

CURRICULUM VITAE

Name: Louis Charles Gerstenfeld

Business Department of Orthopedic Surgery
Boston University Medical School
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Education:

1977 B.S. Biology, Pennsylvania State University, State College Pennsylvania

1977 B.A. General Arts and Sciences, Pennsylvania State University, State College, Pennsylvania

1977-1982 Ph.D. Biochemistry, Boston University, School of Medicine Thesis title:
Regulation of Procollagen in Bovine Muscle Cells.

Post Doctoral Training:

1983-1985 Harvard University, Department of Biochemistry and Molecular Biology;
Laboratory of Professor Paul Doty and Helga Boedtker.
Area of research study cell biology and molecular biology of collagen gene expression.

Academic Appointments:

1982 Research Associate, Department of Biochemistry, Boston University

1983-1985 Research Associate, Department of Biochemistry and Molecular Biology,
Harvard University, Cambridge, MA

1985-1991 Assistant Professor of Orthopaedic Surgery (Biochemistry)
Harvard Medical School, Boston, MA

1991-1998 Associate Professor of Orthopaedic Surgery (Biochemistry)
Harvard Medical School, Boston, MA

1996-1998 Associate Director of Orthopedic Research
Children's Hospital, Laboratory for the
Study of Skeletal Disorders and Rehabilitation

1998 Associate Professor of Orthopedic Surgery and Biochemistry
Boston University School of Medicine, Boston, MA

1998 Director of Research Department of Orthopedic Surgery,
Boston University Medical Center, Boston MA

2001 Professor Orthopedic Surgery, Boston University School of Medicine
Research Professor, Department of Biochemistry, Boston University School of
Medicine, Boston MA

Hospital Appointments:

1985-1998 Research Associate, Children's Hospital, Boston

Committee Appointments:

1988-present	<u>Ad Hoc Reviewer for Extra-mural Research</u> National Institute of Dental Research National Institute of Aging National Institute of Arthritis and Musculoskeletal and Skin Diseases USDA Animal Sciences Research Program
1991-1998	Faculty Council, Children's Hospital Enders Faculty
1991	Program Organizer for the Special Interest Subgroup on Bone Cells At the American Society of Cell Biology, Boston MA
1992-1994	National Institutes of Health Initial Review Group in Orthopedics National Institute of Arthritis and Musculoskeletal Diseases
1993,1994,1999	Invited External Reviewer/MRC Canada
1993-1996	Ad Hoc Reviewer for National Science Foundation
1994-1995	Scientific Reviewer for Intramural Research Program Sick Children's Hospital of Toronto, Canada
1998	Review Committee for the Orthopedic Research Education Foundation Grants Program
1996-2004	Scientific Program Committee, Annual Meeting of the American Society for Bone and Mineral Research
1997-2002	Program Co-Chair for Session of Bone, Cartilage, and Connective Tissue Matrix Annual Meeting of the American Society for Bone and Mineral Research
1997	Program Co-Chair for Session on Orthopedic Cell Response to Mechanical Stimulation: Bone, Annual Meeting of Biomedical Engineering Society
1998	Program Co-Chair for Session on Cell Adhesion and Migration and invited speaker: Third World Congress of Bio-mechanics, Hokkaido University, Japan
1999,2000	Internal Scientific Review Panel MRC Canada Dental Research Committee
2001	Media Spokesperson American Society for Bone and Mineral Research, Education Committee
2001	Organizing Committee The Temporal Mandible Joint Society: Bethesda, Maryland USA 2002
2001	Program Committee Seventh International Conference on the Chemistry and Biology of Mineralized Tissues, Florida, 2001
2001	Ad Hoc Reviewer NIH/NIDR Counsel for Intramural Review Musculoskeletal Research Branch
2004	Program Committee Eighth International Conference on the Chemistry and Biology of Mineralized Tissues, Banff, Canada 2004
2004-	Boston University School of Medicine, Institutional Animal Use and Care Committee
2005	Boston University School of Medicine, Animal Space and Housing Committee

Awards:

National Science Foundation Undergraduate Fellowship, 1976

National Institutes of Health, Institute of Aging, Pre-doctoral Fellowship, 1977-79

National Institutes of Health, Institute of Heart, Lung, Pre-doctoral Fellowship
1980-1982

National Institutes of Health, Institute of Child Health and Human Development,
Competitive NRSA Fellowship, 1983-85

Orthopedic Research Education Foundation, two-year Research Award,
1986-88

National Arthritis Foundation, Investigators Award, 1986-89

Hood Foundation of Massachusetts Investigator Award, co-recipient with Dr.
David DeFranco, Harvard Dental School, 1989-1991

Travel Award for ICCRH/ASBMR Research Conference 1989

General Research Small Instrumentation Award, 1990, Children's Hospital,
Laboratory supervisor for oligonucleotide synthesis for Orthopaedics,
Endocrinology and Neonatology

Selection for the first NASA/NIH NIAMS joint project for experimentation of
space flight on Bone Cell Metabolism STS-59 Launch April 1994 STL C1 and
STL-63 Launch February 1995

Funding History:

National Institutes of Health, Institute Child Health and Human Development
RO1 HD 22400 Expression and Regulation of Bone Specific Genes, 1986-
2001

National Institutes of Health, Institute of Arthritis and Musculoskeletal and Skin
Diseases, Transgenic Osteoblasts to Examine ECM Function, RO1AR43434,
1995-1999

National Institutes of Health, Institute of Arthritis and Musculoskeletal and Skin
Diseases, Osteoblast Response to Applied Mechanical Deformation RO1AR4135
1993-1997

NASA Bone Cell Metabolism in Micro-gravity 1993-1999, NAG5-7789

Department of Defense Bone Health & Military Medical Readiness:
Mechanisms of Mechano-Transduction Within Osteoblasts
1998- 2001, DAM17/-98-18510

Assessment of PTH on Closed Fracture Repair, Eli Lilly 2002 Co Pi with
Thomas Einhorn P.I.

