JOHN S. CLEMMER

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EDUCATION

PhD, Physiology & Biophysics. University of Mississippi Medical Center, Jackson, MS (2010-2015)

Master of Science, Physiology & Biophysics. University of Mississippi Medical Center, Jackson, MS (2010-2012), GPA 3.83/4.0

Master of Science, Biological Engineering. Mississippi State University, Mississippi State, MS (2008-2010), GPA 4.0/4.0

Bachelor of Science, Biological Engineering. Mississippi State University, Mississippi State, MS (2004-2008), GPA 3.62/4.0

EMPLOYMENT

2017 – present	**Instructor** – Center for Computational Medicine. Physiology and Biophysics Department. University of Mississippi Medical Center
2015 – 2017	**Post-doctoral Research Fellow** – Center for Computational Medicine. Physiology and Biophysics Department. University of Mississippi Medical Center
2015 – 2016	**Adjunct Professor** –William Carey University Graduate School (Medical Physiology I & II)
2008 – 2010	**Graduate Assistant** – Biological Engineering Department, Mississippi State University
2007 – 2008	**Chemistry Lab Technician** – Biofuel/Biochemistry Laboratory, Mississippi State University
2006 – 2007	**Health Center Technician** – Longest Health Center, Mississippi State University

PROFESSIONAL SOCIETY MEMBERSHIPS

- American Heart Association (AHA) (2011 - present)
- American Physiological Society (APS) (2011 - present)
- Society for Experimental Biology and Medicine (SEBM) (2013 - 2016)
- Microcirculatory Society (MCS) (2011 - 2015)
- Biomedical Engineering Society (BMES) (2008 - 2010)
- Institute of Biological Engineering (IBE) (2004 - 2010)

HONORS/AWARDS

- American Heart Association Postdoctoral Fellowship Grant, AHA-17POST33661071 (2017-2019)
- T32 Postdoctoral Training Grant (Granger, PI) (2016-2017)

- American Heart Association Predoctoral Fellowship Grant, AHA-14PRE20380069 (2014-2016)
- International Academy of Cardiovascular Sciences Travel Award (2015)
- Regions Outstanding Graduate Research Award (2015)
- Selected for Featured Topic Oral Presentation: Recent Advances in Obesity Research, American Physiological Society (2015)
- Young Investigator Award, Society for Experimental Biology and Medicine (2014)
- Caroline tum Suden/Hellebrandt Professional Award, American Physiological Society (2014)
- Benjamin Zweifach Student Travel Award, Microcirculatory Society (2012)
- T32 Predoctoral Training Grant (Granger, PI) (2010-2014)
- Dean's Scholarship, University of Mississippi Medical Center (2010-2015)
- President's Scholar, Mississippi State University (2006-2007)
- Dean's List Scholar, Mississippi State University (2005-2006)
- ACT Scholarship, Mississippi State University (2004-2008)

JOURNAL PUBLICATIONS

1. **Clemmer JS**, Hester RL, Pruett WA**.** Simulating a virtual population's sensitivity to salt and uninephrectomy. Interface Focus. *Accepted*, 2017.
2. Blair ET, **Clemmer JS**, Harkey HL, Hester RL, Pruett WA**.** Physiological mechanisms of water and electrolyte disturbances following transsphenoidal pituitary surgery. World Neurosurg. 107: 429-436, 2017.
3. **Clemmer JS**, Pruett WA, Butler K, Hester R. The use of complex clinical data and topological data analysis for personalized medicine. Biomed Sci Instrum. *In press*, 2017.
4. **Clemmer JS**, Pruett WA, Coleman T, Hall J, Hester R**.** Mechanisms of blood pressure salt sensitivity: New insights from mathematical modeling. Am J Physiol Regul Integr Comp Physiol. 312 (4): R451-466, 2017.
5. Pruett WA, **Clemmer JS**, Hester R. Validation of an integrative mathematical model of dehydration and rehydration in virtual humans. Physiological Reports. 4 (22): e13015, 2016
6. **Clemmer JS**, Xiang L, Lu S, Mittwede P, Hester R**.** Hyperglycemia-mediated oxidative stress increases pulmonary vascular permeability. Microcirculation. 23(3):221-9,2016.
7. Xiang L, Mittwede P, **Clemmer JS,** Bergin P. Obesity and critical illness: insights from animal models. Shock. 45 (4):349-58, 2016.
8. **Clemmer J**, Prabhu R, Chen J, Colebeck E, Priddy L, McCollum M, Brazile B, Whittington W, Wardlaw J, Rhee H, Horstemeyer M, Williams L, Liao J. Experimental observation of high strain rate responses of porcine brain, liver, and tendon. J Mech Med Biol. 16 (3), 2015.
9. Xiang L, Mittwede P, **Clemmer JS**. Glucose homeostasis and cardiovascular alterations in diabetes. Compr Physiol. 5:1815-1839, 2015.
10. Mittwede P, Bergin P, **Clemmer JS**, Xiang, L. Obesity, Malnutrition, and the Response to Critical Illness, To the Editor. Crit Care Med. 43(8): e321, 2015.
11. Mittwede P, Xiang L, Lu S, **Clemmer JS**, Hester R. Oxidative stress contributes to orthopedic trauma-induced acute kidney injury in obese rats. Am J Physiol Renal. 308 (2): F157-63, 2014.

