DALE RICHMAN ("Rick") SUMNER, JR., Ph.D.

(updated March '17)

EDUCATION

1972	Cornell College, Mt. Vernon, Iowa
1973 - 1975	University of Iowa, Iowa City, Iowa, B.A. 1975, with special distinction and honors
1975	Iowa State University, Ames, Iowa
1976 - 1984	University of Arizona, Tucson, Arizona M.A. 1977 Ph.D. 1984 Major field: Anthropology Minor field: Anatomy Thesis: Size, shape and bone mineral content of the human femur in growth and aging.

POST-GRADUATE TRAINING

1984 - 1987	PHS supported post-doctoral training in Orthopedic Research at Rush-Presbyterian-St. Luke's Medical Center (now Rush University Medical Center), Jorge Galante, MD, DSc, advisor.

ACADEMIC APPOINTMENTS

2004 – Present	The Mary Lou Bell McGrew Presidential Chair for Medical Research, Rush University Medical Center
1997 - Present	Professor and Chairman, Department of Anatomy and Cell Biology, Rush Medical College, Rush University Medical Center
1997 - Present	Professor, Department of Orthopedic Surgery, Rush University Medical Center
1996 - Present	Director, Section of Bone Biology, Department of Orthopedic Surgery, Rush University Medical Center.
2005 – Present	Adjunct Professor in the Bioengineering Program, University of Illinois at Chicago
1997 – 2005	Adjunct Associate Professor in the Bioengineering Program, University of Illinois at Chicago
1991 - 1997	Associate Professor, Department of Orthopedic Surgery, Rush University Medical Center
1986 - Present	appointment to the Faculty of The Graduate College in the Division of Anatomy and Cell Biology, Rush Medical College, Rush University Medical Center
1984 - 1991	Assistant Professor, Department of Orthopedic

	Surgery, Rush University Medical Center
1981 - 1984	Graduate Research Assistant, Department of Anthropology, University of Arizona
1978 - 1981	Graduate Teaching Assistant, Department of Anthropology, University of Arizona

SCIENTIFIC AND SCHOLARLY ACTIVITIES

Journal Reviewing

Acta Orthopaedica Scandinavica
Acta Biomateriala
Advanced Drug Delivery Reviews
American Journal of Physical Anthropology
American Society for Testing and Materials
Anatomical Record
Annals of the Rheumatic Diseases
Applied Biomaterials
Biomaterials
Bone
Connective Tissue Research
Clinical Orthopaedics and Related Research
European Cells and Materials
Journal of Arthroplasty (Editorial Board member, 1997-2009)
Journal of Biomechanical Engineering
Journal of Biomedical Materials Research
Journal of Biomechanics
Journal of Bone and Joint Surgery (Consultant reviewer)
Journal of Bone and Mineral Research
Journal of Musculoskeletal and Neuronal Interactions (Editorial Board member, 2007-2017)
Journal of Orthopaedic Research (Editorial Advisory Board, 2011 – 2014)
Journal of the Royal Society Interface
Nanomedicine
PLoS One
Scanning Microscopy
Spine
Tissue Engineering

Grant Reviewing

Reviewer for The Leakey Foundation (1997, 2006)

Reviewer for U.S.-Israel Binational Science Foundation

American Institute of Biological Sciences
Bone Health & Military Medical Readiness Panel

November 1997
July 2009
FY12 PRMRP Investigator-Initiated Research Award (IIRA) Pre-proposal peer review May 2012

Reviewer for research grants for the Veterans Administration (1999)

Ad Hoc Reviewer for AlloSource, April 1999

Ad Hoc Reviewer: University of Buffalo, internal grants, 1997.

Ad Hoc Reviewer: Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO), 1998, 2010, 2014

Member: NIH Special Emphasis Panel ZRG1-SSS5-098 SBIR Grants, April 1999

Member: NIH Special Emphasis Panel ZRR1 RI-A (02) COBRE Grants, June 2001

Member: NIH Special Emphasis Panel ZRG1 SRB 05 B, Shared Instrumentation Grants, July 2002

Member: NIH Special Emphasis Panel ZRG1 SBIB-X (32) I, Shared Instrumentation Grants, August 2012

Member, NIH Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section (formerly, ZRG1 F10-H, Fellowship – Physiology and Pathophysiology of Organ Systems)
November 2005
March 2006
June 2006
November 2006
March 2007
June 2007
November 2007
March 2008
July 2008
November 2008
March 2009 (Chair)
July 2009 (Chair)
November 2009 (Chair)
July 2010 (Chair)
November 2010 (Chair)
November 2012
October 2015

Ad Hoc Reviewer, NIH Arthritis and Musculoskeletal and Skin Diseases Special

Grants Review Study Section
October 2007
October 2008
November 2009
October 2010
November 2010
June 2012
February 2015

Review of Loan Repayment Program (LRP) applications for the NIH National Institute of Arthritis Musculoskeletal and Skin Diseases
March 2006
April 2007
April 2008
April 2009
March 2010

Review of BIRT grant applications for the NIH National Institute of Arthritis Musculoskeletal and Skin Diseases
June 2009

Review for NIH Challenge Grants, MOSS C 58 mail-in June 2009

Ad Hoc Reviewer, NIH NIDCR Special Grants Review Study Section June 2012

Review of P01 grant for the NIH National Institute on Aging, July 2008

Reviewer for ZRG1 MOSS D82 for AREA grant applications by Internet Assisted Meeting (IAM), October 19, 2016

National Science Foundation
SBIR/STTR Merit Review Panel, Arlington, VA, April 6, 2007
SBIR/STTR Merit Review Panel, Arlington, VA, April 6, 2008
SBIR/STTR Merit Review Panel, Arlington, VA, January 31, 2011
SBIR/STTR Merit Review Panel, Arlington, VA, August 17, 2011
SBIR/STTR Merit Review Panel (VIRTUAL), August 15, 2014

Review of grants for ASIF Foundation (AO Foundation), January 2006

American Society for Bone and Mineral Research Career Enhancement Awards, June 2008

Review of grants for the Musculoskeletal Transplant Foundation
September-October 2010
September-October 2011
September-October 2012
September-October 2013
September-October 2014

September-October 2016

Review of grants for the Orthopaedic Research and Education Foundation November 2016

Award Reviewing

Review of manuscripts for the 2017 Harris Award (given by the Orthopaedic Research Society), November 2016

Other Scholarly Activities

Member of the Implant Interface Committee (Hip Society), 1987-1990

Session Monitor: "Porous Ingrowth II" at the Orthopaedic Research Society Annual Meeting, Atlanta, 1988.

Exhibit Judge: Chicago Public Schools Student Science Fair, Chicago, 1989.

Session Moderator: "Remodeling Around Hip Prostheses" at the Society for Biomaterials Annual Meeting, Lake Buena Vista, Florida, 1989.

Forum Organizer: "Forum on Artificial Implants for Human Use" at the ASCE/ASME Mechanics Conference, San Diego, 1989.

Session Chairperson: "Tibial Component Fixation" at the ASCE/ASME Mechanics Conference, San Diego, 1989.

Session Overview: "Joint and Bone Substitutes" at the 1989 21st International Sun Valley Workshop on Hard Tissue Biology, Sun Valley, Idaho, August, 1989.

Member of Orthopedic Consensus Panel, 2nd International Congress on Tissue Integration in Oral, Orthopedic and Maxillofacial Reconstruction, Rochester, Minnesota, 1990.

Active participant, Bone-Biomaterial Interface Workshop, University of Toronto, Canada, December 3-4, 1990.

Provacateur: "Bone Ingrowth" session at the Orthopaedic Research Society Annual meeting, Anaheim, California, March, 1991.

Speaker: "The effect of micromotion and loads on cementless interface fixation" in the "Failure Mechanics of Implant Interfaces" workshop, Combined Meeting of the Orthopaedic Research Societies, Banff, Canada, October 1991.

Provacateur: "Implants: Bone Ingrowth/Apposition" session at the Orthopaedic

Research Society Annual meeting, San Francisco, California, February, 1993.

Member. Grant Efficacy Committee, Orthopaedic Research and Education Foundation, 1994-1995.

Abstract Reviewer: Society for Biomaterials 1997 Annual Meeting, December, 1996.

Session Moderator: "Fracture Repair" session at the Orthopaedic Research Society Annual meeting, San Francisco, California, February, 1997.

Exhibit Judge: Illinois District VI Junior Science Fair, 1997.

Abstract Reviewer: Orthopaedic Research Society 1998 Annual Meeting, August, 1997.

Symposium organizer for the 28th International Workshop on Hard Tissue Biology, Sun Valley, Idaho, August 3-7, 1998.

Program Chair, The 12th Annual International Symposium for Technology in Arthroplasty, Chicago, September 23 – 25, 1999.

International Society for Technology in Arthroplasty
2nd vice president (1997 - 1998)
1st vice president/president elect (1998 - 1999)
President (1999 – 2000)

Session Moderator: "Growth Factors I" session at the Orthopaedic Research Society Annual meeting, San Francisco, California, February, 2001.

