

**DALE RICHMAN SUMNER, JR., Ph.D. (“Rick”)**

(updated April '26)

**POST-DOCTORAL TRAINING**


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


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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
1973-1975	University of Iowa, Iowa City, Iowa	B.A. 1975, with special distinction and honors
1975	Iowa State University, Ames, Iowa	
1972	Cornell College, Mt. Vernon, Iowa	

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**ACADEMIC APPOINTMENTS**


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2022 – Present	Adjunct member, Rush Center for Integrated Microbiome and Chronobiology Research
2004 – Present	The Mary Lou Bell McGrew Presidential Chair for Medical Research, Rush University Medical Center
1997 - Present	Professor and Chair, Department of Anatomy & Cell Biology (formerly, Cell & Molecular Medicine), Rush Medical College, Rush University Medical Center
1997 - Present	Professor, Department of Orthopedic Surgery, Rush University Medical

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	Center (conjoint appointment)
1997 – 2024	Adjunct Associate to Full Professor in the Department of Bioengineering, University of Illinois at Chicago
1996 - 2024	Director, Section of Bone Biology, Department of Orthopedic Surgery, Rush University Medical Center
1991 - 1997	Associate Professor, Department of Orthopedic Surgery, Rush University Medical Center
1986 - 2023	appointment to the Faculty of The Graduate 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 Biomaterialia  
 Advanced Drug Delivery Reviews  
 Advanced Functional Materials  
 American Journal of Physical Anthropology  
 American Society for Testing and Materials  
 Anais da Academia Brasileira de Ciências  
 Anatomical Record  
 Anatomical Sciences Education  
 Annals of the Rheumatic Diseases  
 Applied Biomaterials  
 Biomaterials  
 Bone  
 Bone Reports  
 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 Mineral Research  
 Journal of Musculoskeletal and Neuronal Interactions (Editorial Board member,  
 2007-2017)  
 Journal of Orthopaedic Research (Editorial Advisory Board, 2011 – 2014)  
 Journal of Pathology  
 Journal of Physics D: Applied Physics  
 Journal of the Royal Society Interface  
 Nanomedicine  
 npj Regenerative Medicine  
 PLoS One  
 Scanning Microscopy  
 Spine  
 Tissue Engineering

## Grant Reviewing

### International Reviewing

<u>Year</u>	<u>Month</u>	<u>Organization</u>	<u>Role</u>
2022		Deutsche Forschungsgemeinschaft (DFG)	Reviewer
2021		Deutsche Forschungsgemeinschaft (DFG)	Reviewer
2014		Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)	Reviewer
2010		Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)	Reviewer
2006	January	Review of grants for ASIF Foundation (AO Foundation)	Reviewer
1998		Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)	Reviewer
		U.S.-Israel Binational Science Foundation	Reviewer

### National Institutes of Health

<u>Year</u>	<u>Month</u>	<u>Study Section</u>	<u>Role</u>
2026	January	NIH CSR ZRG1 MSOS-B(85) T32 Institutional Training Grants	Reviewer
2025	April	ZRG1 MSOS-A (03), Member Conflict: Musculoskeletal Sciences (SBDD, SBSR, MTE)	Reviewer
2024	October	NIAMS T32 Special Emphasis Panel ZAR1 AJ (M1) M	Chair

**National Institutes of Health**

<u>Year</u>	<u>Month</u>	<u>Study Section</u>	<u>Role</u>
2022	October	NIAMS T32 Special Emphasis Panel ZAR1 KM M1 1	Reviewer
2022	March	Special Emphasis Panel ZRG1 MOSS-D (10) Small Business: Musculoskeletal, Orthopedic, Oral, Rehabilitation, Dermatology and Rheumatology	Reviewer
2021	October	NIAMS T32 Special Emphasis Panel ZAR1 FY M1 1	Reviewer
2020	October	NIAMS T32 Special Emphasis Panel ZAR1 FY M1 1	Reviewer
2020	October	NIAMS Special Grants Review Study Section	Reviewer
2019	June	Special Emphasis Panel ZRG1 MOSS D(10) for SBIR Orthopaedic, Skeletal Muscle and Oral Sciences	Chair
2019	October	NIAMS T32 Special Emphasis Panel ZAR1 FY M1 1	Reviewer
2019	October	NIAMS Special Grants Review Study Section	Reviewer
2017	November	Special Emphasis Panel ZRG1 MOSS D(10) for SBIR Orthopaedic, Skeletal Muscle and Oral Sciences	Chair
2016	October	Special Emphasis Panel ZRG1 MOSS D82 for AREA Grants	Reviewer
2015	October	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2015	February	NIAMS Special Grants Review Study Section	Reviewer
2012	August	Special Emphasis Panel ZRG1 SBIB-X (32) I, Shared Instrumentation Grants	Reviewer
2012	November	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2012	June	NIAMS Special Grants Review Study Section	Reviewer
2012	June	NIDCR Special Grants Review Study Section	Reviewer
2010	July	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Chair
2010	November	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Chair
2010	October	NIAMS Special Grants Review Study Section	Reviewer
2010	November	NIAMS Special Grants Review Study Section	Reviewer

**National Institutes of Health**

<u>Year</u>	<u>Month</u>	<u>Study Section</u>	<u>Role</u>
2010	March	Review of Loan Repayment Program (LRP) applications for NIAMS	Reviewer
2009	March	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Chair
2009	July	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Chair
2009	November	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Chair
2009	November	NIAMS Special Grants Review Study Section	Reviewer
2009	April	Review of Loan Repayment Program (LRP) applications for NIAMS	Reviewer
2009	June	Review of BIRT grant applications for NIAMS	Reviewer
2009	June	Review for NIH Challenge Grants, MOSS C 58	Reviewer
2008	March	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2008	July	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2008	November	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2008	October	NIAMS Special Grants Review Study Section	Reviewer
2008	April	Review of Loan Repayment Program (LRP) applications for NIAMS	Reviewer
2008	July	NIA Review of P01 grant	Reviewer
2007	March	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2007	June	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer

**National Institutes of Health**

<u>Year</u>	<u>Month</u>	<u>Study Section</u>	<u>Role</u>
2007	November	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2007	October	NIAMS Special Grants Review Study Section	Reviewer
2007	April	Review of Loan Repayment Program (LRP) applications for NIAMS	Reviewer
2006	March	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2006	June	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2006	November	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2006	March	Review of Loan Repayment Program (LRP) applications for NIAMS	Reviewer
2005	November	Special Emphasis Panel F10B Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems Study Section	Reviewer
2002	July	Special Emphasis Panel ZRG1 SRB 05 B, Shared Instrumentation Grants	Reviewer
2001	June	Special Emphasis Panel ZRR1 RI-A (02) COBRE Grants	Reviewer
1999	April	Special Emphasis Panel ZRG1-SS5-098 SBIR Grants	Reviewer

**Other Federal**

<u>Year</u>	<u>Month</u>	<u>Organization</u>	<u>Role</u>
2022	July	Department of Defense Peer Review Medical Research Program	Reviewer
2014	August	SBIR/STTR Merit Review Panel	Reviewer
2012	May	PRMRP Investigator-Initiated Research Award (IIRA) Pre-proposal peer review	Reviewer
2011	January	SBIR/STTR Merit Review Panel	Reviewer
2011	August	SBIR/STTR Merit Review Panel	Reviewer

