Kenneth S. Campbell, PhD

CONTACT DETAILS

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URLs

https://physiology.med.uky.edu/users/kscamp3
https://www.campbellmusclelab.org

https://twitter.com/CampbellLabatUK
https://www.facebook.com/campbellmusclelab
https://campbell-muscle-lab.github.io/

EDUCATION

1990- 1993	BA (Hons): Physics	University College, University of Oxford, United Kingdom Advanced options in modern optics and atomic physics Special commendation for experimental work
1993 – 1998	PhD: Sports Science	Applied Physiology Research Group University of Birmingham, United Kingdom “The analysis of cross-bridge activity in a stiffening relaxed muscle fiber” Supervisor: Martin Lakie, PhD Examiner: Andrew F. Huxley, (Nobel Laureate, Trinity, Cambridge)

TRAINING

1998 – 2003	Postdoc	Department of Physiology University of Wisconsin-Madison Mechanical properties of skeletal and cardiac muscles Mentor: Richard L. Moss, PhD

EMPLOYMENT

2003 – 2004	Assistant Scientist	Department of Physiology University of Wisconsin-Madison, Madison, WI
2004 – 2009	Assistant Professor (Tenure-track)	Department of Physiology University of Kentucky, Lexington, KY
2009 – 2018	Associate Professor (With tenure)	Department of Physiology University of Kentucky, Lexington, KY
2015 – 2018	Associate Professor (Joint appointment)	Division of Cardiovascular Medicine University of Kentucky, Lexington, KY
2016 – present	Director of Graduate Studies	Department of Physiology University of Kentucky, Lexington, KY
2018 - present	Professor	Department of Physiology and Division of Cardiovascular Medicine University of Kentucky, Lexington, KY

LEADERSHIP TRAINING

2019	University of Kentucky Chair’s Academy
2020	University of Kentucky College of Medicine Mentor Training (now acting as Peer Trainer)
2021	University of Kentucky College of Medicine Leadership Academy

FUNDING

Current

2017-2022 HL133359
NIH U01: Multiscale Modeling Consortium
Multiscale modeling of inherited cardiomyopathies and therapeutic interventions
Role: Contact MPI (30% effort)
PIs: Kenneth Campbell / Jonathan Wenk
Total costs: $3,269,195, available to Campbell: $1,300,000

2019-2023 HL146676
NIH R01
Computer modeling of myosin binding protein C and its effects on cardiac contraction
Role: MPI (20% effort)
PIs: Julian Stelzer (Case Western) / Kenneth Campbell / J.P. Jin (Wayne State)
Total costs: $1,700,000, available to Campbell: $700,000

2019-2022 TP135689
American Heart Association
Thick filament regulation in heart failure
Role: Co-I
PI: Bertrand Tanner (Washington State University)
Total costs: $300,000, available to Campbell: $90,000

2020-2024 HL149164-A1
NIH R01
Length-dependent activation in human myocardium
Role: Contact MPI (20% effort)
MPI: Kenneth Campbell / Bert Tanner (Washington State University)
Total costs: $2,946,000, available to Campbell: $730,600

2020-2024 HL148785-A1
NIH R01
Dual filament control of myocardial power and hemodynamics
Role: MPI (20% effort)
MPI: Kerry McDonald (Missouri) / Kenneth Campbell
Total costs: $2,410,000, available to Campbell: $736,000

2020-2022 Myocardial Recovery Alliance (MYRA)
Institutional Award to build translational research in myocardial recovery via hemodynamic unloading with a Ventricular Assist Device
MPI: Kenneth Campbell / Emma Birks
Total costs: $150,000

2021-2022 GM118292
T32 Institutional Training grant
Graduate training in integrative physiology
Role: Program Director, transferred from B.N.Smith
Total costs: $160,000

2022-2023 TR001998
TL1 Predoctoral training support
Trainee: Greg Milburn
Role: Sponsor
Total costs: $60,000

2021-2022 GM118292
T32 Predoctoral training support
Trainee: Austin Wellette-Hunsucker
Role: Sponsor
Total costs: $40,000

2021-2022 No award number available
British Heart Foundation Project Grant
Measuring and modeling atrial mechanics in health and heart failure
Role: PI of sub-contract to University of Kentucky (5% effort)
PI: Steve Neiderer (King's College, London)
Total costs: $350,000, available to Campbell: $127,146

2021-2023 AHA929744
American Heart Association Postdoctoral Fellowship
Dual filament regulation of contractile power in human myocardium
PI: Sarah Kosta
Role: Sponsor
Total costs: $163,000

2021-2024 No award number
Chan Zuckerburg Institute
Pediatric Networks
Role: PI of Sub-contract to the University of Kentucky
PI: Christine Seidman (Harvard)
Total costs: $1,750,000, available to Campbell: $75,000

2021-2025 TR001998
NIH CTSA
Kentucky Center for Clinical and Translational Sciences
Role: Core Director: Biospecimens (15% effort)
PI: Phillip Kern
Total costs: $23,000,000, available to Campbell: $150,000

