CURRICULUM VITAE

Jeffrey Charles Lotz, Ph.D.

Education:

1983-1988	MIT/Harvard Division of Health, Science and Technology Ph.D. in Medical Engineering
1979-1980	Stanford University M.S. in Mechanical Engineering Design
1975-1979	University of California, Berkeley B.S. in Mechanical Engineering

Awards and Honors:

Deputy-Editor, Spine, 2005-
NIH College of CSR Reviewers, 2010-
Fellow, American Institute for Medical and Biological Engineering, 2008-
Special Consultant, The Spine Journal, 2009-
Western US Representative for the International Society for the Study of the Lumbar Spine, 2009-
UCSF-Coro Faculty Leadership Collaborative Program, 2008
ISSLS Prize for Low Back Pain Research, 2007
Member, Musculoskeletal Tissue Engineering Study Section, NIH, 2005-2009
Medtronic Sofamor Danek Best Poster Award, ISSLS Meeting, 2001
Nordby-Smith Award for Minimally Invasive Surgery, 2000
National Research Council, Panel on Musculoskeletal Disorders and the Workplace, 1999-2001
Volvo Award for Low Back Pain Research, 1998
North American Spine Society AcroMed Award for Outstanding Spinal Research, 1993
Tau Beta Pi Engineering Honors Fraternity
Pi Tau Sigma Mechanical Engineering Honors Fraternity
Howmedica Fellow, 1983-1986
Whitaker Fellow, 1986-1988

Professional/Academic Experience:

2011-Present	Vice-Chair of Research, Department of Orthopaedic Surgery, UCSF
2002-Present	Professor and Director, Orthopaedic Bioengineering Laboratory, University of California at San Francisco.
2009-Present	Faculty, Bioengineering and Therapeutic Sciences, UCSF
2001-Present	Executive Committee, Joint Bioengineering Graduate Group, UCSF and UCB
2006-Present	Faculty, Institute for Regenerative Medicine, UCSF
2007-Present	Faculty, QB3 - California Institute for Quantitative Biosciences
2000-Present	Faculty, Keck Center for Integrative Neuroscience
1998-2002	Associate Professor and Director, Orthopaedic Bioengineering Laboratory, UCSF
1992-Present	Faculty, Joint Bioengineering Graduate Group, UCSF and UCB
1992-1998	Assistant Professor and Director, Orthopaedic Bioengineering Laboratory, UCSF
1991-1993	Managing Engineer, Failure Analysis Associates, Menlo Park, CA
1989-1991	Senior Engineer, Failure Analysis Associates, Menlo Park, CA
1987	Instructor in Introductory Mechanics, MIT MITES Program, MIT, Cambridge, MA
1986	Subintern, Adult Medicine, Mount Auburn Hospital, Cambridge, MA
1980-1983	Research/Design Engineer, Stanford Research Institute, Menlo Park CA

Professional Societies:

International Society for the Study of the Lumbar Spine
Orthopaedic Research Society
American Society of Mechanical Engineers
American Society of Biomechanics
American Society of Automotive Engineers
Peer Reviewer:

Journal of Orthopaedic Research, Spine, Journal of Biomechanics, Journal of Biomechanical Engineering, Journal of Bone and Mineral Research, The Spine Journal.

Publications:

1. Fields, A.J., Liebenberg, E., and Lotz, J.C., Innervation of pathologies in the lumbar vertebral endplate and intervertebral disc. The Spine Journal, in press.
2. Cheng, K.K., Berven, S.H., Hu, S.S., and Lotz, J.C., Intervertebral discs from spinal non-deformity and deformity patients have different mechanical and matrix properties, The Spine Journal, in press.
3. Samartzis, D., Karppinen, J., Cheung, J., and Lotz, J.C., Disc degeneration and low back pain – are they 'fat' related conditions?, Global Spine Journal, in press.
4. Lotz, J.C., Fields, A., and Liebenberg, E., The role of the vertebral endplate in low back pain, Global Spine Journal, in press
5. Sena, M., Chen, J., Dellamaggioria, R., Coughlin, D., Lotz, JC. And Feeley, B., Dynamic Evaluation of Pivot-shift Kinematics in Physeal-sparing Pediatric Anterior Cruciate Ligament Reconstruction Techniques, Am J. Sports Med. V 41(4), 2013
6. Sayson, J.V., Lotz, J., Parazynski, S., and Hargens, A.R., Back pain in space and post-flight spine injury: Mechanisms and countermeasure development, Acta Astronautica, V 86, pp 24-38, 2013.
7. Bailey, J.F., Hargens, A.R., Cheng, K.K., Lotz, J.C., Post-Spaceflight Recovery of Biomechanical Properties of Murine Intervertebral Discs, Gravitational and Space Biology, V 26(2), pp. 38-47, 2012.
8. Christophy, M., Curtin, M., Senan, N.A.F., Lotz, J.C., and O'Reilly, O.M., On the modeling of the intervertebral joint in multibody models for the spine, Multibody System Dynamics, 2012
9. Fields, A.J., Costabal, F.S., Rodriguez, A.G., and Lotz, J.C., Seeing Double: A comparison of microstructure, biomechanical function, and adjacent disc health between double-layer and single-layer vertebral endplates. Spine, Spine, V 37(21), E1310-7, 2012 PMID: 22781006
10. Lotz, J.C., Haughton, V., Boden, S.D., An, H.S., Kang, J.D., Masuda, K., Freemont, A., Berven, S., Sengupta, D.K., Tanenbaum, L., Maurer, P., Ranganathan, A., Alavi, A., and Marinelli, N.S., New treatments and imaging strategies in degenerative disease of the intervertebral disks. Radiology, V 264 (1), pp 6-19, 2012
11. Buser, Z., Liu, J., Thorne, K.J., Coughlin, D., and Lotz, J.C., Inflammatory response of intervertebral disc cells is reduced by fibrin sealant scaffold in vitro, J Tissue Eng Regen Med., May 2012, PMID 2260998
12. Allon, A.A., Butcher, K., Schneider, R.S., and Lotz, J.C., Structured coculture of mesenchymal stem cells and disc cells enhances differentiation and proliferation, Cells Tissues Organs, V 196(2), pp 99-106, 2012.
13. Allon, A.A., Butcher, K., Schneider, R.S., and Lotz, J.C., Structured bilaminar coculture outperforms stem cells and disc cells in a simulated degenerate disc environment. Spine, V 37(10), pp 813-818, 2012

