DANIEL A. MARTINEZ, PH.D.

CURRICULUM VITAE

February 1, 2013

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PROFESSIONAL EXPERIENCE

2010 - present	Research Associate Professor and Director, Connective Tissue Physiology Laboratory, Department of Mechanical Engineering, University of Houston, Houston TX
2004 - 2009	Associate Professor and Director, Connective Tissue Physiology Laboratory and Biomedical Engineering Research Core Laboratory, Biomedical Engineering Program in the Department of Mechanical Engineering, Department of Health and Human Performance, University of Houston, Houston, TX
2004 - present	Adjunct Associate Professor, Department of Biology and Biochemistry, Division of Molecular and Cellular Biology, University of Houston, Houston, TX
2003 - 2004	Research Associate Professor and Co-Director, Connective Tissue Physiology Laboratory, Department of Biology and Biochemistry, University of Houston, Houston, TX
1996 - 2003	Research Assistant Professor and Co-Director, Connective Tissue Physiology Laboratory, Department of Biology and Biochemistry, University of Houston, Houston, TX
1993 - 1996	Post-Doctoral Fellow in the Laboratory of Dr. J. Edward Puzas; University of Rochester School of Medicine, Musculoskeletal Research Laboratory, Division of Orthopaedic-Cellular-Molecular Biology, Rochester, NY

EDUCATION

1993 - 1996	Post-Doctoral Fellow, University of Rochester School of Medicine and Dentistry, Department of Orthopaedics, Musculoskeletal Research Laboratory, Rochester, NY Emphasis: Molecular and cellular biology of bone, cartilage and other connective tissues.
1988 -1993	Doctor of Philosophy, 1993, Biodynamics Laboratory, University of Wisconsin-Madison, Madison, WI Emphasis: Connective tissue plasticity, endocrinology and bone metabolism.
1985 - 1988	Master of Science, 1988, Collagen Research Laboratory, Department of Kinesiology, now named Department of Physiological Sciences, University of California at Los Angeles, Los Angeles, CA Emphasis: Bone growth and maturation during spaceflight.
1980 - 1984	Bachelor of Science in Biology, Minor in Philosophy, 1984, Loyola Marymount University, Los Angeles, CA

HONORS AND AWARDS

2006 - 2010	Distinguished Service Award, Center for Scientific Review, F10B: Physiology and Pathobiology of Musculoskeletal, Oral and Skin Systems Study Section Reviewer, National Institutes of Health, Department of Health and Human Services, Bethesda, MD.
2009	Invited Member, Gordon Research Conference-"Insulin-like Growth Factors in Physiology and Disease", Winter Meetings, Ventura, CA.
2006	Omicron Delta Kappa – National Leadership Honor Society Award. The University of Houston Circle Chapter of ODK Faculty Recognition for High Teaching and Leadership Standards as nominated by Faculty and Students of the University of Houston, 04/24/06.
1999	Invited Member, Gordon Research Conference-"Collagen", Colby-Sawyer College, New London, NH.
1997	BION 11 (Cosmos 2229) Outstanding Science Achievement Award from The National Aeronautics and Space Administration (NASA) and Russian Space Program, Washington DC
1995 - 1996	NIH National Research Service Award Individual (NRSA) Postdoctoral Fellowship, University of Rochester, Department of Orthopaedics.
1995	Cosmos 2G Comparison Project Science Achievement Award from NASA Headquarters. Washington DC
1994	Invited Member, Gordon Research Conference - "Gravitational Effects on Living Systems" Colby-Sawyer College, New London, NH
1993 - 1995	NIH Post-Doctoral Fellowship, University of Rochester, Department of Orthopaedics.

1992	Invited Member, Gordon Research Conference - "Gravitational Effects on Living Systems" Andover, NH
1991	Cosmos 2044 Project Science Achievement Award from The Institute of Biomedical Problems, Union of Soviet Socialists Republic Ministry of Health, Moscow, USSR., and The National Aeronautics and Space Administration (NASA).
1989	Cosmos 1887 Project Science Achievement Award from The Institute of Biomedical Problems, Union of Soviet Socialists Republic Ministry of Health, Moscow, USSR., and The National Aeronautics and Space Administration (NASA).
1987 - 1990	National Aeronautics and Space Administration (NASA) Graduate Student Fellowship Recipient. UCLA and University of Wisconsin-Madison.
1986 - 1987	Edith Hyde Scholarship Recipient, Department of Kinesiology, UCLA.
1985 - 1986	Hazel Cubberly Scholarship Recipient, Department of Kinesiology, UCLA.
1983 - 1984	Crimson Circle Service Honor Organization, "Man of the Year", Loyola Marymount University.

TEACHING EXPERIENCE

Graduate-Level Courses:

Basics Concepts of Connective Tissue Adaptation
Scientific Principles of Human Performance
Physiology of Exercise

Undergraduate-Level Courses:

Tissue Mechanics for Biomedical Engineers
Advanced Exercise Physiology
Physiology of Human Performance
Bioanalytics

ADVISING OR MENTORING

Post-Doctoral Fellow Mentor:

Antonios Kyparos, Ph.D., Institute of Space System Operations, Department of Health and Human Performance (Drs. Charles Layne and Mark S.F. Clarke), The Department of Biology and Biochemistry (Dr. Daniel A. Martinez), and Johnson Space Center (Dr. Daniel Feeback), NASA. Project Title: "Using dynamic foot pressure as a countermeasure to muscle atrophy." (2000 - 2003)

Graduate Students:

Utpala Daftary, M.S. in Biology and Biochemistry, Thesis Title: "Investigating the modulation of collagen production in cultured neonatal rat cardiac fibroblasts in response to C-pro-peptides of human and rat α-1(Type 1) collagen." 2001.

Sarah Ball, M.S. in Biology and Biochemistry. Thesis Title: "Application of gene therapy to ligament wound healing." 2009.

Basilios Sideris, M.S. in Biomedical Engineering, Thesis Title: "Investigating the efficacy of low level laser irradiation in wound healing: An *in vitro* study." 2010.

Tripura Yelamarthi, M.S. in Mechanical Engineering, Thesis Title: "Static and dynamic characterization of the ligament subjected to alternative wound healing." 2012.

Other Graduate Student Committee Service:

Dan Ye, Ph.D. in Biochemistry, committee member. Dr. Steven Blanke, Committee Chair. Dissertation Title: Probing the intracellular structure and function of the *Heliobacter pylori* vacuolating toxin. 2001.

Rakhi Patel, M.S. in Biochemistry, committee member. Dr. Steven Blanke, Committee Chair. Thesis Title: Diphtheria toxin ADP-Ribose acceptor recognition. 2001.

Hetal Patel, Ph.D. in Biochemistry, committee member. Dr. Steven Blanke, Committee Chair. Dissertation Title: Lipid rafts are essential for cellular intoxication mediated by *Heliobacter pylori* vacuolating toxin. 2003.

Tao Guo, M.S. in Biochemistry, committee member. Dr. Steven Blanke, Committee Chair. Thesis Title: Cellular vacuolation mediated by the *Heliobacter pylori* vacuolating cytotoxin is modulated by changes in membrane potential of target mammalian cells. 2005.

James Camp, Ph.D. in Chemical and Biomolecular Engineering, committee member. Dr. Adam Capitano, Committee Chair. Dissertation Title: Induction of zoned liver functions by controlling oxygen diffusion. 2006.

