society Conference. Park City, UT. March 2013. (Podium presentation)
13. Youngstrom DW, **Barrett JG**. Equine tendon extracellular matrix for three-dimensional tissue culture. Gordon Research Conference on Musculoskeletal Biology & Bioengineering. Proctor, NH. August, 2012. (Poster Presentation)
14. Stewart SL, Dahlgren LA, Donnini E, Werre SR, **Barrett JG**, Eyestone WH, Huckle WR. Adipose-derived adult stem cells as trophic mediators of tissue repair. Veterinary Orthopedic Society Conference. Crested Butte, CO. March, 2012. (Podium presentation)

15. Guo Z, DeVita R, **Barrett JG**, Freeman JG. Determination of damage criteria in medial collateral ligaments. Proceedings of the ASME 2010 International Mechanical Engineering Congress and Exposition. Vancouver, Canada, November 2010. (Poster Presentation)
16. Brown JA, **Barrett JG**, Dahlgren LA and White NA. Does growth on collagen-coated plates enhance mesenchymal cell growth and differentiation toward tendon? 2010 ACVS Veterinary Symposium. Seattle, WA. October 2010. (Podium presentation)
17. Everett EK, **Barrett JG**, Morelli J, DeVita R. *In vitro* biomechanical testing of a novel suture pattern for repair of equine tendon lacerations. 2010 ACVS Veterinary Symposium. Seattle, WA. October 2010. (Residents Forum Podium presentation)
18. Raffetto JA, **Barrett JG**, Papich MG, Sullins KE. Biodegradable antibiotic delivery devices: *in vitro* elution profiles. 2010 ACVS Veterinary Symposium. October 2010. Seattle, WA. (Podium presentation)
19. Hart SK, **Barrett JG**, Sullins KE. Elution of antibiotics from a novel dextran gel: *in vivo* quantification. 2009 American College of Veterinary Surgeons Symposium. Washington, DC. October 2009. (Residents Forum Podium Presentation, First Place Award)
20. Hart SK, **Barrett JG**, Sullins KE Antibiotic therapy in equine infections: the old and the new. 2009 European College of Veterinary Surgeons Symposium. October 2009. Thessaloniki, Greece. (Poster Presentation)
21. **Barrett JG,** Stewart AA, Yates AC, Pondenis H, Seitz KA, Stewart M. Tendon-derived progenitor cells can differentiate along multiple lineages. 2007 Veterinary Orthopedic Society Conference. Sun Valley, ID. (Podium Presentation, Mark S. Bloomberg Award)
22. **Barrett JG,** Stewart AA, Yates AC, Pondenis H, Seitz KA, Stewart M. Isolation of Stem Cells from Tendon. 2006 ACVS Veterinary Symposium. Washington, DC. October 2006. (Poster Presentation, First Place Award)
23. **Barrett JG,** Stewart AA, Stewart M, Byron CR, Yates AC. *In vitro* comparison of tendon, muscle, and bone marrow-derived progenitor cells cultured on tendon matrix. 2005 ACVS Veterinary Symposium. San Diego, CA. October 2005. (Residents Forum Podium Presentation, First Place Award)
24. **Barrett JG,** Sample SJ, McCarthy J, Kalscheur VL, Markel MD, Vanderby Jr. R, Prokuski LJ, Muir P. Effect of fatigue fracture on ulna bone blood flow and interstitial fluid flow in the rat. 51st Annual Meeting of the Orthopedic Research Society. Washington, DC. March 2005. (Poster Presentation)
25. **Barrett JG,** Muir P**,** Sample SJ, McCarthy J, Kalscheur VL, Markel MD, Prokuski, LJ. Effect of short term treatment with alendronate on bone structural properties and new bone formation in rats. 51st Annual Meeting of the Orthopedic Research Society. Washington, DC. March 2005. (Poster Presentation)
26. **Barrett JG**, Snyder M. Assembly and regulation of the Cik1-Kar3 microtubule motor complex. *Molecular Biology of the Cell*. 7:211a, American Society of Cell Biology Annual Meeting. San Francisco, CA. December 1996. (Poster Presentation)
27. **Barrett JG**, Snyder M. The Cik1p/Kar3p motor complex: Which end is up? *Chromosome Structure, Regulation and Replication*. FASEB Summer Research Conference. Santa Cruz, CA. August 1996. (Podium Presentation)
28. **Barrett JG**, Page BD, Snyder M. Regulation of the Kar3p microtubule motor by Cik1p, a potential light chain. *Yeast Cell Biology*. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY. July 1995. (Podium Presentation)

