

Erin A. Baker, Ph.D.

Bone & Joint Center
Integrative Biosciences (iBio) Center
6135 Woodward Avenue
Detroit, Michigan, 48202
ebaker9@hfhs.org

RESEARCH INTERESTS

Retrieved implant analyses; surface science; design of experiments; orthopaedic nanotechnologies; musculoskeletal infection; osteoarthritis; intervertebral disc degeneration

EDUCATION AND TRAINING

- 8/2000 – 5/2004 Michigan Technological University – Houghton, MI
B.S. Materials Science & Engineering
- 8/2004 – 12/2005 Michigan Technological University – Houghton, MI
M.S. Mechanical Engineering
“Evaluation of gallium ion implantation via focused ion beam in microelectronic devices”
- 8/2011 – 9/2016 Michigan Technological University – Houghton, MI
Ph.D. Mechanical Engineering
“Enhancing osseointegration of orthopaedic implants with titania nanotube surfaces”
<https://digitalcommons.mtu.edu/etdr/255/>

LICENSURES AND CERTIFICATIONS

1. Specimen Shipping and Packaging, Department of Community Health, State of Michigan
2. 10 Hour General Industry Safety, Safety Council for Southeast Michigan
3. CITI Program Courses in Animal Care and Use, Human Subjects Research, and Biosafety

PROFESSIONAL, ACADEMIC, ADMINISTRATIVE POSITIONS

Professional Positions

- 5/2004 – 7/2004 Engineering Intern
Lewis' Educational and Research Collaborative Internship Program;
Placed via American Association for the Advancement of Science
Entry Point! Program
Non-Destructive Evaluation (NDE) Team
NASA John H. Glenn Research Center (GRC)
- 8/2004 – 5/2005 Graduate Teaching Assistant
Integrated Design and Manufacturing Course, Laboratory Section
Mechanical Engineering-Engineering Mechanics Department
Michigan Technological University
- 1/2006 – 4/2007 Process Quality Engineer
RH Degasser and Process Technology
Steelmaking Division
Management Associate Development Program
United States Steel Corporation, Great Lakes Works
- 5/2007 – 9/2016 Research Engineer II
Retrieved Orthopaedic Implant Registry (ROIR)
Orthopaedic Research Laboratories
Department of Orthopaedic Research
Beaumont Health
- 10/2016 – 3/2021 Research Engineer Scientist
Retrieved Orthopaedic Implant Registry (ROIR)
Orthopaedic Research Laboratories
Department of Orthopaedic Research
Beaumont Health
- 1/2022 – Present Senior Research Engineer
Musculoskeletal Therapeutics Team
Bone & Joint Center
Henry Ford Health System

Academic Positions

- 12/2010 – 3/2021 Associate Professor
Department of Orthopaedic Surgery
Oakland University William Beaumont School of Medicine

Administrative Positions

- 11/2007 – 6/2014 Managing Editor, Beaumont Ortho Research News

Department of Orthopaedic Research
Beaumont Health

- 3/2012 – 6/2014 Member, Capstone Committee
Oakland University William Beaumont School of Medicine
- 1/2014 – 3/2021 Managing Editor, Beaumont Ortho News
Content Developer, Beaumont Orthopaedics' Media Releases
Department of Orthopaedic Surgery
Beaumont Health
- 9/2018 – 3/2021 Member, Committee on Appointments, Promotion and Tenure
Department of Orthopaedic Surgery
Oakland University William Beaumont School of Medicine
- 11/2018 – 3/2021 Delegate, Orthopaedic Surgery, Research Executive Committee
Beaumont Research Institute
Beaumont Health

Professional Memberships

- 2017 – 2020 American Association for the Advancement of Science
2016 – 2020 Orthopaedic Research Society
2015 – 2020 Ruth Jackson Orthopaedic Society

AWARDS AND HONORS

- 9/2003 Society of Automotive Engineers Long Term Member Scholarship
5/2004 Forging Industry Education and Research Achievement Award
4/2005 – 12/2005 Daimler-Chrysler Fund Graduate Fellowship

PUBLICATIONS

Peer-Reviewed Journal Articles

Vaupel Z, **Baker EA**, Baker KC, Kurdziel MD, Fortin PT. Analysis of retrieved Agility total ankle arthroplasty systems. *Foot & Ankle International*, 30(9): 815-23, September 2009.

Majid K, Crowder T, **Baker E**, Baker K, Koueiter D, Shields E, Herkowitz HN. Analysis of *in vivo* corrosion of 316L stainless steel posterior thoracolumbar plate systems: a retrieval study. *Journal of Spinal Disorders and Techniques*, 24(8): 500-5, December 2011.

Matuszak SA, **Baker EA**, Fortin PT. The adult paralytic foot. *Journal of the American Academy of Orthopaedic Surgeons*, 21(5): 276-85, May 2013.

Hess MD, **Baker EA**, Salisbury MR, Kaplan LM, Greene RT, Greene PW. Effect of component design in retrieved bipolar hip hemiarthroplasty systems. *Orthopedics*, 36(9): e1180-8, May 2014.

Peers SC, Maerz T, **Baker EA**, Shetty A, Xia Y, Puwal S, Marcantonio D, Keyes D, Guettler J. T1ρ magnetic resonance imaging for detection of early cartilage changes in knees of asymptomatic collegiate female impact and nonimpact athletes. *Clinical Journal of Sports Medicine*, 24(3): 218-25, May 2014.

Matuszak SA, **Baker EA**, Stewart CM, Fortin PT. Missed peritalar injuries: an analysis of factors in cases of known delayed diagnosis and methods for improving identification. *Foot & Ankle Specialist*, 7(5): 363-71, October 2014.

Wiater BP, **Baker EA**, Salisbury MR, Koueiter DM, Baker KC, Nolan BM, Wiater JM. Elucidating trends in revision reverse total shoulder arthroplasty procedures: a retrieval study evaluating clinical, radiographic, and functional outcomes data. *Journal of Shoulder and Elbow Surgery*, 24(12): 1915-25, December 2015.

Pomajzl RJ, **Baker EA**, Baker KC, Fleischer MM, Salisbury MR, Phillips DM, Fortin PT. Case series with histopathologic and radiographic analyses following failure of fresh osteochondral allografts of the talus. *Foot & Ankle International*, 37(9): 958-67, September 2016.

Okeagu CN, **Baker EA**, Barreras NA, Vaupel ZM, Fortin PT, Baker KC. Review of mechanical, processing, and immunologic factors associated with outcomes of fresh osteochondral allograft transplantation of the talus. *Foot & Ankle International*, 38(7): 808-19, July 2017.

Moore DD, Moravek JE, **Baker EA**, Salisbury MR, Baker KC, Wiater JM. Exploring failure of total shoulder arthroplasty systems through implant retrieval, radiographic, and clinical data analyses. *Journal of Shoulder and Elbow Arthroplasty*, 1: 1-10, May 2017.

Siljander M, Sobh A, Baker KC, **Baker EA**, Kaplan L. Multi-drug resistant organisms in the setting of periprosthetic joint infection—diagnosis, prevention and treatment. *Journal of Arthroplasty*, 33(1): 185-94, January 2018.

Pangrazzi G, **Baker EA**, Shaheen PJ, Okeagu CN, Fortin PT. Single-surgeon experience and complications of a fixed-bearing total ankle arthroplasty. *Foot & Ankle International*, 39(1): 46-58, January 2018.