Jeremiah Whittenton, M.S. in Chemical and Biomolecular Engineering, Committee member. Dr. Adam Capitano, Committee Chair. Thesis Title: Improved Hoechst 33342 fluorescence cell enumeration. 2006.

MariaClara Añez, Ph.D. in Chemical and Biomolecular Engineering, committee member. Dr. Richard Willson, Committee Chair. Dissertation Title: Nucleic acid detection: Computational PCR primer design and compaction agents. 2007.

Yonki Shim, Ph.D. in Civil and Environmental Engineering, committee member. Dr. Shankar Chellam, Committee Chair. Dissertation Title: Mechanisms of amino acids nanofiltration: Effect of size, charge, and hydrophobicity. 2007.

Gerson Vázquez, M.S. in Biomedical Engineering, Committee Member, Drs. Ralph Metcalf and Audrius Brazdeikis Co-Chairs. Thesis Title: A realistic biomagnetic model for optimized acquisition of fetal magnetocardiograms in unshielded clinical settings. 2007.

Liza George, Ph.D. in Pharmacology and Pharmaceutical Sciences, committee member. Dr. Mustafa Lokhandwala, Committee Chair. Dissertation Title: Mechanisms of exercise-mediated restoration of age-related impairment in renal dopamine d1 receptor function. 2010.

Godfrey Rodriguez, M.S. in Kinesiology: Wellness and Fitness, Committee Member, Dr. Joel Bloom Chair. Thesis Title: Applied sport biomechanics for improvement in the efficiency of the punt in American football: The practical importance of the angle of projection. 2010.

Undergraduate Honors Thesis:

David Gallagher, B.S. Biology, (1998-2000) graduated in 2000. Honors Thesis Title: "Quantitation of collagen gene expression markers, collagen concentration and maturation in muscle connective tissue." 2000.

Basilios Sideris, B.S. Biomedical Engineering, (2006-2009). Honors Thesis Title: "Fabrication and Validation of an Automated, *In Vitro*, Low Level Laser Irradiation Platform with an Integrated Environmental Control Chamber." (This Senior Honors Thesis was a University of Houston Honors College Senior Thesis Award Winning Thesis, May 15, 2009). 2009.

Shiva Baghaie, B.S. Candidate in Biology, (2010-2013). Honors Thesis Title: "The Impact of IGF-1 Isoform Gene Therapy on Rat Medial Collateral Ligament During Wound Healing: A comparison of gene expression makers during in vivo MCL healing and within in vitro scratch wound assays." 2013.

Undergraduate Student Advisor and Mentor:

Dr. Martinez has advised 48 undergraduate students across disciplines in preparation of professional degree programs, graduate school research programs and for positions in industry.

PUBLICATIONS

Peer-Reviewed Journal Articles (reverse chronological order)

1. Lawler, J.M., M. Kunsta, J.M. Hood, Y. Lee, K. Joshi, R.E. Botchlett, A. Ramirez, and **D.A. Martinez.** nNOSμ Translocation and Skeletal Muscle Fiber Atrophy During Short-term Mechanical Unloading is Dependent on Oxidative Stress. *Free Radical Biology and Medicine* (submitted, 2012).
2. Lawler, J.M., H-B Kwak, J-H Kim, Y. Lee, J.M. Hord, and **D.A. Martinez**. Biphasic Stress Response in the soleus during reloading following hindlimb unloading. *Med Sci Sports Exer* 44(4): 600-609, 2012.
3. Kwak, H-B, J-H Kim, K. Joshi, A. Yeh, **D.A. Martinez**, and J.M. Lawler. Exercise training reduces fibrosis and matrix metalloproteinase dysregulation in the aging rat heart. *FASEB J* 25(3): 1106-1017, 2011.
4. Buckendahl, P.E., L.A. Pohorecky, L. Kubovcakova, O. Krizanova, R.B. Martin, **D.A. Martinez**, and R. Kvetnansky. Ethanol and stress activate catecholamine synthesis in the adrenal: effects on bone. *Ann NY Acad Sci* 1148: 542-551, 2008.
5. **Martinez**, **D.A.,** P.E. Patterson-Buckendahl, A.T. Lust, K.M. Rangel, T.M. Hoban-Higgins, C.A. Fuller, and A.C. Vailas. A non-invasive analysis of urinary musculoskeletal collagen metabolism markers from rhesus monkeys subject to chronic hypergravity. *J Appl. Physiol.* 105: 1255-1261, 2008.
6. **Martinez, D.A.**, A.C. Vailas, R. Vanderby, Jr., and R.E. Grindeland. Temporal extracellular matrix adaptations in ligament during wound healing and hindlimb unloading. *Am J Physiol Regul Integr Comp Physiol* 293: R1552-R1560, 2007.
7. Provenzano, P.P., A.L. Alejandro-Osorio, K.W. Grorud, **D.A. Martinez**, A.C. Vailas, R.E. Grindeland, and R. Vanderby Jr. Systemic administration of IGF-I enhances healing in

collagenous extracellular matrices: evaluation of loaded and unloaded ligaments. *BMC Physiology* **7**:2 doi:10.1186/1472-6793-7-2, 2007.

8. Choy, V.E., A. Kyparos, T.C. Crenshaw, A.C. Vailas and **D.A. Martinez**. The biphasic response of porcine tendon to recombinant porcine growth hormone. *Growth Horm IGF Res* 15(1): 39-46, 2005.
9. Hilton, M.J., L. Gutierrez, **D.A. Martinez** and D. Wells. EXT1 regulates chondrocyte proliferation and differentiation during endochondral bone development. *Bone* 36(3): 379-386, 2005.
10. Kyparos, A., D.L. Feeback, C.S. Layne, **D.A. Martinez**, and M.S.F. Clarke. Mechanical stimulation of the plantar foot surface attenuates soleus muscle atrophy induced by hindlimb unloading in rats. *J Appl Physiol* 99 (2): 739-746, 2005.
11. Gosselin, L.E. and **D.A. Martinez**. Impact of short term tumor necrosis factor-α blockade on diaphragm from dystrophic (mdx) mice. *Muscle Nerve* 30 (2): 244-246, 2004.
12. Gosselin, L.E., J. Williams, M. Deering, D. Brazeau, S. Koury, and **D.A. Martinez**. Localization and early time course of TGF-ß1 mRNA expression in dystrophic muscle. *Muscle Nerve* 30(5): 645-653, 2004.
13. **Martinez, D.A.,** D.J. Guhl, W.C. Stanley, and A.C. Vailas. Extracellular matrix maturation in the left ventricle of normal and diabetic swine. *Diabetes Res and Clin Pract* 59 (1) 1-9, 2003.
14. Sheu, T-J., E.M. Schwarz, **D.A. Martinez**, R.J. O'Keefe, R.N. Rosier, M.J. Zuscik and J.E. Puzas. A phage display technique identifies a novel regulator of cell differentiation. *J Biol Chem* 278 (1) 438-443, 2003.
15. Provenzano, P.P., **D.A. Martinez**, R.E. Grindeland, K.W. Dwyer, J. Turner, A.C. Vailas, and R. Vanderby Jr. Hindlimb unloading alters ligament healing. *J Appl Physiol* 94 (1): 314-324, 2003.
16. Kyparos, A.**,** M.W. Orth, A.C. Vailas and **D.A. Martinez**. Growth and maturational changes in dense fibrous connective tissue following 14 days of rhGH supplementation in the dwarf rat. *Growth Horm IGF Res* 12: 367-373, 2002.
17. Kohles, S.S. and **D.A. Martinez**. Elastic and physiochemical relationships within cortical bone. *J Biomed Mater Res Part A* 49(4): 479-488, 2000.
18. **Martinez D.A.**, P.E. Buckendahl, R.E. Grindeland, M.A. Dotsenko, A.J. Bigbee, and A.C. Vailas. Evaluation of bone and collagen metabolism by assessing urinary biomarkers in non-human primates. *J Gravit Physiol* 7(1):S169-S170, 2000.
19. **Martinez, D.A.**, M.W. Orth, K.E. Carr, R. Vanderby Jr., M. Vasques, R.E. Grindeland, and A.C. Vailas. Cortical bone responses to acute 2G hypergravity in growing rats. *Aviat Space Environ Med* 69: (6; Suppl.) A17-A22, 1998.
20. Kohles, S.S., **D.A. Martinez**, J.R. Bowers, A.C. Vailas, and R. Vanderby Jr. Effect of a growth hormone treatment on bone orthotropic elasticity in dwarf rats. *Ann Biomed Eng* 25(1): 77-85, 1997.
21. **Martinez, D.A.**, M.W. Orth, K.E. Carr, R. Vanderby Jr., and A.C. Vailas. Cortical bone growth and maturational changes in the dwarf rat induced by human growth hormone. *Amer J Physiol* 270 (*Endocrinol. Metab.* 33) E51-E59, 1996.
22. **Martinez, D.A.**, M.J. Zuscik, M. Ishibe, R.N. Rosier, P.R. Romano, J.E. Cushing, and J. E. Puzas. Identification of functional insulin-like growth factor-II/mannose-6-phosphate receptors in isolated bone cells. *J Cell Biochem* 59(2): 246-257, 1995.

