

ROBERT L ZONDERVAN, DO, PhD

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EDUCATION

University of Connecticut - Hartford, CT

Fellow, Hand Surgery

August 2025 - July 2026

Michigan State University/McLaren Health Care - Lansing, MI

Chief Resident, Orthopaedic Surgery

July 2024 - June 2025

Resident, Orthopaedic Surgery

July 2021 - June 2024

Intern, Orthopaedic Surgery

July 2020 - June 2021

Michigan State University - East Lansing, MI

Doctor of Osteopathic Medicine

August 2013 - May 2020

Doctor of Philosophy in Physiology

August 2013 - December 2018

University of New England - Biddeford, ME

Doctor of Osteopathic Medicine

August 2011 - May 2013

Boston University - Boston, MA

Master of Arts in Medical Science

August 2009 - May 2011

Colby College - Waterville, ME

Bachelor of Arts in Psychology: Neuroscience

August 2003 - May 2007

Webb School of California - Claremont, CA

Diploma

August 1999 - May 2003

MEDICAL EMPLOYMENT EXPERIENCE

Orthopedic Associates of Hartford - Hartford, CT

Hand & Upper Extremity Surgeon

August 2026 - current

- Practice hand, wrist, and upper extremity surgery within a high-volume private orthopedic group.
- Participate in regional orthopedic call coverage and provide multidisciplinary musculoskeletal care.
- Teach orthopedic residents and hand surgery fellows while collaborating on clinical and translational research with affiliated academic institutions.

SteriDev, LLC - Lansing, MI

CEO & Founder

January 2014 - March 2026

- Founded the medical device company to manufacture sterile cases for mobile devices
- Designed a novel method to safely use mobile devices in sterile environments
- Lead operations and strategic decisions for product design, manufacturing, sales, and intellectual property protection
- Awarded over \$75,000 in start-up funds through grants and business competitions
- Raised over \$350,000 in investment from angel investors
- Recruited business and sales experts to join the company in key roles

- Successfully negotiated an intellectual property licensing agreement and acquisition with ZimmerBiomet, a top 20 global medical device manufacturer

Michigan State University - East Lansing, MI

Senior Fellow, Spartan Innovations

January 2015 - December 2016

- Oversaw the valuation of Michigan State University technologies for start-up potential
- Lead four technology assessment teams comprised of MBA and PhD students
- Developed students' skills in technology discovery and validation

Medical Fellow, Spartan Innovations

January 2014 - December 2015

- Advised CEOs on biomedical technologies developed at Michigan State University
- Constructed business plans for new ventures
- Conducted research on the market potential of a technology
- Launched a low-fidelity medical training device company: PractiCare

Dana Farber/Harvard Cancer Center: Tumor Imaging Metrics Core - Boston, MA

Imaging Analysis Specialist, Department of Radiology and 3D Imaging

June 2007 - May 2011

- Performed quantitative and longitudinal tracking of tumors in CT, PET, and MRI using a multitude of medical imaging software packages
- Personally managed treatment response for over 30 oncology studies
- Maintained and improved website and analyst training programs
- Certified as a MRI; collected functional, structural, and behavioral data for alcoholism studies
- Collaborated on research projects involving; CT radiation exposure, NF1, and tumor assessment criteria
- Received the 2009 Partners In Excellence Award

Newton Wellesley Hospital - Newton, MA

Surgical Aide, Department of Surgery

June-August 2006

- Responsible for five operating rooms in an orthopedic surgery pod
- Prepared operating rooms with surgery specific equipment
- Aided in more than 25 surgeries a day
- Directly contributed to patient care by prepping patients for surgery and aided in their transport to and from the operating room
- Observed surgeries in other operating pods (Neurology, Plastic, GYN, Gastrointestinal)

Webb School of California - Claremont, CA

Research Assistant, Raymond M. Alf Museum of Paleontology

June-August 2001-2003

- Catalogued fossilized vertebrate teeth under the guidance of Don Lofgren, PhD.
- Presented on the Goler Formation's Paleocene primates at the Society of Vertebrate Paleontology Conference in Oklahoma City
- Conducted field studies in Utah, Montana, and California
- Discovered new fossil locales and dig sites

