ALESHA B. CASTILLO, PhD

CURRICULUM VITAE

CONTACT INFORMATION

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Biomechanical Engineering Division
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EDUCATION

1997	BS, Materials Engineering, Cal Poly State University, SLO, CA
2000	MS, Biomedical Engineering, University of California, Davis, CA
2004	PhD, Biomedical Engineering, University of California, Davis, CA

PROFESSIONAL POSITIONS

1994	Co-op Education Research Intern (Full-Time) Leads Research and Development Group, Pacesetter, Inc., St. Jude Medical Co. Sylmar, CA *Supervisor:* David J. Vachon, PhD *Thesis Advisor:* Anny Morrobel-Sosa, PhD
1998-2004	Research Assistant (Full-Time) Department of Orthopaedic Surgery, University of California, Davis, CA *Supervisor:* R. Bruce Martin, PhD
2004-2006	Training Research Fellow, (Full-Time) NIH Musculoskeletal Training Grant Departments of Biomedical Engineering and Anatomy & Cell Biology Indiana University School of Medicine, Indianapolis, IN *Supervisor:* Charles H. Turner, PhD
2007-present	Postdoctoral Scholar (Full-Time) Department of Mechanical Engineering Biomechanical Engineering Division Stanford University, Stanford, CA *Supervisor*: Christopher R. Jacobs, PhD

TEACHING

1993	Teaching Assistant, MATE 215 Materials Engineering Laboratory, Department of Materials Engineering, Cal Poly, San Luis Obispo, CA
2006	Guest Lecturer, G818 Integrative Cell Biology, Department of Cellular and Integrative Physiology, Indiana University School of Medicine, Indianapolis, IN
2007	Teaching Assistant, Bio-X Sponsored Tissue Culture Workshop for Faculty and Students, Department of Bioengineering, Stanford University, Stanford, CA.

AWARDS AND HONORS

1997	Graduate Engineering Minority Program/NIH Fellow
2000	Alice L. Jee Memorial Young Investigator Award, Sun Valley Hard Tissue Workshop
2001	National Osteoporosis Foundation Mazess Fellowship Award
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2004 NIRA Institutional Training Grant Fellow, Anatomy & Cell Biology, Indiana University
2005 7th International Bone Fluid Flow Workshop Travel Award
2006 Alice L. Jee Memorial Young Investigator Award, Sun Valley Hard Tissue Workshop
2006 Federation of American Societies for Experimental Biology-MARC Program Poster/Oral Presentation Travel Award, 28th Annual American Society of Bone and Mineral Research Meeting
2007 Stanford Center on Longevity Postdoctoral Fellowship Award
2007 American Society for Bone and Mineral Research Young Investigator Award

PROFESSIONAL ACTIVITIES AND SERVICE

- Undergraduate Student Mentor, Women's Engineering Link (WEL) Mentoring Program, College of Engineering, University of California, Davis, CA, 1998-2002
- Moderator, *In vitro models for tissue engineering*, Society for Physical Regulation in Biology and Medicine, January 9-11, 2008, Miami, FL
- Abstract Reviewer, Meeting of the American Society for Bone and Mineral Research

PROFESSIONAL AFFILIATIONS

Member, American Society for Bone and Mineral Research
Member, American Society of Biomechanics
Member, Biomedical Engineering Society
Member, American Society for Cell Biology
Member, Sigma Xi, The Scientific Research Society
Member, International Society for Stem Cell Research
Member, Society for Physical Regulation in Biology and Medicine

PUBLICATIONS

2002 **Castillo AB**, Tarantal AF, Watnik MR, Martin RB. Tenofovir treatment at 30 mg/kg/day can inhibit cortical bone mineralization in growing rhesus monkeys (*Macaca mulatta*). *J Ortho Res* 20:1185-89.
2002 Tarantal AF, **Castillo A**, Ekert JE, Bischofberger N, Martin RB. Fetal and maternal outcome after administration of tenofovir to gravid rhesus monkeys. *J Acquir Immune Defic Syndr* 29:207-20.
2004 Van Rompay KK, Brignolo LL, Meyer DJ, Jerome C, Tarara R, Spinner A, Hamilton M, Hirst LL, Bennett DR, Canfield DR, Dearman TG, Von Morgenland W, Allen PC, Valverde C, **Castillo AB**, Martin RB, Samii VF, Bendele R, Desjardins J, Marthas ML, Pedersen NC, Bischofberger N. Biological effects of short-term or prolonged administration of 9-[2-(phosphonomethoxy) propyl]adenine (tenofovir) to newborn and infant rhesus macaques. *Antimicrob Agents Chemother* 48(5):1469-87.
2005 Warden SJ, Fuchs RK, **Castillo AB**, Turner CH. Does exercise during growth influence osteoporotic fracture later in life? *Journal of Musculoskeletal and Neuronal Interactions* 5(4):344-346.
2006 **Castillo AB**, Levenda JP, Pavlik M, Warden SJ, Li J, Turner CH. The effects of low amplitude, broad frequency vibration on cortical bone adaptation in adult female mice. *Bone* 39(5):1087-96.
2006 Robling AR, **Castillo AB**, Turner CH. Biomechanical and Molecular Regulation of Bone Remodeling. *Annual Reviews of Biomedical Engineering* 8:6.1-6.44.

