

# Michael Wiggs, Ph.D.

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## Education

Postdoctoral Associate	University of Florida	2011 - 2015
Department of Applied Physiology and Kinesiology		
Mentor: Dr. Scott Powers		
Doctor of Philosophy	Texas A&M University	2011
Exercise Physiology – Department of Health and Kinesiology		
Mentor: Dr. James (Jim) Fluckey		
Bachelor of Science	Texas A&M University	2005
Applied Exercise Physiology – Department of Health and Kinesiology		

## Professional Experience

2020-Present	Assistant Professor, Baylor University, Waco, TX Department of Health, Human Performance, and Recreation; Robbins College of Health and Human Sciences
2015-2020	Assistant Professor, University of Texas at Tyler, Tyler, TX Department of Health and Kinesiology; College of Nursing and Health Sciences
2011-2015	Postdoctoral Associate, University of Florida, Gainesville, FL Department of Applied Physiology and Kinesiology; College of Health and Human Performance
2006-2011	Graduate Research Assistant, Texas A&M University, College Station, TX Department of Health and Kinesiology; College of Education and Human Development

## Peer-Reviewed Publications

Lee DE, Brown JL, Rosa-Caldwell ME, Perry RA, Brown LA, Haynie WS, Washington TA, Wiggs MP, Rajaram N, Greene NP. Cancer-induced cardiac atrophy adversely affects myocardial redox state and mitochondrial oxidative characteristics. *JCSM Rapid Communications*. Published online 07 August 2020.

Rosa-Caldwell ME, Brown JL, Lee DE, Wiggs MP, Perry Jr RA, Haynie WS, Caldwell AR, Washington TA, Lo WJ, Greene NP. Hepatic alterations during the development and progression of cancer cachexia. *Applied Physiology, Nutrition, and Metabolism*. 2020;45(5):500-12.

Rosa-Caldwell ME, Brown JL, Perry Jr RA, Shimkus KL, Shirazi-Fard Y, Brown LA, Hogan HA, Fluckey JD, Washington TA, Wiggs MP, Greene NP. Regulation of Mitochondrial Quality Following Repeated Bouts of Hindlimb Unloading. *Applied Physiology, Nutrition, and Metabolism*. 2019 Jul 24. Epub Ahead of Print.

Smuder AJ, Morton AB, Hall SE, Wiggs MP, Ahn B, Wawrzyniak NR, Sollanek KJ, Min K, Kwon OS, Nelson WB, Powers SK. Effects of exercise preconditioning and HSP72 on diaphragm muscle function during mechanical ventilation. *Journal of cachexia, sarcopenia and muscle*. 2019 Apr 10.

Morton, AB, Smuder, AJ, Wiggs, MP, Hall, SE, Ahn, B, Hinkley, JM, Ichinoseki-Sekine, N, Huertas, AM, Ozdemir, M, Yoshihara, T and Wawrzyniak, NR, Powers SK.. Increased SOD2 in the diaphragm contributes to exercise-induced protection against ventilator-induced diaphragm dysfunction. *Redox biology*, 20, pp.402-413. Jan 2019

Brown, J.L., Lee, D.E., Rosa-Caldwell, M.E., Brown, L.A., Perry, R.A., Haynie, W.S., Huseman, K., Sataranatarajan, K., Van Remmen, H., Washington, T.A. and Wiggs, M.P.,. Protein imbalance in the development of skeletal muscle wasting in tumour-bearing mice. *Journal of cachexia, sarcopenia and muscle*, 9(5), pp.987-1002. Oct 2018 \* Corresponding Author

Blackwell, T.A., Cervenka, I., Khatri, B., Brown, J.L., Rosa-Caldwell, M.E., Lee, D.E., Perry, R.A., Brown, L.A., Haynie, W.S., Wiggs, M.P. and Bottje, W.G.,. A Transcriptomic Analysis of the Development of Skeletal Muscle Atrophy in Cancer-Cachexia in Tumor-Bearing Mice. *Physiological genomics*. Oct 2018.  
Shimkus KL, Shirazi-Fard Y, Wiggs MP, Ullah ST, Pohlentz C, Gatlin DM, Carroll CC, Hogan HA, Fluckey JD. Responses of skeletal muscle size and anabolism are reproducible with multiple periods of unloading/reloading. *J Appl Physiol* (1985). Aug 2018

Brown JL, Rosa-Caldwell ME, Lee DE, Blackwell TA, Brown LA, Perry RA, Haynie WS, Hardee JP, Carson JA, Wiggs MP, Washington TA, Greene NP. Mitochondrial degeneration precedes the development of muscle atrophy in progression of cancer cachexia in tumour-bearing mice. *Journal of cachexia, sarcopenia and muscle*. 2017 Dec 1;8(6):926-38.

Lee DE, Brown JL, Rosa-Caldwell ME, Blackwell TA, Perry Jr RA, Brown LA, Khatri B, Seo D, Bottje WG, Washington TA, Wiggs MP. Cancer cachexia-induced muscle atrophy: evidence for alterations in microRNAs important for muscle size. *Physiological genomics*. 2017 Mar 24;49(5):253-60.

