

## Marni D. Boppart, Sc.D.

---

University of Illinois at Urbana-Champaign  
Department of Kinesiology & Community Health  
Beckman Institute for Advanced Science & Technology  
405 North Mathews Avenue, Urbana, IL 61801  
Phone: (217) 244-1459  
FAX: (217) 244-1995  
Email: mboppart@illinois.edu  
Web: <http://mmp.beckman.illinois.edu>

---

*Updated May 2015*

### Education

- 2000** Doctorate of Science, Applied Anatomy and Physiology  
Boston University: Boston, MA  
Mentors: Roger A. Fielding, Ph.D.; Laurie J. Goodyear, Ph.D.
- 1996** Master of Science, Cell Biology  
Creighton University, Omaha, NE  
Mentor: Diane M. Cullen, Ph.D.
- 1992** Bachelor of Science, Molecular, Cellular and Developmental Biology  
University of New Hampshire, Durham, NH  
Mentor: Gale B. Carey, Ph.D.

### Academic and Other Employment

- 2014-present **Associate Professor (Primary Appointment)**  
Department of Kinesiology and Community Health  
University of Illinois at Urbana-Champaign, IL  
  
Affiliate, Institute for Genomic Biology (Regenerative Biology & Tissue Engineering Theme), 2010-present  
Affiliate, Center for Nutrition, Learning and Memory (CNLM), 2012-present
- 2014-present **Associate Professor (Full-time Appointment)**  
Beckman Institute for Advanced Science and Technology  
University of Illinois at Urbana-Champaign, IL
- 2007-2014 **Assistant Professor**  
Department of Kinesiology and Community Health  
Beckman Institute for Advanced Science and Technology  
University of Illinois at Urbana-Champaign, IL
- 2006 **Research Assistant Professor**  
Department of Cell and Developmental Biology  
University of Illinois at Urbana-Champaign, IL
- 2000-2006 **Postdoctoral Research Associate (Full- and Part-time Appointments)**  
Department of Cell and Developmental Biology  
University of Illinois at Urbana-Champaign, IL
- 2000 **Postdoctoral Research Associate**

Joslin Diabetes Center  
Harvard Medical School, Boston, MA

- 1997-2000 **Predoctoral Research Associate**  
Joslin Diabetes Center  
Harvard Medical School, Boston, MA
- 1997-2000 **Teaching Fellow/Instructor**  
Sargent College, Department of Health Sciences  
Boston University, Boston, MA  
Teaching Fellow, 1997  
Head Teaching Fellow, 1997-1998  
Part-time Instructor, 1998
- 1994-1996 **Research Assistant**  
School of Medicine, Department of Biomedical Sciences, Osteoporosis Research  
Center  
Creighton University, Omaha, NE
- 1992-1996 **United States Air Force Officer/ Aerospace Physiologist**  
Assistant to Major Command Supervisor, Randolph AFB, TX, 1992-1993  
Aerospace Physiologist, Brooks AFB, TX, 1992-1993  
Assistant Unit Chief and Aerospace Physiologist, Offutt AFB, NE, 1993-96

### **Training and Certifications**

Emergency Medical Technician, Mt. Holly, NJ, 1988  
USAF Aerospace Physiology Certification, Brooks AFB, TX, 1992  
USAF Human Centrifuge Training Course, Brooks AFB, TX, 1992  
USAF Accident Investigation Course, Brooks AFB, TX, 1992  
USAF Hyperbaric Medicine Certification, Brooks AFB, TX, 1992  
USAF Academic Instructor Certification, Brooks AFB, TX, 1992  
Life Science Equipment Course, Randolph AFB, TX, 1993  
USAF Free Fall Parachuting, USAF Academy, CO 1994  
National Board of Diving & Hyperbaric Medical Technology, 1994  
Human Factors in Aviation Course, Holloman AFB, NM, 1995  
NASA Fatigue Countermeasure Workshop, Moffett Field, CA, 1995

### **Academic Honors and Awards**

1988 Selected University Honors Program, University of New Hampshire  
1991 Oliver J. Hubbard Summer Research Fellowship, University of New Hampshire  
1992 Stephen C. Decasare Award for Community Service, University of New Hampshire  
1998 Graduate Student Scholarship, American College of Sports Medicine (ACSM)  
1998 National Institutes of Health (NIH) Predoctoral Institutional National Research Service  
Award (NRSA), Joslin Diabetes Center, Harvard Medical School  
1999 Graduate Student Research Competition, Dean's Award (1<sup>st</sup> prize), Boston University  
1999 Graduate Student Scholarship, ACSM  
2000 Most Outstanding Doctoral Student, New England ACSM  
2001 Student Investigator Award, New England ACSM  
2007 Selected Participant, NIA Summer Institute on Aging Research, UIUC  
2008 Arnold O. Beckman Award for Promising Research, UIUC  
2009 Ellison Medical Foundation New Scholar Award, UIUC  
2009- Faculty Ranked as Excellent, 2009-2014 (each semester, multiple courses), UIUC

- 2013 Guiding Undergraduate Research Award, College of Applied Health Sciences, UIUC  
 2014 Invited Speaker, Campus Insights, UIUC Board of Trustees  
 2014 Fellow, American College of Sports Medicine

## **Professional Associations**

- 1997-current American College of Sports Medicine (ACSM)  
 1997-2001 New England Chapter, American College of Sports Medicine  
 1997-2002 American Diabetes Association  
 2005-current Midwest Chapter, American College of Sports Medicine  
 2008-current American Physiological Society  
 2008-current International Society for Stem Cell Research (ISSCR)

## **Professional Service**

### ***Editorial Board***

- 2007-current Molecular and Cellular Biomechanics Journal  
 2012-2015 Exercise in Sport Sciences Reviews (ESSR), Assistant Editor  
 2015-current Exercise in Sport Sciences Reviews (ESSR), Associate Editor  
 2013-current Journal of Cell Adhesion  
 2013-current Frontiers in Exercise Physiology

### ***Manuscript Review***

- EMBO Journal  
 American Journal of Physiology, Cell Physiology  
 American Journal of Physiology, Regulatory, Integrative and Comparative Physiology  
 Journal of Brain, Behavior, and Immunity  
 Journal of Applied Physiology  
 Medicine & Science in Sports and Exercise (MSSE)  
 Journal of Aging Research  
 Molecular Cancer Therapeutics  
 Stem Cells  
 PLoS ONE  
 Frontiers in Exercise Physiology  
 Frontiers in Aging Neuroscience  
 Acta Physiologica  
 AGE  
 Journal of Physiology  
 Journal of American Aging Association

### ***Grant Review***

- 2009 National Institutes of Health, MOSS IRG  
 2010-2012 Research Board, UIUC  
 2013-current Veterans Administration, Aging & Neurodegenerative Diseases  
 2014 Telethon Foundation, Italy  
 2015 National Institutes of Health, MOSS IRG, SBIR/STTR, Ad hoc  
 2015 National Institutes of Health, SMEP IRG, Ad hoc

### ***Consultation***

- 2008-2010 New Permanent Exhibit, Museum of Science and Industry in Chicago  
 2010-2012 NASA, ProOrbis, development of the National Laboratory for ISS  
 2012 ClearView Healthcare Partners

**Society Service**

- 1997-2000 Student Representative, NEACSM  
 2012-2015 Strategic Health Initiative (SHI), Aging, ACSM

**University and College Service**

- 2008-current Medical Scholars Program, Interview Panel, University of Illinois at Urbana-Champaign (UIUC)  
 2009-2011 Faculty Senator, UIUC  
 2009-current Military Education Council, UIUC  
 2009-current Military Education Council, Faculty Review Sub-Committee, UIUC  
 2010-2011 University Educational Policy Committee, UIUC  
 2010-2011 University Educational Policy Committee, Aviation Institute Sub-Committee, UIUC  
 2010-2012 Alleged Capricious Grading Committee, College of Applied Health Sciences (AHS)  
 2011 Osher Lifelong Learning Institute (OLLI) Citizen Scientist Program Mentor, UIUC  
 2012-2014 Faculty Senator, UIUC  
 2012-2016 University Admissions Committee, UIUC  
 2012 NSF CMMB IGERT Symposium – Panel Speaker, UIUC  
 2012-2015 Educational Policy Committee, AHS  
 2012-current Military Education Council, Faculty Review Sub-Committee Chair, UIUC  
 2012-2013 Committee on Committees, UIUC Senate  
 2013 NSF CMMB IGERT – Virtual Site Visit Representative  
 2013 Search Committee, AHS, Associate Dean for Academic Affairs  
 2014-2015 Search Committee, AHS, Disability - Veterans  
 2014-2015 Faculty Advisory Committee, Biotechnology Center, UIUC