2021-2025 CD090642
NIH R01
CRNCS: Multiscale models of proprioceptive encoding for sensorimotor control
Role: PI of Sub-Contract to the University of Kentucky (15% effort)
PI: Lena Ting (Emory University)
Total costs: $2,000,000, available to Campbell: $176,395

Pending

2022-2026 HL163977
NIH R01
Data-driven optimization of therapy for heart failure
Role: MPI (20% effort)
Total costs: $2,500,000, available to Campbell: $1,200,000
Impact score 36, Percentile 15.0%, NHLBI pay-line, 15%, Council meets 01/2022

2022-2027 GM145386
T32 Institutional Training Grant
Graduate Training in Integrative Physiology
Role: MPI (10% effort) with Donna Wilcock, PhD
Total costs: $1,200,000

2022-2024 AHA907620
American Heart Association Predoctoral Fellowship
Trainee: Greg Milburn
Role: Sponsor
Total costs: $60,000

2023-2026 HL165122
NIH R01
Modulation of mitochondrial supercomplexes for right ventricular dysfunction in pulmonary hypertension
Role: Co-Investigator (1% effort)
PI: Richard Clements (University of Rhode Island)
Available to Campbell: $40,000

2023-2026 No award number available
NIH R01
Non-invasive identification of cardiac parameters in heart failure with preserved ejected fraction
Role: Co-Investigator (5% effort)
PI: Mike Moulton (University of Nebraska)
Available to Campbell: $240,000

Completed

1999-2001 992054Z
American Heart Association Northland Affiliate (Postdoctoral Fellowship)
Thixotropic mechanical properties of relaxed cardiac muscle affect diastolic function
Role: Principal Investigator
Total costs: $72,000, available to Campbell: $60,000

2001-2002 020574Z
American Heart Association Northland Affiliate (Postdoctoral Fellowship)
Myocardial diastolic compliance under conditions mimicking ischemic heart failure
Role: Principal Investigator
Total costs: $37,500, available to Campbell: $33,000

2006-2009 0630079N
American Heart Association National Center (Scientist Development Grant)
Cycling cross-bridges augment passive stiffness components during diastole
Role: Principal Investigator
Total costs: $286,000, available to Campbell: $260,000

2006-2008 AG028162-01
NIH R03
Myocardial stiffness in aging associated diastolic heart failure
Role: Principal Investigator
Total costs: $150,000, available to Campbell: $100,000

2007-2010 WKURF 516202-08-02
KY NASA EPSCoR
Gender differences in response to simulated microgravity with and without countermeasure
Role: Co-Principal Investigator
PIs: Kenneth Campbell / Abhijit Patwardhan
Total costs: $50,000, available to Campbell: $50,000

2008-2013 AR055246-01A1
NIH R01
Circadian rhythms in skeletal muscle
Role: Co-Investigator
PI: Karyn Esser
Total costs: $1,600,000, available to Campbell: $100,000

2008-2015 HL090749
NIH R01
Myocardial stiffness in diastolic heart failure
Role: Principal Investigator
Total costs: $1,687,000, available to Campbell: $1,125,000

2009-2011 09POST223406
American Heart Association Great Rivers Affiliate Postdoctoral Fellowship
Sex specific mechanisms leading to elevated myocardial stiffness in type 1 diabetes
Role: Sponsor
PI: Mihail Mitov
Total costs: $92,000, available to Campbell: $0

2009-2011 1RC1 ES01836
NIH Challenge Grant
Clock genes, environmental challenges and cardiopulmonary disease
Role: Co-Investigator
Principal Investigators: Karyn A. Esser / Francisco H. Andrade
Total costs: $1,5000,000

2010-2011 RR021954
NIH P210 COBRE Award
Obesity and Heart Failure
Role: Co-Investigator on sub-contract
PI: Lisa Cassis (overall) / Mark Bonnell (sub-contract)
Total costs: $50,000, available to Campbell: $5,000

2010-2014 AR057868
NIH R01
The growth hormone/IGF-1 axis in skeletal muscle
Role; Co-Investigator of sub-contract to UK
PI: Thomas Clemens (Johns Hopkins University)
Total costs to UK: $175,000, available to Campbell: $60,000

2011-2012 11POST7360038
American Heart Association Great Rivers Affiliate Postdoctoral Fellowship
Mechanisms of delayed relaxation in the aging heart
Role: Sponsor
PI: Stuart G. Campbell
Total costs: $100,000, available to Campbell: $0

2012-2012 Children’s Miracle Cure Network
Cell-driven simulations help detect abnormal ventricular remodeling
Role: Co-Principal Investigator
PIs: Kenneth Campbell / Brandon Fornwalt
Total costs: $10,000, available to Campbell: $5,000

2012-2014 UK CCTS
CTSA Pilot Award
Mechanical unloading improves the function of failing hearts
Role: PI
Total costs: $100,00, available to Campbell: $100,000

2014 International Mobility Fund for the USA
Royal Society of New Zealand
Role: Co-Principal Investigator
PIs: Kenneth Campbell / Andrew Taberner
Total costs: $10,000, available to Campbell: $5,000