HONORS AND AWARDS

American Society for Surgery of the Hand - Vancouver, BC

ASSH/AFSH Annual Meeting Scholarship

2025

McLaren Healthcare/Michigan State University – East Lansing, MI First Place Orthopedic Research Presentation: <i>CD47 is Required for Mesenchymal Progenitor Proliferation and Fracture Repair</i>	2025
American Society for Surgery of the Hand - Minneapolis, MN ASSH/AFSH Annual Meeting Scholarship	2024
American Society for Surgery of the Hand - Chicago, IL ASSH/AFSH Annual Meeting Scholarship	2023
Michigan State University, College of Osteopathic Medicine - East Lansing, MI Veronica M. Maher - J. Justin McCormick Outstanding DO/PhD Award	2020
Orthopaedic Research Society/International Society for Fracture Research - Austin, TX First Place Research Poster: <i>Disruption of CD47 Signaling Promotes Endothelial Cell Proliferation but Inhibits Mesenchymal Stem Cell Expansion Leading to Delayed Fracture Healing.</i>	2019
Orthoregeneration Network Foundation - Lucerne, Switzerland Orthoregenerarion Network/Orthopaedic Research Society Education Grant	2018
University of Michigan, Department of Orthopaedics - Ann Arbor, MI Dennis Kayner Award in Orthopaedic Research	2018
Michigan State University, Department of Physiology - East Lansing, MI Meites Travel Award	2018
Michigan Osteopathic Association Scientific Convention - Southfield, MI First Place Basic Science: <i>Loss of the Ankylosing Spondylitis Gene (ERAP1) Decreases Bone Strength and Perturbs Fracture Healing.</i>	2018
Michigan State University, Department of Physiology - East Lansing, MI Meites Post-Comprehensive Scholarship for Excellence in Physiology	2018
Orthopaedic Research Society/International Society for Fracture Research - New Orleans, LA Third Place Research Competition: <i>What do we want? Fracture healing! When do we want it? We don't know...</i>	2018
Orthopaedic Research Society - New Orleans, LA First Place Business Plan Poster Competition: <i>SteriDev</i>	2018
Michigan Celebrates Small Business - Lansing, MI SmartZone Best Small Business	2017
American Osteopathic Academy of Orthopedics Annual Meeting - Washington, DC First Place Paper: <i>The Influence of Colleague Opinion and AAOS Clinical Practice Guidelines</i>	2016

Michigan State University College of Osteopathic Medicine Senior Research Day - East Lansing, MI	
First Place Podium Presentation:	2015
<i>Functional Outcomes of Minimally Invasive Versus Extensile Lateral Approach for Intra-articular Calcaneus Fractures</i>	
Michigan State University College of Osteopathic Medicine Research Day - East Lansing, MI	
First Place Poster Presentation:	2014
<i>Preconditioning: Making Spines a Little Less Creepy</i>	
Michigan State University, Department of Physiology - East Lansing, MI	
Meites Pre-Comprehensive Scholarship for Excellence in Physiology	2014
Radiological Society of North America - Chicago, IL	
Alexander R. Margulis Award for Scientific Excellence - Finalist:	2013
<i>Body CT Scanning in Young Adults: Exam Indications, Patient Outcomes and Risk of Radiation-Induced Cancer</i>	
Michigan Osteopathic Association Scientific Convention - Grand Rapids, MI	
People's Choice Award:	2013
<i>Preconditioning: Making Spines a Little Less Creepy</i>	
University of New England College of Osteopathic Medicine Research Week - Biddeford, ME	
First Place Oral Presentation:	2012
<i>Spine Mechanics and the Quest of Dynamics</i>	
Second Place Poster Presentation:	2012
<i>Dynamic Properties of the Porcine Lumbar Spine</i>	
University of New England College of Osteopathic Medicine - Biddeford, ME	
Humanism in Aging Action Award	2012
Rohen Award for Best Dissection, Anatomy Lab	2012
UNECOM Dean's Research Fellowship	2012
Above and Beyond Award	2012
Carman Pettapiece Research Fellowship	2011
Student Doctor of Osteopathic Medicine of the Month	2011
Massachusetts General Hospital - Boston, MA	
MGH Scientific Advisory Committee Poster of Distinction Award:	2011
<i>A Centralized Service for Standardized Tumor Measurements at a Multi-institutional Collaborative Cancer Center.</i>	
Dana Farber/Harvard Cancer Center: Tumor Imaging Metrics Core - Boston, MA	
Partners in Excellence Award	2009
Radiological Society of North America Annual Meeting - Chicago, IL	
Research and Education Foundation Support Award:	2008
<i>Use of Multimodality 3D Imaging Algorithms to Demonstrate Complex Nodal Drainage Pathways.</i>	
Radiological Society of North America Annual Meeting - Chicago, IL	

Research and Education Foundation Support Award: <i>Nodal Visualization in Common Pelvic Malignancies.</i>	2008
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ADDITIONAL TRAINING

Skeletal Dynamics - Miami, FL	
Fellow Surgeon Summit	2026
Upper extremity trauma course including surgical skills workshops, didactic sessions, and interactive case discussions.	
 Massachusetts General Hospital - Boston, MA	
New England Hand Fellows Course	2026
An advanced, hands-on hand course focused on the management of distal radius, carpal, and metacarpal injuries. Training included didactic instruction, sawbones simulation, and cadaveric surgical labs.	
 Axogen - Boston, MA	
Best Practices in Upper Extremity Nerve Repair	2025
Lecture and laboratory-based course on nerve repair and transfers using autografts and allografts.	
 Columbia University - New York, NY	
Microsurgery	2025
Intensive laboratory-based course in microsurgical technique, including vessel anastomosis, nerve repair, and free tissue transfer models.	

RESEARCH SUPPORT

Ruth L. Kirschstein National Research Service (NRSA) Dual-Doctoral Degree Fellowship	2017-2020
Title: Disruption of CD47 Signaling Promotes Healing in Ischemic Fractures and Bone Allografts	
ID: 1 F30 AR071201-01A1	
Institute: National Institute of Arthritis, Musculoskeletal, and Skin Diseases	
Role: Principal Investigator	
Direct Funds: \$44,044	
 DePuy Synthes Research Grant	2015-Present
Title: Comparing the Stiffness and Failure Load of Calcaneal Locking Plates Using a Physiologic Compressive Force	
Role: Co-Investigator	
Direct Funds: \$44,292	
 Force and Motion Foundation/Orthopaedic Research Society Scholarship	2015
Title: Impact of Spinal Surgical Instrumentation on Adjacent Segment Dynamic Behavior	
Role: Investigator	
Direct Funds: \$10,000	
 University of New England College of Osteopathic Medicine Dean's Research Fellowship	2012-2013
Title: Dynamic Properties of the Functional Spine Unit	
Role: Investigator	