Session Moderator: "Implant Fixation II" session at the Orthopaedic Research Society Annual meeting, Dallas, Texas, February, 2002

Session Moderator: "Implant Fixation" session at the Orthopaedic Research Society Annual meeting, New Orleans, Louisiana, February, 2003

Symposium organizer for the 34th International Workshop on Hard Tissue Biology, Sun Valley, Idaho, August 1-4, 2004

International Scientific Committee for the 17th Annual Meeting of the International Society for Ceramics in Medicine, New Orleans, Louisiana, December, 2004

Abstract reviewer for Orthopedic Research Society annual meeting, September, 2005

Advisory Board, Sun Valley International Workshop on Skeletal Biology, 2005 - 2010

Session Moderator: "Bone Function and Mechanics I" session at the Orthopaedic Research Society Annual Meeting, Chicago, Illinois, March 2006

Abstract reviewer for Orthopedic Research Society annual meeting, September, 2008

Topic Chair for Orthopedic Research Society annual meeting, 2009-2011

Editorial Advisory Board for *Journal of Orthopaedic Research* (2011-2014)

Session organizer for 42nd International Bone & Mineral Society Sun Valley Workshop on Musculoskeletal Biology, August 5-8, 2012

Standing Review Panel for Human Health Countermeasures, NASA (2012 – 2016)

Session Moderator: "Spotlight Session: Implant Osseointegration" session at the Orthopaedic Research Society Annual Meeting, New Orleans, Louisiana, March 16, 2014

Faculty Member for ORS/OREF/AAOS New Investigator Workshop, Chicago, IL, May 16-17, 2014

NIRA Selection Committee for ORS Annual Meeting, Las Vegas, 2015

Session Moderator: "Genetics, Bone Development, Bone Aging" session at the Orthopaedic Research Society Annual Meeting, Las Vegas, Nevada, March 30, 2015

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Association for the Advancement of Science
Association of Anatomy, Cell Biology and Neurobiology Chairpersons
    Secretary-Treasurer (2011 – present)
Sigma Xi
    Rush Chapter Secretary (1996-1999)
Orthopaedic Research Society
    Membership Committee (1993-1996)
    Membership Committee Chairperson (1995-1996)
    Board of Directors (1995-1996)
    Member-at-Large and Newsletter Editor (2001-2003)
    Information Technology Committee (2001 - 2003)
    Board of Directors (2001-2003)
    Task Force on the Annual Meeting (2002 - 2003)
    Nominating Committee (2008-2009)
    Annual Meeting Topic Chair for Bone (2009-2011)

Editorial Advisory Board for the Journal of Orthopaedic Research (2011-2014)
2nd Vice President (2015-2016)
1st Vice President (2016-2017)
President (2017-2018)
Past-President (2018-2019)
Representative to International Federation of Musculoskeletal Research Societies (Secretary on the IFMRS Board, 2016-2018)

American Society of Bone and Mineral Research
Representative to the FASEB Training and Career Opportunities Subcommittee (2012-2017)

American Association of Anatomists
Membership Committee (2001-2002)
Nominating Committee (2004-2005)
Postdoctoral Fellowship Selection Committee (2010 – 2013)
Board of Directors (2013 – 2016)
Elected as Fellow (2017)
Vice President (2017-2019)
President (2019-2021)
Past-President (2021-2023)

American Academy of Orthopaedic Surgeons

International Society for Musculoskeletal and Neuronal Interactions

International Society for Bone Morphometry
Board of Directors (2013 – present)
President (2016-2019)

International Federation of Musculoskeletal Research Societies
Board of Directors (2016 – present)
Secretary (2016 – present)

RESEARCH SUPPORT

Current

NIH for “Detection and Treatment of Peri-Implant Osteolysis” (Principal Investigator), 7/1/2015 to 6/30/2020 (1R01AR066562)

NIH for “Bone Matrix Maturation in a Rat Model of Intra-Cortical Bone Remodeling” (Principal Investigator), 7/1/2015 to 6/30/2017 (1R21AR065604)

NASA for “Foundational in vivo experiments on osteocyte biology in space” (subcontract PI, Alex Robling PI), 1/1/2016 to 12/31/2018

Rush Philanthropy private donors for “Bone Regeneration Research” (Principal Investigator), 4/1/2014 to 3/31/2019

Past - Federal

Rush Alzheimer's Disease Core Center pilot grant (funded through NIH P30AG010161, David Bennet, PI) for "Association between bone turnover markers and level of cognition in older community dwelling individuals with memory concerns" (Principal Investigator), 7/1/2014 to 6/30/2015

Department of Defense, for "Modulating Wnt Signaling Pathway to Enhance Allograft Integration in Orthopaedic Trauma Treatment", (Co-Investigator, Amarjit Virdi, PI), 10/1/2010 to 3/30/2014 (PRORP OR090261)

National Institutes of Health, for "Recruitment of a Bone and Cancer Early Stage Investigator", (Principal Investigator), 9/30/2009 to 8/31/2012 (P30CA147881)

National Institutes of Health, for "Combined use of BMP-2 and Low Intensity Pulsed Ultrasound in Bone Regeneration", (Collaborator, Amarjit Virdi PI), 7/1/2009 to 6/30/2012 (R21 AR057153)

National Institutes of Health, for "Training in Orthopedic Skeletal Biology", (Principal Investigator), 8/1/07 to 7/31/12 (T32 AR052272)

National Institutes of Health, for "Very High Resolution Laboratory MicroCT Scanner", (Principal Investigator), 6/24/2010 to 6/23/2012 (S10RR027980)

National Institutes of Health, for "Calculation of Total Joint Replacement Contact Forces During Level Walking", (co-sponsor, Hannah Lundberg PI), 4/1/2009 to 6/30/2011 (F32 AR057297)

National Institutes of Health, for "Development and initial application of a rat model for revision joint replacement", (Principal Investigator), 8/1/06 to 7/31/08 (R21 AR054171)

National Institutes of Health, for "Improved orthopedic implant surface coatings", (Principal Investigator on subcontract from Affinergy, Inc.), 10/1/06 to 9/30/08 (R44 AR051264)

National Institutes of Health, for "Factors Influencing the Evolution of Knee Osteoarthritis", (Co-Investigator [co-mentor], Naja Shakoor PI), 3/1/04 to 3/1/09 (K23)

National Institutes of Health, for "Osteoarthritis: A Continuum (SCOR)", (Co-Investigator, Ted Oegema PI), 9/1/98 to 3/31/07 (P50 AR39239)

National Institutes of Health, for "Micromagnetic Resonance Elastography", (Co-Investigator, Richard Magin PI), 4/1/05 to 3/30/07 (R21)

National Institutes of Health, for "Biomimetic Materials Useful for Rehabilitation", (Principal Investigator on subcontract from University of California at

Berkeley), 9/30/01 to 7/31/06 (R01 AR43187)

National Institutes of Health, for "Predicting Joint Degeneration", (Co-Investigator, Debra Hurwitz PI), 8/1/00 to 7/31/06 (R01 AR46225)

National Institutes of Health, for "Fixation in Total Knee Replacement", (Principal Investigator), 2/10/00-1/30/06 (R01 AR42862).

National Institute of Health, for "Novel X-Ray Technology for Degenerative Joint Disease", (Co-Investigator, Carol Muehleman PI), 5/1/02 to 6/30/05 (R01 AR48292)

Department of the Army, for "Noninvasive Detection of Microdamage in Bone", (Principal Investigator), 9/30/01 to 9/29/03 (DAMD17-01-1-0811)

National Institutes of Health, for "X-Ray Micro Computed Tomography Scanner", (Principal Investigator), 4/1/02 to 3/31/03 (1S10RR16631)

National Institutes of Health, for "Total Surgical Replacement of the Human Hip Joint", (Co-Principal Investigator), 9/12/97 to 8/30/01 (RO1 AR16485).

National Institutes of Health, for "Fixation in Total Knee Replacement", (Principal Investigator), 7/1/94-6/30/98 (RO1 AR42862).

National Institutes of Health, for "Bone Ingrowth and Bone Remodeling in Cementless Total Knee Arthroplasty", (Principal Investigator), 5/1/89-4/30/94 (R29 AR39827).

National Science Foundation, for "Evaluation of Osteoconduction and Resorption of Calcium Phosphate Cements Using a Canine Humeral Plug Gap Model", (Subcontractor to Norian Corporation).

Past - Foundations

Grainger Foundation, for “Enhancement of Bone Regeneration”, (Principal Investigator), 10/1/99 to 6/03/2014

Musculoskeletal Transplant Foundation, for “Stem Cell Mobilization to Enhance Bone Regeneration”, (Principal Investigator), 1/1/2010 to 12/31/2013

American College of Rheumatology, for “An Analysis of the Effects of Exercise on a Biomechanical Risk Factor for Knee Osteoarthritis”, (Collaborator, Laura Thorp PI), 7/1/2008 to 6/30/2010

Arthritis Foundation (Chicago Chapter), for “A Biomechanical Approach to Modify Risk Factors for Progression of Knee OA”, (Collaborator, Laura Thorp PI), 7/1/2008 to 6/30/2010

Foundation for Physical Therapy, for “Promotion of Doctoral Studies”, (mentor for Laura Thorp, PhD candidate), 7/1/04 to 6/30/05

American Federation for Aging Research, for "Relationship Between Dynamic Joint Loading, Bone Mineral Density, and Radiographic Predictors of Osteoarthritits in the Elderly" (Consultant, Jack Case PI), 7/1/01 to 6/31/03

The Whitaker Foundation, for "A Study of Factors Affecting Hip Joint Loads During Daily Activities", (Co-Investigator), 12/1/95 to 11/30/99.

American Academy of Orthopedic Surgeons, for "Kappa Delta Award Fund", (Principal Investigator), 3/17/93 to 7/31/94.

Searle (Arthritis & Prostaglandins Research Challenge), for "Study of Particulate-Induced, Prostaglandin-Mediated Bone Resorption", (Co-Investigator), 1991-1992.

Wenner Gren Foundation, for "Growth and Development of Human Limb Bones", (Principal Investigator), 1/1/87 - 12/31/87.

LSB Leakey Foundation, for "Skeletal Analysis and Biomechanics of Gombe Chimpanzees", (Co-Principal Investigator), 1/1/86-9/30/86.