Siljander M, **Baker EA**, Baker KC, Salisbury M, Thor C, Verner J. Fretting and corrosion damage in retrieved metal-on-polyethylene modular total hip arthroplasty systems: what is the importance of femoral head size? *Journal of Arthroplasty*, 33(3): 931-38, March 2018.

Moore D, Baker KC, **Baker EA**, Fleischer MM, Newton MD, Barreras N, Vaupel ZM, Fortin PT. Effect of bisphosphonate pretreatment on fresh osteochondral allografts: analysis of in vitro graft structure and in vivo osseous incorporation. *Orthopedics*, 41(3): e376-82, May 2018.

Freudenberger D, **Baker E**, Siljander M, Rohde R. What are the factors driving patient perception of quality care after primary total hip and total knee arthroplasty? *Journal of the American Academy of Orthopaedic Surgeons Global Research and Reviews*, 2(11): e061, November 2018.

Kaplan LM, Siljander MP, Salisbury MR, Verner JJ, Baker KC, Gehrke CK, **Baker EA**. Analysis of retrieved unicompartmental knee implants and tissue: is third-body wear involved in progression of arthritis to adjacent compartments? *Orthopedics*, 42(3): 149-157, May 2019. Blue Ribbon Article Award

Lombardo DJ, Siljander MP, Gehrke CK, Moore DD, Karadsheh MS, **Baker EA**. Fretting and corrosion damage of retrieved dual mobility total hip arthroplasty systems. *Journal of Arthroplasty*, 34(6): 1273-1278, June 2019.

Siljander MP, Gehrke CK, Wheeler SD, Sobh AH, Moore DD, Flierl MA, **Baker EA**. Does taper design affect taper fretting corrosion in ceramic-on-polyethylene total hip arthroplasty? *Journal of Arthroplasty*, 34(7S): S366-S372.e2, July 2019.

Flierl MA, Sobh AH, Culp BM, **Baker EA**, Sporer SM. Evaluation of the painful total knee arthroplasty. *Journal of the American Academy of Orthopaedic Surgeons*, 27(20): 743-751, October 2019.

Baker EA, Vara AD, Salisbury MR, Fleischer MM, Baker KC, Fortin PT, Roberts RV, Friedrich CR. Titania nanotube morphologies for osseointegration via models of in vitro osseointegrative potential and in vivo intramedullary fixation. *Journal of Biomedical Materials Research Part B: Applied Biomaterials*, 108(4): 1483-1493, May 2020.

Swank KR, Furness JE, **Baker EA**, Gehrke CK, Biebelhausen SP, Baker KC. Metabolomic profiling in the characterization of degenerative bone and joint diseases. *Metabolites*, 10(6): 223, May 2020.

Possley D, Khalil JG, **Baker EA**, Baker KC. Surface modification techniques to enhance osseointegration of spine implants. *Journal of the American Academy of Orthopaedic Surgeons*, 28(22): e988-e994, November 2020.

Swank KR, **Baker EA**, Gehrke CK, Rohde RS. Surgical management of triquetral osteoid osteoma with adjunct tetracycline-induced intraoperative fluorescence: a case report and literature review. *Journal of Bone & Joint Surgery Case Connector*, 10(4): e20.00132, December 2020.

El-Zein Z, Gehrke CK, Croley JS, Siljander MP, Mallow MA, Flierl MA, Verner JJ, **Baker EA**. Assessing taper geometry, head size, head material, and their interactions in taper fretting corrosion of retrieved total hip arthroplasty implants. *Journal of Arthroplasty*, 36(7): S386-S394.e4, July 2021.

Baker EA, Fleischer MM, Vara AD, Salisbury MR, Baker KC, Fortin PT, Friedrich CR. Local and systemic responses to osseointegrative titania nanotube surfaces. *Nanomaterials*, 11(3): 583, February 2021.

Ciufo DJ, **Baker EA**, Gehrke CK, Vaupel ZA, Fortin PT. Tibial torsion correlates with talar morphology. *Foot and Ankle Surgery*, S1268-7731, April 2021.

Wright JO, Gehrke CK, Wiater JM, Weisz KM, **Baker EA**. Applying the new shoulder periprosthetic joint infection consensus definition to a case series of revision shoulder arthroplasty procedures to assess concordance between consensus definitions and diagnoses. *Seminars in Arthroplasty: Journal of Shoulder and Elbow Surgery*, April 2021.

Non-Peer-Reviewed Journal Articles

Bergeron JC, **Burns E**, Bushie J, Sandberg H, Vanden Heuvel A. Failure analysis of H13 gear blank forging dies. *Gear Solutions Magazine*, 12(5): 56-69, May 2014.

Conference Proceedings

“Signal Processing Effects for Ultrasonic Guided Wave Scanning of Composites” Roth DJ, Cosgriff LM, Martin RE, **Burns E**, Teemer L. *American Institute of Physics (AIP) Conference Proceedings – 31st Review of Progress in Quantitative Nondestructive Evaluation*, April 2005.

“NDE for Characterizing Oxidation Damage in Reinforced Carbon-Carbon Used on Shuttle Thermal Protection System” Roth D, Jacobson N, Hsu D, Gray J, Cosgriff L, Wincheski R, Rauser R, **Burns E**, McQuater M. *Mechanical Properties and Performance of Engineering Ceramics and Composites: Ceramic Engineering and Science Proceedings – 29th International Conference and Exposition on Advanced Ceramics and Composites*, 26(2): Chapter 17, March 2008.

Book Chapters

Fortin, PT and **EA Baker**. Introduction, Demographics and Epidemiology of Diabetes in The Surgical Management of the Diabetic Foot and Ankle. Dolfi Herscovici, Jr., ed., Springer International, 2016.

PRESENTATIONS

Scientific Conferences

“Signal Processing Effects for Ultrasonic Guided Wave Scanning of Composites” Roth DJ, Cosgriff LM, Martin RE, **Burns E**, Teemer L. *31st Review of Progress in Quantitative Nondestructive Evaluation*, July 2004. (Podium)

“NDE for Characterizing Oxidation Damage in Reinforced Carbon-Carbon Used on Shuttle Thermal Protection System” Roth D, Jacobson N, Hsu D, Gray J, Cosgriff L, Wincheski R, Rauser R, **Burns E**, McQuater M. *29th International Conference and Exposition on Advanced Ceramics and Composites*, July 2004. (Podium)

“Damage modes of unicompartamental knee systems: a retrieval study” Kaplan L, **Baker E**, Baker K, Greene P, Verner J. *Detroit Academy of Orthopaedic Surgery Annual Resident Research Forum*, May 2008. (Podium)

“Damage modes of unicompartamental knee systems: a retrieval study” Kaplan L, **Baker E**, Baker K, Greene P, Verner J. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2008. (Podium)

“High rate of corrosion in 316L stainless steel plates used in posterior thoracolumbar fixation: a retrieval study” Majid K, Baker K, **Baker E**, Herkowitz HN. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2008. (Podium)

“Radiographical and damage mode analysis of retrieved unicompartamental knee systems” Kaplan L, **Baker E**, Baker K, Greene P, Verner J. *Orthopaedic Research Society Annual Meeting*, February 2009. (Poster)