29. **Barrett JG** and Snyder M. The structure of the Cik1p/Kar3p microtubule motor complex. Northeast Regional Meeting of the Society for Developmental Biology. Marine Biological Laboratory, Woods Hole, MA. July 1995. (Poster Presentation, First Place Award)
30. **Barrett JG**, Snyder M. The regulation and structure of the Cik1p/ Kar3p microtubule motor complex. *Chromosome Structure, Regulation and Replication*. FASEB Summer Research Conference. Aspen, CO. August 1994. (Podium Presentation)
31. Page BD, **Barrett JG**, Snyder M. Localization of the Kar3 kinesin heavy chain-like protein requires the Cik1 interacting protein. *Yeast Cell Biology*. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY. July 1993. (Podium Presentation)

INVITED PRESENTATIONS/ PROCEEDINGS

International:

1. 4th North American Veterinary Regenerative Medicine Association Conference: "Scaffolds in Tendon Engineering" Atlanta, GA, November 2013.
2. 3rd North American Veterinary Regenerative Medicine Association Conference: "Stem Cell Basics" Savannah, GA, November 2012.
3. 6th International Association of Veterinary Rehabilitation and Physical Therapy Symposium, 3 Hours of Lecture: "Regenerative medicine techniques to treat tendon and ligament injuries: from PRP to stem cells", "Regenerative medicine techniques to treat joint disease: stem cell therapies" and "Principals of extracorporeal shock wave therapy for musculoskeletal problems" Auburn University, Auburn, AL, August 2010.
4. International Symposium: Frontiers in Stem Cells and Biotechnology in Human and Veterinary Medicine, "Regenerative medicine strategies for veterinary orthopedics", Tamil Nadu Veterinary and Animal Sciences University, Chennai, India, July 2010.
5. 1st North American Veterinary Regenerative Medicine Association Conference, "Characterization of tendon stem cells", Buellton, CA, February 2010.

National:

1. 2015 Veterinary Information Network, Two-hour online Continuing Education Lecture, "Stem Cells and Platelet Rich Plasma", April 2015.
2. White NA, Barrett, JG. American Association of Equine Practitioners Symposium, "AAEP Past Presidents Topic – Application of the Fetlock Support Shoe", Salt Lake City, UT, December 2014
3. 2014 American Board of Veterinary Practitioners Symposium, 6 Hours of Continuing Education Lecture: "Regenerative Medicine – From PRP to Stem Cells", "Current Imaging for Orthopedics in Horse", "Current Treatments for Synovitis and Osteoarthritis", "Diagnosis and Treatment of Suspensory Desmitis", "Diagnosis and Treatment of Tendon Injury", and "Fractures from the field – stabilization, referral and prognosis", Nashville, TN, November 2014.
4. 2014 ACVS Veterinary Symposium, 2 Presentations: The Surgical Summit "Surgical Applications of Regenerative Medicine", "Regenerative Medicine in the Canine EBM", San Diego, CA, October 2014.
5. 2014 United States Food and Drug Agency, Center for Veterinary Medicine: "Regenerative Medicine to Treat Tendon and Ligament Injuries in Horses", "Regenerative Medicine to Treat Joint injuries in Horses", "Regenerative Medicine to Treat Canine Orthopedic Injuries", Rockville, MD, January 2014.

6. 2013 ACVS Veterinary Symposium: The Surgical Summit "Platelet Rich Plasma Optimization for Horses", San Antonio, TX, October 2013.
7. 2013 Veterinary Information Network, Two-hour online Continuing Education Lecture, "Stem Cells and Platelet Rich Plasma", May 2013.
8. 2012 ACVS Veterinary Symposium: The Surgical Summit "Comparison of treatment options for suspensory desmitis", Washington, DC, November 2012, Conference cancelled, due to Hurricane Sandy, proceedings published.
9. 2011 ACVS Veterinary Symposium: The Surgical Summit "Stem cells: What are they and what do they do", Chicago, IL, November 2011.
10. Havemeyer Foundation Conference on Regenerative Medicine "Scaffolds in regenerative medicine" Mesa, AZ, May 2011.
11. 2009 ACVS Veterinary Symposium: The Surgical Summit "Tendon cell therapy", Washington, DC, October 2009.
12. American Association of Equine Practitioners Symposium "Introduction to tendon injury", San Diego, CA, December 2008.

Regional:

