

College of Engineering and Science

RESUME – Melinda K. Harman

PERSONAL DATA

Assistant Professor
Department of Bioengineering
Clemson University
Clemson, SC 29634
864-656-4140

EDUCATION

Post-doctoral Research Fellow, Rizzoli Orthopaedic Institute, 2008-2010
Project: *“ORTHOWATCH - Integrating outcome registers, retrieval analysis programs and preclinical validation methods into a synergistic post-marketing surveillance program for orthopedic devices”*
Advisor: Marco Viceconti, PhD
Ph.D., Clemson University, 2007, Bioengineering
Dissertation: *“Spatial Sensors for Quantitative Assessment of Retrieved Arthroplasty Bearings”*
Advisors: Scott A. Banks, PhD; Martine LaBerge, PhD
M.S., University of Utah, 1992, Bioengineering
Thesis: *“Measurement of Trabecular Orientation”*
Advisors: Roy D. Bloebaum, PhD; Kent N. Bachus, PhD
B.S., Ball State University, 1990, Physics
B.S., Ball State University, 1990, Athletic Training
B.S., Ball State University, 1990, Pre-Engineering

PROFESSIONAL EXPERIENCE

Clemson University, 2016-2019, Faculty Scholar in the School of Health Research
Clemson University, 2015- , Associate Director, CU-MUSC Orthopaedic Research & Education Program
Clemson University, 2011- , Assistant Professor of Bioengineering
2012- , Director, Medical Device Recycling & Reprocessing Certificate Program
2008-2010, Adjunct Professor
Rizzoli Orthopaedic Institute, 2008-2010, Post-doctoral Research Fellow
Institute for Mobility & Longevity, 2004-2008, Director of Research
1994-2003, Biomedical Engineer
Rizzoli Orthopaedic Institute, 1992-1993, Research Fellow
Veterans Affairs Medical Center, 1990-1992, Graduate Research Assistant
Orthopaedics Indianapolis at Methodist Hospital, 1989, Clinical Research Assistant

CONSULTING EXPERIENCE

Freeland, Harwin & Valori (2016), explant analysis of various hip prostheses
Taggart, Rimes & Graham (2015), explant analysis of a hip prosthesis
DJO Surgical., Austin, Texas (2002-2011, 2013), design, testing and evaluation of knee and shoulder joint prostheses
Stryker Orthopaedics, Mahwah, New Jersey (2007), shoulder joint prosthesis testing

PROFESSIONAL ACTIVITIES

Advisory Boards and Workshops

Track Chair, Translational Biomedical Engineering, Biomedical Engineering Society, (2015)
 Awards Committee, International Society for Technology in Arthroplasty, (2012-2015)
 Scientific Advisory Board, International Society for Technology in Arthroplasty, (2012-2013)
 Orthopaedic Research Society, member, Women's Leadership Forum, (2009, 2012)
 Tenet South Florida, member, Institutional Review Board, (2003-2008)
 Florida Atlantic University, Exercise Science & Health Advisory Board, (2006-2008)
 Intracoastal Health Systems, member, Institutional Review Board, (2001-2003)
 International Society for Technology in Arthroplasty, Workshop Chairperson, (2003)
 Palm Beach Atlantic College, Science Advisory Board Member, (1996-2000)
 World Biomaterials Congress, Workshop Chairperson, (2000)

Memberships

American Society of Mechanical Engineering, ASME, (2014-)
 Association for the Advancement of Medical Instrumentation, AAMI, (2013-)
 Member, Biomedical Engineering Society, BMES, (2012-)
 Member, Orthopaedic Research Society, ORS, (2008-)
 Member, Society for Biomaterials, SFB, (1995-1998, 2011-)
 Member, National Society for Histotechnology, (1994–1996)
 Member, Sigma Pi Sigma Physics Society, (1987–1990)

Journal Reviewer

Journal of Biomedical Materials Research
 Journal of Applied Biomaterials
 Journal of Orthopaedic Research
 Acta Orthopaedica
 Journal of Arthroplasty
 Clinical Orthopaedics and Related Research
 Clinical Biomechanics
 Journal of Biomechanics
 Journal of Applied Biomechanics
 Proceedings of the Institution of Mechanical Engineers (Part H): Journal of Engineering in
 Medicine
 Medical Engineering and Physics

PUBLICATIONS

Books and Monographs

1. Fitzpatrick CK, Harman MK, Baldwin MA, Clary CW, Maletsky LP, Laz PJ, Rullkoetter PJ. Toward Predicting the Performance of Joint Arthroplasty. In *Computational Bioengineering*, G Zhang (ed.) CRC/Francis Taylor, Boca Raton, FL, 2015.

Prior to Clemson

2. Morra EA, Harman MK, Greenwald AS: Computational Models Can Predict Polymer Insert Damage in Total Knee Replacements. In *Insall & Scott Surgery of the Knee, 4th edition*, Vol. 1 (13):271-283, Scott WN (ed.) Elsevier Inc., Philadelphia, PA, 2005.
3. Klos TV, Banks SA, Cook FF, Harman MK, Banks AZ: Interactive Fluoroscopic Controlled Anterior Cruciate Ligament Reconstruction. In *Interactive Technology and the New Paradigm for Healthcare*, Vol. 18 (28):173-4, RM Satava, K Morgan, HB Sieburg, R Mattheus, JP Christensen (eds.) IOS Press, Amsterdam, 1995.

4. Banks SA, Harman MK, Hodge WA, Markovich GD, Kester MA: Kinematics of the Medial Unicompartmental Knee Replacement. In *Unicompartmental Knee Replacement*, Vol. 61(4):27-31, JA Epinette, P Cartier, G Deschamps, and P Hernigou (eds.) Expansion Scientifique Francaise, Paris, 1997.

Refereed Journal Publications

1. Mealing VS, Mikhailova EA, Drapcho CA, Weisensess K, Sharp J, Harman MK. Simulating burial settings: Part 2 - Bone and soil results from a laboratory-scale forensic bioreactor. *Biosystems Engineering* (submitted and in review 2016)
2. Mealing VS, Mikhailova EA, Drapcho CA, McCullough MA, Harman MK. Simulating burial settings: Part 1 – Design verification for a laboratory-scale forensic bioreactor. *Biosystems Engineering* (submitted and in review 2016)
3. Schöneberg L, Otto S, Schmitt S. ACL-substituting TKR: Post-marketing surveillance of a new design concept. *International Orthopaedics*, 2016 (submitted and in review).
4. Panigrahi P, Gregory C, Dean D, Pace TB, Harman MK. Decreased viability, proliferation, and mineralization of murine osteoblasts in clinically relevant doses of protein-stabilized titanium ions. *Journal of Biomedical Materials Research (part A)*, 2016 (resubmitted, in second review).
5. Freed R, Wusylko A, Kornev K, Brandt JM, Harman MK. Technique for measuring contact angle on metal and ceramic spherical femoral heads. *Journal of Biomedical Materials Research: Part B Applied Biomaterials*, 2016 (resubmitted, in second review).
6. Dunphy M, Weisensee K, Mikhailova E, Harman MK. Design and evaluation of bioreactors to model forensic burial environments. *Forensic Science International*, 257:242-251, 2015.
7. Dixel J, Fritzsche H, Beyer F, Harman M, Lützner J. Open wedge high tibial osteotomy: Incidence of lateral cortex fracture and influence of fixation device on osteotomy healing. *Knee Surgery Sports Traumatology Arthroscopy*, 2015. doi: 10.1007/s00167-015-3730-5.
8. Panigrahi P, Schwartzman KG, Harman MK. Polyvinyl siloxane molds for nondestructive surface feature metrology of failed joint prostheses. *Journal of Failure Analysis and Prevention*. 15:266-271, 2015. doi: 10.1007/s1 1668-015-9925-8.
9. Panigrahi P, Durig N, Alvarez E, Harman MK. Damage from unintentional metal-metal articulation of CoCrMo, TiAlV, and oxidized zirconium knee replacements following polyethylene insert failure. *Wear*, 324-325:1-9, 2015.
10. van Ijsseldijk EA, Harman MK, Lützner J, Valstar ER, Stoel BC, Nelissen RGHH, Kaptein BL. Validation of a model-based measurement of the minimum insert thickness of knee prostheses: A retrieval study. *Bone & Joint Research*, 3(10):289-96, 2014. doi: 10.1302/2046-3758.310.2000304.
11. Harman MK, Bonin S, Leslie C, Banks SA, Hodge WA: Total knee arthroplasty designed to accommodate the presence or absence of the posterior cruciate ligament. *Advances in Orthopaedics*, Article ID 178156, 2014. doi:10.1155/2014/178156.
12. Durig N, Pace T, Broome B, Osuji O, Harman MK: Clinical outcomes of tibial components with modular stems used in primary TKA. *Advances in Orthopaedics*, article ID 651279, 2014. doi: 10.1155/2014/651279.
13. Nunez L, Broome B, Pace T, Harman M: Treatment for wear and osteolysis in well-fixed uncemented TKR. *ISRN Orthopedics*, article ID 398298, 2013. doi: 10.1155/2013/398298.

14. Dixel J, Kirschner S, Harman MK, Lützner J: A rare case of bilateral large osteolysis following cemented and cementless total knee arthroplasties. *Acta Orthopaedica*, 84(1):112-115, 2013.
15. Harman MK, Banks SA, Kirschner S, Lützner J: Prosthesis alignment affects axial rotation motion after total knee replacement: A prospective in vivo study combining computed tomography and fluoroscopic evaluations. *BMC Musculoskeletal Disorders*, 13:206-217, 2012.
16. Lützner J, Günther KP, Kirschner S, Harman MK: Patients with no functional improvement after total knee arthroplasty show different kinematics. *International Orthopaedics*, 36(9):1841-1847, 2012.
17. Harman MK, Baleani M, Juda K, Viceconti M: Repeatable procedure for evaluating taper damage on femoral stems with modular necks. *Journal of Biomedical Materials Research: Applied Biomaterials (Part B)*, 99(2):431-439, 2011.
18. Harman M, Cristofolini L, Erani P, Stea S, Viceconti M. A pictographic atlas for classifying damage modes on polyethylene bearings. *Journal of Materials Science: Materials in Medicine*, 22:1137-1146, 2011.
19. Danesi V, Cristofolini L, Stea S, Traina F, Beraudi A, Tersì L, Harman M, Viceconti M: Re-use of explanted osteosynthesis devices: A reliable and inexpensive reprocessing protocol. *Injury*, 42(10): 1101-1106, 2011.
20. Harman MK, Schmitt S, Rössing S, Banks SA, Scharf HP, Viceconti M, Hodge WA: Polyethylene damage patterns and deformation in unicondylar knee replacement corresponding to progressive changes in component alignment and fixation. *Clinical Biomechanics*, 25(6):570-575, 2010.
21. Tanino H, Ito H, Banks SA, Harman MK, Matsuno T: Deep polyethylene liner for treatment of recurrent dislocation. *Hip International*, 20(2):269-272, 2010.
22. Spinelli M, Affatato S, Harman MK, DesJardins JD: Bi-unicondylar knee prosthesis functional assessment utilizing force-control wear testing. *Proc. IMechE, Part H: Journal of Engineering in Medicine*, 224(7), 813-821, 2010.
23. Harman M, Affatato S, Spinelli M, Zavalloni M, Stea S and Toni A. Polyethylene insert damage in unicondylar knee replacement: A comparison of in vivo function and in vitro simulation. *Proc. IMechE, Part H: Journal of Engineering in Medicine*, 224(7), 823-830, 2010.
24. Harman MK, DesJardins JD, Benson LC, Banks SA, LaBerge M, Hodge WA: Comparison of polyethylene tibial insert damage from in vivo function and in vitro wear simulation. *Journal of Orthopaedic Research*, 27(4):540-548, 2009.
25. Hodge WA, Harman MK, Banks SA: Patterns of knee osteoarthritis in Arabian and American populations. *Journal of Arthroplasty*, 24(3):448-453, 2009.
26. Tanino H, Banks SA, Ito H, Harman MK, Matsuno T, Hodge WA: An in vivo model for intraoperative assessment of impingement and dislocation in total hip arthroplasty. *Journal of Arthroplasty*, 23(5):714-720, 2008.
27. Virani NA, Harman MK, Li K, Levy J, Frankle MA, Pupello DR: In vitro and finite element analysis of glenoid bone/baseplate interaction in the reverse shoulder design. *Journal of Shoulder and Elbow Surgery*, 17(3):509-521, 2008.

