# 57th Annual Meeting of the Orthopaedic Research Society

## Papers and Posters from the McKay Orthopaedic Laboratory

*January 13-16, 2011*

Long Beach, CA

**Paper No. 12**

**Restoration of Anterior-Posterior Rotator Cuff Force Balance Improves Shoulder Function in a Rat Model of Chronic Massive Tears**

*Hsu, JE; Reuther KE; Sarver JJ; Lee CS; Thomas SJ; Glaser DL; Soslowsky LJ*

**Paper No. 72**

**Tunable and Depth-Dependent Mechanics of Agarose/ Poly(Ethylene Glycol) Diacrylate Interpenetrating Networks**

*Farrell, MJ; Comeau, ES; Huang, AH; Burdick, JA; Mauck, RL*

**Paper No. 73**

**Depth-Dependent Mechanical Properties of MSC-Laden Engineered Cartilage Constructs**

*Farrell, MJ; Comeau, ES; Nerurkar, NL; Huang, AH; Mauck, RL*

**Paper No. 107**

**Variability in Human MSC Functional Chondrogenesis in Photocrosslinked Hyaluronic Acid Hydrogels**

*Kim, M; Erickson, IE; Huang, AH; Dodge, GR; Burdick, JA; Mauck, RL*

**Paper No. 116**

**Instruction without Impediment: Tunable Fibrous Scaffolds for Engineering Dense Connective Tissues**

*Baker, BM; Shah, RP; Silverstein, AM; Zachry, T; Qu, F; Schenker, M; Esterhai, J; Mauck, RL*

**Paper No. 174**

**Structural Quantification of Human Lumbar Disc and Endplate by High Resolution 3D MRI at 7T**

*Moon, SM; Yoder, JH; Wright, AC; Vresilovic, EJ; Elliott, DM*

**Paper No. 209**

**Glenoid Cartilage Thickness Decreases after Rotator Cuff Tendon Tears in a Rat Model**

*Reuther KE; Sarver JJ; Trasolini NA; Thomas SJ; Schultz SM; Sehgal CM; Lee CS; Glaser DL; Soslowsky LJ*

**Paper No. 223**

**Effect of Diet-Induced Hypercholesterolemia on Rotator Cuff Tendon Mechanics in a Rat Model**

*Beason, DP; Hsu, JE; Edelstein, L; Lee, CS; Tucker, JJ; Abboud, JA; Soslowsky, LJ*

**Paper No. 231**

**Microstructure Dictates Stretch-Induced Cell and Nucleus Reorganization on Aligned Nanofibrous Scaffolds**

*Heo, SC; Nerurkar, NL; Baker, BM; Mauck, RL*

**Paper No. 255**

**In Vitro Maturation and Integration of Engineered Chondrogenic Stem Cell-Seeded Hyaluronic Acid Hydrogels**

*Erickson, IE; Kestle, SR; Kim, M; Zellars, KH; Dodge, GR; Burdick, JA; Mauck, RL*

**Paper No. 262**

**Cytokine-Mediated Degradation of Mesenchymal Stem Cell Based Engineered Cartilage**

*Huang AH; Yeger-McKeever M; Mauck, RL*

**Paper No. 269**

**Enzymatic Delivery from Functionalized Sacrificial Nanofibers for Tissue Repair and Regeneration**

*Qu, F; Baker, BM; Esterhai, JL; Mauck, RL*

**Paper No. 314**

**High Density MSC-Seeded Hyaluronic Acid Constructs Produce Engineered Cartilage with Near-Native Properties**

*Erickson, IE; Kestle, SR; Zellars KH; Burdick, JA; Mauck, RL*

**Paper No. 351**

**Enhancing Meniscus Repair with Exogenous Growth Factors and Electrospun Nanofibrous Scaffolds**

*Ionescu, LC; Sennett, BJ; Mauck, RL*

**Paper No. 353**

**Nanofibrous Meniscus Implants Improve Joint Contact Mechanics in an Ovine Partial Meniscectomy Model**

*Shah, RP; Kelly, NH; Schenker, ML; Baker, BM; Guevara, JL; Modesto, RB; Sennett, BJ; Schaer, TP; Mauck, RL; Maher, SA*

**Paper No. 395**

**Regional Variations in Proteoglycans Decorin, Biglycan, and Aggrecan: Implications to Mechanical Behavior of the Supraspinatus Tendon**

*Matuszewski, PE; Chen, Y-L; Szczesny, SE; Elliott DM; Soslowsky LJ; Dodge GR*

**Paper No. 430**

**Intra-articular Changes Precede Extra-articular Changes in the Biceps Tendon Following Rotator Cuff Tears in a Rat Model**

