

**Scott Medler**  
**Associate Professor**  
**School of Health Professions**  
**St. Bonaventure University**  
**St. Bonaventure, NY 14778**

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**Academic Appointments**

Associate Professor School of Health Professions <b>St. Bonaventure</b>	June 2020 - present
Chair, Biology Department <b>SUNY Fredonia</b>	July 2019 – May 2020
Associate Professor Biology Department <b>SUNY Fredonia</b>	2016 - 2020
Assistant Professor Biology Department <b>SUNY Fredonia</b>	2011 - 2016
Research Assistant Professor Department of Biological Sciences <b>University at Buffalo</b>	2004 – 2011
Assistant Biology Professor Center for Arts and Sciences <b>Community College of Denver</b>	2003 – 2004
NIH Postdoctoral Fellow Department of Biology <b>Colorado State University</b>	2000 – 2003
Instructor Department of Biological Sciences <b>Louisiana State University</b>	1998 – 1999

**Education**

**Louisiana State University**, Department of Biological Sciences. 1998. Ph.D. Zoology  
Dissertation: Structure and function of intrinsic gill muscles in freshwater bivalve molluscs.

**San Diego State University**, Department of Biology. 1989 - 1992. MS candidate in Biology  
Thesis research: Renal contributions to water balance in Anna's hummingbird.

**Texas A & M University**. 1989. BS Zoology

**Research Experience**

<b>SUNY Fredonia</b>	2016 – present. Associate Professor
	2011 – 2016. Assistant Professor
<b>University at Buffalo</b>	2004 – 2011. Research Assistant Professor
<b>Colorado State University</b>	2003 - 2004. Postdoctoral Researcher
	2000 – 2003. NIH Postdoctoral Fellow
<b>Louisiana State University</b>	1993 - May 1998. Ph.D. Student

**La Jolla Pharmaceutical Company** 1992 - 1993. Research Assistant  
**San Diego State University** 1989 - 1992. M.S. Student  
**Texas A & M University** 1988 - 1989. Laboratory Assistant

## **Teaching Experience**

### **SUNY Fredonia. 2011 – 2020**

Mammalian Physiology  
Mammalian Physiology Lab  
Muscles and Movement  
Comparative Anatomy  
Comparative Anatomy Lab  
Neurobiology  
Advanced Neurophysiology Lab  
Introduction to Cell and Molecular Biology  
Human Biology  
Human Anatomy and Physiology Lab  
Health Professions Careers  
Studying for Success  
Student Ambassadors

### **University at Buffalo. 2004 – 2011**

Integrative Neuroscience (lectures on motor systems)  
Perspectives in Human Biology I  
Perspectives in Human Biology II  
Evolutionary Biology  
Physiology Colloquium

### **Community College of Denver. 2003 - 2004**

Human Anatomy and Physiology I  
Human Anatomy and Physiology II  
Introduction to Human Anatomy

### **Colorado State University. 2002**

Biochemical Adaptation

### **Louisiana State University. 1998 - 1999**

Human Physiology  
Introductory Zoology  
Vertebrate Physiology Labs (Coordinator)

### **Louisiana State University. 1993 - 1997**

Cellular Physiology Lab  
Vertebrate Physiology Lab  
Comparative Anatomy Lab  
Introductory Biology Lab

### **San Diego State University. 1989 - 1992**

Human Anatomy Lab  
Health Careers Opportunity Program  
Introductory Biology Lab

## **University Committees**

Departmental Personnel Committee: 2016 – 2019, Chair 2018/19  
Institutional Animal Care and Use Committee (IACUC), Chair: 2013-2020  
CLAS Brown Bag Lunch Committee: 2015-2020  
Departmental Graduate Committee: 2016 - 2020  
Health Professions Advising Committee: 2011- 2020  
First Year Experience Committee, Chair: 2014 - 2020  
Science Education Partnership: 2012- 2020  
Patrie Endowment Committee: 2012 - 2020

Regional Science Consortium. Tom Ridge Environmental Center at Presque Isle, Erie Penn. Alternate Board Member: 2012-2020