Past - Industry

Roche Diagnostics for “Association between bone turnover markers and level of cognition in older community dwelling individuals with memory concerns” (Principal Investigator), 7/1/2015 to 6/30/2016

Amgen, for “Use of Anti-Sclerostin Antibody to Enhance Implant Fixation in the Rat OVX Model”, (Co-Principal Investigator), 12/1/2008 to 6/30/2014 (200812771)

Amgen, for “Use of Anti-Sclerostin Antibody to Enhance Intramembranous Bone Formation and Implant Fixation in the Rat”, (Principal Investigator), 1/1/2008 to 12/31/2008 (200716350)

OrthoLogic Corporation, for “Use of TP508 to Enhance Bone Regeneration in the Presence of an Implant in a Rat Model”, (PI), 1/1/05 to 12/31/07

Depuy Corporation, for “Use of a Novel Calcium Phosphate Coating to Enhance Implant Fixation in a Canine Model”, (PI), 10/1/03 to 12/31/07

Affinergy, Inc., for “Use of Affinergy technology to enhance bone regeneration”, (PI), 1/1/06 to 12/31/06

Etex Corporation, for "Use of a Bone Graft Substitute in a Canine Model", (Co-Principal Investigator), 3/1/00 to 9/30/01.

Depuy, Inc., for “Prospective Study of Periprosthetic Bone Loss following Total Hip Replacement with Dual Energy X-ray Absorptiometry (DXA) and Gait Analysis”, (Co-Investigator), 2/1/97-1/31/00.

Zimmer, Inc., for “Change in Bone Mass in the Proximal Tibia following Cemented Total Knee Arthroplasty: a Randomized, Prospective Study”, (Co-Principal Investigator), 4/1/96 to 3/31/97.

Intermedics Corp., for "Comparison of the Effects of Implants of Low-Temperature Isotropic Pyrolytic Carbon and Cobalt-Chromium-Molybdenum Alloy on Articular Cartilage and Bone after Hemiarthroplasty", (Co-Principal Investigator), 7/1/93-12/30/96.

Zimmer, Inc., for "Growth Factor Enhanced Bone Repair", (Principal Investigator), 5/1/95 to 4/30/96.

Bristol-Myers Squibb/Zimmer Institutional Grant for Excellence in Orthopaedic Research, "Mechanical-Biological Interactions in the Etiology and Treatment of Joint Diseases", (Co-Principal Investigator), 3/1/90-2/28/95.

Implex Corp., for "Evaluation of Tantalum Foam for Bone Ingrowth Fixation", (Co-Investigator), 11/1/92 to 8/30/94.

Upjohn Company, for "Role of Flurbiprofen in Early Bone Ingrowth", (Principal Investigator), 1991-1992.

Norian Corp., for "Histological Evaluation of Osteoconductive Materials", (Principal Investigator), 9/1/90 to 8/31/91.

Past – Rush pilot grants

Rush Translational Sciences Consortium for “Bone Mineralization Pilot Project” (Principal Investigator), 8/1/2013 to 6/30/2015

UCR, for “Application of a Non-Destructive Test to Measure Implant Fixation in the Bone”, (Co-Investigator), 1/15/97-1/14/98.

UCR, for "Bone Healing in Osteoporosis", (Co-Investigator), 1/15/95 to 1/14/96.

BRSG, for "Development of a Method for Evaluating Bone Response to Mechanical Stimulus In Vivo, (Principal Investigator), 7/1/85 6/30/86.

TEACHING ACTIVITIES

Courses Taught

1978 - 1982	Various courses in Anthropology and General Biology (University of Arizona)
1985 - 1987	Human Gross Anatomy (Department of Oral Anatomy, University of IL - Chicago)
1986 – 2007	Orthopedic Residency Program Core Curriculum (2 - 3 lectures per year)
1995 – 2007	Human Gross Anatomy (Department of Anatomy & Cell Biology, Rush Medical College)
2013 – 2014	Proseminar in Skeletal Biology (Department of Anatomy & Cell Biology, Graduate College)
2014	Human Gross Anatomy (Department of Anatomy & Cell Biology, Rush Medical College)

Graduate Student Advising (* indicates publication or peer-review abstract)

Amy Yang*, M.S., 1989 University of Illinois at Chicago. Thesis: "A Study of the Relative Tangential Displacements at the Knee Joint Bone-Interface." (major advisor)

Scott Choi*, M.S. 1991, University of Illinois at Chicago. Thesis topic: "Automated Measurement of Cancellous Bone Architecture." (major advisor)

Robert Mucci, Ph.D., 1992, University of lllinois at Chicago. Thesis topic: "Diaphyseal Bone Remodeling as a Function of Mechanical Factors." (thesis committee)

Ruben Igloria*, M.S., 1994, University of Illinois at Chicago, Thesis topic: "Analysis of Femoral Bone Strain under Loads." (major advisor)

Alberta Smith*, M.S., 1994 , Chicago State, Thesis topic: "Tibial Bone Mineral Content Following Total Knee Arthroplasty". (major advisor)

Yi Xiawene, 1994, dissertation committee, Department of Biochemistry, Rush University.

Aloma D'Souza, Ph.D. 1996-2001, Department of Biochemistry, Rush University, doctoral thesis committee.

Kirsten Moisio*, 1998-2002, Department of Anatomy, Rush University, Ph.D. Thesis topic: "The Relationship between Femoral Bone Mineral Density and

Hip Joint Loads in Osteoarthritis" (major advisor)

Judd Day*, 1999-2005, Department of Orthopedic Surgery, Erasmus University of Rotterdam, doctoral committee member

Charis Merrihew, 1999-2002, Department of Biochemistry, Rush University, doctoral thesis committee.

Eileen Broderick*, 2000-2002, Department of Anatomy, Rush University, M.S. Thesis topic: "Development of a Quantitative Method to Analyze the Effects of TGF-ß on Bone Mineralization Using Backscattered Scanning Electron Microscopy" (major advisor)

Aladino DeRanieri*, 1999-2001, Department of Anatomy, Rush University, master's thesis committee
2001-2004, major advisor for doctoral degree

Joel Rieff, 2001-2003, Department of Anatomy, Rush University, master's thesis committee

Paul Clark*, 2001-2006, Department of Bioengineering, University of Illinois at Chicago, PhD committee

Shane Nho, 2002-2003, Department of Anatomy, Rush University, master's thesis committee

David Gomez*, 2002-2004, Department of Anatomy & Cell Biology, Rush University, M.S. thesis topic: "Hard Tissue Changes during the Consolidation Period after Vertical Mandibular Distraction. A Canine Pilot Study" (major advisor)

Shadi Othman*, 2002-2004, Department of Bioengineering, University of Illinois at Chicago, PhD committee

Anna Lisa Somera, 2002-2004, Department of Anatomy & Cell Biology, Rush University, M.S. committee

Laura Thorp*, 2002-2006, Department of Anatomy & Cell Biology, Rush University, PhD Thesis topic: "Joint Loading, Bone Density and Osteoarthritis" (major advisor)

Gregory Yorek, 2005-2006, Department of Bioengineering, University of Illinois at Chicago, PhD committee

Amit Ailiani*, 2003-2005, Department of Bioengineering, University of Illinois at Chicago, M.S. Thesis topic: "Metal Induced Artifacts and micro Computed Tomography" (major advisor)

Shuo Liu*, 2005-2010, Department of Anatomy & Cell Biology, Rush University, PhD Thesis topic area: implant fixation (major advisor)

Eduardo Mioli*, 2005-2006, Department of Bioengineering, University of Illinois at Chicago, PhD committee

Ankush Bhatia*, 2007-2009, Department of Anatomy & Cell Biology, Rush University, MS/MD, Thesis topic area: evaluation of mouse transgenic models by microCT and mechanical testing (major advisor)

Allan Taaca, MD, 2007-2008, Department of Anatomy & Cell Biology, Rush University, MS, Thesis topic area: evaluation of local mineral density by infrared imaging and backscatter scanning electron microscopy (major advisor)

Naomi Kotwal*, 2008-2010, Department of Bioengineering, University of Illinois at Chicago, MS thesis topic area: imaging mouse articular cartilage with microCT (major advisor)

Lindsey Edwards*, 2008-2009, Department of Anatomy & Cell Biology, Rush University, MS, Thesis topic area: backscatter scanning electron microscopy assessment of bone mineral density with sclerostin antibody treatment (major advisor)

Feifei Li*, MD, 2009-2010, Department of Pathophysiology, Anhui Medical University, PhD, Thesis topics: tumor growth and hypertrophic chondrocyte-specific Col10a1 expression (committee member)

Sid Angle*, 2007-2011, Department of Bioengineering, University of Illinois at Chicago, MS and PhD topics: ultrasound and BMP-2 stimulation of bone repair (committee member)

John Irish*, 2010-2011, Department of Anatomy & Cell Biology, Rush University, MS, Thesis topic area: peri-implant dynamic histomorphometry with sclerostin antibody treatment (major advisor)

Rachna Parwani*, 2011-2013, Department of Bioengineering, University of Illinois at Chicago, MS thesis topic area: imaging the bone-implant interface with microCT (major advisor)

Varun Bhatia, 2012-2014, Department of Bioengineering, University of Illinois at Chicago, PhD topic area: bone adaptation in human subjects (committee member)

Josh Padovano, 2012 -2017, Department of Bioengineering, University of Illinois at Chicago, PhD topic area: DMP1 and bone phenotype (committee member, NIH F30 grant advisory committee)

Maleeha Mashiatulla*, 2013-2017, Department of Bioengineering, University of Illinois at Chicago, PhD thesis topic area: bone mineralization (major advisor). Winner of a 2017 Alice L. Jee Young Investigator Award to attend the ORS 47th International Musculoskeletal Biology Workshop at Sun Valley.

