Dr. Sundeep Khosla is the Dr. Francis Chucker and Nathan Landow Research Professor of Medicine and Physiology, Mayo Foundation Distinguished Investigator, Director of the Center for Clinical and Translational Science, and Dean for Clinical and Translational Science at Mayo Clinic. Dr. Khosla received his A.B. degree from Harvard College and his M.D. from Harvard Medical School. He was subsequently a resident in Internal Medicine and a fellow in Endocrinology at the Massachusetts General Hospital. In 1988 he moved to Mayo Clinic, where his research interests include mechanisms of age-related bone loss and sex steroid regulation of bone metabolism. Dr. Khosla has served as Chair of the NIH SBDD Study Section, on the Council of the National Institute on Aging, and as President of the American Society for Bone and Mineral Research. He has received numerous awards and honors for his work, including the Frederic C. Bartter Award for Clinical Investigation and the William F. Neuman Award for Outstanding Scientific Contributions from the American Society for Bone and Mineral Research, the Outstanding Clinical Investigator Award from the Endocrine Society, and election to the ASCI and AAP. Dr. Khosla currently serves as the Editor-in-Chief of *Bone,* has served as Associate Editor of the *Journal of Bone and Mineral Research* and as a member of the editorial boards for the *Journal of Clinical Investigation, Journal of Bone and Mineral Research, Journal of Clinical Endocrinology and Metabolism, Bone*, and *Endocrine Reviews.*

CURRICULUM VITAE

Name:	Sundeep Khosla, M.D.
Current positions:	Dr. Francis Chucker and Nathan Landow Research Professor and Mayo Foundation Distinguished Investigator Medicine and Physiology Mayo Clinic College of Medicine Director and Principal Investigator, Mayo CTSA/Center for Clinical and Translational Science (CCaTS) Dean for Clinical and Translational Science
[redacted]	[redacted]
Address:	Guggenheim 7 Mayo Clinic 200 First Street SW Rochester, Minnesota 55905 Tel: 507-255-6663 Fax: 507-293-3853

Education:	1978	A.B. Harvard College
	1982	M.D. Harvard Medical School/Harvard-MIT Program in Health Sciences & Technology
Awards and Honors:	1978	Phi Beta Kappa A.B. in Chemistry & Physics, summa cum laude
	1982	M.D. cum laude
	1999	Pharmacia & Upjohn International Award for Excellence in Published Clinical Research in the *Journal of Clinical Endocrinology & Metabolism*
	2000	Association of Osteobiology
	2000	American Society for Bone and Mineral Research (ASBMR) award for outstanding research in the pathophysiology of osteoporosis
	2002-2005	ASBMR Council
	2002-2006	Board of Trustees, National Osteoporosis Foundation
	2003	Election to the American Society for Clinical Investigation (ASCI)

2003	Mayo Department of Medicine Landmark Contribution to the Literature Award
2004	David Rabin Lectureship, Vanderbilt University School of Medicine
2003-2004	Regular member, NIH ORTH/SBSR Study Section
2004-2006	Chair, NIH Skeletal Biology, Development, and Disease (SBDD) Study Section
2005-2006	Vice President, National Osteoporosis Foundation
2006	Frederic C. Bartter Award for Outstanding Clinical Investigation in Bone Diseases, ASBMR
2007-2010	Member, Council of the National Institute on Aging
2007	Election to the Association of American Physicians (AAP)
2007	National Osteoporosis Foundation Innovation in Osteoporosis Research Award
2007	10th Annual John G. Haddad, Jr. Memorial Lecture, University of Pennsylvania
2008	Mayo Department of Medicine Outstanding Investigator Award
2009-2010	Member, Working Group on Programs, Council of the National Institute on Aging
2009	Distinguished Investigator, Mayo Foundation
2010	Outstanding Clinical Investigator Award, The Endocrine Society
2010	H. C. Jacobaeus Lecture, Odense University Hospital, Odense, Denmark
2010	Robert and Arlene Kogod Center on Aging Director's Award, Mayo Clinic
2010-2011	President, ASBMR
2012	The Frank H. Tyler, M.D. Honorary Endowed Lecture, University of Utah
2012	European Calcified Tissue Society Excellence in Research Lecture
2012	William F. Neuman Award for Outstanding Scientific Contributions, ASBMR
2013-2016	Member, Board of Scientific Counselors, National Institute on Aging

Training:	7/82-6/85	Resident in Medicine Massachusetts General Hospital

		Boston, Massachusetts
	7/85-12/87	Clinical & Research Fellow in Endocrinology Massachusetts General Hospital Boston, Massachusetts
Academic Appointments:	1988-1990	Instructor in Medicine College of Medicine, Mayo Clinic Rochester, Minnesota
	1990-1996	Assistant Professor of Medicine College of Medicine, Mayo Clinic
	1996-2000	Associate Professor of Medicine College of Medicine, Mayo Clinic
	2000-	Professor of Medicine College of Medicine, Mayo Clinic
	2004-	Joint Appointment, Department of Physiology and Biomedical Engineering, College of Medicine, Mayo Clinic
	2007-	Professor of Physiology, Mayo Graduate School
	2008-	Dr. Francis Chucker and Nathan Landow Research Professor, College of Medicine, Mayo Clinic
Clinical/Administrative Appointments:	1988-1991	Senior Associate Consultant Endocrinology & Internal Medicine Mayo Clinic Rochester, Minnesota
	1991-	Consultant Endocrinology & Internal Medicine Mayo Clinic Rochester, Minnesota
	1995-1999	Chair, Metabolic Bone Group Mayo Clinic Rochester, Minnesota
	1999-2002	Director, Fellowship Program, and Education Chair, Division of Endocrinology, Mayo Clinic
	2002-2007	Research Chair, Division of Endocrinology, Mayo Clinic
	2005-2008	Director, Endocrine Research Theme, Mayo Clinic

	2007-	Associate Dean for Research Development, Mayo Clinic
	2008-2010	Associate Director, Mayo Clinical Research Unit (CRU)
	2010-2013	Director, Research Resources, Mayo CTSA
	2013	Director and Principal Investigator, Mayo CTSA

Major Committee Assignments:

Intramural	1989-	Endocrine Research Committee
	1989-1994	Endocrine Education Committee
	1989-2007	Division of Endocrinology Executive Committee
	1992-1997	Endocrine Trainee Selection Committee
	1995-2000	Women's Healthcare Council
	1995-1998	Menopause Task Force
	1995-1997	Endocrine Outcomes & Efficiency Committee
	1996-1998	Editorial Board, Mayo Clinic Women's HealthSource
	1997-1999	Mayo Institutional Review Board
	2000-2003	Fiscal Sub-Committee, Mayo Research Committee
	2005-	Theme Council
	2007-	Chair, Theme Council
	2007-	Rochester Research Committee
	2008-	Rochester Research Review Group
	2008-	CTSA Research Resources Executive Committee
	2009-	Chair, Research Development Subcommittee
	2010-	Member, CTSA Executive Committee
	2010-2013	Chair, CTSA Research Resources Executive Committee
	2013-	Chair, CTSA Executive Committee
Extramural	1994-1999	Education Committee, American Society for Bone and Mineral Research
	1997-00	Member, Endocrine Society Annual Meeting Steering Committee
	1997	Review panel on Longitudinal Studies, Bone Health and Military Medical Readiness.
	1998	NIH Scientific Review panel, Columbia Presbyterian GCRC site visit.