2006 Warden SJ, Saxon L, **Castillo AB**, Turner CH. Knee ligament mechanical properties are not influenced by estrogen or its receptors. *Am J Physiol Endocrinol Metab* 290:E1034-E1040.

2007 Warden SJ, Fuchs RK, **Castillo AB**, Nelson IR, Turner CH. Exercise when young provides lifelong benefits to bone structure and strength. *Journal of Bone and Mineral Research* 22(2):251-9.

2007 Hazelwood SJ, **Castillo AB**. Simulated effects of marathon training on bone density, remodeling, and microdamage accumulation of the femur. *International Journal of Fatigue* 29(6):1057-64.

2007 Saxon LK, Robling AG, **Castillo AB**, Mohan S, Turner CH. The skeletal responsiveness to mechanical loading is enhanced in mice with a null mutation in estrogen receptor-**β.** *Am J Physiol: Endocrinol Metab* 293(2):E484-91

- **Castillo AB,** Triplett JW, Pavalko FM, Turner CH. Estrogen receptor-β regulates mechanical signaling in primary osteoblasts. *Submitted to Am J Physiol: Endocrinol Metab, In revision.*
- Anderson C, **Castillo AB**, Jacobs CR, Sterns T. Primary cilia as bone mechanosensors. *Submitted to Anatomical Record.*
- **Castillo AB,** Doyle JM, Allen MR, Turner CH. A role for estrogen receptor-β in trabecular bone loss during disuse. *In preparation.*

INVITED PRESENTATIONS

2002 9-[2-(R)-phosphonomethoxy)propyl]adenine (PMPA) treatment at 30 mg/kg/day can inhibit cortical bone mineralization in rhesus monkeys (Macaca mulatta). 48th Annual Meeting of the Orthopaedic Research Society. February 10-13, Dallas, TX.

2003 The role of fatigue damage in postmenopausal bone fragility. Indiana Bone & Mineral Club, Indiana University School of Medicine, Indianapolis, IN. March 20.

2006 The role of estrogen receptor beta in bone mechanotransduction. 28 Annual Meeting of the American Society for Bone and Mineral Research. September 15-19, Philadelphia, PA.

2007 The role of estrogen receptor beta in bone mechanotransduction. Lawrence J. Ellison Musculoskeletal Research Center, University of California, Davis Medical Center, Sacramento, CA. May 21.

2007 Estrogen receptor-beta regulates mechanical signaling in primary osteoblasts. 54th Annual Meeting of the American College of Sports Medicine. May 30-June 2, New Orleans, LA.

2007 Role for estrogen receptor-beta in trabecular bone loss during disuse. 29th Annual Meeting of the American Society for Bone and Mineral Research. September 16-19, Honolulu, HI.

2008 Bone mechanotransduction. Department of Biomedical Engineering, California Polytechnic State University, San Luis Obispo, CA. April 8.

ABSTRACTS

2000 Hazelwood S. **Castillo A**. On the significance of BMU activation frequency and inhibited refilling on trabecular surfaces in predicting femoral porosity using a bone remodeling simulation. *Transactions of the 45th Annual Meeting of the Orthopaedic Research Society, Vol. 25.* March 12-15, Orlando, FL.

2001 **Castillo AB**, Martin RB. The role of fatigue damage in postmenopausal bone fragility. 31st International Sun Valley Hard Tissue Workshop. August 6-10, Sun Valley, ID.

2002 9-[2-(R)-phosphonomethoxy)propyl]adenine (PMPA) treatment at 30 mg/kg/day can inhibit cortical bone mineralization in rhesus monkeys (Macaca mulatta). *Transactions of the 48th Annual Meeting of the Orthopaedic Research Society, Vol. 27*. February 10-13, Dallas, TX. *Podium presentation*.