**Other Federal**

<u>Year</u>	<u>Month</u>	<u>Organization</u>	<u>Role</u>
2009	July	American Institute of Biological Sciences Bone Health & Military Medical Readiness Panel	Reviewer
2008	April	SBIR/STTR Merit Review Panel	Reviewer
2007	April	SBIR/STTR Merit Review Panel	Reviewer
1999		Reviewer for research grants for the Veterans Administration	
1997	November	American Institute of Biological Sciences Bone Health & Military Medical Readiness Panel	Reviewer

**Foundation and universities**

<u>Year</u>	<u>Month</u>	<u>Organization</u>	<u>Role</u>
2020	June	Musculoskeletal Transplant Foundation	Reviewer
2019	March	Musculoskeletal Transplant Foundation	Reviewer
2016	October	Musculoskeletal Transplant Foundation	Reviewer
2016	November	Orthopaedic Research and Education Foundation	Reviewer
2014	October	Musculoskeletal Transplant Foundation	Reviewer
2013	October	Musculoskeletal Transplant Foundation	Reviewer
2012	October	Musculoskeletal Transplant Foundation	Reviewer
2011	October	Musculoskeletal Transplant Foundation	Reviewer
2010	October	Musculoskeletal Transplant Foundation	Reviewer
2008	June	American Society for Bone and Mineral Research Career Enhancement Awards	Reviewer
2006		The Leakey Foundation	Reviewer
1999	April	AlloSource	Reviewer
1997		The Leakey Foundation	Reviewer
1997		University of Buffalo	Reviewer

**Award Reviewing**

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

**Other Scholarly Activities**

<u>Start year</u>	<u>End year</u>	<u>Activity</u>
2026		Category Chair of Biomechanics & Bone Quality: ASBMR annual meeting abstract reviewing (May-June)
2023	present	Data Safety Management Board for the BATON Study, U01AR080993
2015		Session Moderator: "Genetics, Bone Development, Bone Aging" session at the Orthopaedic Research Society Annual Meeting, Las Vegas, Nevada, March 30
2015		NIRA Selection Committee for ORS Annual Meeting, Las Vegas
2014		Faculty Member for ORS/OREF/AAOS New Investigator Workshop, Chicago, IL, May 16-17
2014		Session Moderator: "Spotlight Session: Implant Osseointegration" session at the Orthopaedic Research Society Annual Meeting, New Orleans, Louisiana, March 16
2012	2016	Standing Review Panel for Human Health Countermeasures, NASA
2012		Session organizer for 42 <sup>nd</sup> International Bone & Mineral Society Sun Valley Workshop on Musculoskeletal Biology, August 5-8
2011	2014	Editorial Advisory Board for <i>Journal of Orthopaedic Research</i>
2009	2011	Topic Chair for Orthopedic Research Society annual meeting
2008		Abstract reviewer for Orthopedic Research Society annual meeting, September
2006		Session Moderator: "Bone Function and Mechanics I" session at the Orthopaedic Research Society Annual Meeting, Chicago, Illinois, March
2005	2010	Advisory Board, Sun Valley International Workshop on Skeletal Biology
2005		Abstract reviewer for Orthopedic Research Society annual meeting, September

**Other Scholarly Activities**

<u>Start year</u>	<u>End year</u>	<u>Activity</u>
2004		International Scientific Committee for the 17 <sup>th</sup> Annual Meeting of the International Society for Ceramics in Medicine, New Orleans, Louisiana, December
2004		Symposium organizer for the 34 <sup>th</sup> International Workshop on Hard Tissue Biology, Sun Valley, Idaho, August 1-4
2003		Session Moderator: "Implant Fixation" session at the Orthopaedic Research Society Annual meeting, New Orleans, Louisiana, February
2002		Session Moderator: "Implant Fixation II" session at the Orthopaedic Research Society Annual meeting, Dallas, Texas, February
2001		Session Moderator: "Growth Factors I" session at the Orthopaedic Research Society Annual meeting, San Francisco, California, February
1999		Program Chair, The 12 <sup>th</sup> Annual International Symposium for Technology in Arthroplasty, Chicago, September 23 – 25
1998		Symposium organizer for the 28 <sup>th</sup> International Workshop on Hard Tissue Biology, Sun Valley, Idaho, August 3-7
1997		Abstract Reviewer: Orthopaedic Research Society 1998 Annual Meeting, August
1997		Exhibit Judge: Illinois District VI Junior Science Fair
1997		Session Moderator: "Fracture Repair" session at the Orthopaedic Research Society Annual meeting, San Francisco, California, February
1996		Abstract Reviewer: Society for Biomaterials 1997 Annual Meeting, December
1994	1995	Member. Grant Efficacy Committee, Orthopaedic Research and Education Foundation
1993		Provocateur: "Implants: Bone Ingrowth/Apposition" session at the Orthopaedic Research Society Annual meeting, San Francisco, California, February

**Other Scholarly Activities**

<u>Start year</u>	<u>End year</u>	<u>Activity</u>
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		Provocateur: "Bone Ingrowth" session at the Orthopaedic Research Society Annual meeting, Anaheim, California, March
1990		Participant, Bone-Biomaterial Interface Workshop, University of Toronto, Canada, December 3-4
1990		Member of Orthopedic Consensus Panel, 2nd International Congress on Tissue Integration in Oral, Orthopedic and Maxillofacial Reconstruction, Rochester, Minnesota
1989		Session Overview: "Joint and Bone Substitutes" at the 1989 21st International Sun Valley Workshop on Hard Tissue Biology, Sun Valley, Idaho, August
1989		Session Chairperson: "Tibial Component Fixation" at the ASCE/ASME Mechanics Conference, San Diego
1989		Forum Organizer: "Forum on Artificial Implants for Human Use" at the ASCE/ASME Mechanics Conference, San Diego
1989		Session Moderator: "Remodeling Around Hip Prostheses" at the Society for Biomaterials Annual Meeting, Lake Buena Vista, Florida
1989		Exhibit Judge: Chicago Public Schools Student Science Fair, Chicago
1988		Session Monitor: "Porous Ingrowth II" at the Orthopaedic Research Society Annual Meeting, Atlanta
1987	1990	Member of the Implant Interface Committee (Hip Society)

**MEMBERSHIP AND PARTICIPATION IN PROFESSIONAL SOCIETIES**

American Association for the Advancement of Science  
Elected Fellow, 2019

American Association for Anatomy  
Past-President (2021-2023)

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

American Society of Bone and Mineral Research

Elected as Fellow (2022)  
Representative to the FASEB Training and Career Opportunities  
Subcommittee (2012-2021)

Association of Anatomy, Cell Biology and Neurobiology Chairpersons

President (2022-2023)  
Secretary-Treasurer (2011 – 2020)

International Society for Bone Morphometry

Past-President (2019-2022)  
President (2016-2019)  
Board of Directors (2013 – 2022)

International Federation of Musculoskeletal Research Societies

Treasurer (2021)  
Secretary (2016 – 2021)  
Board of Directors (2016 – 2021)