1999	NIH Scientific Review panel, Oregon Health Sciences University GCRC site visit.
1999-00	Clinical Chair, Endocrine Society Annual Meeting Steering Committee
1999-00	Member, Endocrine Society Scientific and Educational Programs Committee
1999	NIAMS/NIH Special Emphasis Review Panel.
1999-	Committee of Scientific Advisors, International Osteoporosis Foundation.
2000	Chair, APDEM Curriculum Development Committee (Bone and Calcium).
2000-02	Ad hoc reviewer, Orthopedics & OBM-2 Study Sections, NIH.
2000	Member, Nominating Committee, ASBMR
2000-02	Member, Professional Practice Committee, ASBMR
2000	NIA/NIH Scientific Review panel, Univ of Arkansas PPG on Osteoporosis
2000-	NIAMS/NIH Data Safety Monitoring Board, Specialized Centers for Research in Osteoporosis
2001-04	Chair, Endocrine Society CME Advisory Committee
2001-04	Member, Endocrine Society Meetings and Educational Programs Committee
2001-	Scientific Board, International Society for Men's Health
2001-02	Scientific Advisory Board, National Osteoporosis Foundation
2002	NIA/NIH Scientific Review panel, Mount Sinai PPG on Osteoclast Biology
2002-2005	ASBMR Council
2002-2006	Board of Trustees, National Osteoporosis Foundation
2003-2004	Regular member, NIH ORTH/SBSR Study Section
2004-2006	Chair, NIH Skeletal Biology, Development, and Disease (SBDD) Study Section
2005-2006	Vice-President, National Osteoporosis Foundation
2003	Clinical Chair, 2003 ASBMR Annual Meeting Program Committee
2004	Member, Planning Committee, NIH State-of-the-Science Conference on Management of Menopause-Related Symptoms

	2004-	Osteoporosis Program Advisory Council, The Hormone Foundation
	2005-06	Chair, Annual Meeting Steering Committee, Endocrine Society
	2005	Member, Extramural review panel, Biology of Aging Program, National Institute on Aging
	2005-2006	Chair, Science and Research Committee, National Osteoporosis Foundation
	2006	Member, Extramural review panel, Geriatrics and Clinical Gerontology Program, National Institute on Aging
	2006-2007	Chair, ASBMR Taskforce on ONJ
	2007-2010	Member, Council of the National Institute on Aging
	2009	Member, NIAMS Roundtable on Enhancing Clinical Trials in Bone Diseases
	2009-2010	Member, Working Group on Programs, Council of the National Institute on Aging
	2010	Chair, Extramural review panel, Geriatrics and Clinical Gerontology Program, National Institute on Aging
	2010-2011	President, ASBMR
	2011-	Chair, Governance Committee, National Bone Health Alliance
	2011	Member, NIA Director Leadership Review Panel
	2012-2015	Member and Chair (2013-14), Endocrine Society Awards Committee
Editorial Boards:	1995-2002	Associate Editor, ASBMR *Primer on Metabolic Bone Diseases & Disorders of Mineral Metabolism.*
	2000-2003	Editorial Board, *Journal of Clinical Endocrinology and Metabolism.*
	2001-2004	Editorial Board, *Endocrinology.*
	2004-2007	Editorial Board, *Journal of Bone and Mineral Research*
	2005-2008	Editorial Board, *Journal of Clinical Endocrinology and Metabolism.*
	2006-2009	Editorial Board, *Endocrine Reviews*
	2007-	Editorial Board, *Journal of Clinical Investigation*
	2007-2010	Editorial Board, *Bone*
	2008-2012	Associate Editor, *Journal of Bone and Mineral Research*

	2013-2014	Editorial Board, *Endocrine Reviews*
	2013-2017	Editor-in-Chief, *Bone*
Teaching Experience:	1988-	Attending Physician St. Mary's Hospital Metabolic/GCRC Service
	1988-	Supervisor of Endocrine Fellows/Residents in Endocrine Clinics
	1989-1996	Course Director Endocrine Physiology Course, Mayo Graduate School of Medicine
	1990-	Supervisor of Clinical & Research Fellows in laboratory/clinical research
	1996-00	Steroid Hormone section, Mayo Medical School Pharmacology and Therapeutics Course (Year 2)
Board Certification:	1985	Diplomate, American Board of Internal Medicine
	1987	Diplomate, Endocrinology & Metabolism Subspecialty, American Board of Internal Medicine
Professional Societies:	1982-	American Medical Association
	1986-	American Society for Bone & Mineral Research
	1986-	American Association for the Advancement of Science
	1988-	Minnesota Medical Association
	1988-	Zumbro Valley Medical Society
	1988-	American Federation for Clinical Research
	1988-	Sigma Xi
	1991-	Endocrine Society
	1991-	Fellow, American College of Physicians
	1994-	American Association of Clinical Endocrinologists
Medical Licensure:		Minnesota

Research Interests:	Pathogenesis of postmenopausal and age-related bone loss. Age-related changes in bone quality
Patents:	Patent No. 6,916,790, Treatment of osteoporosis using IGF-II and IGFBP-2

Research Support:

Ongoing:

P01 AG004875 (PI) "Physiology of Bone Metabolism in an Aging Population." 7/1/09-6/30/14
Project 1 (PI) "Pathophysiology of Osteoporosis"
Project 4 (Co-PI) "Estrogen Receptor Signaling Pathways in Bone"
Administrative and Biostatistics Core (PI)

R01 AR027065 (PI) "Epidemiology of Age-Related Bone Loss and Fractures." 6/1/10-5/31/15

R01 AG031750 (Co-PI, Multiple PI Grant) "Role of Endothelial Progenitor Cells in Vascular Aging and Calcification." 4/15/10-3/31/15

R01 AR060700 (Co-I, T. F. Lang, PI) "Bone quality by vQCT and HRpQCT: Translation to multicenter clinical research." 8/1/11-7/31/15

UL1 TR000135/KL2 TR000136/TL1 TR000137 (PI) Mayo Clinic Clinical and Translational Science Award. 7/01/11-6/30/16.

Completed:

R01 AG028936 (PI) Estrogen regulation of the bone marrow adipocyte. 9/1/06-6/30/11

R43 AR057616 (Co-I; D. Kopperdahl, PI) Robust BCT for Clinical Use. 7/01/09-6/30/11

R01 AR027065 (PI) "Epidemiology of Age-Related Bone Loss and Fractures." 6/1/05-5/31/10

P01 AG004875 (PI) "Physiology of Bone Metabolism in an Aging Population." 7/1/04-6/30/09
Project 1 (PI) "Pathophysiology of Osteoporosis in Aging Men"
Project 4 (PI) "Estrogen Receptor Coactivators and Bone Metabolism"
Administrative and Biostatistics Core (PI)

R21 AG024901 (PI) Circulating osteoblast lineage cells in humans. 9/30/04-7/31/06

R01 AR27065 (PI) "Epidemiology of Age-Related Bone Loss and Fractures." 6/1/00-5/31/05

P01 AG14283 (PI - Project 2) Effects of Androgens on Bone Metabolism in Aging. 6/15/98-12/31/04

P01 AG004875 (CI – Project 1; B. L. Riggs, PI) "Pathophysiology of Osteoporosis." 7/1/99-6/30/04