Prior to Clemson

28. Tanino H, Harman MK, Banks SA, Hodge WA: Association between dislocation, impingement and articular geometry in retrieved acetabular polyethylene cups. *Journal of Orthopaedic Research*, 25(11):1401-1407, 2007.
29. Hodge WA, Schmitt S, Harman MK, Mitchell KH, Banks SA: Intraoperative assessment of bone cuts to guide surgical technique during total knee arthroplasty. *Journal of Bone and Joint Surgery*, 89-A(Suppl 3):137-143, 2007.
30. Harman MK, Banks SA, Hodge WA: Backside damage corresponding to articular damage in retrieved tibial polyethylene inserts. *Clinical Orthopaedics and Related Research*, 458:137-44, 2007.
31. Harman MK, Banks SA, Hodge WA: Joint replacement design guided by clinical retrievals. *Journal of Biomechanics*, 39(Suppl. 1):S120, 2006.
32. Harman MK, Banks SA, Fregly BJ, Sawyer WG, Hodge WA: Biomechanical mechanisms for damage: Retrieval analysis and computational wear predictions in total knee replacements. *Journal of Mechanics in Medicine and Biology*, 5(3):469-75, 2005.
33. Harman M; Frankle M; Vasey B; Banks S: Initial glenoid component fixation in "reverse" total shoulder arthroplasty: A biomechanical evaluation. *Journal of Shoulder and Elbow Surgery*, 14(1S):134-39, 2005.
34. Fregly BJ, Sawyer WG, Harman MK, Banks SA: Computational wear prediction of a total knee replacement from in vivo kinematics. *Journal of Biomechanics*, 38:305-314, 2005.
35. Banks SA, Bellemans J, Harman MK, Hodge WA: Making sense of knee arthroplasty kinematics: News you can use. *Journal of Bone and Joint Surgery*, 85-A(Suppl 4):64-72, 2003.
36. Harman MK, Banks SA, Hodge WA: Closed reduction of constrained total hip arthroplasty: In vitro and clinical evaluation. *Clinical Orthopaedics and Related Research*, 414:121-128, 2003.
37. Banks SA, Bellemans J, Nozaki H, Whiteside LA, Harman MK, Hodge WA: Knee motions during maximum flexion in fixed and mobile-bearing arthroplasties. *Clinical Orthopaedics and Related Research*, 410:131-138, 2003.
38. Harman MK, Banks SA, Hodge WA, TDV Cooke: Wear patterns in osteoarthritic knees: What do they tell us about knee kinematics?: *Arabian Orthopaedic News*, 5:9-10, 2002.
39. Benson LC, DesJardins JD, Harman MK, LaBerge M: Effect of stair descent loading on ultra-high molecular weight polyethylene wear in a force-controlled knee simulator. *Proc. IMechE, Part H: Journal of Engineering in Medicine*, 216 409-418, 2002.
40. Banks SA, Harman MK, Hodge WA: Mechanism of anterior impingement damage in total knee arthroplasty. *Journal of Bone and Joint Surgery*, 84-A(supplement 2):37-42, 2002.
41. Harman MK, Banks SA, Hodge WA: Polyethylene damage and knee kinematics after total knee arthroplasty. *Clinical Orthopaedics and Related Research*, 392:383-393, 2001.
42. Klos TV, Harman MK, Habets RJE, Devilee RJJ, Banks SA: Locating femoral graft placement from lateral radiographs in anterior cruciate ligament reconstruction: a comparison of three methods of measuring radiographic images. *Arthroscopy*, 16(5):499-504, 2000.
43. Klos TV, Harman MK, Devilee RJJ, Banks SA, Cook FF: Patellar tendon graft position after anterior cruciate ligament reconstruction: Interobserver variability on lateral radiographs. *Acta Orthopaedica Scandinavica*, 70(2):180-184, 1999.

44. Klos TVS, Harman MK, Devilee RJJ, Habets RJE: Interobserver variation in the assessment of roentgenograms for reconstruction of the anterior cruciate ligament. *Knee Surgery, Sports Traumatology, Arthroscopy*, 6(4):258-259, 1998.
45. Harman MK, Markovich GD, Banks SA, Hodge WA: Wear patterns on tibial plateau from varus and valgus osteoarthritic knees. *Clinical Orthopaedics and Related Research*, 352:149-158, 1998.
46. Harman MK, Banks SA, Hodge WA: Alteration of acrylic bone cement by chemicals used during hard tissue specimen processing. *Journal of Histotechnology*, 21(2):107-114, 1998.
47. Harman MK, Banks SA, Hodge WA: Wear analysis of a retrieved hip implant with titanium nitride coating. *Journal of Arthroplasty*, 12(8):938-945, 1997.
48. Harman MK, Toni A, Cristofolini L, Viceconti M: Initial stability of uncemented hip stems: An in-vitro protocol to measure torsional interface motion. *Medical Engineering and Physics*, 17(3):163-171, 1995.
49. Bachus KN, Harman MK, Bloebaum RD: Stereoscopic analysis of trabecular bone orientation in proximal human tibias. *Cells & Materials*, 2(1):13-20, 1992.

Refereed Journal Publications (in preparation)

1. Casey E, Lu X, Hanschke M, Heniford BT, Lincourt A, Harman, MK. Assessment of pore size and stiffness of surgical mesh materials explanted during hernia repair surgery. *Journal of Biomedical Materials Research (part B)*, 2016 (in preparation).
2. Snethen K, Hernandez J, Panigrahi P, Lützner J, Harman M. Performance of bore-cone taper junctions in modular total knee replacements: Combined finite element modeling and explant analysis. 2016 (in preparation)
3. Burns-Heffner C, Heniford BT, Lincourt A, Harman, MK. Mechanical tests comparing pristine and explanted surgical mesh. *Abdominal Wall Repair Journal*, 2015 (in preparation).
4. Panigrahi P, Poursaee A, Harman MK. Corrosion behavior of Ti-6Al-4V orthopaedic alloy under static elastic and plastic tensile stress. *Corrosion Science*, 2016 (in preparation).
5. Panigrahi P, Beyer F, Schwartzman KG, Snethen K, Lützner J, Kirschner S, Harman MK. Influence of design on fretting corrosion in retrieved revision knee prostheses with modular stem extensions. *Journal of Bone and Joint Surgery* 2016 (in preparation).
6. Snethen K, Lützner J, Kirschner S, Harman M. Mechanical disassembly of retrieved long-stem total knee replacements with taper modularity. 2016 (in preparation).
7. Wusylko A, Freed R, Brandt J, Turgeon T, Kornev K, Harman M. Comparison between surface roughness and wettability on retrieved metal and ceramic femoral heads. *Journal of Arthroplasty*, 2016 (in preparation).

Conference Proceedings (Reviewed)

1. Flannery S, Trowbridge M, Snethen K, Harman M. Polyethylene bearing conformity impacts articular constraint in total knee replacements. *Biomedical Engineering Society*, Minneapolis, MN, 2016.
2. Lu X, Cotton B, Hanschke M, Heniford BT, Harman M. Comparison of large-pore and small-pore polypropylene surgical mesh: Structural, mechanical and histological analysis. *Biomedical Engineering Society*, Minneapolis, MN, 2016.

3. Young L, Snethen K, Brandt P, Bebler M, Leslie H, Harman M. Constraint testing of flat, semi-constrained, and mobile bearing total knee replacements. Biomedical Engineering Society, Minneapolis, MN, 2016.
4. Harman M, Schöneberg L, Otto S, Schmitt S. ACL-Substituting TKR: What Does Post-Marketing Surveillance Tell Us About This Design Concept? International Society for Technology in Arthroplasty, Boston, MA, 2016.
5. Lu X, Sun L, Heniford BT, Harman MK. Pore size characterization methods for explanted surgical mesh. Presented at the World Congress of Biomaterials, Montreal, Canada, 2016.
6. Harman MK, Heniford BT, Cobb W, Carbonell A, Lincourt A, Lu X, Augenstein V, Gil D, Hernandez J, Vertegel A. MeshWatch: An explant registry of surgical mesh. Presented at the 17th Annual Hernia Repair Conference of the American Hernia Society, Washington DC, 2016.
7. Pysh M, Weisensee KE, Schlautman MA, Harman MK. Analysis of citrate distribution in bone for the estimation of postmortem interval. Presented at the 68th Annual Meeting of the American Academy of Forensic Sciences, Las Vegas, NV, 2016.
8. Snethen K, Hernandez J, Harman M. Effects of manufacturing tolerance and loading activity on stress distribution in bore-cone taper junctions of modular total knee replacement. Presented at the Annual Meeting of the Orthopaedic Research Society (ORS), Tampa, FL, 2016.
9. Grujicic A, Grujicic M, Snipes J, Subrahmanian R, Avuthu V, Burnikel B, Harman M. The effect of varying intramedullary stem length, material, fixation, and level of surgical resection on strain concentrations in the tibia. Presented at the Annual Meeting of the Orthopaedic Research Society (ORS), Tampa, FL, 2016.
10. Casey E, Williams K, Lu X, Heniford BT, Lincourt A, Harman MK. Assessment of pore size and histology for different types of explanted hernia mesh. Biomedical Engineering Society, Tampa, FL, 2015.
11. Mealing V, Harman M, Pysh M, Mikhailova E, Drapcho C, Weisensee K. Development of a bone bioreactor for forensic applications. Biomedical Engineering Society, Tampa, FL, 2015.
12. Snethen K, Hernandez J, Panigrahi P, Lützner J, Harman M. Performance of bore-cone taper junctions in modular total knee replacements: Combined finite element modeling and explant analysis. BMES/FDA Frontiers in Medical Devices Conference, College Park, MD 2015.
13. Stamer C, Taylor R, Panigrahi P, Harman M. Quantitative assessment of taper damage and head-neck moment arm on retrieved total hip replacements with modular bore-cone taper junctions. Society for Biomaterials, Charlotte, NC, 2015.
14. Casey E, Burns-Heffner C, Phillips A, Lincourt A, Heniford BT, Harman MK. Mechanical properties of polypropylene-ePTFE surgical mesh explanted after in vivo function. Society for Biomaterials, Charlotte, NC, 2015.
15. Panigrahi P, Poursaee A, Harman MK. Corrosion behavior of Ti-6Al-4V orthopaedic alloy under tensile stress. Society for Biomaterials, Charlotte, NC, 2015.
16. Wusylko A, Kornev K, Harman MK. Surface modification of ceramic biomaterials after in vivo exposure to the physiological environment. Society for Biomaterials, Charlotte, NC, 2015.
17. Panigrahi P, Poursaee A, Harman MK. Corrosion behavior of medical grade Ti-6Al-4V exposed to tensile loads. Orthopaedic Research Society, Las Vegas, NV, 2015.