2014-2016 GM110787
NIH P30 COBRE Award
Molecular mechanisms of cardiac dysfunction
Role: Co-PI on sub-contract
PI: Louis Hersh (overall) / Kenneth Campbell and Jonathan Wenk (sub-contract)
Total costs: $100,000, available to Campbell: $50,000

2015-2017 Lyman T. Johnson PhD student fellowship
University of Kentucky Award
Role: Sponsor
PI: Cheavar A. Blair
Total costs: $20,000, available to Campbell: $0

2015-2017 15GRNT25460003
American Heart Association Grant-in-Aid
Transmural variation in cellular level contraction
Role: Principal Investigator (10% effort)
Total costs: $154,000, available to Campbell: $140,000

2016-2021 TR0001998
NIH CTSA
Kentucky Center for Clinical and Translational Sciences
Role: Core Director: Biospecimens (15% effort)
PI: Phillip Kern
Total costs: $14,500,000, available to Campbell: $72,000

2016-2021 CD090642
NIH R01
CRNCS: Multiscale models of proprioceptive encoding for sensorimotor control
Role: PI of Sub-Contract to the University of Kentucky (15% effort)
PI: Lena Ting, Emory University
Total costs: $1,714,500, available to Campbell: $125,000

2017 SEC Travel Award
Total costs: $1000, available to Campbell: $1,000

2017-2019 HL135000
NIH R01
Role of myocyte Na+ dysregulation in diabetic heart disease
Role: Co-Investigator (5% effort)
PI: Sanda Despa
Total costs: $1,800,000, available to Campbell: $26,000

2020-2021 University of Kentucky CCTS High Impact Pilot Award
Thick filament based therapies for heart failure
Role: PI
Total costs: $40,000, available to Campbell: $40,000
PIs: Kenneth Campbell

2020-2021 University of Kentucky COVID-19 Research Alliance Pilot Award
COVID-19 Research Registry and Specimen Bank
Role: PI
Total costs: $5,000, available to Campbell: $5,000

2021-2022 GM118292
T32 Predoctoral training support
Trainee: Greg Milburn
Role: Sponsor
Total costs: $40,000
Fellowship returned early because Mr Milburn received an additional award

PUBLICATIONS

Google Scholar: H-index 32
Complete list of published work: https://www.ncbi.nlm.nih.gov/myncbi/kenneth.campbell.1/bibliography/public/

1) **CAMPBELL, K. S.** & Lakie, M. (1998). A cross-bridge mechanism can explain the thixotropic short-range elastic component of relaxed frog skeletal muscle. *J Physiol.* 510 (Pt 3), 941-962. PMCID PMC2231083.

2) **CAMPBELL, K. S.** & Moss, R. L. (2000). A thixotropic effect in contracting rabbit psoas muscle: prior movement reduces the initial tension response to stretch. *J Physiol.* 525 Pt 2, 531-548. PMCID PMC2269955.

3) Fitzsimons, D. P., Patel, J. R., **CAMPBELL, K. S.** & Moss, R. L. (2001). Cooperative mechanisms in the activation dependence of the rate of force development in rabbit skinned skeletal muscle fibers. *J Gen Physiol.* 117, 133-148. PMCID PMC2217243.

4) **CAMPBELL, K. S.** & Moss, R. L. (2002). History-dependent mechanical properties of permeabilized rat soleus muscle fibers. *Biophys J.* 82, 929-943. PMCID PMC1301901.

5) **CAMPBELL, K. S.** & Moss, R. L. (2003). SLControl: PC-based data acquisition and analysis for muscle mechanics. *Am J Physiol Heart Circ Physiol.* 285, H2857-2864. PMCID not available, PMID 12907419.

6) **CAMPBELL, K. S.**, Patel, J. R. & Moss, R. L. (2003). Cycling cross-bridges increase myocardial stiffness at submaximal levels of Ca2+ activation. *Biophys J.* 84, 3807-3815. PMCID PMC1302962.

7) Warren, C. M., Krzesinski, P. R., **CAMPBELL, K. S.**, Moss, R. L. & Greaser, M. L. (2004). Titin isoform changes in rat myocardium during development. *Mech Dev.* 121, 1301-1312. PMCID not available, PMID 15454261.

8) Greaser, M. L., Krzesinski, P. R., Warren, C. M., Kirkpatrick, B., **CAMPBELL, K. S.** & Moss, R. L. (2005). Developmental changes in rat cardiac titin/connectin: transitions in normal animals and in mutants with a delayed pattern of isoform transition. *J Muscle Res Cell Motil.* 26, 325-332. PMCID not available, PMID 16491431.

9) **CAMPBELL, K. S.** (2006). Filament compliance effects can explain tension overshoots during force development. *Biophys J.* 91, 4102-4109. PMCID PMC1635681.

10) **CAMPBELL, K. S.** (2006). Tension recovery in permeabilized rat soleus muscle fibers after rapid shortening and restretch. *Biophys J.* 90, 1288-1294. PMCID PMC1367280.