P01 AG004875 (CI – Project 3; T. C. Spelsberg, PI) "Sex Steroids, Growth Factors, and Bone Cell Function." 7/1/99-6/30/04

R01 AR27065 (CI; B. L. Riggs, PI) "Epidemiology of Age-Related Bone Loss and Fractures." 6/1/95-5/31/00

P01 AG004875P1 (CI; B. L. Riggs, PI) "Pathophysiology of Osteoporosis." 7/1/94-6/30/99

P01 AG004875P3 (CI; T. C. Spelsberg, PI) "Sex Steroids, Growth Factors, and Bone Cell Function." 7/1/94-6/30/99

K08 NS01562 (PI) "Molecular Biology of Neuroendocrine Cell Differentiation." 7/1/92-6/30/95)

Marion Merrill Dow Research Transition Award (MARTA) 7/1/92-6/30/95

Wyeth Ayerst, Investigator-initiated grant (PI) "Role of Estrogen Deficiency in the Pathogenesis of Impaired Collagen Synthesis in Postmenopausal Women." 6/1/96-5/31/99

Eagles Cancer Fund (PI) "Pilot Study on the use of 13-cis-retinoic acid (Isotretoin, Accutane) as an adjunct to radioiodine therapy of metastatic thyroid carcinoma." 7/1/92-6/30/93

Mayo Foundation Clinical Research-20 award. 7/1/92-6/30/95

Invited Lectures:

(1) 1995 Minnesota Endocrine Club: "Pathogenesis of age-related bone loss".
(2) 1995 Mayo 16th. Annual Practice of Internal Medicine Course: "New Developments in the Treatment of Osteoporosis" and "Endocrine Update".
(3) 1995 Medical Grand Rounds, Mayo Clinic: "Osteoporosis: Present and Future Directions".
(4) 1995 University of Missouri, Columbia, MO. Endocrine Grand Rounds: "Osteoporosis: Diagnosis and Management".
(5) 1996 Endocrine Round Table, Kansas City, MO. "Insights into the pathogenesis of age-related bone loss".
(6) 1996 Medical Grand Rounds, University of Kansas, Kansas City, MO. "Osteoporosis: Diagnosis and Treatment".
(7) 1996 Medical Grand Rounds, Abbott Northwestern Hospital, Minneapolis, MN. "Osteoporosis: Diagnosis and Treatment".
(8) 1996 Research seminar, Addenbrooke's Hospital, Cambridge, UK. "Studies on the pathogenesis of age-related bone loss".
(9) 1996 Invited lecture, The 3rd. International Bone Disease Symposium, Chantilly, VA. "Future Developments: Bisphosphonates and New Therapeutic Approaches".
(10) 1996 Mayo Clinical Reviews, "New Developments in the Diagnosis and Treatment of Osteoporosis".
(11) 1996 Invited lecture, Annual Meeting of the American Academy of Physical Medicine and Rehabilitation, Chicago, IL. "Drug treatment of osteoporosis".
(12) 1997 Invited lecture, Marin Luther King, Jr. Medical Center, Los Angeles, CA. "Partial estrogen agonists: Retaining beneficial bone and cardiovascular effects without the increased cancer risk".
(13) 1997 Mayo 18th. Annual Practice of Internal Medicine Course: "Management of Mild Hyperparathyroidism".
(14) 1997 Invited Lecture, The 2nd. International Conference on Steroids and Bone, Siena, Italy: "Aromatase Inhibitors: Role on Bone Metabolism".
(15) 1997 Invited Lecture, 79th. Annual Meeting of the Endocrine Society, Minneapolis, MN: "Potential Clinical Applications of Biochemical Markers of Bone Turnover", (Clinical Symposium, "New Horizons in Osteoporosis").
(16) 1997 Invited Lecture, 38th. Annual Meeting of the American College of Nutrition, New York, NY: "Potential Clinical Applications of Biochemical Markers of Bone Turnover".
(17) 1998 Invited Lecture, 54th. Annual Meeting of the American Academy of Allergy, Asthma, and Immunology, Washington D.C.: "Glucocorticoid-Induced Osteoporosis: New Pharmacotherapy and Other Interventions."
(18) 1998 Wisconsin Bone Club, Green Lake, WI. "Skeletal Effects of Estrogens in Men" and "Biochemical Markers of Bone Turnover".
(19) 1998 80th. Annual Meeting of the Endocrine Society, New Orleans, LA. Meet the Professor session: "Use of biochemical markers in osteoporosis".
(20) 1998 3rd Annual Mayo/Karolinska Nutrition & Metabolism Conference, Rochester, MN. "Insulin-like growth factor system abnormalities in hepatitis C-associated osteosclerosis: potential insights into increasing bone mass in adults".

(21) 1998 22nd Brazilian Congress of Endocrinology, Sao Paulo, Brazil. Meet the Professor session: "Diagnostic evaluation and management of osteoporosis".

(22) 1998 22nd Brazilian Congress of Endocrinology, Sao Paulo, Brazil. Plenary lecture: "Potential utility of biochemical markers of bone turnover".

(23) 1999 Symposium in Endocrinology and Metabolism, Bobigny/Paris, France. "Estrogen and bone metabolism in men" and "Diagnostic evaluation of osteoporosis".

(24) 1999 2nd Mayo Clinic Endocrine Course, Maui, Hawaii. "Treatment of osteoporosis".

(25) 1999 Mayo/Cornell University Conference on Gender, Biology and Human Disease, New York, NY. "Osteoporosis: Gender differences and similarities".

(26) 1999 Symposium on Androgen Replacement in Elderly Men, Palm Springs, CA. "The effects of androgens on osteoblast function in vitro".

(27) 1999 Bone and Tooth Society Meeting, Bristol, UK. Plenary lecture: "Recent advances in our understanding of the pathogenesis of male and postmenopausal osteoporosis".

(28) 1999 Invited lecture, University of Sheffield, Sheffield, UK. "Insulin-like growth factor system abnormalities in hepatitis C-associated osteosclerosis: potential insights into increasing bone mass in adults".

(29) 1999 Symposium on Estrogen: Current Developments, 21st Annual Meeting of the American Society for Bone and Mineral Research, St. Louis, MO. "The phytoestrogens: Are they clinically relevant ?"

(30) 1999 Visiting Professor, University of Pittsburgh. "Regulation of OPG and OPG-L production in osteoblastic cells" and "Hepatitis C-associated osteosclerosis: Potential insights into increasing bone mass in adults".

(31) 2000 Invited lecture, Third Mayo Clinic Endocrine Course, Hawaii. "Hepatitis C and Osteosclerosis".

(32) 2000 Invited lecture, University of Cincinnati Symposium on Metabolic Bone Disease, Cincinnati, Ohio. "Potential clinical utility of biochemical markers of bone turnover".

(33) 2000 Plenary lecture, World Congress on Osteoporosis 2000, Chicago, Il. "Other Antiresorptive Agents".

(34) 2000 Invited lecture, 3rd Annual Northern Michigan Conference on Menopause, Glen Arbor, Michigan. "Phytoestrogens: What's out there? What's safe?"

(35) 2000 Visiting Professor in Endocrinology and Molecular Medicine, University of Connecticut Health Center, Farmington, CT. "The role of estrogen in bone metabolism in men" and "Hepatitis C-associated osteosclerosis: Potential insights into increasing bone mass in adults."

(36) 2001 Plenary lecture, 1st International Conference on Osteoporosis in Men, Siena, Italy. "Estrogens and bone health in men."