18. Dunphy M, Weisensee K, Mikhailova E, Harman MK. Design and evaluation of bioreactors to model forensic burial environments. American Academy of Forensic Sciences, 2014.
19. Mikhailova E, Weisensee K, Dunphy M, Harman MK Applications of soil taxonomy and web soil survey (WSS) in universal post-mortem interval formula, The American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America. Long Beach, CA, 2014.
20. Hernandez J, Snethen K, Lützner J, Kirschner S, Harman MK. Finite element analysis of bore-cone taper junctions in modular total knee replacements. Presented at the Biomedical Engineering Society, San Antonio, TX, 2014.
21. Macaluso A, Crites A, Harman M. Biofilm accumulation on medical device materials with varied surface roughness. Presented at the Biomedical Engineering Society, San Antonio, TX, 2014.
22. Schwartzman K, Panigrahi P, Harman M. Validation of PVS impression molds for profilometric analysis of modular joint replacement tapers. Presented at the Biomedical Engineering Society, San Antonio, TX, 2014.
23. Panigrahi P, Schwartzman K, Lützner J, Kirschner S, Harman MK. Surface corrosion of taper interfaces in explanted total knee replacements with modular stems. Presented at the International Conference on Biotribology, Toronto, Canada, 2014.
24. Panigrahi P, Durig N, Alvarez E, Harman MK. Failure mechanisms from unintentional metal articulation after polyethylene wear-through: Analysis of retrieved knee prostheses. Presented at the International Conference on Biotribology, Toronto, Canada, 2014.
25. Snethen K, Henson K, Lützner J, Kirschner S, Harman M. Mechanical disassembly of retrieved long-stem total knee replacements with taper modularity. Presented at the Annual Meeting of the Society for Biomaterials (SFB), Denver, CO, 2014.
26. Wusylko A, Freed R, Brandt J, Turgeon T, Kornev K, Harman M. Comparison between surface roughness and wettability on retrieved metal and ceramic femoral heads. Presented at the Annual Meeting of the Society for Biomaterials (SFB), Denver, CO, 2014.
27. Burns-Heffner C, Shaporev A, Heniford BT, Lincourt A, Marshall P, Harman, MK. Testing compliance of surgical meshes fabricated from different polymeric biomaterials. Presented at the Annual Meeting of the Society for Biomaterials (SFB), Denver, CO, 2014.
28. Freed R, Wusylko A, Kornev K, Brandt JM, Harman MK. Technique for measuring contact angle on metal and ceramic spherical femoral heads. Presented at the Annual Meeting of the Orthopaedic Research Society (ORS), New Orleans, LA, 2014.
29. van Ijsseldijk EA, Harman MK, Stoel BC, Valstar ER, Kaptein BL. Challenges for radiographic monitoring of wear rates in TKR. Presented at the Annual Meeting of the International Society for Technology in Arthroplasty (ISTA), Palm Beach, FL, 2013.
30. Freed R, Harman M. Quantitative surface properties for retrieved metal-on-UHMWPE and ceramic-on-ceramic THR femoral heads. Presented at the Annual Meeting of the International Society for Technology in Arthroplasty (ISTA), Palm Beach, FL, 2013.
31. Ansari F, Alvarez E, Harman M, Pruitt L, Mayor M, Van Citters, D. Metal bearing surfaces in total joint arthroplasty: Do different joints display similar damage modes? Presented at the Annual Meeting of the Society for Biomaterials (SFB), Boston, MA, 2013.
32. Freed R, Keith K, Hodge A, Harman M: Risk of damage during hip dislocation: Surface roughness on dislocated versus non-dislocated femoral heads retrieved after total hip

- replacement. Presented at the Annual Meeting of the Orthopaedic Research Society (ORS), San Antonio, TX, 2013.
33. Thurston B, Bailey L, Shanley E, Sauers E, Kissenberth M, DesJardins J, Thigpen C, Harman M: Humeral torsion and shoulder biomechanics: Comparison of a novel ultrasonographic technique and the computed tomography benchmark. Proceedings of the American Society of Mechanical Engineering (ASME) Summer Bioengineering Conference, Sunriver, OR, 2013.
 34. Kinney AL, Vincent HK, Harman M, Coburn J, D'Lima DD, Fregly BJ: Effects of body weight modification on internal knee contact forces during gait. Proceedings of the American Society of Mechanical Engineering (ASME) Summer Bioengineering Conference, Sunriver, OR, 2013.
 35. Csernica R, Harman M, Baleani M, Tozzi G, Erani P, Stea S, Toni A: Mechanical disassembly and taper damage assessment of retrieved femoral stems with modular necks. Presented at the Annual Meeting of the Orthopaedic Research Society (ORS), San Antonio, TX, 2013.
 36. Durig N, Alvarez E, Harman M: Characterizing metal-polymer bearing couples of knee replacement prostheses retrieved after in vivo function. Presented at the Annual Meeting of the Biomedical Engineering Society (BMES), Atlanta, GA, 2012.
 37. Keith K, Hodge A, Harman M: Surface roughness of dislocated metal hip heads retrieved after total hip replacement. Presented at the Annual Meeting of the Biomedical Engineering Society (BMES), Atlanta, GA, 2012.
 38. Csernica R, Harman M, Baleani M, Tozzi G, Stea S, Toni A: Mechanical disassembly and damage assessment of retrieved femoral stems with modular necks. Presented at the Annual Meeting of the Biomedical Engineering Society (BMES), Atlanta, GA, 2012.
 39. Trent E, Thigpen C, Harman M, Hawkins R, Dean D, Kwartowitz D: Ultrasound imaging as a method to characterize and predict rotator cuff injuries. Presented at the Annual Meeting of the Biomedical Engineering Society (BMES), Atlanta, GA, 2012.
 40. Fitzpatrick CK, Harman MK, Rullkoetter PJ: Comparison of mobile-bearing patella wear patterns in computational and retrieval studies. Presented at the 18th Congress of the European Society of Biomechanics (ESB), Lisbon, Portugal, 2012.
 41. Alvarez E, DesJardins JD, Schmitt S, Harman MK: Relationship between surface roughness and articular wear for cobalt-chrome on polyethylene bearing couples: Evaluation of retrieved unicondylar knee replacements. Presented at the 58th Annual Meeting of the Orthopaedic Research Society (ORS), San Francisco, CA, 2012
 42. Alvarez E, Harman MK, DesJardins JD: Development and assessment of knee femoral components surface damage classification and training method. Presented at the 58th Annual Meeting of the Orthopaedic Research Society (ORS), San Francisco, CA, 2012
 43. Lützner, J, Kirschner S, Günther KP, Harman MK: Patients with rotational mismatch between femur and tibia after TKA show no improvement in the Knee Society functions score and different kinematics. Accepted for presentation at the 57th Annual Meeting of the Orthopaedic Research Society (ORS), Long Beach, CA, 2011.
 44. Harman MK, Spinelli M, DesJardins J, Affatato S, Viceconti M: Pre-clinical assessment of unicondylar knee replacements: Do ISO standards for wear simulation predict damage patterns on explanted UKR? The 56th Annual Meeting of the Orthopaedic Research Society (ORS), New Orleans, LA, 2010.

45. Spinelli M, Harman M, Affatato S, DesJardins J: Functional performance of fixed-bearing unicompartmental knee prosthesis utilizing force-controlled knee wear simulation. The 56th Annual Meeting of the Orthopaedic Research Society (ORS), New Orleans, LA, 2010.
46. Harman M, Danesi V, Cristofolini L, Stea S, Beraudi A, Tersì L, Viceconti M: Re-use of explanted osteosynthesis devices: Decontamination and inspection protocol for assessing device integrity. The 56th Annual Meeting of the Orthopaedic Research Society (ORS), New Orleans, LA, 2010.
47. Harman M, Affatato S, Spinelli M, Zavalloni M, Stea S, Toni A: Polyethylene insert damage in unicompartmental knee replacements: Comparison of *in-vivo* function and *in-vitro* simulation. 10th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Vienna, Austria, 2009.
48. Harman MK, Banks SA, Kirschner S, Lützner J: Axial alignment of mobile-bearing TKR: Does it affect knee rotation and bearing motion? 10th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Vienna, Austria, 2009.
49. Harman MK, Banks SA, Kirschner S, Lützner, J: Quantifying bearing motion in mobile-bearing TKR: Does axial alignment affect *in vivo* functional performance? Knee Arthroplasty Conference, Institution of Mechanical Engineers, London, England, 2009.
50. Banks SA, Harman MK, Hodge WA: It only takes a decade: From concept to *in vivo* data with a new TKA design. Knee Arthroplasty Conference, Institution of Mechanical Engineers, London, England, 2009.
51. Harman MK, Banks SA, Kirschner S, Lützner J: Does prosthesis alignment affect axial rotation after total knee replacement? A prospective study combining computed tomography and fluoroscopic evaluations. The 55th Annual Meeting of the Orthopaedic Research Society (ORS), Las Vegas, NV, 2009.
52. Coburn J, Harman M, Banks S, Roche M: Knee joint kinematics measured using simultaneous video motion capture and fluoroscopy. The 55th Annual Meeting of the Orthopaedic Research Society (ORS), Las Vegas, NV, 2009.
53. Mori A, Harman MK, Tanino H, Schmitt S, Hodge WA: Femoral head penetration into polyethylene acetabular cups: Comparison of techniques for measuring penetration depth. The 55th Annual Meeting of the Orthopaedic Research Society (ORS), Las Vegas, NV, 2009.
54. Mori A, Harman MK, Schmitt S, Banks SA, Hodge WA: Femoral head penetration into retrieved polyethylene acetabular cups: Comparison with hip simulator and *in-vivo* clinical studies. 9th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Nice, France, 2008.
55. Harman MK, Matsuda Y, Ischii Y, Mitchell KH, Kiga H, Pitcairn S, Hodge WA: Anteroposterior knee joint stability after 'ACL-substituting' total knee arthroplasty. 9th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Nice, France, 2008.
56. Banks SA, Mitchell KH, Harman MK, Leslie C, Hodge WA: Deep flexion kinematics in PCL-retaining and PCL-sacrificing knees with the same implant design. German Congress for Orthopaedics & Traumatology (DGOOC), Berlin, Germany, 2008.
57. Banks SA, Harman MK, Mitchell KH, Coburn JC, Hodge WA: Clinical, functional and kinematic results with an 'ACL-substituting' knee arthroplasty design. German Congress for Orthopaedics & Traumatology (DGOOC), Berlin, Germany, 2008.

58. Banks SA, Harman MK, Mitchell KH, Coburn JC, Carson D, Varghese M, Hodge WA: Clinical, functional and kinematic results with an 'ACL-substituting' knee arthroplasty design. 9th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Nice, France, 2008.
59. Hodge WA, Miura H, Harman MK, Carson D, Banks SA: Are different lifestyle activities associated with patterns of knee osteoarthritis in Japanese, Saudi Arabian and American knees? The 81st Annual Congress of the Japanese Orthopaedic Association, Sapporo, Japan, 2008.
60. Mori A, Harman MK, Schmitt S, Banks SA, Hodge WA: Femoral head penetration into retrieved polyethylene acetabular cups: Comparison with hip simulator and in-vivo clinical studies. The 54th Annual Meeting of the Orthopaedic Research Society (ORS), San Francisco, CA, 2008.

Prior to Clemson

61. Schmitt S, Harman MK, Roessing S, Hodge WA: Indications for revision unicondylar knee replacement: Do alignment and radiolucent lines predict component loosening? 8th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Florence, Italy, 2007.
62. Banks, SA, Mitchell KH, Harman MK, Leslie CJ, Hodge WA: Deep flexion kinematics in PCL-retaining and –sacrificing knees with the same implant design. 8th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Florence, Italy, 2007.
63. Harman MK, Banks SA, Hodge WA: Limiting micromotion in modular tibial components: In vitro comparison of two different modular capture mechanisms. 8th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Florence, Italy, 2007.
64. Hodge WA, Harman MK, Schmitt S, Mitchell KH, Banks SA: Intraoperative assessment of bone cuts and ligaments to guide surgical technique during TKA. 74th Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), San Diego, CA, February 2007.
65. Virani, NA, Li K, Harman MK, Levy J, Frankle M, Keller TS, Pupello D: Experimental and finite element analysis of baseplate micromotion in the reverse shoulder design. The 53rd Annual Meeting of the Orthopaedic Research Society (ORS), San Diego, CA, 2007.
66. Matsuda Y, Harman MK, Ishii Y, Kiga H, Mitchell K, Hodge WA: Anteroposterior knee joint stability after total knee replacement. The 53rd Annual Meeting of the Orthopaedic Research Society (ORS), San Diego, CA, 2007.
67. Mori A, Harman MK, Schmitt S, Banks SA, Hodge WA: Damage on dislocated and non-dislocated metal heads retrieved after total hip replacement. The 53rd Annual Meeting of the Orthopaedic Research Society (ORS), San Diego, CA, 2007.
68. Hodge WA, Miura H, Harman MK, Banks SA: Patterns of knee osteoarthritis in Japanese, Saudi Arabian and American knees. The 79th Annual Congress of the Japanese Orthopaedic Association, Yokohama, Japan, 2006.
69. Mori A, Harman MK, Campbell P, Hodge WA, Banks SA: Wear patterns particle morphology in autopsy-retrieved TKR. The 79th Annual Congress of the Japanese Orthopaedic Association, Yokohama, Japan, 2006.