23. Gosselin, L.E., G.C. Sieck, R.A. Aleff, **D.A. Martinez,** and A.C. Vailas. Changes in diaphragm muscle collagen metabolism following acute unilateral denervation. *J Appl Physiol* 79: 1249-1254, 1995.
24. Gosselin, L.E., **D.A. Martinez**, A.C. Vailas, and G.C. Sieck. Passive length-force properties of the senescent diaphragm: relationship to collagen characteristics. *J Appl Physiol* 76: 2680-2685, 1994.
25. Hurschler, C., R. Vanderby Jr., **D.A. Martinez**, A.C. Vailas, and W.D. Turnipseed. Mechanical and biochemical analyses of tibial compartment fascia in chronic compartment syndrome. *Ann Biomed Eng* 22: 272-279, 1994.
26. Gosselin, L.E., **D.A. Martinez**, A.C. Vailas, and G.C. Sieck. Interstitial space and collagen alterations of the developing rat diaphragm. *J Appl Physiol* 74: 2450-2455, 1993.
27. Salem, G.J., R.F. Zernicke, **D.A. Martinez,** and A.C. Vailas. Adaptations of immature trabecular bone to moderate exercise: Geometrical, biochemical, and biomechanical correlates. *Bone* 14: 647-654, 1993.
28. Orth, M.W., **D.A. Martinez**, M.E. Cook, and A.C. Vailas. The presence of lysylpyridinoline in the hypertrophic cartilage of newly hatched chicks. *Biochem Biophys Acta – General Subjects* 1157(2): 229-232, 1993.
29. Vailas, A.C., R. Vanderby Jr., **D.A. Martinez**, R.B. Ashman, M.J. Ulm, R.E. Grindeland, G.N. Durnova, and A. Kaplansky. Adaptations of young adult rat cortical bone to 14 days of spaceflight. *J Appl Physiol* 73 (2), Suppl.: 4S-9S, 1992.
30. Orth, M.W., **D.A. Martinez**, M.E. Cook, and A.C. Vailas. Nonreducible cross-link formation in tibial dischondroplastic growth plate cartilage from broiler chickens fed homocysteine. *Biochem Biophys Res Comm* 179: 1582-1586, 1991.
31. **Martinez, D.A.**, A.C. Vailas, and R.E. Grindeland. Cortical bone maturation in young hypophysectomized rats. *Am J Physiol* 260 (*Endocrinol Metab* 23): E690-E694, 1991.
32. Zernicke, R.F., A.C. Vailas, G.J. Salem, and **D.A. Martinez.** Spaceflight effects on biomechanical and biochemical changes in lumbar vertebrae of rapidly growing rats. *Amer J Physiol* 258 (6 Part 2): R1327-R1332, 1990.
33. Vailas, A.C., R.F. Zernicke, R.E. Grindeland, A. Kaplansky, G.N. Durnova, K-C Li, and **D. A. Martinez**. Spaceflight effects on rat cortical bone geometry, biomechanics, and biochemistry. *FASEB J* 4: 47-54, 1990.
34. Salem G.J., R.F. Zernicke, A.C. Vailas, and **D.A. Martinez.** Biomechanical and biochemical Changes in lumbar vertebrae of rapidly growing rats. *Amer J Physiol* 256 (1 Part 2) : R259-R263, 1989.

Current Scientific Publications in Progress

1. **Martinez, D.A.,** L. Gutierrez, U.J. Erasquin, C. Cai, C. Ye, M.Y. Zhang and G.J. Cheng. *In vitro* osteoblast gene expression and differentiation atop of titanium blocks laser etched with gradients of biphasic calcium phosphate/titanium nanocomposites**.** *European Cells and Materials* (in preparation, 2012).
2. **Martinez, D.A.**, A.C. Vailas, A. Lust, R. Vanderby, Jr., C.E. Wade and R.E. Grindeland. IGF-1 impact on medial collateral ligament gene expression and maturation during wound healing and hindlimb unloading *Am J Physiol (Endocr Metab)* (in preparation, 2012).
3. **Martinez, D.A.,** J.M. Swift, K.M. Reddoch, and S.A. Bloomfield. The expression of extracellular matrix and growth factor genes in the regulation of dense fibrous connective

tissues: "The impact of an stimulated resistance training on rat tendon and ligament during hindlimb unloading. *J Appl Physiol* (in preparation, 2012).

4. **Martinez, D.A.,** L. Gutierrez, K.M. Reddoch, Y. Shirazi-Fard, S.A. Bloomfield, and H.A. Hogan. Differential and site specific gene expression and maturation of adult rat bones following hindlimb unloading and reloading adaptation. *J Appl Physiol* (in preparation, 2012).
5. **Martinez, D.A.,** S.E. Ball, S. Baghaie, S. Cleboski, J.M. Lawler and L. Gutierrez. *In vitro* characterization of two IGF-1 isoforms using scAAV2 gene therapy in rat medial collateral ligament fibroblasts with a fibrin-glue vehicle. *Biomaterials* (in preparation, 2012).
6. **Martinez, D.A.,** S. Baghaie, T. Li, J.M. Lawler and L. Gutierrez. Medial collateral ligament wound repair using two isoforms of IGF-1 scAAV2 gene therapy. *Gene Therapy* (in preparation, 2012).