Direct Funds: \$3,000

Carman Pettapiece, D.O. Research Fund

2012-2013

Title: Frequent CT Scanning of Young Adults

Role: Investigator

Direct Funds: \$2,000

SELECTED RESEARCH EXPERIENCE

Michigan State University - East Lansing, MI

Disruption of CD47 Signaling Promotes Healing in Ischemic Fractures and Bone Allografts

2015-Present

Principal Investigator: Kurt Hankenson, PhD, DVM

- Developed a protocol to assess ischemic fracture healing differences between CD47-null and wild-type mice
- Perform micro surgery under gas anesthesia to induce lower limb ischemia
- Generate closed-stabilized tibia fractures
- Analyze specimens using radiography, micro computed tomography, qPCR, histology, biomechanical testing, laser Doppler, and confocal microscopy
- Script code in the programming environment 'R' to analyze data and generate statistical outcome measurements
- Awarded NIH - Ruth L. Kirschstein National Research Service Award Dual-Doctoral Degree Fellowship (Parent F30)
- Trained and managed four undergraduate pre-medical and pre-dental students to assist with data generation and analysis

Skeletal Phenotypic Differences in Transgenic CD47/TSP Mice

2015-2019

Principal Investigator: Kurt Hankenson, PhD, DVM

- Developed a protocol to assess skeletal and fracture differences between transgenic mice deficient in select thrombospondins (TSP1, TSP2, or TSP1+2) or their receptor (CD47).
- Maintained a mouse colony of 6 genotypes
- Performed closed-stabilized femoral fractures under gas anesthesia
- Analyzed specimens using radiography, micro computed tomography, qPCR, histology, biomechanical testing, and confocal microscopy

Standardized Fracture Generation

2015-2018

Co-Investigator: Robert L. Zondervan

- Designed a novel instrument to generate transverse fractures in murine bones
- Developed a protocol to optimize femoral and tibial fractures
- Built instruments for 5 laboratories

Dynamic Properties of the Functional Spine Unit

2011-2015

Principal Investigator: Norman "Peter" Reeves, PhD

- Authored grants to independently fund research
- Assessed stiffness and damping characteristics of intervertebral discs
- Scripted code in MATLAB to analyze data collected with a 3D motion capture system
- Analyzed arthrodesis and arthroplasty surgical rates using national databases and ICD-9 codes

Biomechanical Evaluation of Locking Calcaneus Reconstruction Plates

2014-Present

Co-Investigator: Robert L. Zondervan

- Developed a testing protocol to compare calcaneal fracture reconstruction plates
- Wrote a grant for industry funding

Massachusetts General Hospital - Boston, MA

Frequent CT Scanning of Young Adults

2008-2014

Principal Investigator: Susanna I. Lee, MD, PhD

- Wrote an internal review board proposal
- Scripted a medical record database query
- Managed a research database of over 20,000 patients

Advanced Imaging Techniques in Neurofibromatosis

2008-2011

Principal Investigator: Scott R. Plotkin, MD, PhD

- Fused MRI and PET images
- Analyzed distribution and intensity of tumors

Gender Differences in Alcoholics' fMRI Response to Emotional Stimuli

2008-2009

Principal Investigator: Gordon J. Harris, PhD

- Collected data using magnetic resonance imaging
- Screened Patients
- Obtained patient consent

Boston University - Boston, MA

Research Thesis

2009-2011

Title: Frequent CT Scanning of Young Adults: A Multicenter Study to Determine Patient Diagnoses, Exam Indications, and the Estimated Cumulative Risk of Radiation-induced Cancer Mortality.

Advisor: Gwyneth D. Offner, PhD

Dana Farber Cancer Institute - Boston, MA

Head and Neck Nodal Anatomy. A Multimodality Imaging Approach.

2008

Principal Investigator: Annick D. Van den Abbeele, MD

- Analyzed nodal anatomy using PET, CT and MRI imaging
- Proposed applications of novel imaging techniques in surgery and oncology

JOURNAL PUBLICATIONS

1. **Zondervan RL**, Capobianco CA, Jenkins DC, Reicha JD, Fredrick L, Lam C, Schmanski JT, Isenberg JS, Ahn J, Marcucio RS, Hankenson KD. CD47 is Required for Mesenchymal Progenitor Proliferation and Fracture Repair. *Bone Res.* 2025; 13(1):29. PMCID: PMC11873311
2. **Zondervan RL**, Riggle PK, Cien AJ, Penny PC, Cochran JM. Postoperative Supine Sleeping Position Following Total Knee Arthroplasty Decreases Knee Flexion Contractures. *Spartan Med. Res. J.* 2024; 9(3):35-42. PMCID: PMC11686962
3. Ulrich PA, **Zondervan RL**, Cochran JM. Letter to the Editor Response: Failure of Cup Screw Interface in the Trident II Acetabular Cup in Total Hip Arthroplasty. *Arthroplasty Today.* 2024; 27: 101367. PMCID: PMC11282407