“Radiographical and damage mode analyses of retrieved Agility total ankle arthroplasty systems” Vaupel Z, **Baker E**, Baker K, Kurdziel M, Fortin P. *Orthopaedic Research Society Annual Meeting*, February 2009. (Podium)

“Radiographical and damage mode analyses of retrieved Agility total ankle arthroplasty systems” Vaupel Z, **Baker E**, Baker K, Kurdziel M, Fortin P. *Detroit Academy of Orthopaedic Surgeons Annual Resident Research Forum*, May 2009. (Podium)

“Radiographic and damage mode analyses of retrieved Agility total ankle arthroplasty systems” Vaupel Z, Baker K, **Baker E**, Kurdziel M, Fortin P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2009. (Podium)

“Damage and radiographic analysis of retrieved bipolar hip systems” Greene R, **Baker E**, Rausch M, Kaplan L, Greene PW. *Orthopaedic Research Society Annual Meeting*, March 2010. (Poster)

“Radiographic and damage mode analyses of retrieved total shoulder arthroplasty systems” Moore D, Nolan B, **Baker E**, Rausch M, Wiater JM. *Orthopaedic Research Society Annual Meeting*, March 2010. (Poster)

“Assessment of early cartilage changes in collegiate in-season female athletes with T1 p-weighted magnetic resonance imaging” Peers S, Keyes D, Shetty A, Marcantonio D, Puwal S, Xia Y, **Baker E**, Guettler J. *Orthopaedic Research Society Annual Meeting*, March 2010. (Poster)

“Radiographic and damage mode analyses of retrieved reverse total shoulder arthroplasty systems” Nolan B, **Baker E**, Richardson-Frazzitta M, Wiater JM, Baker K. *American Academy of Orthopaedic Surgery Annual Meeting*, March 2010. (Podium)

“Radiographic and damage mode analyses of retrieved total shoulder arthroplasty systems” Moore D, Nolan B, **Baker E**, Rausch M, Wiater JM. *Detroit Academy of Orthopaedic Surgeons Annual Resident Research Forum*, May 2010. (Podium)

“Evaluation of in-season early cartilage changes in female collegiate athletes with T1 p-weighted magnetic resonance imaging” Peers S, Keyes D, Shetty A, Marcantonio D, Puwal S, Xia Y, **Baker E**, Guettler J. *Detroit Academy of Orthopaedic Surgeons Annual Resident Research Forum*, May 2010. (Podium)

“Evaluation of early in-season cartilage changes in female collegiate athletes with T1 p-weighted resonance imaging” Peers S, Keyes D, Shetty A, Puwal S, Maracantonio D, Xia Y, **Baker E**. *Annual Meeting of the American Orthopaedic Association*, June 2010. (Poster)

“Biologic effect of metallic wear debris on intervertebral disc chondrocytes *in vitro*” Anderson E, Cason G, Gratopp C, Baker K, **Baker E**, Herkowitz HN. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2010. (Podium)

“Evaluation of in-season early cartilage changes in female collegiate athletes with T1 p-weighted magnetic resonance imaging” Peers S, Keyes D, Shetty A, Marcantonio D, **Baker E**, Ford T, Guettler J. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2010. (Podium)

“Expression of proinflammatory cytokines and proteases in periprosthetic tissues harvested during thoracolumbar revision surgery” Cason G, Anderson E, Baker K, Gratopp C, **Baker E**, Herkowitz HN. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2010. (Podium)

“Radiographic and damage mode analyses of bipolar hip arthroplasty systems” Hess M, Greene R, **Baker E**, Kaplan L, Greene P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2010. (Poster)

“Missed peritalar injuries: A retrospective review” Matuszak S, Fortin P, **Baker E**. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2010. (Podium)

“Radiographic and damage mode analyses of retrieved total shoulder arthroplasty systems” Moore D, Nolan B, **Baker E**, Wiater JM. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2010. (Podium)

“Missed peritalar injuries: A retrospective review” Matuszak S, Fortin P, **Baker E**. *American Orthopaedic Foot and Ankle Society Annual Meeting*, July 2010. (Podium)

“Analysis of retrieved total shoulder arthroplasty components and periprosthetic tissue” Moore D, Nolan B, **Baker E**, Rausch M, Wiater JM. *OREF/ORS Upper Midwest Resident Research Symposium*, October 2010. (Podium)

“Analysis of retrieved total shoulder arthroplasty components and periprosthetic tissue” Nolan E, **Baker E**, Baker K, Kurdziel M, Wiater JM, Moore D. *American Academy of Orthopaedic Surgery Annual Meeting*, February 2011. (Poster)

“Characterization of periprosthetic tissue from patients undergoing revision thoracolumbar fusion” Anderson E, Baker K, Gratopp C, **Baker E**, Herkowitz HN, Cason G. *American Academy of Orthopaedic Surgery Annual Meeting*, February 2011. (Poster)

“Inflammatory response of human articular chondrocytes to wear debris” Kaplan L, Gratopp C, **Baker E**, Baker K. *American Academy of Orthopaedic Surgery Annual Meeting*, February 2011. (Poster)

“Ultrasound and functional assessment of 1-year arthroscopic suture bridge rotator cuff repair” Mayer M, Rimmke N, Maerz T, Cooper R, **Baker E**, Baker K, Anderson K. *American Academy of Orthopaedic Surgery Annual Meeting*, February 2011. (Poster)

“T1ρ MRI can detect early cartilage changes in knees of asymptomatic collegiate female athletes” Peers S, Keyes D, Shetty A, Marcantonio D, **Baker E**, Baker K, Xia Y, Guettler J. *American Academy of Orthopaedic Surgery Annual Meeting*, February 2011. (Podium)

“Correlation on implant damage with metal ion concentration and expression of proinflammatory cytokines and proteases in periprosthetic tissue adjacent to thoracolumbar instrumentation” Cason G, Anderson E, Badve S, Bachison C, Baker K, **Baker E**, Kurdziel M, Herkowitz HN. *Lumbar Spine Research Society Annual Meeting*, May 2011. (Podium)

“Proteomic profiling of lumbar disc degeneration” Smorgick Y, Bachison C, Badve S, Baker KC, **Baker E**, Herkowitz HN, Fischgrund JS. *Lumbar Spine Research Society Annual Meeting*, May 2011. (Podium)

“Characterization of patient specific contact pressures within talar footprint of retrieved Agility total ankle arthroplasty tibial components” Matuszak S, Vaupel Z, **Baker E**, Maerz T, Baker K, Kurdziel M, Richardson-Frazzitta M, Fortin P. *Detroit Academy of Orthopaedic Surgery Annual Resident Research Forum*, May 2011. (Podium)

“Ultrasonographic and functional assessment of 1-year arthroscopic suture bridge rotator cuff repair” Rimmke N, Mayer M, Maerz T, Cooper R, **Baker E**, Baker K, Anderson K. *Detroit Academy of Orthopaedic Surgery Annual Resident Research Forum*, May 2011. (Podium)

“Characterization of pro-inflammatory cytokines and matrix metalloproteinases in total and reverse total shoulder arthroplasty periprosthetic tissue” Moore D, Budge M, **Baker E**, Baker K, Richardson-Frazzitta M, Kurdziel M, Wiater JM. *Detroit Academy of Orthopaedic Surgery Annual Resident Research Forum*, May 2011. (Podium)