1. Penn Vet: Penn Annual Conference, 4 Hours of CE: "Regenerative Medicine for Veterinary Patients: a Primer on Stem Cells", "Regenerative Medicine for Veterinary Patients: a Primer on Stem Biologics", "Regenerative Therapies for Tendon Healing", "Regenerative Medicine in Orthopedics: Joint Injury", Philadelphia, PA, March 2015
2. University of Kentucky, Gluck Equine Research Center invited presentation, "*In Vitro* Systems to Study Tendon Cell Therapy", Lexington, KY, December 2014.
3. 2014 Potomac Regional Veterinary Conference, 2 Hours of CE: "Current Thoughts on Treatment of Osteoarthritis" and "Treatment of Tendon and Ligament Injuries", Baltimore, MD, November 2014.
4. 2014 Northeast Association of Equine Practitioners Conference, 3 Hours of CE: "Current thoughts on osteoarthritis", "Treatments for tendon and ligament injury", "Regenerative Medicine from PRP to Stem Cells", Norfolk, VA, September 2014.
5. Littleton Equine Medical Center Annual Conference, 4 hours of CE: "Diagnosing lameness: What MRI and ultrasonography can tell us that we didn't already know", "Current approaches to intra-articular therapy", "Regenerative medicine: Stem Cells", Regenerative Medicine PRP. Denver, CO, January 2014.
6. George Mason University, Volgenau School of Engineering, Department of Bioengineering: "Tendon tissue engineering", Invited seminar speaker, Fairfax, VA, November 2013.
7. Wisconsin Veterinary Medical Association Annual Conference, 6 hours of CE : "Regenerative medicine: Stem Cells to PRP, Anti-inflammatory properties of stem cells, and treatment of orthopedic injuries with regenerative medicine", Madison, WI, October 2013.
8. Virginia Veterinary Medical Association Annual Conference, 2 Hours of CE: "Regenerative medicine: Stem Cells to PRP", Roanoke, VA, March 2013.
9. University of Connecticut Department of Animal Sciences Invited Presentation: "Regenerative medicine in orthopedics", 1 hour presentation, Storrs, CT, October 2012.
10. West Virginia Veterinary Medical Association CE Meeting, 3 Hours of CE: "Imaging techniques for lameness and orthopedics", "Regenerative medicine to treat orthopedic problems", "Treatments for joint disease" Flatwoods, WV, October 2011.
11. Hudson Valley and New York Veterinary Medical Association CE Meeting "Regenerative medicine: from PRP to stem cell therapy". Rhinebeck, NY, April 2011.

12. Maryland Veterinary Medical Association Annual Symposium 2010, 3 Hours of CE: "Regenerative medicine from stem cells to PRP". Ocean City, MD, June 2010.
13. Maryland Veterinary Medical Association Annual Symposium 2008, 6 Hours of CE: "Special problems in equine orthopedics". Timonium, MD, November 2008.

OUTREACH SEMINARS

1. EMC Continuing Education Seminar for Veterinarians: "Treatment of soft tissue injuries in the foot"; 80 attendees. January 2015.
2. Chili and Chocolate Equine Seminar Series: "Wounds 101: on the farm, into surgery, and back again", Fauquier County Fairgrounds, Warrenton VA. 120 attendees. November 2014.
3. Marion duPont Scott Equine Medical Center Client Appreciation Day: "Equine first aid and emergencies". Leesburg, VA. 100 attendees. October 2014.
4. Student American Association of Equine Practitioners, Virginia-Maryland College of Veterinary Medicine Seminar: "Post-DVM training programs for equine practitioners". Blacksburg VA. 25 attendees. September 2014
5. Long Branch Plantation Seminar Series: "Regenerative Medicine: what is it and how is it being used in horses". Boyce, VA. 40 attendees. March 2014.
6. EMC Tuesday Talk for Horse Owners and Professionals: "What can go wrong in your horse's joints and how can we help?". 50 attendees. March 2014.
7. EMC Continuing Education Seminar for Veterinarians: "Current therapies for osteoarthritis in horses". 40 attendees. January 2014.
8. EMC Tuesday Talk for Horse Owners and Professionals: "Osteoarthritis in horses: diagnosis and treatment options". 70 attendees. February 2013.
9. George Mason University Aspiring Scientists Summer Internship Program: "Careers in veterinary and biomedical sciences". George Mason University, Manassas VA; 50 attendees. August 2012
10. American Association of University Women Career Day for Girls: "Careers in veterinary medicine and biomedical sciences"; Fairfax High School, Fairfax, VA; 100 attendees. March 2012.
11. Maryland Horse World Expo: "Current approaches to joint therapy: from supplements to stem cells". 1 hour. Timonium, MD; 30 attendees. January 2012.
12. Virginia Tech Seminar for Horse Owners: "Regenerative Medicine: Stem cells, PRP and IRAP in clinical practice". Virginia Horse Center, Lexington, VA; 15 attendees. November 2011.
13. "First aid for horses" and "Colic in horses" Maryland Horse World Expo. 2 hours. Timonium, MD; 45 attendees. January 2011.
14. Equine Student Internship Program, Animal Science Department Seminar: "Regenerative Medicine in veterinary medicine"; 5 attendees. April 2010.
15. Student American Association of Equine Practitioners, Virginia-Maryland College of Veterinary Medicine Seminar: "Stem cell therapy for musculoskeletal injury". Blacksburg, VA; 30 attendees. March 2010
16. EMC Tuesday Talk for Horse Owners and Professionals: "Regenerative Medicine in equine orthopedics"; 1 hour; 75 attendees. December 2009.
17. Virginia Cooperative Extension Symposium: "Equine first aid", Front Royal, VA; 30 attendees. November 2009.
18. Virginia Licensed Veterinary Technician Fall Conference: "Equine lameness examination"; "Regenerative Medicine to treat orthopedic disease". Harrisonburg, VA; 40 attendees. September 2009.