4. **Zondervan RL**, Childe JR, Kustasz R, Hornbach EE. Scaphoid nonunions treated with nonvascularized bone grafting and screw fixation. *J Wrist Surg.* 2023. 13(1):24-30. PMID: PMC10803147.
5. Ulrich PA, **Zondervan RL**, Cochran JM. Failure of Screw/Shell Interface in the Trident II Acetabular System in Total Hip Arthroplasty. *Arthroplasty Today.* 2022; 17:80-86. PMID: PMC9420431
6. **Zondervan RL**, Jenkins DR, Reicha JD, Hankenson KD. Spatiotemporal expression and characterization of thrombospondin-2 in skeletal fractures. *JOR.* 2021; 39(1):30-41. PMID: PMC8218109
7. Youngstrom DW, **Zondervan RL**, Doucet NR, Acevedo PK, Sexton HE, Gardner EA, Anderson JS, Kushwaha P, Little HC, Rodriguez S, Riddle RC, Kalajic I, Wong GW, Hankenson KD. CTRP3 Regulates Endochondral Ossification and Bone Remodeling During Fracture Healing. *JOR.* 2020; 38(5):996-1006. PMID: PMC7162724
8. **Zondervan RL***, Vaux JJ*, Blackmer MJ, Brazier BG, Taunt CJ. Improved outcomes in patients with positive metal sensitivity following revision total knee arthroplasty. *JOSR.* 2019; 14:182. PMID: PMC6580588 *Co-First Authors
9. Bahney CS*, **Zondervan RL***, Allison P, Theologis A, Ashley J, Ahn J, Miclau T, Marcucio R, Hankenson KD. The Cellular Biology of Fracture Healing. *JOR.* 2018; 37(1):35-50. PMID: PMC6542569 *Co-First Authors
10. Kasik C, Rosen M, Saper M, **Zondervan RL**. High Rate of Return to Sport in Adolescent Athletes Following Anterior Shoulder Stabilization: A Systematic Review. *JISAKOS.* 2018; 4:33-40. PMID: PMC6487304
11. **Zondervan RL**, Vorce M, Servadio N, Hankenson KD. Fracture Apparatus Design and Protocol Optimization for Closed-Stabilized Fractures in Rodents. *JOVE.* 2018; (138):58186. PMID: PMC6126799
12. Knight MN, Karuppaiah K, Lowe M, Mohanty S, **Zondervan RL**, Bell S, Ahn J, Hankenson KD. R-spondin-2 is an osteoblast-produced Wnt agonist that regulates osteoblast activity and bone mass. *Bone Research.* 2018; 6(24). PMID: PMC6089978
13. Saper MG, Pearce S, Shung J, **Zondervan RL**, Ostrander III RV, Andrews JR. Outcomes and Return to Sports After Revision ACL Reconstruction in Adolescent Athletes. *Orthopaedic Journal of Sports Medicine.* 2018; 6(4). PMID: PMC5894923
14. Youngstrom DW, Senos R, **Zondervan RL**, Brodeur JD, Lints AR, Young DR, Mitchell TL, Moore ME, Myers MH, Tseng WJ, Loomes KM, Hankenson KD. Intraoperative delivery of the Notch ligand Jagged-1 regenerates appendicular and craniofacial bone defects. *Npj Regenerative Medicine.* 2017; 2(32). PMID: PMC5732299
15. Saper MG, Milchtein C, **Zondervan RL**, Andrews JR, Ostrander III RV. Outcomes After Arthroscopic Bankart Repair in Adolescent Athletes Participating in Collision and Contact Sports. *Orthopaedic Journal of Sports Medicine.* 2017; 5(3). PMID: PMC5400177

16. Horn BJ, **Zondervan RL**, Shafer-Crane G, Hornbach E. Prevention of Tendon Subluxation in DeQuervain's Tenosynovitis Release Using Retinacular Repair. *Spartan Med. Res. J.* 2016; 1(1):1-14. PMID: PMC7746020
17. **Zondervan RL**, Popovich Jr. CJ Radcliffe, PK Pathak, Reeves NP. Sagittal rotational stiffness and damping increase in a porcine lumbar spine with increased or prolonged loading. *Journal of Biomechanics.* 2016; 49(4):624-7. PMID: 26892899
18. Saper MG, Brady C, **Zondervan RL**, Shneider D. Clinical Results after Treatment for Bidirectional Patellar Subluxation: Minimum 2-Years Follow-up. *The Knee.* 2016; 23:1154-8. PMID: 27810431
19. Katona LB, Douglas WS, Lena SR, Ratner KG, Crothers D, **Zondervan RL**, Radis CD. Wilderness First Aid Training as a Tool for Improving Basic Medical Knowledge in South Sudan. *Prehosp Disaster Med.* 2015; 30:1-5. PMID: 26490386
20. **Zondervan RL**, Hahn PF, Sadow CA, Liu B, Lee SI. Body CT Scanning in Young Adults: Exam Indications, Patient Outcomes and Risk of Radiation-Induced Cancer. *Radiology.* 2013; 267:460-9.
21. **Zondervan RL**, Hahn PF, Sadow CA, Liu B, Lee SI. Frequent Body Computed Tomography Scanning of Young Adults: Indication, Outcome and Risk of Radiation-induced cancer. *Journal of the American College of Radiologists.* 2011; 8:501-7.
22. Urban T, Harris GJ, Barish MA, Oliveira GR, **Zondervan RL**, Hanlon WB, Van Den Abbeele AD. Imaging Analysts: How bringing onboard these multimodality trained personnel can impact oncology trials. *Applied Clinical Trials.* 2010.
23. Urban T, Harris GJ, Barish MA, Oliveira GR, **Zondervan RL**, Hanlon WB. Benefits of Image Analysts. *Applied Clinical Trials.* 2009.
24. Lofgren DL, Honey JG, McKenna MC, **Zondervan RL**, Smith E. Paleocene Primates from the Goler Formation of the Mojave Desert in California. *Natural History Museum of Los Angeles County.* 2007; 41:11-28.