Assessment of p38 Inhibitors on Fracture Repair, Scios, Inc 2002-2003 Co Pi with
Thomas Einhorn P.I.

Current Funding :

National Institutes of Health, Institute of Arthritis and Musculoskeletal and Skin
Diseases, 1 RO1AR47045-01 Functional role of TNF-alpha cytokine in bone
repair -April 31 2005 35% Effort \$200,000/year

Osteotech Inc. Development of an In Vitro Assay System for the Routine Screening of the Osteoinductive Potential of Demineralized Bone
2003 - 2005

Department of Defense Bone Health & Military Medical Readiness: Sub contract
Bone Geometry as a Predictor of Tissue Fragility and Stress Fracture Risk
DAMD17-01-1-0806 Dr. Karl Jepsen P.I. Mount Sinai Medical School NY, NY
January 2003-December 2003

Department of Defense Bone Health & Military Medical Readiness:
Assessment of the Genetic Variation in Bone Fracture Healing DAMD (Sept
2003- August2005)

Stryker Biotechnology Inc. Development of Quantitative Minimally
Invasive Surrogate Measures for the Mechanical Properties of
Bone as a Means of Assessing Healing Co PI with Dr. Paul Tornetta, III

National Institutes of Health, Institute of Arthritis and Musculoskeletal and Skin
Diseases PO1 Program Grant Proposal/ Molecular Mechanisms of Skeletal Repair

Pending:

Society Memberships:

Member of the East Coast Connective Tissue Club 1980-present

Member of the Society of Bone and Mineral Research 1985- present

Member of the American Society of Gravitational and Space Biology 1992-
present

Member New York Academy of Sciences 1994-present

Member, FASEB, Biochemistry and Molecular Biology , 1998-present

Member Orthopedic Research Society 1999-present

Major Research Interests:

- 1) Bone and Cartilage Cellular Differentiation and Gene Regulation
- 2) Mechanisms of Tissue Mineralization
- 3) Mechanisms of Bone Repair
- 4) Mechanical Regulation of Bone and Cartilage Metabolism

Teaching Experience:

1976-77 Laboratory Instructor of Basic Biology 11, Department of
Biology, Pennsylvania State University

1978-1980 Tutor for Medical Biochemistry, Department of Biochemistry,
Boston University School of Medicine

1980-1981 Lecturer in Review Course of Biochemistry, Department of
Biochemistry, Boston University School of Medicine

1987-1999 Research advisor for post graduate training programs of the

Harvard School of Dental Medicine.
Thesis director of seven masters M.M.Sc. and six doctoral students
D.M.Sc. 1987-1999

- 1999-present Research advisor for post graduate training programs of the Boston University School of Dental Medicine Thesis director Of two doctoral students in the D.M.Sc. program
- 1999-present Research advisor for post graduate training programs of the Boston University School of Medicine (Medical Sciences) Thesis director of four Masters students in the Medical Sciences Program Thesis Director of Two PhD Candidates in Biochemistry
- 1987-1995 Co-sponsor and Lecturer of "Oral Biology of Connective and Mineralized Tissues", Harvard School of Dental Medicine
- 1989,1991-2005 Lecturer in Biology of Mineralized Tissues Biology Harvard University
- 1992-present Lecturer in Graduate Course in Oral Biology Boston University Goldman School of Graduate Dentistry SDM OB 763
- 1993-1998 Faculty Advisor for the Minority Faculty Development Program "Project Success" Harvard Medical School
- 1996-1998 Faculty Director of "Oral Biology of Connective Tissue and Mineralized Tissues" Harvard School of Dental Medicine
- 1999-present Lecturer "Oral Biology of Connective Tissue and Mineralized Tissues" Harvard School of Dental Medicine
- 1995-1998 Lecturer in Pathobiology of Pediatric Orthopedic Conditions, Course for Orthopedic Surgical Residents, Children's Hospital Department of Orthopedic Surgery, Boston, MA
- 1998,1999 Lecturer in Cellular Exercise Physiology Sargent College of Health and Rehabilitation, Boston University, Boston, MA
- 1998-present Lecturer in Orthopedic Residency Program Boston University Medical Center Organized Basic Science Faculty Lecture Series for Residence Boston Medical Center, Boston, MA
- 1998-present Research Advisor for Graduate Program of Biomedical Engineering Masters Students of Biomedical Engineering Boston University
- 2000- Present Lecturer in "Biomedical Mechanisms of Aging", GMS BI 854 Department of Biochemistry Boston University School of Medicine Boston, MA
- 2001 -Present Lecturer in "Molecular Mechanism of Development", GMS BI 787 Department of Biochemistry Boston University School of Medicine Boston, MA
- 2003- Lecturer in "Biochemistry", GMS BI 1755 Department of Biochemistry Boston University School of Medicine Boston, MA

**Post Graduate
Trainees:**

Harvard University School of Dental Medicine 1988-1998

Four Doctoral of Medical Sciences
Five Masters of Medical Sciences
Four Post Doctoral Trainees

Boston University School of Dental Medicine 1998-2004
Three Doctoral of Medical Sciences
Current Two Trainees Doctoral Program
Current One Trainee Masters Program

Boston University School of Medicine
One Doctoral of Biochemistry
Two Masters of Medical Sciences
Current Two Trainees Doctoral Program
Current One Trainee Masters Program
One Post Doctoral Trainee

Consultancies:

Therics Inc. (1994)
One Kendall Square, Building 1400
Cambridge, MA

ETEX Inc.(1988-1990)
M.I.T.
University Park
Cambridge, MA

American Institute of Biological Sciences (1994)
10700 Parkridge Bldg., Suite 380
Reston, VA 22091

Natur Apatites 1997-1999
Brookline,MA

Osteotech 2002-present
Eatontown, New Jersey

Journal Reviewer:

Journal of Bone and Mineral Research
Journal Cell Biology
Journal Cellular Biochemistry
Biochem Biophys Acta
Journal Biological Chemistry
Calcified Tissue International
Endocrinology
Journal of Dental Research
New England Journal of Medicine

Editorial Boards

Journal of Dental Research 1999-2002
Journal of Bone and Mineral Research 2002-2007

Bibliography

Original Journal Reports:

1. Beldekas JC, Smith B, **Gerstenfeld LC**, Sonenshein GE, Franzblau C. Effects of 17 β -Estradiol on the biosynthesis of collagen in cultured bovine aortic smooth muscle cells. Biochem. 1981; 20:2162-2167.