Georgia Wai Thi Lau, DDS, 2013-2014, Graduate Program in Dentistry (Orthodontics) of the Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil (visiting PhD student), project area: microCT imaging of dental implants (major advisor at Rush)

Brittany Wilson, 2015-, Department of Anatomy & Cell Biology, Rush University, PhD, Thesis topic area: biomarkers for particle-induced peri-implant osteolysis (major advisor)

Medical Student Research Advising (* indicates publication or peer-review abstract)

Craig Olson*, 1986, "Computed Tomography of the Human Femur"

Terry Devlin*, 1987, "Canine Femoral Geometry"

Ken Pierce, 1987, "Implant Retrieval Analysis"

Alex Lipowicz, 1987, "Implant Retrieval Analysis"

Vicki Mazzorana, 1988, "Implant Retrieval Analysis"

Jim Bryan*, 1988, "SEM Measurement of Bone"

Dan Winkleman*, 1988, "Canine Femoral Geometry"

Greg Konrath*, 1990, "Tibial Bone Changes Following THR"

Sohel Majeed, 1990, "Human Femoral and Humeral Geometry"

Amod Paranjpe, 1991, "Medullary Bone Density in Revision Arthroplasty"

Raied Abdullah, 1991, "Tibial Bone Changes Following ACL Transection"

Dave Dawson*, 1992, "Bone Ingrowth in Cementless TKR"

Frank Gentile, 1992, "Tibial and Femoral Bone Mineral Changes Following TKR"

Mark Stewart*, 1993, "Change in Trabecular Archictecture Following

TKR"

Allison Sihlanek, 1993, "Changes in Tibial Bone Mineral Content Following Cementless THR"

Traci Pritchard*, 1993, "rhBMP-2 Induced Bone Formation"

Bavesh Shah*, 1994, "Mechanical Testing of Humeral Implants with Varied Length-to-Diameter Ratios"

Christopher Funk*, 1995, “Bone Mineral Content of the Tibia Measured by Dual Energy X-ray Absorptiometry”

Boris Raginsky*, 1995, “Periprosthetic Changes in Bone Mass Measured by Dual Energy X-ray Absorptiometry”

Mark Stewart*, 1995-1996, “Prospective Changes in Bone Mineral Content Following Total Hip Arthroplasty” (Fellowship Program in Academic Medicine for Minority Students, sponsored by Bristol-Meyers Squibb)

Kevin Fagan, 1996, “Architecture of Growth Factor -Enhanced Healing Bone”

Galina Podolskaya*, 1996, “Bone Mineral Content and Mechanical Properties of Bone in a Model of Aging”

Frank Rottier*, 1996, “Relationship between Tibial Bone Mineral Content and Loads at the Knee Joint”

Brad Bernadini, 1996, “Relationship between Tibial Bone Mineral Content and Limb Usage in Experimental Models”

Jason Browdy, 1997, “Joint Loads and Contact Stress in the Knee and Ankle”

Brett Barnhart, 1997, “Relationship Between Bone Density And Mechanical Properties Of Bone”

Keith Minihane*, 1997, “Correlation Between Degenerative Changes Of Acetabular Cartilage And Remodeling Of Underlying Bone”

David Guhl, 1997, “Enhancement of Bone Regeneration”

Thomas Shin, 1997, “Bone Density and Osteoarthritis”

Eugene Kuo, 1998, “Bone Regeneration”

Alizaline Bradley, 1999, “Bone Histomorphometry”

Phillip LoSavio*, 1999, “Bone Histomorphometry”

Christian Malalis, 2006, “Bone Implant Contact by microCT”

Christopher Ripperda, 2007, “Histology of Bone Regeneration”

Joe Broucek*, 2008, “Peri-implant Histomorphometry”

Neil Kamdar, 2008, “Cartilage Imaging with microCT”

Jim Maletich*, 2008, “Trabecular Bone Mechanical Properties in Transgenic Mice”

Devin Mehta, 2009, “Mechanical Testing of Bone and Implants”

John Irish*, 2009 - 2010, “Dynamic Histomorphometry and Bone Implants”

George Michael, 2011, “microCT analysis of mouse and rat models”

Mark Mudarth, 2012, “$CD26^{-/-}$ model bone phenotyping”

Cristian Ramirez, 2012-2013, “Bone Regeneration in Different Mice Strains”

Steve Mazzone, 2014-2015, “Genetics and Bone Regeneration”

Kyle Anderson, 2016-2017, “Bone Heterogeneity”

Post-Doctoral Advising (* indicates publication or peer-review abstract)

Ray Pierson*, M.D., Temple University, 1986-87, "Effects of Radiation Treatment on Bone Ingrowth"

Josh Jacobs*, M.D., Rush University, 1987-1988, "Implant Retrieval Analysis"

Horace Caviglio*, M.D., University of Buenos Aires, 1988, "Implant Retrieval Analysis"

Chuck Platz*, M.D., University of Iowa, 1988-1989, "Tibial Bone Mineral Content and Bone Ingrowth"

Heino Kienapfel*, M.D., Rurecht-Karls Universitaet Heidelberg, 1988-1990, "Enhancement of Bone Ingrowth"

Charlotte Goethgen*, M.D., University of Aarhus, Denmark, 1988-1990, "Mechanical Factors and Bone Ingrowth"

Aivars Berzins*, M.D., Latvian Scientific Research Institute of

Traumatology and Orthopedics, Riga, Latvia, 1990-1993, "Femoral Stem Stability".

Geoff Tompkins*, M.D., UCLA, 1992-1993 "Periprosthetic Bone Loss Following Cementless THR"

Jim Bryan*, M.D., Rush Medical College, 1993 "Correlation of Gait and Periprosthetic Bone Loss Following Cementless THR

Harrie Weinans*, Ph.D., University of Nijmegen, 1994-1995 "Adaptvie Bone Remodeling Theory Applied to Total Joint Replacement"

Richard Berger, M.D., University of Pittsburg, 1995-1996 “Bone Mineral Changes in the Proximal Tibia following Total Knee Replacement”

Rod Bruno*, M.D., University of Cincinati, 1996 “Development of a rat model of bone regeneration” and “Retrospective Analysis of Periprosthetic Bone Loss following Cementless Total Hip Arthroplasty”

Ingemar Önsten*, M.D., Ph.D., 1997-1998, Lund University, “Models of Bone Regeneration”

Shinji Kuroda*, D.D.S., Ph.D., 2001-2003, Tokyo Medical and Dental University, “Gene Expression in Bone Regeneration”

Eduardo Franzotti Sant’Anna*, D.D.S., 2002-2004, Federal University of Rio de Janeiro, “Analysis of the Temporal Mandibular Joint following Distraction Osteogenesis”

Kotaro Sena*, D.D.S., Ph.D., 2003-2006, Tokyo Medical and Dental University, “Enhancement of Bone Regeneration”

Allan Taaca, MD, 2007-2008, Rush Medical College, “Qualitative Assessment of Enhanced Bone Regeneration”

Joel Wise*, PhD, 2008-2011, University of Illinois at Chicago, “Mobilizing MSCs” (co-sponsor)

Margaret McNulty*, PhD, 2010-2012, University of Minnesota, “Using Mobilized Stem Cells to Enhance Bone Regeneration”

Ryan Ross*, PhD, 2011-2016, University of Notre Dame, “Sclerostin antibody Effects on Bone Material Properties”

- 2013 ASBMR Young Investigator Travel Grant
- 2015/2016 ORS/OREF Post-doctoral fellowship awardee

Meghan Moran*, PhD, 2012-present, Northeast Ohio Medical University, “Genetics of Bone Regeneration”

Mathew Meagher, PhD, 2015-present, University of Notre Dame, “Bone Quality”

Undergraduate Student Advising (* indicates publication or peer-review abstract)

Brett Searles, B.S. 1990, University of Illinois at Chicago, "Bioengineering Senior Design Project"

Ted Willke*, University of Illinois at Chicago, 1991-1993, "Mechanical Testing of Bone and Prostheses"

Gerlinde Goelzhaeuser, Fachhochschule Muenchen, Germany, 1997, “Development Of An Automated Technique For Analysis Of ‘Wear’ In Plain Radiographs From Total Hip Arthroplasty”

Wilco Jacobs, University of Nijmegen, Holland, 1997, “Bone Remodeling and Total Hip Replacement”

Peer mentoring

Tolou Shokuhfar, PhD, Assistant Professor in Bioengineering at the University of Illinois at Chicago, for the Bone and Joint Young Investigator Initiative Career Development and Grant Mentoring Program, 2017 -

HONORS AND AWARDS

B.A. with special distinction and honors

Sigma Xi Grant-in-Aid (thesis research)

PHS National Research Service Award (1984-1987)

NIH First Award (1989-1994)

European Society of Biomechanics Research Award (1992)

Orthopaedic Research Society and the American Academy of Orthopaedic Surgeons Kappa Delta Young Investigator Award (1993)

Hip Society Otto Aufranc Award (1994)

Mentor for The Fellowship Program in Academic Medicine for Minority Students, Bristol-Meyers Squibb (1995-1996)

RIB (Remodeling in Bone) Award, Sun Valley International Hard Tissue Workshop (2001)

Award for Exceptional Research Mentoring, The Graduate College of Rush University, June 6, 2002

"Hooder" for masters of science students at the Rush University Commencement Ceremony (selected by the graduating students), June 8, 2002

Exceptional Mentor Award, The Graduate College of Rush University as chosen by the graduate students, June 12, 2008

Excellence in Teaching Award, The Graduate College of Rush University as chosen by the graduate students, June 10, 2010

“Hooder” for graduating Doctor of Philosophy students at the Rush University Commencement Ceremony (selected by the graduate students), June 12, 2010