Faculty Senate Subcommittee-Adjunct and Contingent Faculty. Science Representative: 2012-2014

## Grant Support

**National Institutes of Health (NIAMS) 2007-2010.**

RO3: Myosin heavy chain polymorphism in hybrid skeletal muscle fibers. \$237,000

**University at Buffalo UB 2020 Interdisciplinary Research Development Fund (IRDF) 2006-2007**

Scale effects on the musculoskeletal system of terrestrial crabs \$36,000

**National Institutes of Health (NIAMS) NIH postdoctoral fellowship (NRSA) 2000-2003**

Muscle fiber type switching in the lobster claw \$125,160

## Peer Reviewed Publications (26) (undergraduates students are underlined)

Ewing, M.D. and **Medler, S.** (in press) Quantifying the effects of two local anesthetics on the crayfish stretch receptor organ: an integrated neurophysiology lab. *Journal of Undergraduate Neuroscience Education*.

**Medler, S.** (2019) Mixing it up: biological significance of hybrid skeletal muscle fibers. *Journal of Experimental Biology* 222: 1 – 15.

Larson, L., Lioy, J., Johnson, J, and **Medler, S.** (2019) Transitional hybrid skeletal muscle fibers in the development of the rat soleus. *J. Histochem Cytochem* 67: 891 – 900.

**Medler S** (2019) Anesthetic MS 222 eliminates nerve and muscle activity in frogs used for physiology teaching lab. *Advances in Physiology Education* 43: 69 – 75.

Wittmore SB, Hoglin B, Green M, **Medler, S** (2015) Stride frequency in relation to allometric growth in ghost crabs (*Ocypode quadrata*). *J. Zool.* 296: 286-294.

Denies M, Johnson, J, Maliphol, AB, Bruno, M, Kim, A, Rizvi, A, Rustici, K, and **Medler, S** (2014) Diet induced obesity alters skeletal muscle fiber types of male but not female mice. *Physiological Reports* 2: e00204.

**Medler S**, and Harrington, F (2013) Measuring dynamic kidney function in an undergraduate physiology laboratory. *Advances in Physiology Education* 37: 384-391.

Brummer H, Zhang MY, Piddoubny M, and **Medler S** (2013) Hybrid fibers transform into distinct fiber types in maturing mouse muscles. *Cells Tissues and Organs* 198: 227-236.

Zhang, MY, Zhang, WJ, and **Medler, S** (2010). The continuum of IIX/IIB hybrid fibers in normal mouse muscles: relative proportions and distribution of isoforms. *American Journal of Physiology Regulatory Integrative Comp Physiol* 299: R1582-R1591.

MacLea, KS, Covi, JA, Kim, HW, Chao, E, **Medler, S**, Chang, ES, and Mykles, DL (2010) Myostatin from the American lobster, *Homarus americanus*: cloning and effects of molting on expression in skeletal muscles. *Comparative Biochemistry and Physiology* 157A: 328-337.

Glaser, BW, You, G, Zhang, M, and **Medler, S.** (2010) Relative proportions of hybrid fibers are unaffected by 6 weeks of running exercise in mouse skeletal muscles. *Experimental Physiology* 95: 211-221.

Perry, MJ, Tait, J, Hu, J, White, SC, and **Medler, S.** (2009) Skeletal muscle fiber types in the ghost crab, *Ocypode quadrata*: implications for running performance. *Journal of Experimental Biology* 212: 673-683.

**Medler, S** and Hulme, K (2009). Power output from striated muscles performing cyclical contractions: patterns and constraints. *Comparative Biochemistry and Physiology* 152A: 407-417.

**Medler, S**, Chang, ES, and Mykles, DL (2007). Muscle-specific calpain is localized in regions near motor endplates in differentiating lobster claw muscles. *Comparative Biochemistry and Physiology – A* 148: 591 - 598.

**Medler, S**, Lilley, TR, Riehl, JH, Mulder, EP, Chang, ES, and Mykles, DL (2007). Myofibrillar gene expression in differentiating lobster claw muscles. *Journal of Experimental Zoology* 307A: 281-295.