**Department of Kinesiology & Community Health Service**

- 2010-current Curriculum Committee (*ad hoc*)  
 2010-current Faculty Panel Speaker, KIN125  
 2010-2011 Graduate Student Conference Travel Grant Application Review Panel  
 2010-2011 Faculty Search Committee  
 2011 Faculty Search Committee  
 2012-2014 Executive Committee  
 2012 Faculty Search Committee  
 2012 Faculty Search Committee  
 2014-2017 Executive Committee

**Beckman Institute Service**

- 2013-2016 Appointed, Program Advisory Committee, Beckman Institute, UIUC

**Public Service and Community Outreach**

- St Matthew Catholic School
- Education Commission (School Board), 2008-present
  - Provided lectures to middle school children at St. Matthew Catholic School on the importance of “adult” stem cells for repair of tissues and overall health, 2014
- Illinois News Radio Network WJBC  
 Interview, Exercise and stem cells, 2012
- Canadian Broadcast Company  
 Interview, Exercise and stem cells, 2012
- WILL-AM News Radio  
 Interview (along with Prof. Petruzzello), “Exercise for Life”, 2012
- Illinois News Radio Network  
 Interview, Stem cells augment adaptive response to exercise, 2014
- Beckman Institute Open House  
 Stem Cells Across the Lifespan, 2015

## Book Chapters

1. Hayashi T, SD Dufresne, DA Aronson, DJ Sherwood, MF Hirshman, **MD Boppart**, RA Fielding, LJ Goodyear. *Intracellular Signaling Pathways in Contracting Skeletal Muscle*. In: Hargreaves M, Thompson M, Eds. *Biochemistry of Exercise X*. Champaign, IL: Human Kinetics Publishers, 1999; pp. 19-34.
2. Zhao Y, Bower AJ, Graf BW, **Boppart MD**, Boppart SA. *Imaging and Tracking of Bone-Marrow-Derived Immune and Stem Cells*. In: Turken K, Ed. *Methods in Molecular Biology*. Humana Press, 2013; pp. 1-20.
3. **Boppart MD**, De Lisio M, Witkowski S. *Exercise and Stem Cells*. In: Bouchard C, Ed. *Molecular and Cellular Regulation of Adaptation to Exercise*, 2015 (In press).

## Publications

1. **Kvidera (Boppart) MD**, Carey GB. Glutamine synthetase in rat epididymal tissue. *Proc Soc Exp Biol Med* 206(4): 360-364, 1994.
2. **Boppart MD**, Kimmel DB, Yee JA, Cullen DM. Time course of osteoblast appearance after *in vivo* mechanical loading. *Bone* 23(5): 409-15, 1998.
3. Napoli R, Gibson L, Hirshman MF, **Boppart MD**, Dufresne SD, Horton ES, Goodyear LJ. Epinephrine and insulin stimulate different mitogen-activated protein kinase signaling pathways in rat skeletal muscle. *Diabetes* 47: 1549-1554, 1998.
4. Aronson D, **Boppart MD**, Dufresne SD, Fielding RA, Goodyear LJ. Exercise stimulates c-Jun NH<sub>2</sub> kinase activity and c-Jun transcriptional activity in human skeletal muscle. *Biochem Biophys Res Comm*, 251: 106-110, 1998.
5. **Boppart MD**, Aronson D, Bean J, Goodyear LJ, Fielding RA. Eccentric exercise markedly increases c-Jun NH<sub>2</sub>-terminal kinase activity in human skeletal muscle. *J Appl Physiol* 87: 1668-1673, 1999.
6. **Boppart MD**, Asp S, Wojtaszewski JFP, Fielding RA, Mohr T, Goodyear LJ. Marathon running transiently increases c-Jun NH<sub>2</sub>-terminal kinase and p38 kinase activities in human skeletal muscle. *J Physiol* 526.3: 663-669, 2000.
7. **Boppart MD**, Hirshman MF, Fielding RA, Goodyear LJ. Static stretch markedly increases c-Jun NH<sub>2</sub>-terminal kinase (JNK) activity and p38 phosphorylation in rat skeletal muscle. *Am J Physiol Cell Physiol* 280: C352-C358, 2001.
8. Fujii N, **Boppart MD**, Dufresne SD, Crowley PF, Jozsi AC, Sakamoto K, Miyazaki H, Hirshman MF, Goodyear LJ. Overexpression or ablation of JNK in skeletal muscle has no effect on glycogen synthase activity. *Am J Physiol Cell Physiol* 287: C200-208, 2004.
9. **Boppart MD**, Burkin DJ, Kaufman SJ.  $\alpha\beta 1$  Integrin inhibits mechanotransduction and prevents skeletal muscle injury *in vivo*. *Am J Physiol Cell Physiol* 290: C1660-1665, 2006.
10. Pasquesi JJ, Schlachter S, **Boppart MD**, Chaney EJ, Kaufman SJ, Boppart SA. *In vivo* detection of exercise-induced ultrastructural changes in genetically-altered murine skeletal muscle using polarization-sensitive optical coherence tomography. *Optics Express* 14: 1547-1556, 2006.

11. **Boppart MD**, Volker SE, Alexander N, Burkin DJ, Kaufman SJ. Exercise promotes  $\alpha 7$  integrin gene transcription and protection in skeletal muscle. *Am J Physiol Regul Integr Comp Physiol* 295: R1623-1630, 2008.
12. Ge Y, Wu AL, Warnes C, Liu J, Zhang C, Kawasome H, Terada N, **Boppart MD**, Schoenherr CJ, Chen J. mTOR regulates skeletal muscle regeneration through kinase-dependent and kinase-independent mechanisms. *Am J Physiol Cell Physiol* 297: C1434-1444, 2009.
13. Ding H, Bearl E, Wang Z, Millet LJ, Gillette MU, Liu J, **Boppart MD**, Popescu G. Fourier transform light scattering of biological structures and dynamics. *IEEE J Select Topics Quant Electronics* 16: 909-918, 2010.
14. Ding H, Wang Z, Nguyen F, Boppart SA, Millet LJ, Gillette MU, Liu J, **Boppart MD**, Popescu G. Fourier Transform Light Scattering (FTLS) of Cells and Tissues. *J Comp Theo Nanosci*, 7:2501-2511, 2010.
15. **Boppart MD**, Burkin DJ, Kaufman SJ. Activation of AKT signaling promotes cell growth and survival in  $\alpha 7\beta 1$  integrin-mediated alleviation of muscular dystrophy. *Biochimica et Biophysica Acta - Molecular Basis of Disease* 1812: 439-446, 2011.
16. Lueders T, Zou K, Huntsman HD, Meador B, Abel M, Valero MC, Huey K, **Boppart MD**. The  $\alpha 7\beta 1$  integrin accelerates fiber hypertrophy and myogenesis following a single bout of eccentric exercise. *Am J Physiol Cell Physiol* 301: C938-946, 2011.
17. Zou K, Meador B, Johnson B, Huntsman HD, Valero MC, Huey K, **Boppart MD**. The  $\alpha 7\beta 1$  integrin increases muscle fiber hypertrophy following multiple bouts of eccentric exercise. *J Appl Physiol* 111: 1134-1141, 2011.
18. Liu J, Milner DJ, **Boppart MD**, Ross RS, Kaufman SJ.  $\beta 1D$  chain increases  $\alpha 7\beta 1$  integrin and laminin and protects against sarcolemmal damage in mdx mice. *Hum Mol Genet* 21: 1592-1603, 2012.
19. Valero MC, Huntsman HD, Liu J, Zou K, **Boppart MD**. Eccentric exercise facilitates mesenchymal stem cell appearance in skeletal muscle. *PLoS One* 7(1): e29760, 2012.
20. Zhao Y, Graf BW, Chaney EJ, Mahmassani Z, Antoniadou E, Devolder R, Kong H, **Boppart MD**, Boppart SA. Integrated multimodal optical microscopy for structural and functional imaging of engineered and natural skin. *J Biophotonics* 5: 437-448, 2012.
21. Huntsman HD, Zachwieja N, Zou K, Ripchik P, Valero MC, De Lisio M, **Boppart MD**. Mesenchymal stem cells contribute to vascular growth in skeletal muscle in response to eccentric exercise. *Am J Physiol Heart Circ Physiol* 304: H72-81, 2013.
22. Graf BW, Chaney EJ, Marjanovic M, Adie SG, De Lisio M, Valero MC, **Boppart MD**, Boppart SA. Long-term time-lapse multimodal intravital imaging of wound healing and bone-marrow-derived cell dynamics in skin. *Technology*, 1: 8-19, 2013.
23. Graf BW, Chaney EJ, Marjanovic M, De Lisio M, Valero MC, **Boppart MD**, Boppart SA. In vivo imaging of immune cell dynamics in skin in response to zinc-oxide nanoparticle exposure. *Biomed Opt Express* 4: 1817-1828, 2013.
24. **Boppart MD**, De Lisio M, Zou K, Huntsman HD. Defining a role for mesenchymal stem cells in muscle repair following exercise. *Front Physiol* 4: 310, 2013. Invited Review.