PATENT

1. **Zondervan RL**. Sterile case for electronic devices used in medical procedures. *U.S. Patent 9,642,429 & 9,930,946; Canadian Patent 2,937,933; European Patent 301,233.* May 9, 2017.

PODIUM PRESENTATIONS

1. Zondervan RL, Ashmead D, Mastella DJ, McCarthy C, Caputo A, Bontempo N. Presence of a Subcompartment in Patients with DeQuervain's and its Implications on Conservative Management. New England Hand Society. Southbridge, MA. 2026.
2. **Zondervan RL**, Hankenson KD. What do we want? Fracture healing! When do we want it? We don't know. Orthopaedic Research Society. New Orleans, LA. 2018.

3. **Zondervan RL**, Rastall DP, Rakic I, Servadio N, Vorce M, Walkowski H, Amalfitano A, Hankenson KD. Loss of the Ankylosing Spondylitis Gene (ERAP1) Decreases Bone Strength and Perturbs Fracture Healing. Orthopaedic Research Society. New Orleans, LA. 2018.
4. Saper MG, Milchtein C, **Zondervan RL**, Andrews JR, Ostrander III RV. Outcomes After Arthroscopic Bankart Repair in Adolescent Athletes Participating in Collision and Contact Sports. Arthroscopy Association of North America Annual Meeting. Denver, CO. 2017.
5. **Zondervan RL**, Pick AG. Orthopaedic Clinical Decisions: The Influence of Colleague Opinion and AAOS Clinical Practice Guidelines. American Osteopathic Academy of Orthopedics Annual Meeting. Colorado Springs, CO. 2015.
6. **Zondervan RL**, Popovich Jr. JM, Vijayangar V, Gukasov MB, Reeves NP. Effects of Preconditioning on Intervertebral Disc Stiffness and Damping. U. S. National Congress on Theoretical and Applied Mechanics, East Lansing, MI. 2014.
7. **Zondervan RL**, Popovich Jr. JM, Vijayangar V, Gukasov MB, Reeves NP. Preconditioning: Making Spines a Little Less Creepy. Michigan State University Graduate Academic Conference, East Lansing, MI. 2013.
8. **Zondervan RL**. Art in the Wards. Seminar: Humanism in Aging Action, Biddeford, ME. 2012.
9. **Zondervan RL**, Popovich Jr. JM, Radcliff C, Vijayangar V, Reeves NP. Spine Mechanics and the Quest of Dynamics. UNECOM Research Week, Biddeford, ME. 2012.
10. **Zondervan RL**, Hahn PF, Sadow CA, Liu B, Lee SI. Radiation from CT Scanning - What Are the Real Risks? ARRS, Vancouver, British Columbia. 2012.
11. **Zondervan RL**, Hahn PF, Sadow CA, Liu B, Lee SI. Frequent CT Scanning of Young Adults: A Multicenter Study to Determine Patient Diagnoses, Exam Indications, and the Estimated Cumulative Risk of Radiation-induced Cancer Mortality. RSNA, Chicago, IL. 2009.

POSTER PRESENTATIONS

1. Capobianco C, **Zondervan RL**, Schmanski J, Jenkins DR, Reicha JD, Maas K, Donneys A, Karen Kessel K, Hankenson KD. Thrombospondin 1 (TSP1) Is Necessary for Fracture Healing Under Normoxic and Ischemic Conditions. Orthopaedic Research Society. Long Beach, CA. 2024.
2. Capobianco C, **Zondervan RL**, Song M, Farrell E, Donneys A, Knights A, Kessel K, Wilson H, Ahn J, Marcucio R, Maerz T, Hankenson KD. Absence Of Cd47 Leads To Stromal Cell Reduction And Impaired Bone Healing. Orthopaedic Research Society. Dallas, TX. 2023.
3. Youngstrom DW, **Zondervan RL**, Doucet NR, Acevedo; PK, Sexton HE, Gardner EA, Anderson JS, Kushwaha P, Little HC, Rodriguez S, Riddle RC, Kalajic I, Wong GW, Hankenson KD. CTRP3 Regulates Endochondral Fracture Healing And Bone Remodeling. Orthopaedic Research Society. Phoenix, AZ. 2020.