2. Beldekas JC, **Gerstenfeld LC**, Sonenshein GE, Franzblau C. Cell density and estradiol modulation of procollagen type III in cultured calf smooth muscle cells. J Biol Chem. 1982; 257:12252-12256.
3. Farris B, Mozzicato P, Magazzel PJ, Ferrera R, **Gerstenfeld LC**, Glembourtt M, Maborski JS, Handenchild CC, Franzblau C. Effect of protein hydroxyethylmethacrylate hydrogels on cultured endothelial cells. Exp Cell Res. 1983; 143:15-25.
4. **Gerstenfeld LC**, Beldekas JC, Franzblau C, Sonenshein GE. Cell-free translation of calf type III collagen: Effects of magnesium on ribosome movement during elongation. J Biol Chem. 1983; 258:12058-12063.
5. **Gerstenfeld LC**, Beldekas JC, Sonenshein GE, Franzblau C. Processing of procollagens types I and III in cultured bovine smooth muscle cells. J Biol Chem. 1984; 259:9158-9162.
6. **Gerstenfeld LC**, Crawford DR, Boedtke H, Doty P. Expression of types I and III collagen genes during differentiation of embryonic chicken myoblasts in culture. J Mol and Cell Biol. 1984; 4:1483-1492.
7. Finer M, **Gerstenfeld LC**, Boedtke H, Doty P. Altered collagen expression in chondrocytes treated with phorbol myristate acetate is controlled at the level of both transcription and translation. J Mol and Cell Biol. 1984; 5:1415-1424.
8. **Gerstenfeld LC**, Finer M, Boedtke H. Altered β -actin gene expression in phorbol myristate acetate treated chondrocytes and fibroblasts. J Mol and Cell Biol. 1985; 5:1425-1433.
9. Mackowiak S, **Gerstenfeld LC**, Hauschka P, Lian JB. Cell-free translation of the vitamin K-dependent bone protein osteocalcin. Biochem Biophys Res Commun. 1985; 132:240-244.
10. Finer MH, Aho S, **Gerstenfeld LC**, Boedtke H, Doty P. Unusual DNA sequences located within the promoter region and first intron of the chicken pro α 1 (I) collagen gene. J Biol Chem. 1987; 262:13323-13332.
11. **Gerstenfeld LC**, Chipman S, Glowacki J, Lian J. Expression of differentiated function by mineralizing cultures of chicken osteoblasts. Develop Biol. 1987; 122:49-60.
12. **Gerstenfeld LC**, Chipman S, Kelly C, Lee D, Landis W. Collagen expression, ultrastructural assembly and mineralization in cultures of chicken embryo osteoblasts. J Cell Biol. 1988; 106:979-989.
13. **Gerstenfeld LC**, Finer M, Boedtke H. Quantitative analysis of collagen expression in embryonic chick chondrocytes having different developmental fates. J Biol Chem. 1989; 264:5112-5120.
14. Shalhoub V, **Gerstenfeld LC**, Collart C, Lian JB, Stein G. Down-regulation of cell growth and cell cycle regulated genes during chick osteoblast differentiation with the reciprocal expression of histone gene variants. Biochem. 1989; 28:318-5322.
15. Stein GS, Lian JB, **Gerstenfeld LC**, Shalhoub V, Aronow M, Owen T, Markose E. The onset and progression of osteoblast differentiation is functionally related to cellular proliferation. Conn Tiss Res. 1990; 20:3-13.
16. **Gerstenfeld LC**, Lian JB, Gotoh Y, Lee DD, Landis WJ, McKee M, Nanci A, Glimcher, MJ. Use of cultured embryonic chicken osteoblasts as a model of cellular differentiation and bone mineralization. Conn Tiss Res. 1989; 21:215-225.
17. McKee M, Nanci A, Landis WJ, **Gerstenfeld LC**, Gotoh Y, Glimcher MJ. Ultrastructural immunolocalization of a major phosphoprotein in embryonic chick. Conn Tiss Res. 1989; 21:21-29.
18. **Gerstenfeld LC**, Kelly CM, von Deck M, Lian JB. Comparative morphological and biochemical analysis of hypertrophic, non-hypertrophic and 1,25(OH)₂D₃ treated non-hypertrophic chondrocytes. Conn Tiss Res. 1990; 24:29-39.
19. Gotoh Y, **Gerstenfeld LC**, Glimcher MJ. Identification and characterization of the major bone specific phosphoprotein synthesized by cultured embryonic chicken osteoblasts. Eur J Biochem. 1990; 187:49-58.