70. Tanino H, Harman MK, Banks SA, WA Hodge: Effects of retrieved acetabular polyethylene liner design and wear on hip dislocation. The 79th Annual Congress of the Japanese Orthopaedic Association, Yokohama, Japan, 2006.
71. Banks SA, Mitchell KH, Harman MK, Leslie CJ, Hodge WA: Kneeling kinematics of an 'ACL-substituting' knee arthroplasty in North American patients. The 79th Annual Congress of the Japanese Orthopaedic Association, Yokohama, Japan, 2006.
72. Mori A, Harman MK, Campbell P, Hodge WA, Banks SA: Particle size and shape of wear debris from autopsy-retrieved TKR. The 52nd Annual Meeting of the Orthopaedic Research Society (ORS), Chicago, IL, 2006.
73. Harman MK, Kinsey TL, Mahoney OM, Banks SA, Hodge WA: Does articular constraint affect backside bearing damage on retrieved posterior cruciate-retaining and cruciate-substituting knee replacements? The 52nd Annual Meeting of the Orthopaedic Research Society (ORS), Chicago, IL, 2006.
74. Tanino H, Ito H, Banks SA, Harman MK, Hirayama T, Matsuno T: Acetabular liner design affects clinical dislocation rates after THA. The 52nd Annual Meeting of the Orthopaedic Research Society (ORS), Chicago, IL, 2006.
75. Harman MK, Banks SA,: Patterns of knee osteoarthritis in Arabian and American knees. 73rd Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), Chicago, IL, March 2006.
76. Banks SA, Fregly BJ, Harman MK, Hamilton MA, Sawyer WG: Objective lifetime design of orthopaedic joint replacements: Are we there yet?" World Tribology Congress III, Washington DC, 2005.
77. Harman MK, Markovich, GD, Banks SA, Hodge, WA: The relationship between polyethylene damage and function of metal-backed patellar components retrieved after mobile bearing total knee arthroplasty. 7th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Lisbon, Portugal, 2005.
78. Harman MK, Banks SA, Kanekasu, K, Hodge, WA: Knee kinematics and polyethylene backside wear: Comparison of posterior cruciate-retaining and cruciate-substituting knee replacements. 7th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Lisbon, Portugal, 2005.
79. Harman MK, Frankle M, Gutierrez S, Greiwe RM, Banks SA, Lee III W: Analysis of glenoid component position, lateral offset and screw geometry for fixation of "reverse" total shoulder replacements. 7th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Lisbon, Portugal, 2005.
80. Harman MK, Schmitt S, Roessing S, Banks SA, Scharf HP, Hodge WA: Wear performance of retrieved unconstrained fixed-bearing unicondylar knee replacements. 7th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Lisbon, Portugal, 2005.
81. Harman MK, Schmitt S, Roessing S, Banks SA, Scharf HP, Hodge WA: Polyethylene damage mechanisms on retrieved unicondylar knee replacements. The 51st Annual Meeting of the Orthopaedic Research Society (ORS), Washington, DC, 2005.
82. Harman MK, Tanino H, Ishida I, Nakamura T, Banks SA, Hodge WA: Cement stresses and stem loosening after cemented total hip arthroplasty: Effects of increased lateral offset and stem geometry. The 51st Annual Meeting of the Orthopaedic Research Society (ORS), Washington, DC, 2005.

83. Tanino H, Harman MK, Banks SA, Hodge WA: Relationship between polyethylene liner design, impingement and dislocation on retrieved acetabular components. The 51st Annual Meeting of the Orthopaedic Research Society (ORS), Washington, DC, 2005.
84. Harman MK, Schmitt S, Roessing S, Banks SA, Scharf HP, Hodge WA: Mechanisms of polyethylene damage on retrieved unicondylar knee replacements. Proceedings of the 17th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), Rome, Italy, 2004.
85. Harman MK, Banks SA, Hodge WA: Damage on retrieved all-polyethylene patellar components after total knee replacement. 77th Annual Congress of the Japanese Orthopaedic Association, Kobe, Japan. May 2004.
86. Harman MK, Markovich GD, Banks SA, Hodge WA: Cementless LCS total knee arthroplasty after 9 years in-situ: Articular and backside wear on retrieved meniscal and rotating platform polyethylene bearings. 71st Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), San Francisco, CA, March 2004.
87. Harman MK, Markovich GD, Banks SA, Hodge WA: Wear on retrieved meniscal and rotating platform polyethylene bearings after 9 years in-situ. 71st Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), San Francisco, CA, 2004.
88. Harman MK, Markovich GD, Banks SA, Hodge WA: Damage on metal-backed patellar components retrieved after mobile bearing total knee arthroplasty. 50th Annual Meeting of the Orthopaedic Research Society (ORS), San Francisco, CA, 2004.
89. Harman MK, Frankle M, Banks SA, Vasey M, Lee III W, Ondrovic L, Ganey T, Gutierrez S: In-vitro biomechanical testing of initial glenoid fixation for "reverse" total shoulder arthroplasty. 50th Annual Meeting of the Orthopaedic Research Society (ORS), San Francisco, CA, 2004.
90. Harman MK, Markovich GD, Banks SA, Hodge WA: Articular and backside wear on retrieved LCS meniscal and rotating platform polyethylene bearings after 9 years in-situ. Proceedings of the 16th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), San Francisco, CA, 2003.
91. Harman MK, Frankle M, Banks SA, Vasey M, Lee III W, Ondrovic L, Ganey T, Gutierrez S: In-vitro comparison of glenoid component fixation for two different semi-constrained shoulder replacements used in rotator cuff deficient patients. Proceedings of the 16th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), San Francisco, CA, 2003.
92. Harman MK, Frankle M, Banks SA, Vasey M, Lee III W, Ondrovic L, Ganey T, Gutierrez S: A comparison of micromotion for two different semi-constrained shoulder replacements used in rotator cuff deficient patients. Annual Meeting of the American Shoulder and Elbow Surgeons, Las Vegas, NV, 2003.
93. Harman MK, Frankle M, Banks SA, Vasey M, Lee III W, Ondrovic L, Ganey T, Gutierrez S: Achieving adequate glenoid fixation during semi-constrained total shoulder arthroplasty used in rotator cuff -deficient patients. Annual Meeting of the American Shoulder and Elbow Surgeons, Las Vegas, NV, 2003.
94. Harman MK, Takeuchi N, Hodge WA: Femoral anatomic considerations in cementless total hip arthroplasty. 6th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Helsinki, Finland, 2003.

95. Harman MK, Banks SA, Hodge WA: Component size selection in total knee replacement: Implications for impingement and abrasive polyethylene damage. 6th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Helsinki, Finland, 2003.
96. Harman MK, Banks SA, Campbell P, Hodge WA: Polyethylene wear and insert micromotion in retrieved total knee replacements: Does the locking mechanism degrade with time? 6th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Helsinki, Finland, 2003.
97. Harman MK, Takeuchi N, Hodge WA: Early outcomes of cementless stems in total hip arthroplasty. 6th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Helsinki, Finland, 2003.
98. Harman MK, Cooke TDV, Banks SA, Hodge WA: Cartilage degeneration patterns in osteoarthritic knees: What do they tell us about knee kinematics? 6th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Helsinki, Finland, 2003.
99. Hodge WA, Harman MK, Takeuchi, N: Early outcomes of cementless stems in total hip arthroplasty. Annual Meeting of the Japanese Orthopaedic Association, 2003.
100. Hodge WA, Harman MK, Banks, SA: Component size selection in total knee replacement: Implications for impingement and abrasive polyethylene damage. Annual Meeting of the Japanese Orthopaedic Association, 2003.
101. Hodge WA, Harman MK, Takeuchi N: Femoral anatomic considerations in cementless total hip arthroplasty. Annual Meeting of the Japanese Orthopaedic Association, 2003.
102. Hodge WA, Harman MK, Cooke, TDV, Banks, SA: Cartilage degeneration patterns in osteoarthritic knees: What do they tell us about knee kinematics? Annual Meeting of the Japanese Orthopaedic Association, 2003.
103. Hodge WA, Harman MK, Banks, SA, Campbell, P: Polyethylene wear and insert micromotion in retrieved total knee replacements: Does the locking mechanism degrade with time? Annual Meeting of the Japanese Orthopaedic Association, 2003.
104. Banks SA, Harman MK, Bellemans J, Hodge WA: Making sense of knee arthroplasty kinematics: News you can use. 70th Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), New Orleans, LA, 2003.
105. Harman MK, Banks SA, Campbell P, Hodge WA: Polyethylene insert micromotion and backside wear: Is it a concern in cemented TKR? 70th Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), New Orleans, LA, 2003.
106. Harman MK, Banks SA, Esposito C, Campbell P, Hodge, WA: Polyethylene backside damage and insert micromotion in total knee arthroplasty: Does the locking mechanism degrade with time? The 49th Annual Meeting of the Orthopaedic Research Society (ORS), New Orleans, LA, 2003.
107. Harman MK, Banks SA, Hodge WA: Damage on retrieved all-polyethylene patellar components after total knee arthroplasty. The 49th Annual Meeting of the Orthopaedic Research Society (ORS), New Orleans, LA, 2003.
108. Harman MK, Banks SA, Hodge WA: Polyethylene damage on modular, unconstrained tibial components: Do retrieved inserts show evidence of backside micromotion and edge loading? The 49th Annual Meeting of the Orthopaedic Research Society (ORS), New Orleans, LA, 2003.

109. Hodge WA, Harman MK, Markovich GD, Banks SA: Total knee arthroplasty in valgus osteoarthritic knees: 5 year clinical outcomes. 32nd Annual Meeting of the Japanese Society for Replacement Arthroplasty, 2002.
110. Harman MK, Banks, SA, Hodge WA: Contact stress and polyethylene wear after total knee replacement: Centered wear patterns are not consistent with edge loading. Proceedings of the 15th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), Oxford, England, 2002.
111. Hodge WA, Harman MK: Biomechanics of hip replacement and effects on design. Annual Meeting of the Japanese Orthopaedic Association and Japanese Hip Society, 2002.
112. Harman MK, Banks SA, Schmitt S, Hedley AK, Hodge WA: Total knee replacement performance beyond 5 years: Can in vivo fluoroscopy and retrieved implant analysis lead the way? 69th Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), Dallas, TX, 2002.
113. Banks SA, Harman MK, Hodge, WA: Mechanisms of anterior impingement damage in total knee arthroplasty. 69th Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), Dallas, TX, 2002.
114. Harman MK, Banks SA, Hodge WA: Polyethylene wear and insert micromotion in total knee arthroplasty: Does the locking mechanism degrade with time? Proceedings of the 15th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), Oxford, England, 2002.
115. Harman MK, Banks SA, Hodge WA: Component size selection in total knee replacement: Implications for impingement and abrasive polyethylene wear. Proceedings of the 15th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), Oxford, England, 2002.
116. Harman MK, Benson L, DesJardins JD, LaBerge M: Kinematics and wear damage during stair descent loading in knee simulation. 28th Annual Meeting of the Society for Biomaterials (SFB), Tampa, Florida, 2002.
117. Hodge WA, Harman MK, Banks, SA: Stem design considerations in early loosening of cemented total hip replacements. Proceedings of the 14th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), page T4-4, Maui, Hawaii, 2001.
118. Hodge WA, Harman MK, Banks SA: Matched comparison of in-vivo kinematics and polyethylene wear after total knee arthroplasty. 5th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Rhodes, Greece, 2001.
119. Harman MK, Hodge WA, Urban RM, Banks SA: Retrieval analysis of contemporary metal-on-metal total hip replacements. 5th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Rhodes, Greece, 2001.
120. Hodge WA, Harman MK, Banks SA, Jacobs JJ, Urban RM, Skipor AK, Campbell P, Amstutz HC: Early clinical experience with contemporary metal-on-metal total hip arthroplasty: A multicenter collaboration. 68th Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), San Francisco, CA, 2001.
121. Harman MK, Banks SA, Hodge WA: Organization of a post-mortem implant retrieval program. 68th Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), San Francisco, CA, 2001.