“Characterization of patient specific contact pressures within talar footprint of retrieved Agility total ankle arthroplasty tibial components” Matuszak S, Vaupel Z, **Baker E**, Maerz T, Baker K, Kurdziel M, Richardson-Frazzitta M, Fortin P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2011. (Podium)

“Ultrasound and functional assessment of 1-year arthroscopic suture bridge rotator cuff repair” Rimmke N, Mayer M, Maerz T, Cooper R, **Baker E**, Baker K, Anderson K. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2011. (Poster)

“A Comparison of T1 ρ - and T2*-weighted MRI as diagnostic tools for assessing articular cartilage in impact vs. non-impact female collegiate athletes” Peers S, Maerz T, **Baker E**, Baker K, Marcantonio D, Xia Y, Shetty A, Guettler J. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2011. (Podium)

“Characterization of pro-inflammatory cytokines and matrix metalloproteinases in total and reverse total shoulder arthroplasty periprosthetic tissue” Moore D, Budge M, **Baker E**, Baker K, Richardson-Frazzitta M, Kurdziel M, Wiater JM. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2011. (Podium)

“A comparison of T1- and T2-weighted MRI as diagnostic tools for assessing articular cartilage in impact vs. non-impact female collegiate athletes.” Peers S, Maerz T, **Baker E**, Baker KC, Marcantonio D, Xia Y, Shetty A, Guettler J. *Orthopaedic Research Society Annual Meeting*, February 2012. (Poster)

“Influence of bisphosphonates on fresh osteochondral allografts during cold storage” Leonard ZC, Baker KC, **Baker E**, Fortin P. *American Academy of Orthopaedic Surgeons Annual Meeting*, February 2012. (Podium)

“Pro-inflammatory cytokines and proteases in shoulder arthroplasty periprosthetic tissue” Moore D, Budge M, **Baker E**, Baker KC, Kurdziel M, Richardson-Frazzitta M,

Wiater JM. *American Academy of Orthopaedic Surgeons Annual Meeting*, February 2012. (Poster)

“Characterization of pro-inflammatory cytokines and matrix metalloproteinases in shoulder arthroplasty periprosthetic tissue” Moore D, Budge M, **Baker E**, Baker KC, Kurdziel M, Richardson-Frazzitta M, Wiater JM. *Mid-America Orthopaedic Association Annual Meeting*, April 2012. (Podium)

“Ultrasound and functional assessment of 1-year arthroscopic suture bridge rotator cuff repair” Rimmke N, Maerz T, Cooper R, **Baker E**, Baker K, Anderson K. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2012. (Podium)

“Knee meniscal allograft transplantation for the treatment of osteoarthritis of the metatarsophalangeal joint of the great toe” Saad H, Fortin P, **Baker E**, Vaupel Z. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2012. (Podium)

“Analysis of tibial osteotomy techniques for the treatment of foot and ankle disorders” Saad M, **Baker EA**, Baker KC, Shaheen P, Fortin PT. *Mid-America Orthopaedic Association Annual Meeting*, April 2013. (Podium)

“Exploring clinical failure of total shoulder arthroplasty systems: a retrieval study” Moore D, **Baker E**, Salisbury M, Moravek J, Baker KC, Wiater JM. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2013. (Podium)

“Complications of the Tornier Salto Talaris total ankle prosthesis: a single-surgeon experience” Pangrazzi G, **Baker EA**, Fortin P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2013. (Podium)

“Analysis of tibial osteotomy techniques for the treatment of foot and ankle disorders” Saad M, **Baker EA**, Baker KC, Shaheen P, Fortin PT. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2013. (Podium)

“Analysis of gradual correction techniques for the treatment of complex midfoot and hindfoot deformities” Saad M, **Baker EA**, Carrillo M, Fortin P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2013. (Podium)

“Elucidating trends in revision reverse total shoulder arthroplasty procedures: a retrieval study” Wiater BP, **Baker EA**, Salisbury M, Moravek J, Wiater JM. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2013. (Podium)

“Analysis of retrieved Salto Talaris total ankle arthroplasty systems” **Baker E**, Salisbury M, Fortin P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2013. (Podium)

“Histopathologic analysis of failed fresh osteochondral allografts of the talus” Pomajzl R, **Baker E**, Baker K, Fortin P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2013. (Podium)

“Analysis of retrieved Salto Talaris total ankle replacement systems” Vaupel Z, **Baker EA**, Coetzee JC, Stone R, Salisbury M, Baker KC, et al. *American Orthopaedic Foot and Ankle Society Annual Meeting*, July 2013. (E-Poster) Third Place E-Poster

“Mid-term radiographic analysis of trabecular metal augments for acetabular bone loss in revision hip arthroplasty” Ackerman J, Salisbury M, Kurdziel MD, **Baker E**, Verner JJ. *International Society for Technology in Arthroplasty Annual Congress*, October 2013. (E-Poster)

“*In vitro* chondrocyte viability and gene expression in response to exposure of metallic wear debris” Kurdziel MD, Maerz T, Salisbury MS, **Baker EA**, Kaplan L, Baker KC. *International Society for Technology in Arthroplasty Annual Congress*, October 2013. (Podium)

“Multifunctional nanostructured orthopedic surfaces—characteristics and fabrication processes” Friedrich C, Ganguly D, Tewari R, **Baker E**. *The Minerals, Metals, and Materials Society Annual Meeting*, February 2014.

“Retrieved reverse total shoulder systems: an analysis of damage, imaging, clinical and outcomes data” Wiater BP, Moravek JE, **Baker EA**, Salisbury M, Pinkas D, Wiater JM. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2014. (Podium)

“Elucidating trends in revision reverse total shoulder arthroplasty: a retrieval study evaluating clinical, radiographic, and functional outcomes data” Wiater BP, Moravek JE, **Baker EA**, Salisbury MR, Koueiter D, Pinkas D, Wiater JM. *American Shoulder and Elbow Surgeons Specialty Day Meeting*, March 2014. (Podium) Nominated, Neer Award

“Histopathologic analysis of failed fresh osteochondral allografts of the talus” Pomajzl R, Baker K, **Baker E**, Fortin P. *Mid-America Orthopaedic Association Annual Meeting*, April 2014. (Podium)

“Histopathologic analysis of failed fresh osteochondral allografts of the talus” Pomajzl R, Baker K, **Baker E**, Fortin P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2014. (Podium)

“Retrieval analysis of total ankle arthroplasty prostheses” Vaupel Z, **Baker E**, Salisbury M, Baker K, Anderson J, Bohay D, Padley M, Fortin P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2014. (Podium)

“Radiographic outcomes of the PROSTALAC hip implant for mid- and long-term implantation.” Radulescu M, Salisbury M, Kurdziel MD, Baker EA, Baker KC, Verner JJ. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2014. (Poster)

“Characterization of subtalar joint motion with Taylor Spatial frame-based deformity correction” Beaman D, Kurdziel M, Baker KC, **Baker EA**, Irwin T, Fortin P. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2014. (Podium)

“Characterization of subtalar joint motion with Taylor Spatial frame-based deformity correction” Beaman D, Kurdziel M, Baker KC, **Baker EA**, Irwin T, Fortin P. *Limb Lengthening and Reconstruction Society Annual Meeting*, July 2014. (Podium)

“Static and dynamic anterior cervical plates: a retrieval analysis of damage and clinical data.” Aguwa O, Koreckij T, **Baker EA**, Salisbury M, Baker KC, Park DK, Fischgrund JS. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2015. (Poster)