20. **Gerstenfeld LC**, Kelly CM, von Deck M, Lian JB. Effects of 1,25(OH)₂D₃ on induction of chondrocyte maturation in culture: extracellular matrix gene expression, morphology and growth. Endocrinology. 1990; 126:1599-1609.
21. **Gerstenfeld LC**, Gotoh Y, McKee MD, Nanci A, Landis WJ, Glimcher MJ. Expression and ultrastructural localization of the major phosphoprotein synthesized by chicken osteoblasts during in vitro mineralization. Anat Rec. 1990;228:93-103.
22. McKee MD, Nanci A, Landis WJ, Gotoh Y, **Gerstenfeld LC**, Glimcher MJ. Developmental appearance and ultrastructural immunolocalization of a major 66 kDa phosphoprotein in embryonic post-natal chicken bone. Anat Rec. 1990;228:77-92.
23. Aronow MA, **Gerstenfeld LC**, Owen TA, Tassinari MS, Stein GS, Lian JB. Factors that promote progressive development of the osteoblasts phenotype in cultured fetal rat calvaria cells. J Cell Phys. 1990; 142:213-221.
24. Gotoh Y, Pierschbacher M, Grzesiak J, **Gerstenfeld LC**, Glimcher MJ. Comparisons of two phosphoproteins in chicken bone and their similarities to the mammalian bone proteins osteopontin and bone sialoprotein. Biochem Biophys Res Commun 1990; 173:471-479.
25. **Gerstenfeld LC**, Landis WJ. Gene expression and extracellular matrix ultrastructure of a mineralizing chondrocyte culture system. J Cell Biol. 1991; 112:501-513.
26. Moore MA, Gotoh Y, Rafidi K, **Gerstenfeld LC**. Characterization of a cDNA for chicken osteopontin: Expression during bone development, osteoblast differentiation and tissue distribution. Biochem. 1991; 30:2501-2508.
27. Bruder SP, Caplan AI, Gotoh Y, **Gerstenfeld LC**, Glimcher MJ. Immunohistochemical localization of a 66 kDa glycosylated phosphoprotein during development of the embryonic chick tibia. Calcif Tiss Int. 1991; 48:429-437.
28. Tassinari MS, **Gerstenfeld LC**, Stein GS, Lian JB. Effect of caffeine on parameters of osteoblast growth and differentiation of a mineralizing extracellular matrix in vitro. J Bone and Min Res. 1991; 6:12029-12036.
29. McKee MD, Nanci A, Landis WJ, Gotoh Y, **Gerstenfeld LC**, Glimcher MJ. Effects of fixation and demineralization on bone phosphoprotein and other matrix components as evaluated by biochemical analysis and of quantitative immunocytochemistry. J Bone and Min Res. 1991; 6:937-945.
30. **Gerstenfeld LC**, Riva A, Eyre DR, Landis WJ. Posttranslational control of collagen fibrillogenesis in a mineralizing chicken osteoblast culture system. J Bone and Min Res. 1993; 8:1031-1042.
31. Lian JB, McKee MD, Todd AM and **Gerstenfeld LC**. Induction of bone related proteins, osteocalcin and osteopontin and their matrix ultrastructural localization with development of chondrocyte hypertrophy in vitro. J Cell Biochem. 1993; 52:206-219
32. Rafidi K, Simkina I, Johnson E, Moore MA, **Gerstenfeld LC**. Characterization of the structural and regulatory sequences of the chicken osteopontin gene. Gene. 1994; 140:163-169
33. Schaffer JL, Rizen M, L'Italien GJ, Benbrahim A, Megerman J, **Gerstenfeld LC**, and Gray ML. A device for the application of dynamic uniform biaxial strain to a flexible cell culture membrane. J Orthopedic Res. 1994;12:709-719
34. **Gerstenfeld LC**, Feng M, Gotoh Y and Glimcher MJ. Selective extractability of non collagenous proteins from chicken bone Calcify Tissue Intl. 1994; 55:230-235
35. Neugebauer BM, Moore MA, Broess M, **Gerstenfeld LC** and Hauschka PV. Characterization of the structural sequences of the chicken osteocalcin gene: Expression of osteocalcin during osteoblast maturation and by hypertrophic chondrocytes in vitro. J. Bone Miner. Res. 1995; 10:157-163

36. Broess M, Riva A and **Gerstenfeld LC**. Inhibitory effects of 1,25(OH)₂ vitamin D₃ on collagen type I, osteopontin, osteocalcin, and osteocalcin gene expression in chicken embryo osteoblasts. J. Cellular Biochem. 1995; 57:440-451
37. Yang R, Gotoh Y, Moore MA, Rafidi K, and **Gerstenfeld LC**. Characterization of avian Bone Sialoprotein cDNA: Comparisons to mammalian BSP and identification of conserved structural domains. J. Bone Miner. Res. 1995; 10:632-640
38. Gotoh Y, Salih E, Glimcher MJ, and **Gerstenfeld LC**. Characterization of the major non-collagenous proteins of chicken bone: identification of a novel 60 kDa non-collagenous phosphoprotein. Biochem Biophys Res Commun. 1995; 208:863-870
39. Winnard RG, **Gerstenfeld LC**, Toma C, Franceschi RT. Fibronectin gene expression synthesis and accumulation during in vitro differentiation of chicken osteoblasts. J. Bone Miner. Res. 1995; 12:1969-1977
40. Rey C, Kim H-M, **Gerstenfeld LC**, and Glimcher MJ. Structural and chemical characteristics and maturation of the calcium-phosphate crystals formed during the calcification of the organic matrix synthesized by chicken osteoblasts in culture. J. Bone and Miner. Res. 1995; 10:1577-1588
41. **Gerstenfeld LC**, Zurakowski D, Schaffer JL, Nichols D, Toma, C, Broess M, Bruder S, and Caplan A. Variable hormonal responsiveness of osteoblast populations isolated at different stages of embryogenesis and its relationship to the osteogenic lineage. Endocrinology 1996; 137:3957-3968
42. Salih E, **Gerstenfeld LC**, Ashkar S. And Glimcher MJ. Protein kinases of the cultured chicken osteoblasts, the catalytic competence of their selectivity for bone proteins. J. Bone Miner. Res. 1996; 11:1461-1473
43. Salih E., Ashkar S, Zhou H-Y, **Gerstenfeld LC**, And Glimcher MJ. Protein kinases of cultured chicken osteoblasts that phosphorylate extracellular bone proteins. Conn. Tiss. Res. 1996; 35:207-213
44. Yang R, and **Gerstenfeld LC**. Structural analysis and characterization of tissue and hormonal responsive expression of the avian bone sialoprotein gene. J. Cellular Biochem. 1997; 64:77-93
45. **Gerstenfeld LC**, Uporova T, Schmidt J, Strauss PG, Huang L-F, Gundberg C, Mizuno S, and Glowacki J. 1996. Osteogenic potential of murine osteosarcoma cells: in vitro/in vivo differences in extracellular matrix development and bone specific gene expression. Lab Invs. 1996; 74:895-906
46. **Gerstenfeld LC** and Shapiro F. (Prospective) Expression of bone specific genes by hypertrophic chondrocytes: Implications of a complex functionality for the growth plate. J Cellular Biochem. 1996; 62:1-9
47. Yang R and **Gerstenfeld LC** Signal transduction pathways mediating parathyroid hormone stimulation of bone sialoprotein (BSP) gene expression in osteoblasts. J Biol Chem. 1996; 271:29839-29846
48. Salih E, Ashkar S, **Gerstenfeld LC**, and Glimcher MJ. Identification of metabolically labeled sites of phosphorylation of chicken osteopontin. J Biol Chem. 1997; 272:13966-13973.
49. Toma CD, Ashkar S, Gray ML, Schaffer JL, and **Gerstenfeld LC**. Mechano-induction of osteopontin expression in osteoblasts: dependency of signal transduction on microfilament integrity. J Bone Miner Res. 1997, 12:1626-1636
50. Toma C, Schaffer J, Meazzini MC, Zurakowski D, Nah H-D, and **Gerstenfeld LC**. Developmental restriction of embryonic mesenchymal stem cells as characterized by their In vitro potential for differentiation. J. Bone Miner Res. 1997,12:2024-2039
51. Meazzini MC, Schaffer JS, Toma CD, Gray ML, and **Gerstenfeld LC**. Osteoblast cytoskeletal modulation in response to mechanical strain in vitro. 1998 J Orthopedic Res: 1998, 16:170-180