25. Graf BW, Bower AJ, Chaney EJ, Marjanovic M, Adie SG, De Lisio M, Valero MC, **Boppart MD**, Boppart SA. *In vivo* multimodal microscopy for detecting bone-marrow-derived cell contribution to skin regeneration. (Featured on Cover) *J Biophotonics*, 7: 96-102, 2014.
26. De Lisio M, Jensen T, Sukiennik AR, Huntsman HD, **Boppart MD**. Substrate and strain alter the muscle-derived mesenchymal stem cell secretome to promote myogenesis. *Stem Cell Res Ther*, 5: 74, 2014.
27. Lee MK, Rich MH, Shkumatov A, Liu SC, Jeong JH, LeyTheng L, **Boppart MD**, Gillette MU, Bashir J, Lee J, Kong H. Glacier moraine formation-mimicking colloidal particle assembly in microchanneled, bioactive hydrogel for vascular and neural patterning. *Adv Health Mater*, Epub ahead of print, 2014.
28. Zou K, Huntsman HD, Valero MC, Adams J, Skelton J, De Lisio M, Jensen T, **Boppart MD**. Mesenchymal stem cells augment the adaptive response to eccentric exercise. *Med Sci Sports Exerc*, Epub ahead of print, 2014.
29. Zou K\*, De Lisio M\*, Huntsman HD, Pincu Y, Mahmassani Z, Miller M, Olatunbosun D, Jensen T, **Boppart MD**. Laminin-111 improves skeletal muscle stem cell quantity and function following eccentric exercise. *Stem Cell Transl Med*, 3: 1013-22, 2014. (\*equal contribution as first author)
30. Zhao Y, Marjanovic M, Chaney EJ, Graf BW, Mahmassani Z, **Boppart MD**, Boppart SA. Longitudinal label-free tracking of cell death dynamics in living engineered human skin tissue with a multimodal microscope. *Biomed Opt Express*, 5: 3699-716, 2014.
31. Ogasawara R, Nakazato K, Sato K, **Boppart M**, Fujita S. Resistance exercise increases active MMP and  $\beta$ 1-integrin protein expression in skeletal muscle. *Physiol Rep*, 2: e12212.
32. Caliaro SR, Weisgerber DW, Grier WK, Mahmassani Z, **Boppart MD**, Harley BAC. Collagen scaffolds incorporating coincident gradations of instructive structural and biochemical cues for osteotendinous junction engineering, accepted 2015.
33. Pincu Y, Linden MA, Woods JA, T Baynard, **Boppart MD**. The effects of high fat diet and moderate exercise on TGFbeta1 and collagen deposition in mouse skeletal muscle, accepted 2015.

### Upcoming Manuscripts

34. De Lisio M, Farup J, Sukiennik RA, Clevenger N, Nallabelli J, Belson B, Ryan K, Rahbek SK, d Paoli F, Vissing K, **Boppart MD**. The acute response of pericytes to muscle-damaging eccentric contraction and protein supplementation in human skeletal muscle. In review, 2015.
35. Farup J, De Lisio M, Rahbek SK, Vendelbo MH, **Boppart MD**, and Vissing K. Stem cell content in human skeletal muscle is influenced by resistance exercise contraction mode, but not protein supplementation. In review, 2015.
36. Rich, MH, Lee MK, Marshall N, Chen J, Mahmassani ZS, **Boppart MD**, Kong HJ. Water-hydrogel binding affinity modulates freeze-drying induced micropore architecture and skeletal myotube formation. In review, 2015.
37. Huntsman HD, Merritt J, Rendeiro ACN, Pincu Y, Cobert A, De Lisio M, Kolyvas E, Dvoretzkiy S, Khanna N, Dobrucka I, Chen J, Kemkemer R, Jensen T, Dobrucki LW, Rhodes J and

- Boppart MD.** Preconditioned mesenchymal stem cells rejuvenate muscle function and distal brain plasticity in aged mice. In review (Abbott Nutrition), 2015.
38. Pincu Y, Huntsman HD, Zou HD, De Lisio M, Mahmassani Z, Jung P, Joseph A, Jensen T, **Boppart MD.** Evaluation of mesenchymal stem cell contribution to adipose health in the context of high fat diet and exercise. Manuscript in progress.
39. Chung HR, Wu PT, Fitschen PJ, Kistler BM, Park H, Wilund KR, **Boppart MD.** The impact of hypercholesterolemia and physical activity on statin-associated skeletal muscle myopathy. Manuscript in progress.
40. Munroe M, Cobert A, Merritt J, Jensen T, Rhodes J, and **Boppart MD.** HMB supplementation improves mesenchymal stem cell gene expression and muscle function in aged mice. Manuscript in progress.
41. Mahmassani Z and Boppart MD. The  $\alpha7\beta1$  integrin regulates gene expression in muscle following an acute bout of eccentric exercise. Manuscript in progress.

### Invited Lectures and Invited Conference Presentations

1. **Boppart MD**,  $\alpha7\beta1$  Integrin regulates mechanotransduction and prevents skeletal muscle injury in vivo, *Center for Cellular Mechanics Colloquium*, University of Illinois, Urbana-Champaign, IL, March 2006.
2. **Boppart MD**, Role of the  $\alpha7\beta1$  integrin in preventing skeletal muscle injury: decreased mechanotransduction or increased adhesion? *Department of Chemical and Biomolecular Engineering Cell Biomechanics Interest Group Seminar*, University of Illinois, Urbana-Champaign, IL, May 2007.
3. **Boppart MD**, Basics of extracellular matrix composition and exercise-induced changes in skeletal muscle ECM and linkage proteins, *Center for Nanoscale Science and Technology & Center for Cellular Mechanics Summer School*, University of Illinois, Urbana-Champaign, IL, July 2007.
4. **Boppart MD**, A physiological approach to studying the role of the  $\alpha7$  integrin as a mechanotransducer in skeletal muscle, *Department of Mechanical Engineering Bio-Interest Seminar*, University of Illinois, Urbana-Champaign, IL, November 2007.
5. **Boppart MD**,  $\alpha7$  Integrin-mediated recruitment of muscle-derived stem cells, *School of Anatomy and Human Biology*, University of Western Australia, Crawley, Australia, June 2008.
6. **Boppart MD**, Basics of stem cell biology, *Biophotonics Imaging Laboratory*, Beckman Institute for Advanced Science and Technology, University of Illinois, Urbana-Champaign, IL, July 2009.
7. **Boppart MD**, Does a role exist for non-satellite stem cells in skeletal muscle growth following exercise? *Midwest American College of Sports Medicine Annual Meeting*, Indianapolis, IN, October 2010.
8. **Boppart, MD**, Identification of stem cells in skeletal muscle that contribute to growth following exercise, *Department of Kinesiology and Nutrition Seminar*, University of Illinois, Chicago, IL, March 2011.

9. **Boppart, MD**, Role of stem cells in exercise-induced skeletal muscle adaptations, *American College of Sports Medicine Annual Meeting Tutorial*, Denver, CO, June 2011.
10. **Boppart, MD**, Development of strategies for the prevention of age-related muscle loss: what we've learned from exercise research, *Beckman Institute Director's Seminar*, University of Illinois, Urbana-Champaign, IL, March 2012.
11. **Boppart, MD**, Impact of social dynamics on laboratory performance, *Third National Sports Science Laboratory Management and Development Forum*, Beijing Sport University, Beijing, China, October 2012.
12. **Boppart, MD**, Development of strategies for the prevention of age-related muscle loss: what we've learned from exercise research, *Beijing Sport University Research Symposium*, Beijing, China, October 2012.
13. **Boppart, MD**, Development of strategies for the prevention and/or treatment of age-related declines in skeletal muscle function, *UIUC National Science Foundation IGERT: Training the Next Generation of Researchers in Cellular and Molecular Mechanics and BioNanotechnology Seminar*, April 2013.
14. **Boppart, MD**, Sensing the tension: identification of mechanotransducers that contribute to muscle growth, *American College of Sports Medicine Annual Meeting Symposium*, Indianapolis, IN, May 2013.
15. **Boppart, MD**, Development of stem cell strategies for the prevention of age-related muscle loss, *American College of Sports Medicine Annual Meeting Tutorial*, Indianapolis, IN, May 2013.
16. **Boppart, MD**, Defining a role for mesenchymal stem cells in muscle repair following exercise, *American College of Sports Medicine Annual Meeting*, World Congress on Inflammation, Orlando, FL, May 2014.
17. **Boppart, MD**, Role for non-satellite stem cells in muscle repair and adaptation post-exercise. *ACSM Integrative Physiology of Exercise Meeting*, Miami, FL, September 2014.
18. **Boppart, MD**, Development of a stem cell-based strategy for the prevention of age-related disability, *Intramural Research Program Seminar*, National Institute on Aging, Baltimore, MD, November 2014.
19. **Boppart, MD**, Stem cells in skeletal muscle, *Associated Colleges of the Chicago Area (ACCA), Advances in Cell Biology Seminar Series*, April 2015.
20. **Boppart, MD**, Development of a stem cell-based strategy for the prevention of age-related disability, *Exercise Physiology Seminar Series*, Texas A&M, April 2015.
21. **Boppart, MD**, Skeletal muscle repair, *International Society of Sports Nutrition*, Austin, TX, June 2015.
22. **Boppart, MD**, Title TBD, *4<sup>th</sup> Annual Symposium on Regenerative Rehabilitation*, Mayo Clinic, Rochester, MN, September 2015