14. Cooke ME, Allon AA, Cheng T, Kuo AC, Kim HT, Vail TP, Marcucio RS, Schneider RA, Lotz JC, Alliston T., Structured three-dimensional co-culture of mesenchymal stem cells with chondrocytes promotes chondrogenic differentiation without hypertrophy. Osteoarth Cartilage, Vol 19 (10), pp 1210-8, 2011.
15. Laws, C.J., Coughlin, D.G., Lotz, J.C., Serhan, H.A., and Hu, S.S., Direct lateral approach to lumbar fusion is a biomechanically equivalent alternative to the anterior approach: an in vivo study. Spine, V 37(10) pp 819-825, 2012
16. Acosta, F., Metz, L., Adkisson, H.D., Liu, Jane, Carruthers-Liebenberg, E., Milliman, C., Maloney, M., and Lotz, J.C., Porcine intervertebral disc repair using allogeneic juvenile articular chondrocytes or mesenchymal stem cells, Tissue Engineering Part A, Vol 17 (23-24), pp 3045-55, 2011.
17. Rodriguez, A.G., Rodriguez-Soto, A.E., Burghardt, A.J., Berven, S., Majumdar, S., and Lotz, J.C., Morphology of the human vertebral endplate, The Journal of Orthopaedic Research, V 30 (2), pp 280-7, 2012.
18. Buser, Z., Kuelling, F., Liu, J., Liebenberg, E., Thorne, K.J., Coughlin, D., and Lotz, J.C., Biological and biomechanical effects of fibrin injection into porcine intervertebral discs, Spine, V 36(18), E1201-1209, 2011
19. Christophy, M., Faruk Senan, N.A., Lotz, J.C., and O'Reilly, O.M., A musculoskeletal model for the lumbar spine, Biomech Model Mechanobiol, V 11(1-2), pp 19-34, 2012
20. Kennedy, A., Coughlin, D.G., Metzger, M.F., Tang, R., Pearle, A.D., Lotz, J.C., Feeley, B.T., Biomechanical evaluation of pediatric anterior cruciate ligament reconstruction techniques, Am J Sports Med, V 39(5), pp 964-971, 2011
21. Lotz, J.C., Load and the spine. How does the Goldilocks principle apply? The Spine Journal, 11(1), pp 44-45, 2011
22. Bailey, J., Liebenberg, E., Degmetich, S., and Lotz, J.C., Innervation patterns of PGP9.5 positive nerve fibers within the human lumbar vertebra; Implications for low back pain. Journal of Anatomy, V 218(3), pp 263-270, 2011.
23. Rodriguez, A.G., Slichter, C.K., Acosta, F.L., Rodriguez-Soto, A.E., Burghardt, A.J., Majumdar, S., and Lotz, J.C., Human disc nucleus properties and vertebral endplate permeability, Spine, V 38(7), pp 512-520, 2011
24. Han, H.K., Buckley, J., Kursa, K., O'Neill, C., and Lotz, J., Microdialysis technique to quantify drug concentration in human intervertebral discs. J Med. Devices, V 4(4), 2010.
25. Allon, A.A., Aurouer, N., Yoo, B.B., Liebenberg, E.C., Buser, Z., and Lotz, J.C., Structured co-culture of stem cells and disc cells prevent disc degeneration in a rat model, The Spine Journal, 10(12), pp1089-97, 2010.
26. Kim, A.J., Adkisson, H.D., Wendland, M., Seyedin, M., Berven, S., and Lotz, J.C., Juvenile chondrocytes may facilitate disc repair, Open Tissue Engineering and Regenerative Medicine Journal, 3, pp 28-35, 2010.
27. Hashi, C.K., Derugin, N., Janario, R.R., Lee, R., Schultz, D., Lotz, J., and Li, S., Antithrombogenic modification of small-diameter microfibrous vascular grafts, Aterioscler Thromb Vasc Biol, 30(8), pp 1621-7, 2010.
28. Metzger, M.F., Faruk Senan, N.A., O'Reilly, O.M., and Lotz, J.C., Minimizing errors associated with calculating the location of the helical axis for spine motions, J. Biomechanics, 43(14), pp 2822-9, 2010.
29. Wheeler, D.J., Garabekyan, T., Lugo, R., Buckley, J.M., Jones, C., Lotz, M., Lotz, J.C., and Ma, C.B., Biomechanical comparison of transosseous versus suture anchor repair of the subscapularis tendon, Arthroplasty, 28(4), pp 444-450, 2010