Published Scientific Abstracts and Presentations

1. Hord, JM, Y Lee, CL Leeuwenburgh, JM Lawler and **DA Martinez.** Lifelong wheel running with mild caloric restriction protects against the age-related disruption of the dystrophin-glycoprotein complex (DGC) in skeletal muscle *Experimental Biology'12 meeting*, *FASEB J.* 26: San Diego, CA, 2012 *In Press.*
2. **D.A. Martinez,** L. Gutierrez, K.M. Reddoch, M. A. Krebsbach, S. Baghaie, Y. Shirazi-Fard, S.A. Bloomfield, and H.A. Hogan. Gene Expression and Extracellular Matrix Profiles in Diaphyseal and Metaphyseal Bone Following Hindlimb Unloading and Periods of Reloading Adaptation. 18th International Academy of Astronautics Human in Space Symposium, to be presented on April 11th-15th, 2011, Houston, TX.
3. Hord J., Kunst M., Joshi K., Lee Y., **Martinez, D.A.,** and Lawler, J.M. nNOS Translocation from the Sarcolemma with Mechanical Unloading in Skeletal Muscle: Redox Regulation of Mechanotransduction. Whitaker Poster Sessions, Dept. of Biomedical Engineering, Texas A&M University, 2011.
4. **D.A. Martinez**, S.E. Ball, L. Gutierrez. A Gene Therapy Application for Ligament Wound Healing: *In Vitro* scAAV-IGF-1 delivery to Rodent Medial Collateral Ligament Fibroblasts. Transactions from the Annual Meeting of the Orthopaedic Research Society, Long Beach, CA. Volume 36, Paper No. 295, 2011.
5. Hord, J, M. Kunst, K. Joshi, Y. Lee, **D.A. Martinez** and J.M. Lawler. "ROS-Mediated Localization of Caveolin-3 in the Sarcolemma During Short-term Mechanical Unloading." *Int. J. Exer Sci.* Texas Chapter - American College of Sports Medicine Meeting, Austin, TX, 2011.
6. **D.A. Martinez,** L. Gutierrez, K.M. Reddoch, M.A. Krebsbach, Y. Shirazi-Fard, S.A. Bloomfield, and H.A. Hogan. Differential and site specific gene expression of adult rodent long bones following hindlimb unloading and periods of reloading adaptation. American Society of Bone and Mineral Research International Annual Meeting, Toronto, Ontario, Canada, October 15-19, 2010.
7. Sideris, B.E., L. Gutierrez, H.D. Collette, **D.A. Martinez.** Fabrication and validation of an automated, *in vitro*, low-level laser irradiation platform with an integrated environmental control chamber. Biomedical Engineering Society Annual National Meeting, "Bridging the 3 Rivers of Biology, Engineering and Medicine" Pittsburgh, PA, October 7-10, 2009.

8. Clarke, M.S.F., A. Kyparos, C.S. Layne, **D.A. Martinez,** and D.L. Feeback. Dynamic Foot Pressure (DFS) As an Unloading-Induced Muscle Atrophy Countermeasure. *16th IAA Humans in Space Symposium*, Bejing, China, May, 2007.
9. Kwak HB, Kim JH, **Martinez DA**, and Lawler JM. Reloading-induced alterations in 1GF-1 and HSP70 signaling in the rat soleus following prolonged hindlimb unloading. *Faseb Journal* 21: A950, 2007.
10. **Martinez, D.A.**, A. Lust, A.C. Vailas, R.E. Grindeland, and R. Vanderby, Jr. Ligament healing during hindlimb unloading: Exogenous IGF-1 improves the biomechanical and biochemical properties of the rodent medial collateral ligament. Paper presented at the 2006 American College of Sports Medicine meeting, Denver, CO. Medicine & Science in Sports and Exercise. 38(5) 72, 2006.
11. Kwak, H.B., J.H. Kim, **D.A. Martinez**, and J.M. Lawler. Alterations in p-HSP25 and redox signaling in the rat soleus due to prolonged hindlimb unloading followed by reloading. Paper presented at the 2006 American College of Sports Medicine meeting, Denver, CO. Medicine & Science in Sports and Exercise. 38(5) S548, 2006.
12. **D.A. Martinez,** R.E. Grindeland, R. Vanderby, Jr., and A.C. Vailas. Healing Response of Injured Rodent Knee Ligaments to Hindlimb Unweighting and the Therapeutic Efficacy of Growth Hormone and Insulin-like Growth Factor-I. USRA Bioastronautics Investigators' Workshop Symposium, January 10-12 Galveston, Texas, pp. 25, 2005.
13. Strasnick SL, **Martinez DA**, Manickam P, Grindeland RE, and Wade CE. Hindlimb unloading alters gene expression patterns in wound healing ligaments. Experimental Biology Meetings, *Faseb Journal* 18: A942-A942, 2004.
14. Kyparos, A., C.S. Layne, D.L. Feeback,, **D.A. Martinez**, and M.S.F. Clarke. Foot Pressure may Preserve Neuromuscular Function of the Injured Athlete: Preliminary Results from a Rat Model. 7th IOC Olympic World Congress on Sport Sciences. Athens, Greece, October, 2003.
15. Kyparos, A., C.S. Layne, D.L. Feeback, **D.A. Martinez,** and M.S.F Clarke. Dynamic Foot Pressure Attenuates Myofiber Atrophy Induced by Mechanical Unloading. 14th Humans in Space Conference, Banff, Alberta, Canada , May, 2003.
16. P.P. Provenzano, **D.A. Martinez,** R.E. Grindeland, A.C. Vailas, R. Vanderby Jr. Insulin-like growth factor-1 improves mechanical properties in healing ligament. Transactions from the 49th Annual Meeting of the Orthopaedic Research Society Vol.28, New Orleans, Louisiana, 2003.
17. **D.A. Martinez,** R. Vanderby, Jr., R.E. Grindeland, C. Fung, P. Le, A.K. Lee, A. Lust, P. Provenzano and A.C. Vailas. Time Course and Response to Growth Hormone and Insulin-Like Growth Factor-1 Supplementation in the Extracellular Matrix During Ligament Healing and Hindlimb Unweighting in Rats. USRA Bioastronautics Investigators' Workshop Symposium, January 13-15 Galveston, Texas, pp. 61, 2003.
18. L.E. Gosselin, K.M. McCormick, J. Barkley, and **D.A. Martinez**. Impact of short-term TNF-a blockade on collagen and TGF-b gene expression in dystrophic diaphragm. American College of Sports Medicine Annual Meeting, San Francisco, CA, pp 2003.