## Conference Proceedings

1. Pasquesi JJ, Schlachter SC, **Boppart MD**, Chaney E, Kaufman SJ, and Boppart SA. *Detection of ultrasound changes in genetically-altered and exercised skeletal muscle using PS-OCT*. In: Tuchin VV, Izatt JA, and Fujimoto JG, Eds. Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine X. Proceedings of SPIE – The International Society for Optics and Photonics, Vol. 6079, 2006.
2. Graf BW, Chaney EJ, Valero MC, Marjanovic M, **Boppart MD**, Boppart SA. *Long-term, time-lapse, multi-modal microscopy for tracking cell dynamics in live tissue*. Proceedings of SPIE – The International Society for Optics and Photonics, San Francisco, CA, 2011.
3. Zhao Y, Graf BW, Devolder R, Kong H, Mahmassani Z, **Boppart MD**, Boppart SA. *Integrated multimodality microscope for functional imaging of engineered and natural tissues*. Proceedings of SPIE – The International Society for Optics and Photonics, San Francisco, CA, 2012.

### Research Presentations – National & Regional Conferences

1. **Kvidera (Boppart) MD**, Carey GB. Glutamine synthetase in rat epididymal tissue. *Federation of American Societies for Experimental Biology Meeting*, Anaheim, CA, 1994.
2. **Boppart MD**, Kimmel DB, Yee JA, Cullen DM. Time course for osteoblast appearance after *in vivo* mechanical loading. *American Society for Bone and Mineral Research Conference*, Seattle, WA. *Journal of Bone and Mineral Research*, 11(1) M340, 1996.
3. **Boppart MD**, Gibson L, Aronson D, Goodyear LJ, Fielding RA. Eccentric exercise potentially activates c-jun NH<sub>2</sub> terminal (JNK) signaling in human skeletal muscle. *American College of Sports Medicine, New England Chapter, Annual Meeting*, Providence, RI, 1997.
4. **Boppart MD**, Gibson L, Aronson D, Bean J, Goodyear LJ, Fielding RA. Effect of eccentric exercise on c-jun NH<sub>2</sub> terminal (JNK) signaling in human skeletal muscle. *American College of Sports Medicine, Annual Meeting*, Orlando, FL. *Medicine and Science in Sport and Exercise*, 30(5) S2, 1998.
5. **Boppart MD**, Asp S, Wojtaszewski JFP, Fielding RA, Mohr T, Goodyear LJ. Marathon running transiently increases c-Jun kinase (JNK) and p38 kinase activities in human skeletal muscle. *American College of Sports Medicine Annual Meeting*, Seattle, WA. *Medicine and Science in Sport and Exercise*, 31(5) S171, 1999.
6. **Boppart MD**, Hirshman MF, Fielding RA, LJ Goodyear LJ. Static stretch markedly increases c-Jun kinase (JNK) activity in rat skeletal muscle *in vitro*. *American College of Sports Medicine, New England Chapter, Annual Meeting*, Providence, RI, 1999.
7. **Boppart MD**, Hirshman MF, Sakamoto K, Fielding RA, Goodyear LJ. Effects of static stretch on c-Jun kinase (JNK) activity in rat skeletal muscle *in vitro*. *American College of Sports Medicine, Annual Meeting*, Indianapolis, IN. *Medicine and Science in Sport and Exercise*, 32(5) S210, 2000.
8. **Boppart MD**, Hirshman MF, Fielding RA, Goodyear LJ. Regulation of the focal adhesion proteins following contraction in rat skeletal muscle. *11<sup>th</sup> International Conference on the Biochemistry of Exercise: Molecular Aspects of Physical Activity and Aging*, Little Rock, AK. *J Aging Phys Activ* 8(3): 260, 2000.
9. Fukuwatari T, **Boppart MD** (presenter), Hirshman MF, Goodyear LJ. Insulin does not increase p38 MAP kinase activity or phosphorylation in rat skeletal muscle. *American Diabetes Association, Annual Meeting*, San Antonio, TX. *Diabetes* 50(2) A276, 2000.

10. Fujii N, **Boppart MD**, Dufresne SD, Jozsi AP, Crowley PF, Hirshman MF, Goodyear LJ. Overexpression of JNK in skeletal muscle does not alter glycogen synthase activity. *American Diabetes Association, Annual Meeting*, Philadelphia, PA, 2001.
11. **Boppart MD**, M Hirshman, RA Fielding, and LJ Goodyear. Regulation of focal adhesion proteins following contraction in rat skeletal muscle. *J Aging Phys Activ* 8(3): 260, 2000.
12. Fujii N, **Boppart MD**, Dufresne SD, Jozsi AP, Crowley PF, Hirshman MF, Goodyear LJ. Overexpression of JNK in skeletal muscle does not alter glycogen synthase activity. *Gordon Research Conference*, Meriden, NH, 2001.
13. Fujii N, Crowley PF, Sakamoto K, Jozsi AP, **Boppart MD**, Dufresne SD, Hirshman MF, Goodyear LJ. Overexpression of JNK in skeletal muscle suppresses ERK and Akt signaling pathways. *American Diabetes Association, Annual Meeting*, San Francisco, CA, 2002.
14. Fujii N, Crowley PF, Sakamoto K, Jozsi AP, **Boppart MD**, Dufresne SD, Hirshman MF, Goodyear LJ. Overexpression of JNK into skeletal muscle by *in vivo* electroporation; Cross-talk with ERK and Akt signaling pathways. *Gordon Research Conference*, Meriden, NH, 2002.
15. Wallace GQ, Burkin DJ, **Boppart MD**, Milner DJ, Kaufman SJ.  $\alpha7\beta1$  Integrin promotes muscle integrity, regeneration and hypertrophy in rescued dystrophic mice. *Molecular Biology of Muscle Development and Regeneration Conference*, Alberta, Canada, 2003.
16. **Boppart MD**, Wallace GQ, Chaney EJ, Kaufman SJ. Inhibition of signaling in mouse skeletal muscle overexpressing the  $\alpha7\beta1$  integrin receptor immediately following downhill running. *American College of Sports Medicine, Annual Meeting*, Indianapolis, IN. *Medicine and Science in Sport and Exercise*, 36(5), 2004.
17. **Boppart MD**, Mulligan J, Chaney EJ, Kaufman SJ.  $\alpha7\beta1$  Integrin prevents injury in mouse skeletal muscle following downhill running. *Federation of American Societies for Experimental Biology*, San Diego, CA, 2005.
18. **Boppart MD**, Mulligan J, Chaney EJ, Kaufman SJ.  $\alpha7\beta1$  Integrin prevents injury in mouse skeletal muscle following downhill running. *Federation of American Societies for Experimental Biology*, San Diego, CA, 2005.
19. Alexander N, **Boppart MD**, Kaufman SJ. The role of the  $\alpha7\beta1$  integrin in muscle protection following a repeated bout of exercise. *Howard Hughes Medical Institute Undergraduate Research Fellow Research Symposium*, Urbana, IL, 2005.
20. **Boppart MD**, Volker SE, Chaney EJ, Kaufman SJ. Eccentric exercise increases  $\alpha7\beta1$  integrin expression in skeletal muscle and subsequently protects against muscle damage. *American College of Sports Medicine, Midwest Chapter, Annual Meeting*, Muncie, IN, 2005.
21. Pasquesi JJ, **Boppart MD**, Kaufman SJ, Boppart SA. Detection of ultrastructural changes in genetically-altered and exercised skeletal muscle using PS-OCT. *International Society for Optical Engineering Photonics West-Biomedical Optics*, San Jose, CA, 2006.
22. Alexander N, **Boppart MD**, Kaufman SJ. The role of the  $\alpha7\beta1$  integrin in muscle protection following a repeated bout of exercise. *Howard Hughes Medical Institute Undergraduate Research Fellow Research Symposium*, Urbana, IL, 2006.