19. EMC Open House: "Equine research at the EMC"; 3 sessions 45 min each; Lecture and tour of laboratory for horse owners, horse professionals and veterinarians; 50 attendees. July 2009.
20. American Association of University Women Career Day for Girls: "Careers in veterinary medicine and biomedical sciences". Fairfax High School, Fairfax, VA; 100 attendees. March 2009.
21. American Association of University Women Career Day for Girls: "Careers in veterinary medicine and biomedical sciences". Fairfax, VA; 100 attendees. April 2008.
22. EMC Tuesday Talk for Horse Owners and Professionals: "Stem cell therapy for musculoskeletal injury"; 1 hour; 50 attendees. February 2008.
23. EMC Continuing Education Seminar for Veterinarians: "Tendon injury and repair"; 1 hour; 50 attendees. October 2007.
24. University of Illinois Fall Conference for Veterinarians: "Angular limb deformities: The straight scoop!" 45 attendees. September 2006.

RESEARCH GRANTS

External Grants (Total: $1,530,793):

2015 American Quarter Horse Foundation
"Novel stem cell therapy to treat osteoarthritis in horses"
2015-2016
Principal Investigator; $58,028

2015 4-VA Initiatives Grant
"Proteomic analysis of mechanotransduction pathways in stem cell-seeded decellularized tendon scaffolds in a dynamic bioreactor"
2015-2016
Principal Investigator; $25,000

2014 American Kennel Club Canine Health Foundation
"Blinded, controlled clinical trial comparing regenerative medicine therapies to treat tendon injury in dogs"
2014-2016
Principal Investigator; $254,000

2014 American College of Veterinary Surgeons Foundation
"Optimizing the anti-inflammatory properties of mesenchymal stem cells to treat arthritis"
2014-2015
Principal Investigator; $14,998

2014 Morris Animal Foundation
"Optimizing Stem Cell Therapy to Treat Tendon Injury in Horses"
2014-2016
Principal Investigator; $115,050

2013 Virginia Horse Industry Board Research Grant
"Using platelet rich plasma to promote healing in horses, phase 2"
2013-2014
Principal Investigator; $9,200

2012 Virginia Horse Industry Board Research Grant
"Using stem cells to treat endotoxemia"

2012-2013
Co-Principal Investigator; $9,000

2011 Bernice Barbour Foundation
"Navicular syndrome and foot lameness: Harnessing regenerative medicine therapies to treat disease within the hoof"
2011-2013
Principal Investigator; $19,625

2010 Virginia Horse Industry Board Research Grant
"Using platelet rich plasma to promote healing in horses"
2010-2011
Principal Investigator; $20,222

2010 National Science Foundation; SBIR Phase II
"Customizable Meniscus Implant Prepared by Dielectrophoretic Biofabrication"
2010-2013
Principal Investigator on Sub-Award from BC Genesis $84,795
Total award: $500,000

2009 National Science Foundation
"Micro-mechanical characterization of damage in ligaments"
2009-2012
Co-investigator with Raffaella DeVita; 25% credit, $300,150

2009 Morris Animal Foundation
"Cell-based approaches to treat tendon and ligament injury"
2009-2010
Principal Investigator; $103,569

2008 American College of Veterinary Surgeons Diplomate Clinical Research Grant
"Biomechanical properties and microangiographic analysis of a novel pattern of primary repair for equine tendon lacerations"
2009-2010
Principal Investigator; $9,556

2007 American College of Veterinary Surgeons Surgeon-In-Training Grant
"Rapid expansion of bone marrow and tendon progenitor cells in three-dimensional culture"
Resident in training awardee: James A. Brown, BVSc. DACT
2009-2010
Principal Investigator; $14,980

2008 Royer Animal Health
"Elution of antibiotics from dextran gel and calcium sulfate dextran beads"
2008-2009
Principal Investigator; $12,000

2006 American Quarter Horse Association Research Grant
"Growth factor enhanced mesenchymal stem cell-based therapies to promote tendon healing"
2006-2008
Co-Investigator with Allison A. Stewart, DVM, MS, Dipl. ACVS; $32,485

2005 American College of Veterinary Surgeons Surgeon-In-Training Grant
"Mesenchymal stem cell-based therapies to promote tendon healing"
2005-2006
Resident in training awardee: Jennifer G. Barrett
Principal Investigator: Allison A. Stewart, DVM, MS, Dipl. ACVS; $13,670

2005 American Quarter Horse Association Research Grant
"Mesenchymal stem cell-based therapies to promote tendon healing"
2005-2007
Co-Investigator with Allison A. Stewart, DVM, MS, Dipl. ACVS; $19,260

Internal Grants ($118,285):

2015 Internal Research Competition, Department of Research and Graduate Studies, Virginia-Maryland College of Veterinary Medicine
"Study of mesenchymal stem cell homing regulation using a "Vasculature on a Chip""
Principal Investigator; $20,000