Rush Postdoc Society Mentor of the Year, August 5, 2015

Elected as a fellow of the American Association of Anatomists, February 2017

COMMITTEE AND ADMINISTRATIVE SERVICES

Rush University committees and task forces

University Committee for Research, alternate member (1995)

University Committee for Research (1996 - 2002)
--Chair (2001-2002)

Task Force on the form of the Rush Research Report (1996 - 1998)

Faculty Advisory Committee (1998 – present)

Education/Research Workgroup (2002)

Conflict of Interest Committee (2002 – present)

Scientific Integrity Committee (2007 – present)
Chair

Chair, Search Committee for the Dean of the Graduate College (2004)

Research Space Committee (2006 – present)

Task Force for Capital Equipment for Translational Research (2006 – present)

Chair, Faculty Committee on Core Resources (2009 – present)

Scientific Leadership Council (2007 – present)

Medical Computational Sciences Director search committee (2010)

Rush University Cancer Center, Internal Advisory Board (2011 – present)

Intellectual Property Committee (2012 – 2013)

Rush Medical College committees and task forces

Cancer Center Bioinformatics Director search committee (2010)

Chair, Behavioral Science Department new chair search committee (2007)

Rush Medical College admissions interviewing (1986 – 1989, 2005 - 2009)

Committee on Academic Freedom member (1991-1993)

Task Force on Industry-Academic Relationships (1997 - 1999)

Research Council (2005 – 2009)

Medical Affairs Management Committee (1997 – 2005, 2010 - present)

Committee on Committees (1998 – 2001, 2002 to 2006)

Ad hoc committee on Research Space Assignment (1999 – 2000)

Committee on Senior Faculty Appointments (2000 – 2003, 2006-2010)
--Secretary (2001 -- 2003)

Research Affairs Management Committee (2001 -- 2009)

Biochemistry Chair search (2001)

Diagnostic Radiology Chair search (2003-2004)

LCME Education Resources Task Force (2003-2004)

Faculty Council (2008 – 2011)

Physiology Chair search (2014-2015)

Task force on Basic Science Organization, co-chair (2015-2016)

General Surgery Chair search (2016)

Review of Department of Immunity & Emerging Pathogens (2017)

Departmental committees and task forces

Residency Selection Committee member (Department of Orthopedic Surgery, 1993-1999)

Department of Orthopedic Surgery Advisory Committee (1996 – present)

PATENT

Patent Number 7,674,477: "Bone & Tissue Scaffold for Delivery of Therapeutic Agents" (co-inventor with Steven Schmid and Glen Niebur)

PAPERS PUBLISHED
(Peer Reviewed)

1. **Sumner** DR, Jr. Postembryonic dimensional allometry of the human femur. Am J Phys Anthropol. 1984;64(1):69-74.
2. **Sumner** DR, Mockbee B, Morse K, Cram T, Pitt M. Computed tomography and automated image analysis of prehistoric femora. Am J Phys Anthropol. 1985;68(2):225-32.
3. Turner TM, **Sumner** DR, Urban RM, Rivero DP, Galante JO. A comparative study of porous coatings in a weight-bearing total hip-arthroplasty model. J Bone Joint Surg Am. 1986;68(9):1396-409.
4. Galante J, **Sumner** DR, Gachter A. [Surface structures and bone ingrowth in cement-free fixed prostheses]. Orthopade. 1987;16(3):197-205.
5. **Sumner** DR, Turner TM, Galante JO. Symmetry of the canine femur: implications for experimental sample size requirements. J Orthop Res. 1988;6(5):758-65.
6. **Sumner** DR, Morbeck ME, Lobick JJ. Apparent age-related bone loss among adult female Gombe chimpanzees. Am J Phys Anthropol. 1989;79(2):225-34.
7. **Sumner** DR, Olson CL, Freeman PM, Lobick JJ, Andriacchi TP. Computed tomographic measurement of cortical bone geometry. J Biomech. 1989;22(6-7):649-53.

8. Turner TM, Urban RM, **Sumner** DR, Skipor AK, Galante JO. Bone ingrowth into the tibial component of a canine total condylar knee replacement prosthesis. J Orthop Res. 1989;7(6):893-901.
9. **Sumner** DR, Bryan JM, Urban RM, Kuszak JR. Measuring the volume fraction of bone ingrowth: a comparison of three techniques. J Orthop Res. 1990;8(3):448-52.
10. **Sumner** DR, Jr., Devlin TC, Winkelman D, Turner TM. The geometry of the adult canine proximal femur. J Orthop Res. 1990;8(5):671-7.
11. **Sumner** DR, Turner TM, Pierson RH, Kienapfel H, Urban RM, Liebner EJ, Galante JO. Effects of radiation on fixation of non-cemented porous-coated implants in a canine model. J Bone Joint Surg Am. 1990;72(10):1527-33.
12. Goethgen CB, **Sumner** DR, Platz C, Turner TM, Galante JO. Changes in tibial bone mass after primary cementless and revision cementless total hip arthroplasty in canine models. J Orthop Res. 1991;9(6):820-7.
13. Jacobs JJ, Galante JO, **Sumner** DR. Local response to biomaterials: bone loss in cementless femoral stems. Instr Course Lect. 1992;41:119-25.
14. Kienapfel H, **Sumner** DR, Turner TM, Urban RM, Galante JO. Efficacy of autograft and freeze-dried allograft to enhance fixation of porous coated implants in the presence of interface gaps. J Orthop Res. 1992;10(3):423-33.
15. **Sumner** DR, Galante JO. Bone remodeling in experimental total hip arthroplasty. Chir Organi Mov. 1992;77(4):413-23.
16. **Sumner** DR, Galante JO. Determinants of stress shielding: design versus materials versus interface. Clin Orthop Relat Res. 1992(274):202-12.
17. **Sumner** DR, Turner TM, Urban RM, Galante JO. Experimental studies of bone remodeling in total hip arthroplasty. Clin Orthop Relat Res. 1992(276):83-90.
18. **Sumner** DR, Turner TM, Urban RM, Galante JO. Remodeling and ingrowth of bone at two years in a canine cementless total hip-arthroplasty model. J Bone Joint Surg Am. 1992;74(2):239-50.
19. Berzins A, **Sumner** DR, Andriacchi TP, Galante JO. Stem curvature and load angle influence the initial relative bone-implant motion of cementless femoral stems. J Orthop Res. 1993;11(5):758-69.
20. Jacobs JJ, **Sumner** DR, Galante JO. Mechanisms of bone loss associated with total hip replacement. Orthop Clin North Am. 1993;24(4):583-90.
21. Padgett DE, Kull L, Rosenberg A, **Sumner** DR, Galante JO. Revision of the acetabular component without cement after total hip arthroplasty. Three to six-year follow-up. J Bone Joint Surg Am. 1993;75(5):663-73.
22. Pidhorz LE, Urban RM, Jacobs JJ, **Sumner** DR, Galante JO. A quantitative study of bone and soft tissues in cementless porous-coated acetabular components retrieved at autopsy. J Arthroplasty. 1993;8(2):213-25.
23. Pidhorz LE, Urban RM, Jacobs JJ, **Sumner** DR, Galante JO. [Histological study of the porous coating of the uncemented acetabulum. Apropos of 11 implants removed at autopsy]. Chirurgie. 1993;119(6-7):334-9.
24. **Sumner** DR, Jasty M, Jacobs JJ, Urban RM, Bragdon CR, Harris WH, Galante JO. Histology of porous-coated acetabular components. 25 cementless cups retrieved after arthroplasty. Acta Orthop Scand. 1993;64(6):619-26.
25. Turner TM, Urban RM, **Sumner** DR, Galante JO. Revision, without cement, of aseptically loose, cemented total hip prostheses. Quantitative comparison of the effects of four types of medullary treatment on bone ingrowth in a canine model. J Bone Joint Surg Am. 1993;75(6):845-62.