23. **Boppart MD**, Volker SE, Chaney EJ, Kaufman SJ. Mechanical induction of  $\alpha 7 \beta 1$  integrin expression and its role in intracellular signaling in skeletal muscle *in vivo*. *University of Illinois Center for Nanoscale Science and Technology, Center for Intracellular Mechanics, Symposium on Cell Mechanics*, Urbana-Champaign, IL, 2006.
24. **Boppart MD**, Volker SE, Alexander NM, Burkin DJ, Kaufman SJ. Exercise-induced increase in skeletal muscle injury in  $\alpha 7$  integrin knockout mice. *NIH-sponsored Symposium on Adult Skeletal Muscle*, Indianapolis, IN, 2007.
25. **Boppart MD**, Liu J, Alexander NM, Kaufman SJ. The  $\alpha 7 \beta 1$  integrin recruits a Sca-1<sup>+</sup>/CD45<sup>-</sup> stem cell population in skeletal muscle following exercise-induced injury. *American College of Sports Medicine, Annual Meeting*, Indianapolis, IN. *Medicine and Science in Sport and Exercise*, 40(5) S33, 2008.
26. Liu J, Valero MC, **Boppart MD**. Characterization of a Sca-1<sup>+</sup>CD45<sup>-</sup> stem cell population preferentially recruited by the  $\alpha 7 \beta 1$  integrin in skeletal muscle following eccentric exercise. *Integrative Biology of Exercise Meeting*, Hilton Head Island, SC, 2008.
27. **Boppart MD**, SJ Kaufman. Transgenic overexpression of  $\alpha 7 \beta 1$  integrin stimulates p70S6K phosphorylation in mice with a severe form of muscular dystrophy. *Federation of American Societies for Experimental Biology*, New Orleans, LA, 2009.
28. Valero MC, Liu J, Fecek C, **Boppart MD**. Muscle-specific overexpression of the  $\alpha 7 \beta 1$  integrin facilitates the appearance of mesenchymal stem cells in skeletal muscle following exercise. *Making Muscle in the Embryo and Adult*, Columbia University, New York, NY, 2009.
29. Lueders T, Meador B, Zou K, Valero MC, **Boppart MD**. Mesenchymal-like stem cells contribute to increases in muscle growth in  $\alpha 7$  integrin transgenic mice following exercise. *American College of Sports Medicine, Annual Meeting*, Baltimore, MD. *Medicine and Science in Sport and Exercise*, 42(5) S126, 2010.
30. Huntsman HD, Valero C, Zou K, Lueders T, **Boppart MD**. Skeletal muscle mesenchymal stem cells facilitate exercise-mediated myogenesis. *UIC-UIUC Workshop on Regenerative Biology and Tissue Engineering*, University of Illinois, Urbana-Champaign, IL, 2010 (Selected Best Abstract).
31. Graf BW, Chaney EJ, Valero MC, Marjanovic M, **Boppart MD**, Boppart SA. Time-lapse intravital-modal microscopy for studying dynamics of bone marrow derived cells in cutaneous wound healing. *UIC-UIUC Workshop on Regenerative Biology and Tissue Engineering*, University of Illinois, Urbana-Champaign, IL, 2010.
32. Huntsman HD, Lueders T, Zou K, Valero MC, **Boppart MD**. Skeletal muscle mesenchymal stem cells facilitate exercise-induced myogenesis. *American College of Sports Medicine, Midwest Chapter, Annual Meeting*, Indianapolis, IN, 2010.
33. Zou K, Meador B, Johnson B, Huntsman HD, Valero MC, **Boppart MD**. The  $\alpha 7 \beta 1$  integrin promotes skeletal muscle hypertrophy following eccentric exercise. *American College of Sports Medicine, Midwest Chapter, Annual Meeting*, Indianapolis, IN, 2010.
34. Graf BW, Chaney EJ, Valero MC, Marjanovic M, **Boppart MD**, Boppart SA. Long-term, time-lapse, multi-modal microscopy for tracking cell dynamics in live tissue. *Society of Photo-Optical Instrumentation Engineers (SPIE) Annual Meeting*, San Jose, CA, 2011.

35. Huntsman HD, Valero C, Zou K, Lueders T, **Boppart MD**. Skeletal muscle mesenchymal stem cells facilitate exercise-induced myogenesis. *American College of Sports Medicine, Annual Meeting*, Denver, CO, *Medicine and Science in Sport and Exercise*, 43(5) S282, 2011.
36. Zou K, Meador B, Johnson B, Huntsman H, Valero C, **Boppart MD**. The  $\alpha7\beta1$  integrin promotes skeletal muscle hypertrophy following eccentric exercise. *American College of Sports Medicine, Annual Meeting*, Denver, CO, *Medicine and Science in Sport and Exercise*, 43(5) S282, 2011.
37. Zou K, Huntsman HD, Skelton J, Adams J, Mahmassani Z, **Boppart MD**. Muscle-derived mesenchymal stem cells secrete myokines that facilitate exercise-induced skeletal muscle growth. *Advances in Skeletal Muscle Biology in Health and Disease*, University of Florida, Gainesville, FL, 2012.
38. Zou K, Huntsman HD, Valero C, Skelton J, Adams J, Mahmassani ZS, **Boppart MD**. Muscle-derived mesenchymal stem cells contribute to exercise-induced skeletal muscle hypertrophy. *Federation of American Societies for Experimental Biology*, San Diego, CA 2012.
39. Mahmassani Z, Zou K, Herring R, **Boppart MD**. The  $\alpha7\beta1$  integrin is an intrinsic regulator of mechanical strain-induced hypertrophic signaling in skeletal muscle. *American College of Sports Medicine, Annual Meeting*, San Francisco, CA, *Medicine and Science in Sport and Exercise*, 44(5) S126, 2012.
40. Pincu Y, Linden MA, Woods JA, **Boppart MD**, Baynard T. The effects of high fat diet and moderate exercise on TGF- $\beta$  signaling in mouse skeletal muscle. *American College of Sports Medicine, Annual Meeting*, San Francisco, CA, *Medicine and Science in Sport and Exercise*, 44(5) S126, 2012.
41. Huntsman HD, Valero C, Zou K, Zachwieja N, **Boppart MD**. Mesenchymal stem cells contribute to vascular growth in skeletal muscle in response to eccentric exercise. *American College of Sports Medicine, Annual Meeting*, San Francisco, CA, *Medicine and Science in Sport and Exercise*, 44(5) S567, 2012.
42. Graf BW, Chaney EJ, DeLisio M, Marjanovic M, Adie SG, **Boppart MD**, Boppart SA. Time-lapse multi-modal microscopy of bone-marrow-derived cell dynamics during cutaneous wound healing and regeneration. *American Society for Photobiology*, Quebec, Canada, 2012.
43. Zou K, Huntsman HD, **Boppart MD**. Mesenchymal stem cells contribute to exercise-induced skeletal muscle hypertrophy and strength. *Integrative Biology of Exercise Meeting*, Westminster, CO, 2012.
44. Huntsman HD, Ozturk T, **Boppart MD**, Kemkemer R. The effect of substrate stiffness on the apparent stress cells experience during cyclic strain. *Federation of American Societies for Experimental Biology*, Boston, MA, 2013.
45. Huntsman HD, Ozturk T, **Boppart MD**, and Kemkemer R. The effect of substrate stiffness on the apparent stress cells experience during cyclic strain. *IGERT and M-CNTC Annual Symposium*. UIUC, 2013 (CNST Nanotechnology Workshop 2013 Best Poster Award).
46. Huntsman HD, Zachwieja, Khazoum E, Ryan K, Kolyvas EA, and **Boppart MD**. Stem cell preconditioning and transplantation as a therapeutic strategy to revitalize growth and function in aged skeletal muscle. National Science Foundation IGERT Video and Poster Competition, 2013 (Selected, UIUC Representative for National Competition).