“Histopathological analysis of failed fresh osteochondral allografts of the talus.” Pomajzl RJ, **Baker EA**, Salisbury M, Baker KC, Vaupel Z, Fortin PT. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2015. (Podium)

“Characterization of *in vivo* damage and failure of total ankle arthroplasty systems: a multi-center retrieval study.” Vaupel Z, Green G, **Baker EA**, Salisbury M, Baker KC, Bohay DR, Coetzee JC, Myerson MS, Fortin PT. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2015. (Podium)

“Characterization of shoulder arthroplasty periprosthetic tissue pro-inflammatory marker and radiographic data” Pinkas D, Moore D, Gowda AL, Baker KC, **Baker EA**, Kurdziel M, Salisbury M, Wiater JM. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2015. (Podium)

“Enhancing osseointegration of orthopaedic implants with titania nanotube surfaces” Vara A, **Baker EA**, Friedrich C, Shokuhfar T, Salisbury M, Fortin PT. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2015. (Podium)

“Multi-center retrieval study of *in vivo* damage and failure of total ankle arthroplasty systems” Green G, Vaupel Z, **Baker EA**, Baker KC, Fortin PT. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2015. (Podium)

“Inflammatory cytokine and chemokine expression in periprosthetic tissue adjacent to failed total ankle arthroplasty components” Vaupel Z, **Baker EA**, Baker KC, Fortin PT. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2015. (Podium)

“Characterization of *in vivo* damage of total ankle arthroplasty prostheses: a multi-center retrieval study” Vaupel Z, **Baker E**, Baker K, Myerson M, Coetzee JC, Anderson J, Bohay D, Fortin P. *American Orthopaedic Foot and Ankle Society Annual Meeting*, July 2015. (Podium) Nominated, Goldner Award

“Blood loss, fusion rates, and perioperative complications associated with RIA for repair of fracture nonunion” Smith JT, Busse EB, Saad MA, **Baker E**, Sadowski J. *American Medical Association-Medical Student Symposium*, October 2015. (Poster)

“Analysis of tibial osteotomy for conditions of the foot and ankle” Beaman D, Fortin P, Irwin T, **Baker EA**, Etscheidt J, Baker K. *International Limb Lengthening and Reconstruction Society Congress*, November 2015. (Podium)

“*In vivo* performance and characterization of nanostructured orthopedic surfaces” Friedrich C, **Baker E**, Bohnle S. *The Minerals, Metals, and Materials Annual Meeting*, February 2016. (Podium)

“Enhancing osseointegration of orthopaedic implants with titania nanotube surfaces” **Baker EA**, Vara A, Salisbury M, Fleischer M, Shokuhfar T, Friedrich C, Fortin P. *Orthopaedic Research Society Annual Meeting*, March 2016. (Poster)

“*In vivo* biocompatibility of titania nanotube surfaces developed for enhancing osseointegration” **Baker EA**, Vara A, Fleischer M, Fortin P, Shokuhfar T, Bohnle S, Friedrich C. *Orthopaedic Research Society Annual Meeting*, March 2016. (Poster)

“Multi-modal analysis of failed total ankle arthroplasty implants retrieved at multiple centers” Vaupel Z, **Baker E**, Anderson J, Bohay D, Coetzee J, Myerson M, Green G, Salisbury M, Padley M, Baker K, Fortin P. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2016. (Scientific Exhibit)

“*In vivo* biocompatibility of titania nanotube surfaces developed for enhancing osseointegration” **Baker EA**, Vara A, Fleischer M, Fortin P, Shokuhfar T, Bohnle S, Friedrich C. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2016. (Poster)

“Serum bone turnover biomarkers in revision surgery for shoulder arthroplasty loosening” Smith JT, Wilhelm SK, **Baker EA**, Wiater JM, Baker KC. *Orthopaedic Research Society Annual Meeting*, March 2017. (Poster)

“Local delivery of SDF-1 beta via titania nanotube surface to promote osseointegration” Wright JO, **Baker EA**, Okeagu C, Fleischer MM, Salisbury MR, Newton M, Maerz T, Fortin PT, Friedrich C. *Orthopaedic Research Society Annual Meeting*, March 2017. (Poster)

“Unicompartmental Knee Arthroplasty Damage Modes and Chondrocyte Inflammatory Response” Siljander M, **Baker EA**, Baker KC, Kaplan L. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2017. (Podium)

“Corrosion and fretting of taper interfaces in total hip arthroplasty: a retrieval analysis” Siljander M, Thor C, **Baker E**, Baker K, Verner J. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2017. (Podium) Third Place Paper

“Arthroplasty implant enhanced bone fixation by nano-texturing via hybrid anodization” Justin D, Friedrich CR, Bhosle S, **Baker E**, Jin S, Pratt C. *International Society for Technology in Arthroplasty Annual Meeting*, September 2017. (E-Poster)

“Corrosion and fretting of taper interfaces in total hip arthroplasty: a retrieval analysis” Siljander M, Thor C, **Baker E**, Baker K, Verner J. *American Association of Hip and Knee Surgeons Annual Meeting*, November 2017. (Poster)

“Surface coatings: what they portend in TJA” Su EP, Justin DF, Pratt CR, Walsh WR, **Baker EA**, Friedrich CR, Jin S. *Current Concepts in Joint Replacement*, December 2017. (Podium)

“Unicompartmental knee arthroplasty damage modes and chondrocyte inflammatory response” Siljander M, **Baker E**, Baker K, Kaplan L. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2018. (Podium)

“Corrosion and fretting of taper interfaces in total hip arthroplasty: what is the effect of head size?” Siljander M, Thor C, **Baker E**, Baker K, Verner J. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2018. (Podium)

“Antibacterial and osseointegrative efficacy of titania nanotube surfaces” **Baker E**, Gehrke C, Siljander M, Wright J, Powell K, Fleischer M, Hartner S, Newton M, Sims M, Fortin P, Friedrich C. *Orthopaedic Research Society Annual Meeting*, March 2018. (Poster)

“Unicompartmental Knee Arthroplasty Damage Modes and Chondrocyte Inflammatory Response” Siljander M, **Baker EA**, Baker KC, Kaplan L. *Mid-America Orthopaedic Association Annual Meeting*, April 2018. (Podium) San Antonio, TX.