122. Harman MK, Banks SA, Hodge WA: Assessing repeated dislocations with constrained acetabular components. The 47th Annual Meeting of the Orthopaedic Research Society (ORS), San Francisco, CA, 2001.
123. Schmitt S, Harman MK, Banks SA, Schroeder-Boersch H, Hodge WA, Scharf HP: Early loosening after cemented total knee arthroplasty. 14th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), page P91, Maui, Hawaii, 2001.
124. Banks SA, Harman MK, Hodge WA: Is condylar liftoff a major concern in total knee replacements? 14th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), page P72, Maui, Hawaii, 2001.
125. Harman MK, DesJardins JD, Banks SA, Benson L, LaBerge M, Hodge WA: Damage patterns of polyethylene inserts after retrieval and after wear simulation. 14th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), page P52, Maui, Hawaii, 2001.
126. Harman MK, Banks SA, Hodge WA: The magnitude of in vivo motion and wear on modular tibial inserts: Backside versus articular surface. 14th Annual Symposium of the International Society for Technology in Arthroplasty (ISTA), page P50, Maui, Hawaii, 2001.
127. Harman MK, DesJardins JD, Banks SA, Benson L, LaBerge M, Hodge WA: Damage patterns of polyethylene inserts after retrieval and after wear simulation. 4th Combined Meeting of the Orthopaedic Research Societies of the U.S.A., Canada, Europe and Japan, Rhodes, Greece, 2001.
128. Harman MK, Banks SA, Hodge WA: Early loosening of modern high offset cemented femoral stems. American Association of Hip and Knee Surgeons, Dallas, TX, 2001.
129. Harman MK, Hodge WA, Banks SA: The spectrum of polyethylene wear after contemporary PCL-retaining total knee arthroplasty. 5th Congress of the European Federation of National Associations of Orthopaedics and Traumatology (EFORT), Rhodes, Greece, 2001.
130. Harman MK, DesJardins J, Banks SA, Benson L, LaBerge M, Hodge W: Damage patterns on polyethylene inserts after retrieval and after wear simulation. The 47th Annual Meeting of the Orthopaedic Research Society (ORS), San Francisco, CA, 2001.
131. Harman MK, Urban R, Banks SA, Hodge WA: Analysis of retrieved contemporary metal-on-metal total hip replacements. The 47th Annual Meeting of the Orthopaedic Research Society (ORS), San Francisco, CA, 2001.
132. Hodge WA, Harman MK, Banks SA: Metal on metal bearing surfaces in total hip arthroplasty. Proceedings of the 73rd Annual Meeting of the Japanese Orthopaedic Association, Kobe, Japan, 2000.
133. Hodge WA, Harman MK, Banks SA: Direct comparison of in vivo function and polyethylene damage after PCL-retaining total knee replacement. 73rd Annual Meeting of the Japanese Orthopaedic Association, Kobe, Japan, 2000.
134. Hein K, Harman MK, Dorrance LJ, Banks SA, Hodge WA: Hip dislocation and closed reduction after use of constrained acetabular components in total hip arthroplasty. 67th Annual Meeting of the American Academy for Orthopaedic Surgeons (AAOS), Orlando, FL, 2000.
135. Harman MK, Banks SA, Hodge WA: Organization of a post-mortem implant retrieval program. 67th Annual Meeting of the American Academy for Orthopaedic Surgeons (AAOS), Orlando, FL, 2000.

136. Harman MK, Banks SA, Pone E, Hodge WA: Depth and rate of surface deformation on retrieved polyethylene tibial inserts. 46th Annual Meeting of the Orthopaedic Research Society (ORS), Orlando, FL, 2000.
137. Harman MK, Banks SA, Pone E, Hodge WA: Damage depth and rate of surface deformation on retrieved polyethylene tibial inserts. World Congress of Biomaterials, Kamuela, Hawaii, 2000.
138. Harman MK, Banks SA, Hodge WA: Corrosion of retrieved knee implants with modular stem extensions. The 25th Annual Meeting of the Society for Biomaterials (SFB), 1999.
139. Harman MK, Banks SA, Natarajan RN, Andriacchi TP, Hofmann AA, Hodge WA: Analysis of retrieved flat-on-flat polyethylene inserts: Wear patterns are not consistent with medial edge loading after TKA. The 45th Annual Meeting of the Orthopaedic Research Society (ORS), Anaheim, CA, Transactions of the Orthopaedic Research Society, 24:835, 1999.
140. Harman MK, Banks SA, Hodge WA: Do in vivo kinematics predict polyethylene damage after total knee arthroplasty? 12th Annual International Symposium for Technology in Arthroplasty (ISTA), Chicago, IL, 1999.
141. Harman MK, Banks SA, Natarajan RN, Andriacchi TP, Hodge WA: Direct comparison of in-vivo kinematics and wear on retrieved TKA polyethylene inserts from the same subject group. 66th Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), Anaheim, CA, page 72, 1999.
142. Harman MK, Banks SA, Natarajan RN, Andriacchi TP, Hofmann AA, Hodge WA: The spectrum of polyethylene wear in contemporary posterior cruciate ligament retaining total knee arthroplasty. The 66th Annual Meeting of the American Academy for Orthopaedic Surgeons (AAOS), Anaheim, CA, 1999.
143. Harman MK, Banks SA, Hodge WA: The influence of femoral geometry on in vivo kinematics and wear in two designs of PCL-retaining total knee arthroplasty. 45th Annual Meeting of the Orthopaedic Research Society (ORS), Anaheim, CA, Transactions of the Orthopaedic Research Society, 24:148, 1999.
144. Harman MK, Banks SA, Natarajan RN, Andriacchi TP, Hodge WA: Comparison of in-vivo kinematics and wear patterns on retrieved UHMWPE total knee replacements. 24th Annual Meeting of the Society for Biomaterials (SFB), San Diego, CA, Transactions of the Society for Biomaterials, 24:246, 1998.
145. Harman MK, Banks SA, Natarajan RN, Andriacchi TP, Hodge WA: Comparison of in-vivo kinematics and polyethylene wear in retrieved total knee replacements. The 44th Annual Meeting of the Orthopaedic Research Society (ORS), New Orleans, LA, Transactions of the Orthopaedic Research Society, 23:368, 1998.
146. Harman MK, Markovich GD, Banks SA, Gleiber M, Hodge WA: Cruciate ligaments as constraint mechanisms in varus and valgus osteoarthritic knees prior to total knee replacement. The 64th Annual Meeting of the American Academy for Orthopaedic Surgeons (AAOS), San Francisco, CA, 1997.
147. Klos TV, Devilee RJJ, Banks SA, Harman MK: Inter-observer variability in postoperative radiographic localization of graft placement in endoscopic ACL reconstruction. Combined Meeting of the American Orthopaedic Society for Sports Medicine, Munich, Germany, 1997.

148. Hodge WA, Harman MK, Markovich GD, Banks SA: Articular cartilage wear patterns in osteoarthritic knees. 50th Annual Meeting of the Association of Bone and Joint Surgeons (ABJS), Phoenix, Arizona, 1997.
149. Harman MK, Markovich GD, Banks SA, Hodge WA: Factors affecting articular cartilage wear patterns in severely osteoarthritic knees. The 43rd Annual Meeting of the Orthopaedic Research Society (ORS), San Francisco, CA, Transactions of the Orthopaedic Research Society, 22:638, 1997.
150. Harman MK, Banks SA, Hodge WA: Bone cement porosity and volume are affected by chemicals used during specimen processing. The 22nd Annual Meeting of the Society for Biomaterials, Toronto, Canada. Transactions of the Society for Biomaterials (SFB), 22:39, 1996.
151. Harman MK, Markovich GD, Banks SA, Hodge WA: Cartilage wear patterns in osteoarthritis of the knee. The 63rd Annual Meeting of the American Academy for Orthopaedic Surgeons (AAOS), Atlanta, GA, Orthopaedic Transactions, 20(1):209-210, 1996.
152. Harman MK, Banks SA, Hodge WA: Loss of titanium nitride coating adhesion from the articular surfaces of retrieved THR prostheses. 21st Annual Meeting of the Society for Biomaterials, San Francisco, CA, Transactions of the Society for Biomaterials (SFB), 21:168, 1995.
153. Harman MK, Cristofolini L, Toni A, Viceconti M, Giunti A: A reproducible in-vitro protocol for initial hip stem torsional stability. Second World Congress of Biomechanics, Amsterdam, The Netherlands, 1994.
154. Harman MK, Bachus KN: Three-dimensional stereoscopic analysis of trabecular orientation of cancellous bone after surgical preparation for total knee arthroplasty. 59th Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), Washington DC, Orthopaedic Transactions, 16(3):678, 1992.

Conference Proceedings (Unreviewed)

1. David M, Bebler M, Farrell A, Harper C, Leslie H, Doyle J, Li A, Graham W, Harman M. Performance of four knee design categories: A comparison of CU-REPRO and international registries. Bioengineering Design Expo, Greenville, SC, April 29, 2016.
2. David M, Bebler M, Farrell A, Harper C, Leslie H, Doyle J, Li A, Graham W, DesJardins J, Harman M. Clemson University Retrieval of Explants Program and Registry in Orthopaedics (CU-REPRO). 11th Annual Focus on Creative Inquiry Forum, Clemson, SC, April 6-7, 2016.
3. Mealing V, Harman M, Mihailova E, Drapcho C, Sharp J, Weisensee K. Development of a bone bioreactor for forensic applications. Biomaterials Day Regional Symposium, Clemson, SC, Sept. 25, 2015.
4. Snethen K, Hernandez J, Harman M. Contact mechanics in taper junctions of modular total knee replacements: A finite element investigation on the effect of manufacturing tolerance. Biomaterials Day Regional Symposium, Clemson, SC, Sept. 25, 2015.
5. Lu X, Sun L, Harman M. Digital image processing for pore size measurements in explanted surgical mesh. Biomaterials Day Regional Symposium, Clemson, SC, Sept. 25, 2015.
6. Harper C, Leslie H, Doyle J, Young L, Li A, Farrell A, Bebler M, David M, DesJardins J, Harman M. Clemson University Retrieval of Explants Program and Registry in

- Orthopaedics (CU-REPRO). Biomaterials Day Regional Symposium, Clemson, SC, Sept. 25, 2015.
7. Pysh M, Weisensee K, Schlautman M, Harman M. Analysis of citrate in porcine rib bone by high performance liquid chromatography. Biomaterials Day Regional Symposium, Clemson, SC, Sept. 25, 2015.
 8. Grujicic A, Grujicic M, Snipes J, Subrahmanian R, Avuthu V, Burnikel B, Harman M. The effect of varying intramedullary (IM) stem length, material, and fixation on strain concentrations in the tibia. Biomaterials Day Regional Symposium, Clemson, SC, Sept. 25, 2015.
 9. Hernandez J, Harman MK. Laparoscopic tools to sense mechanical properties of implanted hernia mesh. Biomaterials Day Regional Symposium, Clemson, SC, Sept. 25, 2015.
 10. Macaluso A, Burns-Heffner C, Harman MK. GreenMD: A Medical Device Recycling and Reprocessing Certificate Program. Presented at the annual meeting of the Southeastern Medical Devices Association, April 2015.
 11. Binnicker R, Hall G, Harper C, Leslie H, Patel A, Taylor R, DesJardins J, Harman M. Clemson University Retrieval of Explants Program and Registry in Orthopaedics (CU-REPRO). 10th Annual Focus on Creative Inquiry Forum, Clemson University, Clemson, SC, Apr 2015.
 12. Burns-Heffner C, Harman M. Tissue fixation and digestion chemicals impact the mechanical properties of explanted surgical mesh. Biomaterials Day, Society for Biomaterials, Atlanta, GA, 2014.
 13. Casey E, Phillips A, Harman M. Tissue digestion methods suitable for explanted hernia mesh. Biomaterials Day, Society for Biomaterials, Atlanta, GA, 2014.
 14. Pysh M, Weisensee K, Schlautman M, Harman M. Analytical methods for assessing bone biochemistry to determine citrate concentration and mineral content. Biomaterials Day, Society for Biomaterials, Atlanta, GA, 2014.
 15. Mealing V, Pysh M, Weisensee K, Mikhailova E, Harman M. Bone decomposition after death: Developing a bioreactor to mimic burial settings. Biomaterials Day, Society for Biomaterials, Atlanta, GA, 2014.
 16. Stamer C, Taylor R, Panigrahi P, Harman M. Quantifying variations in the femoral head-neck moment arm and associated surface changes on retrieved modular total hip replacements. Biomaterials Day, Society for Biomaterials, Atlanta, GA, 2014.
 17. Hernandez J, Snethen K, Harman M. Manufacturing tolerance impacts stresses in bore-cone taper junctions of modular total knee replacements: A finite element analysis. Biomaterials Day, Society for Biomaterials, Atlanta, GA, 2014.
 18. Schwartzman K, Panigrahi P, Harman M. Metrology of explanted joint replacements with modular tapers: Validation of non-destructive profilometry using PVS impression molds. Biomaterials Day, Society for Biomaterials, Atlanta, GA, 2014.
 19. Macaluso A, Crites A, Harman M. Assessing biofilms accumulation and thickness using colorimetric assays and imaging techniques. Biomaterials Day, Society for Biomaterials, Atlanta, GA, 2014.
 20. Zandecki A, Bergren A, Binnicker R, Dixon R, Hall G, Ruzzo E, Stamer C, Taylor R, Santillo A, Siatkowski S, Harman M, DesJardins J. Clemson University Retrieval of Explants Program and Registry in Orthopaedics (CU-REPRO). 9th Annual Focus on Creative Inquiry, Clemson University, Apr 3, 2014.