12. **Clemmer JS**, Xiang L, Lu S, Mittwede P, Hester R**.** β_2-adrenergic regulation of stress hyperglycemia following hemorrhage in the obese Zucker rat. Physiological Reports. 2 (12): e12215, 2014.
13. **Clemmer JS**, New Investigator Editorial: Professional Skills Training in Effective Science Teaching. Am J Physiol Heart Circ Physiol. 307(9): H1267-H1268, 2014.
14. Lu S, Xiang L, **Clemmer JS**, Mittwede P, Hester R. Oxidative stress increases pulmonary vascular permeability in diabetic rats through activation of transient receptor potential melastatin 2 (TRPM2) channels. Microcirculation. 21(8): 754-60, 2014.
15. Xiang L, Lu S, Mittwede P, **Clemmer JS,** Husband G, Hester R**.** β2 adrenoreceptor blockade improves early post-trauma hyperglycemia and pulmonary injury in obese rats. Am J Physiol Heart Circ Physiol. 307: 621-7, 2014.
16. Xiang L, Lu S, Mittwede P, **Clemmer JS,** Hester R. Inhibition of NADPH oxidase prevents acute lung injury in obese rats following severe trauma. Am J Physiol Heart Circ Physiol. 306: 684-9, 2014.
17. Mittwede P, Xiang L, Lu S, **Clemmer JS**, Hester R. A novel experimental model of orthopedic trauma with acute kidney injury in obese Zucker rats. Physiological Reports. 1 (5), 2013.
18. Lu S, Xiang L, **Clemmer JS**, Gowdey A, Mittwede P, Hester R. Impaired Vascular $_{KATP}$ Function Attenuates Exercise Capacity in Obese Zucker Rats. Microcirculation. 20: 662-9, 2013.
19. Xiang L*, **Clemmer JS*,** Lu S, Mittwede P. Impaired Blood Pressure Compensation Following Hemorrhage in Conscious Obese Zucker Rats. Life Sciences. 93: 214-219, 2013.
20. **Clemmer JS**, Liao J, Davis D, Horstemeyer M, Williams L. A Mechanistic Study for Strain Rate Sensitivity of Rabbit Patellar Tendon. Journal of Biomechanics. 43: 2785-91, 2010.

ABSTRACTS

1. **Clemmer J**, Lohmeier T, Iliescu R, WA Pruett, and Hester R. Blood pressure lowering during chronic baroreflex activation: Don't forget the heart. Hypertension 70:AP180 2017.
2. Blair E, **Clemmer J**, Harkey L, Hester R, and Pruett W. Using a Physiological Model to Understand Water and Electrolyte Disturbances Following Transsphenoidal Pituitary Surgery. Research Day. Medical Student Research Program, 2017.
3. **Clemmer J**, Pruett W, and Hester R. Physiological Sensitivity to Salt and Uninephrectomy. FASEB J 2017; 31:1026.1.
4. **Clemmer J**, Pruett W, Butler K, and Hester R. Personalizing medicine in obesity using topological data analysis. Mississippi Academy of Sciences 62 (1) 2017.
5. **Clemmer J**, Hester R, Pruett W. Physiological Sensitivity to Salt and Nephrectomy. Virtual Physiological Human Conference, 2016; 978-90-826254-0-0.
6. Pruett W, **Clemmer J**, Hester R. Simulating physiological variability in human responses to renal denervation. Virtual Physiological Human Conference, 2016; 978-90-826254-0-0.
7. **Clemmer J**, Pruett W, and Hester R. Predicting salt and diuretic sensitivity in a virtual population using topological data analysis. FASEB J 2016; 30:1216.14.

8. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Effects of Acute and Chronic Hyperglycemia on Lung Capillary Permeability. International Academy of Cardiovascular Sciences Meeting, Omaha 2015.
9. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Effects of Acute and Chronic Hyperglycemia on Lung Capillary Permeability. FASEB J 2015; 29:863.22.
10. Mittwede P, Lu S, **Clemmer J**, Hester R, and Xiang L. Attenuation of Post-Trauma Hyperglycemia Prevents Acute Kidney Injury in Obese Rats. FASEB J 2015; 29:800.6.
11. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Pulmonary permeability after hemorrhage and resuscitation in the obese Zucker rat. FASEB J 2014; 28:1157.2.
12. Xiang L, Lu S, Mittwede P, **Clemmer J**, and Hester R. Beta 2 adrenoreceptor blockade reduces early post-trauma hyperglycemia and pulmonary injury in obese rats. FASEB J 2014; 28:859.1.
13. Lu S, Xiang L, **Clemmer J**, Mittwede P, and Hester R. Oxidative stress increases pulmonary capillary permeability in lean Zucker rats with chronic hyperglycemia. FASEB J 2014; 28:1153.6.
14. Mittwede P, Xiang L, Lu S, **Clemmer J**, and Hester R. Reactive oxygen species and acute kidney injury after trauma in obese rats. FASEB J 2014; 28:859.2.
15. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Hemorrhage-induced Hyperglycemia Improved with Acute TNFα blockade in the Obese Zucker Rat. Gulf Coast Physiological Meeting 2013.
16. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Hemorrhage-induced Hyperglycemia Improved with Acute TNFα blockade in the Obese Zucker Rat. FASEB J 2013; 27:1193.4.
17. Lu S, Xiang L, **Clemmer J**, Mittwede P, and Hester R. Impaired Autonomic Regulation during Exercise in Obese Zucker Rats. FASEB J 2013; 27:943.22.
18. Mittwede P, Xiang L, **Clemmer J**, Lu S, Gowdey A, and Hester R. Acute kidney injury following orthopedic trauma in obese Zucker rats. FASEB J 2013; 27:1114.6.
19. Xiang L, **Clemmer J**, Lu S, and Mittwede P. Hemorrhage-induced increase in total peripheral resistance is blunted in conscious obese Zucker rats. FASEB J 2013; 27:1193.5.
20. Xiang L, Mittwede P, **Clemmer J**, Lu S, and Hester R. TNF-a-mediated hyperglycemia in Obese Zucker rats following orthopedic trauma. FASEB J 2013; 27:1154.14.
21. **Clemmer J**, Xiang L, Lu S, Lee L, and Hester R, Autonomic Impairment During Severe Hemorrhage in Obese Zucker Rats. FASEB J 2012; 26:853.27.
22. Lu S, Xiang L, **Clemmer J**, Lee L, Sebai M, and Hester R. Apocynin Improves Exercise Performance and Functional Vasodilation by Improving KATP Function in Obese Zucker Rats. FASEB J 2012; 26:860.17.
23. Xiang L, Lu S, **Clemmer J**, Lee L, and Hester R. Impaired Blood Pressure Compensation after Hemorrhage in Obesity. FASEB J 2012; 26:684.23.
24. **Clemmer J**, Williams L, and Liao J, "A Mechanistic Study for Strain Rate Sensitivity in Rabbit Patellar Tendon." IBE Annual Conference, Cambridge, MA, March 4-6, 2010
25. **Clemmer J**, Williams L, and Liao J, "Mechanistic Study for Strain Rate Sensitivity in Rabbit Patellar Tendon." BMES Annual Fall Meeting, Pittsburgh, PA, October 7-10, 2009
26. **Clemmer J**, Liao J, Horstemeyer M, Williams L, "Mechanistic Study for Strain Rate Sensitivity in Rabbit Patellar Tendon." ASME Summer Bioengineering Conference, Lake Tahoe, CA; June 17-21, 2009