30. Eguizabal, J., Tufaga, M., Scheer, J.K., Ames, C., Lotz, J.C., Buckley, J.M., Pure moment testing for spinal biomechanics applications: Fixed versus sliding ring cable-driven test designs. J. Biomechanics, 43(7), pp 1422-1425, 2010
31. Masuda, K. and Lotz, J.C., New challenges for intervertebral disc treatment using regenerative medicine, Tissue Engineering: Part B, V 16(1), pp 147-58, 2010
32. Allon, A.A., Schneider, R.A. and Lotz, J.C., Co-culture of adult mesenchymal stem cells and nucleus pulposus cells in bilaminar pellets for intervertebral disc regeneration, SAS Journal, 3 pp 41-49, 2009.
33. Henning, T.D., Sutton, E.J., Kim, A., Golovko, D., Horvai, A., Ackerman, L., Sennino, B., McDonald, D., Lotz, J., and Daldrup-Link, H.E., The influence of ferucarbotran on the chondrogenesis of human mesenchymal stem cells, Contrast Media & Molecular Imaging, 4(4), pp 165-173, 2009
34. O'Reilly, O.M., Metzger, M.F., Buckley, J.M., Moody, D.A., and Lotz, J.C., On the stiffness matrix of the intervertebral joint: application to total disc replacement, ASME Journal of Biomechanical Engineering, 131, pp 63-87, 2009
35. Hansma, P., Yu, H., et al., The tissue diagnostic instrument. Review of Scientific Instruments, 80(5), pp 054303, 2009
36. Schultz, D.S., Rodriguez, A.G., Hansma, P.K., and Lotz, J.C., Mechanical profiling of intervertebral discs, Journal of Biomechanics, 42(8), pp 1154-7, 2009.
37. Barnes, A.H., Eguizabal, J.A., Acosta, F.L., Lotz, J.C., Buckley, J.M., and Ames, C.P., Biomechanical pullout strength and stability of the cervical artificial pedicle screw, Spine 34(1) pp E16-20, 2009.
38. Haudenschild, A.K., Hsieh, A.H., Kapila, S., and Lotz, J.C., Pressure and distortion regulate human mesenchymal stem cell gene expression, Annals of Biomedical Engineering, 37(3), pp 492-502, 2009.
39. Xu, J., Wang, W., Kapila, Y., Lotz, J., and Kapila,S., Multiple differentiation capacity of STRO-1/+CD146+ PDL mesenchymal progenitor cells, Stem Cells Dev, 18(3), pp 487-496, 2009.
40. Butler, D.L., Lewis, J.L., Frank, C.B, et al., Evaluation criteria for musculoskeletal and craniofacial tissue engineering constructs: A conference report. Tissue Engineering, Part A, Vol 14 (12), pp 2089-2104, 2008.
41. Wagner, D.R. and Lotz, J.C., Quantifying the contributions of structure to the annulus fibrosus mechanical function using a nonlinear, anisotropic, hyperelastic model, J Orthop Res, Vol 26 (12), pp 1675-6 (author reply).
42. Meier, R., Boddington, S., Krug, C., Acosta, F., Thuillier,D., Henning T., Sutton E., Tavri S., Lotz, J.C., and Daldrup-Link H., Detection of postoperative granulation tissue with an ICG-enhanced integrated OI-/X-ray System. Journal of Translational Medicine, V6 (73), 2008
43. Lotz, J.C., Hadi, T., Bratton, C., Rieser, K.M., and Hsieh, A.H., Anulus fibrosus tension inhibits degenerative structural changes in lamellar collagen, Eur Spine J, V17 (9) pp 1149-59, 2008
44. Schultz, D.S., Lotz, J.C., Lee, S.M., Trinidad, M.L., Stewart, J.M., Structural factors that mediate scleral stiffness, Invest Ophthalmol Vis Sci, V49(10), pp 4232-6, 2008
45. Acosta, F.L., Buckley, J.M., Xu, Z., Lotz, J.C., and Ames, C.P., Biomechanical comparison of three fixation techniques for unstable thoracolumbar burst fractures. Laboratory Investigation, J. Neurosurg Spine, V8(4), pp 341-6, 2008
46. Xu, J., Wang, W., Ludeman, M., Cheng, K., Hayami, T., Lotz, J.C., Kapila, S., Chondrogenic differentiation of human mesenchymal stem cells in three-dimensional alginate gels, Tissue Eng Part A, V14(5), pp 667-80, 2008
47. Xu, J., Wang, W., Kapila, Y., Lotz, J., and Kapila, S., Multiple differentiation capacity of STRO-1+/CD146+ PDL mesenchymal progenitor cells, Stem Cells, 2008