“Is patient sex a significant factor driving patient perception of quality care after primary total hip and total knee arthroplasty?” Freudenberger D, **Baker EA**, Siljander M, Rohde RS. *American Orthopaedic Association Annual Meeting*, June 2018. (E-Poster)

“Factors associated with 90-day readmission rates following total hip and knee arthroplasty” Peterson JC, Baker KC, **Baker EA**, Park K, Kaplan LM. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2018. (Podium)

“Fretting and corrosion damage in retrieved dual mobility total hip arthroplasty” Lombardo DJ, Siljander M, Gehrke C, Moore D, Karadsheh M, **Baker EA**. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2018. (Podium)

“Rate and risk factors of culture-negative periprosthetic joint infection” Park KW, Henrichsen JL, Siljander MP, **Baker EA**, Flierl MA. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2018. (Podium)

“Aspirin chemoprophylaxis is effective after revision arthroplasty for periprosthetic joint infections” Park KW, Henrichsen JL, Siljander MP, **Baker EA**, Flierl MA. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2018. (Poster)

“Does taper design affect taper fretting corrosion in ceramic on polyethylene total hip arthroplasty? A retrieval analysis” Siljander M, Sobh A, Gehrke C, Wheeler S, Flierl M, Moore D, **Baker E**. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2018. (Poster)

“Antibacterial and osseointegrative efficacy of titania nanotube surfaces” **Baker E**, Gehrke C, Siljander M, Wright J, Powell K, Fleischer M, Hartner S, Newton M, Sims M, Fortin P, Friedrich C. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2018. (Podium)

“*In vivo* anti-bacterial effectiveness of nanotextured titanium implant surfaces” Friedrich C, **Baker E**, Bhosle S, Justin D. *International Society for Technology in Arthroplasty Annual Congress*, October 2018. (Podium)

“Enhanced bone fixation of TKA tibial tray implants with TiO₂ nanotubes” Justin D, Ngyuen Y, Walsh W, Pelletier M, Friedrich C, **Baker E**, Jin S, Pratt C. *International Society for Technology in Arthroplasty Annual Congress*, October 2018. (Podium)

“Does taper design affect taper fretting and corrosion in ceramic on polyethylene total hip arthroplasty? A retrieval analysis” Siljander M, Sobh A, Gehrke C, Wheeler S, Flierl M, Moore D, **Baker EA**. *American Association of Hip and Knee Surgeons Annual Meeting*, November 2018 (Poster)

“Does taper design affect taper fretting and corrosion in ceramic-on-polyethylene total hip arthroplasty?” **Baker EA**, Gehrke C, Siljander M, Sobh A, Wheeler S, Flierl MA, Moore DD. *Orthopaedic Research Society Annual Meeting*, February 2019. (Podium)

“Influence of implant surface modification on osseointegrative and antibacterial properties in the setting of MRSA” **Baker E**, Gehrke C, Siljander M, Wright J, Powell K, Fleischer M, Hartner S, Newton M, Sims M, Fortin P, Friedrich C. *Orthopaedic Research Society Annual Meeting*, February 2019. (Poster)

“Aspirin venous thromboembolism chemoprophylaxis is effective after revision arthroplasty for periprosthetic joint infection” Park K, Henrichsen J, Siljander M, **Baker EA**, Gehrke C, Flierl MA. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2019. (Poster)

“Antibacterial and osseointegrative efficacy of titania nanotube surfaces” Wright J, Siljander M, Gehrke C, **Baker E**, Powell K, Newton M, Sims M, Fortin P, Friedrich C. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2019. (Poster)
Selected for Adult Reconstruction ePoster Tour at Presentation Stage

“Influence of local chemokine delivery and postoperative peripheral blood mobilization on Achilles tendon repair” Hsu M, Loy B, Salisbury M, **Baker EA**, Vaupel Z, Fortin PT, Baker KC. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2019. (Poster)

“Does taper design affect taper fretting and corrosion in ceramic-on-polyethylene total hip arthroplasty? A retrieval analysis” Siljander M, Sobh A, Gehrke C, Wheeler S, Flierl M, Moore D, **Baker E**. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2019. (Podium)

“*In vivo* antibacterial effectiveness of nanotextured titanium implant surfaces” Friedrich C, **Baker E**, Bhosle S, Poyner D. *International Society for Technology in Arthroplasty*, October 2019. (Podium)

“Does femoral head composition affect fretting and corrosion in ceramic-on-polyethylene total hip arthroplasty? A retrieval analysis” Jee Y, Siljander M, Lepore M, Flierl M, Moore D, **Baker E**. *International Society for Technology in Arthroplasty*, October 2019. (Young Investigators Podium)

“Evaluation of taper fretting and corrosion damage in retrieved reverse total shoulder arthroplasty components” Gehrke CK, Wright JO, Khatib ON, Penvose IR, Wiater JM, Wiater BP, **Baker EA**. *Orthopaedic Research Society Annual Meeting*, February 2020. (Late-Breaking Poster)

“Do taper geometry and head size affect taper fretting corrosion in total hip arthroplasty? A retrieval analysis of ceramic-on-polyethylene and metal-on-polyethylene explants” Gehrke CK, El-Zein ZS, Croley JS, Mallow MA, Verner JJ, Flierl MA, **Baker EA**. *Orthopaedic Research Society Annual Meeting*, February 2020. (Moderated Poster)

“Retrieval analyses of total ankle arthroplasty implants and periprosthetic tissue through a multicenter collection” **Baker EA**, Vaupel ZM, Gehrke CK, Briggs DM, Baker KC, Coetzee JC, Myerson MS, Anderson JG, Biebelhausen SP, Fortin PT. *Orthopaedic Research Society Annual Meeting*, February 2020. (Podium) *New Investigator Recognition Award (NIRA) Finalist*

“Does femoral head composition affect fretting and corrosion in retrieved total hip arthroplasty implants? **Baker EA**, Gehrke CK, Jee YM, Siljander MP, Lepore MA, Flierl MA, Moore DD. *Orthopaedic Research Society Annual Meeting*, February 2020. (Poster)

“Applying the new MSIS classification (2018 Version) to determine rates, culture status, and risk factors of periprosthetic joint infections” Park KW, Henrichsen JL, Siljander MP, **Baker EA**, Gehrke CK, Flierl MA. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2020. (Poster)

“Retrieval analyses of total ankle arthroplasty implants and periprosthetic tissue through a multicenter collection” Vaupel Z, Briggs D, **Baker EA**, Gehrke CK, Coetzee JC, Myerson MS, Anderson JG, Biebelhausen S, Fortin PT. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2020. (Podium)

“Do taper geometry and head size affect taper fretting corrosion in total hip arthroplasty? A retrieval analysis of ceramic-on-polyethylene and metal-on-polyethylene explants” Gehrke CK, El-Zein ZS, Croley JS, Mallow MA, Verner JJ, Flierl MA, **Baker EA**. *American Academy of Orthopaedic Surgeons Annual Meeting*, March 2020. (Podium)

“Retrieval analyses of total ankle arthroplasty implants and periprosthetic tissue through a multicenter collection” Vaupel Z, Briggs D, **Baker EA**, Gehrke CK, Anderson JG, Bohay D, Biebelhausen S, Fortin PT. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2020. (Virtual Meeting) Best Paper Award

“Tibial torsion may predict morphology of the talus” Ciufu DJ, **Baker EA**, Fortin PT. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2020. (Virtual Meeting)

“A biomechanical evaluation of the tibia after retrograde intramedullary reaming” Ciufu DJ, Koueiter DK, Alsaleh M, **Baker EA**, Baker KC, Fortin PT, Vaupel ZA. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2020. (Virtual Meeting)

“Applying the periprosthetic joint infection consensus definition to a case series of revision foot and ankle implant-associated and infection-suspected procedures to assess diagnosis” **Baker EA**, Harley JS, Gehrke CK, Ciufu DJ, Fortin PT, Vaupel ZA. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2020. (Virtual Meeting)

“Postoperative length of stay may predict foot and ankle patients at risk for readmission” Ciufu DJ, **Baker EA**, Carver L, Henrichsen J, Gehrke CK, Vaupel ZA, Fortin PT. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2020. (Virtual Meeting)

“Do taper geometry and head size affect taper fretting corrosion in total hip arthroplasty? A retrieval study of ceramic-on-polyethylene and metal-on-polyethylene explants” El-Zein Z, **Baker EA**, Croley JS, Flierl MA, Gehrke CK, Siljander M, Verner JJ. *Michigan Orthopaedic Society Annual Scientific Meeting*, June 2020. (Virtual Meeting)