52. Carvalho RS, Schaffer JL, and **Gerstenfeld LC**. Osteoblast induction of osteopontin expression in response to cell attachment or mechanical stimuli shows common mediation through integrin receptors. J. Cellular Biochem. 1998, 70:376-390.
53. Landis WJ, Hodgens KJ, Block D, Toma CD, **Gerstenfeld LC** (2000) Spaceflight effects on cultured embryonic chick bone cells. J Bone Miner Res 15:1099-1112
54. Pines M, Knopov V, Geinna O, Hurwitz S, Faerman A, **Gerstenfeld LC**, Leach RM. Development of avian tibia dyschondroplasia: gene expression and protein synthesis. Calcif Intl 1998, 63:156-173.
55. Isogai N, Landis WJ, Kim T-H, Gotoh Y, **Gerstenfeld LC**, Upton J, and Vacanti JP. Formation of phalanges and small joints of the finger by tissue engineering. J. Bone and Joint Surgery: 1999, 81A306-316.
56. **Gerstenfeld LC**, Toma CD, Schaffer JL, Landis WJ. Chondrogenic potential of skeletal cell populations: selective growth of chondrocytes and their morphogenesis and development in vitro. Microscopy Res. and Technique: 1998, 43:156-173.
57. Ranger A, **Gerstenfeld LC**, Wang JX, Kon T, Gravallesse, EM, Bae H, Glimcher, MJ and Glimcher LH. (2000) The transcription factor NAFTp is a repressor of chondrogenesis. J Exp Medicine 191:9-22.
58. Nah H-D, Pacifici M, **Gerstenfeld LC**, Adams SL, and Kirsch T.(2000) A transient chondrogenic phase in intramembraneous pathway during normal skeletal development. J. Bone Mineral Res.15:522--533
59. Mueller SM, Mizuno S, **Gerstenfeld LC** and Glowacki J (1999) Medium perfusion enhances osteogenesis by murine osteosarcoma cells in three-dimensional collagen sponges J. Bone Mineral Res 14:2118-26.
60. Uzel MI, Shih SD, Gross H, Kessler E, **Gerstenfeld LC** and Trackman PC (2000) Molecular events that contribute to insoluble collagen accumulation and lysyl oxidase enzyme activity in osteosarcoma cell clones J. Bone Mineral Res:15:1189-1197.
61. Aizawa T, Kon T, Einhorn TA and **Gerstenfeld LC**. (2001) Induction of apoptosis in chondrocytes by tumor necrosis factor-alpha J Ortho Res 19:785-796.
62. Wang J, Yang R, **Gerstenfeld LC** and Glimcher MJ (2000) Characterization of matrix induced osteogenesis in rat calvaria defects Calcif Tissue Int 67:314-320
63. Isogai N, Landis WJ, Mori R, Gotoh Y, **Gerstenfeld LC**, Upton J, and Vacanti JP (2000) Experimental Use of Fibrin Glue to Induce Site-Directed Osteogenesis from Cultured Periosteal Cells. Plast Reconstr Surg. 105:953-63.
64. Kon T, Cho T-J, Aizawa T, Yamazaki M, Nooh N, , Graves, **Gerstenfeld LC**, and Einhorn TA (2001) Relationship of OPG/OPG-L and Inflammatory Cytokine Expression to Bone Formation, Endochondral Resorption, and Bone Remodeling During Murine Fracture Healing J. Bone Miner. Res 16:1004-1014
65. Kuhn L.T, Wu Y, Rey C, **Gerstenfeld LC**, Grynblas MD, Ackerman JL, Kim H-Y, Glimcher MJ (2000) Structure and composition of newly deposited calcium phosphate crystals in chicken osteoblast cell cultures. J. Bone Mineral Res: J Bone Miner Res 15:1301-9.
66. **Gerstenfeld, LC**, Cho T-J, T. Kon T, Aizawa T, Cruceta J, Graves, D, and T. A. Einhorn (2001) Impaired Intramembraneous Bone Formation During Bone Repair in the Absence of TNF- α Signaling Cells, Tissues Organs 169:285-294