- Medler S**, Brown KJ, Chang ES, and Mykles DL (2005) Eye-stalk ablation has little effect on actin and myosin heavy chain expression in adult lobster skeletal muscles. *Biological Bulletin* 208: 127 – 137.
- Medler S**, Lilley T, and Mykles, DL (2004) Fiber polymorphism in lobster skeletal muscles: continuum between slow phasic (S<sub>1</sub>) and slow tonic (S<sub>2</sub>) muscle fibers. *Journal of Experimental Biology* 207: 2755-2767
- Koenders A, Lamey TM, **Medler S**, West JM, and Mykles DL (2004) Two fast-type fibres in the claw closer and abdominal deep muscles of the Australian freshwater crustacean, *Cherax destructor*, differ in Ca<sup>2+</sup>-sensitivity and troponin I isoforms. *Journal of Experimental Zoology* 301A: 588-598.
- Medler S** and Mykles DL (2003) Analysis of myofibrillar proteins and transcripts in skeletal muscles of the American lobster, *Homarus americanus*: variable expression of myosins, actin, and troponins in fast, slow-twitch, and slow-tonic fibres. *Journal of Experimental Biology* 206: 3557-3567.
- Medler S** (2002) Comparative trends in shortening velocity and force production in skeletal muscles. *American Journal of Physiology Regulatory Integrative Comp Physiol* 283: R368-R378.
- Mykles D L, **Medler S**, Koenders A, and Cooper RL (2002) Myofibrillar protein isoform expression is correlated with synaptic efficacy in slow fibres of the claw and leg opener muscles of crayfish and lobster. *Journal of Experimental Biology* 205: 513-522.
- Medler S** and Silverman H (2001) Muscular alteration of gill geometry *in vitro*: implications for bivalve pumping processes. *Biological Bulletin* 200: 77-86
- Medler S**, Thompson C C, Dietz T H, and Silverman H (1999) Ionic effects on intrinsic gill muscles in the freshwater bivalve, *Dreissena polymorpha*. *Comparative Biochemistry and Physiology* 112A: 163-172.
- Medler S** and Silverman H (1998) Extracellular matrix and muscle fibers in the gills of freshwater bivalves. *Invertebrate Biology* 117: 288-298.
- Medler S** and Silverman H (1997) Functional organization of integral gill muscles in *Dreissena polymorpha* (Mollusca: Bivalvia) and response to transmitters *in vitro*. *Invertebrate Biology* 116: 200-212.
- Medler S** (1995) Physiological time and the measurement of glomerular filtration rate. *Journal of Theoretical Biology* 176: 59-65.

### Book Chapters

**Medler S** and Mykles DL. 2015. Muscle Structure, Fiber Types, and Physiology. Chapter 4 in: *The Natural History of Crustaceans*. ES Chang and M Thiel, Ed. Oxford University Press, Oxford.

Mykles DL and **Medler S**. 2015. Muscle Plasticity. Chapter 5 in: *The Natural History of Crustaceans*. ES Chang and M Thiel, Ed. Oxford University Press, Oxford.

### Presentations (35) (undergraduates students are underlined)

- Douglas T, Abrantes AA, and **Medler S** (2017) Arterial blood supply to skeletal muscles in ghost crabs. SICB Annual Meeting. New Orleans, LA. *Integrative and Comparative Biology* 57: Supplement 1: E42-E42.
- Bunge ZD, Biber J, Ferguson SB, and **Medler S** (2017) Integrating research and undergraduate education: Cloning ghost crab myosins. *Integrative and Comparative Biology* 57: Supplement 1: E22-E22.
- Larson LR, Johnson J, and **Medler S** (2015) Fiber type asymmetries in growing skeletal muscles. SICB Annual Meeting. West Palm Beach, FL. *Integrative and Comparative Biology* 55: Supplement: 1: E289-E289
- Medler S** and Harrington F (2014) Measuring dynamic kidney function in an undergraduate physiology lab. American Physiological Society Institute on Teaching and Learning. Bar Harbor, ME, June 23 – 27.
- Johnson J, DeNies M, **Medler S** (2014) Diet induced obesity alters skeletal muscle fiber types of male but not female mice. 16<sup>th</sup> Annual Student Research and Creativity Expo, SUNY Fredonia, May 1.