19. **D.A. Martinez,** R. Vanderby Jr., R.E. Grindeland, A. K. Lee, H.Y. Hoang P. Le, A. Lust, N. Garcia, and A.C. Vailas. Acute Wound Healing and Repair of Rodent MCL During Hindlimb Unweighting in Response to rhGH and IGF-1 Countermeasures. Proceedings of the American Society of Gravitational and Space Biology (ASGSB) National Meeting, Cape Canaveral, FL. Gravitational and Space Biology Bulletin 16(1), p.57, 2002.
20. U. Daftary, S.R. Blanke, A. K. Lee and **D. A. Martinez.** Adaptive Extracellular Matrix Remodeling in Neonatal Cardiac Fibroblasts. American Heart Association Research Symposium, Dallas, TX, Meeting Proceedings, Abstract #17, p. 6, May 18, 2002.
21. **D.A. Martinez,** R. Vanderby, Jr., R.E. Grindeland, K. Dave, A.K. Lee, H.Y. Hoang, P. Provenzano, T. Wang, and A.C. Vailas. A Model of Tissue Repair in Spaceflight: Ligament Wound Healing During Hindlimb Unweighting in Rodents. Proceedings from the 2002 Joint Conference of the Wound Healing Society and the European Tissue Repair Society, Baltimore, MD. Wound Repair and Regeneration (The International Journal of Tissue Repair and Regeneration) 10(2) A37, 2002.
22. **D.A. Martinez,** R. Vanderby, Jr., R.E. Grindeland, K. Dave, A.K. Lee, H.-Y. Hoang, P. Provenzano, T. Wang, and A.C. Vailas. Wound Healing Response of the MCL During Hindlimb Unweighting in Rodents. Proceedings of the American Society of Gravitational and Space Biology (ASGSB) National Meeting, Alexandria, VA. Gravitational and Space Biology Bulletin 15(1), p.29, 2001.
23. P. Provensano, **D.A. Martinez,** R.E. Grindeland, A.C. Vailas, and R. Vanderby Jr., The Effect of Hindlimb Unloading on the Healing Medial Collateral Ligament. 2001 Annual Fall Meeting of the Biomedical Engineering Society, Durham, NC, October 4-7, 2001.
24. **D.A. Martinez**, R. Vanderby, Jr., P. Provenzano, T. Wang, F. Yuan, and A.C. Vailas. Wound Healing Response of the Medial Collateral Ligament During Hindlimb Unweighting in Young Rats. USRA Bioastronautics Investigators' Workshop Symposium, Galveston, Texas, pp 108-110., 2001.
25. A.C. Vailas, P.E. Buckendahl, R.E. Grindeland, A.J. Bigbee, MA. Dotsenko, K.M. Shea, D.E. Gallagher, J.D. Tanksley, and **D.A. Martinez**. Musculoskeletal Collagen Metabolism and Adaptation in Rhesus Monkeys: Results from 14 Days of Spaceflight and Chronic 2*G* Hypergravity. USRA Bioastronautics Investigators' Workshop Symposium, Galveston, Texas, pp 98-100., 2001.
26. **D.A. Martinez**, V.R. Edgerton, R.E. Grindeland, D.E. Gallagher, J.D. Tanksley, K.M. Shea, and A.C. Vailas. Muscle collagen gene expression and protein adaptation following 14 days of spaceflight in Bion 11 rhesus monkeys (*Macaca Mulatta*).. Proceedings of the American Society of Gravitational and Space Biology International Meeting, Montreal, Canada Gravitational and Space Biology Bulletin 14(1) p. 43., 2000.
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31. **Martinez, D.A.**, D. Hicks, R. Rosier, R. O'Keefe, B. Stroyer, and J.E. Puzas. Localization of lysosomal enzymes and complex carbohydrates in osteoclastic resorption lacunae in an *in vitro* remodeling system. Transactions from the 42nd Annual Meeting of the Orthopaedic Research Society, Atlanta, GA. Volume 21, p. 107, 1996.
32. Puzas JE, Hicks DG, Okeefe RJ, **Martinez DA**, Zuscik MJ, Fullmer C, and Rosier RN. Effects of lead on skeletal remodeling. ASBMR Meetings, *Journal of Bone and Mineral Research* 11: S537-S537, 1996.
33. Hicks DG, **Martinez DA**, Zuscik MJ, Rosier RN, Stroyer BF, and Puzas JE. The effects of lead on osteoclastic function and bone turnover: An experimental model. *Laboratory Investigation* 74: 851-851, 1996.
34. O'Keefe, R.J., L.A. Teot, D. Singh, R.N. Rosier, **D.A. Martinez,** J.E. Puzas, and D.G. Hicks. Expression of resorption stimulating cytokines by osteoclasts - evidence for autocrine or paracrine regulation. ASBMR Meetings, *J. Bone Miner. Res.* 10: (Suppl. 1) S-274, 1995.
35. Kohles, S.S., **D.A. Martinez,** J.R. Bowers, A.C. Vailas and R. Vanderby Jr. Elastic evaluation of cortical bone After growth hormone treatment of a dwarf rat model. Transactions from the 41st Annual Meeting of the Orthopaedic Research Society, Orlando, FL. Vol. 20, ORS, p. 282, February, 1995.
36. Zuscik, M.J., **D.A. Martinez,** P.R. Romano, M. Ishibe, J.E. Cushing, R.N. Rosier and J.E. Puzas. Identification of functional insulin-like growth factor II/mannose-6-phosphate receptors in isolated rat bone cells. Transactions from the 41st Annual Meeting of the Orthopaedic Research Society, Orlando, FL. p. 479, 1995.
37. **Martinez, D.A.**, A.C. Vailas, M.W. Orth, R. Vanderby Jr., B. Graf, M. Vasques and R.E. Grindeland. Cortical bone responses to acute 2g hypergravity in growing rats. 40th Annual Meeting, Transactions from the 40th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA p. 32, 1994.
38. Gosselin, L.E., G.C. Sieck, **D.A. Martinez**, and A.C. Vailas. Passive force-length relationship of senescent rat diaphragm: Relationship to collagen characteristics. *FASEB J.*: 7(4) A231, 1993.
39. Gosselin, L.E., **D.A. Martinez**, A.C. Vailas, and G.C. Sieck. Contractile and collagen Characteristics of acutely denervated rat hemidiaphragm muscle. *Med. Sci. Sport. and Exer.* 1993.
40. **Martinez, D.A.,** M.W. Orth, K.E. Carr, and A.C. Vailas. Cortical bone growth and maturation in the dwarf rat model induced by recombinant human growth hormone. *J. Bone Miner. Res.* 8: (Suppl. 1) S-243, 1993.

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42. Gosselin, L.E., **D.A. Martinez**, A.C. Vailas, and G.C. Sieck. Collagen maturation in developing rat diaphragm. *FASEB J.*: 6 (5): A2025, 1992.
43. **Martinez, D.A.**, A.C. Vailas and R.E. Grindeland. The maturation of cortical bone in young hypophysectomized rats. *FASEB J.*: 5 (6): A1659, 1991.
44. **Martinez, D.A.**, A.C. Vailas and R.E. Grindeland. Growth hormone modification of cortical bone to hindlimb suspension in hypophysectomized rats. *Med. Sci. Sport. and Exer.* 21: 38, 1989.
45. Vailas, A.C., R.F. Zernicke, B.J. Loitz, K. McCranie-Barton and **D.A. Martinez**. Strenuous exercise effects on the mechanical properties and geometry versus non-weightbearing mature bones. XII International Congress of Biomechanics, Congress Proceedings ISB UCLA: abstract #264, 1989.
46. **Martinez, D.A.**, R.E. Grindeland and A.C. Vailas. Acute Adaptation of the cortical bone matrix to weightlessness *Med. Sci. Sport. and Exer.* 20**:** 60, 1988.
47. Salem, G.J., R.F. Zernicke, A.C. Vailas and **D.A. Martinez**. Biomechanical and biochemical changes in lumbar vertebrae of rapidly crowing rats. *Med. Sci. Sport. and Exer.* 20**:** 58, 1988.
48. Vailas, A.C., **D.A. Martinez**, S. Shaw, R.F. Zernicke and R.E. Grindeland. Biochemical, morphological and mechanical characteristics of cortical bone in young growing rats exposed to 7 days of spaceflight: Results from the SL-3 flight mission. In: *Space Life Sciences Symposium: Three Decades of Life Science Research in Space,* Washington, D.C, June 21-26, p. 173-174, 1987.