21. Zandecki A, Bergren A, Binnicker R, Dixon R, Hall G, Ruzzo E, Stamer C, Taylor R, Santillo A, Siatkowski S, Harman M, DesJardins J. Clemson University Retrieval of Explants Program and Registry in Orthopaedics (CU-REPRO). 9th Annual Focus on Creative Inquiry, Clemson University, Apr 3, 2014.
22. Burns-Heffner C, Shaporev A, Heniford T, Lincourt A, Marshall P, Vertegel A, Harman MK. Development of a standard test method for testing compliance of explanted hernia meshes. Biomaterials Day Regional Symposium, Clemson, SC, Nov. 1-2, 2013.
23. Dunphy M, Weisensee K, Mikhailova E, Harman M. Bioreactor designed to control environmental factors on bone decomposition for anthropology. Biomaterials Day Regional Symposium, Clemson, SC, Nov. 1-2, 2013.
24. Macaluso A, Harman M. Quantifying the environmental factors affecting biofilm adhesion on medical instruments. Biomaterials Day Regional Symposium, Clemson, SC, Nov. 1-2, 2013.
25. Panigrahi P, Durig N, Alvarez E, Harman M. Performance of oxidized zirconium femoral components in total knee arthroplasty after severe UHMWPE wear. Biomaterials Day Regional Symposium, Clemson, SC, Nov. 1-2, 2013.
26. Snethen K, Henson K, Lutzner J, Kirschner S, Harman M. Mechanical disassembly of retrieved total knee replacements with taper modularity. Biomaterials Day Regional Symposium, Clemson, SC, Nov. 1-2, 2013.
27. Wusylko A, Freed R, Kornev K, Brandt JM, Turgeon T, Harman MK. Quantification of surface roughness in relation to wettability of ceramic femoral head retrievals. Biomaterials Day Regional Symposium, Clemson, SC, Nov. 1-2, 2013.
28. Zandecki A, Bergren A, Binnicker R, Dixon R, Hall G, Ruzzo E, Stamer C, Taylor R, Wisniewska D, Harman M, DesJardins J. Clemson University Implant Retrieval Program. Southeast and Mid-Atlantic BME Regional Career Conference, Washington DC, Oct. 25, 2013.
29. Nunez L, Harman MK, Pace TP. Treatment for wear and osteolysis in uncemented TKR. Presented at the Annual Meeting of the South Carolina Orthopaedic Association, Kiawah Island, SC, Aug. 1-4, 2013.
30. Freed R, Keith K, Hodge A, Harman MK. Characterization of surface roughness on retrieved cobalt-chrome femoral heads: Dislocated versus non-dislocated hips. Biomaterials Day Regional Symposium, Clemson, SC, Sept. 29, 2012.

Prior to Clemson

31. Harman MK, Frankle M, Banks SA: Biomechanical analysis of different RSP sizes. Second International Symposium for the Treatment of Complex Shoulder Problems. Tampa, FL, 2005.
32. Harman MK, Frankle M, Banks SA: In-vitro biomechanical evaluation of glenoid component fixation. First International Symposium for the Treatment of Complex Shoulder Problems. Tampa, FL, 2004.
33. Hodge WA, Harman MK, Urban RM, Banks SA: Retrieval analysis of contemporary metal on metal total hip replacements. Annual Meeting of the Florida Orthopaedic Society, West Palm Beach, FL, 2000.
34. Hodge WA, Harman MK, Banks SA: Direct comparison of in vivo knee motion and wear on retrieved TKA polyethylene inserts from the same subject group. Annual Meeting of the Florida Orthopaedic Society, West Palm Beach, FL, 2000.

35. Taylor GS, Harman MK, Hodge WA: The mineral content and cellular structure of heterotopic bone. The 17th Annual Meeting of the Florida Society for Microscopy, Orlando, FL, page 60, 1999.
36. Klos TV, Harman MK, Habets RJE, Devilee RJJ, Banks SA: Locating femoral graft placement from lateral radiographs in anterior cruciate ligament reconstruction. A comparison of three methods of measuring radiographic images. 2nd Joint Congress of the Belgian Arthroscopy Society and the Netherlands Society for Arthroscopy, Brugge, Belgium, 1999.
37. Hodge WA, Harman MK, Markovich GD, Banks SA: Factors affecting articular cartilage wear patterns in severely osteoarthritic knees. The 51st Annual Meeting of the Florida Orthopaedic Society, Coral Gables, FL, 1998.
38. Harman MK: Articular wear patterns in degenerative joint disease of the knee. Tenth Annual Joint Replacement Symposium. Palm Beach, FL, 1995.
39. Harman MK: Implant retrievals with kinematic correlation. Ninth Annual Joint Replacement Symposium, Palm Beach, FL, 1994.
40. Bueno Lozano AL, Stea S, Harman MK, Viceconti M, Bertoni F, Sudanese A, Toni A: Relation between torsional stability and interface contact: A case report with cemented stem. Recent Advances in Oral and Orthopaedic Prostheses, Venice, Italy, 1993.
41. Viceconti M, Harman MK, Toni A, Giunti A: Fretting corrosion in titanium modular stems. Recent Advances in Oral and Orthopaedic Prostheses, Venice, Italy, 1993.
42. Cristofolini L, Harman MK, Viceconti M, Toni A, Giunti A: A protocol for testing the torsional stability of uncemented hip stems. Recent Advances in Oral and Orthopaedic Prostheses, Venice, Italy, 1993.
43. Viceconti M, Harman MK, Toni A, Giunti A: Corrosion resistance of titanium modular neck stems. Modern Trends in Orthopaedic Surgery and Pathology, Bologna, Italy, 1993.
44. Bueno Lozano AL, Stea S, Harman MK, Viceconti M, Bertoni F, Sudanese A, Toni A, Giunti A: Interface and stability of cemented stems: An ex-vivo study on a femur with prosthesis. Modern Trends in Orthopaedic Surgery and Pathology, Bologna, Italy, 1993.
45. Harman MK, Cristofolini L, Viceconti M, Toni A, Bueno Lozano AL, Giunti A: An in-vitro protocol for testing the primary torsional stability of uncemented hip stems. Modern Trends in Orthopaedic Surgery and Pathology, Bologna, Italy, 1993.
46. Harman MK, Bachus KN, Bloebaum RD: Three-dimensional stereoscopic analysis of trabecular bone orientation for total knee arthroplasty. Scanning Electron Microscopy International, Washington DC, 1991.
47. Harman MK, Brueckmann FR: Total Articular Replacement Arthroplasty: A clinical survival analysis. Methodist Hospital Researchers' Presentations, Indianapolis, IN, 1989.

PRESENTATIONS (INVITED)

Harman MK. Mechanics of Materials. Southeast Regional Biomaterials Day, Clemson, SC, (2015)

Harman MK. Advancing Joint Arthroplasty Through Evidence-based Design. Presented at the Martha Maria Hospital in support of their effort to attain German certification as a EndoProthetikZentrum der Maximalversorgung (Arthroplasty Center of Excellence), (2014).

Harman MK, Panigrahi P, Recall! The Histology and Pathology of Metal-on-Metal Hip Replacements. Regional Symposium of the National Society for Histotechnology, Greenville, SC, (2014)

Harman MK, Evidence-Based Medical Device Design: Insights Gained from Clinical Studies and Retrieval Analysis. Grand Rounds, Department of Surgery, University of Manitoba, Winnipeg, MB, Canada, (2013)

Harman MK, Computer Methods for Medical Devices: Validation of Computer Simulations with Non-clinical Models, Food & Drug Administration (FDA), (2011)

Harman MK, 5th International Knee Symposium, Ilseburg, Germany, (2010)

Harman MK, Prosthesis Monitoring, Vigilance and Substitution in the Orthopaedic Field, Rizzoli Orthopaedic Institute, Bologna, Italy, (2009)

Harman MK, Combining Explant Analysis with Clinical Registries of Joint Replacement, Orthopaedic Department, University Hospital Carl Gustav Carus, Dresden, Germany, (2009)

Harman MK, Total Knee Joint Arthroplasty Symposium, Ilseburg, Germany, (2009)

Harman MK, Prosthesis Monitoring, Vigilance and Substitution in the Orthopaedic Field, Rizzoli Orthopaedic Institute, Bologna, Italy, (2008)

Harman MK, Italian Society of Knee Surgery, Arthroscopy, Sports, Cartilage and Orthopaedic Technology (SIGASCOT). Bari, Italy, (2008)

Harman MK, Mechanical Testing of Biomaterials Workshop, Idea Network for Biomaterials Research Excellence, Bioengineering Department, Clemson University, (2006)

Harman MK, Mechanical Testing of Biomaterials Workshop, Idea Network for Biomaterials Research Excellence, Bioengineering Department, Clemson University, (2006)

Harman MK, Technological Advances in Total Joint Arthroplasty, Key Largo, FL, (2002)

HONORS AND AWARDS

Best Poster (2nd place) – Retrieval of Explants and Registry in Orthopaedics (CU-REPRO), Focus on Creative Inquiry, Clemson University (2015)

Critical Thinking Scholar, Clemson Thinks2 Summer Institute, Quality Enhancement Plan for SACSCOC accreditation, Clemson University (2014)

Best Poster (2nd place) – Retrieval of Explants and Registry in Orthopaedics (CU-REPRO), Focus on Creative Inquiry, Clemson University (2013)

Page Morton Hunter Distinguished Lecturer, Clemson University (2010)

Engineering in Medicine & Health Presentation Prize, Institution of Mechanical Engineers (2010)

Marie Curie International Fellow Award, 7th European Community Framework Program (2008)

Healthcare Heroes – Innovation in Healthcare Award, Palm Beach Co. Medical Society (2004)

Golden Key National Honor Society, (1988-1990, President 1990)

Whitinger Academic Scholarship, Ball State University (1986-1990)

Cooper Science Physics Student of the Year (1989)

Outstanding Senior Athletic Trainer, Ball State University (1990)

Physical Education Major of the Year, Ball State University (1990)

Mortar Board Honorary, Ball State University (1989-1990)

Rotary International Ambassador Scholarship, Stavanger, Norway (1985)

SPONSORED RESEARCH

External Sponsored Research

“RET-Site Reusable & Sustainable Engineering Design (REUSED) Teacher Challenge”, National Science Foundation, Principal Investigator, \$600,000 over 3 years, in review October 2016.

“Biomechanical Mechanisms of Spinal Cord Injury in the Cervical Spine”, SC IDEa Networks of Biomedical Research, Principal Investigator, \$50,000, in review September 2016.

“An Integrated Platform Based On Explanted Surgical Meshes and Personalized Responses For Preclinical Test Verification”, SC-CERSI, project leader (Zhang PI), \$375,000/5 years for PL, in review February 2016.

“Pre-clinical Testing Platform for TKR Under Clinically Relevant Alignment and Soft Tissue Conditions”, SC COBRE for Translational Research Improving Musculoskeletal Health, Junior Investigator (Yao PI), \$450,00/3 years to J, in review January 2016.

“Assessment of hydrogel tissue adhesives using in vitro simulation of abdominal distension”, MedUSim, Principal Investigator, \$8,250, (2016-2017).

“CU-MUSC Orthopaedic Research & Education Program”, DePuy – Synthes, co-investigator, \$315,000, (2015-2017).

“Measurement of Bone Biochemistry in Human Skeletal Remains” Clemson University Research Grant Committee, Principle Investigator, \$8,500 funded, (2015-2016).

“Design Optimization of the Veress Needle”, Charlotte Medical Center Division of Gastrointestinal & Minimally Invasive Surgery, Principal Investigator, \$40,283, (2016-2017)

“Post-marketing surveillance of 3D Knee™ TKR implanted at a large clinical site in Germany,” DJO Surgical, Principal Investigator, \$35,177 funded, (2015-2017).

“Clemson University Retrieval of Explants Program and Registry in Orthopaedics (CU-REPRO)”, Institutional funding from Clemson University through the Creative Inquiry Program, Principal Investigator, \$5,500 funded, (2015-2016).

“Summer Undergraduate Research Fellowship Program – Gaithersburg”, National Institute of Standards and Technology and Dept. of Commerce, Principal Investigator, \$8,685 funded, (2014).