PRESENTATIONS

1. **Clemmer J**, Lohmeier T, Iliescu R, WA Pruett, and Hester R. Blood pressure lowering during chronic baroreflex activation: Don't forget the heart. Council on Hypertension 2017.
2. **Clemmer J**, Pruett W, Butler K, and Hester R. Personalizing medicine in obesity using topological data analysis. Oral Presentation in the Population Health Symposium. Mississippi Academy of Sciences Meeting 2017.
3. **Clemmer J**, Pruett W, and Hester R. Simulating physiological sensitivity to salt and uninephrectomy. Oral Presentation at the UMC Research Symposium 2016.
4. **Clemmer J**, Pruett W, and Hester R. Predicting salt and diuretic sensitivity in a virtual population using topological data analysis. Experimental Biology 2016.
5. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Effects of Acute and Chronic Hyperglycemia on Lung Capillary Permeability. International Academy of Cardiovascular Sciences Meeting 2015.
6. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Effects of Acute and Chronic Hyperglycemia on Lung Capillary Permeability. Oral Presentation at Experimental Biology 2015.
7. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Pulmonary permeability after hemorrhage and resuscitation in the obese Zucker rat. Experimental Biology 2014.
8. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Hemorrhage-induced Hyperglycemia Improved with Acute TNFα blockade in the Obese Zucker Rat. Gulf Coast Physiological Meeting 2013.
9. **Clemmer J**, Xiang L, Lu S, Mittwede P, and Hester R. Hemorrhage-induced Hyperglycemia Improved with Acute TNFα blockade in the Obese Zucker Rat. Experimental Biology 2013.
10. **Clemmer J**, Xiang L, Lu S, Lee L. and Hester R, Autonomic Impairment During Severe Hemorrhage in Obese Zucker Rats. Experimental Biology 2012.
11. **Clemmer J**, Williams L, and Liao J, "A Mechanistic Study for Strain Rate Sensitivity in Rabbit Patellar Tendon." IBE Annual Conference, Cambridge, MA, March 2010.
12. **Clemmer J**, Williams L, and Liao J, "Mechanistic Study for Strain Rate Sensitivity in Rabbit Patellar Tendon." BMES Annual Fall Meeting, Pittsburgh, PA, October 2009.
13. **Clemmer J**, Liao J, Horstemeyer M, Williams L, "Mechanistic Study for Strain Rate Sensitivity in Rabbit Patellar Tendon." ASME Summer Bioengineering Conference, Lake Tahoe, CA; June 2009.

TEACHING EXPERIENCE

- Teaching assistant, PHYSIO 744: UMC, Simulation of Physiological Mechanisms (2014-2017)
- Teaching assistant, PHYSIO 701: UMC, Physiology Simulation Lab (2015-2017)
- Adjunct Professor: Medical Physiology I & II, William Carey University (2015-2016)
- Guest Lectures: UMC Physical Therapy, Physiology (2013-2016)
- Guest Lectures: Belhaven University, Computational Biology (2016)
- APS PST Teaching in Science Workshop: Bar Harbor, Maine (2014)
- Teaching assistant, PHYSIO 701: UMC, Physiology Cardiovascular Lab (2012-2014)
- Guest Lectures: Tougaloo College, Respiratory Physiology (2014)

- Teaching Practicum (UMC class ID 716) (2013)
- Guest Lectures : Holmes Community College, Anatomy & Physiology II (2013)
- UMC M1 Physiology Tutor (2013-present)
- UMC STEP 1 Review Course, Renal Section (2013)
- Teaching assistant, ABE 4723/6723: MSU, Tissue Engineering and Regeneration (2009)
- Teaching assistant, ABE 8723: MSU, Tissue and Cellular Biomechanics (2010)

LABORATORY EXPERIENCE/SKILLS

- Computational biology/ programming
- Mathematica
- ELISA/Western Blotting
- Lab Chart
- Lung function (isolated lung/ perfusion techniques)
- Animal exercise and metabolic/oxygen consumption testing
- Microcirculatory preparations (in vivo and isolated vessels)
- Rat/mice catheter preparation surgeries
- EchoMRI
- Uniaxial biomechanics on soft tissue
- High strain rate soft tissue testing (Polymeric Split Hopkinson Pressure Bar)
- LabVIEW programing for imaging acquisition, processing, and image analysis
- Biaxial mechanical testing of planar soft tissues, e.g., porcine heart valves
- Microscopy techniques for tissue characterization: Laser Scanning Confocal Microscopy (LSCM), Scanning Electron Microscopy (SEM), and Transmission Electron Microscopy (TEM)
- Data processing and statistical analysis

SERVICE

- Experimental Biology Judge for David Bruce Research Award (2013-2017)
- APS Physiology Understanding (PhUn Week) Volunteer (2011- present)
- Peer Reviewer – Journal of Anatomy (2017)
- Peer Reviewer – AJP - Heart and Circulatory Physiology (2015-2016)
- Peer Reviewer - Frontiers in Physiology (2015-2016)
- Responsible Conduct of Research Course (2016)
- UMC Associated Student Body Mentoring Chair (2014-2015)
- Mississippi High School State Science Fair Judge (2013-2014)
- Vice President of UMC Graduate School (2013- 2015)
- UMC Graduate School Curriculum Committee (2013-2014)
- UMC Project Outreach Davis Magnet Elementary (2012-2016)
- UMC Discover U volunteer (2015)
- MSU Honors College (2004-2008)
- Bulldogs for Heart Health (2008-2010)
- Student Association – Athletic Affairs (2005-2006)
- Big Brother/Big Sister Mentoring Scholarship Award (2004)
- Eagle Scout (2004)