48. Keshari, K.R., Lotz, J.C., Link, T.M., Hu, S.S., Majumdar, S., and Kurhanewicz, J., Lactic acid and proteoglycans as metabolic markers for discogenic back pain, Spine, 33(3), pp 312-317, 2008
49. Reiser, K.M., Gratton, C.G., Yankelevich, D.R., Knoesen, A., Rocha-Mendoza, I., and Lotz, J.C., Quantitative analysis of structural disorder in intervertebral disks using second harmonic generation imaging: comparison with morphometric analysis, Journal of Biomedical Optics, Vol 12(6), 2007.
50. Behonick, D.J., Zing, Z., Lieu, S., Buckley, J.M., Lotz, J.C., Marcucio, R.S., Werb, Z., Miclau, T., and Colnot, C., The role of matrix metalloproteinase 13 in both endochondral and intramembranous ossification during skeletal regeneration, PLoS One, 2(11), pp e1150, 2007
51. Ulrich, J.A., Liebenberg, E.C., Thuillier, D.U. and Lotz, J.C., Repeated disc injury causes persistent inflammation. 2007 ISSLS Prize Winner, Spine, 32(25), pp 2812-19, 2007.
52. Walsh, A.J.L, O'Neill, C.W., and Lotz, J.C., Glucosamine HCl alters production of inflammatory mediators by rat intervertebral disc cells in vitro, The Spine Journal, 7(5) pp 601-8, 2007
53. Rhyu, K-W, Walsh, A., O'Neill, C.W., Bradford, D.S., and Lotz, J.C., The short-term effects of electrosurgical ablation on proinflammatory mediator production by intervertebral disc cells in tissue culture, The Spine Journal, 7(4), pp 451-8, 2007
54. Court, C., and Lotz, J.C., Biological and mechanical consequences of transient intervertebral disc bending, European Spine Journal, 16(11) pp 1899-906, 2007
55. Sproul, R.C., Reynolds, H.M., Lotz, J.C. and Ries, M.D., Relationship between femoral head size and distance to lesser trochanter, Clin Orthop Relat Res, 461, pp 122-4, 2007.
56. Asundi, K.R., Kursa, K., Lotz, J., Rempel, D.M., In vitro system for applying cyclic loads to connective tissues under displacement or force control, Ann Biomed Eng, 35(7) pp 1188-1195, 2007
57. Nau, W. H., Diederich, C. J., Shu, R., Kinsey, A., Bass, E., Lotz, J. ,Hu, S. ,Simko, J. ,Ferrier, W., Sutton, J., Attawia, M., Pellegrino, R., Intradiscal thermal therapy using interstitial ultrasound: an in vivo investigation in ovine cervical spine, Spine, 32 (5), pp 503-511, 2007
58. Rousseau, M.A., Ulrich, J.A., Bass, E.C., Rodriguez, A., Liebenberg, E., Liu, J. and Lotz, J.C., Stab incision for inducing intervertebral disc degeneration in the rat. Spine, V32(1), pp17-24, 2007.
59. Rousseau, M.A., Bradford, D.S., Bertagnoli, R., Hu, S.S., and Lotz, J.C., Disc arthroplasty design influences intervertebral kinematics and facet forces. The Spine Journal, V 6(3), pp 258-266, 2006.
60. Wagner, D.R., Reiser, K.M., and Lotz, J.C., Glycation increases human annulus fibrosus stiffness in both experimental measurements and theoretical predictions, Journal of Biomechanics, Vol. 39(6), pp 1021-1029, 2006.
61. Lotz, J.C. and Ulrich, J.A., Innervation, inflammation, and hypermobility may characterize pathologic disc degeneration: Review of animal model data, Journal of Bone and Joint Surgery, V 88(S2), pp 76-82, 2006.
62. Hsieh, A.H., Wagner, D.R., Cheng, L.Y. and Lotz, J.C., Dependence of mechanical behavior of the murine tail disc on regional material properties: a parametric finite element study, ASME J. Biomech. Eng, Vol. 127, pp 1158-1167, 2006.
63. Rousseau, M-A, Bradford, D.S., Hadi, T.M., Pederson, K.L., and Lotz, J.C., The instant axis of rotation influences facet forces at L5/S1 during flexion/extension and lateral bending. The European Spine Journal, 15(3), pp 299-307, 2006.
64. Bass, E.C., Nau, W.H., Diederich, C.J., Libenberg, E., Shu, R., Pellegrino, R., Sutton, J., Attawia, M., Hu, S.S., Ferrier, W.T., Lotz, J.C., Intradiscal thermal therapy does not stimulate biologic remodeling in an *in vivo* model. Spine, 31 (2), pp 139-145, 2006
65. Lotz, J.C., and Kim, A.J., Disc degeneration: why, when, and how. Neurosurg Clin N Am, 16 (4), pp 657-663, 2005.