“Towards development of an image-based protocol for the detection and staging of rotator cuff injury,” South Carolina Bioengineering Alliance, co-investigator, \$99,606 funded, (2013).

“Analysis of wear patterns on polyethylene inserts after pre-clinical testing using a knee joint wear simulator,” DJO Surgical, Principal Investigator, \$9,750, (2011).

Prior to Clemson

“Knee kinematics of German 3-D Knee patients in deep flexion,” DJO Surgical, Principal Investigator, \$26,600, (2009-2011).

“ORTHOWATCH - Integrating outcome registers, retrieval analysis programs and preclinical validation methods into a synergistic post-marketing surveillance program for orthopedic

devices,” Marie Curie Career Development Award (Grant PIIF-GA-2008-219978), Commission of the European Communities 7th Framework Program, Principal Investigator, €224,255, (2008-2010).

“Student Scholarship Program for Orthopaedic Science” Walter & Adi Blum Foundation, Principal Investigator, \$30,000, (2008).

“Knee kinematics of 3-D Knee patients in deep flexion: Comparison of three different cultures,” DJO Surgical, Principal Investigator, \$60,000, (2008-2011).

“Comparison of ground reaction forces and motions with in vivo kinematics,” DePuy Orthopaedics, Principal Investigator, \$128,748, (2007-2009).

“Trunk and shoulder motions during a golf swing as related to implantable defibrillators,” InnerPulse, Inc., Co-Principal Investigator, \$10,000, (2007).

“Analysis of retrieved total knee replacement polyethylene inserts,” Encore Medical, Principal Investigator, \$13,900, (2007-2008).

“Program development: Assessment of joint replacements and the Pediatric Gait Program,” Tenet Healthcare Foundation, Principal Investigator, \$20,000, (2007).

“Intraoperative assessment of limb and prosthesis alignment during total knee arthroplasty using surgical navigation,” Encore Medical and OrthoSoft, Principal Investigator, \$24,750, (2006-2007).

“Development of computerized database systems for clinical outcomes and digital image analysis software for evaluation of clinical radiographs after total knee arthroplasty,” Encore Medical, Principal Investigator, \$75,000, (2006-2009).

“Anteroposterior knee stability after total knee arthroplasty,” Encore Medical, Principal Investigator, \$15,000, (2006-2007).

“Evaluation of tibial rotation in navigated and non-navigated implantation of mobile bearing total knee arthroplasty,” Stryker Orthopaedics, Principal Investigator, \$25,800, (2006-2007).

“Functional demands of hip replacement measured using an instrumented hip prosthesis: Implications for maintaining joint cartilage,” Tenet Healthcare Foundation, Principal Investigator, \$10,500, (2006).

“Pediatric Gait Analysis Program,” Walter & Adi Blum Foundation, Principal Investigator, \$25,000, (2006).

“Comparison of articular and backside damage on posterior cruciate retaining and substituting polyethylene inserts,” Stryker Orthopaedics, Principal Investigator, \$20,000, (2005-2006).

“Femoral head damage with hip dislocation after total hip replacement,” Smith & Nephew, Principal Investigator, \$10,000, (2005-2006).

“In vitro evaluation of relative motion between polyethylene inserts and metal baseplates in modular tibial components,” Stryker Orthopaedics, Principal Investigator, \$14,986, (2005-2006).

“Program development: Assessment of joint replacements and the Pediatric Gait Program,” Tenet Healthcare Foundation, Principal Investigator, \$25,000, (2005).

“Analysis of retrieved unicompartmental prostheses,” Waldemar Link GmbH & Co. KG, Principal Investigator, \$30,000, (2004-2005).

“Microscopic analysis of modular hip prostheses after cyclic fatigue testing,” Encore Medical, Principal Investigator, \$3,218, (2004).

“Polyethylene damage analysis of unicompartamental prostheses after cyclic loading in a knee simulator,” Biomet Manufacturing Corp, Principal Investigator, \$5,500, (2003).

“Program development: Assessment of joint replacements and the Pediatric Gait Program,” Tenet Healthcare Foundation, Principal Investigator, \$35,000, (2003).

“Phase 1 proposal to initiate the Cardiac Retrieval Program of the Palm Beaches,” Foundation for the Advanced Cardiac Therapies, Co-Principal Investigator, \$25,000, (2003).

“In vitro biomechanical testing of initial glenoid component fixation for two different reverse shoulder prostheses,” Encore Medical, Principal Investigator, \$32,191, (2002-2003).

“Program development : Assessment of joint replacements and the Pediatric Gait Program,” Tenet Healthcare Foundation, Co-Principal Investigator, \$50,000, (2002).

“Analysis of retrieved Series 7000 polyethylene tibial inserts: Evaluation of the articular and backside surface damage and micromotion at the modular tibial insert interface,” Stryker Howmedica Osteonics, Principal Investigator, \$26,746, (2001-2002).

“Dislocation and closed reduction after use of a constrained acetabular component in THA,” Depuy Orthopaedics, Inc, Principal Investigator, \$11,700, (1999-2001).

“Development of an etching protocol to observe the morphological crystal structure of UHMWPE in a scanning electron microscope,” Microscopy Society of America, Principal Investigator, \$2,500, (1996).

Other Sponsored Research

“Establishment of the Lab for Retrieval Research and Reprocessing of Medical Devices – ReMED”, Bioengineering Faculty Start-up Funds, Principal Investigator, \$250,000, funded, (8/22/2011-8/21/2015).

INNOVATION PORTFOLIO

Invention Disclosures through Clemson University Research Foundation (CURF)

CURF#2017-005: Surgical Instrument for In Situ Mechanical Characterization of Surgical Mesh-Tissue Composites (“aQ-flexx”)

Disclosure date: 10 Aug 2016

Role: 30% owner/inventor

CURF #2016-036: Ultrasound Device for Cleft Palette Repair (“Perfect Palette”)

Disclosure date: 23 Nov 2015

Role: 10% owner/inventor

Faculty Mentor for Biomedical Engineering Capstone Design Program – Clemson University

2016-17

Expandable Interbody Fusion Cage (“Elite Spine Solutions”)

Students: Nolan Bagnol, Tim Litzinger, Austin McCadden, Conor Olejarz, Steven Siclari

Clinical Partner: Charles C. Kanos, MD, Greenville Health System

2015-16

Headband to Reduce Concussive Impacts During Soccer (“ImpactUs”)

Students: Chad Fair, Jared Gentry, Nardine Ghobrial, William Gingrey, Garret Wilson, Zack Wyatt

Clinical Partner: Steven Trocha, MD, Greenville Health System

Vein Retractor Device for Use During Whipple Procedures (“Surg+Ex”)

Students: Irina Geiculescu, Robert Hutchinson, Alison Lehane, Brittany McCord, Joseph Pate
 Clinical Partners: Steven Martin, MD, Jerome Razayeski, ATC, Abby DeDecker, ATC

Ultrasound Device for Cleft Palette Repair (“Perfect Palette”)

Students: Sharon Olang, Erik Schatzer, Bailey-Jean Walker, Lauren Weaver, Shannon Wood
 Clinical Partner: Joseph Cart Debrux Jr., MD, Greenville Health System

2014-15

Arthroscopic Tool for Assessing Ligament Stiffness

Students: Andrew Cobb, Jordan Esposito, Andrew Mlynarczyk, Kate Showers
 Clinical Partner: Douglas Wyland, MD, Greenville Health System

Ultrasound Attachment to Guide Instruments During Thyroid Biopsy

Students: Medha Vyavahare, Lauren Jordan, Kaitlin McClure, Anna Cantrell
 Clinical Partner: Robert Brown, MD, Greenville Health System

Surgical Instrument to Reduce Wound Tension During Abdominal Surgery

Students: Ryan Borem, Matthew Urban, William Gingrey, Jisele Green, Karcy Grove
 Clinical Partner: Alfredo Carbonell, MD, Greenville Health System

2013-14

PowerPaw Gripper to Improve and Assess Grip Strength

Students: Nikki Hadley, Jonathon Lapage, Chris Ferreira, Garrett Nichols
 Clinical Partner: Adam Smotherman, Strength & Conditioning Coach

NEXUS 3-axis Neck Strengthening Device

Students: Tyler Harvey, Nora Hlavac, Drew Lay, Finley Stewart
 Clinical Partner: Adam Smotherman, Strength & Conditioning Coach

2012-13

Novel Fixation for Hernia Mesh

Students: Theresa Hafner, Michael Howell, Michael Beshay, Adam Mueller
 Clinical Partner: Alfredo Carbonell, MD, Greenville Health System

Hospital Patient Bed Access Stepping Stool Assist Device

Students: Mary Daly, Allison Kniola, Matthew Cogburn, Kevin Lybrand
 Clinical Partner: LouNell Eady, Manager of GHS Therapy

2011-12

Breast Nipple Reconstruction Wound Healing Patch

Students: Margeaux Rogers, James Wood, Joshua Lake, Austin King
 Clinical Partner: Brian McKinley, MD – Greenville Health System

Chest Sternal Cutting Guidance System

Students: Christine Donovan, Kevin Keith, Scott Creel, Brianna Liberio, James Wilson
 Clinical Partner: Christopher Wright, MD – Greenville Health System

GRADUATE STUDENT ADVISING

Current Graduate Advising

Brittney Cotton (MS - thesis), “Host Response of Explanted Surgical Mesh Materials”, 2016-18, (Chair)

Angela Grujicic (PhD), “Multi-physics Modeling of Corrosion Behavior in Orthopaedic Implants”, 2014-17, (Chair)

Katherine Hafner (MS), “Adhesion and Alignment of Dental Pulp Stem Cells Along Spider Silk Scaffolds”, 2016-17, (Committee member)

Moh'd Jaradat (PhD), "Assessment of Injury Risk Using Computational Modeling of the Cervical Spine", 2015-17, (Co-Chair)

Kathleen Lewicki (PhD), "Computational Modeling of the Bone-Implant Interface after Shoulder Replacement", Dartmouth College, 2016-19, (Committee member)

XinYue Lu (PhD), "Optimization of Surgical Mesh Materials for Laparoscopic Gastrointestinal Surgery", 2014-17, (Chair)

Devin (Alex) Mahon (MS – thesis), "Corrosion Behavior of Medical Metal Alloys Under Known Loading Conditions", 2016-17, (Chair)

Kyle Snethen (PhD), "Computational Modeling of Total Knee Replacements", 2013-17, (Chair)

Mathew Stanford (MS - thesis), "In vivo Validation of a Minimally Invasive Surgical Sensor with Applications in Hernia Repair Surgery", 2016-18, (Chair)

PhD Graduates

Duong Nguyen, (PhD), "In vitro Simulation of Pathological Bone Conditions to Predict Clinical Outcome of Bone Tissue Engineering Materials", December 2013, (Committee member)

Suzanne Tabbaa (PhD), "Development of a Transport System for Advancing Tissue Engineering and Cell Identification", December 2014, (Committee member)

Pooja Panigrahi (PhD), "Mechanically- And Electrochemically- Induced Damage at Metal Interfaces of Joint Replacements and the Biological Consequences", May 2015, (Chair)

Yogender Gowtham (PhD), "Understanding the Transcriptional Landscape of Chinese Hamster Ovary (CHO) Cell Lines Using Next Generation Sequencing Technology, RNA-SEQ, Under Industrially Relevant Conditions", May 2016, (Committee member)

Emiel van Ijsseldijk (PhD), "Model-based wear measurements in total knee arthroplasty. Development and validation of novel radiographic techniques", Leiden University Medical Center, Leiden, Netherlands, September 2016, (Committee member).

Masters Graduates

Cameron Golightly, (MS – non-thesis), "A Literature Review on the Effect of Accelerated Aging on UHMWPE and Reflections of Industry Wear Testing Studies," May 2012, (Committee member)

Bryan Thurston, (MS - thesis), "Humeral Torsion and Shoulder Biomechanics: Comparison of a Novel Ultrasonic Technique and the Computed Tomography Benchmark," May 2013, (Chair)

Leah Nunez, (MS - thesis), "Post-Market Surveillance of Total Knee Replacement Combining Clinical Outcomes and Quantitative Image Processing Techniques," May 2013, (Chair)

Nicole Durig (MS - thesis), "Characterization of Potential Wear Sources in Knee Arthroplasty Prostheses After in vivo Function," May 2013, (Chair)

Erica Trent, (MS - thesis), "Detection and Staging of Rotator Cuff Disease Using Ultrasound Elastography", May 2013, (Committee member)

Riley Csernica (MS – non-thesis), "Impact of Post-market Surveillance in Medical Device Companies," August 2013, (Committee member).