(37) 2001 Symposium lecture, 20th Joint Meeting of the British Endocrine Societies, Belfast, UK. "Role of androgens vs oestrogens on the skeleton."

(38) 2001 Symposium lecture, 2nd International Congress on Glucocorticoid Induced Osteoporosis, Mantova, Italy. "Mechanism of glucocorticoid induced bone loss: Effects on bone resorption."

(39) 2001 Invited lecture, Metropolitan Bone Club, New York, New York. "Estrogen, bones and men: When testosterone just isn't enough."

(40) 2001 Visiting Professor, Endocrinology, College of Physicians and Surgeons of Columbia University. "Hepatitis C-associated osteosclerosis: From bedside to bench and (partway) back."

(41) 2001 Symposium lecture, 83rd Annual Meeting, Endocrine Society, Denver, CO. "Hepatitis C-Associated Osteosclerosis: Potential insights into increasing bone mass in adults."

(42) 2001 Invited lecture, FASEB Summer Research Conference on Steroids and Bone, Whitefish, MT. "Androgen effects on bone cells."

(43) 2001 Invited lecture, Loyola University Symposium on Osteoporosis, Chicago, IL. "Future treatments for osteoporosis."

(44) 2001 Invited lecture, Endocrine Grand Rounds, Massachusetts General Hospital, Boston, MA. "The Role of Estrogen in Bone Metabolism in Men."

(45) 2001 Symposium lecture, 1st World Congress on Men's Health, Vienna, Austria. "The Unitary Model and the Development of Osteoporosis in Males."

(46) 2002 Invited lecture, NIH Inter-Institute Endocrine Grand Rounds, Bethesda, MD. "The Role of Estrogen in Bone Metabolism in Men."

(47) 2002 Invited lecture, Metabolic Bone Research Seminar, Washington University, St Louis, MO. "The Role of Estrogen in Bone Metabolism in Men."

(48) 2002 Invited lecture, Medical Grand Rounds, University of Nebraska Medical Center, Omaha, NE. "Diagnosis and Treatment of Osteoporosis".

(49) 2002 Invited lecture, 5th International National Osteoporosis Foundation Symposium on Osteoporosis, Honolulu, HI. "Estrogens from beans and plants: Do phytoestrogens really work?"

(50) 2002 Invited lecture, NIH/NIDDK Workshop on Asymptomatic Primary Hyperparathyroidism, Bethesda, MD. "Fracture risk in primary hyperparathyroidism"

(51) 2002 Invited lecture, Endocrine Grand Rounds, Vanderbilt University, Nashville, TN. "The OPG/RANKL/RANK system: Clinical Implications"

(52) 2002 Invited lecture, ASBMR/NIH Workshop on Osteoporosis Trials, Bethesda, MD. "Surrogates for fracture endpoints in clinical trials"

(53) 2002 Symposium lecture, 84th Annual Meeting, Endocrine Society, San Francisco, CA. "Osteoporosis in men".

(54) 2002 Invited lecture, 16th Annual Symposium on the Long Term Effects of Estrogen Deprivation, Half Moon Bay, CA. "The critical role of estrogen in bone metabolism in both sexes".

(55) 2002 Invited lecture, Biomedical Engineering Seminar Series, Mayo Clinic, Rochester, MN. "The OPG/RANKL/RANK system: From bone biology to clinical applications."

(56) 2002 Invited lecture, Medical Grand Rounds, Mayo Clinic, Rochester, MN. "New concepts in the pathogenesis and treatment of osteoporosis in men."

(57) 2002 Invited lecture, Mayo Clinic Department of Medicine 35th Anniversary Celebration, Rochester, MN. "Case studies in genetic diagnosis: Endocrine disease."

(58) 2002 Invited lecture, Endocrine Society Clinical Endocrinology Update, Portland, OR. "Sex steroids and the skeleton in men: Physiology and clinical implications."

(59) 2002 Invited lecture, International Congress on Hormonal Steroids and Steroids and Cancer, Fukuoka, Japan. "Estrogen versus androgen actions on bone metabolism in humans."

(60) 2003 Invited lecture, 2nd International Conference on Osteoporosis in Men, Genoa, Italy. "Male Osteoporosis and Estrogens."

(61) 2003 Invited lecture, University of California at San Francisco, Endocrine Grand Rounds. "Role of estrogen in bone metabolism in men."

(62) 2003 Invited lecture, University of Texas-Southwestern, Dallas, TX, Endocrine Grand Rounds. "The OPG/RANKL/RANK System: Clinical Implications."

(63) 2003 Invited lecture, Yale School of Medicine, New Haven, CT, Endocrine Grand Rounds. "Sex steroids and the skeleton in men: Physiology and clinical implications."

(64) 2003 Invited lecture, NIH Symposium on the Menstrual Cycle and Bone Health, Bethesda, MD. "Sex Steroids and Bone Health: The Clinical Science."

(65) 2003 Invited presentation, National Advisory Council on Aging, National Institute on Aging, Bethesda, MD. "Program Highlights: Role of RANK ligand in mediating the increased bone resorption in early postmenopausal women."

(66) 2003 Invited presentation, University of Arkansas Medical Center, Little Rock, AK, Endocrine Grand Rounds. "Sex steroids and the skeleton in men: Physiology and clinical implications."

(67) 2004 Invited presentation, Northwestern University, Chicago, IL, Endocrine Grand Rounds. "Sex steroids and the skeleton in men: Physiology and clinical implications."

(68) 2004 Invited presentation, Seventh Mayo Clinic Endocrine Course, Hawaii. "Osteoporosis in Men."

(69) 2004 Invited presentation, Medical University of South Carolina, Charleston, SC, Endocrine Grand Rounds. "Sex steroids and the skeleton in men: Physiology and clinical implications."

(70) 2004 Invited presentation, Indiana University School of Medicine, Indianapolis, IN, Endocrine Grand Rounds. "Sex steroids and the skeleton in men: Physiology and clinical implications."

(71) 2004 Invited presentation, Univ of Pennsylvania School of Medicine, Philadelphia, PA, Endocrine Grand Rounds. "Sex steroids and the skeleton in men: Physiology and clinical implications."

(72) 2004 Invited presentation, National Institute on Aging Conference on Aging Research, Bethesda, MD, "Age-related bone loss and osteoporosis."

(73) 2004 Invited presentation, Baylor College of Medicine, Houston, TX, Endocrine Grand Rounds. "Estrogen and bone: Insights from studies in men."

(74) 2004 Invited presentation, ASBMR Symposium on Advances in Skeletal Anabolic Agents for the Treatment of Osteoporosis, Bethesda, MD. "Growth Hormone, IGFs and IGFBPs: Clinical Aspects."

(75) 2004 NIA/ORWH Biology of the Perimenopause: Impact on Health and Aging Workshop, Bethesda, MD. Chair, Bone Discussion Session.

(76) 2004 Invited plenary speaker, Australian and New Zealand Bone and Mineral Society, Hunter Valley, NSW, Australia. "Sex hormones and the skeleton" and "Growth hormone, IGFs and bone: a promise yet unfulfilled."

(77) 2004 Invited speaker, NIA Workshop on Inflammation, Inflammatory Mediators and Aging, Bethesda, MD. "Inflammatory cells, cytokines, estrogen effects and bone."

(78) 2004 Invited speaker, University of Michigan Bone Center, Ann Arbor, Michigan. "Sex steroids and the skeleton in men: Physiology and clinical implications."