67. **Gerstenfeld, LC**, Cruceta, J, Shea, CM, Sampath, K, Barnes GL, and Einhorn TA, (2002) Chondrocytes provide morphogenic signals that selectively induce osteogenic differentiation of mesenchymal stem cells. J. Bone Miner. Res 17:221-30.
68. Cullinane, D., Fredrick, AD, Eisneberg, S, Paccica D, Altuwaigi, O, Lee C, Salisbury, K, **Gerstenfeld, LC** and Einhorn TA. (2000) Induction of articular-like cartilage and joint structure by controlled micromotion in experimental mid-femoral defect J. Ortho Res 20:579-86.
69. Javed A, Barnes GL, Jasanya BO, Stein JL, **Gerstenfeld LC**, Lian JB and Stein GS. (2001) The runt homology domain transcription factors (Cbfa/AML) mediate repression of the bone sialoprotein promoter: evidence for promoter context dependent activity of Cbfa proteins. Molecular and Cell Biol: 8:2891-905.
70. Cho T-J, **Gerstenfeld LC**, and Einhorn TA. (2002) Differential temporal expression of members of the TGF- β superfamily during murine fracture healing. J Bone and Mineral Res: 17:513-20.
71. Carvalho RS, Schaffer JL, Bumann A. and **Gerstenfeld LC**. (2002) Predominant integrin ligands expressed by osteoblasts show preferential regulation in response to both cell adhesion and mechanical perturbation. J. Cellular Biochem. 84:497-508.
- 72 Harper J, **Gerstenfeld LC**, and Klagsbrun MJ (2001) Neuropilin-1 expression in osteogenic cells: Down-regulation during differentiation of osteoblasts into osteocytes. J Cellular Biochem 81:82-92.
73. Cho T-J, **Gerstenfeld LC**, Barnes GL, and Einhorn TA. (2001) Cytokines and fracture healing Current Opinions in Orthopaedics
74. Barnes GL, DellaTorre T, Sommer B Young MF, and **Gerstenfeld LC**. (2002) Transcriptional regulation restricting bone sialoprotein gene expression to hypertrophic chondrocytes and osteoblasts. J. Cellular Biochem 87:458-69.
75. **Gerstenfeld LC**, Thiede M, Seibert, K, Mielke C, Tewari S, Svagar, B, Cullinane D, Einhorn TA (2003) Differential Inhibition of Fracture Healing By Non Specific and Cyclo-oxygenase-2 Specific Non-Steroidal Anti-inflammatory Drugs. J Orthop Res. 21:670-675.
76. **Gerstenfeld LC**, Barnes GL, Shea CM and T. A. Einhorn TA. (2003) Osteogenic Differentiation Is Selectively Promoted by Morphogenetic Signals From Chondrocytes and Synergized By A Nutrient Rich Growth Environment Conn Tiss Res 44(S):85-91
77. Kinner B, **Gerstenfeld LC**, Einhorn TA, and Spector M. (2002) Expression of smooth muscle actin in connective cells participating in fracture healing in a murine model Bone. 30:738-45.
78. Kinner, B. D.M. Pacicca, DM, **Gerstenfeld LC**, Lee C, T.A. Einhorn TA, and Spector M. (2003) Cells Expression of smooth muscle actin is involved in distraction osteogenesis in a rat model J Orthop Res. 21:20-7.
79. Kacena MA, Todd P, **Gerstenfeld LC**, Landis WJ (2003) Experiments With Osteoblasts Cultured Under Varying Orientations With Respect To The Gravity Vector. Cytotechnology 39:147-154.
80. Lu H, Kraut D, **Gerstenfeld LC**, Graves DT. (2003) Diabetes Interferes with the Bone Formation by Affecting the Expression of Transcription Factors that Regulate Osteoblast Differentiation. Endocrinology 144:346-52.

81. **Gerstenfeld LC**, Cullinane DM, Barnes GL, Graves DT, Einhorn TA (2003) Fracture Healing As a Post-Natal Developmental Process: Molecular, Spatial, and Temporal Aspects of Its Regulation J.Cellular Biochem 88:873-884.
82. Barnes GL, Javed A, Waller SM, Kamal M, Hassan M, Bellahcene A, Van Wijen A, Young MF, Lian J, Stein G, and **Gerstenfeld LC** (2003) Osteoblast Related Transcription Factors Mediate the Expression of Bone Sialoprotein in Human Metastatic Breast Cancer Cells Cancer Res. 63:2631-7.
83. Carvalho RS, Kostenuik PJ, Salih E, Bumann A, and **Gerstenfeld LC** (2003) Selective adhesion of osteoblasts to different integrin ligands will induce osteopontin gene expression. Matrix Biol. 22:241-9.
84. Cho TJ, Lehmann W, Edgar C, Sadeghi C, Hou A, Einhorn TA, **Gerstenfeld LC.** (2003) TNF- α Activation of the Apoptotic Cascade in Articular Chondrocytes Is Associated With the Induction of Metalloproteinases and Specific Pro-Resorptive. Arthritis and Rheum 48:2845-54.
85. **Gerstenfeld LC**, Cho T-J, Kon T, Aizawa T, Tsay A, Barnes GL, Graves DT, and Einhorn TA, (2003) Impaired Fracture Healing in the Absence of TNF- α Signaling: the Role of TNF- α in Endochondral Cartilage Resorption J Bone Min Res 18:1584-1592
86. Cullinane D, Slaisbury KT, Alkhiary Y, Eisneberg, S, **Gerstenfeld LC**, and Einhorn TA. (2003) Effects of the local mechanical environment on tissue differentiation during the repair of skeletal defects: can repair recapitulate development? Exp Biol. 206:2459-2471
87. Carvalho RS, Einhorn T, Lehman W, Edgar C, Alyamani A, Apazidis A, Pacicca DM, and **Gerstenfeld LC** (2004) The role of angiogenesis in a murine tibial model of distraction osteogenesis Bone 34: 849-861
88. Pacicca DM, Patel N, Lee C, Salisbury K, Lehman W, Carvalho R, **Gerstenfeld LC**, and Einhorn TA (2003) Expression of Angiogenic Factors During Distraction Osteogenesis Bone 33:889-98.
89. Shea CM, Edgar C, Einhorn TA and **Gerstenfeld LC** (2003) BMP-7 Treatment of C3H10T1/2 Mesenchymal Stem Cells Recapitulates the Temporal Pattern of Endochondral Differentiation In Vitro J Cellular Biochem 15:1112-27.
90. He H, Liu R, Desta T, Leone C, **Gerstenfeld LC**, Graves DT. 2003 Diabetes Causes Decreased Osteoclastogenesis, Reduced Bone Formation and Enhanced Apoptosis of Osteoblastic Cells in Bacteria Stimulated Bone Loss. Endocrinology. 145, 447-452
91. Kacena M, Todd P, **Gerstenfeld LC**, Landis WJ 2003 .Experiments with Osteoblasts Cultured under Hypergravity Conditions, Microgravity Sciences and Technology 15:28-34, 2004.
92. Barroug A, Kuhn LT, **Gerstenfeld LC**, Glimcher MJ 2004 Interactions of Cisplatin with Calcium Phosphate Nanoparticles: In Vitro controlled adsorption and release J Ortho Res. 22(4):703-8.
93. Barnes GL, Hebert KE, Kamal M, Javed A, Einhorn TA, Lian JB, Stein GS, **Gerstenfeld LC.** 2004 Fidelity of Runx2 activity in breast cancer cells is required for the generation of metastases-associated osteolytic disease. Cancer Res. 64:4506-13.
94. Alkhiary YM, **Gerstenfeld LC**, Krall E, Westmore M, Sato M, Mitlak BH, and Einhorn TA, 2005 Enhancement of Experimental Fracture Healing by Systemic Administration of Recombinant Human Parathyroid Hormone (PTH 1-34) J. Bone and Joint Surgery Am. 87:731-41.