MicroArray Data Deposited in the NCBI Gene Expression Omnibus (GEO) Database

1. Strasnick SL, **Martinez D.A.**, Manickam P, Grindeland R.E., Wade C.E. Hindlimb unloading alters wound healing in ligaments. Submission date: March 04, 2004
   Accession Number: GSE1105
   Url: http://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE1105

Scientific Symposium Chair (Symposium proposal peer-reviewed)

1. **Martinez, D.A. Chair,** *Keynote Presenters:* Michael Kjaer, Bispebjerg Hospital, Copenhagen, Denmark; David Hart, Division of Orthopaedics, Department of Surgery, University of Calgary, Canada. *Other Featured Presenters:* Steven Abramowitch, Musculoskeletal Research Center, University of Pittsburgh, Pittsburgh, PA; Paul Salo, Department of Surgery, University of Calgary, Canada; and Daniel Martinez, Department of Health and Human Performance and the Biomedical Engineering Program, University of Houston, Houston, TX. **Featured Science Session** entitled, "Adaptations of Ligament and Tendon During Overload, Injury and Repair" at the American College of Sports Medicine Annual Meeting, Denver, Colorado May 31-June 3, 2006.

INVITED SCIENTIFIC LECTURES

1. **Martinez, D.A.,** *"Insulin-like Growth Factor-1 Gene Therapy: A Tissue Engineering Strategy to Improve Ligament Wound Healing."* University of Toledo, Department of Bioengineering, Toledo, Ohio, August, 2010.
2. **Martinez, D.A.,** *"Therapeutic Approaches to Improve the Extracellular Matrix of Ligament and Tendons During Wound Healing."* University of Texas Health Science Center, Dental Branch, Department of Orthodontics, Texas Medical Center, Houston, Texas, August, 2009.
3. **Martinez, D.A.,** *"Wound Healing During Spaceflight and Reduced Mechanical Loading."* NSBRI Musculoskeletal Alterations Team Meeting, NASA/HRP Investigators' Workshop, League City, TX, February, 2009.
4. **Martinez, D.A.,** *"The Impact of Load and Growth Factors on Ligament Wound Healing."* College of Pharmacy, Department of Pharmacological and Pharmaceutical Sciences, University of Houston, Houston, TX, October, 2007.
5. **Martinez, D.A.,** *The Interrelationships between Skeletal Muscle Connective Tissue Fibrosis and Muscular Dystrophy in MDX mice.* College of Education and Human Development, Department of Health and Kinesiology, Texas A&M University, College Station, TX, October, 2006.
6. **Martinez, D.A.,** *Extracellular Matrix Adaptation: Growth Factor and Gene Delivery.* University of Houston, Undergraduate Frontiers Course - Biomedical Engineering Program, September, 2006.
7. **Martinez, D.A.,** *The Frontiers of Bioscience: Biomedical Engineering, Exercise Science and Biology/Biochemistry.* Biology and Biochemistry Undergraduate Association Invited Talk, University of Houston, March, 2006.
8. **Martinez, D.A.,** *IGF-1 and Ligament Wound Healing***.** Biomedical Engineering Undergraduate Association Invited Talk, University of Houston, February, 2006.
9. **Martinez, D.A.,** *Will Wounds Heal During Spaceflight?* University of Texas Health Science Center, Dental Branch, Department of Orthodontics, Texas Medical Center, Houston, Texas, Title: April, 2004.
10. **Martinez, D.A.,** *Wound Healing and Tissue Regeneration in Dense Fibrous Connective Tissue.* Joint United Kingdom/Texas, Tissue Engineering and Regenerative Medicine Symposium, Imperial College of London, London, England, March, 2004.
11. **Martinez, D.A.,** *Wound Healing of the Medial Collateral Ligament (MCL) During Hindlimb Unweighting: A Model to Study Wound Healing During Spaceflight.* College of Education and Human Development, Department of Health and Kinesiology, Texas A&M University, College Station, TX, October, 2003.
12. **Martinez, D.A.,** *A Model to Study Wound Healing During Spaceflight Using Real Time Q-PCR: Molecular and Biochemical Adaptations in the Rodent MCL During Wound Healing and Hindlimb Unloading.* 14th Annual Gene Sequencing and Analysis Conference, Boston, MA, Stratagene, Inc. Users Group Meeting. October, 2002.
13. **Martinez, D.A.,** *Wound Healing in Rodent Dense Fibrous Connective Tissues During Hindlimb Unweighting: A Model to Study Wound Healing During Spaceflight.* Department

of Physical Therapy, Exercise and Nutrition Sciences, University at Buffalo – SUNY, Buffalo, NY, April, 2002.

14. **Martinez, D.A.,** *Extracellular Matrix Adaptation of the Wounded Medial Collateral Ligament Following Three and Seven Weeks of Hindlimb Suspension.* Baylor College of Medicine, Section of Leukocyte Biology, Department of Pediatrics, Houston, Texas. July, 2001.
15. **Martinez, D.A.,** *Collagen Metabolism - Urinary Markers of Mineralized and Non-Mineralized Collagen Turnover in Rhesus Monkeys After Spaceflight (BION 11).* XI International Conference on Space Biology and Aerospace Medicine, Russian National Academy of Sciences, Moscow, Russia, June, 1998.
16. **Martinez, D.A.,** *The Effects of Spaceflight on the Excretion of Collagen Cross-links.* The International BION 11 Spaceflight Symposium, Preliminary Results, NASA-Ames Research Center, Moffett Field, CA, USA, September, 1997.
17. **Martinez, D.A.,** *Site Directed Bone Formation, An <u>In Vitro</u> Model of Bone Remodeling.* University of Houston, Department of Biology and Biochemical and Biophysical Sciences, Houston, TX. May, 1995
18. **Martinez, D.A.,** *Bone Remodeling -Temporal and Spatial Regulation of Osteoblasts and Osteoclasts.* University of Wisconsin-Madison, Department of Surgery, Madison, WI. April, 1995.
19. **Martinez, D.A.,** *The Effects of Hypophysectomy and rhGH Re-supplementation on Rat Cortical Bone Growth and Maturation.* Jerry L. Pettis VA Medical Center, Loma Linda, CA. May. 1993.
20. **Martinez, D.A.,** *Plasma Hormone Levels and Connective Tissue Resorptive Changes in Monkeys after Spaceflight (Cosmos Mission 2229).* The International Biocosmos Symposium, Moscow, Russia, December, 1993.