11) **CAMPBELL, K. S.** & Holbrook, A. M. (2007). The rate of tension recovery in cardiac muscle correlates with the relative residual tension prevailing after restretch. *Am J Physiol Heart Circ Physiol.* 292, H2020-2022. PMCID PMC2001153.

12) Mccarthy, J. J., Andrews, J. L., Mcdearmon, E. L., **CAMPBELL, K. S.**, Barber, B. K., Miller, B. H., Walker, J. R., Hogenesch, J. B., Takahashi, J. S. & Esser, K. A. (2007). Identification of the circadian transcriptome in adult mouse skeletal muscle. *Physiol Genomics.* 31, 86-95. PMCID PMC6080860.

13) Robia, S. L., **CAMPBELL, K. S.**, Kelly, E. M., Hou, Z., Winters, D. L. & Thomas, D. D. (2007). Forster transfer recovery reveals that phospholamban exchanges slowly from pentamers but rapidly from the SERCA regulatory complex. *Circ Res.* 101, 1123-1129. PMCID PMC2590498.

14) **CAMPBELL, K. S.** & Lakie, M. (2008). Response to Bianco et al.: Interaction forces between F-actin and titin PEVK domain measured with optical tweezers. *Biophys J.* 94, 327-328; discussion 329-330. PMCID PMC2134857.

15) Hardin, B. J., **CAMPBELL, K. S.**, Smith, J. D., Arbogast, S., Smith, J., Moylan, J. S. & Reid, M. B. (2008). TNF-alpha acts via TNFR1 and muscle-derived oxidants to depress myofibrillar force in murine skeletal muscle. *J Appl Physiol (1985).* 104, 694-699. PMCID not available, PMID 18187611.

16) **CAMPBELL, K. S.** (2009). Interactions between connected half-sarcomeres produce emergent mechanical behavior in a mathematical model of muscle. *PLoS Comput Biol.* 5, e1000560. PMCID PMC2770126.

17) Mitov, M. I., Greaser, M. L. & **CAMPBELL, K. S.** (2009). GelBandFitter--a computer program for analysis of closely spaced electrophoretic and immunoblotted bands. *Electrophoresis.* 30, 848-851. PMCID PMC2742644.

18) Mitov, M. I., Holbrook, A. M. & **CAMPBELL, K. S.** (2009). Myocardial short-range force responses increase with age in F344 rats. *J Mol Cell Cardiol.* 46, 39-46. PMCID PMC2633371.

19) Andrews, J. L., Zhang, X., Mccarthy, J. J., Mcdearmon, E. L., Hornberger, T. A., Russell, B., **CAMPBELL, K. S.**, Arbogast, S., Reid, M. B., Walker, J. R., Hogenesch, J. B., Takahashi, J. S. & Esser, K. A. (2010). CLOCK and BMAL1 regulate MyoD and are necessary for maintenance of skeletal muscle phenotype and function. *Proc Natl Acad Sci U S A.* 107, 19090-19095. PMCID PMC2973897.

20) **CAMPBELL, K. S.** (2010). Distorting the sarcomere. *J Gen Physiol.* 136, 155-157. PMCID PMC2912064.

21) **CAMPBELL, K. S.** (2010). Short-range mechanical properties of skeletal and cardiac muscles. *Adv Exp Med Biol.* 682, 223-246. PMCID PMC3095648.

22) Campbell, S. G., Lionetti, F. V., **CAMPBELL, K. S.** & Mcculloch, A. D. (2010). Coupling of adjacent tropomyosins enhances cross-bridge-mediated cooperative activation in a markov model of the cardiac thin filament. *Biophys J.* 98, 2254-2264. PMCID PMC2872217.

23) Mavalli, M. D., Digirolamo, D. J., Fan, Y., Riddle, R. C., **CAMPBELL, K. S.**, Van Groen, T., Frank, S. J., Sperling, M. A., Esser, K. A., Bamman, M. M. & Clemens, T. L. (2010). Distinct growth hormone receptor signaling modes regulate skeletal muscle development and insulin sensitivity in mice. *J Clin Invest.* 120, 4007-4020. PMCID PMC2964973.

24) Bossuyt, J., Chang, C. W., Helmstadter, K., Kunkel, M. T., Newton, A. C., **CAMPBELL, K. S.**, Martin, J. L., Bossuyt, S., Robia, S. L. & Bers, D. M. (2011). Spatiotemporally distinct protein kinase D activation in adult cardiomyocytes in response to phenylephrine and endothelin. *J Biol Chem.* 286, 33390-33400. PMCID PMC3190922.

25) **CAMPBELL, K. S.** (2011). Impact of myocyte strain on cardiac myofilament activation. *Pflugers Arch.* 462, 3-14. PMCID PMC3115504.

26) Campbell, S. G. & **CAMPBELL, K. S.** (2011). Mechanisms Of Residual Force Enhancement In Skeletal Muscle: Insights From Experiments And Mathematical Models. *Biophys Rev.* 3, 199-207. PMCID PMC3237401.

27) Campbell, S. G., Hatfield, P. C. & **CAMPBELL, K. S.** (2011). A mathematical model of muscle containing heterogeneous half-sarcomeres exhibits residual force enhancement. *PLoS Comput Biol.* 7, e1002156. PMCID PMC3182863.