95. Lehmann W, Edgar CM, Wang K, Cho T-J, Barnes GL, Kakar S, Graves DT, Rueger JM, **Gerstenfeld LC**, and Einhorn TA, (2005) Tumor Necrosis Factor Alpha (TNF- α) Coordinately Regulates the Expression of Specific Matrix Metalloproteinases (MMPs) and Angiogenic Factors During Fracture Healing Bone 36(2):300-310.
96. Kim HKW, Bian H, Randall T, Garces A, **Gerstenfeld LC**, Einhorn TA. Increased VEGF Expression in the Epiphyseal Cartilage Following Ischemic Necrosis of the Capital Femoral Epiphysis. J Bone Min Res, 2004 19:2041-8.
97. Lehmann W, Schinke T, Schilling AF, Catala-Lehnen P, Gebauer M, Pogoda P, **Gerstenfeld LC**, Rueger JM, Einhorn TA, Amling M. Absence of mouse pleiotrophin does not affect bone formation in vivo Bone. 2004 6:1247-55
98. Javed A, Barnes GL, Pratap J, Antkowiak T, **Gerstenfeld LC**, van Wijnen AJ, Stein JL, Lian JB, Stein GS Impaired intranuclear trafficking of Runx2 (AML3/Cbfa1) transcription factors in breast cancer cells inhibits formation of osteolysis in vivo Proc Natl Acad Sci U S A. 2005 102(5):1454-9.
99. **Gerstenfeld LC**, Wronski TJ, Hollinger JO, Einhorn TA 2005 Perspective: The Application of Histomorphometric Methods to the Study of Bone Repair J. J Bone Min Res (In Press)

Books, Monographs, Invited Reviews and Perspectives:

1. **Gerstenfeld LC**, von Deck M, Kelly C, Uskokovic M, Lian JB. 125(OH)₂D₃ Promotes differentiation of resting chondrocyte to hypertrophic cell in vitro: A model system for evaluating the potency of vitamin D Analogs in "Vitamin D Molecular and Clinical Endocrinology" ed. Norman a, Schaefer K, Grigoleit H; de Gruyter W. Berlin 1988.
2. Lian JB, Stein GS, **Gerstenfeld LC**, Glowacki J. Gene expression and functional studies of the vitamin K-dependent protein of bone, osteocalcin in "Clinical impact of bone and connective tissue markers". ed. Lindh and Thorell; Harcourt, Brace and Jovanich Ltd., London 1989.
3. **Gerstenfeld LC**, Gotoh Y, Landis WJ, McKee MD, Nanci A, Glimcher MJ. Expression and ultrastructural localization of the major phosphoprotein synthesized by chicken osteoblasts during in vitro mineralization. 1990; In: "Calcium regulation and bone metabolism". (ed. D.V. Cohn, F.H. Glorieux and J.H. Martin) pg. 227-232. Elsevier, Amsterdam, Netherlands.
4. **Gerstenfeld LC**, Broess M, Bruder S, Caplan A, Landis WJ. Regulation of osteoblast extracellular matrix formation: posttranslational regulation of extracellular matrix deposition and relationship between embryonic development and hormonal response. 1992; In: Chemistry and Biology of Mineralized Tissues (ed. H. Slavkin and P. Price) pg. 287-295. Elsevier, Amsterdam, Netherlands.
5. **Gerstenfeld LC**, Uporova T, Ashkar S, Salih E, Gotoh Y, McKee MD, Nanci A, and Glimcher MJ. Regulation of avian osteopontin pre- and post- transcriptional expression in skeletal tissues. Annals of the New York Academy of Sciences 1995; 270:67-82
6. Ashkar S, Schaffer JL, Salih E, **Gerstenfeld LC** and Glimcher MJ. Phosphorylation of osteopontin by Golgi kinases. Annals of the New York Academy of Sciences 1995; 270:296-298