66. Keshari, K.R., Zektzer, A.S., Swanson, M.G., Majumdar, S., Lotz, J.C., Kurhanewicz, J. Characterization of intervertebral disc degeneration by high-resolution magic angle spinning (HR-MAS) spectroscopy. Magn Reson Med, 53 (3), pp 519-527, 2005
67. Keshari, K.R., Lotz, J.C., Kurhanewicz, J., and Majumdar, S., Correlation of HR-MAS spectroscopy derived metabolite concentrations with collagen and proteoglycan levels and Thompson grade in the degenerative disc, Spine, 30 (23), pp 2683-2688, 2005.
68. Yao, W., Hadi, T., Jiang, Y., Lotz, J., Wronski, T.J., and Lane, N.E., Basic fibroblast growth factor improves trabecular bone connectivity and bone strength in the lumbar vertebral body of osteopenic rats, Osteoporosis International, 16 (12), pp 1939-1947, 2005.
69. Acosta, F.L., Lotz, J., and Ames, C.P., The potential role of mesenchymal stem cell therapy for intervertebral disc degeneration: a critical overview. Neurosurg Focus, 19 (3) E4, 2005.
70. Ananthakrishnan, D., Berven, S., Deviren, V., Cheng, K., Lotz, J.C., Xu, Z., and Puttlitz, C.M., The effect on anterior column loading due to different vertebral augmentation techniques. Clinical Biomechanics, V 20 pp 25-31, 2005.
71. Diao, E., Shao, F., Liebenberg, E., Rempel, D., and Lotz, J.C., Carpal tunnel pressure alters median nerve function in a dose-dependent manner: a rabbit model for carpal tunnel syndrome, Journal of Orthopaedic Research, V 23(1), pp 218-223, 2005.
72. Kroeber, M. Unglaub, F., Guehring, T., Nerlich, A., Hadi, T., Lotz, J., and Carstens, C., Effects of controlled dynamic disc distraction on degenerated intervertebral discs. Spine V 30 (2), pp 181-187, 2005.
73. Puttlitz, C.M., Rousseau, M.A., Zheng, X., Hu, S., Tay, B.K-B., and Lotz, J.C., Intervertebral disc replacement maintains cervical spine kinetics, Spine, V 29 (24), pp2809-2814, 2005.
74. Reiser, K.M., Rocha-Mendoza, I., Wang, M., Yankelevich, D.R., Bratton, C., Knoesen, A., Lotz, J.C., and Liebenman, E., Polarization-modulated second harmonic generation imaging: method for quantitative assessment of disorganization in annulus, Conf Proc IEEE Eng Med Biol Soc; Vol 7, pp 4982-4985, 2004
75. Lotz, J.C., Animal models of intervertebral disc degeneration: lessons learned. Spine V 29 (23), pp 2742-2750, 2004
76. An, H.S., Anderson, P.A., Haughton, V.M., Iatridis, J.C., Kang, J.D., Lotz, J.C., Natarajan, R.N., Oegema, T.R., Roughley, P., Setton, L.A., Urban, J.P., Videman, T., Andersson, G.B., Weinstein, J.N., Introduction: disc degeneration summary, Spine, V 29(23), pp 2677-2678, 2004
77. Majumdar, S., Issever, A.S., Burghart, A., Lotz, J., Arfelli, F., Rigon, L., Heitner, G., Menk, R-H., Diffraction enhanced imaging of articular cartilage and comparison with micro-computed tomography of the underlying bone structure. Eur Radiol, V. 14, pp 1440-1448, 2004
78. Lotz, J.C. and Diederich, C.J., Point of View, Spine, V 29 (10), pp 1130-1131, 2004.
79. Bass, E., Ashford, F.A., Segal, M.R., and Lotz, J.C., Biaxial testing of human annulus fibrosus and its implications for a constitutive formulation, Annals of Biomedical Engineering, V 32(9), pp 1233-1244, 2004
80. Rousseau, M-A., Bass, E.C., and Lotz, J.C., An anterior approach to the lumbar spine of the Sprague-Dawley rat, Lab Animal, V 33 (6), pp 43-44, 2004
81. Patel, V.V., Hall, K., Ries, M., Lotz, J., Ozhinsky, E., Lindsey, C., Lu, Y., Majumdar, S., A three-dimensional MRI analysis of knee kinematics, J. Orthop Res, V 22 (2), pp 283-292, 2004.
82. Crevensten, G., Walsh, A.J.L., Anathakrishnan, D., Page, P., Wahba, G.M., Lotz, J.C. and Berven, S., Intervertebral disc cell therapy for regeneration: Mesenchymal stem cell implantation in rat intervertebral discs, Annals of Biomedical Engineering, V 32 (3), pp 430-434, 2004
83. Puttlitz, C.M., Melcher, R.P., Kleinstueck, F.S., Harms, J., Bradford, D.S. and Lotz, J.C., Stability analysis of craniovertebral junction fixation techniques, JBJS, 86-A (3), pp 561-568, 2004