28) Ferreira, L. F., **CAMPBELL, K. S.** & Reid, M. B. (2011). Effectiveness of sulfur-containing antioxidants in delaying skeletal muscle fatigue. *Med Sci Sports Exerc.* 43, 1025-1031. PMCID PMC6311533.

29) Ferreira, L. F., **CAMPBELL, K. S.** & Reid, M. B. (2011). N-acetylcysteine in handgrip exercise: plasma thiols and adverse reactions. *Int J Sport Nutr Exerc Metab.* 21, 146-154. PMCID PMC3374331.

30) Mccarthy, J. J., Mula, J., Miyazaki, M., Erfani, R., Garrison, K., Farooqui, A. B., Srikuea, R., Lawson, B. A., Grimes, B., Keller, C., Van Zant, G., **CAMPBELL, K. S.**, Esser, K. A., Dupont-Versteegden, E. E. & Peterson, C. A. (2011). Effective fiber hypertrophy in satellite cell-depleted skeletal muscle. *Development.* 138, 3657-3666. PMCID PMC3152923.

31) Burgess, D. E., Bartos, D. C., Reloj, A. R., **CAMPBELL, K. S.**, Johnson, J. N., Tester, D. J., Ackerman, M. J., Fressart, V., Denjoy, I., Guicheney, P., Moss, A. J., Ohno, S., Horie, M. & Delisle, B. P. (2012). High-risk long QT syndrome mutations in the Kv7.1 (KCNQ1) pore disrupt the molecular basis for rapid K(+) permeation. *Biochemistry.* 51, 9076-9085. PMCID PMC3613984.

32) Ferreira, L. F., Moylan, J. S., Stasko, S., Smith, J. D., **CAMPBELL, K. S.** & Reid, M. B. (2012). Sphingomyelinase depresses force and calcium sensitivity of the contractile apparatus in mouse diaphragm muscle fibers. *J Appl Physiol (1985).* 112, 1538-1545. PMCID PMC3362233.

33) Jackson, J. R., Mula, J., Kirby, T. J., Fry, C. S., Lee, J. D., Ubele, M. F., **CAMPBELL, K. S.**, Mccarthy, J. J., Peterson, C. A. & Dupont-Versteegden, E. E. (2012). Satellite cell depletion does not inhibit adult skeletal muscle regrowth following unloading-induced atrophy. *Am J Physiol Cell Physiol.* 303, C854-861. PMCID PMC3469717.

34) Lefta, M., **CAMPBELL, K. S.**, Feng, H. Z., Jin, J. P. & Esser, K. A. (2012). Development of dilated cardiomyopathy in Bmal1-deficient mice. *Am J Physiol Heart Circ Physiol.* 303, H475-485. PMCID PMC3423146.

35) Campbell, S. G., Haynes, P., Kelsey Snapp, W., Nava, K. E. & **CAMPBELL, K. S.** (2013). Altered ventricular torsion and transmural patterns of myocyte relaxation precede heart failure in aging F344 rats. *Am J Physiol Heart Circ Physiol.* 305, H676-686. PMCID PMC3761331.

36) Chung, C. S. & **CAMPBELL, K. S.** (2013). Temperature and transmural region influence functional measurements in unloaded left ventricular cardiomyocytes. *Physiol Rep.* 1, e00158. PMCID PMC3871472.

37) Milani-Nejad, N., Xu, Y., Davis, J. P., **CAMPBELL, K. S.** & Janssen, P. M. (2013). Effect of muscle length on cross-bridge kinetics in intact cardiac trabeculae at body temperature. *J Gen Physiol.* 141, 133-139. PMCID PMC3536524.

38) Weimer, K., Theobald, J., **CAMPBELL, K. S.**, Esser, K. A. & Dimario, J. X. (2013). Genome-wide expression analysis and EMX2 gene expression in embryonic myoblasts committed to diverse skeletal muscle fiber type fates. *Dev Dyn.* 242, 1001-1020. PMCID PMC3763492.

39) **CAMPBELL, K. S.** (2014). Dynamic coupling of regulated binding sites and cycling myosin heads in striated muscle. *J Gen Physiol.* 143, 387-399. PMCID PMC3933939.

40) Chung, C. S., Mitov, M. I., Callahan, L. A. & **CAMPBELL, K. S.** (2014). Increased myocardial short-range forces in a rodent model of diabetes reflect elevated content of beta myosin heavy chain. *Arch Biochem Biophys.* 552-553, 92-99. PMCID PMC3942377.

41) Haynes, P. & **CAMPBELL, K. S.** (2014). Myocardial hypertrophy reduces transmural variation in mitochondrial function. *Front Physiol.* 5, 178. PMCID PMC4019838.

42) Haynes, P., Nava, K. E., Lawson, B. A., Chung, C. S., Mitov, M. I., Campbell, S. G., Stromberg, A. J., Sadayappan, S., Bonnell, M. R., Hoopes, C. W. & **CAMPBELL, K. S.** (2014). Transmural heterogeneity of cellular level power output is reduced in human heart failure. *J Mol Cell Cardiol.* 72, 1-8. PMCID PMC4037376.