2012 Internal Research Competition, Department of Research and Graduate Studies, Virginia-Maryland Regional College of Veterinary Medicine
"Tissue engineering of mesenchymal stem cell-seeded decellularized tendon scaffold in a dynamic bioreactor"
Principal Investigator; $18,680

2012 Internal Research Competition, Department of Research and Graduate Studies, Virginia-Maryland Regional College of Veterinary Medicine
"Anti-inflammatory effects of bone marrow derived stem cells in equine endotoxemia"
Co-Principal Investigator; $19,905

2011 Internal Research Competition, Department of Research and Graduate Studies, Virginia Maryland Regional College of Veterinary Medicine
"Mesenchymal stem cellular responses to growth on nanofiber matrices"
Principal Investigator; $20,000

2011 Virginia Tech Foundation Veterinary Memorial Fund
"Harnessing regenerative medicine therapies to treat disease within the hoof"
Principal Investigator; $19,900

2008 Internal Research Competition, Department of Research and Graduate Studies, Virginia-Maryland Regional College of Veterinary Medicine
"Three-Dimensional Culture of Tendon Progenitor Cells and Bone Marrow Mesenchymal Stromal Cells in a Bioreactor"
Principal Investigator; $19,800

SCHOLARLY REVIEW (*Ad Hoc*)

Tissue Engineering
Cytotherapy
PLOS ONE
Regenerative Medicine
Veterinary Surgery
American Journal of Veterinary Research

Equine Veterinary Journal
Journal of Animal Science
Journal of Veterinary Science
Veterinary Radiology and Ultrasound

ADMINISTRATION AND SERVICE

Extramural:

2015-present	Grayson Jockey Club Foundation Research Advisory Committee
2014-present	Scientific Advisory Board, ReCellerate, Inc.
2014-present	*Frontiers in Veterinary Science Journal*
	Chief Editor - Regenerative Medicine specialty section
2010-present	North American Veterinary Regenerative Medicine Association
	Board of Directors
2013-2015	North American Veterinary Regenerative Medicine Association
	Chair
2008-2014	American Association of Equine Practitioners
	Review Committee for AAEP Foundation Research Fellow Scholarship
2012-2013	North American Veterinary Regenerative Medicine Association
	Chair-Elect; Scientific Program Chair for 2013 NAVRMA Conference
2010-2013	American College of Veterinary Surgeons
	Research Committee
	Grant Review
	Review of publications for Residents Publication Awards
2011-2012	American College of Veterinary Surgeons
	Symposium Session Chair
2011-2012	North American Veterinary Regenerative Medicine Association
	Secretary

Intramural:

2015-present	Search Committee for Clinical Assistant Professor of Equine Surgery
	Marion duPont Scott Equine Medical Center
2015-present	Search Committee for Clinical Assistant Professor of Equine Internal Medicine
	Marion duPont Scott Equine Medical Center
2013-present	Promotion and Tenure Committee
	Department of Large Animal Clinical Sciences, Virginia Tech
2011-present	Interdisciplinary Graduate Education Program in Regenerative Medicine, Virginia Tech
	Program Development Committee
2011-present	Center for Veterinary Regenerative Medicine
	Virginia Tech and Wake Forest Institute for Regenerative Medicine
	Faculty Steering Committee
2010-present	American College of Veterinary Surgeons
	Residency Program Director for Marion duPont Scott Equine Medical Center
2008-present	Research Committee, Department of Biomedical Veterinary Sciences
	Grant Review for Internal Research Competition
	Review of Pfizer Outstanding Research Award Candidates
2008-present	Director, Regenerative Medicine Service, Marion duPont Scott Equine Medical Center

	Provides stem cell and platelet rich plasma preparations for clinical equine and canine patients ($190,000 gross revenue per year)
2012-2015	Search Committee for EMC Director Hired: Michael Erskine, DVM, DABVP
2007	Search Committee for Paul Mellon Distinguished Chair of Agriculture, Department of Animal Science Hired: Sally Johnson, PhD
2010	Search Committee for Clinical Assistant Professor of Equine Surgery and Emergency Care Hired: James A. Brown, BVSc, MS, DACT, DACVS
2007	Search Committee for Clinical Assistant Professor of Equine Surgery Hired: M. Norris Adams, DVM, MS, DACVS

PROFESSIONAL DEVELOPMENT AND TEACHER TRAINING

2015	Online Collaborative Learning Seminar Virginia Tech Faculty Development Institute
2015	RNA-seq Data Analysis, EdX Online Course
2014	NIH Regional Seminar on Program Funding and Grants Administration
2012	NIH Improving Animal Models for Regenerative Medicine Symposium
2012	Strategies for Mindful Learning Seminar Virginia Tech Faculty Development Institute
2009	Online Resources for Teaching Using Scholar Virginia Tech Faculty Development Institute
2009	Leadership and Team Building Workshop with Katherine Jeffries
2008	Advanced Statistics: Design and Analysis of Experiments using JMP Virginia Tech Faculty Development Institute
2008	FASEB Grant Writing Workshop
2003	Kaplan Instructional Training Program
1991	Working at Teaching: Teaching Assistant Training Program Yale Graduate School of Arts and Sciences
1987-88	Dartmouth College Academic Resource Center Teaching Assistant Training Program (Fall 1988) Public Speaking (Winter 1988) Editorial Skills Development Program (Fall 1987)