Sollanek KJ, Burniston JG, Kavazis AN, Morton AB, Wiggs MP, Ahn B, Smuder AJ, Powers SK. Global Proteome Changes in the Rat Diaphragm Induced by Endurance Exercise Training. *PloS one*. 2017 Jan 30;12(1):e0171007.

Talbert EE, Smuder AJ, Kwon OS, Sollanek K J, Wiggs M P., Powers SK. Blockage of the Ryanodine Receptor via Azumolene Does Not Prevent Mechanical Ventilation-Induced Diaphragm Atrophy. *PloS one*, 11(2), e0148161.

Hudson MB, Smuder AJ, Nelson WB, Wiggs MP, Shimkus KL, Fluckey JD, Szeto HH, Powers SK. Partial Support Ventilation and Mitochondrial-Targeted Antioxidants Protect against Ventilator-Induced Decreases in Diaphragm Muscle Protein Synthesis. *PLoS One*. 2015 Sep 11;10(9):e0137693.

Kwon OS, Smuder AJ, Wiggs MP, Hall SE, Sollanek KJ, Morton AB, Talbert EE, Toklu HZ, Tumer N, Powers SK. AT1 receptor blocker losartan protects against mechanical ventilation-induced diaphragmatic dysfunction. Toklu HZ, Tumer N, Powers SK. *J Appl Physiol* (1985). 2015 Nov 15;119(10):1033-41.

Wiggs MP. Can endurance exercise preconditioning prevent disuse muscle atrophy? *Front Physiol*. 2015 Mar 11;6:63.

Wiggs MP, Smuder AJ, Sollanek KJ, Min K, Shimkus KL, Fluckey JD, and Powers SK. Inhibition of FoxO-specific transcription prevents mechanical ventilation-induced decreases in diaphragm protein synthesis. (In Revision at *J Physiol*)

Hudson MB, Smuder AJ, Nelson WB, Wiggs MP, Shimkus KL, Fluckey JD, Szeto HH, and Powers. Therapeutic strategies to protect against ventilator-induced diaphragm dysfunction by maintaining diaphragm muscle protein synthesis. *Crit Care*. (In review at *J Appl Physiol*)

Talbert EE, Smuder AJ, Kwon OS, Sollanek KJ, Wiggs MP, and Powers SK. Blockage of the Ryanodine Receptor is not Sufficient to Prevent Mechanical Ventilation-induced Diaphragm Atrophy. (In Review at *Plos One*).

Min K, Kwon OS, Smuder AJ, Wiggs MP, Sollanek KJ, Christou DD, Yoo JK, Hwang MH, Szeto HH, Kavazis AN, Powers SK. Increased mitochondrial emission of reactive oxygen species and calpain activation are required for doxorubicin-induced cardiac and skeletal muscle myopathy. *J Physiol* (Accepted Jan. 20, 2015)

Sollanek KJ, Smuder AJ, Wiggs MP, Morton AB, Koch LG, Britton SL, and Powers SK. Role of Intrinsic Aerobic Capacity and Ventilator-Induced Diaphragm Dysfunction. *J Appl Physiol* (1985). 2015 Jan 8.  
Wiggs MP, Duarte AF, Powers SK. Exercise Can Protect against a Broken Heart. *Curr Sports Med Rep*. 2015 Jan;14(1):6-8

Boudreaux RD, Swift JM, Gasier HG, Wiggs MP, Hogan HA, Fluckey JD, Bloomfield SA. Increased resistance during rodent jump exercise does not enhance the cortical bone formation response. *Med Sci Sports Exerc*. 2014 May;46(5):982-9.

Smith IJ, Godinez GL, Singh BK, McCaughey KM, Alcantara RR, Gururaja T, Ho MS, Nguyen HN, Frieria AM, White KA, McLaughlin JR, Hansen D, Romero JM, Baltgalvis KA, Claypool MD, Li W, Lang W, Yam GC, Gelman MS, Ding R, Yung SL, Creger DP, Chen Y, Singh R, Smuder AJ, Wiggs MP, Kwon OS, Sollanek KJ, Powers SK, Masuda ES, Taylor VC, Payan DG, Kinoshita T, Kinsella TM. Inhibition of Janus kinase signaling during controlled mechanical ventilation prevents ventilation-induced diaphragm dysfunction. *FASEB J*. 2014 Jul;28(7):2790-803.

Toklu HZ, Kwon OS, Sakarya Y, Powers SK, Llinas K, Kirichenko N, Sollanek KJ, Wiggs MP, Smuder AJ, Talbert EE, Scarpace PJ, Tümer N. The effects of enalapril and losartan on mechanical ventilation-induced sympathoadrenal activation and oxidative stress in rats. *J Surg Res*. 2014 May 15;188(2):510-6.

Bruells CS, Bergs I, Rossaint R, Du J, Cleilevens C, Goetzenich A, Weis J, Wiggs MP, Powers SK, Hein M. Recovery of diaphragm function following mechanical ventilation in a rodent model. *PLoS One*. 2014 Jan 27;9(1):e87460.

Powers SK, Solanek KJ, Wiggs MP, Demirel H, Smuder AJ. Exercise-induced improvements in myocardial antioxidant capacity: the antioxidant players and cardioprotection. *Free Radic Res*. 2014 Jan;48(1):43-51.