International Society for Musculoskeletal and Neuronal Interactions

International Society for Technology in Arthroplasty

President (1999-2000)  
1<sup>st</sup> vice president/president elect (1998-1999)  
2<sup>nd</sup> vice president (1997-1998)

Orthopaedic Research Society

Elected as Fellow (2021)  
Past-President (2018-2019)  
President (2017-2018)  
1<sup>st</sup> Vice President (2016-2017)  
Representative to International Federation of Musculoskeletal Research  
Societies (Secretary on the IFMRS Board, 2016-2021)  
2<sup>nd</sup> Vice President (2015-2016)  
Editorial Advisory Board for the Journal of Orthopaedic Research (2011- 2014)  
Annual Meeting Topic Chair for Bone (2009-2011)  
Nominating Committee (2008-2009)  
Task Force on the Annual Meeting (2002 - 2003)  
Board of Directors (2001-2003)  
Information Technology Committee (2001 - 2003)

Member-at-Large and Newsletter Editor (2001-2003)  
Board of Directors (1995-1996)  
Membership Committee Chairperson (1995-1996)  
Membership Committee (1993-1996)

Sigma Xi  
Rush Chapter Secretary (1996-1999)

## **RESEARCH SUPPORT**

### **Current as Principal Investigator**

Acquisition of a laser microtomy system for hard tissue histology

Source: National Institutes of Health S10OD036245

Role: PI

Dates: 5/15/2024 to 5/14/2026

Status: no cost extension

Total notices of award to date: \$462,680

Establishing a New Model of Bone Health in Formerly Premature Individuals

Source: National Institutes of Health R21HD102026

Role: Contact PI (multiPI with Randy Buddington, LSU)

Dates: 7/1/2022 to 6/30/2026

Status: no cost extension

Total notices of award to date: \$433,429 (~65% to Rush)

Systems Genetics of Bone Regeneration

Source: National Institutes of Health R01AR079197

Role: multiPI (Contact PI Charles Farber, Univ Virginia)

Dates: 4/15/2022 to 1/31/2027

Status: active

Total notices of award to date: \$3,303,505 (~50% to Rush)

Pre and Post-Doctoral Training in Joint Health

Source: National Institutes of Health T32AR073157

Role: PI

Dates: 6/1/2019 to 5/31/2029

Status: active

Total notices of award to date: \$2,068,957

### **Current as Co-Investigator**

How bisphosphonates affect bone matrix and remodeling: implications for atypical femoral fractures

Source: National Institutes of Health R01AR080118, contact PI = Dr. Ryan Ross

Role: co-I

Dates: 05/12/2023 to 3/31/2028

Status: active  
Total notices of award to date: \$1,209,492

Chicago Center on Musculoskeletal Pain (C-COMP)

Source: National Institutes of Health P30AR079206, PI = Dr. Anne-Marie Malfait  
Role: co-I  
Dates: 9/14/2021 to 8/31/2026  
Status: active  
Total notices of award to date: \$3,846,727

Molecular Pathways of Pain Generation in Osteoarthritis

Source: National Institutes of Health R01AR060364, PI = Dr. Anne-Marie Malfait  
Role: co-I  
Dates: 9/1/2021 to 06/30/2026  
Status: active  
Total notices of award to date: \$2,896,087

**Current as Mentor**

Role of Periostin Expressing Cells in Intramembranous Bone Regeneration

Source: National Institutes of Health K01AR077679 to Dr. Frank Ko  
Role: primary sponsor  
Dates: 7/1/2021 to 06/30/2026  
Status: active  
Total notices of award to date: \$707,032

**Past – Federal as PI**

Role of the Gut Microbiome in Implant Loosening

Source: National Institutes of Health R21AR075130  
Role: PI  
Dates: 3/1/2019 to 2/28/2023  
Status: closed  
Total notices of award: \$379,940

Long-Acting Anti-TNFA Conjugates to Minimize Osteolysis Around Joint Replacement Devices

Source: National Institutes of Health R43AR071857  
Role: PI on subcontract  
Dates: 9/13/2017 to 8/31/2019  
Status: closed  
Total notices of award: ~\$73,490 (Rush)

Foundational in vivo experiments on osteocyte biology in space

Source: National Aeronautics and Space Administration NNX15AL13G S01  
Role: PI on subcontract (parent grant PI = Alex Robling at Indiana University)  
Dates: 1/1/2016 to 12/31/2018  
Status: closed  
Total notices of award: ~\$33,600 (Rush)

Bone Matrix Maturation in a Rat Model of Intra-Cortical Bone Remodeling

Source: National Institutes of Health R21AR065604  
Role: PI  
Dates: 7/1/2015 to 6/30/2017  
Status: closed  
Total notices of award: \$375,100

Detection and Treatment of Peri-Implant Osteolysis

Source: National Institutes of Health R01AR066562  
Role: PI  
Dates: 7/1/2015 to 5/30/2021  
Status: closed  
Total notices of award: \$1,705,000

Association between bone turnover markers and level of cognition in older community dwelling individuals with memory concerns

Source: National Institutes of Health P30AG010161, David Bennet, PI)  
Role: PI  
Dates: 7/1/2014 to 6/30/2015  
Status: closed  
Total notices of award: \$30,000

Very High Resolution Laboratory MicroCT Scanner

Source: National Institutes of Health S10RR027980  
Role: PI  
Dates: 6/24/2010 to 6/23/2012  
Status: closed  
Total notices of award: \$496,000

Recruitment of a Bone and Cancer Early Stage Investigator

Source: National Institutes of Health P30CA147881  
Role: PI  
Dates: 9/30/2009 to 8/31/2012  
Status: closed  
Total notices of award: \$774,737

Training in Orthopedic Skeletal Biology

Source: National Institutes of Health T32AR052272

Role: PI  
Dates: 8/1/2007 to 7/31/2012  
Status: closed  
Total notices of award: \$1,054,848

Improved orthopedic implant surface coatings

Source: National Institutes of Health R44AR051264 to Paul Hamilton, Affinergy, Inc.

Role: PI on subcontract  
Dates: 10/1/2006 to 9/30/2008  
Status: closed  
Total notices of award: \$388,463 (Rush)

Development and initial application of a rat model for revision joint replacement

Source: National Institutes of Health R21AR054171

Role: PI  
Dates: 8/1/2006 to 7/31/2008  
Status: closed  
Total notices of award: \$353,439

X-Ray Micro Computed Tomography Scanner

Source: National Institutes of Health S10RR16631

Role: PI  
Dates: 4/1/2002 to 3/31/2003  
Status: closed  
Total notices of award: \$275,769

Biomimetic Materials Useful for Rehabilitation

Source: National Institutes of Health R01043187 to Dr. Kevin Healy (UC-Berkeley), PI

Role: PI on subcontract  
Dates: 9/30/2001 to 7/31/2006  
Status: closed  
Total notices of award: \$1,470,989 (~50% to Rush)

Noninvasive Detection of Microdamage in Bone

Source: Department of the Army DAMD17-01-1-0811

Role: PI  
Dates: 9/30/01 to 9/29/03  
Status: closed  
Total notices of award: \$70,000