TEACHING

Major Advisor of Graduate Students:	Degree	Graduation (expected)
Samantha A. Hart, BVSc, MS, DACVS, DACVECC	MS	May 2009
James A. Brown, BVSc, MS, DACT, DACVS	MS	May 2010
Eric Everett, DVM, MS, DACVS	MS	May 2011
Megan M. Lamb, DVM, DACVS	MS	May 2013
Kendra D. Freeman, DVM, DACVS	MS	May 2014
Daniel W. Youngstrom	PhD	May 2015
Tracee Popielarcyk, MS	PhD	(May 2016)
Lauren Groom, BVSc	MS	(May 2017)
Jade Irby, MS	PhD	(May 2017)

Sophie Bogers, BVSc, MVSc	PhD	(May 2017)
Ibtesam Rajpar, MS	PhD	(May 2018)

Selected Graduate Student Honors

Sophie Bogers	Grayson Jockey Club Elaine Klein Development Award, 2015
Daniel W. Youngstrom	Fulbright Fellowship to study cartilage engineering, 2013 Grayson Jockey Club Storm Cat Award for Career Advancement, 2013 Institute for Critical Technology and Science Scholarship, 2010-present
Kendra D. Freeman	EQUUS Foundation Research Fellowship, 2013 American College of Veterinary Surgeons Resident Forum, 2013
Tracee Popielarczyk	Stamps Family Fellowship, 2012-present
Eric Everett	American College of Veterinary Surgeons Resident Forum, 2011
Samantha A. Hart	American College of Veterinary Surgeons Resident Forum, First Place Award, 2009

Committee Membership for Graduate Students:	**Degree**	**Graduation (expected)**
Elizabeth MacDonald, DVM, MS	MS	May 2015
Kathryn Krista, DVM, MS	MS	May 2012
Shelley Stewart, MS	MS	May 2011
Linda Frellstedt, BVSc, MS, DACVIM	MS	May 2010
J. Michael Cissell, DVM, MS, DACVS	MS	May 2009

Mentored Research Scholars: Undergraduate and Veterinary (DVM) Students

Lashana Ali	George Mason University Aspiring Scientists Summer Internship Program, 2015
Vaidehi Patel	George Mason University Aspiring Scientists Summer Internship Program, 2015
Brad Jones	George Mason University Bioengineering Senior Design Project, 2015
Zeb Zaheer	George Mason University Bioengineering Senior Design Project, 2015
Adriana Pacheco-Figuera	George Mason University Bioengineering Senior Design Project, 2015
Zeena Husayni	George Mason University Bioengineering Senior Design Project, 2015
David Hatch	George Mason University Aspiring Scientists Summer Internship Program, 2014
Austin Dunn	George Mason University Aspiring Scientists Summer Internship Program, 2014
Megan Barlow	George Mason University Aspiring Scientists Summer Internship Program, 2014
Anuraag Ravikumar	George Mason University Bioengineering Senior Design Project, 2013
Alex Baker	George Mason University Bioengineering Senior Design Project, 2013
Alaa Alhussein	George Mason University Bioengineering Senior Design Project, 2013
Katrina Nguyen	George Mason University Bioengineering Senior Design Project, 2013
Vidya Ganesh	George Mason University Aspiring Scientists Summer Internship Program, 2013
Penelope Burchfiel (DVM)	Merial Summer Veterinary Student Research Program, 2013

Lauren Marfurt	George Mason University Aspiring Scientists Summer Internship Program, 2012
Dorothy Jones (DVM)	Morris Animal Foundation Veterinary Research Program, 2012
Kelley Duerbeck	Research Internship Rotation, 2012
Shannon Brown (DVM)	Research Internship Rotation, 2011
Kathryn Jones	Summer Research Internship, 2012

Didactic Instruction

Virginia Tech

Graduate Curriculum:

BMVS 6534 Mechanisms of Veterinary Diseases: Musculoskeletal System, **Course Leader**
2/11/2015 "Advanced Therapeutics"; 1.5 hour; 9 students
3/18/2015 "Intra-articular Therapy"; 1.5 hour; 9 students
3/23/2015 "Cartilage Healing and Resurfacing"; 1.5 hour; 9 students
4/20/2015 "Bone Healing"; 1.5 hour; 9 students
4/22/2015 "Principals of Fracture Repair"; 9 students
5/1/2015 "Practical Arthroscopy and Ultrasonographic Imaging"; 5 hour laboratory; 5 students