84. Puttlitz, C.M., Deviren, V., Smith, J.A., Kleinstueck, F.S., Tran, Q.N., Thurlow, R.W., Eisele, P., Lotz, J.C., Biomechanics of cervical laminoplasty: kinetic studies comparing different surgical techniques, temporal effects and the degree of level involvement. Eur Spine J, V 13 (3), pp 213-221, 2004.
85. Wagner, D.R. and Lotz, J.C., Theoretical model and experimental results for the nonlinear elastic behaviour of human annulus fibrosus, Journal of Orthopaedic Research, V 22 (4), pp 901-909, 2004.
86. Rannou, F., Lee, T-S., Zhou, R., Chin, J., Lotz, J.C., Mayoux-Benhamou, M-A., Barbet, J.P., and Shyy, J.Y-J., Intervertebral Disc Degeneration: The Role of the Mitochondrial Pathway in Annulus Fibrosus Cell Apoptosis Induced by Overload, American Journal of Pathology, 164 (3), pp 915-924, 2004
87. O'Neill, C.W., Liu, J.J., Leibenberg, E., Hu, S.S., Deviren, V., Tay, B. K-B., Chin, C.T., and Lotz, J.C., Percutaneous Plasma Decompression Alters Cytokine Expression in Injured Porcine Intervertebral Discs, The Spine Journal, 4(1), pp 88-98, 2004
88. Walsh, A.J.L. and Lotz, J.C., Biological Response of the Intervertebral Disc to Dynamic Loading, Journal of Biomechanics, 37 (3), pp 329-337, 2004
89. Walsh, A.J.L., Bradford, D.S.B and Lotz, J.C., *In Vivo* Growth Factor Treatment of Degenerated Intervertebral Discs, Spine, 29(2), pp 156-163, 2004
90. Bass, E.C., Wistrom, E.V., Diederich, C.J., Nau, W.H., Pellegrino, R., Ruberti, J., and Lotz, J.C., Heat-Induced Changes in Porcine Annulus Fibrosus Biomechanics, Journal of Biomechanics, 37 (2): 233-240, 2004.
91. Palmer, E.I., and Lotz, J.C., The Compressive Creep Properties of Normal and Degenerated Murine Intervertebral Discs. Journal of Orthopaedic Research, 22 (1): 164-169, 2004.
92. Hsieh, A.H. and Lotz, J.C., Prolonged Spinal Loading Induces MMP-2 Activation in Intervertebral Discs, Spine, 28 (16), pp 1781-1788, 2003
93. Ries, M. D., Suzuki, Y., Renowitzky, G., Lotz, J. C., Barrack, R. L., Bourne, R. B., Rorabeck, C. H., Effect of cementless bowed stem distal surface contour and coronal slot on femoral bone strains and torsional stability, J. Arthroplasty, 18 (4), pp 494-498, 2003
94. Soejima, O., Diao, E., Lotz, J. C., Hariharan, J. S., Naito, M., Dorsal and Palmar Material Properties of the Adult Human Flexor Profundus Tendon in Zone II, J. Hand Surgery, 8 (1), pp 53-58, 2003
95. Kleinstueck, F.S., Diederich, C.J., Nau, W.H., Puttlitz, C.M., Smith, J.A., Bradford, D.S., and Lotz, J.C., Temperature and Thermal Dose Distributions during Intradiscal Electro-Thermal (IDET) Therapy in Cadaveric Lumbar Spine, Spine, 28 (15), pp 1700-1709, 2003
96. Whyne, C.M, Hu, S.S. and Lotz, J.C., Burst fracture in the metastatically involved spine, Part II: Biomechanically derived guideline equations for risk prediction, Journal of Spinal Disorders, 16 (2), pp 180-185, 2003
97. Ishiko, T., Puttlitz, C.M., Lotz, J.C., and Diao, E., Scaphoid kinematic behavior after division of the transverse carpal ligament, J. Hand Surgery, 28 (2), pp 267-271, 2003
98. Whyne, C.M, Hu, S.S. and Lotz, J.C., Burst fracture in the metastatically involved spine. Part I: Development, validation, and parametric analysis of a three-dimensional poroelastic finite element model, Spine, 28 (7), 652-660, 2003
99. Issever A.S., Walsh A., Lu Y., Burghardt A., Lotz J.C., and Majumdar S., MicroCT Evaluation of Trabecular Bone Structure In Loaded Murine Tail Vertebrae, Spine 28(2): 123-128; Jan 2003
100. Lotz, J.C., Hsieh, A.H., Walsh, A.L., Palmer, E.I. and Chin, J.R., Mechanobiology of the Intervertebral Disc, Biochemical Journal, 30 (6), 853-858, 2002
101. Melcher, R.P., Puttlitz, C.M., Kleinstueck, F.S., Lotz, J.C., Harms, J., and Bradford, D.S., Biomechanical testing of posterior atlantoaxial fixation techniques, Spine Vol. 27, No. 22, pp 2435-2440, 2002.