43) **CAMPBELL, K. S.** & Sorrell, V. L. (2015). Cell- and molecular-level mechanisms contributing to diastolic dysfunction in HFpEF. *J Appl Physiol (1985).* 119, 1228-1232. PMCID PMC4816411.

44) Chung, C. S., Mechas, C. & **CAMPBELL, K. S.** (2015). Myocyte contractility can be maintained by storing cells with the myosin ATPase inhibitor 2,3 butanedione monoxime. *Physiological Reports.* 3, e12445. PMCID PMC4522161.

45) Nance, M. E., Whitfield, J. T., Zhu, Y., Gibson, A. K., Hanft, L. M., **CAMPBELL, K. S.**, Meininger, G. A., Mcdonald, K. S., Segal, S. S. & Domeier, T. L. (2015). Attenuated sarcomere lengthening of the aged murine left ventricle observed using two-photon fluorescence microscopy. *Am J Physiol Heart Circ Physiol.* 309, H918-925. PMCID PMC4591408.

46) Zhang, X., Haynes, P., **CAMPBELL, K. S.** & Wenk, J. F. (2015). Numerical evaluation of myofiber orientation and transmural contractile strength on left ventricular function. *J Biomech Eng.* 137, 044502. PMCID PMC5101031.

47) Blair, C. A., Haynes, P., Campbell, S. G., Chung, C., Mitov, M. I., Dennis, D., Bonnell, M. R., Hoopes, C. W., Guglin, M. & **CAMPBELL, K. S.** (2016). A Protocol for Collecting Human Cardiac Tissue for Research. *VAD J.* 2, Article 12. http://uknowledge.uky.edu/vad/vol12/iss11/12. PMCID PMC5199025.

48) **CAMPBELL, K. S.** (2016). Compliance Accelerates Relaxation in Muscle by Allowing Myosin Heads to Move Relative to Actin. *Biophys J.* 110, 661-668. PMCID PMC4744171.

49) Tang, W., Blair, C. A., Walton, S. D., Malnasi-Csizmadia, A., **CAMPBELL, K. S.** & Yengo, C. M. (2016). Modulating Beta-Cardiac Myosin Function at the Molecular and Tissue Levels. *Front Physiol.* 7, 659. PMCID PMC5220080.

50) Wang, H., Zhang, X., Dorsey, S. M., Mcgarvey, J. R., **CAMPBELL, K. S.**, Burdick, J. A., Gorman, J. H., 3rd, Pilla, J. J., Gorman, R. C. & Wenk, J. F. (2016). Computational Investigation of Transmural Differences in Left Ventricular Contractility. *J Biomech Eng.* 138. PMCID PMC5125313.

51) **CAMPBELL, K. S.** (2017). Super-relaxation helps muscles work more efficiently. *J Physiol.* 595, 1007-1008. PMCID PMC5309356.

52) Chung, C. S., Hoopes, C. W. & **CAMPBELL, K. S.** (2017). Myocardial relaxation is accelerated by fast stretch, not reduced afterload. *J Mol Cell Cardiol.* 103, 65-73. PMCID PMC5347980.

53) Duggal, D., Requena, S., Nagwekar, J., Raut, S., Rich, R., Das, H., Patel, V., Gryczynski, I., Fudala, R., Gryczynski, Z., Blair, C., **CAMPBELL, K. S.** & Borejdo, J. (2017). No Difference in Myosin Kinetics and Spatial Distribution of the Lever Arm in the Left and Right Ventricles of Human Hearts. *Front Physiol.* 8, 732. PMCID PMC5645524.

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INVENTION DISCLOSURES

2002	Disclosure to the Wisconsin Alumni Research Foundation “SLControl: a computer system that controls muscle physiology experiments”
2008	Disclosure to the University of Kentucky Intellectual Property Committee “Quantification of overlapping bands in gel electrophoresis”
2015	Disclosure to the University of Kentucky Intellectual Property Committee (with Yuan Wen and John McCarthy) “In vitro high-throughput screen of skeletal muscle hypertrophy and atrophy”
2018	Disclosure to the University of Kentucky Intellectual Property Committee (with John McCarthy and Chase Vickery) “MyoGrowth: computer modeling of muscle growth and regeneration”

CONSULTING

2016 - 2017	Software development for Odercept, LLC
2017	Eli Lilly

STARTUPS

2016-2018	Chief Technology Officer for MyoAnalytics, LCC

COMPUTER SOFTWARE

2000 - present SLControl

http://www.slcontrol.org

SLControl is software for acquiring and analyzing experimental data quantifying the contractile properties of muscle.

2009 - present GelBandFitter

http://www.gelbandfitter.org

GelBandFitter is a computer program that uses non-linear regression techniques to fit mathematical functions to densitometry profiles of protein gels. This allows for improved quantification of gels with partially overlapping and potentially asymmetric protein bands. The program can also be used to analyze immunoblots with closely-spaced bands

2007 – 2011 DEngine

http://www.dengine.org

DEngine (which stands for Distributed computing ENGINE) was a collection of computer programs that allows multiple machines to work together (using 'spare' screen-saver processing power) to solve large-scale mathematical problems.