FUNDING

Current Extramural Funding:

1. NASA-HRP. **Martinez, D.A.** Awarded 6/1/08 – 11/19/12. Title: *"Contributors to Long-Term Recovery of Bone Strength following Exposure to Microgravity."* Harry Hogan, P.I., Susan Bloomfield, Co-P.I., Texas A&M, Total Award: $1,023,379.00. **Role: Co-PI.**

Past Extramural Funding:

1. NFL Medical Charities Grant – Awarded 1/1/09 – 12/31/11. Title: *"The Impact of IGF-1 Gene Therapy to Improve Knee Ligament Wound Repair."* David Zimmerman, Ph.D. Co-I, Total Award: $118,693.00 (Direct) . **Role: PI**
2. National Science Foundation, NSF: 0650822. Awarded 6/5/07 – 8/31/11 (with a no-cost Extension) Title: *"Laser Engineered Multilayer Bioactive Coatings with Hydroxyapatite Nano-Powders."* Purdue University, Department of Industrial Engineering, West Lafayette, IN. Gary Cheng, P.I., Total Award $300,000.00, 3 years. **Role: Co-I.**
3. National Aeronautics and Space Administration-NSBRI Supplement Grant BL00001. Awarded 9/04/07. Title, *"The expression of extracellular matrix & growth factor genes in*

the regulation of dense fibrous connective tissues: The impact of an exercise re-loading paradigm on rat tendon and ligament during hindlimb unloading." Supplement to Susan Bloomfield, P.I. NSBRI grant. Submitted Award: $60,747.00 1.5 years.

4. National Aeronautics and Space Administration NAG9-1152. 11/9/99 - 11/8/04. Title: *"Healing Response of Injured Rodent Knee Ligaments to Hindlimb Unweighting and the Therapeutic Efficacy of Growth Hormone."* Co-I's: Ray Vanderby Jr. University of Wisconsin, Madison, WI, Richard E. Grindeland, NASA-Ames Research Center, Arthur C. Vailas, University of Houston, Awarded $721,167.00. **Role: PI**
5. American Heart Association-National: 9930148N. 1/1/98 - 12/31/03. Title: *"Adaptive Cardiac Connective Tissue Remodeling Through Directed Delivery Into Cardiac Myo-fibroblast Cells."* Awarded: $260,000.00. **Role: PI**
6. National Aeronautics and Space Administration NAG2-1284. 2/1/99 - 7/1/00. Title: *"A Non-Invasive Analysis of Musculoskeletal Collagen Metabolism from Urine of Rhesus Monkeys During Long Term 2G Hypergravity Perturbation."* Arthur C. Vailas, P.I., 200Awarded: $25,000.00. **Role: Co-I.**
7. National Aeronautics and Space Administration NAG2-1089. 7/1/96 - 2/28/99. Title: *"An Evaluation of Collagen Metabolism in Non Human Primates Associated with the BION Space Program-Markers of Urinary Collagen Turnover and Muscle Tissue Gene Expression and Collagen Types."* Arthur C. Vailas, P.I., Awarded: $209,417.00. **Role: Co-I.**
8. NIH-NIAMS, 1-F32-AR008384-01. 8/01/95 – 11/30/96. National Institute of Arthritis and Musculoskeletal and Skin Diseases. PHS Individual NRSA Post-Doctoral Research Grant. Title: *"In vitro bone remodeling."* University of Rochester School of Medicine and Dentistry, Department of Orthopaedics, Musculoskeletal Research Laboratory, Rochester, NY. Awarded: $48,246.00 **Role: PI** (Post-Doctoral Fellow mentored by J. Edward Puzas).
9. NIH-NIAMS, 3R01AR028420-08S1. 8/01/93 – 7/31/95. National Institute of Arthritis and Musculoskeletal and Skin Diseases. PHS Individual NRSA Supplement Post-Doctoral Research Grant. Title: *"Regulation of Osteoblast Activity."* University of Rochester School of Medicine and Dentistry, Department of Orthopaedics, Musculoskeletal Research Laboratory, Rochester, NY. Awarded: $92,781.00 **Role: PI** (Post-Doctoral Fellow mentored by J. Edward Puzas).

Internally Funded Research at the University of Houston

1. University of Houston Provost's Undergraduate Research Scholarship (PURS). 1/20/09 – 5/15/09 Title: *"Potential novel gene regulators of ligament growth and homeostasis following electrical stimulation and hindlimb unloading in the rat model."* Abida Faiz, B.S. Candidate in Biochemistry, Department of Biology and Biochemistry. Recipient of the Spring 2009 Award, $1,000.00 scholarship. **Role: Mentor/Advisor.**
2. University of Houston Undergraduate Summer Research Scholarship (SURF-UH). 6/2/08 – 8/8/08. Title: *"The Impact of Low Level Laser Irradiation on Extracellular Matrix Regeneration and Growth Factor Secretion in Ligament Fibroblasts During Wound Repair."* Mr. Basilios Sideris, B.S. Candidate in Biomedical Engineering, Department of

Mechanical Engineering, Biomedical Engineering Program. Recipient of the Summer 2008 Awarded: $3,300.00 scholarship + costs for supplies. **Role: Mentor/Advisor.**

3. Grants to Enhance and Advance Research. 9/1/05 – 9/30/07 Title: *"The efficacy of growth hormone delivery via adenovirus mediated transgene delivery in the rat medial collateral ligament wound healing model."* Internal Grants Program, University of Houston, Houston, TX. Awarded $24,820.00 2 years (including no-cost extensions). **Role: P.I.**
4. University of Houston Provost's Undergraduate Research Scholarship (PURS). 8/20/07 - 12/14/07. Title of the Research Project: *"IGF-1 Gene Therapy in Orthopaedics."* Ms. Michelle Aguilos, B.S. Double Major Candidate in Biology and Nutrition, Department of Biology and Biochemistry and Health and Human Performance. Recipient of the Fall 2007 Award, $1,000.00 scholarship. **Role: Mentor/Advisor.**
5. University of Houston, College of Education Course Development Grant. 2006 – 2007. Title: "*Transition of existing exercises sciences classes to a hybrid format."* Faculty Development Initiative Program – B., KIN 3306 Hybrid. Brian McFarlin, P.I., Charles Layne, Max Kurz, Co-I's. Awarded: $23,250.00. University of Houston, Houston, TX., **Role: Co-I.**
6. National Aeronautics and Space Administration NASA-UH/ISSO. 6/1/01 - 5/31/04. Title: *"Using Dynamic Foot Pressure as a Countermeasure to Muscle Atrophy."* Post-Doctoral Student Fellowship Funded **(**Antonios Kyparos, Ph.D.) Co-PI's: Charles Layne, Mark S.F. Clarke, University of Houston, Dan Feeback, NASA-JSC, University of Houston, Natural Science and Mathematics, Department of Biology and Biochemistry and the Institute of Space System Operations. Awarded: $120,000.00, **Role: PI.**

RESEARCH INTERESTS

My research is focused on extracellular matrix (ECM) adaptations, specifically the globular protein collagen, in response to 1) altered gravitational loads, 2) hormonal and growth factor modulation, and 3) wound healing. My laboratory uses *in vitro* cell culture and *in vivo* whole animal models to investigate the molecular and cellular mechanistic changes within specific ECM cell types (e.g. fibroblasts, osteoblasts, osteoclasts, chondrocytes) when challenged by physiological and non-physiological perturbations. Exercise, hyper-loading, hypo-loading and changes in the magnitude, duration and frequency of these perturbations are some examples of model paradigms that my research laboratory has been and will continue to focus on in future research.

I am particularly interested in: i. *Tissue engineering using gene-therapy* approaches using self complementary adeno-associated virus (e.g. scAAV-2-IGF-1) treatment of dense fibrous connective tissues, ii. *Bone physiology and growth/turnover* during unloading and exercise, iii. *Bone cell viability* in response to hydroxyapatite mineral gradients on titanium surfaces using YAG-laser etching, and iv. *Cardiovascular research* involving the biochemical and molecular pathways of cardiac ECM protein and gene regulation.