Powers SK, Wiggs MP, Sollanek KJ, Smuder AJ. Invited Review: Ventilator-induced diaphragm dysfunction: cause and effect. *Am J Physiol Regul Integr Comp Physiol*. 2013 Sep;305(5):R464-77.

Nilsson MI, Dobson JP, Greene NP, Wiggs MP, Shimkus KL, Wudeck EV, Davis AR, Laureano ML, Fluckey JD. Abnormal protein turnover and anabolic resistance to exercise in sarcopenic obesity. *FASEB J*. Oct;27(10):3905-16, 2013.

Bruells CS, Smuder AJ, Reiss LK, Hudson MB, Nelson WB, Wiggs MP, Sollanek KJ, Uhligs, Powers SK. Negative Pressure Ventilation and Positive Pressure Ventilation Promote Comparable Levels of Ventilator-induced Diaphragmatic Dysfunction in Rats. *Anesthesiology*. Sep;119(3):652-62, 2013

Powers SK, Wiggs MP, Duarte J, Zergeroglu AM, Demirel HA. Mitochondrial signaling contributes to disuse muscle atrophy. *Am J Physiol Endocrinol Metab*. Jul 1;303(1):E31-9, 2012.

Gasier HG, Fluckey JD, Previs SF, Wiggs MP, and Riechman SE. Acute resistance exercise augments integrative myofibrillar protein synthesis. *Metabolism*. 61(2):153-6, 2012.

Gasier HG, Riechman SE, Wiggs MP, Buentello A, Previs SF, and Fluckey JD. Cumulative responses of muscle protein synthesis are augmented with chronic resistance exercise training. *Acta Physiologica (Oxf)*. 109(6):1600-7, 2011.

JM Swift, HG Gasier, SN Swift, MP Wiggs, HA Hogan, JD Fluckey and SA Bloomfield. Increased training loads do not magnify cancellous bone gains with rodent jump resistance exercise. *J Appl Physiol*. 109(6):1600-7, 2010.

Nilsson MI, Greene NP, Dobson, JP, Wiggs MP, Gasier HG, Macias BR, Shimkus KS, and Fluckey JD. Mitochondrial anabolic response is attenuated in insulin-resistance muscle following resistance exercise. *Am J Physiol Endocrinol Metab* 299: E466–E474, 2010.

Gasier H, Riechman SE, Wiggs MP, Previs SF, and Fluckey JD. A comparison of 2H<sub>2</sub>O and phenylalanine flooding dose to investigate muscle protein synthesis with acute exercise in rats. *Am J Physiol Endocrinol Metab*. 297: E252, 2009.

## Educational Content

Gatorade Sports Science Institute (GSSI) Sports Science Exchange.

Title: Endurance Exercise and Antioxidant Supplementation: Sense or Non-Sense? Part 2.

Scott K. Powers, Kurt J. Sollanek, and Michael P. Wiggs

Gatorade Sports Science Exchange (2014) Vol. 27, No. 138, 1-4

Book Chapter: Entitled Antioxidant supplementation athletes and active individuals – Michael P Wiggs and Scott K Powers. 2014

## Presentations

University of Texas at Arlington – Kinesiology Seminar – October 2019

Title: The role of mitochondrial dysfunction in cancer-induced muscle wasting.

UT Tyler Department of Biology – September 2018

Title: Mitochondrial function in skeletal muscle in a model of cancer-induced muscle wasting

UT Tyler The Center for Excellence in Teaching & Learning - November 2017

Title: Ditching the discussion board for Flipgrid.

UT Health North East Department Seminar. – September 2017

Title: A myopic view of cancer

Texas ACSM Annual Meeting - Invited Lecture - February 2017

Title: A role for mitochondria in the progression and treatment of muscle wasting associated with cancer –

University of Arkansas – December 2016

Title: Role of mitochondria in the regulation of skeletal muscle mass

UT Tyler CNHS Lunch and Learn — September 2016  
Title: Mitochondria in Health and Disease

University of Florida Department of Applied Physiology and Kinesiology Seminar. April 2013  
Title: The importance of protein synthesis in disuse muscle atrophy

Muscle Biology/Physiology Seminar Series - University of Florida Department of Physical Therapy, September 2011  
Title: Muscle Protein Synthesis? A loaded Question

Student Research Week Oral Presentation – Kinesiology, Physiology, and Anatomy Taxonomy, Texas A&M University, April 2010  
Title: The effect of 21 days of simulated 1/6th and 1/3rd gravitational load on *gastrocnemius* muscle mass and FSR in mice

Texas A&M University Exercise Physiology Graduate Seminar, February 2010  
Title: A putative factor released from contracting skeletal muscle inhibits tumor cell growth. The effect of 21 days of simulated 1/6th and 1/3<sup>rd</sup> gravitational load on *gastrocnemius* muscle mass and FSR in mice.

Student Research Week Oral Presentation – Kinesiology, Physiology, and Anatomy Taxonomy, Texas A&M University, April 2008  
Title: A putative factor released from contracting skeletal muscle inhibits tumor cell growth.