26. Van Rietbergen B, Huiskes R, Weinans H, **Sumner** DR, Turner TM, Galante JO. ESB Research Award 1992. The mechanism of bone remodeling and resorption around press-fitted THA stems. J Biomech. 1993;26(4-5):369-82.
27. Weinans H, Huiskes R, van Rietbergen B, **Sumner** DR, Turner TM, Galante JO. Adaptive bone remodeling around bonded noncemented total hip arthroplasty: a comparison between animal experiments and computer simulation. J Orthop Res. 1993;11(4):500-13.
28. Berzins A, **Sumner** DR, Turner TM, Natarajan R. Effects of fixation technique on displacement incompatibilities at the bone-implant interface in cementless total knee replacement in a canine model. J Appl Biomater. 1994;5(4):349-52.
29. Johnson AW, Smittle DA, **Sumner** DR, Glaze NC. Efficacy and Compatibility for Fenamiphos and EPTC Applied in Irrigation Water for Nematode and Weed Control in Snapbean Production. J Nematol. 1994;26(4 Suppl):690-6.
30. **Sumner** DR, Berzins A, Turner TM, Igloria R, Natarajan RN. Initial in vitro stability of the tibial component in a canine model of cementless total knee replacement. J Biomech. 1994;27(7):929-39.
31. **Sumner** DR, Turner TM, Dawson D, Rosenberg AG, Urban RM, Galante JO. Effect of pegs and screws on bone ingrowth in cementless total knee arthroplasty. Clin Orthop Relat Res. 1994(309):150-5.
32. **Sumner** DR, Willke TL, Berzins A, Turner TM. Distribution of Young's modulus in the cancellous bone of the proximal canine tibia. J Biomech. 1994;27(8):1095-9.
33. Bobyn JD, Jacobs JJ, Tanzer M, Urban RM, Aribindi R, **Sumner** DR, Turner TM, Brooks CE. The susceptibility of smooth implant surfaces to periimplant fibrosis and migration of polyethylene wear debris. Clin Orthop Relat Res. 1995(311):21-39.
34. Boden SD, **Sumner** DR. Biologic factors affecting spinal fusion and bone regeneration. Spine (Phila Pa 1976). 1995;20(24 Suppl):102S-12S.
35. Boden SD, **Sumner** DR, Andersson GB, Fraser RD, Garfin SR, Goel VK, Hanley EN, Jr., Katz JN, Pope MH, Sonntag VK, et al. Biologic issues in lumbar spinal fusion. Introduction. 1995 Focus Issue Meeting on Fusion. Spine (Phila Pa 1976). 1995;20(24 Suppl):100S-1S.
36. Pope MH, Goel VK, **Sumner** DR, Andersson GB, Boden SD, Fraser RD, Garfin SR, Hanley EN, Jr., Katz JN, Sonntag VK, et al. Biomechanics introduction. 1995 Focus Issue Meeting on Fusion. Spine (Phila Pa 1976). 1995;20(24 Suppl):84S.
37. **Sumner** DR, Kienapfel H, Jacobs JJ, Urban RM, Turner TM, Galante JO. Bone ingrowth and wear debris in well-fixed cementless porous-coated tibial components removed from patients. J Arthroplasty. 1995;10(2):157-67.
38. **Sumner** DR, Turner TM, Purchio AF, Gombotz WR, Urban RM, Galante JO. Enhancement of bone ingrowth by transforming growth factor-beta. J Bone Joint Surg Am. 1995;77(8):1135-47.
39. Berzins A, **Sumner** DR, Wasielewski RC, Galante JO. Impacted particulate allograft for femoral revision total hip arthroplasty. In vitro mechanical stability and effects of cement pressurization. J Arthroplasty. 1996;11(5):500-6.
40. Bryan JM, **Sumner** DR, Hurwitz DE, Tompkins GS, Andriacchi TP, Galante JO. Altered load history affects periprosthetic bone loss following cementless total hip arthroplasty. J Orthop Res. 1996;14(5):762-8.
41. Glant TT, Jacobs JJ, Mikecz K, Yao J, Chubinskaja S, Williams JM, Urban RL, Shanbhag AS, Lee SH, **Sumner** DR. Particulate-Induced, Prostaglandin- and Cytokine-Mediated Bone Resorption in an Experimental System and in Failed Joint Replacements. Am J Ther. 1996;3(1):27-41.

42. Johnson AW, Wauchope RD, **Sumner** DR. Effect of simulated rainfall on efficacy and leaching of two formulations of fenamiphos. J Nematol. 1996;28(3):379-88.
43. Smith AM, Turner TM, **Sumner** DR. Unilateral hip replacement causes bilateral changes in tibial bone mineral content in a canine model. J Bone Miner Res. 1996;11(5):693-6.
44. **Sumner** DR, Andriacchi TP. Adaptation to differential loading: comparison of growth-related changes in cross-sectional properties of the human femur and humerus. Bone. 1996;19(2):121-6.
45. Urban RM, Jacobs JJ, **Sumner** DR, Peters CL, Voss FR, Galante JO. The bone-implant interface of femoral stems with non-circumferential porous coating. J Bone Joint Surg Am. 1996;78(7):1068-81.
46. Berzins A, Shah B, Weinans H, **Sumner** DR. Nondestructive measurements of implant-bone interface shear modulus and effects of implant geometry in pull-out tests. J Biomed Mater Res. 1997;34(3):337-40.
47. Cole BJ, Bostrom MP, Pritchard TL, **Sumner** DR, Tomin E, Lane JM, Weiland AJ. Use of bone morphogenetic protein 2 on ectopic porous coated implants in the rat. Clin Orthop Relat Res. 1997(345):219-28.
48. Turner TM, **Sumner** DR, Urban RM, Igloria R, Galante JO. Maintenance of proximal cortical bone with use of a less stiff femoral component in hemiarthroplasty of the hip without cement. An investigation in a canine model at six months and two years. J Bone Joint Surg Am. 1997;79(9):1381-90.
49. Weinans H, **Sumner** DR. Finite Element analyses to study periprosthetic bone adaptation. Stud Health Technol Inform. 1997;40:3-16.
50. Bareither D, Manion BL, **Sumner** DR, Berzins A, Albright TB, Rottier F, Muehleman C. Relationship between articular cartilage damage and bone density in the first metatarsal. J Foot Ankle Surg. 1998;37(5):401-9.
51. Berzins A, **Sumner** DR, Galante JO. Dimensional characteristics of uncomplicated autopsy-retrieved acetabular polyethylene liners by ultrasound. J Biomed Mater Res. 1998;39(1):120-9.
52. Golzhauser G, Wimmer MA, Berzins A, **Sumner** DR, Scheuvens BJ, Schneider E. [Development and validation of a method for wear measurement of polyethylene hip acetabulum with metal backing using roentgen images]. Biomed Tech (Berl). 1998;43 Suppl:66-7.
53. Hurwitz DE, Foucher KC, **Sumner** DR, Andriacchi TP, Rosenberg AG, Galante JO. Hip motion and moments during gait relate directly to proximal femoral bone mineral density in patients with hip osteoarthritis. J Biomech. 1998;31(10):919-25.
54. Hurwitz DE, **Sumner** DR, Andriacchi TP, Sugar DA. Dynamic knee loads during gait predict proximal tibial bone distribution. J Biomech. 1998;31(5):423-30.
55. **Sumner** DR, Turner TM, Igloria R, Urban RM, Galante JO. Functional adaptation and ingrowth of bone vary as a function of hip implant stiffness. J Biomech. 1998;31(10):909-17.
56. Bruno RJ, Sauer PA, Rosenberg AG, Block J, **Sumner** DR. The pattern of bone mineral density in the proximal femur and radiographic signs of early joint degeneration. J Rheumatol. 1999;26(3):636-40.
57. Day JS, Ding M, Odgaard A, **Sumner** DR, Hvid I, Weinans H. Parallel plate model for trabecular bone exhibits volume fraction-dependent bias. Bone. 2000;27(5):715-20.

58. Goker B, **Sumner** DR, Hurwitz DE, Block JA. Bone mineral density varies as a function of the rate of joint space narrowing in the hip. J Rheumatol. 2000;27(3):735-8.
59. Muehleman C, Lidtke R, Berzins A, Becker JH, Shott S, **Sumner** DR. Contributions of bone density and geometry to the strength of the human second metatarsal. Bone. 2000;27(5):709-14.
60. Weinans H, **Sumner** DR, Igloria R, Natarajan RN. Sensitivity of periprosthetic stress-shielding to load and the bone density-modulus relationship in subject-specific finite element models. J Biomech. 2000;33(7):809-17.
61. Bruno RJ, Cohen MS, Berzins A, **Sumner** DR. Bone graft harvesting from the distal radius, olecranon, and iliac crest: a quantitative analysis. J Hand Surg Am. 2001;26(1):135-41.
62. Day JS, Ding M, van der Linden JC, Hvid I, **Sumner** DR, Weinans H. A decreased subchondral trabecular bone tissue elastic modulus is associated with pre-arthritic cartilage damage. J Orthop Res. 2001;19(5):914-8.
63. Elliott ML, Des Jardin EA, Batson WE, Jr., Caceres J, Brannen PM, Howell CR, Benson DM, Conway KE, Rothrock CS, Schneider RW, Ownley BH, Canaday CH, Keinath AP, Huber DM, **Sumner** DR, Motsenbocker CE, Thaxton PM, Cubeta MA, Adams PD, et al. Viability and stability of biological control agents on cotton and snap bean seeds. Pest Manag Sci. 2001;57(8):695-706.
64. Hurwitz DE, **Sumner** DR, Block JA. Bone density, dynamic joint loading and joint degeneration. A review. Cells Tissues Organs. 2001;169(3):201-9.
65. Onsten I, Berzins A, Shott S, **Sumner** DR. Accuracy and precision of radiostereometric analysis in the measurement of THR femoral component translations: human and canine in vitro models. J Orthop Res. 2001;19(6):1162-7.
66. **Sumner** DR, Turner TM, Urban RM. Animal models relevant to cementless joint replacement. J Musculoskelet Neuronal Interact. 2001;1(4):333-45.
67. **Sumner** DR, Turner TM, Urban RM, Leven RM, Hawkins M, Nichols EH, McPherson JM, Galante JO. Locally delivered rhTGF-beta2 enhances bone ingrowth and bone regeneration at local and remote sites of skeletal injury. J Orthop Res. 2001;19(1):85-94.
68. Muehleman C, Berzins A, Koepp H, Eger W, Cole AA, Kuettner KE, **Sumner** DR. Bone density of the human talus does not increase with the cartilage degeneration score. Anat Rec. 2002;266(2):81-6.
69. Muehleman C, Green J, Williams JM, Kuettner KE, Thonar EJ, **Sumner** DR. The effect of bone remodeling inhibition by zoledronic acid in an animal model of cartilage matrix damage. Osteoarthritis Cartilage. 2002;10(3):226-33.
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71. Ding M, Day JS, Burr DB, Mashiba T, Hirano T, Weinans H, **Sumner** DR, Hvid I. Canine cancellous bone microarchitecture after one year of high-dose bisphosphonates. Calcif Tissue Int. 2003;72(6):737-44.
72. Liu W, Burton-Wurster N, Glant TT, Tashman S, **Sumner** DR, Kamath RV, Lust G, Kimura JH, Cs-Szabo G. Spontaneous and experimental osteoarthritis in dog: similarities and differences in proteoglycan levels. J Orthop Res. 2003;21(4):730-7.
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74. Moisio KC, **Sumner** DR, Shott S, Hurwitz DE. Normalization of joint moments during gait: a comparison of two techniques. J Biomech. 2003;36(4):599-603.
75. Padgett DE, Holley KG, Cummings M, Rosenberg AG, **Sumner** DR, Conterato D, Galante JO. The efficacy of 500 CentiGray radiation in the prevention of heterotopic ossification after total hip arthroplasty: a prospective, randomized, pilot study. J Arthroplasty. 2003;18(6):677-86.
76. Raudenbush D, **Sumner** DR, Panchal PM, Muehleman C. Subchondral thickness does not vary with cartilage degeneration on the metatarsal. J Am Podiatr Med Assoc. 2003;93(2):104-10.
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81. Kuroda S, Virdi AS, Li P, Healy KE, **Sumner** DR. A low-temperature biomimetic calcium phosphate surface enhances early implant fixation in a rat model. J Biomed Mater Res A. 2004;70(1):66-73.
82. Leven RM, Virdi AS, **Sumner** DR. Patterns of gene expression in rat bone marrow stromal cells cultured on titanium alloy discs of different roughness. J Biomed Mater Res A. 2004;70(3):391-401.
83. Moisio KC, Hurwitz DE, **Sumner** DR. Dynamic loads are determinants of peak bone mass. J Orthop Res. 2004;22(2):339-45.
84. Muehleman C, **Sumner** DR, Zhong Z. Refraction effects of diffraction-enhanced radiographic imaging: a new look at bone. J Am Podiatr Med Assoc. 2004;94(5):453-5.
85. **Sumner** DR. Summary-Joint regeneration using functional tissue engineering. J Musculoskelet Neuronal Interact. 2004;4(4):401.
86. **Sumner** DR, Turner TM, Urban RM, Turek T, Seeherman H, Wozney JM. Locally delivered rhBMP-2 enhances bone ingrowth and gap healing in a canine model. J Orthop Res. 2004;22(1):58-65.
87. Virdi AS, De Ranieri A, Kuroda S, Dai Y, **Sumner** DR. Anabolic agents and gene expression around the bone implant interface. J Musculoskelet Neuronal Interact. 2004;4(4):388-9.
88. Broderick E, Infanger S, Turner TM, **Sumner** DR. Depressed bone mineralization following high dose TGF-beta1 application in an orthopedic implant model. Calcif Tissue Int. 2005;76(5):379-84.
89. Clark PA, Rodriguez A, **Sumner** DR, Hussain MA, Mao JJ. Modulation of bone ingrowth of rabbit femur titanium implants by in vivo axial micromechanical loading. J Appl Physiol (1985). 2005;98(5):1922-9.
90. De Ranieri A, Virdi AS, Kuroda S, Healy KE, Hallab NJ, **Sumner** DR. Saline irrigation does not affect bone formation or fixation strength of