102. Byl, C., Puttlitz, C., Byl, N., Lotz, J., and Topp, K., Strain in the Median and Ulnar Nerves During Upper Extremity Positioning, J. of Hand Surgery, Vol. 27A, No.6, pp 1032-1040, 2002.
103. Mao, J.R., Dean, W.B., Taylor, G., Wagner, D.W., Afzal, V., Lotz, J.C., Rubin, E.M., and Bristow, J.D., Tenascin-X Deficiency Mimics the Ehlers-Danlos Syndrome in Mice Through Alteration of Collagen Deposition, Nat Genet. 2002 Apr;30(4):421-5.
104. Kroeber M, Ries MD, Suzuki Y, Renowitzky G, Ashford F, Lotz J., Impact Biomechanics and Pelvic Deformation During Insertion of Press Fit Acetabular Cups, Journal of Arthroplasty, J Arthroplasty. 2002 Apr;17(3):349-54.
105. Riches P, Dhillon N, Lotz J, Woods A, McNally D, The internal mechanics of the intervertebral disc under cyclic loading., J Biomech. 2002 Sep;35(9):1263.
106. Kroeber MW, Rovinsky D, Lotz J, Carstens C., Bioabsorbable materials for fixation of slipped capital femoral epiphysis (SCFE), Orthopade 2002 Jun;31(6):563-7
107. Whyne, C.M, Hu, S.S. and Lotz, J.C., Mechanics of Metastatically Involved Spine Described through Poroelastic Modeling, Journal of Biomechanics, 34: 1317-1324, 2001
108. Kleinstueck, F.S., Diederich, C.J., Nau, W.H., Puttlitz, C.M., Smith, J.A., Bradford, D.S., and Lotz, Acute Biomechanical and Histological Effects of Intradiscal Electrothermal Therapy on Human Lumbar Discs, Spine, 26:2198-2207, 2001
109. Chiu, E.J., Newitt, D.C., Segal, M.R., Hu, S.S., Lotz, J.C., Majumdar, S., Measurement of MR Relaxation and Water Diffusion in the Human Lumbar Intervertebral Disc under Compression - In Vitro, Spine. 2001 Oct 1;26(19):E437-44.
110. Court, C. Colliou, O.K., Chin, J.R., Liebenberg, E., Bradford, D.S., and Lotz, J.C., The Effect of Static *in vivo* Bending on the Intervertebral Disc, The Spine Journal, 1 (4): 239-245, 2001
111. Dhillon, N., Bass, E.C., and Lotz, J.C., Effect of Frozen Storage on Creep Behavior of Human Intervertebral Discs, Spine, 26 (8): 883-888, 2001
112. Diederich, C.J., Nau, W.H., Kleinstueck, F., Lotz J.C., Bradford D.S., IDTT therapy in cadaveric lumbar spine: temperature and thermal dose distributions, in Thermal Treatment of Tissue: Energy Delivery and Assessment, Proceedings of SPIE Annual Meeting, San Jose, Jan 21-22. 2001
113. Kroeber MW, Lane N, Lotz JC, Thomsen M, Effects of early estrogen replacement therapy on bone stability of ovariectomized rats. A biomechanical and radiologic study of the tibial plateau, Orthopade. 2000 Dec;29(12):1082-7.
114. Fujita, Y., Wagner, D.R., Biviji, A.A., Duncan, N.A., and Lotz, J.C. Anisotropic Shear Behavior of the Annulus Fibrosus: Effect of Harvest Site and Tissue Pre-strain, Medical Engineering & Physics, 22 (5): 349-357, 2000
115. Whyne, C.M., Hu, S.S. and Lotz, J.C., Biphasic Material Properties of Lytic Bone Metastases, Annals of Biomedical Engineering, 28 (9): 1154-1158, 2000
116. Chin, J.R. and Lotz, J.C., Intervertebral Disc Cell Death is Dependent on the Magnitude and Duration of Spinal Loading, Spine, 25 (12): 1477-1483, 2000
117. Lotz, J.C., Kroeber, M.W., Heilmann, M., Pericherla, K., Kimmel, D., Kinney, J.H., and Lane, N.E., Tibial Plateau Fracture is a Sensitive Measure of Estrogen-Dependent Bone Fragility in Rats, Journal of Orthopaedic Research, 18 (2):326-332, 2000.
118. Klisch, S.A., and Lotz, J.C., A special theory of biphasic mixtures and experimental results for human annulus fibrosus tested in confined compression, J. Biomech Eng, Vol. 122, pp1-9, 2000
119. Filvaroff E; Erlebacher A; Ye J; Gitelman SE; Lotz J; Heillman M; Derynck R. Inhibition of TGF-b receptor signaling in osteoblasts leads to decreased bone remodeling and increased trabecular bone mass, Development, Oct;126(19):4267-79, 1999
120. Diao E, Soejima O, Lotz J, Hariharan J. Randomized biomechanical study of zone II human flexor tendon repairs [letter], J Hand Surg [Am], Jul;24(4):871-3, 1999