Fixation in Total Knee Replacement

Source: National Institutes of Health R01AR042862

Role: PI  
Dates: 9/30/1994 to 1/31/2006  
Status: closed  
Total notices of award: \$2,379,462

Evaluation of New Cementing Technique for Implants  
Source: National Science Foundation SBIR grant to Dr. Brent Constantz, Norian Corporation

Role: PI on subcontract  
Dates: 1/10/1991 to 9/30/1991  
Status: closed  
Total notices of award: \$49,985 (~\$10,000 to Rush)

Bone Ingrowth and Bone Remodeling in Cementless Total Knee Arthroplasty

Source: National Institutes of Health R29AR39827  
Role: PI  
Dates: 5/1/1989-4/30/1994  
Status: closed  
Total notices of award: \$446,215

**Past – Federal as co-I, co-mentor, collaborator**

National Institutes of Health for “Sclerostin Regulation of Skeletal Mineralization and Phosphate Metabolism” (co-mentor), 9/1/2019 to 8/31/2024, (1K01AR073923 to Dr. Ryan Ross)

Modulating Wnt Signaling Pathway to Enhance Allograft Integration in Orthopaedic Trauma Treatment

Source: Department of Defense PRORP OR090261, Amarjit Viridi, PI  
Role: co-I  
Dates: 10/1/2010 to 3/30/2014  
Status: closed  
Total notices of award: \$597,966

Combined use of BMP-2 and Low Intensity Pulsed Ultrasound in Bone Regeneration

Source: National Institutes of Health R21AR057153  
Role: collaborator  
Dates: 7/1/2009 to 6/30/2012  
Status: closed  
Total notices of award: \$412,487

Calculation of Total Joint Replacement Contact Forces During Level Walking

Source: National Institutes of Health F32AR057297 to Dr. Hannah Lundberg  
Role: co-mentor  
Dates: 4/1/2009 to 6/30/2011

Status: closed  
Total notices of award: \$67,439

Factors Influencing the Evolution of Knee Osteoarthritis

Source: National Institutes of Health K23AR049748 to Dr. Naja Shakoor  
Role: co-mentor  
Dates: 3/1/2004 to 2/28/2009  
Status: closed  
Total notices of award: \$540,000

Osteoarthritis: A Continuum (SCOR)

Source: National Institutes of Health P50AR039239 to Dr. Ted Oegema, PI  
Role: co-investigator  
Dates: 1/1/2003 to 12/31/2007  
Status: closed  
Total notices of award: \$5,364,721

Micromagnetic Resonance Elastography

Source: National Institutes of Health R21EB004885 to Dr. Richard Magin (Univ Illinois-Chicago), PI  
Role: co-investigator  
Dates: 3/15/2005 to 2/28/2007  
Status: closed  
Total notices of award: N/A (Rush)

Predicting Joint Degeneration

Source: National Institutes of Health R01AR046225 to Dr. Debra Hurwitz, PI  
Role: co-I  
Dates: 8/1/2000 to 7/31/2006  
Status: closed  
Total notices of award: \$702,362

Novel X-Ray Technology for Degenerative Joint Disease

Source: National Institutes of Health R01AR048292 to Dr. Carol Muehleman, PI  
Role: co-I  
Dates: 6/1/2002 to 5/31/2008  
Status: closed  
Total notices of award: \$3,324,409

Total Surgical Replacement of the Human Hip Joint

Source: National Institutes of Health R01AR16485 to Dr. Jorge Galante, PI  
Role: co-I  
Dates: 9/12/1997 to 8/31/2002

Status: closed

Total notices of award: \$1,090,991

### **Past - Foundations**

Little Giraffe Foundation for “Preventing Metabolic Bone Disease of Prematurity” (Principal Investigator), 10/01/2021 to 9/30/2022

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

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 Osteoarthritis 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 “Genetic Basis of Bone Strength, Density and Composition” (Principal Investigator), 7/1/2018 to 6/30/2019

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.

BRSB, 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

2022-2023	EMB Small Group Facilitator (Rush Medical College)
2014	Human Gross Anatomy (Department of Anatomy & Cell Biology, Rush Medical College)
2013 – 2014	Proseminar in Skeletal Biology (Department of Anatomy & Cell Biology, Graduate College)
1995 – 2007	Human Gross Anatomy (Department of Anatomy & Cell Biology, Rush Medical College)
1986 – 2007	Orthopedic Residency Program Core Curriculum (2 - 3 lectures per year)
1985 - 1987	Human Gross Anatomy (Department of Oral Anatomy, University of IL - Chicago)
1978 - 1982	Various courses in Anthropology and General Biology (University of Arizona)

### Graduate Student Advising: PhD major advisor (\* indicates publication or peer-review abstract)

Brittany Wilson\*, 2015-2019, Department of Anatomy & Cell Biology, Rush University, PhD, Thesis topic: “Biomarkers of Compromised Implant Fixation” (major advisor)

- Winner of a 2018 best poster award, Preclinical Models Section, ORS Annual meeting

Maleeha Mashiatulla\*, 2013-2017, Department of Bioengineering, University of Illinois at Chicago, PhD thesis topic: “Structural and Compositional Assessment of Bone and Articular Cartilage with Micro-Computed Tomography” (major advisor).

- Winner of a 2017 Alice L. Jee Young Investigator Award to attend the ORS 47th International Musculoskeletal Biology Workshop at Sun Valley.

Shuo Liu\*, 2005-2010, Department of Anatomy & Cell Biology, Rush University, PhD Thesis topic: “Development and Initial Testing of a Rat Model for Particle-Induced Impaired Implant Fixation” (major advisor)

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

Aladino DeRanieri\*, 2001-2004, Department of Anatomy and Cell Biology, Rush University, PhD Thesis topic: “Morphologic, Mechanical, and Molecular Aspects of TGF-B2 Enhanced Implant Fixation” (major advisor)

Kirsten Moio\*, 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)

**Graduate Student Advising: PhD committee member (\* indicates publication or peer-review abstract)**

Itzel Lazcano, 2024-present, Department of Cell & Molecular Medicine, Rush University, PhD, Thesis topic: “How antiretrovirals reshape bone-fat hormonal crosstalk” (committee chair)

Sophie Rapagna, 2021, Flinders University, Adelaide, Australia, PhD thesis examiner, “Examining Tibial Cartilage Morphology, Subchondral Bone Microarchitecture and In Vivo Joint Loading Indices in Knee Osteoarthritis”

Laura Tran, 2020-2023, Department of Internal Medicine, Rush University, PhD, Thesis topic: Circadian mismanagement and gut health (committee member)

Kyle Anderson\*, 2019-2022, Department of Cell & Molecular Medicine, Rush University, PhD, Thesis topic: “Bone Implant Fixation and Diabetes” (committee member)

Kelsey Carpenter, 2018-2022, Department of Cell & Molecular Medicine, Rush University, PhD, Thesis topic: “Mouse Model of Hypophosphatemia” (committee member)

Marianne Koolen, 2018, Department of Orthopaedic Surgery, Utrecht University, PhD, Thesis topic area: Building better bone (opponent)

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)

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)

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

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

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

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

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

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

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

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

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

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

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

**Graduate Student Advising: MS major advisor (\* indicates publication or peer-review abstract)**

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)

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)

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)

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

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)