REVIEWING ACTIVITIES

Ad-Hoc Reviewer for Peer-Reviewed Journals and Research Programs

- American Journal of Physiology
- American Journal of Sports Medicine
- Aviation, Space, and Environmental Medicine
- Clinical and Experimental Hypertension
- Experimental Cell Research
- Journal of Applied Physiology
- Journal of Biomedical Materials Research: Part A.
- Journal of Orthopaedic Research
- Medicine and Science in Sports and Exercise
- Muscle and Nerve
- Regulatory Peptide

National and International Review Panels

NIH Study Section Member: Special Emphasis Panel/Scientific Review Group, Physiology and Pathophysiology of Organ Systems, 2008/01 Council ZRG1 F10-H 20, Washington, D.C., 7/2005 to the present (Meet three times/year).

NIH Ad hoc Study Section Member: – Special Emphasis Panel/ZRG-1 MOSS-CO2, Meeting (IAM): 3/2010.

NIH Ad hoc Study Section Member: – Special Emphasis Panel/ZRG-1 MOSS-CO2, Meeting (IAM): 9/14/2010.

NASA Peer Review Panelist: NASA Bion M1 Biospecimens Program, NASA Headquarters, 500 E Street, SW, Suite 200, Washington, DC, held May 7-8, 2008.

American Institute of Biological Sciences, Scientific Peer Advisory and Review Panel for the US Army Medical Research and Material Command (USAMRMC) Grants, 6/2006.

The Scientific Committee of the Association Française contre les Myopathies, International Grant Reviewer. AFM Institut de Myologie Bâtiment Babinski Groupe Hospitalier Pitié-Salpêtrière 47-83, bd de l'Hôpital 75013 PARIS FRANCE 5/2006.

Civilian Research and Development Foundation International Grant Review, **United States State Department**, Washington D.C., 11/2005.

Veterans Administration-Grants Science Merit Reviews, External Reviewer, Livermore, CA, 1995.

American College of Sports Medicine National Meeting, Abstract Reviews, Cincinnati, OH, 1994.

External Reviewer for University Faculty Promotions

Promotion Review (Associate Professor) Division of Natural Sciences and Mathematics, Richard John Stockton University of New Jersey, 1998.

PROFESSIONAL SERVICE ACTIVITIES

Service to the University

Department of Health and Human Performance:
Graduate Research Degrees Committee (2004 - 2009)
Scholarship Committee (2004 - 2006)
Grievance Committee (2004 - 2007); Chair 2006-2007
Ad hoc Professor Recognition/Honor Committee (2004 - 2005)

College of Education:
Faculty Development Committee (2005 - 2007)
Technology Committee (2004 - 2006)
Grievance Committee (2006 - 2007)

Cullen College of Engineering:
Biomedical Engineering Curriculum Development Committee (2005 - 2006)
Director, Biomedical Engineering Research Core Laboratory (BMERCL) Renovations (2004 -2007).
Director, Biomedical Engineering Program Undergraduate Bioanalytics Teaching Laboratory Renovations, Department of Chemical and Biomolecular Engineering (2006 - 2008)

University of Houston:
Institutional Animal Care and Use Committee (IACUC) (2004 - 2009).
Research Council Member for the University of Houston, College of Natural Science and Mathematics (2003 -2004).

Faculty Advisor:
Engineering World Health Organization, University of Houston Chapter, Biomedical Engineering, (http://ewh.org and http://www.medicalbridges.org) (2005 - 2009)

Service to the Profession and Academic Discipline

Committee Member:
American College of Sports Medicine, American College of Sports Medicine Program Committee, Topical Area Representative for skeletal muscle, bone and connective tissue (2003 - 2006).

Professional Memberships:
American Society of Bone and Mineral Research (1994 to Present)
American Association for the Advancement of Science (since 1998)
American College of Sports Medicine (1988 - 1993 and 2004 - 2011)
American Physiological Society (since 2004)
American Society of Gravitational and Space Biology (since 1992)
American Society of Matrix Biology (2001 - 2010)
Biomedical Engineering Research Society (2007-2011)

International Maillard Reaction Society (2007 - 2009)
Orthopaedic Research Society (1993 - 1997 and 2007 - Present)
Wound Healing Society (since 2002 - 2010)

Service to the Community

Eucharistic Minister, St. Michael Catholic Church, Houston, Texas (2002 - Present)
Bread of Life Food Delivery, St. Michael Catholic Church, Houston, Texas (2002 - 2003)
Continuing Christian Education (CCE) Parent Volunteer, St. Michael Catholic Church, Houston, Texas (2007 - Present)
Youth Sports Coach, Soccer, Basketball, and Baseball, Pre-Kindergarten through 3rd Grade, St. Michael Catholic Church, Houston, Texas (2008 – Present)
Youth Sports Coach, Baseball, Trotter-YMCA, Houston, Texas (2012 - Present)
Rice Military Community Member (2003 - Present)
Hillside Children's Center, Halloween Harvest Benefit for Children, Rochester, NY, 1995.

Publicity and Media Related to Research

Cullen College of Engineering News (web pages). Title: **"College Unveils New Undergraduate Lab Space."** Engineering Communications url: http://www.egr.uh.edu/news/0409/?e=lab (April 14, 2009)

Cullen College of Engineering News (web pages). Title: **"Undergraduate Students Construct an *In Vitro* Low Level Laser Irradiation Laboratory Instrument."** Engineering Communications url: http://www.egr.uh.edu/news/0309/?e=plotter (March 12, 2009)

Cullen College of Engineering News (web pages). Title: "**Study by UH, Texas A&M Professors to Explore Bone Loss in Astronauts."** Engineering Communications. url: http://www.egr.uh.edu/news/1208/?e=nasa (December 12, 2008)

College of Education and Health and Human Performance News (web pages). Title: "**Dr. Martinez is Co-investigator in $1.1 million NASA Grant."** http://www.coe.uh.edu/mycoe/hhp/Currentevents/09_martinez.cfm (December 12, 2008)

Cullen College of Engineering News (web pages). Title: "**NFL Grant Supports Gene Therapy Study to Benefit Athletes."** Engineering Communications url: http://www.egr.uh.edu/news/1208/?e=nfl (December 10, 2008)

University of Houston Daily Cougar Newspaper (web pages): Title: **"UH heads research on space travel effects."** Daily Cougar url: http://www.thedailycougar.com/uh_heads_research_ on _space_travel_effects-1.1353685 (February 4, 2009)

Cullen College of Engineering News (web pages). Title: **"Mechanical engineering renovates biomedical lab."** Dr. Daniel Martinez interviewed by Toby Weber and Krista Kuhl, Engineering Communications url: http://www.egr.uh.edu/news/1006/?e=biolab (October 24, 2006).

Stratagene Strategies. Title: **"Improving gene expression studies with the Mx-4000 multiplex Q-PCR System."** Dr. Daniel Martinez interviewed by Judy Macemon, Director of Marketing, Stratagene Inc. Stratagene's "Strategies" News Letter, Volume 14, Number 2, Pages 54-57, 2001.

Other Professional Service

Consultant: Stratagene, Inc, La Jolla, CA; MX-4000 Real-time Quantitative PCR machine collaborator (2001 - 2003).