4. **Zondervan RL**, Reicha JD, Jenkins DR, Brazina S, Ahn J, Marcucio R, Isenberg J, Hankenson KD. Disruption of CD47 Signaling Promotes Endothelial Cell Proliferation but Inhibits Mesenchymal Stem Cell Expansion Leading to Delayed Fracture Healing. Orthopaedic Research Society. Austin, TX. 2019.
5. **Zondervan RL**, Servadio N, Brazina S, Vorce M, Gruizinga B, Marcucio R, Isenberg J, Hankenson KD. Disruption of CD47 Does Not Improve Hard Callus Healing in Ischemic and Non-ischemic Murine Fractures. Orthopaedic Research Society. New Orleans, LA. 2018.
6. Youngstrom DW, Senos R, **Zondervan RL**, D. Hankenson KD. Intraoperative Delivery of Jagged-1 Drives Craniofacial Bone Regeneration in Rodents. Orthopaedic Research Society. New Orleans, LA. 2018.
7. Vaux JJ, **Zondervan RL**, Blackmer MB, Brazier BG, Taunt Jr. CJ. Outcomes Following Revision Total Knee Arthroplasty for Positive Metal Sensitivity. Orthopaedic Research Society. New Orleans, LA. 2018.
8. **Zondervan RL**, Vorce M, Hankenson KD. Closed-Stabilized Fracture Optimization in Mice. Musculoskeletal Health Symposium. Ann Arbor, MI. 2017.
9. Vaux JJ, **Zondervan RL**, Brazier BG, Taunt Jr CJ. Outcomes Following Revision Total Knee Arthroplasty for Positive Metal Sensitivity. Mid-Michigan Regional Research Day. East Lansing, MI. 2017.
10. Pearce S, Saper MG, Shung J, **Zondervan RL**, Ostrander III RV, Andrews JR. Outcomes and Return to Sports After ACL Reconstruction in Adolescent Athletes. AAOS/POSNA: International Pediatric Orthopaedic Symposium. Orlando, FL. 2016.
11. Saper MG, **Zondervan RL**, Shneider D. Clinical Results after Treatment for Bidirectional Patellar Subluxation: Minimum 2-Year Follow-up. Michigan Orthopedic Society, Mackinac Island, MI. 2015.
12. Gengler SG, **Zondervan RL**, Fine L, Penny P, Swords MP. Functional Outcomes of Minimally Invasive Versus Extensile Lateral Approach for Intra-articular Calcaneus Fractures. Michigan Orthopedic Society, Mackinac Island, MI. 2015.
13. Childe JR, **Zondervan RL**, Kustasz R, Hornbach EE. Treatment of Scaphoid Non-Unions and Associated Proximal Pole Avascular Necrosis with Non-Vascularized Distal Radius Bone Grafting and Screw Fixation. MSUCOM SCS Senior Research Day, East Lansing, MI. 2015.
14. **Zondervan RL**, Brady, C. Performance Evaluation: AO/OTA Fracture Classification in an Orthopedic Residency. American Osteopathic Academy of Orthopedics Annual Meeting, Rancho Palos Verdes, CA. 2014.
15. **Zondervan RL**, Reeves NP. Effect of Preconditioning on Spine Dynamic Parameters. National MD/PhD Student Conference, Keystone, CO. 2014.
16. **Zondervan RL**, Popovich Jr. JM, Vijayangar V, Gukasov MB, Reeves NP. Preconditioning: Making Spines a Little Less Creepy. MSUCOM SCS Research Day, East Lansing, MI. 2014.

17. **Zondervan RL**, Popovich Jr. JM, Vijayangar V, Gukasov MB, Reeves NP. Sagittal Stiffness and Damping of a Functional Spine Unit: Impact of Loading History. Orthopedic Research Society, New Orleans, LA. 2014.
18. Popovich Jr. JM, **Zondervan RL**, Vijayangar V, Gukasov MB, Reeves NP. The Effects of Annular Compromise on Lumbar Spine Flexion/Extension Stiffness and Damping: An In-vitro Investigation. Orthopedic Research Society, New Orleans, LA. 2014.
19. **Zondervan RL**, Popovich Jr. JM, Vijayangar V, Gukasov MB, Reeves NP. Preconditioning: Making Spines a Little Less Creepy. MIOA, Grand Rapids, MI. 2013.
20. Douglas W, Lena S, Katona LB, Ratner K, **Zondervan RL**. The Delivery and Evaluation of a First Aid Course in the River Kit Region of South Sudan. OMED, Las Vegas, NV. 2013.
21. **Zondervan RL**, Hassett H, Albert K, Cao L, Davidoff A, Gugliucci M. Medical Student Research Training: A Professional Continuum. UNE Faculty & Student Research Poster Session, Biddeford, ME. 2012.
22. **Zondervan RL**, Popovich Jr. JM, Radcliff C, Vijayangar V, Reeves NP. Dynamic Properties of the Porcine Lumbar Spine. OMED, San Diego, CA. 2012.
23. **Zondervan RL**, Hahn PF, Sadow CA, Liu B, Lee SI. Radiation from CT Scanning - What Are the Real Risks? UNECOM Research Day, Biddeford, ME. 2011.
24. Urban T, Lim R, Bredella MA, Kassarian A, Cai W, **Zondervan RL**, Merker V, Harris G, Plotkin S. Whole-Body F-18 fluorodeoxyglucose Positron Emission Tomography (FDG-PET)/Magnetic Resonance Imaging (MRI) (PET-MRI) in Patients with Neurofibromatosis Type 1 (NF1). RSNA, Chicago, IL. 2011.
25. Sadow CA, Urban T, **Zondervan RL**, Harris GJ, Van den Abbeele AD. Tumor Response Assessment Criteria in Oncologic Trials: A Novel Online Teaching Tool. ARRS, Chicago, IL. 2011.
26. Sawyer K, Poey A, Valmas M, **Zondervan RL**, Marinkovic K, Oscar-Berman M. Measures of skin conductance and heart rate in alcoholic men and women during MRI acquisition. SFN, Chicago, IL. 2009.
27. Ruiz S, Marinkovic K, Oscar-Berman M, Poey A, Sawyer K, **Zondervan RL**, Urban T, Harris GJ. Alcoholism and gender effects on BOLD activation during working memory for emotional faces. SFN, Chicago, IL. 2009.
28. Oliveira G, **Zondervan RL**, Harris G, Hodge S, Harisinghani M. Treatment Response with Ca-125 in Ovarian Cancer Patients: Comparison among RECIST, WHO, Tridimensional and 3D Volumetric Criteria. ARRS, Boston, MA. 2009.
29. Braschi M, Ramaiya N, **Zondervan RL**, Urban T, Van Den Abbeele AD, Harris GJ. Tumor Response Criteria: What Should a Radiologist Know? ARRS, Boston, MA. 2009.