“Applying the periprosthetic joint infection consensus definition to a case series of revision foot and ankle implant-associated and infection-suspected procedures to assess diagnosis” **Baker EA**, Harley JS, Gehrke CK, Ciufu DJ, Fortin PT, Vaupel ZA. *American Orthopaedic Foot and Ankle Society Annual Meeting*, September 2020. (ePoster; Virtual Meeting)

“Postoperative length of stay may predict foot and ankle patients at risk for readmission” **Baker EA**, Gehrke CK, Ciufu DJ, Vaupel ZA, Fortin PT. *American Orthopaedic Foot and Ankle Society Annual Meeting*, September 2020. (Poster; Virtual Meeting)

“A biomechanical evaluation of the tibia after retrograde intramedullary reaming” Ciufu DJ, Koueiter DK, Alsaleh M, **Baker EA**, Baker KC, Fortin PT, Vaupel ZA. *American Orthopaedic Foot and Ankle Society Annual Meeting*, September 2020. (Podium; Virtual Meeting)

“Tibial torsion may predict morphology of the talus” Ciufu DJ, **Baker EA**, Fortin PT. *American Orthopaedic Foot and Ankle Society Annual Meeting*, September 2020. (Podium; Virtual Meeting)

“Taper geometry and head size both affect taper fretting corrosion in total hip arthroplasty” El-Zein Z, Croley JS, Gehrke CK, Siljander MP, Verner JJ, Flierl MA, **Baker EA**. *American Association of Hip and Knee Surgeons Annual Meeting*, November 2020. (Podium)

“Evaluation of taper fretting and corrosion damage in retrieved reverse total shoulder arthroplasty components” Gehrke CK, Wright JO, Khatib ON, Penvose IR, Wiater JM, Wiater BP, **Baker EA**. *American Shoulder and Elbow Surgeons Annual Meeting*, October 2020. (E-Poster; Virtual Meeting)

“A new multi-modal analgesia approach used in conjunction with an enhanced recovery after surgery protocol significantly improved outcomes following lumbar fusion” Easton RW, Ahlgren BD, Vibert B, Papakonstantinou N, Hulen CA, Lipphardt M, **Baker EA**, Baker KC, Silvasi D, Smith G, Pestano C. *North American Spine Society*, October 2020. (E-Poster; Virtual Meeting)

“Diagnosing total joint arthroplasty-associated periprosthetic joint infections in immunocompromised patient populations” **Baker EA**, Huber C, Gehrke CK, Zakko P, Friedman B, Flierl M. *Orthopaedic Research Society Annual Meeting*, February 2021. (Poster; Virtual Meeting)

“Intraoperative purulence as a criteria for diagnosing periprosthetic joint infection” Gehrke CK, Friedman B, Huber C, Zakko P, Sims M, **Baker EA**, Flierl M. *Orthopaedic Research Society Annual Meeting*, February 2021. (Poster; Virtual Meeting)

“Prevention of external fixator pin-tract infections using a synthetic coating to provide controlled release of a novel broad-spectrum antibiotic” Wright J, Gehrke C, Mallow M, Savage P, Wiater P, Huber C, **Baker E**. *Orthopaedic Research Society Annual Meeting*, February 2021. (Podium; Virtual Meeting)

“Doctor heal thyself: performance-affecting musculoskeletal conditions in orthopaedic surgeons” Swank K, Furness J, Gehrke C, Rohde R, **Baker E**. *American Orthopaedic Association Annual Leadership Meeting*, June 2021 (E-Poster; Virtual Meeting)

“The routine use and cost analysis of acid-fast bacilli and fungal cultures in foot and ankle surgery: a retrospective study” El-Zein Z, Gehrke C, Baker EA, Fleischer MM,

Bohr MC, Fortin PT, Diamond S, Vaupel Z. *American Academy of Orthopaedic Surgeons Annual Meeting*, August 2021. (Poster)

“Musculoskeletal injuries and conditions in the orthopaedic surgeon: a survey” Swank K, Furness J, Baker EA, Gehrke C, Rohde RS. *American Academy of Orthopaedic Surgeons Annual Meeting*, August 2021. (Poster)

“Diagnosing total joint arthroplasty-associated periprosthetic joint infections in immunocompromised patient populations” Friedman BJ, Huber CM, Gehrke C, Baker EA, Flierl MA, Zakko P. *American Academy of Orthopaedic Surgeons Annual Meeting*, August 2021. (Poster)

Visiting Professorships/Invited Seminars/Invited Lectureships

“Enhancing osseointegration of orthopaedic implants with titania nanotube surfaces” Department of Mechanical Engineering-Engineering Mechanics Seminar, Michigan Technological University, January 2016.

“Biomaterials in orthopaedic surgery: an implant retrieval perspective” Department of Biomedical Engineering, Lawrence Technological University, April 2018.

“Orthopaedic implant retrieval and analysis: using post-market surveillance to evaluate current technologies and develop new solutions” Beaumont-Farmington Hills Alvin Yarrows Research Day, Keynote Speaker, April 2018.

TEACHING

8/2004 – 5/2005 Graduate Teaching Assistant (Instructor of Record)
Integrated Design & Manufacturing, Laboratory Module
Department of Mechanical Engineering
Michigan Technological University

2/2012 – 3/2021 Site Co-coordinator
Perry Outreach Programs; High School, Undergraduate, and
Medical School
Perry Initiative at Beaumont Health

- 18 programs at Beaumont-Royal Oak and Southeast Michigan high, middle, and elementary schools.
- One-day programs for women interested in orthopaedic surgery and/or engineering careers to network with program staff/faculty and perform hands-on, simulated surgeries.

5/2014 – 3/2021 Director
Student Orthopaedic Academic Research (SOAR) Program
Department of Orthopaedic Research
Beaumont Health

- 10/2016 – Present Mentor
Embark Capstone Program
Oakland University William Beaumont School of Medicine
- Mentor or co-mentor of seven medical students
 - 5 current students: Foot and ankle readmission rates and causes (MS IV); Fretting and corrosion in shoulder arthroplasty components (MS II); Culture status in foot and ankle revision cases (MS II); Retrieval analysis of dual-mobility hip systems (MS I); Value analysis of AFB and fungal cultures on foot and ankle service (MS I)

RESEARCH/GRANTS

Recently Completed Support

- 8/2015 – 12/2017 “Osteoinductive titania nanotube surfaces on titanium implants to enhance osseointegration of intramedullary implants” Herb & Betty Fisher Seed Research Grant at Beaumont Health; Pilot Study.
Role: Co-Investigator
Award: \$20,000
Summary: Previous work by our group has demonstrated that Ti6Al4V orthopaedic implant surfaces modified through an electrochemical etching process to yield nanotubular surfaces result in increased periprosthetic bone formation in a rodent (rat) intramedullary implant model. While the nanotube surfaces alone enhance bone formation, this project focused on further increasing bone formation via attachment of the chemotactic factor SDF-1 α to the nanotubes via a HEP-DOPA functionalization technique. The ability to functionalize the titania nanotube-modified implant surfaces was confirmed using XPS, while *in vivo* bone formation in a rodent intramedullary implant model was assessed via microcomputed tomography and histologic techniques.
- 2/2017 – 2/2018 “Antibacterial orthopaedic implant commercialization” Michigan Translational Research and Commercialization for Life Sciences Innovation Hub; MI-TRAC Mid-Stage Award.
Role: Sub-Award Principal Investigator
Award: \$183,672
Summary: Following on prior extensive anodization work, titanium alloy (Ti6Al4V) samples were etched with titania nanotubes (TiNT) as well as TiNT with nanosilver (TiNT+Ag) and compared with standard-of-care materials (i.e. as-received Ti6Al4V, Ti6Al4V+TPS) and using *in vitro* techniques (i.e. drop-seeding, media inoculation) to demonstrate inhibition of biofilm formation and bactericidal activity of titania nanotube surfaces challenged with a clinical isolate of