121. Klisch, S.M. and Lotz, J.C., A Fiber-reinforced Continuum Theory and Constitutive Equation for the Annulus Fibrosus, Journal of Biomechanics, 32 (10), pp 1027-1036, 1999.
122. Randall RL; Wolf EM; Heilmann MR; Lotz J., Comparison of bone-patellar tendon-bone interference screw fixation and hamstring transfemoral screw fixation in anterior cruciate ligament reconstruction , Orthopedics, Jun;22(6):587-91, 1999
123. Lotz, J.C., Colliou, O.K., Chin, J.R., Duncan, N.A., and Liebenberg E., Compression-Induced Degeneration of the Intervertebral Disc: An In Vivo Mouse Model and Finite Element Study, Volvo Award for Low Back Pain Research, Spine, Dec 1, 23(23):2493-506, 1998
124. Lotz, J.C., The Biomechanics of Prevention and Treatment for Low Back Pain: 2nd International Workshop, Clinical Biomechanics, 13: 561-573, 1998
125. Duncan, N.A., and Lotz, J.C., Experimental Validation of a Porohyperelastic Finite Element Model of the Annulus Fibrosus, Biomechanics & Biomedical Engineering, Eds. J. Middleton and G.N. Pande, Gordon and Breach, 1998
126. Tay, B. K-B, Le, A.X., Heilman, M., Lotz, J.C., and Bradford, D.S., Use of a Collagen-Hydroxyapatite Matrix in Spinal Fusion: A Rabbit Model, Spine, Nov 1;23(21):2276-81, 1998
127. Lotz, J.C., Hariharan, J.S., Diao, E., An Analytic Model to Predict the Strength of Tendon Repairs, Journal of Orthopaedic Research, 16 (4): 399-405, 1998.
128. Glazer, P.A., Heilmann, M.R., Lotz, J.C., Bradford. D.S., Use of Ultrasound in a Spinal Fusion: A Rabbit Model., Spine, Vol. 23, No. 10, pp 1142-1148, 1998
129. Whyne, C., Hu, S.S., Lotz, J.C., The Influence of the Posterior Arch on Vertebral Body Strain., Spine, 23 (8): 899-907, 1998
130. Fujita, Y., Duncan, N.A., Lotz, J.C., Radial Tensile Properties of the Annulus Fibrosus, Journal of Orthopaedic Research, (15):814-819, 1997
131. Glazer, P.A., Heilmann, M.R., Lotz, J.C., Bradford. D.S., Use of Electromagnetic Fields in a Spinal Fusion: A Rabbit Model., Spine, Oct 15;22(20):2351-6, 1997
132. Bass, E., Duncan, N.A., Bueff, H.U., Dusic, J., and Lotz, J.C., The Compressive Creep Behavior of the Porcine Intervertebral Disc is Affected by Frozen Storage. Spine, 22(24):2867-2876, 1997
133. Lotz, J.C., Hu, S.S., Chiu, D.F., Colliou, O., Glazer, P.A., Duncan, N.A., Poser, D.V.M., Carbonated Apatite Cement Augmentation of Pedicle Screw Fixation in the Lumbar Spine., Spine, Spine, 22 (23):2716-2723, 1997
134. Hariharan, J.S., Diao, E., Soejima, O. and Lotz, J.C., Tensile Properties of Incomplete Lacerations of the Human Digital Flexor Tendon. The Journal of Hand Surgery, 22A (6): 1-5, 1997.
135. Glazer, P.A., Colliou, O., Klisch, S.M., Bradford D.S., Bueff, H.U., Lotz, J.C., Biomechanical Analysis of Multi-Level Fixation Methods in the Lumbar Spine, Spine, 22 (2):171-182, 1997.
136. Majumdar, S; Newitt, D; Mathur, A; Osman, D; Gies, A; Chiu, E; Lotz, J; Kinney, J; Genant, H. Magnetic resonance imaging of trabecular bone structure in the distal radius: relationship with X-ray tomographic microscopy and biomechanics. Osteoporosis International, 6(5):376-85, 1996.
137. Glazer, P.A., Colliou, O**.,** Lotz, J.C., and Bradford, D.S., Biomechanical Analysis of Lumbosacral Fixation. Spine, 21 (10):1211-1222, 1996
138. Diao, E., Hariharan, J.S., Soejima, O., and Lotz, J.C. Effect of Peripheral Suture Depth on Strength of Tendon Repairs. The Journal of Hand Surgery, 21A(2), pp243-239, 1996.
139. Lotz, J.C. and Namba, R.N., Biomechanics of femoral prostheses. Portland Bone Symposium. Portland OR, August, 1995
140. Soejima O; Diao E; Lotz JC; Hariharan JS. Comparative mechanical analysis of dorsal versus palmar placement of core suture for flexor tendon repairs. Journal of Hand Surgery. American Volume, 1995 Sep, 20(5):801-7

141. Bueff HU; Lotz JC; Colliou OK; Khapchik V; Ashford F; Hu SS; Bozic K; Bradford DS. Instrumentation of the cervicothoracic junction after destabilization. Spine, 1995 Aug 15, 20(16):1789-92
142. Lotz, J.C., Cheal, E.J. and Hayes, W.C., Stress Distributions within the Proximal Femur During Gait and Falls: Implications for Osteoporotic Fracture. Osteoporosis International, 1995, 5(4):252-61
143. Genant, H.K., Gluer, C.C, and Lotz, J.C.: Gender Differences in Bone Density, Skeletal Geometry, and Fracture Biomechanics. Radiology, 190:636-640,1994.
144. Lotz, J.C., Cheal E.J., and Hayes W.C.: Fracture Prediction for the Proximal Femur Using Finite Element Models, Part I: Linear Analysis, Journal of Biomechanical Engineering, Vol. 113(4), p. 353-360, 1991.
145. Lotz, J.C., Cheal E.J., and Hayes W.C.: Fracture Prediction for the Proximal Femur Using Finite Element Models, Part II: Nonlinear Analysis, Journal of Biomechanical Engineering, Vol. 113(4), p. 361-365, 1991.
146. Lotz J.C., Hayes W.C.: Mechanical Properties of Metaphyseal Bone in the Proximal Femur, J. Biomechanics Vol. 24, No. 5, pp. 317-329, 1991.
147. Lotz, J.C., Gerhart, T.N., and Hayes, W.C.: Mechanical Properties of Trabecular Bone from the Proximal Femur: A Quantitative CT Study, Journal of Computer Assisted Tomography, 14(1) 107-114, 1990.
148. Lotz, J.C. and Hayes, W.C.: The Use of Quantitative Computed Tomography to Estimate Risk of Fracture of the Hip from Falls, The Journal of Bone and Joint Surgery, Vol. 72-A, No. 5, 1990.
149. Esses, S.I., Lotz, J.C. and Hayes, W.C.: Biomechanical Properties of the Proximal Femur Determined In Vitro by Single-Energy Quantitative Computed Tomography, Journal of Bone and Mineral Research, Vol. 4, No. 5, 1989
150. Cheal, E.J., Lotz, J.C., Edwards, W.T., Knopf, K.B., and Hayes, W.C., Finite element modeling of failure processes in the skeleton. In: Computational Mechanics ’88 (eds. S.N. Atluri and G. Yagawa) Springer-Verlag, Vol. 2 pp 61, 1988
151. Renshaw, A.A., Lotz, J.C., Cohen, D.B., Edsberg, L.E., and Hayes, W.C.: Apparent Density of Fat in the Proximal Femur: Implications for Assessment of Osteoporosis with Quantitative Computed Tomography, Harvard University Honors Forum, 1988.