2013 - present MyoSim

http://www.myosim.org

MyoSim is computer software that can be used to simulate the mechanical properties (force, shortening, power output, etc.) of striated muscles. It was developed in the Campbell lab and is feely available under the GNU General Public License.

2017 - present MMoTH

http://www.mmoth.org

MMotH (Multiscale Model of the Heart) is collaborative project led by Dr. Campbell and Dr. Jonathan Wenk. The goal is to develop a multi-scaled computer model that can predict how cardiac structure and function remodel in response to genetic and/or therapeutic modulation of myosin kinetics. The project is funded by a 5-year U01 grant.

2020 - present FiberSim

https://campbell-muscle-lab.github.io/FiberSim/

FiberSim is a spatially explicit model of half-sarcomeres that is being developed by Dr. Campbell and Dr. Kosta, a postdoc in his group. A manuscript introducing the model is available at https://www.biorxiv.org/content/10.1101/2021.06.11.448126v1

2020 - present PyMyoVent

https://campbell-muscle-lab.github.io/PyMyoVent

PyMyoVent simulates a single ventricle pumping blood around a closed circulation. The contractile module is based on MyoSim but is augmented with baroreflex and growth modules. It is designed as a test-bed to facilitate early-stage modeling of human cardiac disease.

A variety of other software packages, educational material, and tutorials are available at https://campbell-muscle-lab.github.io

WEBSITES

2008 - 2011 Center for Muscle Biology

http://www.mc.uky.edu/muscle

I was solely responsible for the development of the website for the Center for Muscle Biology in December 2008 and maintained the resource until 2011. I created more than 90% of the content for the original site which had about 100 pages.

2010 - 2012 Department of Physiology grants database

http://www.ukpgygrants.org

UKPGYGrants.org was a website where members of the University of Kentucky Physiology department could view grant applications submitted by other colleagues and post their own proposals for others to view. The goal was to provide a simple way of sharing knowledge and experience so that departmental members could submit stronger and better grant applications. I created the original site in 2010 and maintained it for 2 years

University of Kentucky

2005	Spring	PGY 604	Advanced cardiovascular physiology	2 lectures
		PGY 818	Electrocardiogram workshop	
	Fall	PGY 502	Muscle/Cardiovascular physiology	9 lectures
		PGY 602	Muscle/Cardiovascular physiology	3 lectures
2006	Spring	PGY 630	Advanced skeletal muscle physiology	3 lectures
	Fall	PGY 412G	Cardiovascular physiology	8 lectures
2007	Spring	PGY 412G	Cardiovascular physiology	8 lectures
		PGY 604	Advanced cardiovascular physiology	3 lectures
		PGY 630	Advanced skeletal muscle physiology	3 lectures
	Fall	PGY 412G	Cardiovascular physiology	8 lectures
2008	Spring	PGY 412G	Cardiovascular physiology	8 lectures
	Fall	PGY 412G	Cardiovascular physiology	8 lectures
2009	Spring	PGY 412G	Cardiovascular physiology	8 lectures
		PGY 630	Advanced skeletal muscle physiology	18 lectures
		PGY 604	Advanced cardiovascular physiology	2 lectures
	Fall	PGY 412G	Cardiovascular physiology	8 lectures
2010	Spring	PGY 412G	Cardiovascular physiology	8 lectures
	Fall	PGY 412G	Cardiovascular physiology	8 lectures
2011	Spring	PGY 412G	Cardiovascular physiology	8 lectures
		PGY 604	Advanced cardiovascular physiology	4 lectures
	Fall	PGY 412G	Cardiovascular physiology	8 lectures
2012	Spring	PGY 412G	Cardiovascular physiology	8 lectures
	Fall	PGY 412G	Cardiovascular physiology	8 lectures
2013	Spring	PGY 412G	Cardiovascular physiology	8 lectures
		PGY 604	Advanced cardiovascular physiology	3 lectures
	Fall	PGY 412G	Cardiovascular physiology	8 lectures
2014	Spring	PGY 412G	Cardiovascular physiology	8 lectures
		IBS 608	Digital imaging for biomedical scientists	7 lectures
	Fall	PGY 412G	Cardiovascular physiology	8 lectures
2015	Spring	PGY 412G	Cardiovascular physiology	7 lectures
		PGY 412G	Cardiovascular physiology	7 lectures (online)
		PGY 604	Advanced cardiovascular physiology	1 lecture
		IBS 608	Digital imaging for biomedical scientists	7 lectures
	Summer	PGY 412G	Cardiovascular physiology	7 lectures (online)
	Fall	PGY 412G	Cardiovascular physiology and striated muscle	11 lectures