Texas A&M University Exercise Physiology Graduate Seminar, March 2008  
Title: Effect of amino acid recycling in the measurement of protein synthesis

Texas A&M University Exercise Physiology Graduate Seminar, March 2007  
Title: Insulin signaling in sedentary human skeletal muscle via PI3K is necessary for protein synthesis.  
\*also presented at Student Research Week – Kinesiology, Physiology, and Anatomy Taxonomy Texas A&M University, March 2007

## **Grant Support**

### **Funded or Completed Proposals:**

Development of Targeted Approaches in Prevention of Cancer-Cachexia.  
NIH RO1 (NP Greene, PI)  
Role: PI of Subaward to Baylor University – Total Funding to Baylor \$155,897  
Funding period – July 01, 2020 – June 30, 2025 – Total funding \$337,895  
Project Number: 1R01AR075794-01A1  
Status: In progress

Mitochondrial Degeneration – The Root of Skeletal Muscle Atrophy  
NIH R15  
Role: Co-I (NP Greene, PI)  
Submitted June 25, 2015

Funded July 1, 2017 – June 30, 2020 -  
Project Number: 1R15AR069913-01A1  
Status: Completed

Modification of virus-like particles to target skeletal muscle.  
UT Tyler Presidential Interdisciplinary Grants Program  
Submitted March 18<sup>th</sup>, 2018, Funded September 1, 2019 - July 31, 2020.  
**Direct Costs: \$20,000.**  
Role: PI  
Status: Completed

The Role of muscle protein synthesis in cancer-induced cardiac atrophy  
University of Texas at Tyler Office of Sponsored Research Faculty Research Grant  
Role: PI  
Submitted April 1, 2016  
Direct Costs- \$8,820  
Status - Completed

Mitochondrial protein synthesis in cardiac atrophy  
Integrative Institute of Healthcare - UT Tyler  
Role: PI  
August 10/2016  
Direct Costs - \$4,763  
Status: Completed

### **Submitted Proposals- Awaiting Decision**

#### **Submitted Proposals - Not Funded:**

Development of muscle targeting virus-like particle for treatment of cancer cachexia  
HESI-Pardee THRIVE Grant Program. – 2 years - \$50,000 direct costs  
Role: PI  
Submitted July 2019

Skeletal Muscle Mitochondrial Degeneration – the Onset of Cancer Cachexia  
NIH-R15  
Role: Co-I (NP Greene PI)  
Submitted 10/26/2016

Skeletal Muscle Mitochondrial Degeneration – the Onset of Cancer Cachexia  
NIH-R03  
Role: Co-I (NP Greene PI)  
Submitted 10/26/2015

Skeletal muscle miRNAs are necessary and sufficient in the development of Type 2 Diabetes Mellitus  
NIH R15  
Role: Co-I (NP Greene PI)  
Submitted June 25, 2015

Role mitochondrial degeneration in development of cancer cachexia  
American Institute for Cancer Research  
Role: Co-I (NP Greene PI)  
Submitted May 11, 2015

Role of mitochondrial degeneration in metabolic flexibility of skeletal muscle.  
College of Nursing and Health Sciences Intramural Grant  
Role: PI  
Submitted November 18, 2015

### **Previous Funding as a Trainee**

Title: Ventilator-induced diaphragmatic atrophy: role of autophagy  
Role: Key Personnel – Post-doctoral Associate  
Principal Investigator: Scott Powers  
Agency: NIH (NIAMS)  
Type: NIH Exploratory/Developmental Research Grant Program (Parent R21); \$275,000  
Status: 1R21AR064956-01A1 – Funded 2014 – Total Costs \$197,670 for 2 years.

Title: Mechanisms of exercise protection in ventilator-induced diaphragm dysfunction  
Role: Key Personnel – Post-doctoral Associate  
Principal Investigator: Scott Powers  
Agency: NIH (NIAMS)  
Type: R-01 Investigator Initiated Research Project Grant  
Status: R01 AR064189 – Funded 2013 – Total Costs – \$434,706 per year (5 years)

Title: Ventilator-induced diaphragmatic atrophy: role of FoxO signaling  
Role: Key Personnel – Post-doctoral Associate  
Principal Investigator: Scott Powers  
Agency: NIH (NIAMS)  
Type: NIH Exploratory/Developmental Research Grant Program (Parent R21); \$275,000  
Status: R21 AR063805 – Funded 2013 - Direct Costs \$201,375 (2 years)

Title: Efficacy of Rigel compound(s) to protect against ventilator-induced diaphragm dysfunction  
Role: Key Personnel – Post-doctoral Associate  
Principal Investigator: Scott Powers  
Agency: Rigel Pharmaceuticals  
Budget: \$125,000  
Status: Complete

Title: Role of Myostatin in Mechanical Ventilation-induced Diaphragmatic Weakness  
Role: Key Personnel – Post-doctoral Associate  
Principal Investigator: Scott Powers  
Agency: Regeneron Pharmaceuticals  
Budget: \$62,857  
Status: Complete

Title: The effect of resistance exercise on myofibrillar protein synthesis during microgravity.