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)

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)

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

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

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

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

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)

**Graduate Student Advising: MS committee member (\* indicates publication or peer-review abstract)**

Sarah Cheung, 2025-2026, Department of Anatomy & Cell Biology, Rush University, M.S. 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)

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

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

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

Aladino DeRanieri\*, 1999-2001, Department of Anatomy, Rush University, master's thesis committee

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

Emma Gossman, 2026 "Pre-Term Birth and Osteoarthritis"

Davida Reingold, 2022 "Bone Growth Following Pre-Term Birth"

Amal Adra\*, 2019-2020, "Circadian Rhythm and Bone"

Kyle Anderson\*, 2016-2017, 2018-2019 "Bone Heterogeneity"

Steve Mazzone, 2014-2015, "Genetics and Bone Regeneration"

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

Mark Mudarth, 2012, "CD26<sup>-/-</sup> model bone phenotyping"

George Michael, 2011, "microCT analysis of mouse and rat models"

John Irish\*, 2009 - 2010, "Dynamic Histomorphometry and Bone Implants"

Devin Mehta, 2009, "Mechanical Testing of Bone and Implants"

Jim Maletich\*, 2008, "Trabecular Bone Mechanical Properties in Transgenic Mice"

Neil Kamdar, 2008, "Cartilage Imaging with microCT"

- Joe Broucek\*, 2008, "Peri-implant Histomorphometry"
- Christopher Ripperda, 2007, "Histology of Bone Regeneration"
- Christian Malalis, 2006, "Bone Implant Contact by microCT"
- Phillip LoSavio\*, 1999, "Bone Histomorphometry"
- Alizaline Bradley, 1999, "Bone Histomorphometry"
- Eugene Kuo, 1998, "Bone Regeneration"
- Thomas Shin, 1997, "Bone Density and Osteoarthritis"
- David Guhl, 1997, "Enhancement of Bone Regeneration"
- Keith Minihane\*, 1997, "Correlation Between Degenerative Changes Of Acetabular Cartilage And Remodeling Of Underlying Bone"
- Brett Barnhart, 1997, "Relationship Between Bone Density And Mechanical Properties Of Bone"
- Jason Browdy, 1997, "Joint Loads and Contact Stress in the Knee and Ankle"
- Brad Bernadini, 1996, "Relationship between Tibial Bone Mineral Content and Limb Usage in Experimental Models"
- Frank Rottier\*, 1996, "Relationship between Tibial Bone Mineral Content and Loads at the Knee Joint"
- Galina Podolskaya\*, 1996, "Bone Mineral Content and Mechanical Properties of Bone in a Model of Aging"
- Kevin Fagan, 1996, "Architecture of Growth Factor -Enhanced Healing Bone"
- 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)
- Boris Raginsky\*, 1995, "Periprosthetic Changes in Bone Mass Measured by Dual Energy X-ray Absorptiometry"
- Christopher Funk\*, 1995, "Bone Mineral Content of the Tibia Measured by Dual Energy X-ray Absorptiometry"
- Bavesh Shah\*, 1994, "Mechanical Testing of Humeral Implants with Varied Length-to-Diameter Ratios"
- Traci Pritchard\*, 1993, "rhBMP-2 Induced Bone Formation"
- Allison Sihlanek, 1993, "Changes in Tibial Bone Mineral Content Following Cementless THR"

Mark Stewart\*, 1993, "Change in Trabecular Architecture Following TKR"  
Frank Gentile, 1992, "Tibial and Femoral Bone Mineral Changes Following TKR"  
Dave Dawson\*, 1992, "Bone Ingrowth in Cementless TKR"  
Raied Abdullah, 1991, "Tibial Bone Changes Following ACL Transection"  
Amod Paranjpe, 1991, "Medullary Bone Density in Revision Arthroplasty"  
Sohel Majeed, 1990, "Human Femoral and Humeral Geometry"  
Greg Konrath\*, 1990, "Tibial Bone Changes Following THR"  
Dan Winkleman\*, 1988, "Canine Femoral Geometry"  
Jim Bryan\*, 1988, "SEM Measurement of Bone"  
Vicki Mazzorana, 1988, "Implant Retrieval Analysis"  
Alex Lipowicz, 1987, "Implant Retrieval Analysis"  
Ken Pierce, 1987, "Implant Retrieval Analysis"  
Terry Devlin\*, 1987, "Canine Femoral Geometry"  
Craig Olson\*, 1986, "Computed Tomography of the Human Femur"

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

Brittany Wilson\*, PhD, 2019-2025, Rush University, "Biomarkers for Implant Loosening"  

- Postdoctoral Platform Presentation Award, 2023 American Association for Anatomy annual meeting

Frank Ko\*, PhD, 2018-2021, Cornell University, "Intramembranous Bone Regeneration Lineage Tracing"  
Mathew Meagher\*, PhD, 2015-2018, University of Notre Dame, "Bone Quality"  
Meghan Moran\*, PhD, 2012-2018, Northeast Ohio Medical University, "Genetics of Bone Regeneration, Implant Fixation"  
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

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

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

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

Kotaro Sena\*, D.D.S., Ph.D., 2003-2006, Tokyo Medical and Dental University,  
"Enhancement of 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"

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

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

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

Richard Berger, M.D., University of Pittsburgh, 1995-1996 "Bone Mineral Changes  
in the Proximal Tibia following Total Knee Replacement" (Joint Replacement  
Fellow)

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

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

Geoff Tompkins\*, M.D., UCLA, 1992-1993 "Periprosthetic Bone Loss Following  
Cementless THR" (Joint Replacement Fellow)

Aivars Berzins\*, M.D., Latvian Scientific Research Institute of Traumatology and  
Orthopedics, Riga, Latvia, 1990-1993, "Femoral Stem Stability"

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

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

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

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

Josh Jacobs\*, M.D., Rush University, 1987-1988, "Implant Retrieval Analysis" (Joint Replacement Fellow)

Ray Pierson\*, M.D., Temple University, 1986-87, "Effects of Radiation Treatment on Bone Ingrowth" (Joint Replacement Fellow)

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

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

Gerlinde Goelzhaeuser, Fachhochschule Muenchen, Germany, 1997, "Development Of An Automated Technique For Analysis Of 'Wear' In Plain Radiographs From Total Hip Arthroplasty"

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

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

### **Peer mentoring**

Georgia Papavasiliou, PhD, Professor of Biomedical Engineering, Illinois Institute of Technology. Visiting Professor in the Department of Anatomy & Cell Biology, Rush University Medical Center, January 2022 – July 2022

Elisa Budyn, PhD, Dr.Hab, Professor of Mechanical Engineering, Ecole Normale Supérieure de Cachan, Paris. Visiting Professor in the Department of Anatomy & Cell Biology, Rush University Medical Center, January 2022 – December 2022

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- 2018

## **HONORS AND AWARDS**

### **National/International**

Elected as a fellow of the American Society for Bone and Mineral Research, June 2022

Elected as a fellow of the Orthopaedic Research Society, February 2021

Elected as a fellow of the American Association for the Advancement of Science, November 2019

Elected as a fellow of the American Association for Anatomy, February 2017

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

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

Hip Society Otto Aufranc Award (1994)