30. Urban T, Bredella M, Harris GJ, **Zondervan RL**, Fischman A, Plotkin S. Utility of Whole-Body F-18 Fluorodeoxyglucose Positron Emission Tomography (FDG-PET) Magnetic Resonance Imaging (MRI) (PET-MRI) in the Evaluation of Patients with Neurofibromatosis Type-1(NF1). RSNA, Chicago, IL. 2008.
31. Urban T, Van Den Abbeele AD, Barish M, Oliveira G, **Zondervan RL**, Braschi M, Harris GJ. Benefits of Utilizing Image Analysts for Radiological Measurements in Oncology Clinical Trials. RSNA, Chicago, IL. 2008.
32. Oliveira G, Urban T, **Zondervan RL**, Braschi M, Harris GJ, Harisinghani M. Nodal Visualization in a Common Pelvic Malignancies. RSNA, Chicago, IL. 2008.
33. **Zondervan RL**, Oliveira G, Urban T, Braschi M, Harris GJ, Harisinghani M. Use of Multimodality 3D Imaging Algorithms to Demonstrate Complex Nodal Drainage Pathways. RSNA, Chicago, IL. 2008.
34. Urban T, Oscar-Berman M, Marinkovic K, Sawyer K, **Zondervan RL**, Mosher S, Harris GJ. Gender differences in alcoholics' fMRI response to emotional stimuli. SFN, Washington, DC. 2008.
35. Mosher S, Marinkovic K, Oscar-Berman M, Sawyer K, **Zondervan RL**, Urban T. Effects of alcohol cues on working memory for faces in abstinent alcoholic men and women. SFN, Washington, DC. 2008.
36. **Zondervan RL**, Oliveira G, Urban T, Yap J, Harris GJ, Van Den Abbeele AD. Head and Neck Nodal Anatomy. A Multimodality Imaging Approach. SNM, New Orleans, LA. 2008.
37. **Zondervan RL**, Van Den Abbeele AD, Barish M, Urban T, Oliveira G, Braschi M, Frenkel V, Hanlon M, Harris GJ. Tumor Imaging Metrics Core: a centralized service for standardized tumor measurements at a multi-institutional collaborative cancer center. ASCO, Chicago, IL. 2008.
38. Oliveira G, **Zondervan RL**, Van Den Abbeele AD, Barish M, Urban T, Braschi M, Frenkel V, Hanlon W, Harisinghani M, Harris GJ. The impact of large lesions on the RECIST assessment criteria. ASCO, Chicago, IL. 2008.
39. Harris GJ, Van Den Abbeele AD, Barish M, Urban T, **Zondervan RL**, Oliveira G, Braschi M, Frenkel V, Hanlon M. Tumor Imaging Metrics Core: Evaluating Treatment Response for Clinical Trials. Simches Research Symposium, Boston, MA. 2008.
40. **Zondervan RL**. A Comparison of Three Anti-Obesity Drugs' Efficacy in Obese Zucker Rats. Colby Student Research Day, Waterville, ME. 2007.
41. **Zondervan RL**, Macpherson, A. Specialized Trapping Procedure for Eastern Chipmunks (*Tamias striatus*). Colby Student Research Day, Waterville, ME. 2006.
42. **Zondervan RL**, Carlson L, Price K. The Effect of Verbal Overshadowing and Local Processing on Line-Up Identification. Colby Student Research Day, Waterville, ME. 2006.

43. **Zondervan RL**, Audin L. Influence of Muscle Mass on Fatigue Rate in Crustaceans in Response to Stimulation of Motor Neurons. Colby Student Research Day, Waterville, ME. 2005.
44. **Zondervan RL**. The Effect of Fornix Lesions on Episodic Memory in Rats. Colby Student Research Day, Waterville, ME. 2004.
45. Lofgren DL, **Zondervan RL**, Smith E, Barron D. New Fossil Findings in the Goler Formation of California. SVP, Oklahoma City, OK. 2003.

EDITORIAL ACTIVITIES

JoVE

Ad hoc Reviewer 2022-Present

Journal of Orthopaedic Research

Ad hoc Reviewer 2023-Present

Spartan Medical Research Journal

Ad hoc Reviewer 2011-Present

TEACHING EXPERIENCE

University of Connecticut Health - Farmington, CT

Hand Surgery Emergency Case Management August 2025-July 2026

- Lecturer: plastic surgery, general surgery, orthopedic surgery, and emergency medicine residents, 60 minute contact time
- 1 hour of preparation time per lecture
- Approximately one lectures per month on various hand surgery topics

Hand Surgery Grand Rounds August 2025-July 2026

- Lecturer: 15 Faculty, Residents, and Medical Students, 60 minute contact time
- 6 hours of preparation time per lecture
- Approximately one lecture per quarter on various hand topics