hydroxyapatite/tricalcium phosphate-coated implants in a rat model. J Biomed Mater Res B Appl Biomater. 2005;74(2):712-7.
91. De Ranieri A, Virdi AS, Kuroda S, Shott S, Dai Y, **Sumner** DR. Local application of rhTGF-beta2 modulates dynamic gene expression in a rat implant model. Bone. 2005;36(5):931-40.
92. De Ranieri A, Virdi AS, Kuroda S, Shott S, Leven RM, Hallab NJ, **Sumner** DR. Local application of rhTGF-beta2 enhances peri-implant bone volume and bone-implant contact in a rat model. Bone. 2005;37(1):55-62.
93. Gomez DF, Sant'Anna EF, Leven RM, Ostric SA, Figueroa AA, Royston TJ, **Sumner** DR, Polley JW. Microstructural and strength evaluation of regenerate tissue during the consolidation period after vertical mandibular ramus distraction. J Craniofac Surg. 2005;16(5):805-11.
94. Kuroda S, Virdi AS, Dai Y, Shott S, **Sumner** DR. Patterns and localization of gene expression during intramembranous bone regeneration in the rat femoral marrow ablation model. Calcif Tissue Int. 2005;77(4):212-25.
95. Minihane KP, Turner TM, Urban RM, Williams JM, Thonar EJ, **Sumner** DR. Effect of hip hemiarthroplasty on articular cartilage and bone in a canine model. Clin Orthop Relat Res. 2005(437):157-63.
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INVITED PRESENTATIONS

1. **Sumner**, D.R.: Bone Remodeling Associated with Cementless Femoral Components. Presented at the Hip Society, August, 22-24, 1985, Chicago.

2. **Sumner**, D.R.: Bone Ingrowth Fixation in Total Hip and Total Knee Arthroplasty Models. Presented at the Seminar on Implant Fixation, American Academy of Orthopedic Surgeons, November 7-8, 1985, Atlanta.

3. Andriacchi, T.P., Strickland, A.B., **Sumner**, D.R., Turner, T.M. and Galante, J.O.: A Relationship Between Stress Distribution and Bone Remodeling Ingrowth in a Region

Surrounding a Porous Coated Peg of a Tibial Component in a Canine Total Knee Replacement Model. Presented at the Knee Society, February, 1986, New Orleans.

4. **Sumner**, D.R. and Turner, T.M.: The Effects of Femoral Component Design Features on Femoral Remodeling Following Cementless Total Hip Arthroplasty. Presented at the Bristol-Myers/Zimmer Symposium, "Non-Cemented Total Hip Arthroplasty: The Bone Interface. Phoenix, Arizona, March, 1986.

5. **Sumner**, D.R.: Bone Remodeling Associated with Total Joint Replacement. Presented at the Midwestern Meeting, Division of Vertebrate Morphology, American Society of Zoologists, Chicago Academy of Sciences. April 18-19, 1986, Chicago.

6. **Sumner**, D.R.: Bone Ingrowth and Remodeling Associated with Cementless Total Joint Arthroplasty. Presented at the Orthopaedic Hospital, Arhus, Denmark, September 5, 1986.

7. **Sumner**, D.R.: Bone Ingrowth and Bone Remodeling. Presented at the Hopitaux de Paris, Paris, France, September 19, 1986.

8. **Sumner**, D.R. and Galante, J.O.: The Influence of Bone Remodeling Processes in Cementless Porous Coated Canine Total Hip Prosthesis Model. Presented at the Implant Anchorage Symposium, Munich, Germany, November 28-29, 1986.

9. **Sumner**, D.R.: Bone Ingrowth and Bone Remodeling. Presented at the Chinese Medical Association of the Republic of China, Taipai, July 9-10, 1988.

10. **Sumner**, D.R.: Bone Ingrowth into Porous Surfaces. Presented at the Symposium International Prosthese Totale de Hanche, Lyon, France, December 15-17, 1988.

11. **Sumner**, D.R.: Enhancement of Bone Ingrowth into Porous Metals. Presented at the Bone Grafting Symposium, Tampa, Florida, January 26-28, 1989.

12. **Sumner**, D.R.: Evaluation of Calcium Phosphates for Enhancement of Bone Ingrowth. Presented at the Workshop on Characterization and Analysis of Hydroxyapatite, Society for Biomaterials, Bethesda, Maryland, June 14-15, 1989.

13. **Sumner**, D.R.: Bone remodeling around non-cemented implants: animal studies. Presented at the 21st International Sun Valley Workshop on Hard Tissue Biology. Sun Valley, Idaho, August 6-11, 1989.

14. **Sumner**, D.R.: Backscatter electron imaging. Presented at the Purdue University Undecalcified Bone Meeting, West Lafayette, Indiana, August 29, 1989.

15. **Sumner**, D.R., Turner, T.M., Urban, R.M., Galante, J.O.: Bone remodeling 2 years after cementless THA with a proximally porous-coated stem. Presented at the Harvard Medical School Fall Hip Course, Cambridge, Massachusetts, October 5-8, 1989.

16. **Sumner**, D.R.: Enhancement of Biological Fixation in Total Knee Arthroplasty. Presented at the Bristol-Myers/Zimmer Symposium, "Controversies of Total Knee

Arthroplasty: Issues for the Nineties". Phoenix, Arizona, November 15-19, 1989.

17. **Sumner**, D.R., Galante, J.O.: Principles of Porous Ingrowth as it Relates to Tumor Prostheses. Presented at the Musculoskeletal Tumor Society Meeting, Chicago, May 4, 1990.

18. **Sumner**, D.R.: General Characteristics of Bone Resorption Secondary to Stress Shielding. Presented at the Academic Orthopaedic Society Meeting, Philadelphia, November 8-9, 1990.

19. **Sumner**, D.R.: Fixation by Bone Ingrowth into Metallic Porous Coatings; Animal Models and Human Implant Retrieval Studies. Presented at the Workshop on the Interface Problem, Munich, November 30, 1990.

20. **Sumner**, D.R.: Bone Remodeling around the Femoral Stem. Presented at the Workshop on the Interface Problem, Munich, December 1, 1990.

21. **Sumner**, D.R.: Enhancement of Bone Ingrowth into Porous Coated Orthopedic Implants. Invited seminar, Genetics Institute, Cambridge, Mass., April 9, 1991.

22. **Sumner**, D.R.: Bone Remodeling: Studies from Nature and Experimental Manipulation. Invited seminar, Department of Anthropology, Harvard University, Cambridge, Mass., April 10, 1991.

23. Turner, T.M., **Sumner**, D.R., Urban, R.M., Galante, J.O.: Quantitative changes in bone ingrowth and cortical remodeling in response to alteration of stem stiffness in a composite canine THA. Harrington Arthritis Research Center 1991 Eighth Annual International Symposium, Scottsdale, Arizona, Nov 24-27, 1991.