American Academy of Orthopaedic Surgeons Kappa Delta Young Investigator Award (1993)

European Society of Biomechanics Research Award (1992)

NIH First Award (1989-1994)

PHS National Research Service Award (1984-1987)

Sigma Xi Grant-in-Aid (thesis research), ~1981

## **Local**

Mentor of the Year, Rush Mentoring Programs, September 2021

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

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

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

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

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

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

B.A. with special distinction and honors, Phi Beta Kappa invitation 1975

## **COMMITTEE AND ADMINISTRATIVE SERVICES**

### **Rush University committees and task forces**

<b><u>Start year</u></b>	<b><u>End year</u></b>	<b><u>Committee</u></b>
2018	2020	Chair, Scientific Leadership Council task force on post-graduate training at Rush
2012	2013	Intellectual Property Committee
2011	2014	Rush University Cancer Center, Internal Advisory Board
2010		Medical Computational Sciences Director search committee
2009	2021	Chair, Faculty Committee on Core Resources
2007	present	Scientific Integrity Committee
2007	2018	Scientific Leadership Council
2006	2010	Research Space Committee
2006	2010	Task Force for Capital Equipment for Translational Research
2004		Chair, Search Committee for the Dean of the Graduate College
2002		Education/Research Workgroup
2002	present	Research Conflict of Interest Committee
1998	2001	Faculty Advisory Committee
1996	2002	University Committee for Research (Chair, 2001-2002)
1996	1998	Task Force on the form of the Rush Research Report
1995		University Committee for Research, alternate member

#### **Rush Medical College committees and task forces**

<b><u>Start year</u></b>	<b><u>End year</u></b>	<b><u>Committee</u></b>
2022	2026	Committee on Senior Faculty Appointments
2018	2019	Microbial Pathogens & Immunity Chairperson Search Committee
2017		Review of Department of Immunity & Emerging Pathogens
2016		General Surgery Chair search
2015	2018	Committee on Senior Faculty Appointments
2015	2016	Task force on Basic Science Organization, Co-Chair
2014	2015	Physiology Chair search
2010		Cancer Center Bioinformatics Director search committee

**Rush Medical College committees and task forces**

<b><u>Start year</u></b>	<b><u>End year</u></b>	<b><u>Committee</u></b>
2010	2013	Medical Affairs Management Committee
2008	2011	Faculty Council
2007		Chair, Behavioral Science Department new chair search committee
2006	2010	Committee on Senior Faculty Appointments
2005	2009	Rush Medical College admissions interviewing
2005	2009	Research Council
2003	2004	Diagnostic Radiology Chair search
2003	2004	LCME Education Resources Task Force
2002	2006	Committee on Committees
2001	2009	Research Affairs Management Committee
2001		Biochemistry Chair search
2000	2003	Committee on Senior Faculty Appointments (Secretary, 2001-2003)
1999	2000	Ad hoc committee on Research Space Assignment
1998	2001	Committee on Committees
1997	1999	Task Force on Industry-Academic Relationships
1997	2005	Medical Affairs Management Committee
1991	1993	Committee on Academic Freedom member
1986	1989	Rush Medical College admissions interviewing

**Departmental committees and task forces**

<b><u>Start year</u></b>	<b><u>End year</u></b>	<b><u>Committee</u></b>
1997	present	Multiple Department of Anatomy & Cell Biology committees and task forces (as department chair)
1996	2024	Department of Orthopedic Surgery Advisory Committee
1993	1999	Residency Selection Committee member (Department of Orthopedic Surgery)

**PATENTS**

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

U.S. Application No. 16/357,578: “Biomarker Panel to Identify Patients at Risk for Peri-Implant Osteolysis” (co-inventor with Ryan Ross and Josh Jacobs)

**Google Scholar statistics (April, 2026)**

	All	Since 2021
<u>Citations</u>	14,250	2,669
<u>h-index</u>	66	28
<u>i10-index</u>	173	60

**PAPERS PUBLISHED  
(Peer Reviewed)**

- 183 Moran, M. M., Li, J., Shen, Q., Drummond, S. P., Milner, C. M., Day, A. J., . . . **Sumner, D. R.**, Plaas, A. (2026). Evidence of an allostatic response by intestinal tissues following induction of joint inflammation. PLoS One, 21(1), e0338053. doi:10.1371/journal.pone.0338053
- 182 Wilson, B. M., Wilson, A. B., Kraemer, M., Bowker, R., Patel, A. L., & **Sumner, D. R.** (2025). Bone mineral density deficits in individuals born preterm persist through young adulthood: A systematic review and meta-analysis of DXA studies. Bone, 198, 117519. doi:10.1016/j.bone.2025.117519
- 181 Wilson, B. M., Ko, F. C., Moran, M. M., Adra, A., Rasmussen, M. B., Thymann, T., . . . **Sumner, D. R.** (2024). Skeletal consequences of preterm birth in pigs as a model for preterm infants. J Bone Miner Res, 39(6), 791-803. doi:10.1093/jbmr/zjae064
- 180 Scheller, E. L., McDonald, M., Andersen, T. L., **Sumner, D. R.**, Noda, M., Erben, R. G., . . . Wronski, T. J. (2024). Celebrating 50-years: the history and future of the International Society of Bone Morphometry. JBMR Plus, 8(7), ziae070. doi:10.1093/jbmrpl/ziae070
- 179 Ko, F. C., Xie, R., Willis, B., Herdman, Z. G., Dulion, B. A., Lee, H., . . . **Sumner, D. R.** (2024). Cells transiently expressing periostin are required for intramedullary intramembranous bone regeneration. Bone, 178, 116934. doi:10.1016/j.bone.2023.116934
- 178 de Souza, W., Gemini-Piperni, S., Ruivo, C., Bastos, N., Almeida, S., Lopes, D., . . . **Sumner, D. R.** ... Ribeiro, A. R. (2024). Osteoblasts-derived exosomes as potential novel communicators in particle-induced periprosthetic osteolysis. Mater Today Bio, 28, 101189. doi:10.1016/j.mtbio.2024.101189

- 177 Organ, J. M., Smith, H. F., Trainor, P. A., Allen, K., Balta, J. Y., Beresheim, A. C., . . . **Sumner, D. R.** ... Zumwalt, A. C. (2023). Personal autonomy and self-determination are crucial for professionalism in healthcare. *Anat Sci Educ*, 16(4), 571-573. doi:10.1002/ase.2278
- 176 Markovics, A., Lupo, S., Patel, N., Mikecz, K., **Sumner, D. R.**, & Ross, R. D. (2023). SHP-1 Protein Tyrosine Phosphatase Affects Early Postnatal Bone Development in Mice. *Calcif Tissue Int*, 112(4), 472-482. doi:10.1007/s00223-023-01064-5
- 175 Ko, F. C., Jochum, S. B., Wilson, B. M., Adra, A., Patel, N., Lee, H., . . . **Sumner, D. R.** (2023). Colon epithelial cell-specific Bmal1 deletion impairs bone formation in mice. *Bone*, 168, 116650. doi:10.1016/j.bone.2022.116650
- 174 Chan, D. D., Mashiatulla, M., Li, J., Ross, R. D., Pendyala, M., Patwa, A., . . . **Sumner, D. R.** (2023). Contrast-enhanced micro-computed tomography of compartment and time-dependent changes in femoral cartilage and subchondral plate in a murine model of osteoarthritis. *Anat Rec (Hoboken)*, 306(1), 92-109. doi:10.1002/ar.25027
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- 8 **Sumner, D. R.**, & Turner, T. M. (1991). Enhancement of biological fixation in cementless total knee arthroplasty. In V. M. Goldberg (Ed.), *Controversies of Total Knee Arthroplasty* (pp. 105-117). New York: Raven Press.
- 7 **Sumner, D. R.**, & Galante, J. O. (1990). Bone ingrowth. In C. M. Evarts (Ed.), *Surgery of the musculoskeletal system* (Vol. 2, pp. 151-176). New York: Churchill Livingstone.

