



Alan S. Litsky, M.D., Sc.D.
Associate Professor

Education

Undergraduate degree: A.B. - Chemistry, Princeton University, 1975

Graduate degrees:

M.D. - Columbia University's College of Physicians and Surgeons, 1979

Sc.D. - Materials Science and Engineering, Massachusetts Institute of Technology, 1988



Appointments

Associate Professor of Biomedical Engineering

Associate Professor of Orthopaedics

Director - Orthopaedic BioMaterials Laboratory

BME - Director of Graduate Education

Additional faculty appointments in the Integrated Biomedical Sciences Graduate Program (IBGP), the Medical Scientist Program (MSP), and the Oral Biology Program

Contact Information

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Affiliations

[Department of Orthopaedics](#)

[Orthopaedic BioMaterials Laboratory](#)

Area of expertise

- Hard-Tissue Biomaterials
- Implant Fixation
- Biomedical Research Ethics

Research Interests

My research focus is hard-tissue biomaterials with an emphasis on new materials for orthopaedic and dental applications. This has including development and evaluation of a reduced-modulus acrylic bone cement and a hydroxyapatite-metal alloy composite for net-shaped manufacture of musculoskeletal implants. Continuing research projects in Orthopaedic BioMaterials Laboratory are investigating the use of shape-memory alloys for fracture fixation, micromotion between components of total hip arthroplasties, the determination of the specific origin of polyethylene wear debris in arthroplasty components, and the fatigue behavior of external fixators and dental prostheses.

Teaching

- BME 733 "Hart-Tissue Biomaterials" (Spring Quarter, every other year)
- BME 741 "Tissue Mechanics" (Winter Quarter)
- BME 883 "Research Ethics"

Recent Publications

Gallagher, S., Marras, W.S., Litsky, A.S., and Burr, D. An Exploratory Study of Loading and Morphometric Factors Associated with Specific Failure Modes in Fatigue Testing of Lumbar Motion Segments. *Clinical Biomechanics*, 21(3):228-234, 2006.

Huja, S.S., Rao, J., Struckhoff, J.A., Beck, F.M., and Litsky, A.S. Biomechanical and Histomorphometric Analysis of Monocortical Screws at Six Weeks Post-Insertion. *J. Oral Implantology*, 32(3):110-116, 2006.

Bertone, A., Lipson, D., Kamei, J., Litsky, A., and Weisbrode, S. Effective Bone Hemostasis and Healing Using Radiofrequency and Conductive Fluid. *Clin. Orthop. Rel Res.*, 446:278-285, 2006.

Bartsch, A.J., Bolte, J.H., Litsky, A.S., Herriott, R.G., and McFadden, J.D. Application of Anthropomorphic Test Device Crash Test Kinetics to Post Mortem Human Subject Lower Extremity Testing. *Soc. Auto. Eng.*, SP-1995:Doc. No. 2006-01-0251, 2006.

Neat, B., Kowaleski, M.P., Litsky, A.S., and Boudrieau, R.J. The Effects of Wire Diameter and an Additional Lateral Wire on Pin and Tension-Band Fixation Subjected to Cyclic Loads. *J. Vet. Comp. Orthop. Traumat.*, 19(4):213-218, 2006.

Neat, B.C., Kowaleski, M.P., Litsky, A.S., and Boudrieau, R.J. Mechanical Evaluation of Pin and Tension-Band Wire Factors in an Olecranon Osteotomy Model. *J. Vet. Surg.*, 35(4): 398-405, 2006.

Waselau, M., Samii, V.F., Litsky, A.S., Weisbrode, S.E., and Bertone, A.L. The Effect of a Magnesium Adhesive Cement on Stability and Healing of an Equine Metatarsal Osteotomy. *Amer. J. Vet. Res.*, 68(4):370-378, 2007.

Gallagher, S., Marras, W.S., Litsky, A.S., Burr, D., Landol, J.D., and Matkovic, V. A Comparison of Fatigue Failure Responses of Young and Old Lumbar Motion Segments in Simulated Flexed Lifting. *Spine*, 32(17):1832-1839, 2007.

Henry, J., Feinblatt, J., Kaeding, C., Latshaw, J., Litsky, A.S., Sibel, R., Stephens, J.A., and Jones, G. Biomechanical Analysis of Distal Biceps Tendon Repair. *Amer. J. Sports Med.*, 35(11):1950-1954, 2007.

Bertone, A.L., Goin, S., Kamei, S.J., Mattoon, J.S., Litsky, A.S., Weisbrode, S.E., Clarke, R.B., Plouhar, P.L., and Kaeding, C.C. Metacarpophalangeal Collateral Ligament Reconstruction Using Small Intestinal Submucosa (SIS) in an Equine Model. *J. Biomed. Mat. Res.*, 84(1):219-229, 2008.

Pozzi, A., Litsky, A.S., Field, J., Apelt, D., Meadows, C., and Johnson, K.A. Pressure Distributions on the Medial Tibial Plateau After Medial Meniscal Surgery and Tibial Plateau Leveling Osteotomy in Dogs. *Vet. Comp. Orthop. Traumatol.*, 21(1):8-14, 2008.