47. Zou K, Huntsman HD, Mahmassani Z, De Lisio MD, **Boppart MD**. Skeletal muscle-derived mesenchymal stem cells secrete paracrine factors in response to mechanical strain that are important for regeneration and growth. *American College of Sports Medicine, Annual Meeting*, Indianapolis, IN, 2013.
48. Chung HR, Wu PT, Fitschen PJ, Kistler BM, Park H, **Boppart MD**, Woods J, Wilund KR. The impact of hypercholesterolemia and physical activity on statin-associated skeletal muscle myopathy. *American College of Sports Medicine, Annual Meeting*, Indianapolis, IN, 2013.
49. Ogasawara R, Nakazato K, Sato K, **Boppart M**, Fujita S. Continuous resistance training alters exercise-induced MMP activation and expression of ECM components. *American College of Sports Medicine, Annual Meeting*, Indianapolis, IN, 2013.
50. Caliari SR, Grier WK, Hortensius RA, Mahmassani Z, **Boppart MD**, Harley BA. Multi-compartment collagen-GAG scaffolds to guide MSC differentiation for osteotendinous junction repair. *Biomedical Engineering Society, Annual Meeting*, Seattle, WA, 2013.
51. Huntsman HD, **Boppart MD**. Simultaneous reversal of age-related declines in muscle health and function with transplantation of preconditioned mesenchymal stem cells. *UIC-UIUC Stem Cell and Regenerative Medicine Workshop*, University of Illinois, Chicago, IL, 2013 (Second Prize Winner, Student Oral Presentation).
52. Huntsman HD, De Lisio M, Kolyvas E, Merritt J, Bhattacharya T, Rhodes J, **Boppart MD**. Simultaneous reversal of age-related declines in muscle health and function with transplantation of preconditioned mesenchymal stem cells. *Nathan Shock Center Conference on Aging, Stem Cells and Aging*, San Antonio, TX, 2013.
53. Pincu Y, Huntsman HD, Zou K, De Lisio M, Mahmassani, **Boppart MD**. High fat diet and exercise alter gene expression of mesenchymal stem cells derived from muscle and adipose. *6<sup>th</sup> D-Cure Symposium, New Frontiers in Diabetes Research*, Herzliya, Israel, 2013.
54. Pincu Y, Huntsman HD, Zou K, De Lisio M, Mahmassani, **Boppart MD**. Evaluation of mesenchymal stem cell contribution to adipose health in the context of high fat diet and exercise. *Federation of American Societies for Experimental Biology*, San Diego, CA, 2014.
55. Huntsman HD, De Lisio M, Kolyvas E, Merritt J, Bhattacharya T, Jensen T, Rhodes J, **Boppart MD**. Simultaneous reversal of age-related declines in muscle health and function with transplantation of preconditioned mesenchymal stem cells. *Federation of American Societies for Experimental Biology*, San Diego, CA, 2014.
56. De Lisio M, Jensen T, Sukiennik RA, **Boppart MD**. Substrate and stretch regulate muscle-resident mesenchymal stem cells to promote myoblast proliferation. *Federation of American Societies for Experimental Biology*, San Diego, CA, 2014.
57. Zou K, De Lisio M, Huntsman HD, Mahmassani, Pincu Y, Jensen T, Miller M, Olatunbosun D, Zhang A, Samuel E, **Boppart MD**. Laminin-111 improves skeletal muscle repair following eccentric exercise-induced damage. *American College of Sports Medicine, Annual Meeting*, Orlando, FL, 2014.
58. De Lisio M, Farrup J, Sukiennik RA, Clevenger N, Nallabelli J, Nelson B, Ryan K, Vissing K, **Boppart M**. Pericyte response to eccentric exercise and protein supplementation in human skeletal muscle. *Integrative Physiology of Exercise*, Miami, FL, 2014

59. Mahmassani ZS, Pincu Y, Jensen T, **Boppart MD**. IL-13 directs muscle-resident mesenchymal stem cell differentiation and function. *Integrative Physiology of Exercise*, Miami, FL, 2014.
60. Pincu Y, Huntsman HD, Zou K, De Lisio M, Mahmassani ZS, Jensen T, **Boppart MD**. Evaluation of adipose- and muscle-resident mesenchymal stem cell adipogenic potential following high fat diet and exercise. *Integrative Physiology of Exercise*, Miami, FL, 2014.
61. Grier W, Mozdzen L, Caliaro S, Weisberber D, **Boppart MD**, Harley B. Spatial control of MSC fate using 3D multi-compartment scaffolds for engineering orthopedic interfaces. *Biomedical Engineering Society, Annual Meeting*, San Antonio, TX, 2014.
62. Moy AS, Grier WK, Garg K, Boppart M, Harley B. Incorporation of laminin into collagen-GAG scaffolds for muscle tissue engineering. *UIUC Undergraduate Symposium*, 2015.
63. Hadhli J, Schuh S, Czerwinski A, Huntsman HD, Dobrucki IT, Slania S, **Boppart M**, Dobrucki LW. Molecular imaging of stem cell induced angiogenesis at the onset of microvascular complication in type-1 diabetes. *Society of Nuclear Medicine and Molecular Imaging*, Baltimore, MD, 2015.
64. Moy AS, Grier WK, Garg K, Boppart MD, Harley BA. Incorporation of laminin into collagen-GAG scaffolds for muscle tissue engineering. *Biomedical Engineering Society Annual Meeting*, Tampa, FL, 2015.
65. Marjanovic M, Li J, Bower AJ, Pincu Y, Chaney EJ, Boppart MD, Boppart SA. Effect of pericytes on skin wound healing in diabetic (*db/db*) mice. *Biomedical Engineering Society Annual Meeting*, Tampa, FL, 2015

## Grant Funding

- 1997-1998 **Dudley Allen Sargent Alumni Association Research Fund**, "Upstream regulators of the c-Jun kinase signaling pathway in skeletal muscle", PI Marni Boppart, \$2,500.
- 1998-1999 **American College of Sports Medicine Graduate Student Foundation Grant**, "Molecular regulators of JNK signaling in skeletal muscle", PI Marni Boppart, \$5,000.
- 2006-2009 **Illinois Regenerative Medicine Institute**, "Therapeutic implementation of mesoangioblast stem cells in muscular dystrophy", co-PI's Marni Boppart and Suzanne Berry, \$367,750.
- 2008 **Beckman Foundation**, "Bio-Rad ChemiDoc XRS System for high resolution multicolor fluorescent imaging", PI Marni Boppart, \$15,882.
- 2009-2010 **Mary Neer Jane Fund**, "Utilization of a novel multipotent stem cell as therapy in the alleviation of muscular dystrophy", PI Marni Boppart, \$15,000.
- 2009-2010 **Arnold O. Beckman Award (UIUC Campus Research Board)**, "Utilization of a novel multipotent stem cell as therapy in the alleviation of sarcopenia", PI Marni Boppart, \$20,880.
- 2009-2011 **National Science Foundation**, "3-D optical tracking of bone marrow derived skin stem cells", PI Stephen Boppart, co-PI Marni Boppart, \$300,000.
- 2009-2014 **Ellison Medical Foundation**, "Utilization of  $\alpha 7$  integrin-derived stem cells as therapy for the alleviation of sarcopenia", PI Marni Boppart, co-PIs Stephen Boppart and Bradford Schwartz, \$400,000.

2009 **National Science Foundation (Major Instrumentation Grant)**, “Acquisition of a molecular imaging instrument for dynamic material and biological systems (PET)”, PI Stephen Boppart (4 co-PIs + 49 users), \$1,999,997.

2009 **National Institutes of Health (S10 – Shared Instrumentation Grant)**, “High-resolution in vivo ultrasound imaging using VisualSonics VEVO2100 system”, PI William O’Brien (9 major + 5 minor users; M Boppart major user), \$499,098.

2010-current **National Science Foundation (IGERT)**, “Cellular & Molecular Mechanics and Bio-Nanotechnology (CMMB)”, Integrative Graduate Education and Research Traineeship (IGERT) to support graduate students in the study of cellular mechanotransduction in collaboration with the University of Illinois Center for Cellular Biomechanics (23 UIUC professors), \$3,200,000.

2010-2013 **National Science Foundation**, “Advanced optical imaging of 3-D cell dynamics in engineered skin”, PI Stephen Boppart, co-PIs Marni Boppart, Hyunjoon Kong, and Mark Shannon, \$600,000.

2011-2013 **National Science Foundation IGERT-CMMB Graduate Student Fellowship (to Heather Huntsman)**, “Alleviation of sarcopenia using mechanical strain-induced myogenic stem cells”, PI Marni Boppart, co-PIs Hyunjoon Kong, Stephen Boppart, Matthew Wheeler, Derek Milner, \$90,000 (competitive renewal 2012-2013).

2011-2013 **Center on Health, Aging, and Disability (CHAD)**, “The impact of hypercholesterolemia and physical activity on statin-associated skeletal muscle myopathy”, PI Marni Boppart, co-PIs Ken Wilund and M. Sivaguru, \$15,000.

2012-2015 **Center for Nutrition, Learning and Memory/Abbott Nutrition**, “Nutritional enhancement of cognition through stem cells”, PI Marni Boppart, co-PI Justin Rhodes, \$600,000.