- 6 Kienapfel, H., **Sumner, D. R.**, Jacobs, J. J., Turner, T. M., Urban, R. M., & Galante, J. O. (1990). A quantitative topographic evaluation of bone ingrowth in tibial components removed from human patients. In G. Heimke, U. Soltesz, & A. J. C. Lee (Eds.), *Clinical Implant Materials* (pp. 415-420). Amsterdam: Elsevier Science Publishers.
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- 2 **Sumner, D. R.** (1985). A probable case of pre-Columbian tuberculosis from northeastern Arizona. In C. F. Merbs & R. J. Miller (Eds.), *Health and Disease in the Prehistoric Southwest* (pp. 340-346). Tempe, Arizona: Arizona State University Anthropological Research Papers.
- 1 **Sumner, D. R.** (1982). An analysis of six Anasazi burials from the Kayenta region: biological and cultural variables. In L. D. Linford (Ed.), *Kayenta Anasazi Archeology on Central Black Mesa, Northeastern Arizona: the Pinon Project* (pp. 417-432). Window Rock, Arizona: Navajo Nation Papers in Anthropology.

## INVITED PRESENTATIONS

- 91 **Sumner, DR:** "Training Grant, Shared Equipment Grant and Research Updates" JOINT Seminar, Rush University Medical Center, Chicago, January 12, 2026
- 90 **Sumner, DR:** "Bone Regeneration and Implant Fixation" Institute of Biomaterials, Tribocorrosion, Nano and Regenerative Medicine, University of Illinois at Chicago, March 18, 2021.
- 89 **Sumner, DR:** "Novel Bone Regeneration Strategies and Implant Fixation" Research Grand Rounds, Department of Internal Medicine, Rush University Medical Center, Chicago, March 3, 2020
- 88 **Sumner, DR:** "Novel Bone Regeneration Strategies and Implant Fixation" 3<sup>rd</sup> Danish Bone Research Workshop at Sandberg, Denmark, February 1, 2020
- 87 **Sumner, DR:** "Bone from the Perspective of Implant Fixation" Saint Vincent Institute, Melbourne, Victoria, Australia, October 7, 2019
- 86 **Sumner, DR:** "Bone Regeneration and Implant Fixation" Keynote at the annual meeting of the Australia-New Zealand Orthopaedic Research Society, Canberra, Australian Capital Territory, Australia, October 5, 2019
- 85 **Sumner, DR:** "Bone Quality, Regeneration and Implant Fixation" Sydney Bone Club, Sydney, New South Wales, Australia, October 2, 2019

- 84 **Sumner**, DR: “Innovations and Basic Science in Orthopedics” keynote at the 2019 annual meeting of the Nederlandse Orthopaedische Vereniging, 's-Hertogenbosch, The Netherlands, January 24, 2019
- 83 **Sumner**, DR: “Bone Regeneration, Implant Fixation and Osteolysis” 45<sup>th</sup> Annual Meeting of the Japanese Hip Society, Nagoya, Japan, October 27, 2018
- 82 **Sumner**, DR: “Bone Regeneration, Bone Remodeling and Implant Fixation” Tokyo Medical and Dental University, Tokyo, Japan, October 24, 2018
- 81 **Sumner**, DR: “New Approaches to Study Bone Remodeling and Implant Fixation” University of Utrecht, Utrecht, The Netherlands, September 19, 2018
- 80 **Sumner**, DR: “Implant Fixation: the Role of Prosthesis Stability, Bone Healing and Adaptation” Academy of Osseointegration Summit, Oak Brook, IL, August 9, 2018
- 79 **Sumner**, DR: “Bone and Implant Fixation” ORS Great Lakes/Midwest Regional Symposium, University of Michigan, August 6, 2018
- 78 **Sumner**, DR: “A Novel Model to Assess Osteoporosis Drugs on Bone Quality” American Association of Anatomists Symposium on the Future of Osteoporosis, San Diego, CA, April 24, 2018
- 77 **Sumner**, DR: “Bone and Implant Fixation” University of Iowa, Iowa City, March 15, 2018
- 76 **Sumner**, DR: “Bone and Implant Fixation” Mayo Clinic, Rochester, MN, October 16, 2017
- 75 **Sumner**, DR: “Detection and Treatment of Peri-Implant Osteolysis” Mayo Clinic, Rochester, MN, October 16, 2017
- 74 **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
- 73 **Sumner**, DR: “Bone Regeneration and Implant Fixation” XXVII Congresso Brasileiro de Anatomia, Sociedade Brasileira de Anatomia, Natal, Brazil, July 21, 2016.
- 72 **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
- 71 **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
- 70 **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
- 69 **Sumner**, DR: “Basic Scientist Start-Up Package” ORS Young Investigator’s Workshop, Rosemont, Illinois, May 16, 2014.
- 68 **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.
- 67 **Sumner**, DR: “Bone Regeneration and Implant Fixation,” Rush University Medical Center Research Grand Rounds (Department of Medicine), October 15, 2013
- 66 **Sumner**, DR: “Bone Remodeling and the Wnt Signaling Pathway in Implant Loosening” IBMS Sun Valley Workshop on Musculoskeletal Biology, August 7, 2012