24. **Sumner**, D.R.: Fundamentals of bone ingrowth and remodeling. Joint Replacement Institute Inagural Symposium, Los Angeles, California, Dec 7-8, 1991.

25. **Sumner**, D.R., Turner, T.M., Urban, R.M., Galante, J.O.: Bone remodelling and bone ingrowth in dependence of implant stiffness and porous coating location. The 5th Biomaterial Symposium (Implant/Bone Interface), Göttingen, Germany, March 6-8, 1992.

26. **Sumner**, DR, Turner, TM, Urban, RM, Galante, JO: Influence of femoral component design on interface histology and bone remodeling in cementless total hip replacement. Kappa Delta Young Investigator Award Presentation, February 18, 1993, Orthopaedic Research Society, San Francisco.

27. **Sumner**, DR: "Local application of growth factors to enhance regeneration." Sun Valley Hard Tissue Workshop, August, 1995.

28. **Sumner**, DR: "Role of biologic mechanisms in endurance of load-bearing implants." Sun Valley Hard Tissue Workshop, August, 1995.

29. **Sumner**, DR: "Bone remodeling with low stiffness stems." Zimmer-USA, Warsaw,

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30. **Sumner**, DR: "Local And Remote Effects Of Growth Factors Used To Enhance Local Bone Regeneration." Workshop on Tissue Engineering: the Role of ASTM, ASTM Committee F04 on Medical and Surgical Devices and Materials, St. Louis, MO, May 7, 1997.

30. **Sumner**, DR: "Use of TGF-ß to Enhance Fixation of Orthopaedic Implants": Biology of Skeletal Tissues: Basic Science, Molecular Medicine, and Tissue Engineering symposium at the Scanning Microscopy, and Cells and Materials annual meeting, Chicago, May 15, 1997.

31. **Sumner**, DR: "Enhancement of Bone Regeneration and Ingrowth in Implants with TGF-ß and BMP-2" ASBMB Fall Symposia, Taos, New Mexico, October 16-19, 1998

32. **Sumner**, DR: "Growth Factors and Bone Regeneration in Aging" Sun Valley Hard Tissue Workshop, August, 1999.

33. **Sumner**, DR: "Implants and Bone Repair" 2nd International Workshop on Musculoskeletal Interactions, Delphi, Greece, May 18, 2000

34. **Sumner**, DR: "Bone Response to Joint Degradation and Repair" First Annual Scientific Meeting of the TMJ Association, Bethseda, Md, May 22, 2000

35. **Sumner**, DR: "Implant Fixation and Adaptive Remodeling of the Bone in Total Joint Replacement" 27th Annual Meeting of the Japanese Hip Joint Society, Nagoya, Japan, November 10, 2000

36. **Sumner**, DR: "Implant Fixation and Bone Remodeling in Total Joint Arthroplasty" Zimmer-USA seminar series, Warsaw, Indiana, April 12, 2001

37. **Sumner**, DR: "Bone Regeneration and Orthopedic Implants" Regenerative Medicine Symposium, the University of Illinois at Chicago, Chicago, Illinois, April 24, 2001

38. **Sumner**, DR: "Bone Remodeling After Implantation" Symposium on Evaluation of Implants, 4th Combined Meeting of the Orthopaedic Research Societies of the USA, Canada, Europe and Japan, Rhodes, Greece, June 3, 2001

39. **Sumner**, DR: "Implant Fixation and Bone Remodeling in Joint Replacement" Oral Biology Seminar, University of Illinois College of Dentistry, Chicago, October 9, 2001

40. **Sumner**, DR: "Bone Remodeling and Regeneration" Mini symposium on Physical Stimulation of Bone Growth, University of Illinois at Chicago, College of Dentistry, Chicago, November 1, 2002

41. **Sumner**, DR: "Bone Adaptation after Joint Replacement" Biocomplexity Workshop III, University of Notre Dame, South Bend, Indiana, November 8-10, 2002

42. **Sumner**, DR: "Bone Biology and Osteoarthritis" Citywide Rheumatology Fellow's Conference, Chicago, Illinois, December 14, 2002

43. **Sumner**, DR: "Growth Factors and Cementless Implant Fixation" Orthopaedic Research Society/American Academy of Orthopaedic Surgeons Joint Symposium on the Role of Pharmacologic Agents in Fracture Healing and Implant Fixation, San Francisco, March 10, 2004.

44. **Sumner**, DR: "Bone Regeneration and Remodeling in Joint Replacement" Department of Bioengineering, University of California at Berkeley, March 10, 2004.

45. **Sumner**, DR: "Assessment of Bone Formation and Mineralization by Backscatter SEM" Midwest Microscopy and Microanalysis Society and the Biological Imaging Facility, Northwestern University, Evanston, IL, March 26, 2004.

46. **Sumner**, DR: "Orthopedic Implants and Bone" Presented at A Tribute to Harold M. Frost, M.D. Workshop, Pueblo, Colorado, April 24, 2004.

47. **Sumner**, DR: "Enhancing Bone Regeneration and Implant Fixation" Section of Orthopaedic Surgery and Rehabilitation Medicine Grand Rounds, University of Chicago, May 12, 2004.

48. **Sumner**, DR: "Bone Biology, Osteoporosis and Osteoarthritis" Citywide Rheumatology Fellow's Conference, Chicago, Illinois, November 13, 2004

49. **Sumner**, DR: "Enhancement of Bone Regeneration" Department of Orthopedics, Erasmus University, Rotterdam, The Netherlands, June 9, 2005

50. **Sumner,** DR: "Enhancement of Bone Regeneration" Festschrift for Professor Web Jee, Oakland, CA, June 18, 2005

51. **Sumner,** DR: "Bone and OA" Smith & Nephew Symposium on Osteoarthritis, Memphis, TN, July 7-8, 2005

52. **Sumner,** DR: "Scaling Effects in Bone Phenotypes" Midwest Connective Tissue Workshop, Chicago, IL November 5, 2005

53. **Sumner**, DR: "Bone Biology, Osteoporosis and Osteoarthritis" Citywide Rheumatology Fellow's Conference, Chicago, Illinois, November 11, 2006

54. **Sumner**, DR: "Bone Regeneration -- Implant Fixation," Department of Kinesiology and Nutrition, University of Illinois at Chicago, December 7, 2007

55. **Sumner**, DR: "Bone Regeneration -- Implant Fixation," Department of Pharmacology, Rush University Medical Center, April 2, 2008

56. **Sumner**, DR: "Bone Regeneration – Implant Fixation," Dominican University, River Forest, IL, April 16, 2008

57. **Sumner,** DR: "Bone Regeneration and Implant Fixation," van Andel Institute, Grand Rapids, Michigan, September 22, 2009

58. **Sumner,** DR: "Bone Regeneration and Implant Fixation," Northwestern University, April 7, 2010

59. **Sumner**, DR: "Bone Regeneration and Implant Fixation," Lawrence Livermore Laboratory, June 2, 2010

60. **Sumner,** DR: "Microcomputed Tomography Applications in Orthopedic Research," Xradia Corporation, June 3, 2010

61. **Sumner,** DR: "Bone Regeneration and Implant Fixation," Anhui Medical University, Heifei, China, September, 2010

62. **Sumner**, DR: "Stem Cell Mobilization to Enhance Bone Regeneration," Musculoskeletal Transplant Foundation Symposium, Chicago, September 23, 2011

63. **Sumner**, DR: "Stem Cell Mobilization and Wnt Signaling – Two Approaches to Enhancing Bone Regeneration," University of Illinois at Urbana-Champaign, October 24, 2011

64. **Sumner**, DR: "Stem Cell Mobilization and Wnt Signaling – Two Approaches to Enhancing Bone Regeneration," University of Pennsylvania, December 13, 2011

65. **Sumner**, DR: "Bone Remodeling and the Wnt Signaling Pathway in Implant Loosening" IBMS Sun Valley Workshop on Musculoskeletal Biology, August 7, 2012

66. **Sumner**, DR: "Bone Regeneration and Implant Fixation," Rush University Medical Center Research Grand Rounds (Department of Medicine), October 15, 2013

67. **Sumner**, DR: "Are there new biological markers for wear or corrosion?" Association of Bone and Joint Surgeons Carl T. Brighton Workshop on Implant Wear and Tribocorrosion, Tampa Bay, Florida, November 22, 2013.

68. **Sumner**, DR: "Basic Scientist Start-Up Package" ORS Young Investigator's Workshop, Rosemont, Illinois, May 16, 2014.

69. **Sumner**, DR: "Novel Strategies to Enhance Bone Mass: Local Growth Factors, Systemic Drugs, and Stem Cell Mobilization" Association of Anatomy Cell Biology and Neurobiology Chairs annual meeting, Los Cabos, Mexico, January 23, 2015

70. **Sumner**, DR: "Promotion and Advancement from a Basic Science Department" Orthopaedic Research Society workshop on career advancement at the annual meeting, Orlando, Florida, March 5, 2016

71. **Sumner**, DR: "Bone Regeneration and Implant Fixation" Department of Orthodontics and Dentofacial Orthopedics, Federal University of Rio de Janeiro Dental School, Rio de Janeiro, Brazil, July 20, 2016

72. **Sumner**, DR: "Bone Regeneration and Implant Fixation" XXVII Congresso Brasileiro de Anatomia, Sociedade Brasileira de Anatomia, Natal, Brazil, July 21, 2016.

73. **Sumner**, DR: "Implant Fixation and Interface Imaging" Biomaterials, Biomechanics and Bio-Imaging in Orthopaedics Research Interest Group at the annual meeting of the Orthopaedic Research Society, San Diego, CA, March 21, 2017

ABSTRACTS

(>260 abstracts presented at various national and international meetings)