2012-2014 **American College of Sports Medicine Foundation Grant**, “Use of laminin-111 to increase skeletal muscle hypertrophy”, PI Kai Zou, Faculty Mentor Marni Boppart, \$5,000.

2013-2015 **National Institutes of Health R21**, “Patterning instructive biomolecular cues into collagen scaffolds for tendon insertion regeneration”, PI Brendan Harley, co-PI Marni Boppart, \$422,583.

2013-2014 **Diabetic Complications Consortium Pilot and Feasibility Program**, “Molecular imaging of stem cell induced reversal of vascular complications in DM”, PI Wawrzyniec Dobrucki, co-PIs Marni Boppart and Andrew Smith, \$159,518.

2014-2015 **American College of Sports Medicine Foundation Grant**, “Adipose resident pericyte response to high fat diet and exercise”, PI Yair Pincu, Faculty Mentor Marni Boppart, \$5,000.

2014-2016 **National Institutes of Health R21**, “Alpha7 integrin-mediated hypertrophic signaling and growth in skeletal muscle”, PI Marni Boppart, \$417,753.

2014-2015 **Carver Biotechnology Center Fluidigm C1 Single Cell Genomics Grant Promotion**, “Characterization of two types of pericytes in adipose tissue using multicolor flow cytometry and single cell gene expression approaches”, PI Yair Pincu, Faculty Mentor Marni Boppart, \$5,000.

2014 **UIUC OVCR Equipment Grant**, “In vivo 3-D optical and x-ray CT imaging system”, PI Stephen Boppart, multiple users listed.

2014 **UIUC OVCR Equipment Grant**, “All-in-one plate reader/imager for high throughput screening”, PI Zeynep Madak-Ergogan, multiple users listed.

2015 **Mayo Clinic Summer Undergraduate Research Fellowship (SURF)**, PI Kelly Twohig, Faculty Mentor Marni Boppart

2015-2020 **National Institutes of Health K23**, “Translational study of vocal exercise dose-response, PI Aaron Johnson, Faculty Mentors Marni Boppart and Eddie McAuley, \$969,157.

2015-2019 **National Institutes of Health RO1**, “Pericyte-based therapy for diabetic wound healing”, MPI Marni Boppart and Stephen Boppart, pending (impact score 38).

2015-2019 **National Institutes of Health RO1**, “Pericyte regulation of the aged neuromuscular junction”, PI Marni Boppart, co-PIs Aaron Johnson and Hyun Joon Kong, pending.

2015-2017 **National Institutes of Health R21**, “Development of a liposomal nanostimulator to improve stem cell-based revascularization therapies”, PI Hyun Joon Kong, co-PI Marni Boppart, pending.

2015-2017 **American Diabetes Association**, “Use of multimodal imaging in evaluation of adipose-derived stem cell therapy in treatment of diabetic vascular complications, PI Wawrzyniec Dobrucki, co-PIs Marni Boppart and Michael Insana, pending.

## Collaborators

Justin Rhodes, UIUC, Psychology, Neuroscience Program  
 Kristian Vissing, Aarhus University, Denmark, Department of Public Health-Sport Science  
 Stephen Boppart, UIUC, Electrical and Computer Engineering & Bioengineering  
 Brendan Harley, UIUC, Chemical and Biomolecular Engineering  
 Wawrzyniec Dobrucki, UIUC, Bioengineering  
 Hyun Joon Kong, UIUC, Chemical and Biomolecular Engineering  
 Aaron Johnson, UIUC, Speech and Hearing Sciences  
 Ken Wilund, UIUC, Kinesiology and Community Health  
 Dean Burkin, University of Nevada, Reno, Pharmacology  
 Troy Hornberger, U Wisconsin-Madison, School of Veterinary Medicine, Comparative Biosciences  
 Jie Chen, UIUC, Cell and Developmental Biology

## Academic Teaching Experience

### Courses Currently Taught

- **KIN 450 Exercise Biochemistry**, Department of Kinesiology and Community Health, University of Illinois, Urbana-Champaign, IL  
2007-2009: Guest Lecturer, Exercise and Extracellular Matrix
- **KIN 494/470 Exercise Endocrinology**, Department of Kinesiology and Community Health, University of Illinois, Urbana-Champaign, IL  
2007-current: Director, new course
- **KIN 591 Exercise Physiology Graduate Seminar**, Department of Kinesiology and Community Health, University of Illinois, Urbana-Champaign, IL  
2008, 2011, 2012: Director

- **KIN 150 Biosciences of Human Movement (Exercise Physiology)**, Department of Kinesiology and Community Health, University of Illinois, Urbana-Champaign, IL, 2008-current: Director, course modernization/revision
- **KIN 594/552, Advanced Skeletal Muscle Physiology**, Department of Kinesiology and Community Health, University of Illinois, Urbana-Champaign, IL  
2010-current: Director, new course
- **KIN 594, Advanced Exercise Physiology Laboratory Methods**, Department of Kinesiology and Community Health, University of Illinois, Urbana-Champaign, IL  
2010-current: Co-Instructor, assisted new course
- **KIN 565, Teaching in the Professoriate**, Department of Kinesiology and Community Health, University of Illinois, Urbana-Champaign, IL  
2009: Mentor for Melinda Flegel  
2010: Mentor for Melissa Linden  
2013: Mentor for Michael Munroe
- **KIN 365, Civic Engagement in Wellness**, Department of Kinesiology and Community Health, University of Illinois, Urbana-Champaign, IL  
2012: Guest Lecturer, Physical Wellness in Older Adults

### **Courses Previously Taught**

- **Undergraduate Teaching Assistant for General Biology**, Department of Biological Sciences, University of New Hampshire, Durham, NH, 1989
- **HS 574 Clinical Exercise Physiology** Department of Health Sciences, Sargent College, Boston University, Boston, MA

### **Military Teaching Experience**

- **Aerospace Physiology Instructor:** United States Air Force, Brooks AFB, San Antonio, TX, 1992-1993, topics: situational awareness, human factors, hypoxia, aircraft evacuation, parasail training.
- **Aerospace Physiology Instructor:** United States Air Force, Offutt AFB, Omaha, NE, 1993-1996; 10-40 military and civilian aviators/class; 2-3 classes/wk, topics: situational awareness, human factors, hypoxia, spatial disorientation, acceleration, G force protection, exercise, nutrition, visual illusions, fatigue, noise protection, thermal stress, hyperbarics.
- **Aerospace Physiology Lecturer:** United States Air Force, Aerospace Physiology Lecturer, 1992-1996; 40-300 military and civilian personnel/lecture, special topics: heat stress, fatigue, exercise, nutrition, visual illusions, fitness testing.

### **Supervision of Student Research**

*Director of Research*

- **Postdoctoral Fellows and Medical Residents**

*M. Carmen Valero*, Ph.D., Postdoctoral Fellow/Research Specialist, 2007-2011, conducted research on extracellular matrix interaction with muscle-derived mesenchymal stem cells following mechanical strain, currently employed in Department of Entomology, UIUC

*Jianming Liu*, Ph.D., Postdoctoral Fellow, 2007-2008, conducted research on role for  $\alpha 7$  integrin in mesenchymal stem cell appearance in skeletal muscle, currently postdoctoral fellow at Children's Hospital, Harvard Medical School

*Nadia Nasreen*, M.D. Medical Resident, Carle Hospital, 2008-2010, conducted research on  $\alpha 7$  integrin and inflammation, currently internal medicine physician

*Michael De Lisio*, Ph.D., Postdoctoral Fellow, 2012-2013  
Project Title: Regulation of muscle-derived mesenchymal stem cell function in response to environmental cues, currently Assistant Professor, Department of Kinesiology & Community Health, UIUC.