BMVS 6534 Mechanisms of Veterinary Diseases: Cardiovascular System
11/19/2014 "Uterine Artery Hemorrhage"; 1.5 hour; 12 students

BMVS 6534 Mechanisms of Veterinary Diseases: Special Senses
4/30/2014 "Peripheral Nerve Injury"; 1.5 hour; 11 students

GRAD 5134 Regenerative Medicine: Science and Society
2/5/2013 "Introduction to Stem Cells"; 2 hours, 14 students
2/7/2013 "Ethical Implications of Stem Cell Therapy"; 2 hours, 14 students
4/23/2013 "Evidence-based Medicine and Regenerative Medicine"; 2 hours, 14 students

BMVS 6534 Mechanisms of Veterinary Diseases: Gastrointestinal
3/16/2013 "Surgical Conditions of the Large Colon and Cecum"; 1.5 hour; 11 students

BMVS 6534 Mechanisms of Veterinary Diseases: Musculoskeletal System, **Course Leader**
2/23/2012 "Cartilage Healing and Resurfacing"; 1.5 hour; 9 students
4/13/2012 "Bone Healing"; 1.5 hour; 9 students
4/15/2012 "Principals of Fracture Repair"; 9 students
5/4/2012 "Advanced Therapeutics"; 1.5 hour; 9 students
5/7/2012 "Practical Arthroscopy and Ultrasonographic Imaging"; 5 hour laboratory; 5 students

BMVS 6534 Mechanisms of Veterinary Diseases: Cardiovascular System
11/19/2011 "Uterine Artery Hemorrhage"; 1.5 hour; 12 students

BMVS 6534 Mechanisms of Veterinary Diseases: Special Senses
3/19/2011 "Peripheral Nerve Injury"; 1.5 hour; 11 students

BMVS 6534 Mechanisms of Veterinary Diseases: Gastrointestinal
3/15/2010 "Surgical Conditions of the Large Colon and Cecum"; 1.5 hour; 11 students

BMVS 6534 Mechanisms of Veterinary Diseases: Musculoskeletal System, **Course Leader**
2/23/2009 "Cartilage Healing and Resurfacing"; 1.5 hour; 12 students
4/13/2009 "Bone Healing"; 1.5 hour; 12 students

5/4/2009 “Advanced Therapeutics”; 1.5 hour; 12 students
5/7/2009 “Practical Arthroscopy and Ultrasonographic Imaging”; 8 hour laboratory; 12 students

BMVS 6534 Mechanisms of Veterinary Diseases: Cardiovascular System
11/19/2008 “Uterine Artery Hemorrhage”; 1.5 hour; 10 students

BMVS 6534 Mechanisms of Veterinary Diseases: Special Senses
3/19/2008 “Peripheral Nerve Injury"; 1.5 hour; 10 students

Veterinary Professional Curriculum:

VM 8695 Equine Medicine and Surgery 1
9/17/2015 “Degenerative Joint Disease”; 3 hours; 29 students
9/16/2015 “Angular Limb Deformity”; “Flexural Deformity”; 2 hours; 29 students
8/28/2015 “Osteochondritis Dissecans”; 2 hours, 29 students
9/23/2014 “Degenerative Joint Disease”; 2 hours; 20 students
9/16/2014 “Degenerative Joint Disease”; 1 hour; 20 students
9/15/2014 “Angular Limb Deformity”; “Flexural Deformity”; 2 hours; 20 students
8/29/2014 “Osteochondritis Dissecans”; 2 hours, 20 students
9/23/2013 “Degenerative Joint Disease”; 2 hours; 24 students
9/17/2013 “Degenerative Joint Disease”; 1 hour; 24 students
9/16/2013 “Angular Limb Deformity”; “Flexural Deformity”; 2 hours; 24 students
8/30/2013 “Osteochondritis Dissecans”; 2 hours, 24 students
9/15/2012 “Angular Limb Deformity”; “Flexural Deformity”; “Degenerative Joint Disease”; 5 hours; 18 students
9/28/2012 “Osteochondritis Dissecans”; 2 hours, 18 students
9/29/2011 “Angular Limb Deformity”; “Flexural Deformity”; “Degenerative Joint Disease”; 5 hours; 18 students
8/28/2011 “Osteochondritis Dissecans”; 2 hours, 18 students
9/15/2010 “Field Stabilization of Fractures”; 1 hour; 20 students
9/15/2010 “Equine Fracture Repair”; 1 hour; 20 students
9/14/2010 “Degenerative Joint Disease”; 3 hours; 20 students
9/27/2010 “Angular Limb Deformity”; “Flexural Deformity”; 2 hours; 20 students
9/24/2009 “Angular Limb Deformity”; “Flexural Deformity”; “Degenerative Joint Disease”; 5 hours; 30 students
9/13/2008 “Angular Limb Deformity”; “Flexural Deformity”; “Degenerative Joint Disease”; 5 hours; 30 students