(79) 2004 Invited speaker, Working Group on Biochemical Markers of Bone Turnover, 26th Annual ASBMR Meeting, Seattle, WA. "Cytokines and bone: Do they reflect bone turnover and predict fractures?"

(80) 2004 Invited speaker, Symposium on the Clinical Outlook on RANKL, 26th Annual ASBMR Meeting, Seattle, WA. "Current and emerging perspectives on RANKL and its specific role in osteoclastogenesis."

(81) 2004 Invited speaker, Finnish Endocrine Society, Helsinki, Finland. "Sex steroids and the skeleton."

(82) 2004 Invited speaker, 1st. International Conference on Bone Involvement in Arthritis, Venice, Italy. "The role of RANKL and osteoprotegerin in bone resorption."

(83) 2004 Invited speaker, NIA Workshop on Stem Cells and Aging, Potomac, MD. "Circulating osteoblast lineage cells in humans."

(84) 2005 Invited speaker, Endocrine Grand Rounds, Oregon Health Sciences University, Portland, OR. "Sex steroids and the skeleton in men: Physiology and clinical implications."

(85) 2005 Invited speaker, National Osteoporosis Foundation Symposium on Osteoporosis, Washington DC. "Mechanisms of bone loss."

(86) 2005 Invited speaker, 3rd. International Conference on Osteoporosis in Men, Genoa, Italy. "Sex steroids and bone: From mice to men."

(87) 2005 Invited speaker, NY Academy of Sciences Meeting on Skeletal Development and Remodeling in Health, Disease and Aging, NY, NY. "Circulating osteoblast lineage cells in humans."

(88) 2005 Invited speaker, 87th. Annual Meeting of the Endocrine Society, San Diego, CA. "What's new in SERMs and SARMs?"

(89) 2005 Invited speaker, Gordon Research Conference on Bones and Teeth, Biddeford, ME. "IGFs and GH in basic and clinical studies."

(90) 2005 Invited speaker, Non-invasive Assessment of Trabecular Bone Microstructure Working Group, 27th Annual ASBMR Meeting, Nashville, TN, "Clinical micro-CT: Initial clinical experience and results."

(91) 2005 Invited speaker, Medical Grand Rounds, Emory University, Atlanta, GA, "Sex Steroids and the Skeleton in Men: Physiology and Clinical Implications."

(92) 2005 Invited speaker, NIH-Industry Bone Quality Initiative, Bethesda, MD, "Clinical studies using existing cohorts."

(93) 2006 Invited speaker, Sullivan Conference, Kidney Institute, KU Medical Center, Kansas City, KS, "Circulating osteogenic cells in humans."

(94) 2006 Invited speaker, Center for Metabolic Bone Disease, University of Alabama, Birmingham, AL, "Circulating osteogenic cells in humans."

(95) 2006 Plenary talk, 33rd European Symposium on Calcified Tissues, Prague, Czech Republic, "Gender specific patterns of age-related bone loss."

(96) 2006 Medical Grand Rounds, University of Utah, Salt Lake City, Utah, "Sex Steroids and the Skeleton in Men: Physiology and Clinical Implications."

(97) 2006 Invited speaker, New technology, treatments and trials for osteoporosis, 28th Annual ASBMR Meeting, Philadelphia, PA, "Non-invasive assessment of bone microarchitecture: What can it tell us about 'bone quality?'"

(98) 2006 Invited speaker, Xth Congress of the International Society of Bone Morphometry, Philadelphia, PA, "Bone quality: Bone markers – Under-utilized indices of bone quality"

(99) 2006 Invited speaker, 8th Annual Meeting of the Japan Osteoporosis Society, Tokyo, Japan, "Targeting the OPG/RANKL/RANK system in the treatment of osteoporosis"

(100) 2006 Invited speaker, Jackson Laboratories, Bar Harbor, ME, "Circulating osteogenic cells in humans"
(101) 2007 Visiting Kramer Professor, Department of Medicine Medical Grand Rounds, Dartmouth-Hitchcock Medical Center, Lebanon, NH, "Sex steroids and the skeleton in men"
(102) 2007 Visiting Professor, University of Arkansas Medical Center, Little Rock, AR, "Circulating osteogenic cells in humans"
(103) 2007 Invited speaker, 13th Annual Meeting of the International Society for Clinical Densitometry, Tampa FL, "What is the relationship between the skeletal and cardiovascular system?"
(104) 2007 Visiting Professor, Medical College of Georgia, Augusta, GA, "Circulating osteogenic cells in humans"
(105) 2007 Invited speaker, NOF 7th International Symposium on Osteoporosis, Washington, DC, "Pros and Cons of Long-Term Therapies"
(106) 2007 Invited speaker, 2nd Conference on Skeletal Biology and Medicine, New York, NY, "Stem cells in metabolic bone diseases: Challenges and controversies"
(107) 2007 Invited speaker, AAOS Research Symposium on Fracture Repair, Miami, Fla, "Circulation of osteoblast progenitors in the peripheral blood"
(108) 2007 Invited speaker, CaMos Scientific Workshop, Montreal, CA, "Moving from bone density to bone structure in population studies"
(109) 2007 Visiting Professor, Endocrine Grand Rounds, University of Louisville, Louisville, KY, "Sex steroids and the skeleton in men."
(110) 2007 Invited speaker, 17th Scientific Meeting of the International Bone and Mineral Society, Montreal, CA, "Effects of glucocorticoids and calcineurin inhibitors on bone."
(111) 2007 Invited speaker, 29th Annual ASBMR Meeting, Honolulu, HI, "ONJ, Fear of ONJ, and the treatment of osteoporosis."
(112) 2007 Invited speaker, 12th Congress of the Spanish Society of Osteoporosis and Mineral Metabolism, Valencia, Spain, "Immunosuppressive drugs and the skeleton."
(113) 2007 Visiting Professor, Endocrine Grand Rounds, UCSF, San Francisco, CA, "Moving from bone density to bone structure."
(114) 2007 10th Annual John G. Haddad, Jr. Memorial Lecture, University of Pennsylvania, PA, "Circulating osteogenic cells in humans."
(115) 2007 Invited speaker, ASBMR meeting on Targeting Bone Remodeling for the Treatment of Osteoporosis, Washington, DC, "Sex Steroids."
(116) 2008 Visiting Professor, Endocrine Rounds, University of Toronto, Toronto, CA, "Sex steroids and the skeleton" and Osteoporosis Rounds, "Moving from bone density to bone structure."
(117) 2008 Invited speaker, International Symposium on Advances in Osteoporosis, Sitges, Spain, "Low bone mass in young individuals."
(118) 2008 Visiting Professor, Endocrine Grand Round, Johns Hopkins School of Medicine, Baltimore, MD, "Sex steroids and the skeleton in men."
(119) 2008 Visiting Professor, Endocrine University-Wide Conference, University of Pittsburgh, Pittsburgh, PA, "Circulating osteogenic cells in humans."
(120) 2008 Visiting Professor, Pediatric Grand Rounds, Medical University of South Carolina, Charleston, SC, "Distal forearm fractures in adolescents: Epidemiology and pathogenesis.