- 65 **Sumner**, DR: "Stem Cell Mobilization and Wnt Signaling – Two Approaches to  
Enhancing Bone Regeneration," University of Pennsylvania, December 13, 2011
- 64 **Sumner**, DR: "Stem Cell Mobilization and Wnt Signaling – Two Approaches to  
Enhancing Bone Regeneration," University of Illinois at Urbana-Champaign, October  
24, 2011
- 63 **Sumner**, DR: "Stem Cell Mobilization to Enhance Bone Regeneration,"  
Musculoskeletal Transplant Foundation Symposium, Chicago, September 23, 2011
- 62 **Sumner**, DR: "Bone Regeneration and Implant Fixation," Anhui Medical University,  
Heifei, China, September, 2010
- 61 **Sumner**, DR: "Microcomputed Tomography Applications in Orthopedic Research,"  
Xradia Corporation, June 3, 2010
- 60 **Sumner**, DR: "Bone Regeneration and Implant Fixation," Lawrence Livermore  
Laboratory, June 2, 2010
- 59 **Sumner**, DR: "Bone Regeneration and Implant Fixation," Northwestern University,  
April 7, 2010
- 58 **Sumner**, DR: "Bone Regeneration and Implant Fixation," van Andel Institute, Grand  
Rapids, Michigan, September 22, 2009
- 57 **Sumner**, DR: "Bone Regeneration – Implant Fixation," Dominican University, River  
Forest, IL, April 16, 2008
- 56 **Sumner**, DR: "Bone Regeneration -- Implant Fixation," Department of Pharmacology,  
Rush University Medical Center, April 2, 2008
- 55 **Sumner**, DR: "Bone Regeneration -- Implant Fixation," Department of Kinesiology  
and Nutrition, University of Illinois at Chicago, December 7, 2007
- 54 **Sumner**, DR: "Bone Biology, Osteoporosis and Osteoarthritis" Citywide  
Rheumatology Fellow's Conference, Chicago, Illinois, November 11, 2006
- 53 **Sumner**, DR: "Scaling Effects in Bone Phenotypes" Midwest Connective Tissue  
Workshop, Chicago, IL November 5, 2005
- 52 **Sumner**, DR: "Bone and OA" Smith & Nephew Symposium on Osteoarthritis,  
Memphis, TN, July 7-8, 2005
- 51 **Sumner**, DR: "Enhancement of Bone Regeneration" Festschrift for Professor Web  
Jee, Oakland, CA, June 18, 2005
- 50 **Sumner**, DR: "Enhancement of Bone Regeneration" Department of Orthopedics,  
Erasmus University, Rotterdam, The Netherlands, June 9, 2005
- 49 **Sumner**, DR: "Bone Biology, Osteoporosis and Osteoarthritis" Citywide  
Rheumatology Fellow's Conference, Chicago, Illinois, November 13, 2004
- 48 **Sumner**, DR: "Enhancing Bone Regeneration and Implant Fixation" Section of  
Orthopaedic Surgery and Rehabilitation Medicine Grand Rounds, University of  
Chicago, May 12, 2004.
- 47 **Sumner**, DR: "Orthopedic Implants and Bone" Presented at A Tribute to Harold M.  
Frost, M.D. Workshop, Pueblo, Colorado, April 24, 2004.
- 46 **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.
- 45 **Sumner**, DR: "Bone Regeneration and Remodeling in Joint Replacement"  
Department of Bioengineering, University of California at Berkeley, March 10, 2004.

- 44 **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.
- 43 **Sumner**, DR: "Bone Biology and Osteoarthritis" Citywide Rheumatology Fellow's Conference, Chicago, Illinois, December 14, 2002
- 42 **Sumner**, DR: "Bone Adaptation after Joint Replacement" Biocomplexity Workshop III, University of Notre Dame, South Bend, Indiana, November 8-10, 2002
- 41 **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
- 40 **Sumner**, DR: "Implant Fixation and Bone Remodeling in Joint Replacement" Oral Biology Seminar, University of Illinois College of Dentistry, Chicago, October 9, 2001
- 39 **Sumner**, DR: "Bone Remodeling After Implantation" Symposium on Evaluation of Implants, 4<sup>th</sup> Combined Meeting of the Orthopaedic Research Societies of the USA, Canada, Europe and Japan, Rhodes, Greece, June 3, 2001
- 38 **Sumner**, DR: "Bone Regeneration and Orthopedic Implants" Regenerative Medicine Symposium, the University of Illinois at Chicago, Chicago, Illinois, April 24, 2001
- 37 **Sumner**, DR: "Implant Fixation and Bone Remodeling in Total Joint Arthroplasty" Zimmer-USA seminar series, Warsaw, Indiana, April 12, 2001
- 36 **Sumner**, DR: "Implant Fixation and Adaptive Remodeling of the Bone in Total Joint Replacement" 27<sup>th</sup> Annual Meeting of the Japanese Hip Joint Society, Nagoya, Japan, November 10, 2000
- 35 **Sumner**, DR: "Bone Response to Joint Degradation and Repair" First Annual Scientific Meeting of the TMJ Association, Bethesda, Md, May 22, 2000
- 34 **Sumner**, DR: "Implants and Bone Repair" 2<sup>nd</sup> International Workshop on Musculoskeletal Interactions, Delphi, Greece, May 18, 2000
- 33 **Sumner**, DR: "Growth Factors and Bone Regeneration in Aging" Sun Valley Hard Tissue Workshop, August, 1999.
- 32 **Sumner**, DR: "Enhancement of Bone Regeneration and Ingrowth in Implants with TGF- $\beta$  and BMP-2" ASBMB Fall Symposia, Taos, New Mexico, October 16-19, 1998
- 31 **Sumner**, DR: "Use of TGF- $\beta$  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.
- 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.
- 29 **Sumner**, DR: "Bone remodeling with low stiffness stems." Zimmer-USA, Warsaw, IN, August, 1996.
- 28 **Sumner**, DR: "Role of biologic mechanisms in endurance of load-bearing implants." Sun Valley Hard Tissue Workshop, August, 1995.
- 27 **Sumner**, DR: "Local application of growth factors to enhance regeneration." Sun Valley Hard Tissue Workshop, August, 1995.

- 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.
- 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.
- 24 **Sumner**, D.R.: Fundamentals of bone ingrowth and remodeling. Joint Replacement Institute Inagural Symposium, Los Angeles, California, Dec 7-8, 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.
- 22 **Sumner**, D.R.: Bone Remodeling: Studies from Nature and Experimental Manipulation. Invited seminar, Department of Anthropology, Harvard University, Cambridge, Mass., April 10, 1991.
- 21 **Sumner**, D.R.: Enhancement of Bone Ingrowth into Porous Coated Orthopedic Implants. Invited seminar, Genetics Institute, Cambridge, Mass., April 9, 1991.
- 20 **Sumner**, D.R.: Bone Remodeling around the Femoral Stem. Presented at the Workshop on the Interface Problem, Munich, December 1, 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.
- 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.
- 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.
- 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.
- 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.
- 14 **Sumner**, D.R.: Backscatter electron imaging. Presented at the Purdue University Undecalcified Bone Meeting, West Lafayette, Indiana, August 29, 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.
- 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.
- 11 **Sumner**, D.R.: Enhancement of Bone Ingrowth into Porous Metals. Presented at the Bone Grafting Symposium, Tampa, Florida, January 26-28, 1989.

- 10 **Sumner**, D.R.: Bone Ingrowth into Porous Surfaces. Presented at the Symposium International Prothese Totale de Hanche, Lyon, France, December 15-17, 1988.
- 9 **Sumner**, D.R.: Bone Ingrowth and Bone Remodeling. Presented at the Chinese Medical Association of the Republic of China, Taipei, July 9-10, 1988.
- 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.
- 7 **Sumner**, D.R.: Bone Ingrowth and Bone Remodeling. Presented at the Hopitaux de Paris, Paris, France, September 19, 1986.
- 6 **Sumner**, D.R.: Bone Ingrowth and Remodeling Associated with Cementless Total Joint Arthroplasty. Presented at the Orthopaedic Hospital, Arhus, Denmark, September 5, 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.
- 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.
- 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.
- 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.
- 1 **Sumner**, D.R.: Bone Remodeling Associated with Cementless Femoral Components. Presented at the Hip Society, August, 22-24, 1985, Chicago.

## ABSTRACTS

(>300 abstracts presented at various national and international meetings)