7. Salih E, Ashkar S, **Gerstenfeld LC**, And Glimcher MJ. Identification of the in vivo phosphorylated sites of secreted osteopontin from cultured chicken osteoblasts. Annals of the New York Academy of Sciences 1995; 270:257-360
8. Davidovitch M and **Gerstenfeld LC**. Differential Effects of PTH on cAMP and Collagen I-RNA Production by Chick Osteoblasts 1994 In " The Biological Mechanisms of Tooth Eruption, Resorption and Replacement by Implants"(ed. Ze'ev Davidovitch) pg. 239-252 Harvard Society for the Advancement of Orthodontics, EBSCO, Media Birmingham, AL
9. Schaffer JL, Toma CD, Meazzini MC, Gray ML and **Gerstenfeld LC** Mechanical stimulation of osteopontin gene expression and its relationship to microfilament structure In "The Biological Mechanisms of Tooth Movement and Cranial Facial Adaptation" (ed Ze'ev Davidovitch and Louis Norton) pg. 113-121 Harvard Society for the Advancement of Orthodontics, EBSCO, Media Birmingham, AL
10. **Gerstenfeld LC**, Shih S., George C, Mizuno S, and Glowacki J. Effect of overexpression of bone sialoprotein or osteocalcin on osteosarcoma tissue growth and mineralization. In: The Chemistry and Biology of Mineralized Tissues, M Goldberg, A Bosky, C Robinson, eds, American Acad Orthop Surg, Chicago, IL;1999
11. **Gerstenfeld LC**. Editorial\Perspective Osteopontin in skeletal tissue homeostasis: an emerging picture of the autocrine\paracrine functions of the extracellular matrix. J Bone Miner Res 1999 14:850-855.
12. Barnes GL, Kostenuick PJ, **Gerstenfeld LC** and Einhorn TA Growth factor regulation of fracture repair . J Bone Miner Res 1999 14:1805-1815.
- 13.**Gerstenfeld LC** and Einhorn TA (2003) Developmental Aspects of Fracture Healing and the Use of Pharmacological Agents to Alter Healing J. Musculoskeletal Neuron Interaction 3:297-303.
14. **Gerstenfeld LC** and Einhorn TA. COX inhibitors and their effects on bone healing. Expert Opin Drug Saf. 2004 Mar;3(2):131-6. Review
15. **Gerstenfeld, LC**, Edgar, CM, Kakar, S, Jacobsen, K, Einhorn, TA Chapter # Osteogenic Growth Factors and Cytokines and Their Role in Bone Repair (2005) To appear in *Engineering of Functional Skeletal Tissues*, Volume 3 in *Topics in Bone Biology* series edited by Mary C Farach-Carson, Antonios G Mikos and Felix Bronner Springer-Verlag (London) Ltd.,

Invited Lectures and Workshops

Invited speaker: Bone and Mineral Tissues Gordon Conference 1986

Invited Speaker: Calcium and Phosphate Gordon Conference 1989

Invited Speaker: Texas Mineralized Tissue Society Conference, San Antonio, TX 1989

Invited Speaker: University of Toronto Dental School, Academic Lecture Series, Toronto, Canada 1990

Invited Speaker: The Third International Conference on the Chemistry and Biology of Mineralized Tissues, Chatam MA, 1992

Invited Speaker: European Science Foundation Conference on the Biology of Cartilage and Bone, Bittesburg, France, 1992

Invited Speaker: New York Academy of Sciences, Conference on "Osteopontin: Role in Cell Signaling and Adhesion" Rutgers, NJ, 1994

Invited Speaker : International Conference; Biological Mechanisms of Tooth Movement and Craniofacial Adaptation, Burlington, MA 1995

Invited Speaker: Washington University of St. Louis, St. Louis, MO Metabolic Bone and Endocrinology Departments, Professor Series, 1995

Invited Speaker: Pennsylvania State University, University Park, PA Departments of Biochemistry and Molecular Biology, Seminar Series 1996

Invited Speaker: National Biomedical Engineering Society, University California, San Diego, 1997

Invited Speaker: National Biomedical Engineering Society, Pennsylvania State University, University Park, Annual Meeting 1996

Invited Speaker: University of Indiana School of Medicine, Orthopedic Surgery, Lecture Series, and Indianapolis, IN, 1997

Invited Speaker: The Sixth International Conference on the Chemistry and Biology of Mineralized Tissues, Vittel, France, 1998

Invited Speaker: The Third World Conference of Biomechanics ,Hakkaido University, Sapporo, Japan, 1998

Invited Speaker: University of Michigan Dental School, Academic Lecture Series, Ann Arbor, Michigan 1998

Invited Speaker Fisher Lecturer: Department of Anatomy and Cell Biology, McGill University, Montreal, Canada 1999

Invited Speaker: The Wellcome Trust Conference: Osteoporosis as a Failure of Bone's Adaptation to Functional Load Bearing Highgate House, Creton, Northamptonshire, England 1999

Invited speaker: The Temporal Mandible Joint Society: Role of Tumor Necrosis Factor in Bone Repair, Bethesda, Maryland USA 2000 “

Invited Speaker: The Seventh International Conference on the Chemistry and Biology of Mineralized Tissues, Sawgrass, Florida, 2001

Invited Speaker AAOS Workshop on Bone Repair, Scottsdale, AZ 2002

Invited Speaker University Connecticut Health Sciences Center 2002

Invited Speaker Sun Valley Hard Tissues Workshop 2003

AAOS/ORS Joint Symposium "The Role of Pharmacological Agents in Fracture Healing and Implant Fixation" 71st Annual Meeting of the AAOS in San Francisco.

Keynote Speaker: Science Day Boston University School of Dental Medicine 2004 Boston ,MA

Working Group "Bone Remodeling and Stress Fractures" American Society for Bone and Mineral Research 2004 Seattle, WA

Organizer Orthopaedic/Speaker Workshop on " Use of Mouse Models in Orthopedic Research" Research Society 2005 Washington DC

University of Pennsylvania Orthopedic Surgery Research Department Seminar Series 2005 "Molecular Mechanisms of Fracture Healing" Philadelphia, PA

Book Reviews

1. **Gerstenfeld LC** A New Read of the Radiographic Findings of Skeletal Growth and Maturation Endocrine Control of Skeletal Maturation: Annotations to Bone Age Readings Ze'ev Hochberg Karger, 2003 Trends in Endocrinology and Metabolism

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