VM 8696 Equine Medicine and Surgery 2
3/14/2012 Gastrointestinal Disease and Surgery: 5 hours; 20 students
3/15/2011 Gastrointestinal Disease and Surgery: 5 hours; 18 students
3/16/2010 Gastrointestinal Disease and Surgery: 5 hours; 17 students
3/15/2009 Gastrointestinal Disease and Surgery: 5 hours; 30 students
3/12/2008 Gastrointestinal Disease and Surgery: 5 hours; 32 students

VM 9544 Equine Medical Center Clerkship: Lectures
Equine Lameness Diagnosis and Orthopedics; 2-5 students on rotation: 1.5 hour lecture
2015: 4 lectures
2014: 4 lectures
2013: 6 lectures

2012: 5 lectures
2011: 5 lectures
2010: 6 lectures
2009: 6 lectures
2008: 8 lectures
2007: 3 lectures

VM 9544 Equine Medical Center Clerkship: Laboratory
4/14/2008 Castration Lab with 4 horses; 8 hours; 4 students

University of Illinois

Graduate Curriculum:

VCM 584 Current Concepts in Comparative Surgery: Urogenital Surgery
Interns, Residents and Faculty; two 1 hour lectures
Fall 2006; 15 students

- Surgical Problems of the Kidney and Ureter
- Urogenital Surgery in the Foal

VCM 584 Current Concepts in Comparative Surgery: Orthopedics
Interns, Residents and Faculty; two 1 hour lectures
Spring 2006; 15 students

- Equine phalangeal fractures
- Stem cells and grafting to promote bone healing

VCM 577 Large Animal Internal Medicine: Respiratory Physiology and Diseases
Interns, Residents and Faculty; two lectures
Fall 2005; 15 students

- Neonatal respiratory distress syndrome and foal interstitial pneumonia
- Ethmoid Hematomas

VCM 584 Current Concepts in Comparative Surgery: Gastrointestinal System
Interns, Residents and Faculty; two 1 hour lectures
Fall 2005; 5 students

- Epidemiology of equine colic
- Equine small colon and rectal disease

VCM 694 Current Concepts in Comparative Surgery: Advanced Clinical Neurology and Neurosurgery
Interns, Residents and faculty; 1 hour lecture
Spring 2005; 5 students

- Surgical treatment of developmental disorders of the equine vertebral column

VCM 484 Current Concepts in Comparative Surgery: Cardiovascular and Respiratory Diseases
Interns, Residents and Faculty; two 1 hour lectures
Fall 2004; 5 students

- Surgery of the larynx
- Surgery of the pharynx

VCM 492 Advanced Topics in Investigative Orthopedics

Residents and Faculty; 1 hour lecture
Fall 2004; 10 students

- Case presentation: angular limb deformity in a foal

Veterinary Professional Curriculum:

VCM 604 Equine Medicine and Surgery: Clinical Rotation
Fall 2004-Spring 2007

- Teaching during clinical rotations on Equine Surgery service

VCM 653 Large Animal General Surgery
Third year veterinary students; 1 hour lecture
Fall 2006, Fall 2005; 100 students

- Equine urogenital surgery (female)

VCM 651 Introduction to Surgery Laboratory
Third year veterinary students; 5 Hours Laboratory Instruction
Fall 2006, Fall 2005, Fall 2004; 30 students

VCM 653 Introduction to Equine Surgery Laboratory
Third year veterinary students; 5 Hours Laboratory Instruction
Fall 2006, Fall 2005, Fall 2004; 30 students

VCM 655 Large Animal Surgery
Third year veterinary students; 1 hour lecture
Spring 2006, Spring 2005; 100 students

- Diseases of the equine foot

Additional Teaching Experience

Madison, Wisconsin

Kaplan MCAT Preparation classes in Biology. Undergraduate and Post-graduate students. 24 hours. Spring 2004. 28 students

Yale University

BIOL 312 Cell Biology II: The Cytoplasm. Undergraduate students. 12 hours. Teaching Assistant and Seminar Instructor. Spring 1993. 35 students

BIOL 310 Cell Biology I: The Nucleus. Undergraduate students. Teaching Assistant and Seminar Instructor. 12 hours. Fall 1992. 40 students

BIOL 120 Introduction to Biology. Undergraduate students. Teaching Assistant and Laboratory Instructor. 24 hours. Fall 1991. 150 students course, 30 students lab

Wilbur Cross High School, New Haven, CT

Algebra, Biology, and Independent Research. Secondary school students. Volunteer Teaching Assistant. Fall 1991, Spring 1992. 30 students

Dartmouth College Academic Resource Center

BIOL12 Cell Structure and Function. Undergraduate students. Tutorial Leader: 2 hours per week lecture and discussion leader. Spring 1990. 25 students

Individual Tutor. Spring 1990. 2 students

Writing Skills Laboratory, part time assistant. 1987