*Peltz CD; Hsu JE; Zgonis MH; Trasolini NA; Glaser DL; Soslowsky LJ*

**Poster No. 475**
**Coculture of Human Mesenchymal Stem Cells and Articular Chondrocytes Reduces Hypertrophy and Enhances Functional Properties of Engineered Cartilage**
*Bian, L.; Zhai, DY; Mauck, RL; Burdick, JA*

**Poster No. 482**
**In Vitro and In Vivo Evaluation of a Bi-Phasic Nanofiber Scaffold for Integrative Rotator Cuff Repair**
*Moffat, KL; Zhang, X; Greco, S; Boushell, MB; Guo, XE; Doty, SB; Soslowsky, LJ; Levine, WN; and Lu, HH*

**Poster No. 536**
**Biceps Tendon Properties Worsen Initially but Improve Sixteen Weeks Following Rotator Cuff Tears in a Rat Model**
*Peltz CD; Hsu JE; Zgonis MH; Trasolini NA; Glaser DL; Soslowsky LJ*

**Poster No. 537**
**The Upper Band of the Subscapularis Tendon in the Rat has Inferior Mechanical Properties**
*Miller, KS; Thomas, SJ; Trasolini, NA; Soslowsky, LJ*

**Poster No. 625**
**Quantitative Human Disc Tear Severity Using 3D MRI**
*Yoder, JH; Moon, SM; Wright, AC; Vresilovic, EJ; Elliott, DM*

**Poster No. 692**
**Inhibition of Functional Matrix Degradation in a Cytokine-Mediated In-Vitro Model of Nucleus Pulposus Degeneration**
*Smith, LJ; Nerurkar, NL; Cortes, DH; Horava, SD; Dodge, GR; Hebela, NM; Mauck RL; Elliott, DM*

**Poster No. 759**
**An Injectable Nucleus Pulposus Implant to Restore Spinal Range of Motion in Compression**
*Malhotra, NR; Han, W; Beckstein, J; Cloyd, J; Chen, W; Elliott DM;*

**Poster No. 805**
**Effect of Boundary Conditions on Stress-Strain Uniformity in Biaxial Tension of Annulus Fibrosus**
*Jacobs, NT; Cortes, DH; Szczesny, SE; Vresilovic, EJ; Elliott, DM*

**Poster No. 806**
**Differential Tensile Mechanical Behavior of the Inner and Outer Annulus Fibrosus Following Treatment with Chondroitinase ABC and Buffer Solutions**
*Han, W; Jacobs, NT; Nerurkar, NL; Smith, LJ; Mauck RL; Elliott DM*

**Poster No. 807**
**Material Properties of the Extrafibrillar Matrix of Annulus Fibrosus in Tension and Compression**
*Cortes, DH; Gerasimowicz, KM; Smith, LJ; Elliott, DM*

**Poster No. 919**
**Development and Evaluation of Multiple Tendon Injury Models in the Mouse**
*Beason, DP; Kuntz, AF; Hsu, JE; Miller, KS; Soslowsky, LJ*

**Poster No. 1701**
**Mechanical property changes during neonatal development and healing using a multiple regression model**
*Ansorge, HL; Adams, S; Birk, DE; Soslowsky, LJ*

**Poster No. 1814**
**Functional Maturation of Porcine MSC- and Chondrocyte-Seeded Hydrogels for Cartilage Repair**
*Kim, M; Erickson, IE; Huang, AH; Schenker, M; Dodge, GR; Burdick, JA*

**Poster No. 1878**
**Shear Mechanics of Electrospun Scaffold for Annulus Fibrosus Tissue Engineering**
*Driscoll, TD; Nerurkar, NL; Jacobs, NT; Mauck, RL; Elliott, DM*

**Poster No. 1883**
**Functional Enhancement of Disc-Like Angle-Ply Structures via Dynamic Culture**
*Kluge, JA; Martin, JT; Nerurkar, NL; Amaniera, FA; Pampati, RA; Elliott, DM; Mauck R L*

**Poster No. 1886**
**Functional Human MSC Fibrochondrogenesis on Aligned Nanofibrous Scaffolds via Combined Exposure to FGF/TGF**
*Baker, BM; Silverstein, AM; Qu, F; Mauck, RL*

**Poster No. 1896**
**Versatile Nanofibrous Composites for Soft Tissue Repair via Silk Protein Incorporation**
*Kluge, JA; Pampati, RA; Amaniera, FA; Shah, RP; Kaplan, DL; Mauck RL*

**Poster No. 2187**
**Fibrochondrogenesis Attenuates Stretch-Induced Nuclear Deformation on Aligned Nanofibrous Electrospun Scaffolds**
*Heo, SC; Nerurkar, NL; Baker, BM; +Mauck, RL*