(121) 2008 Invited speaker, The Endocrine Society's 90th Annual Meeting, San Francisco, CA, "Circulating osteogenic cells: Their properties and function."
(122) 2008 Visiting Professor, Orthopedic Research, University of Rochester, Rochester, NY, "Circulating osteogenic cells in humans."
(123) 2008 Invited speaker, 30th Annual ASBMR Meeting, Montreal, Canada, Molecular Biology and Pathology of Bone Working Group, "Vascular spaces in bone remodeling."
(124) 2008 Invited speaker, 30th Annual ASBMR Meeting, Montreal, Canada, Bone Strength Working Group, "Bone structure and strength through the lifespan."
(125) 2008 Invited speaker, 4th International Conference on Osteoporosis in Men, S. Margherita Ligure, Italy, "High resolution 3D-pQCT imaging: Gender differences in changes in age-related bone structure."
(126) 2009 Invited speaker, Division of Endocrinology, Columbia University College of Physicians and Surgeons, New York, NY, "Sex steroids and the skeleton" and NY Bone Club, "Changes in bone structure during growth and senescence."
(127) 2009 Invited speaker, International Society for Magnetic Resonance in Medicine Workshop, San Francisco, CA, "The role of structural imaging for monitoring treatment responses in osteoporosis."
(128) 2009 Invited speaker, Division of Endocrinology, University of Chicago, Chicago, IL. "Sex steroids and the skeleton."
(129) 2009 Invited speaker, Advances in Mineral Metabolism, Snowmass, CO. "ER signaling in bone."
(130) 2009 Invited speaker, New Frontiers in Skeletal Research: Bone, Fat and Brain Connections, Bethesda, MD. "Estrogen modulation of marrow osteoblastogenesis and adipogenesis."
(131) 2009 Invited speaker, 4th International Workshop on Advances in the Molecular Pharmacology and Therapeutics of Bone Disease, Oxford, UK. "The future of bone research and osteoporosis therapy."
(132) 2009 Invited speaker, Bone and Joint Decade Global Network Conference, Washington DC. "Future directions in osteoporosis."
(133) 2010 H. C. Jacobaeus Lecture, Odense University Hospital, Odense, Denmark. "Estrogen and the Skeleton: What have we learned from sixty years of research?"
(134) 2010 Invited speaker, 2nd International Symposium on Advances in Osteoporosis, Barcelona, Spain. "Novel therapeutic targets in the treatment of osteoporosis."
(135) 2010 Visiting Professor, Yale University School of Medicine, New Haven, CT. "Characterization of circulating osteogenic cells" and "Sex steroids and the skeleton in men."
(136) 2010 Visiting Professor, University of Arkansas Medical School, Little Rock, AK. "Changes in bone structure during growth and senescence."
(137) 2010 Keynote Lecture, The Rolanette and Berdon Lawrence Bone Disease Program of Texas, Houston, TX. "Sex steroids and the skeleton."
(138) 2010 Clinical Investigator Award Plenary Lecture, 92nd Annual Meeting of the Endocrine Society, San Diego, CA. "Estrogen and bone: Insights from studies in men."
(139) 2010 Plenary Lecture, 28th Annual Meeting of the Japanese Society for Bone and Mineral Research, Tokyo, Japan. "Sex steroids and the skeleton"; Seminar lecture, "Characterization of circulating osteogenic cells."

(140) 2010 Invited Lecture, IBMS Sun Valley Workshop, Sun Valley ID. "Changes in bone structure during growth and aging."
(141) 2010 Invited Lecture, 5th International Conference on Osteoporosis in Men, Genoa, Italy. "Insights from studies in men on the coupling of bone resorption and bone formation."
(142) 2011 Invited Lecture, Washington Bone Club, Washington, D.C. "Sex steroids and the skeleton."
(143) 2011 Invited Lecture, Medical Grand Rounds Distinguished Lecture, University of California, Irvine. "Estrogen and bone: Insights from clinical and basic studies."
(144) 2011 Invited Lecture, Advances in Mineral Metabolism, Snowmass, CO. "Changes in bone structure in humans during growth."
(145) 2011 Invited Lecture, Medical Grand Rounds, Tulane Medical Center, New Orleans, LA. "Update on the pathogenesis and management of osteoporosis."
(146) 2011 Distinguished Lecture in Aging, Tulane Center for Aging, New Orleans, LA. "Sex steroids and the aging skeleton."
(147) 2011 Plenary Lecture, 9th International Symposium on Osteoporosis, National Osteoporosis Foundation, Las Vegas, NV. "New horizons in bone research."
(148) 2011 Plenary Lecture, 23rd Korean Society of Bone Metabolism, Seoul, S. Korea. "Sex steroids and the skeleton."
(149) 2011 25th Annual Boy Frame Memorial Lecture, Henry Ford Hospital Medical Grand Rounds, Detroit, MI. "Estrogen and bone: Still relevant after all these years."
(150) 2011 Plenary lecture, Puerto Rico Society for Endocrinology and Diabetes, San Juan, PR. "Update on the pathogenesis and management of osteoporosis."
(151) 2011 Medical Grand Rounds, NYU Langone Medical Center, New York, NY. "Sex steroids and the skeleton."
(152) 2011 Research Seminar, Forsyth Institute, Cambridge, MA. "Sex steroids and the skeleton."
(153) 2012 Medical Grand Rounds, University of Utah School of Medicine, Salt Lake City, UT. "Sex steroids and the skeleton."
(154) 2012 Endocrine Grand Rounds, University of Utah School of Medicine, Salt Lake City, UT. "New approaches to clinical-investigative studies of bone metabolism."
(155) 2012 Invited Lecture, Third International Symposium on Advances in Osteoporosis, Barcelona, Spain. "Drugs for osteoporosis on the waiting list."
(156) 2012 Research Lecture, Hospital for Special Surgery, New York, NY. "Sex steroids and the skeleton."
(157) 2012 European Calcified Tissue Society Excellence in Research Lecture, Stockholm, Sweden. "Mechanisms of age-related bone loss."
(158) 2012 Invited Lecture, ASBMR Topical Meeting: Bone and Muscle Interactions, Kansas City, MO. "Determinants of peak bone and muscle mass."
(159) 2012 Plenary Lecture, 30th Annual Meeting of the Japanese Society for Bone and Mineral Research, Tokyo, Japan. "Mechanisms of age-related bone loss."
(160) 2012 Invited Lecture, Australian Institute for Musculoskeletal Science, University of Melbourne, Melbourne, Australia. "The evolution of translational research in the US."
(161) 2012 Endocrine Grand Rounds, UCLA Medical Center, Los Angeles, CA. "Sex steroids and the skeleton."
(162) 2012 Invited Presentation, IOM Committee to Review the CTSA Program at NCATS, Washington, DC. "Role of the CTSAs in translating basic science to human studies."

(163) 2013 Invited Presentations, 16th Annual Mayo Clinic Endocrine Course, Marco Island, FLA. "Mechanisms of age-related bone loss" and "Emerging therapies for osteoporosis."

(164) 2013 Invited Presentation, 2nd Joint Meeting of the International Bone and Mineral Society and the Japanese Society for Bone and Mineral Research, Kobe, Japan. "Potential therapeutic targets for age-related bone loss."

(165) 2013 Invited Presentation, 19th Annual Mayo-Karolinska Scientific Research Meeting, Stockholm, Sweden. "Pathogenesis of age-related bone loss."

(166) 2014 Invited presentation, Midwest CTSA Consortium Education Conference, Madison, WI. "Team science at a programmatic level."