- DeNies M., Johnson J., Bruno M., Kim A., Green M., and Medler S (2013) Diet induced obesity alters skeletal muscle fiber types of male but not female mice. 9<sup>th</sup> Annual Research Symposium. Regional Science Consortium, Tom Ridge Environmental Center at Presque Isle, Erie, PA.
- Johnson J, DeNies M, Kim A, Green M, Bruno M, and Medler S (2013) Obesity is responsible for a fundamental physiological shift to fast twitch fiber types in male mice. 15<sup>th</sup> Annual Student Research and Creativity Expo, SUNY Fredonia, May 2.
- Larson L and **Medler S** (2013) Asymmetrical hybrid fibers and myosin heavy chain isoforms in mouse soleus muscles. 15<sup>th</sup> Annual Student Research and Creativity Expo, SUNY Fredonia, May 2.
- Whittemore SB, Morris K, and Medler S (2013) Stride frequency and body size in running ghost crabs. SICB Annual Meeting, San Francisco, CA.
- Rizvi A, Rustici K, Johnson J, Denies M, and Medler S (2012) Muscle fiber types in obese mice: Does a high fat diet cause changes in skeletal muscle phenotype? 14<sup>th</sup> Annual Student Research and Creativity Expo, SUNY Fredonia, April 26.
- Piddoubny, M and Medler, S. (2010) Hybrid muscle fibers in developing mice. 6th Annual Celebration of Academic Excellence, University at Buffalo, April 1, 2010.
- Medler, S** (2009) Myosin heavy chain polymorphism in mouse hybrid muscle fibers. Workshop on Multi-Scale Muscle Mechanics. Woods Hole, MA.
- Medler, S** (2008) Muscle fiber types in ghost crabs: implications for running performance. The Integrative Biology of Exercise V. American Physiological Society Intersociety Meeting. Hilton Head, SC.
- Hu J, Tate J, and Medler, S (2007) Molecular mechanisms available to “fine-tune” muscle function in the ghost crab, *Ocypode quadrata*. Sigma Xi Research Day, University at Buffalo, April 24, 2007.
- Perry M, Feuerstein J, and Medler S (2006) Why are terrestrial crabs so fast? Characterization of Leg Muscles in the Ghost Crab, *Ocypode quadrata*. Sigma Xi Research Day, University at Buffalo, April 26, 2006.
- Lilley, TR, Medler, S., and Mykles, DL (2005) Lobster myocyte enhancing factor (Mef2): cloning and tissue expression in response to elevated ecdysteroid. SICB Annual Meeting, Orlando, FL.
- Lilley T, Medler S, Riehl J, and Mykles DL (2005) Variable expression of myofibrillar protein isoforms in juvenile lobster claw muscles. SICB Annual Meeting, San Diego, CA.
- Spencer N and Medler S (2004) Using the Visible Human Dissector in Undergraduate Education: Examination of Hip Muscles. Annual Meeting of the Southwestern and Rocky Mountain Division of AAAS. Denver, Colorado.
- Ascione M, MacQueen K, and Medler S (2004) Using the Visible Human Dissector in the Classroom: An Examination of Herniated Discs. Annual Meeting of the Southwestern and Rocky Mountain Division of AAAS. Denver, Colorado.
- Lilley T, Medler S, and Mykles DL (2004) Coordinated expression of myofibrillar protein isoforms in slow fibers of lobster superficial abdominal muscles. Int. Comp. Biology, New Orleans, LA.
- Medler S, Chang ES, and Mykles DL** (2003) Myofibrillar gene expression in lobster muscles. Int. Comp. Biology 42.
- Medler S and Mykles D L** (2002) Myosin heavy chain isoform distribution and expression in lobster skeletal muscles. The Physiologist 45: 328.
- Zhou JB, **Medler S, Chang ES, and Mykles DL** (2002) Cloning an expression of lobster calcineurin A. Int. Comp. Biology 42: 1342.
- Medler S, Mulder EP, Chang E S, and Mykles DL** (2001) Muscle fiber-type switching in the developing lobster claw: timing during the intermolt cycle. Am Zool 41: 1524.
- Medler S** (2001) Comparative analysis of maximum shortening velocity and maximum tetanic tension: Implications for skeletal muscle design. Faseb J 15: A89.
- Medler S** (2000) Comparative trends in maximum shortening velocity and tetanic tension: influence on skeletal muscle diversity. Am Zool 40: 1129.
- Mykles DL, Mulder E P, **Medler SA,** and Chang ES (2000) Developmentally-regulated fiber-type switching in claw muscles of American lobster, *Homarus americanus*. Am Zool 40: 1143.
- Medler S and Silverman H** (1998) Muscles of the bivalve pump. Am Zool 38: A573.
- Medler S and Silverman H** (1997) Muscular regulation of interfilament distance and ostial dimension in three freshwater bivalves. National Shellfisheries Association 89th Annual Meeting.