Methicillin-resistant *Staphylococcus aureus* (MRSA). Using an *in vivo* model of tibial osteomyelitis (NZW rabbit), both untreated and treated (with vancomycin), with the same clinical isolate of MRSA, the four implant materials were multi-modally characterized with microcomputed tomography, histologic, implant sonication (for bacterial viability) to assess both osseointegrative and antibacterial performance.

- 5/2015 – 7/2020 “The effect of reamer/irrigator/aspirator (RIA) use on the resistance of distal tibiae to torsional loading” DepuySynthes Directed Research Grant.
Role: Co-Investigator
Award: \$77,000 (including product support)
Summary: Autologous bone graft materials are frequently used to enhance foot and ankle fusions, but harvesting from distal sites is associated with donor site complications. The use of a reamer/irrigator/aspirator allows for the collection of endosteal bone and bone marrow during the process of reaming. The collected bone and marrow has been shown to promote new bone formation; however, concerns remain regarding the potential for increased fracture risk at the site of reaming. This cadaveric biomechanics project will characterize the reduction in torsional strength of the distal tibia following use of the reamer/irrigator/aspirator system.
- 1/2017 – 7/2020 “Prevention of external fixator pin-tract infections using a synthetic coating to provide controlled release of a novel, broad-spectrum antibiotic” AO Trauma North America Resident Research Grant.
Role: Key Personnel
Award: \$10,000
Summary: Pin-tract infections are a common issue in orthopaedic surgery, limiting the amount of time an external fixator or Taylor spatial frame can be applied. In this study, an antibacterial coating, containing a novel antibiotic, cationic steroid antibiotic (CSA)-44, will be applied to pins. CSA-44 has been developed to mimic endogenous antimicrobial peptides of the innate immune system and has been shown to effectively eradicate biofilms as well as prevent infection and stimulate healing of open, contaminated fractures. In a rodent (rat) model of environmentally-acquired pin-tract infections, CSA-coated and as-received (control) pins will be implanted into vertebrae and assessed for bacterial viability (via implant sonication, bone sonication, swab), osteolysis (through microcomputed tomography), and clinical appearance.
- 9/2018 – 12/2020 “Retrospective review of infected shoulder arthroplasty to assess culture-positive and culture-negative infections” Blue Cross Blue Shield of Michigan Foundation Student Award Program Grant.

Role: Faculty Advisor/Principal Investigator

Award: \$3,000

Summary: Total shoulder arthroplasty, reverse total shoulder arthroplasty, and shoulder hemiarthroplasty revised due to suspected periprosthetic joint infection (PJI) by a single surgeon will be retrospectively reviewed to assess culture status. The primary objective is to identify the rate of culture-positive vs. culture-negative PJIs in revision shoulder arthroplasty cases, using the established MSIS criteria, and the difference in culture status rates between arthroplasty types. In the culture-positive cases, the identified organisms will be compared between arthroplasty types. Finally, patient risk factors will be analyzed to determine if there are any associations with culture status.

1/2019 – 3/2021 “Orthopaedic foot and ankle fellowship research studies” Paragon 28 Educational Grant.

Role: Co-Investigator/Fellowship Faculty

Award: \$20,000

Summary: Industry grant supporting the clinical orthopaedic surgery foot and ankle fellowship, which has a strong research component.

Current Support

9/2018 – Present “Mitigation of post-traumatic osteoarthritis via augmented immunomodulation of endogenous marrow-derived stem cells” (W81XWH-17-1-0155) U.S. Army/Congressionally-Directed Medical Research Program (CDMRP).

Role: Key Personnel

Award: \$1,495,834

Summary: Follow-on study of in situ regenerative medicine technique via adjunct stem cell mobilization therapy, focusing on tryptophan metabolism in the post-traumatic osteoarthritic knee joint, using a rat model of closed ACL rupture.

9/2019 – Present “Applicability of new periprosthetic joint infection diagnoses classification system in immunocompromised postoperative total hip and knee arthroplasty patient populations” Blue Cross Blue Shield of Michigan Foundation Student Award Program Grant.

Role: Faculty Advisor/Principal Investigator

Award: \$3,000

Summary: The use of the 2018 Musculoskeletal Infection Society (MSIS) criteria for the diagnoses of PJI in immunocompromised patient populations will be evaluated. Patient characteristics of immunocompromised and non-immunocompromised populations will be compared to identify factors that alter culture status (negative vs. positive) and PJI diagnosis.

- 10/2019 – Present “Genetically-modified mouse model of unilateral developmental dysplasia of the hip (DDH)” Children’s Miracle Network and Beaumont Foundation Grant.
Role: Co-Investigator
Award: \$25,000
Summary: Development of a murine model to study and determine possible therapies to disrupt DDH.
- 9/2020 – Present “Evaluating Trunnion-Taper Fretting and Corrosion Damage in Anatomic Total Shoulder and Shoulder Hemiarthroplasty Prostheses: A Retrieval Study including Clinical and Radiographic Outcomes” Blue Cross Blue Shield of Michigan Foundation Student Award Program Grant.
Role: Faculty Advisor/Principal Investigator
Award: \$3,000
Summary: Assessment of modularity-related factors (humeral head size, taper geometry/design, materials, moment of inertia/flexural rigidity) in retrieved ATSA and HA implants to evaluate clinical variables and radiographic outcomes associated with *in vivo* implant damage, focusing on fretting and corrosion at the trunnion-taper interface.

SERVICE

Professional Service

- 3/2016 – Present Peer Reviewer
 Journal of the American Academy of Orthopaedic Surgeons
- 5/2019 – Present Peer Reviewer
 Journal of the American Academy of Orthopaedic Surgeons:
 Global Research and Reviews
- 1/2020 – Present Peer Reviewer
 Foot and Ankle Specialist
- 2/2020 – Present Peer Reviewer
 Drug Delivery and Translational Research
- 5/2020 – Present Peer Reviewer
 Orthopedics

Institutional Service

- 9/2015 – 3/2016 Medical Student Applicant Interviewer
 Oakland University William Beaumont School of Medicine

- 6/2016 – 11/2017 Medical Student Application Screener
Oakland University William Beaumont School of Medicine
- 3/2016 – 3/2021 M3 Medical Student Mini-Manuscript Judge
Oakland University William Beaumont School of Medicine
- 1/2018 – 5/2018 Graduate School Committee Member (Ad Hoc Faculty); MSME
Program, Department of Mechanical Engineering-Engineering
Mechanics, Michigan Technological University
- 1/2019 – 3/2021 Fisher Family Research Seed Grant Peer-Reviewer
Beaumont Research Institute