Agency: Sydney & J.L Huffines Institute for Sports Medicine and Human Performance

Type: Graduate Student Research Grants, 2009. \$2000

Status: Complete

Title: Role of protein kinase C in muscle protein synthesis

Role: Principal Investigator

Agency: Sydney & J.L Huffines Institute for Sports Medicine and Human Performance

Type: Graduate Student Research Grants, 2007. \$2000

Status: Complete

## Honors and Awards

2019-2020 – UT Tyler Research Fellows Program – Year long training on building and writing a successful research grant

2013 University of Florida Post Doc Symposia – Second place oral presentation. Monetary award \$100

Title: Impact of mode mechanical ventilation mode on diaphragm protein synthesis

2010 American Physiological Society - Environmental & Exercise Physiology (EEP) Space Biomedical Research Institute's Pre-doctoral Gravitational Physiology Award.

2010 Kinesiology, Physiology, and Anatomy Taxonomy 1<sup>st</sup> place Oral Presentation. Monetary award \$200  
Student Research Week, Texas A&M University

Title: The effect of 21 days of simulated 1/6th and 1/3rd gravitational load on *gastrocnemius* muscle mass and FSR in mice

2010 3<sup>rd</sup> Place Student Research Poster Presentation – Doctoral Level, Texas Regional Chapter of the ACSM Annual Meeting

Title of Poster Presentation - The effect of 21 days of simulated 1/6th and 1/3rd gravitational load on gastrocnemius muscle fractional protein synthesis in mice

2008 Kinesiology, Physiology, and Anatomy Taxonomy 1<sup>st</sup> place Oral Presentation. Monetary award \$300  
Session Winner Oral Presentation

Safety Recognition Award; Interdisciplinary Research Recognition Award

Student Research Week, Texas A&M University

Title: A putative factor released from contracting skeletal muscle inhibits tumor cell growth.

2008 – 2010 NASA/Texas Space Grant Consortium Fellowship

2007 First Place Oral Presentation. Monetary award \$300

Student Research Week, Texas A&M University

Title: Insulin signaling in sedentary human skeletal muscle via PI3K is necessary for protein synthesis.

## Travel Awards



- 2009 Sydney & J.L Huffines Institute for Sports Medicine and Human Performance Graduate Student Research Presentation Travel Grant Award \$700  
Title of Poster Presentation: The effect of simulated 1/6th and 1/3rd gravity on gastrocnemius muscle mass and fractional protein synthesis rates in mice. Presented at Experimental Biology 2010. Anaheim, CA. 2010 American Physiological Society - Environmental & Exercise Physiology (EEP) Space Biomedical Research Institute's Predoctoral Gravitational Physiology Award.
- 2008 Sydney & J.L Huffines Institute for Sports Medicine and Human Performance Graduate Student Research Presentation Travel Grant Award \$550  
Title of Poster Presentation: Expression of atrogin-1 is not increased in soleus or plantaris after 5 days of hindlimb unloading in rats. Presented at 14th International Biochemistry of Exercise Conference - June 2009. Guelph, Ontario, CA.
- 2008 Department of Health and Kinesiology Graduate Student Travel Grant \$500  
Title of Poster Presentation: Expression of atrogin-1 is not increased in soleus or plantaris after 5 days of hindlimb unloading in rats.
- 2007 Sydney & J.L Huffines Institute for Sports Medicine and Human Performance Graduate Student Research Presentation Travel Grant Award \$750  
Title of Poster Presentation: Insulin signaling in sedentary human skeletal muscle via PI3K is necessary for protein synthesis.  
Presented at Experimental Biology 2007, Washington D.C.
- 2007 Sydney & J.L Huffines Institute for Sports Medicine and Human Performance Graduate Student Research Presentation Travel Grant Award \$750  
Title of Poster Presentation: Assessment of cumulative FSR over a 24 h period with hindlimb unloading and intermittent reloading in rats.  
Presented at 2008 APS Intersociety Meeting: The Integrative Biology of Exercise V, Hilton Head, SC

## **Abstracts**

### **Abstracts presented since first faculty appointment (2015)**

Colleen O'Reilly, Mats I Nilsson, Nicholas P Greene, Justin P Dobson, Michael P Wiggs, Heath G Gasier, James D. Fluckey. Influence of GATOR1 Sub Complex NPRL2 on Anabolic Signaling During Insulin Resistance in Rats. Experimental Biology 2019

Sex differences in anabolic regulators during development of atrophic pathology in hindlimb unloading-induced disuse. Lisa T. Jansen, Megan E. Rosa-Caldwell, Wesley S. Haynie, Seongkyun Lim, Kirsten R. Dunlap, Jacob L. Brown, David E. Lee, Richard A. Perry Michael P. Wiggs, Tyrone A. Washington, Nicholas P. Greene. ACSM 2019

Megan E. Rosa-Caldwell, Kirsten R. Dunlap, Wesley S. Haynie<sup>2</sup>, Seongkyun Lim, Lisa T. Jansen, Jacob L. Brown, David E. Lee, Tyrone A. Washington, Michael P. Wiggs, Nicholas P. Greene. Mitochondrial aberrations during the progression of disuse atrophy differentially affect male and female mice. Advances in Skeletal Muscle Biology in Health and Disease at University of Florida 2019