McLaren Greater Lansing Hospital - Lansing, MI

Orthopaedic Residency Didactics July 2021-June 2023

- Lecturer: 18 Residents and Medical Students, 30 minute contact time
- 3 hours of preparation time per lecture
- Approximately two lectures per month on various orthopaedic topics

McLaren Greater Lansing Hospital - Lansing, MI

Fracture Conference July 2021-June 2022

- Lecturer: Attendings, residents, and medical students, 1 hour contact time
- 6 hours of preparation time per lecture
- One lecture per month covering all fracture cases from the prior week

Michigan State University College of Osteopathic Medicine - Lansing, MI

Surgical Specialty Residency Panel April 2020

- Lecturer: 50 Medical Students, 1.5 hour contact time

- 1 hour of preparation time

Michigan State University College of Osteopathic Medicine - Lansing, MI

Topical Formal: Rotator Cuff

November 2014

- Lecturer: 30 Medical Students, 1 hour contact time
- 4 hours of preparation time

Michigan State University: DO/PhD Program - Lansing, MI

Dealing with Disease Complexity: A Systems Approach to Studying Back Pathology

October 2014

- Lecturer: 30 Medical Students, 1.5 hour contact time
- 8 hours of preparation time

Michigan State University: Orthopedic Surgery Residency - Lansing, MI

Academic Resource Management

November 2013

- Lecturer: 25 Residents, 1.5 hour contact time
- 4 hours of preparation time

University of New England College of Osteopathic Medicine - Biddeford, ME

The Lower Extremity: Anatomy/Case Study: Femoral Neck Fracture in a Patient with Osteoarthritis.

September 2012

- Lecturer: 30 Participants, 1.5 hour contact time
- 6 hours of preparation time

University of New England College of Osteopathic Medicine - Biddeford, ME

The Upper Extremity: Anatomy/Case Study: The 'Floating Shoulder'

September 2012

- Lecturer: 60 Participants, 1 hour contact time
- 8 hours of preparation time

University of New England College of Osteopathic Medicine - Biddeford, ME

Imaging Modalities: Technology and Techniques

September 2012

- Lecturer: 20 Participants, 1 hour contact time
- 4 hours of preparation time

University of New England College of Osteopathic Medicine - Biddeford, ME

Presenting Fractures

August 2012

- Lecturer: 45 Participants, 1 hour contact time
- 5 hours of preparation time

Colby College - Waterville, ME

Pre-med Academy: Student Perspectives on Admission to Medical School

January 2012

- Panelist: 30 Participants, 2 hour contact time
- 4 hours of preparation time

University of New England College of Osteopathic Medicine - Biddeford, ME

Introduction to Medical Imaging: DICOM

November 2011

- Lecturer: 60 Participants, 1 hour contact time
- 10 hours of preparation time

University of New England College of Osteopathic Medicine - Biddeford, ME

Student Development: Introduction to the Medical CV

November 2011

- Lecturer: 40 Participants, 3 hour contact time
- 20 hours of preparation time

Massachusetts General Hospital - Boston, MA

Radiology Rounds: Frequent CT Scanning of Young Adults

November 2009

- Lecturer: 25 Participants, 1 hour contact time
- 20 hours of preparation time

LICENSES AND CERTIFICATIONS

State of Connecticut Department of Public Health

Physician/Surgeon License (80075)

Current

State of Connecticut Department of Consumer Protection

Controlled Substance Registration for Practitioner (CSP.0089756)

Current

United States Department of Justice Drug Enforcement Administration

Controlled Substance Registration for Practitioner (FZ5046520)

Current

Occupational Safety and Health Association

Certified in occupational exposure and blood-borne pathogens

Current

Certified in biohazard exposure

Current

Certified in analytical x-ray

Current

U.S. Department of Health and Human Services

Certified HIPAA Privacy and Security Awareness

Current

American College of Surgeons

Certified in ATLS

Current

American Heart Association

Certified in CPR/BLS

Current

NATIONAL SOCIETIES

American Society for Surgery of the Hand

Candidate Fellow

2023-Present

Orthopaedic Research Society

International Section of Fracture Repair Member

2017-Present

Social Media Liaison

2017-2021

Associate Member

2014-Present

Student American Osteopathic Academy of Orthopedics

Treasurer

2014-2017

Education Committee Chair	2014-2015
Member	2011-2021

Michigan Osteopathic Association	
Member	2011-Present

American Roentgen Ray Society	
Member	2011-2013

ACTIVITIES

Michigan State University Crew Club - East Lansing, MI	2014-2017
▪ Novice men's coach ▪ Sculling coach	

Riverside Boat Club - Boston, MA	2006-2013
▪ Awarded Most Improved Riverside Sculler ▪ Awarded Dark Side of Fitness Award ▪ Placed 3rd at the 2010 Royal Canadian Henley Regatta in the Open Men's Quad ▪ Placed 1st out of 43 at the 2008 Head of the Charles in the Club Men's Four	

Messalonskee Rowing Club - Waterville, ME	2007-Present
▪ Co-founded the organization for Colby alumni rowers ▪ Serve on the board and oversee fundraising, event organization, and website design ▪ Aided in building a club membership of over 350 alumni	

Colby Crew - Waterville, ME	2003-2007
▪ Four-year varsity rower ▪ Third- and fourth-year team captain ▪ Voted Most Valuable Rower and received Spirit Award ▪ Led team to first overseas victory at Henley Royal Regatta in England	

Boy Scouts of America - Claremont, CA	1999-Present
▪ Eagle Scout ▪ Order of the Arrow	