- Medler S**, Silverman H, Dietz TH, and Thompson C (1997) The effects of elevated salinity on the gill musculature of *Dreissena polymorpha*. National Shellfisheries Association 89th Annual Meeting.
- Medler S** and Silverman H (1997) Comparative structure of connective tissue the gill of *D. polymorpha*. 7<sup>th</sup> International Congress on Zebra Mussels and other Nuisance Species.
- Medler S**, Silverman H, Lynn JW, and Dietz TH. (1996) Ion and transmitter effects on *D. polymorpha* gill musculature. 6th International Congress on Zebra Mussels and other Nuisance Species.
- Medler S** and Silverman H (1995) Organization of gill musculature in the zebra mussel, *Dreissena polymorpha*. *Am Zool* 33(5): 96A.
- Plunkett, ML, **Medler SA**, Blackwood WC, and Coutts SM (1994) LJP 249 delays expression of anti – ds DNA antibodies and improves survival in male BXSB mice. Abstracts of Papers of the American Chemical Society 207: 114.
- Medler S** and Beuchat CA (1991) Measurement of glomerular filtration rate in conscious hummingbirds. *Am Zool* 31(5): A44.

### Workshops Offered

November 2015. PKAL Upstate New York Conference. Workshop on engaging UG students in research. In collaboration with Scott B. Ferguson (*SUNY Fredonia*) and Adam Rich (*SUNY Brockport*).

March 2015. Professional Development Center workshop on Engaging UG students in Research.

October 2014. Profession Development Center workshop on Using Case Studies in Teaching.

### Awards

- 2019 American Physiological Society Fellow
- 2015 William T. and Charlotte N. Hagan Young Scholar Award
- 2015 Profession Development Center Associate - \$750
- 2014 Professional Development Award for Teaching and Learning - \$600
- 2014 United University Professionals Individual Development Award - \$825
- 2014 United University Professionals Individual Development Award - \$1000
- 2014 Summer Research and Creativity Award - \$1500
- 2011 Instructional Incentive Award for Classroom Innovations - \$2000
- 2006 United University Professionals Individual Development Award - \$1000
- 2005 United University Professionals Individual Development Award - \$1000
- 1991 Sigma Xi Grant in Aid: Glomerular filtration rate in hummingbirds - \$500
- 1991 Mabel Mayers Scholarship - \$500

### Student Independent Research Projects

- 2020 Theresa Kenney. Effects of aging and wheel running on mouse skeletal muscles. Fredonia MS Thesis.
- 2019 Siyuan Yang. Relationship Between Muscle Fiber Types and Cardiovascular System in Ghost Crabs. Fredonia MS Thesis.
- 2019 Zainab Alolaywi. Physiological Fiber Types in Crayfish. Fredonia MS Thesis
- 2018 Maha Alanzani. Physiological Fiber Types in Ghost Crabs. Fredonia MS Thesis
- 2018 Siyuan Yang. Fredonia Holmberg Summer Fellowship: The Effects of Muscular Fiber Phenotypes on Running Performance: Ghost and Fiddler Crabs
- 2017 Ryan Ruia. Fredonia Holmberg Summer Fellowship: Muscle fiber types and MHC isoform composition in *Ocypode quadrata*
- 2016 Zachary Bunge. Fredonia Holmberg Summer Fellowship: Completion of a full-length myosin heavy chain sequence in fast and slow twitch muscles of *Ocypode quadrata*
- 2016 John Biber. Fredonia Holmberg Summer Fellowship: Completion of a full-length myosin heavy chain sequence in fast and slow twitch muscles of *Ocypode quadrata*