Wesley S. Haynie<sup>1</sup>, Megan E. Rosa-Caldwell<sup>1</sup>, Seongkyun Lim<sup>1</sup>, Katarina A. Bejarano<sup>1</sup>, Lisa T. Jansen<sup>1</sup>, Kirsten R. Dunlap<sup>1</sup>, Jarrod A. Call<sup>2</sup>, Michael P. Wiggs<sup>3</sup>, Nicholas P. Greene<sup>1</sup>, Tyrone A. Washington<sup>1</sup> Force production during the development of cancer cachexia in female mice. *Advances in Skeletal Muscle Biology in Health and Disease at University of Florida* 2019

Seongkyun Lim, Megan E. Rosa-Caldwell, Wesley S. Haynie, Lisa T. Jansen, Kirsten R. Dunlap, Katarina Bejarano, Jacob L. Brown, David E. Lee, Tyrone A. Washington, Michael P. Wiggs, Nicholas P. Greene. Atrophy-related genes are differentially expressed during progression of disuse-induced atrophy in male and female mice. *Advances in Skeletal Muscle Biology in Health and Disease at University of Florida*. 2019

Early mitochondrial degeneration in the development of disuse-induced muscle atrophy  
Nicholas P. Greene, Jacob L. Brown, Megan E. Rosa-Caldwell, David E. Lee, Wesley A. Haynie, Tyrone A. Washington, Michael P. Wiggs – *Experimental Biology* 2018

Protein Synthesis throughout the Progression of Cancer Cachexia in Tumor-Bearing Mice  
Jacob L. Brown, David E. Lee, Megan E. Rosa-Caldwell, Richard A. Perry, Wesley A. Haynie, Tyrone A. Washington, Michael P. Wiggs, Nicholas P. Greene *Experimental Biology* 2018

Alterations in Hepatic Protein Synthetic Signaling During the Progression of Cancer Cachexia.  
Megan E. Rosa-Caldwell, Jacob L. Brown, David E. Lee, Richard A. Perry, Wesley A. Haynie, Aaron R. Caldwell, Tyrone A. Washington, Michael P. Wiggs, Nicholas P. Greene *Experimental Biology* 2018

Changes in liver fibrosis during the progression of cancer cachexia in mice. Kyle W. Turner , Megan E. Rosa-Caldwell , Jacob L. Brown , David E. Lee , Richard A. Perry , Wesley A. Haynie, Tyrone A. Washington, Michael P. Wiggs, Nicholas P. Greene. *Central State ACSM Conference*

Cancer cachexia: metabolic changes in carbohydrate metabolism of the liver. Sarah M. Ramey, Megan E. Rosa-Caldwell, Jacob L. Brown, David E. Lee, Richard A. Perry, Wesley A. Haynie, Aaron R. Caldwell, Tyrone A. Washington, Michael P. Wiggs, Nicholas P. Greene

Timecourse of alterations in myofiber CSA and oxidative phenotype in progression of cancer-cachexia.  
Nicholas P. Greene<sup>1</sup>, Jacob L. Brown<sup>1</sup>, Megan E. Rosa<sup>1</sup>, David E. Lee<sup>1</sup>, Thomas A. Blackwell<sup>1</sup>, Haley N. McCarver<sup>1</sup>, Richard A. Perry<sup>1</sup> Jr., Lemuel A. Brown<sup>1</sup>, Wesley S. Haynie<sup>1</sup>, Michael P. Wiggs<sup>2</sup>, Tyrone A. Washington<sup>1</sup>. – *ACMS* 2017

Partial or complete unloading of skeletal muscle leads to specific alterations of anabolic signal transduction.  
Collen L O'Reilly, Michael Wiggs, J William Deaver, Susan Bloomfield and James D Fluckey - 2017

Myogenic And Atrophic Signaling In The Progression Of Cancer-cachexia. Thomas A. Blackwell<sup>1</sup>, Jacob L. Brown<sup>1</sup>, David E. Lee<sup>1</sup>, Megan E. Rosa-Caldwell<sup>1</sup>, Richard A. Perry Jr<sup>1</sup>, Lemuel A. Brown<sup>1</sup>, Wesley S. Haynie<sup>1</sup>, Michael P. Wiggs<sup>2</sup>, Tyrone A. Washington<sup>1</sup>, Nicholas P. Greene<sup>1</sup> – *ACSM* 2017

Cancer-cachexia Upregulates Autophagy Machinery. Jacob L. Brown, Megan E. Rosa-Caldwell<sup>1</sup>, David E. Lee<sup>1</sup>, Thomas A. Blackwell<sup>1</sup>, Richard A. Perry<sup>1</sup>, Lemuel A. Brown<sup>1</sup>, Wesley S. Haynie<sup>1</sup>, Michael P. Wiggs<sup>2</sup>, Tyrone A. Washington<sup>1</sup>, Nicholas P. Greene<sup>1</sup> – *ACSM* 2017

Oral Administration of BGP-15 Significantly Increases HSP72 Expression and Attenuates Ventilator Induced Diaphragm Dysfunction. A.B. Morton, A.J. Smuder, S.E. Hall, M.P. Wiggs, S.K. Powers. *Experimental Biology* 2017

microRNA Expression Profile of Cancer Cachexia-Induced Muscle Atrophy David E. Lee, Jacob L. Brown, Megan E. Rosa-Caldwell, Thomas A. Blackwell, Richard A. Perry, Jr., Lemuel A. Brown, Bhuwan Khatri,