Melissa Dunphy (MS – thesis), “An Engineering Approach to Forensic Methods: The Citrate Method for Postmortem Interval Determination.”, May 2014, (Chair)

Kevin Lybrand (MS –non-thesis), “Encapsulation of Rat Dermal Fibroblasts in Fibrin/T904 Hybrid Hydrogel”, May 2014, (Committee member)

Amanda Macaluso (MS – thesis), “Characterization of Biofilms on Medical Device Materials with Application to Reusable Surgical Instruments”, December 2014, (Chair)

Colin Burns-Hefner (MS – thesis), “Development of Explant Registry and Mechanical Testing of Pristine and Explanted Surgical Mesh”, December 2014, (Chair)

Alex Wusylko (MS – thesis), “A Study of Surface Modification on Current Orthopaedic Bioceramics After in vivo Exposure to the Physiological Environment”, December 2014, (Chair)

Erin Casey (MS – thesis), “Physical Characterization of Surgical Mesh After Function in Hernia Repair”, May 2015, (Chair)

Christine Stamer (MS – thesis), “Assessment of Bore-Cone Taper Junctions in Explanted Modular Total Hip Replacements”, May 2015, (Chair)

John Lilley (MS - thesis), “Micro and Molecular Phase Modulation for Long-Lasting, Absorbable, Compliant Polymers for Orthopaedic Applications”, May 2015, (Committee member)

Matthew Pysh (MS – thesis), “Analysis of Citrate Content in Porcine Bone Using HPLC”, December 2015, (Chair)

Jorge Hernandez (MS – thesis), “Development and Initial Validation of a Surgical Instrument for in situ Mechanical Characterization of Surgical Mesh-Tissue Composites”, August 2016, (Chair)

VeeAnder Mealing (MS – thesis), “Simulating Burial Settings: Laboratory-Scale Forensic Bioreactor”, August 2016, (Chair)

Undergraduate Honors

Nicole Durig (BS departmental honors), “Characterization of Potential Wear Sources in Knee Arthroplasty Prostheses After in vivo Function,” May 2012, (Advisor).

Ryan Freed (BS departmental honors), “Evaluation of the Tribological Surface Properties of Retrieved THR Bearing Components: Quantification of Surface Roughness and Wettability,” May 2013, (Advisor).

Melissa Dunphy (BS departmental honors), “Methodology for Determining the Time of Death from Bone Obtained Post-mortem,” May 2013, (Advisor).

Alison Lamb (BS departmental honors), “Obesity in Total Joint Replacement: Literature Review,” May 2013, (Advisor).

Andrew Crites (BS departmental honors), “Surface Characterization and Biofilm Growth on Common Medical Device Materials. May 2015, (Advisor).

International Research Fellows

Emiel van Ijsseldijk (PhD-candidate), Leiden University Medical Center, Spring 2013.

Valeria Di Credico (MS-candidate), University of Bologna and the Rizzoli Orthopaedic Institute, Summer 2014.

Medical Students

Amy Phillips (1st year), Greenville Health System, summer 2014

Tiffanie Aiken (3rd year), Greenville Health System, summer 2016

MENTORING

Research supervisor and mentor for the following medical student research fellows and undergraduate student research fellows at the Clemson University Biomedical Engineering Innovation Campus (CUBEInC)

2011-2012

Riley Csernica (BS)

Nicole Durig (BS) – honors

Kaitlyn Harfmann (BS)

Ross Hansen (BS)

Katherine Henson (BS)

Kevin Keith (BS)

Ryan Quinn (BS)

2012-2013

Melissa Dunphy (BS) - honors

Ryan Freed (BS) - honors

Katherine Henson (BS)

Jacob Kuruvilla (BS)

Alison Lamb (BS) - honors

Alan Marionneaux (BS)

Sam McCauley (HS)

Alex Wusylko (BS)

2013-2014

Andrew Crites (BS) - honors

Katherine Henson (BS)

Jorge Hernandez (BS)

Kevin Schwartzman (BS)

2014-2015

Andrew Crites (BS) - honors

Moriah David (BS)

Jorge Hernandez (BS)

Amy Phillips (Medical Student, USC-Greenville)

Kevin Schwartzman (BS)

Ryan Taylor (BS)

Kendyl Williams (BS)

Emily Grant (HS)

2015-2016

Madeline Bebler (BS)

Patrick Brandt (BS)

Sean Collins (BS)

Sean Flannery (BS)

Megan Henschke (MEng)

DeShawn Hoskins (BS)

Lucy Young (BS)

2016-2017

Madeline Bebler (BS)
 Sean Flannery (BS)
 Megan Henschke (MEng)
 Jhordan Jenkins (BS)
 Michael Kopschik (BS)
 Matthew Trowbridge (BS)
 Lucy Young (BS)

Instructor and mentor for the following undergraduate students in Creative Inquiry**2011-2012**

Hannah Cash, Riley Csernica, Nicole Durig, Kevin Keith, Virginia King, Amber Justice,
 Alison Lamb, Ariel Nissan, Kathy Parker, Ryan Quinn, Christine Stamer

2012-2013

Rachel Binnicker, Riley Csernica, Nicole Durig, Kevin Keith, Alison Lamb, Kathy Parker,
 Elizabeth Russo, Ryan Quinn, Christine Stamer, Andrew Zandecki

2013-2014

Anjali Bergren, Rachel Binnicker, Rebekah Dixon, Garrett Hall, Elizabeth Russo, Alison
 Santillo, Sandra Siatkowski, Christine Stamer, Ryan Taylor, Dominika Wisniewska, Andrew
 Zandecki

2014-2015

Rachel Binnicker, Moriah David, Garrett Hall, Curtis Harper, Haley Leslie, Amar Patel,
 Alison Santillo, Ryan Taylor

2015-2016

Madeline Bebler, Moriah David, Jonathan Doyle, Alison Farrell, William Graham, Curtis
 Harper, Haley Leslie, Ang Li, Lucy Young

2016-2017

Madeline Bebler, Zach Hargett, Haley Leslie, Helen Nguyen, Jason Smiddy, Lucy Young

Masters Graduates – prior to Clemson**(I was acting research supervisor for the following student research fellows at the Medical Technology Lab, Rizzoli Orthopaedic Institute, Bologna, Italy)**

Rosaria Mecca, (MS) “Force Required to Disassemble Modular Hip Replacements After in vivo Function,” University of Bologna, Bologna, Italy (2010).

Valentina Denesi, (MS) “A Reprocessing Protocol for Explanted Osteosynthesis Devices,” University of Bologna, Bologna, Italy (2010).

Kacper Juda, (MS), “Repeatable Procedure for Evaluating Taper Damage on Femoral Stems with Modular Necks,” Wroclaw University of Technology, Poland (2010).

Wojciech Wojciechowski, (MS) “Assessment of Isoelastic Hip Stems Retrieved During Revision Hip Arthroplasty,” Wroclaw University of Technology, Poland (2010).

(I was acting research supervisor for the following student research fellows at the Institute for Mobility & Longevity, West Palm Beach, Florida over the period of 1994-2007)

Emily Downs, (BS/MD), University of Michigan / University of Virginia School of Medicine
 Lucia Talavera, (BS/JD), Florida Atlantic University / Cornell University School of Law
 Mike Gleiber, (BS/MD), University of Miami, George Washington Univ. School of Medicine
 Matt Varghese (BS/MD), University of Miami Miller School of Medicine
 Egest Pone (BS/PhD), Palm Beach Atlantic University / Univ. of California Irvine
 Travis Von Troebel (BS/MD), Drexel University / New York Medical College
 Stephen Pitcairn (BS/MS), Kalamazoo College / Johns Hopkins Institute for Cell Engineering
 Daniel Carson, (BS/MS), Florida Atlantic University / University of Tennessee
 Chad Stewart, (BS/MD), Florida Atlantic University / University of Miami
 Stacy Kaplan, (BS), Florida Atlantic University
 Juan Montolvo, (BS), University of Central Florida
 Suraj Kadabi, (BS), Johns Hopkins University
 Robb Pagarigan, (BS), Palm Beach Atlantic University / Scripps Research Institute
 Brandi Fulford, (BS), Palm Beach Atlantic University
 Mary Birse, (BS), Palm Beach Atlantic University
 Gregg Taylor, (BS), Palm Beach Atlantic University
 Karl Hein, (BS), Palm Beach Atlantic University
 Jamie Langer, (BS), Palm Beach Atlantic University
 Mike DeLaneuville, (BS), Palm Beach Atlantic University

TEACHING

Courses Taught

BIOE 4120/6120, Orthopaedic Engineering & Pathology, F11, F12, F13, F14, F15, F16
 BIOE 4510-002, Creative Inquiry, S11, F11, F12, F13, S14, F14, S15, F15, S16, F16
 BIOE 8150 Design, Manufacturing & Validation Methods for Reusable Medical Devices, S13, S14, S15, S16
 BIOE4030, Engineering Design (faculty mentor), S11, S12, S13, S14, F14, S15, F15, F16
 BIOE8900 Medical Device Recycling and Reprocessing Practicum, F14, Su15, F15, S16, Su16, F16
 BIOE 8600 Biomedical Engineering Device Design Innovation, F15
 BIOE 321, BioFluid Mechanics (guest instructor), S11, S12, S13, S15, S16
 BIOE 320, BioMechanics (guest instructor), F11
 BIOE 201, Introduction to Bioengineering (guest instructor), F11, S11

New Course Development

Medical Device Recycling & Reprocessing Certificate: This five course (15 credit) curriculum sequence offered through the Department of Bioengineering is an internship immersion / training program for engineers, with a focus on optimizing medical device designs for reprocessing and reuse and promoting medical device sustainability (approved by the Curriculum Committee in April 2012).

BIOE 8110 Sterilization and Cleaning Engineering for Medical Devices
 BIOE 8130 Industrial Bioengineering

BIOE 8140 Medical Device Commercialization
 BIOE 8150 Design, Manufacturing & Validation Methods for Reusable Medical Devices
 BIOE8900 Medical Device Recycling and Reprocessing Practicum

UNIVERSITY AND PUBLIC SERVICE

Committees

Department: member, Awards & Nominations Committee (2011- 2016)
 Department: member, ABET Sub-Committee (2011-)
 Department: member, Qualifier Exam Sub-Committee (2011-)
 Department: member, Search and Screening Committee
 Wyss Endowed Chair for Regenerative Medicine (2012-2014)
 Department: Chair, Biomedical Device Recycling and Reprocessing
 Certificate Curriculum Task Force (2012-)
 Department: CUBEInC Strategic Planning Team (2012-)
 Department: BIOE QEP Strategy Task Force (2015-)
 Department: co-chair, Assessment Committee (2016-)
 Department: CU-MUSC Bioengineering Program (2016-)
 University Director, Medical Device Recycling & Reprocessing Certificate
 Program (2012-)
 University Associate Director, CU-MUSC Orthopaedic Research & Education
 Program (2015-)
 International: Awards Committee, International Society for Technology in
 Arthroplasty (2013-2014)
 International: Track Chair for Translational Biomedical Engineering, Biomedical
 Engineering Society (2015)

Other Service

University: short course instructor for outreach event targeting recruitment
 and retention in STEM, Bioengineering, Building a Better You
 (Bioengineering, BABY!) camp, (2011-2016).
 University: short course instructor for outreach event targeting recruitment
 and retention in STEM, Programs for Educational Enrichment and
 Retention (PEER) Foundations in Research Experience (FIRE), (2015-
 2016).
 University: short course instructor for outreach event targeting recruitment
 and retention in STEM, Women in Science & Engineering (WISE)
 "CURE" Research Experience for Undergraduates, (2016)
 University: short course instructor for outreach event targeting recruitment
 and retention in STEM, GHS/Clemson Health Science Immersion
 camp, (2016)
 Professional: abstract reviewer, Biomedical Engineering Society, (2012-2016)
 Professional: abstract reviewer, International Society for Technology in
 Arthroplasty, (2016)
 Public: judge, Palm Beach County Middle School Science Fair, (1996-1998)
 Public: community educator, Suncoast Middle School, (1997-1999)
 Public: community educator, Palm Beach County Community Health Fair,
 (1995-1998)