- 2016 Tara Douglas. Fredonia Holmberg Summer Fellowship: Arterial blood supply to skeletal muscles in ghost crabs, *Ocypode quadrata*
- 2015 Jordan Johnson. Effects of Maternal Obesity on Skeletal Muscle Development in the Offspring. Fredonia MS Thesis.
- 2014 Lauren Larson. Asymmetrical Hybrid Fibers in Developing Rat Muscles. Fredonia MS Thesis.
- 2012 Jordan Johnson. Fredonia Holmberg Summer Fellowship: Correlation Between a Metabolic Fiber Type Regulator (PGC-1 $\alpha$ ) and Myosin Heavy Chain Expression in Skeletal Muscle Fibers
- 2012 Steven Whittemore. Fredonia Holmberg Summer Fellowship: The Effects of Muscular Fiber Phenotypes on Running Performance: Ghost and Fiddler Crabs
- 2012 Rannan Kased. Effects of Running Exercise and High Fat Diet on Mouse Plantaris Muscle. University at Buffalo, Honors Thesis.
- 2009 Brian Glaser. Effects of Running Exercise on Type X/B Hybrid Fibers in the Triceps Muscle of the Mouse. University at Buffalo, MS Thesis.
- 2009 Cheng Gong You. Effects of 10 Weeks of Running Exercise on Mouse Soleus Muscle. University at Buffalo, Honors Thesis.

### **Professional Development**

- April 2016 – Learning Assistant Northeast Regional Workshop. Rochester Institute of Technology.
- July 2015 – Crawfly Invertebrate Neurophysiology Course, Cornell University/ADInstruments
- September 2014 – Case Study Conference. National Center for Case Studies, University at Buffalo.
- July 2014 – Project Kaleidoscope (PKAL) Leadership Institute, Pendle Hill, PA
- June 2014 – American Physiological Society Institute on Teaching and Learning. Bar Harbor, ME
- April 2014 – IACUC Conference (PRIM&R), Denver, CO
- April 2014 – PKAL Upstate Regional Conference, Rochester, NY
- October 2013 – AACU National Conference, San Diego, CA
- April 2013 – PKAL Upstate Regional Conference, Rochester, NY
- June 2012 – NIH Regional Conference, Washington DC

### **Service and Outreach**

- 2019 – Art and Science Exhibit – outreach to Fredonia Middle School
- 2015 – Physiology Phun Day (American Physiological Society) – Dunkirk Middle School
- 2014 – Physiology Phun Day (American Physiological Society) – Dunkirk Middle School
- 2009 – Physiology Phun Day (American Physiological Society) – North Collins High School
- 2007 – University at Buffalo: Review of IRDF awards
- 1999 – Department of Biological Sciences (LSU): Review of candidates for physiology faculty position
- 1997 – Department of Biological Sciences (LSU): Admissions Committee, Grad. Student Representative

### **Ad hoc reviewer**

- Acta Physiologica*
- Aquatic Toxicology*
- Physiological Reports*
- Journal of Applied Physiology*
- Journal of Experimental Biology*
- Comparative Biochemistry and Physiology*
- Journal of Experimental Zoology*
- Marine Biotechnology*
- Journal of Theoretical Biology*
- Elsevier Publishing – Book Review*
- Freeman Publishing – Textbook Review*
- BBA Proteins*

*Muscle and Nerve*  
*Cells, Tissues, and Organs*  
*Invertebrate Biology*  
*FEBS Letters*  
*American Journal of Undergraduate Research*

**Professional Associations**

Society for Integrative and Comparative Biology  
American Physiological Society  
Sigma Xi