*Koyal Garg*, Ph.D., Postdoctoral Fellow, 2014-current  
Project Title: Laminin-111-mediated rejuvenation of aged skeletal muscle

#### • Graduate Students

*Tara Lueders*, M.S., Kinesiology and Community Health (KCH), UIUC, 2009-2010  
Thesis Title: The  $\alpha 7\beta 1$  integrin accelerates exercise-induced myogenesis  
Currently orthodontics resident, University of Illinois at Chicago

*Kai Zou*, Ph.D., KCH, UIUC, 2009-2013  
Dissertation Title: Development of novel strategies to improve skeletal muscle repair and adaptation following eccentric exercise  
Currently postdoctoral fellow, East Carolina University, Dr. Joe Houmard

*Heather Huntsman*, Ph.D., KCH, UIUC, 2010-2014  
Dissertation Title: Preconditioned muscle-derived mesenchymal stem cells revitalize muscle growth and function in aged skeletal muscle  
Currently postdoctoral fellow, National Institutes of Health, Dr. Andre Larochelle

*Ruirui Yang*, Visiting Ph.D. Candidate, Beijing Sport University, China, 2010-2011  
Project Title: Inhibition of NF- $\kappa$ B signaling in skeletal muscle by overexpression of the  $\alpha 7\beta 1$  integrin

*Ziad Mahmassani*, Ph.D. Candidate, KCH, UIUC, 2011-current  
Dissertation Title: Investigation of a role for the  $\alpha 7\beta 1$  integrin as a mechanotransducer of hypertrophic signaling in skeletal muscle

*Yair Pincu*, Ph.D. Candidate, KCH, UIUC, 2011-current  
Dissertation Title: Adipose-resident pericyte response to high fat diet and exercise

*Michael De Lisio*, Visiting Ph.D. Candidate, McMaster University, Canada, 2011-2012  
Project Title: Extracellular matrix regulation of mesenchymal stem cell function in skeletal muscle  
Currently faculty, University of Illinois at Urbana-Champaign, Kinesiology & Community Health

*Jean Farup*, Visiting Ph.D. Candidate, Aarhus University, Denmark, 2013  
Project Title: Evaluation of mesenchymal stem cells in human skeletal muscle following exercise

*Michael Munroe*, Ph.D. Candidate, KCH, UIUC, 2013-current

*Nicholas (Cole) Hartwigsen*, M.S. Candidate, KCH, UIUC, 2013-current

*Svyatoslav (Slav) Dvoretzkiy*, M.S. Candidate, KCH, UIUC, 2014-current

• **Undergraduate Students**

*Nicole Alexander*, Kinesiology & Community Health (KCH), 2005-2007, HHMI Fellowship

*Ryan McCombs*, MCB, 2007-2008

*Dev Sethi*, MCB, 2007-2008

*Don Lambka*, KCH, 2008-2009

*Diana Panek*, MCB, 2008-2009, Senior Thesis: Effect of the  $\alpha 7$  Integrin and Mesenchymal-Like Stem Cells in Promoting Skeletal Muscle Angiogenesis in Mice

*Jordan Orr*, KCH, 2008-2009

*Lauren Reader*, MCB, 2009-2010

*Megan Abel*, Material Science Engineering, 2009-2010

*Michael Hagstrom*, MCB, 2009-2010

*Brian Johnson*, KCH, 2009-2011

*Cassie Drummond*, MCB, 2009-2011

*Dan Morgan*, MCB, 2010-2011

*Nicole Zachwieja*, KCH, 2010-2012

*Danielle Weech*, KCH, 2010-2011

*Max Woolf*, KCH, 2010-2012

*Pauline Ripchik*, MCB, 2011-2012, Senior Thesis: Examination of the Arteriogenic Response to Voluntary Wheel Training in Young and Adult Skeletal Muscle (Honors)

*Joseph Adams*, MCB, 2011-2012

*Jack Skelton*, KCH, 2011-2012

*Bridget Jackson*, KCH, 2011-2012

*Cody Lindsey*, KCH, 2011-2012

*Ryan Herring*, MCB, 2011-2013

*Cameron Baldes*, MCB, 2011-2013

*Kelly Ryan*, MCB, 2012-2013

*Zak Kammer*, Integrative Biology, 2012-2013, Honors Program

*Anthony Zhang*, KCH, 2012-2013

*Eli Khazoum*, KCH, 2012-current

*Paul Jung*, KCH, 2012-current, James Scholar

*Adam Sukiennik*, KCH, 2012-2013

*Adam Joseph*, KCH, 2012-current, James Scholar

*Justin Biondo*, KCH, 2012-2013

*Sabina Cashin*, MCB, 2012-2014

*Emily Kolyvas*, MCB, 2012-2014, Senior Thesis:  $\alpha 7$  Integrin, a Potential Therapeutic Target in the Preservation of Skeletal Muscle Repair over the Lifespan (High Honors)

*Urvi Khare*, KCH, 2012-2014

*Nicole Clevenger*, MCB, 2013, James Scholar

*Christopher Ng*, Integrative Biology, 2013

*Emily Samuel*, MCB, 2013

*Harsh Patel*, Economics, 2013-current

*Monica Rossi*, MCB, 2013-2014

*Julian Nallabelli*, MCB & FSHN (Nutrition), 2013

*Sumin Kim*, MCB, 2013

*Shane Shafi*, MCB, 2013-current

*Matt Miller*, KCH, 2013-2014

*Dami Olatunbosum*, MCB, 2013-2014

*Bianca Mulaikal*, KCH, 2013-2014

*Victoria Knauf*, KCH, 2013-current

*Jamey Cooper*, MCB, 2013-2014  
*Ryan Brander*, KCH, 2014-current  
*David Rossi*, MCB, 2014-current  
*Kelly Twohig*, Chemistry, 2014-current, James Scholar  
*Shamil Shafi*, Finance, 2014-current  
*Mayand Vakil*, MCB, 2014  
*Alay Parikh*, MCB, 2014-current  
*Brittany Cline*, MCB, 2014-current

• **Research Staff**

*Dan Morgan*, MCB Major, Research Technician, 2010-2011  
*Collin Kurtenbach*, Bioengineering Major, Research Technician, 2011-2012  
*Kevin Urbain*, Bioengineering Major, Research Technician, 2012-2013  
*Emily Kolyvas*, MCB Major, Research Technician, 2013-2014  
*Victoria Knauf*, KCH Major, Research Technician, 2014-current

*Faculty Committee Member*

*Cynthia Mann*, Ph.D., Department of Chemical Engineering, UIUC, 2009  
 Dissertation Title: Applications of traction force microscopy in measuring adhesion molecule dependent cell contractility

*Ben Meador*, Ph.D., KCH, UIUC, 2010  
 Dissertation Title: Statin-associated skeletal muscle damage and its interactions with novel or accustomed exercise: Functional and mechanistic assessments

*Yejing Ge*, Ph.D., Department of Cell and Developmental Biology, UIUC, 2011  
 Dissertation Title: Regulation of myocyte fusion in skeletal muscle maturation

*Brandt Pence*, Ph.D., KCH, UIUC, 2012  
 Dissertation Title: Short-term exercise training: Implications for wound healing in obese mice

*Benedikt Graf*, Ph.D., Department of Electrical and Computer Engineering, UIUC, 2012  
 Dissertation Title: Multimodal intravital imaging of tissue structure and cell dynamics in skin using integrated optical coherence and multiphoton microscopy

*Stephen Martin*, Ph.D., KCH, UIUC, 2013  
 Dissertation Title: Effects of voluntary wheel running and forced treadmill running on inflammation-induced behavioral abnormalities in young and old mice

*Marc Cook*, Ph.D., KCH, UIUC, 2013  
 Dissertation Title: Moderate exercise training exacerbates inflammation and mortality in DSS-induced colitis in mice

*Hae Ryong Chung*, Ph.D. Candidate, KCH, UIUC, 2014  
 Dissertation Title: The impact of hypercholesterolemia and physical activity on statin-associated skeletal muscle myopathy

*Paula Poh*, Ph.D. Candidate, KCH, UIUC, Expected May 2015  
 Dissertation Title: Effects of different thermal stimuli during simulated hemorrhaging on various aspects of cognitive performance

*Rebecca Hortensius*, Ph.D. Candidate, Bioengineering, UIUC, Expected May 2016

Dissertation Title: Bioinspired alterations of collagen-glycosaminoglycan scaffolds for tendon regeneration

*William Grier*, Ph.D. Candidate, Chemical and Biomolecular Engineering, UIUC, Expected May 2016

Dissertation Title: Enhancement of spatially-controlled MSC responses in a multi-compartment CG scaffold for tendon-bone junction regeneration

*James Scholar Mentor for Honors Credit – KIN 150*

Amanda Spies, Spring 2009

Katherine Clarizio, Spring 2009

Lisa Melbourn, Spring 2009

Jennie Aten, Fall 2009

Alyssa Fullerton, Fall 2009

Christopher Burgielski, Fall 2010

Maren Dixon, Fall 2010

Wyneisha McIntosh, Fall 2010

Aimee Gottlieb, Fall 2011

Kristen Lanxon, Fall 2011

Alexis Anderson, Spring 2012

Slav Dvoretzkiy, Spring 2012

Allison Gates, Fall 2012

Matthew Moersch, Spring 2013

Konstantin Geogiev, Spring 2013

Sara Heunisch, Fall 2013

Leya Allind, Fall 2013

Morgan Swinger, Spring 2014

Randall Peterson, Spring 2014

Elayna Pappas, Fall 2014

Brent Black, Spring 2015

Shirali Shah, Spring 2015