Dongwon Seo, Walter G. Bottje, Tyrone A. Washington, Michael P. Wiggs, Byung-Whi Kong & Nicholas P. Greene – Muscle Biology Conference 2017

Mitochondrial Degeneration Precedes Muscle Atrophy in Cancer-Cachexia. Jacob L. Brown, Megan E. Rosa, David E. Lee, Thomas A. Blackwell, Richard A. Perry Jr., Lemuel A. Brown<sup>2</sup>, Wesley S. Haynie, Michael P. Wiggs, Tyrone A. Washington, Nicholas P. Greene – Muscle Biology Conference 2017

Progression of Cancer-Cachexia – A Transcriptomics View. Nicholas P. Greene, Thomas A. Blackwell, Bhuwan Khatri, Jacob L. Brown, David E. Lee, Megan E. Rosa, Richard A. Perry, Jr., Lemuel A. Brown, Michael P. Wiggs, Tyrone A. Washington, Byung-Whi Kong – Muscle Biology Conference 2017

Mitochondrial dysfunction promotes cancer-induced cardiac and respiratory muscle weakness. Michael . Wiggs, Brandon M. Roberts, Oh-Sung Kwon, Jeung-Ki Yoo, Demetra D. Christou, Andrew R. Judge, David D. Fuller, Hazel H. Szeto and Ashley J. Smuder - Poster Presentation at 10th international SCWD conference on cachexia, sarcopenia and muscle wasting

Cancer cachexia induced muscle atrophy: evidence for alterations in microRNAs important for muscle size. - David E. Lee, Jacob L. Brown, Megan E. Rosa-Caldwell, Richard A. Perry, Jr., Lemuel A. Brown, Bhuwan Khatri, Dongwon Seo, Tyrone A. Washington, Michael P. Wiggs, Byung-Whi Kong & Nicholas P. Greene. – Central States ACSM 2016

Mitochondrial Dysfunction in Diaphragm Muscle Precedes the Cachectic Phenotype in LLC Tumor-Bearing Mice. Conner A Benson, David E Lee, Jacob L Brown, Megan E Rosa-Caldwell, Tyrone A Washington, Nicholas P Green, Michael P Wiggs. - Texas ACSM 2017

Loss in oxidative phenotype in lewis lung carcinoma-induced cancer cachexia. Haley N. McCarver, Jacob L. Brown, Megan E. Rosa, David E. Lee, Richard A. Perry Jr., Lemuel A. Brown, Michael P. Wiggs, Tyrone A. Washington, Nicholas P. Greene. – Central States ACSM 2016.

Mitochondrial dysfunction is evident in Lewis Lung Carcinoma-induced muscle wasting  
Benson, C, Lee DE, Brown JL, Rose ME, Washington TA, Greene NP, Wiggs MP. Submitted for presentation. Texas American College of Sport Medicine Annual Meeting, 2016.

Exercise-induced protection against ventilator-induced diaphragm atrophy is dependent upon increased diaphragmatic levels of manganese superoxide dismutase. Morton AB, Smuder AJ, Wiggs MP, Hall SE, Wawrzyniak NR, Powers SK. Experimental Biology 2016

HSP72 is required for exercise-induced protection against ventilator-induced diaphragm dysfunction. Smuder AJ, Morton AB, Hall SE, Ahn BS, Wiggs MP, Wawrzyniak NR, Powers SK. Experimental Biology 2016

Angiotensin II Type 1 Receptor Contributes to Ventilator-Induced Diaphragm Dysfunction Hall, Stephanie E; Smuder, Ashley J; Wiggs, Michael P; Morton, Aaron B; Sollanek, Kurt J; Powers, Scott K. Advances in Skeletal Muscle Biology in Health and Disease at University of Florida. 2016

Increased HSP72 Expression is Required for Exercise-Induced Protection Against Ventilator-Induced Mitochondrial Dysfunction in the Diaphragm Smuder, Ashley J; Morton, Aaron B; Hall, Stephanie E; Ahn,

Bumsoo; Wiggs, Michael P; Wawrzyniak, Nicholas R; Powers, Scott K; Advances in Skeletal Muscle Biology in Health and Disease at University of Florida. 2016

### **Selected First and Last Author Abstracts Presented at Regional, National or International Meetings**

Wiggs MP, Sollanek KJ, Hall SE, Koch LG, Britton SL, Powers SK. Intrinsic high aerobic capacity is not associated with a skeletal muscle mitochondrial phenotype that resists apoptotic stimuli. Submitted for presentation at Integrative Physiology of Exercise, 2014

Wiggs MP, Smuder AJ, Sollanek KJ, Shinkus KL, Fluckey JD, Powers SK. Inhibition of FoxO signaling prevents mechanical ventilation-induced reduction in protein synthesis. Submitted for presentation at ACSM Annual Meeting, 2014.

Wiggs, MP, Hudson MB, Smuder AJ, Nelson WB, Shimkus KL, Fluckey JD, Powers SK. Impact of prolonged mechanical ventilation on diaphragmatic protein synthesis. *FASEB J April 9, 2013 27:lb784*

Wiggs MP, Swift JM, Lima F, Greene ES, Bloomfield SA, and Fluckey JD. The effect of simulated 1/6th and 1/3rd gravity on gastrocnemius muscle mass and fractional protein synthesis rates in mice. *The FASEB Journal* 24: 616.616, 2010.