(167) 2014 Invited presentations, Johns Hopkins School of Medicine, Baltimore, MD. "Potential therapeutic targets for age-related bone loss" and "Changes in bone quality with growth, aging, and diabetes."

(168) 2014 Invited presentation, University of Texas Southwestern School of Medicine, Dallas, TX. Internal Medicine Grand Rounds, "Sex Steroids and the Skeleton."

(169) 2014 Plenary lecture, 43rd Annual Meeting of the Israel Endocrine Society, Tel Aviv, Israel. "Update on treatment of osteoporosis."

(170) 2014 Symposium lecture, International Congress of Endocrinology/Endocrine Society Joint Meeting, Chicago, IL. "The importance of estrogen for the male skeleton."

PUBLICATIONS

Peer-reviewed publications

1. Fisher J, Belasco JG, Charnas RL, **Khosla S**, Knowles JR. Beta-lactamase inactivation by mechanism based reagents. Phil Trans R Soc London, Ser B 289:309-319, 1980.

2. Fisher J, Belasco JG, **Khosla S**, Knowles JR. Beta-lactamase proceeds via an acylenzyme intermediate. Interaction of the Escherichia coli RTEM enzyme with Cefoxitin. Biochemistry 19:2895-2901, 1980.

3. **Khosla S**, Demay M, Pines M, Hurwitz S, Potts JT, Jr., Kronenberg HM. Nucleotide sequence of cloned cDNAs encoding chicken preproparathyroid hormone. J Bone and Mineral Res 3:689-698, 1988.

4. **Khosla S**, Wolfson JS, Demerjian Z, Godine JE. Adrenal crisis in the setting of high dose ketoconazole therapy. Arch Intern Med 149:802-804, 1989.

5. **Khosla S**, Johansen KL, Ory SJ, O'Brien PC, Kao PC. Parathyroid hormone-related peptide in lactation and in umbilical cord blood. Mayo Clinic Proceedings 65:1408-1414, 1990.

6. **Khosla S**, Patel VM, Hay ID, Grant CS, van Heerden JA, Thibodeau SN. Loss of heterozygosity suggests multiple genetic alterations in pheochromocytomas and medullary thyroid carcinomas. J Clin Invest 87:1691-1699, 1991.

7. Reubi JC, Waser B, **Khosla S**, Kvols L, Goellner JR, Krenning E, Lamberts S. In vitro and in vivo detection of somatostatin receptors in pheochromocytomas and paragangliomas. J Clin Endocrinol Metab 74:1082-1089, 1992.

8. Kao PC, van Heerden JA, Grant CS, Klee GG, **Khosla S**. Clinical performance of parathyroid hormone immunometric assays. Mayo Clinic Proceedings 67:637-645, 1992.

9. Sinaki M, **Khosla S**, Limburg PJ, Rogers JW, Martaugh PA. Muscle strength in osteoporotic versus normal women. Osteoporosis International 3:8-12, 1993.

10. **Khosla S**, Firek AF, Ebeling P, Burritt M, Kao PC, Heath H III. Calcium suppression suggests a "set-point" abnormality in parathyroid gland function in familial benign hypercalcemia and more complex disturbances in primary hyperparathyroidism. J Clin Endocrinol Metab 76:715-720, 1993.

11. Farley DR, Eberhardt NE, Grant CS, Schaid DJ, van Heerden JA, **Khosla S**. Expression of a potential metastases suppressor gene (nm23) in thyroid neoplasms. World J Surgery 17:615-621, 1993.

12. Tsai MS, Ledger GA, **Khosla S**, Gharib HG, Thibodeau SN. Identification of multiple endocrine neoplasia, type 2 gene carriers using linkage analysis and analysis of the RET proto-oncogene. J Clinical Endocrinol Metab 78:1261-1264, 1994.

13. Ledger GA, Burritt MF, Kao PC, O'Fallon WM, Riggs BL, **Khosla S**. Abnormalities of parathyroid hormone secretion in elderly women that are reversible by short-term therapy with 1,25-dihydroxyvitamin D_3 J Clinical Endocrinol Metab 79:211-216, 1994.

14. Mckane WR, **Khosla S**, Peterson JM, Egan K, Riggs BL. Assessment of circulating levels of cytokines modulating bone resorption: effects of age and menopause in women. J Bone Mineral Res 9:1313-1318, 1994.

15. **Khosla S**, Lufkin EG, Hodgson SF, Fitzpatrick LA, Melton LJ III. Epidemiology and clinical features of osteoporosis in young individuals. Bone 15:551-555, 1994.

16. **Khosla S**, Peterson JM, Egan K, Jones JD, Riggs BL. Circulating cytokine levels in osteoporotic and normal women. J Clinical Endocrinol Metab 79:707-711, 1994.

17. **Khosla S**, Oursler MJ, Schroeder MJ, Eberhardt NL. Growth inhibition of a human medullary thyroid carcinoma cell line by transforming growth factor-β1 despite a relative increase in steady state c-myc mRNA levels. Endocrinology 135:1887-1893, 1994.

18. Kane LA, Tsai MS, Gharib HG, **Khosla S**, Robertson DM, Schaid DJ, Honchel R, Thibodeau SN. Familial medullary thyroid cancer and prominent corneal nerves: clinical and genetic analysis. J Clinical Endocrinol Metab 80:289-293, 1995.

19. Lindor NM, Honchel R, **Khosla S**, Thibodeau SN. Mutations in the RET proto-oncogene in sporadic pheochromocytomas. J Clinical Endocrinol Metab 80:627-629, 1995.

20. Ledger GA, Burritt MF, Kao PC, O'Fallon WM, Riggs BL, **Khosla S**. Role of parathyroid hormone in mediating nocturnal and age-related increases in bone resorption. J Clinical Endocrinol Metab 80:3304-3310, 1995.

21. McKane WR, **Khosla S**, Burritt MF, Kao PC, Wilson DM, Ory SJ, O'Fallon WM, Riggs BL. Mechanism of renal calcium conservation with estrogen replacement therapy in early postmenopausal women. J Clinical Endocrinol Metab 80:3458-3464, 1995.

22. Ledger GA, **Khosla S**, Lindor NM, Thibodeau SN, Gharib H. Genetic testing in the diagnosis and management of multiple endocrine neoplasia type II. Annals Internal Medicine 122:118-124, 1995.

23. Kassem M, **Khosla S**, Spelsberg TC, Riggs BL. Cytokine production in the bone marrow microenvironment: Failure to demonstrate estrogen regulation in early postmenopausal women. J Clinical Endocrinol Metab 81:513-518, 1996.

24. McKane WR, **Khosla S**, Egan, KS, Robins S, Burritt MF, Riggs BL. A high calcium intake reverses the secondary hyperparathyroidism and increased bone resorption of elderly women. J Clinical Endocrinol Metab 81:1699-1703, 1996.

25. **Khosla S**, Atkinson EJ, Melton LJ III, Riggs B. L. Relationship between body composition and bone mass in women. J Bone Mineral Res 11:857-863, 1996.

26. Indridason OS, Heath H 3rd, **Khosla S**, Yohay DA, Quarles LD. Non-suppressible parathyroid hormone secretion is related to gland size in uremic secondary hyperparathyroidism. Kidney International 50:1663-71, 1996.

27. Wermers RA, **Khosla S**, Atkinson EJ, Hodgson SF, O'Fallon WM, Grant CS, Melton LJ III. The rise and fall of primary hyperparathyroidism in Rochester, Minnesota. A population-based study, 1965-1992. Annals of Internal Medicine 126:433-440, 1997.