Ishihara, A., Shields, K.M., Litsky, A.S., Mattoon, J.S., Weisbrode, S.E., Bartlett, J.S., and Bertone, A.L. Osteogenic Gene Regulation and Relative Acceleration of Healing by Adenoviral-Mediated Transfer of Human BMP-2 or -6 in Equine Osteotomy and Ostectomy Models. *J. Orthop. Res.*, 26(6):764-771, 2008.

Glass, D.H., Roberts, C.J., Litsky, A.S., and Weber, P.A. A Viscoelastic Biomechanical Model of the Cornea Describing the Effect of Viscosity and Elasticity on Hysteresis. *Invest. Ophthalmology & Visual Sci.*, 49:(in press), 2008.

Recent Presentations

Bellisari, G.E., Kaeding, C.C., and Litsky, A.S. Mechanical Evaluation of Crosspins Used for Femoral Fixation of Hamstring Grafts in Anterior Cruciate Ligament Reconstructions. *Amer. Acad. Orthop. Surg.*, 28, 2006.

Ishihara, A., Bertone, A.L., Litsky, A.S., Mattoon, J.S., and Weisbrode, S.E. Acceleration of Fracture Healing with Adenovirally Transduced Human BMP-2 and -6 Genes in Horse Metatarsal Osteotomy and Ostectomy Models. *Mol. Ther. Abstr.*, 13:S217-S218, 2006.

Hahn, A., Golovin, K., and Litsky, A.S. The Potential for Reuse of Ilizarov Composite Half-Rings. *Trans. Soc. Biomat.*, 29:448, 2006.

Bartsch, A.J., Bolte, J.H., Litsky, A.S., Herriott, R.G., and McFadden, J.D. Application of Anthropomorphic Test Device Crash Test Kinetics to Post Mortem Human Subject Lower Extremity Testing. *SAE World Cong. & Exhibition*, Detroit, MI, April, 2006.

Bartsch, A.J., Bolte, J.H. IV, Litsky, A.S., Herriott, R.G., and McFadden, J.D. Impact of the Flexed Human Lower Extremity and Posterior Cruciate Ligament (PCL) Injury: A Comparison to Previous Studies. 5th World Biomech. Cong., Munich, Germany, July, 2006.

Ishihara, A., Bertone, A., Litsky, A., Mattoon, J., and Weisbrode, S. Direct Percutaneous Gene Therapy with Human BMP-2 and -6 in a Large Animal Model. Trans. Orthop. Res. Soc., 32:924, 2007.

Waselau, M., Samii, V.F., Litsky, A.S., Weisbrode, S.E., and Bertone, A.L. Magnesium Adhesive Cement Enhances Healing and Stability in a Wedge Osteotomy Model. European Soc. of Vet. Surg., Sevilla, Spain, July, 2006; Amer. Col. Vet. Surg., Washington, D.C., October, 2006; Trans. Orthop. Res. Soc., 32:1558, 2007.

Henry, D.E., Roberts, C.J., Litsky, A.S., and Weber, P.A. Computational Model of the Elastic and Viscous Properties of the Cornea. Invest. Ophthalmol. Vis. Sci., 48E:1854, 2007.

Higueta, N., Gallego, D., García, F., Posada, O.M., López, L.E., Litsky, A.S., and Hansford, D. J. Portland cement – metakaolin blends as novel biomaterials for applications in load-bearing bone tissue engineering. Biomed. Eng., Soc., Abstract 6.138, 2007.

Higueta, N., Gallego, D., García, F., López, L.E., Sarassa, C., Agudelo, P., Litsky, A.S., and Hansford, D. J. Development of polydimethylsiloxane-reinforced Portland cement porous scaffolds for load-bearing bone tissue engineering applications. Intern. Conf. on Mech. of Biomaterials and Tissues, 2007.

Melvin, A., Litsky, A., Mayerson, J., Witte, D., Juncosa-Melvin, N., and Melvin, D. An Artificial Tendon With Durable Muscle Interface. Trans. Orthop. Res. Soc., 33:1688, 2008.

Child, J.R., Litsky, A.S., and Flanigan, D.C. Load to Failure of Tibial Fixation in an Anterior Tibialis Allograft ACL Reconstruction. Arthroscopy Assocn of North America, e-poster, 2008.

Amos, B.C., Litsky, A.S., and Flanigan, D.C. Biomechanical Comparison of Meniscal Suture and Second Generation All-Inside Meniscal Repair Devices and Techniques. Arthroscopy Assocn of North America, e-poster, 2008.

Glass, D.H., Roberts, C.J., Litsky, A.S., Weber, P.A., and Lembach, R.G. Evaluation of the Deformation Response to an Air Puff in Healthy and Diseased In Vivo Human Corneas. Invest. Ophthalmol. Vis. Sci., 49E:(in press), 2008.

Gallego, D., Higueta, N., Litsky, A.S., García, F., Posada, O.M., López, L.E., and Hansford, D.J. Biocompatibility, Bioactivity and Mechanical Properties of Portland Cement and Portland Cement-Metakaolin Blends for Bone Tissue Engineering Applications. Mat. Res. Soc., 2008.

Melvin, A., Litsky, A., Mayerson, J., Witte, D., Juncosa-Melvin, N., and Melvin, D. An Artificial Tendon With Durable Muscle Interface. Trans. Soc. Biomat, 31:117, 2008.

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