Wiggs MP, Nilsson MI, Latham GS, Walters S, Flores K, Allender K, and Fluckey JD. Expression of atrogen-1 is not increased in soleus or plantaris after 5 days of hindlimb unloading in rats. *Appl. Physiol. Nutr. Metab.* 34(6): 1117–1168 (2009).

Wiggs MP, Gasier HG, Previs SF and Fluckey JD. Assessment of cumulative FSR over a 24h period with hindlimb unloading and intermittent reloading in rats. *The Physiologist* 51:6 program number 35.5, 2008

Wiggs MP, Jones KP, William Rayburn, Thomas Davis, Dohm GL, and Fluckey, JD. Insulin signaling in sedentary human skeletal muscle via PI3K is necessary for protein synthesis. [Abstract] *FASEB J* 2007.

## **Teaching**

As an instructor, I have extensive experience teaching undergraduate and graduate courses in Kinesiology, with a focus on exercise physiology, training methods, and bioenergetics. I take great passion in developing engaging course content that blends basic science with applied scenarios. I have participated in a summer long training on developing and creating online courses and best practices in integrating technology (UT Tyler PATSS). In the previous year (Fall 2018-Summer 2019), my overall teaching evaluation score was 4.48 out of 5, which included traditional face-to-face, laboratory-based, and online teaching in undergraduate and graduate courses.

Example online lecture: <https://youtu.be/zrq2im9FBs8>

### *Instructor*

UT Tyler:

Physiology of Exercise – University of Texas at Tyler. KINE3311. Fall 2016, Spring 2017, Summer 2017,2018, Spring 2018, 2019

Training Methods - University of Texas at Tyler. KINE5317. Fall 2015, 2016, 2017, 2018.  
Exercise Physiology Laboratory - University of Texas at Tyler. KINE3112 Fall 2015, Fall, Spring  
Summer 2016, 2017, 2018, 2019  
Principles of Training – Endurance - University of Texas at Tyler. KINE4304. Spring 2019.  
University of Florida  
Physiology of Exercise Training – University of Florida APK 3110, Fall 2014  
Responsible for teaching Neuromuscular and cardiovascular adaptations to exercise  
Texas A&M University- Graduate Exercise Physiology I – Texas A&M University, Spring 2019, 2020  
Six week lecture series focused on Structure and Function of Skeletal Muscle

#### *Guest Lectures*

Advanced Exercise Physiology – 2 Lectures: (1) Exercise induced changes in cardiovascular functions  
and (2) Control and regulation of angiogenesis - University of Florida, Fall 2011  
Exercise Metabolism – 3 Lectures: (1) Use of isotope traces in the determination of protein synthesis;  
(2) Evaluation of protein metabolism with disuse and hypertrophy; (2) Intracellular signaling regulation  
translation initiation in muscle; (3) Introduction to satellite cell function – Fall 2012  
Advanced Exercise Physiology – Skeletal Muscle and Cardiovascular changes with Aging – Fall 2013

## **Service and Training**

### Service

#### *Graduate Student Mentoring*

Megan Rosa-Caldwell – PhD Committee Member  
Project Title: Mitochondrial Contributions to Disuse Atrophy: Let's Talk about Sex  
Completed Spring 2020

#### *Undergraduate Mentoring –*

Emmalea Shaw – Honors Research Project  
Project Title: Mitochondrial dysfunction is correlated to muscle size in cancer cachexia  
Completed Fall 2018

#### *Undergraduate Internships in research*

Connor Benson – Spring 2016  
Belinda Reyes – Spring 2018  
Drake Davis – Spring 2018  
Brennan Thompson – Summer 2019

#### *Board Membership*

FitSteps for Life – Research Board Member – 2019-2021

#### *UT Tyler Committees*

Health Expo Organizing Committee Member 2016; Chair 2017, Member 2018, 2019  
Classroom Technology Task Force Member 2015  
Dept. Curriculum Committee – Member 2017, Chair 2018  
Hiring Committee – Student Advisor I – Member 2016  
Hiring Committee – Student Advisor II – Member 2016

Hiring Committee – Student Advisor I – Chair 2019  
CNHS Teaching Award committee – Member 2017, 2018, Chair 2019.

*Other*

East Texas Research Conference – Planning Committee 2019-2020  
*Texas ACSM Student Bowl Referee – 2016, 2017, 2018, 2019*  
*Texas ACSM – Poster Judge 2019*  
*UT Tyler Honors Program Lyceum – Judge 2017*  
*Texas ACSM - Student Research Development Grant Reviewer 2018*

*Professional Memberships:*

American College of Sports Medicine, 2007 – present  
American Physiological Society, 2007 - present  
Texas Regional Chapter of the American College of Sports Medicine, 2007-2011; 2015-present  
Southeast Regional Chapter of the American College of Sports Medicine, 2012

*Participation as Journal Referee:*

The Journal of Cachexia, Sarcopenia and Muscle  
Medicine & Science in Sports & Exercise  
American Journal of Physiology - Regulatory, Integrative and Comparative Physiology  
Journal of Gerontology  
Journal of Physiology  
Antioxidants  
Nutrients  
Sports