28. McKane WR, **Khosla S**, Risteli J, Muhs JM, Riggs BL. Role of estrogen deficiency in pathogenesis of secondary hyperparathyroidism and bone turnover abnormalities in elderly women. Proceedings of the Association of American Physicians 109 (2):175-180, 1997.

29. Heshmati HM, Gharib H, **Khosla S**, Abu-Lebdeh H, Lindor NM, Thibodeau SN. Genetic testing in medullary thyroid carcinoma syndromes: Mutation types and clinical significance. Mayo Clinic Proceedings 72:430-436, 1997.

30. **Khosla S**, Atkinson EJ, Melton LJ III, Riggs BL. Effects of age and estrogen status on serum parathyroid hormone levels and biochemical markers of bone turnover in women : a population based study. J Clinical Endocrinol Metab 82:1522-1527, 1997.

31. Melton LJ III, **Khosla S**, Atkinson EJ, O'Fallon WM, Riggs BL. Relationship of bone turnover to bone density and fractures. J Bone Mineral Res 12:1083-1091, 1997.

32. Barry MK, van Heerden JA, Grant CS, Thompson GB, **Khosla S**. Is familial hyperparathyroidism a unique disease ? Surgery 122:1028-33, 1997.

33. Hassoun AAK, Nippoldt TB, Tiegs RD, **Khosla S**. Hepatitis C-associated osteosclerosis: An unusual syndrome of acquired osteosclerosis in adults. Am J Med 103:70-73, 1997.

34. Hofbauer LC, Hicok KC, Schroeder MJ, Harris SA, Robinson JA, **Khosla S**. Development and characterization of a conditionally immortalized human osteoblastic cell line stably transfected with the human androgen receptor gene. J Cellular Biochem 66:542-551, 1997.

35. Melton LJ III, Crowson CS, **Khosla S**, Wilson DM, O'Fallon WM. Fracture risk among patients with urolithiasis: A population-based cohort study. Kidney International 53:459-464, 1998.

36. Heshmati HM, Riggs BL, Burritt MF, McAlister CA, Wollan PC, **Khosla S**. Effects of the circadian variation of serum cortisol on markers of bone turnover and calcium homeostasis in normal postmenopausal women. J Clinical Endocrinol Metab 83:751-756, 1998.

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39. **Khosla S**, Hassoun AAK, Baker BK, Liu F, Zein N, Whyte MP, Reasner CA, Nippoldt TB, Tiegs RD, Hintz RL, Conover CA. Insulin-like growth factor system abnormalities in hepatitis C-associated osteosclerosis. Potential insights into increasing bone mass in adults. J Clin Invest 101:2165-2173, 1998.

40. Heshmati HM, **Khosla S**, Burritt MF, Riggs BL. A primary defect in renal calcium conservation may contribute to the pathogenesis of postmenopausal osteoporosis J Clinical Endocrinol Metab 83:1916-1920, 1998.

41. **Khosla S**, Melton LJ III Atkinson EJ, Klee GG, Riggs BL. Relationship of serum sex steroid levels and bone turnover markers with bone mineral density in men and women: A key role for bioavailable estrogen. J Clinical Endocrinol Metab 83:2266-2274, 1998.

42. Hofbauer LC, Hicok KC, **Khosla S**. Effects of gonadal and adrenal androgens in a novel androgen-responsive human osteoblastic cell line. J Cellular Biochem 71:96-108, 1998.

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45. Melton LJ III, Atkinson EJ, **Khosla S**, O'Fallon WM, Riggs BL. Secondary osteoporosis and the risk of vertebral fractures in women. Bone 24:49-55, 1999.

46. Thomas T, Gori F, **Khosla S**, Jensen MD, Burguera B, Riggs BL. Leptin acts on human marrow stromal cells to enhance differentiation to osteoblasts and to inhibit differentiation to adipocytes. Endocrinology 140:1630-1638, 1999.

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48. Melton LJ III, Crowson CS, **Khosla S**, O'Fallon WM. Fracture risk following surgery for peptic ulcer disease: A population-based cohort study. Bone 25:61-67, 1999.

49. Hofbauer LC, Klassen RA, **Khosla S**. Gorham-Stout disease (phantom bone) of the shoulder girdle. Rheumatology 38: 904-905, 1999.

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51. Hofbauer LC, **Khosla S**, Dunstan CR, Spelsberg TC, Riggs BL. Estrogen stimulates gene expression and protein production of the antiresorptive cytokine osteoprotegerin by human osteoblastic cells. Endocrinology 140:4367-4370, 1999.

52. Hofbauer LC, Lacey DL, Dunstan CR, Spelsberg TC, Riggs BL, **Khosla S**. Interleukin-1beta and tumor necrosis factor-α, but not interleukin-6, stimulate osteoprotegerin ligand gene expression in human osteoblastic cells. Bone 25:255-259, 1999.

53. Hofbauer LC, Gori F, Riggs BL, Dunstan CR, Lacey DL, Spelsberg TC, **Khosla S**. Stimulation of osteoprotegerin ligand and inhibition of osteoprotegerin production by glucocorticoids in human osteoblastic lineage cells: Potential mechanisms of glucocorticoid-induced osteoporosis. Endocrinology 140:4382-4389, 1999.

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57. Hofbauer LC, **Khosla S**. Androgen effects on bone metabolism. Recent progress and controversies. European Journal of Endocrinology :140:271-286, 1999.

58. Spelsberg TC, Subramaniam M, Riggs BL, **Khosla S**. The actions and interactions of sex steroids and growth factors/cytokines on the skeleton. Mol Endocrinology 13:819-828, 1999.

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Committee on Energy and Commerce
U.S. House of Representatives

Witness Disclosure Requirement - "Truth in Testimony"
Required by House Rule XI, Clause 2(g)

1. Your Name: SUNDEEP KHOSLA, M.D.		
2. Are you testifying on behalf of the Federal, or a State or local government entity?	**Yes**	**No** x
3. Are you testifying on behalf of an entity that is not a government entity?	**Yes** x	**No**
4. Other than yourself, please list which entity or entities you are representing: Mayo Clinic		
5. Please list any Federal grants or contracts (including subgrants or subcontracts) that <u>you or the entity you represent have received</u> on or after October 1, 2011: As the largest medical group practice in the country, Mayo Clinic is a recipient of numerous grants, specifically in medical research.		
6. If your answer to the question in item 3 in this form is "yes," please describe your position or representational capacity with the entity or entities you are representing: Dean for Clinical and Translational Science at Mayo Clinic, Rochester, MN		
7. If your answer to the question in item 3 is "yes," do any of the entities disclosed in item 4 have parent organizations, subsidiaries, or partnerships that you are not representing in your testimony? DMC Economic Development Agency Mayo Clinic Health System- Franciscan Healthcare, Inc.	**Yes** x	**No**
8. If the answer to the question in item 3 is "yes," please list any Federal grants or contracts (including subgrants or subcontracts) that were received by the entities listed under the question in item 4 on or after October 1, 2011, that exceed 10 percent of the revenue of the entities in the year received, including the source and amount of each grant or contract to be listed: Please see response to question 5		
9. Please attach your curriculum vitae to your completed disclosure form. CV Attached		

Signature: [redacted] **Date:** July 8, 2014