2003 **Castillo AB**, Metz LN, Martin RB. Ovariectomy results in an increase in intracortical remodeling in the female ferret (*Mustela furo*). *Transactions of the 49th Annual Meeting of the Orthopaedic Research Society, Vol. 28*. February 2-5, New Orleans, LA.

2005 Hazelwood SJ, **Castillo AB**. Simulated effects of marathon training on bone remodeling and microdamage accumulation. First International Conference on Mechanics of Biomaterials & Tissues. December 11-15, Waikoloa Beach, HA.

2005 Warden SJ, Fuchs RK, **Castillo AB**, Turner CH. Mechanical loading during growth has long-term benefits to skeletal health. *Abstracts of the 27th Annual Meeting of the American Society for Bone and Mineral Research, Vol. 20, Suppl 1*. September 23-27. Nashville, TN.

2006 McGee ME, **Castillo AB**, Nelson OL, Robbins CT, Donahue SW. The effects of disuse (hibernation) on trabecular bone architecture and mineral density in grizzly bear (*Ursus Arctos Horribilis*) femurs. *Transactions of the 52nd Annual Meeting of the Orthopaedic Research Society, Vol 31.* March 19-22, Chicago, IL.

2006 **Castillo AB**, Levenda JP, Pavlik M, Warden SJ, Turner CH. The effects of low amplitude, broad frequency vibration on cortical bone adaptation in adult female mice. *Transactions of the 52nd Annual Meeting of the Orthopaedic Research Society, Vol. 31*. March 19-22, Chicago, IL.

2006 **Castillo AB**, Triplett JW, Pavalko FM, Turner CH. The role of estrogen receptor-beta in bone mechanotransduction. *Abstracts of the 28th Annual Meeting for the American Society for Bone and Mineral Research, Vol. 21, Suppl 1;S371*. September 15-19, Philadelphia, PA. *Podium presentation*.

2007 **Castillo AB**, Triplett JW, Pavalko FM, Turner CH. Estrogen receptor-beta regulates mechanical signaling in primary osteoblasts. *Med Sci Sports Exerc, 39(5 Suppl):33*.

2007 **Castillo AB**, Doyle JM, Allen MR, Turner CH. Role for estrogen receptor-beta in trabecular bone loss during disuse. 29th Annual Meeting for the American Society of Bone and Mineral Research. September 16-19, Honolulu, HI.

2008 **Castillo AB**, Jacobs CR. Oscillatory fluid flow activates hedgehog signaling in C3H10T1/2 cells. 26th Annual Scientific Conference of the Society for Physical Regulation in Biology and Medicine. January 9-11, Miami, FL.

2008 **Castillo AB**, Leucht P, Tang J, Helms JA, Jacobs CR. SDF-1 is expressed in osteocytes and periosteal cells in response to mechanical loading. 30th Annual Meeting of the American Society for Bone and Mineral Research. September 12-16, Montréal, Quebéc, Canada.

RESEARCH SUPPORT

5RO1 AR41644-06 NIH/NIAMS (PI: RB Martin) 07/00 – 07/02
Title: *Histologic microcracks and fatigue of cortical bone*
Project Goal: Study the role of fatigue damage and remodeling in post-menopausal bone loss and fragility.

National Osteoporosis Foundation Fellowship (Mentor: RB Martin) 07/01 – 10/02
Title: *The role of fatigue damage in postmenopausal bone fragility*
Project Goal: Evaluate whether strain-induced microdamage in cortical bone contributed to bone loss in postmenopausal bone fragility.

3RO1 T32 AR07581-08 NIH/NIAMS (Mentor: CH Turner) 04/04 – 10/06
Title: *Musculoskeletal Training Program*
Project Goals: Recruit and train postdoctoral fellows for academic careers in musculoskeletal research.

Stanford Center on Longevity (SCL) Fellowship (Mentor: CR Jacobs) 07/07 – 07/10
Title: *The role of mechanical loading and IGF-I signaling in aging bone*
The SCL fellowship award was based on research productivity, overall scientific merit and strength of professional recommendations. In addition to conducting scientific research in the field of aging, recipients participate as Teaching Fellows in the undergraduate course *Longevity*. The major objective of the scientific project is to examine the role of mechanical loading and IGF-1 in the age-related decline in bone mechanosensitivity.
Role: Research Fellow

PROFESSIONAL COURSES

2005 Grant Writing Workshop: Write Winning Grants, Indiana University School of Medicine Division of Continuing Medical Education, Ruth Lilly Learning Center, Indiana University Purdue University, Indianapolis, IN, October 17.

2006 Microarray Profiling the Murine Osteoprogenitor Lineage, University of Connecticut at Storrs and Farmington, May 12-14.