2016	Spring	PGY 412G	Cardiovascular physiology and striated muscle	11 lectures
		PGY 412G	Cardiovascular physiology and striated muscle	11 lectures online
		PGY 604	Advanced cardiovascular physiology	1 lecture
		IBS 608	Digital imaging for biomedical scientists	7 lectures
	Fall	PGY 412G	Cardiovascular physiology and striated muscle	11 lectures
		PGY 412G	Cardiovascular physiology and striated muscle	11 lectures online
		PGY 413G	Cardiovascular physiology and striated muscle	3 lectures
2017	Spring	MD 826	Medical school cardiology	5 lectures
		PGY 412G	Cardiovascular physiology and striated muscle	10 lectures
		PGY 412G	Cardiovascular physiology and striated muscle	10 lectures online
		PGY 412G Honors	Cardiovascular physiology and striated muscle	10 lectures online 3 lectures in person
		PGY 413G	Cardiovascular physiology and striated muscle	3 lectures
		IBS 608	Digital imaging for biomedical scientists	7 lectures
		MD 818	Medical school muscle physiology	2 lectures
	Fall	MD 826	Medical school cardiology	5 lectures
		PGY 412G	Cardiovascular physiology and striated muscle	10 lectures
		PGY 412G	Cardiovascular physiology and striated muscle	10 lectures online
		PGY 412G Honors	Cardiovascular physiology and striated muscle	10 lectures online 3 lectures in person
		PGY 413G	Cardiovascular physiology and striated muscle	3 lectures
		HHS 402	Skeletal muscle function	2 lectures
2018	Spring	PGY 630	Quantitative methods for biomedical scientists	36 lectures
		PGY412G	Cardiovascular physiology and striated muscle	10 lectures
		PGY 412G	Cardiovascular physiology and striated muscle	10 lectures online
		PGY 412G Honors	Cardiovascular physiology and striated muscle	10 lectures online 3 lectures in person
		PGY 603	Advanced cardiovascular physiology	3 lectures
		MD 818	Medical school muscle physiology	2 lectures

2018	Fall	PGY 412G-01	Cardiovascular physiology and muscle	10 lectures
		PGY412G-02	Cardiovascular physiology and muscle	10 lectures online
		PGY 412G Honors	Cardiovascular physiology and striated muscle	10 lectures online 6 lectures in person
		HHS 402	Skeletal muscle function	3 lectures
		MD 826	Medical school cardiology	3 lectures
2019	Spring	PGY 412G-01	Cardiovascular physiology and muscle	10 lectures
		PGY412G-02	Cardiovascular physiology and muscle	10 lectures online
		PGY 412G Honors	Cardiovascular physiology and muscle	10 lectures online 6 lectures in person
		PGY412G-PA	Cardiovascular physiology and muscle (Physician Assistants)	10 lectures
		PGY 630-01	Quantitative methods in biomedical sciences (Course director)	32 lectures
2019	Fall	PGY 412G-01	Cardiovascular Physiology and muscle	10 lectures
		PGY412G-02	Cardiovascular physiology and muscle	10 lectures online
		PGY 412G Honors	Cardiovascular physiology and muscle	10 lectures online 6 lectures in person
		MD826	Medical school cardiology	7 lectures
2020	Spring	PGY 412G-01	Cardiovascular physiology and muscle	10 lectures
		PGY412G-02	Cardiovascular physiology and muscle	10 lectures online
		PGY 412G Honors	Cardiovascular physiology and muscle	10 lectures online 6 lectures in person
		PGY412G-PA	Cardiovascular physiology and muscle (Physician Assistants)	10 lectures online
		PGY 630-02	Quantitative methods in biomedical sciences (Course director)	32 lectures
		MD818	Medical school muscle physiology	2 lectures
2020	Fall	PGY 412G-01	Cardiovascular physiology and muscle	10 lectures
		PGY412G-02	Cardiovascular physiology and muscle	10 lectures online
		PGY 412G Honors	Cardiovascular physiology and muscle	10 lectures online 6 lectures in person
		PGY412G-PA	Cardiovascular physiology and muscle (Physician Assistants)	10 lectures online
		MD826	Medical school cardiology (Course Director for 100 hour class)	10 lectures
2021	Spring	PGY 412G-01	Cardiovascular physiology and muscle	10 lectures
		PGY412G-02	Cardiovascular physiology and muscle	10 lectures online
		PGY 630-02	Quantitative methods in biomedical sciences (Course director)	32 lectures
		PGY 604	Advanced cardiovascular physiology	6 lectures

2021	Fall	PGY 412G-01	Cardiovascular physiology and muscle	10 lectures
		PGY412G-02	Cardiovascular physiology and muscle	10 lectures online
		MD826	Medical school cardiology (Course Director for 100 hour class)	10 lectures
2022	Spring	PGY 412G-01	Cardiovascular physiology and muscle	10 lectures
		PGY412G-02	Cardiovascular physiology and muscle	10 lectures online
		PGY412G-03	Cardiovascular physiology and muscle (Physician Assistants)	10 lectures
		PGY 630-02	Quantitative methods in biomedical sciences (Course director)	32 lectures
		PGY 604	Advanced cardiovascular physiology	6 lectures

Asbury University

2007	Spring	Biology 352	Muscle physiology and biological kinetics	1 lecture 1 demonstration
2008	Spring	Biology 352	Muscle physiology and biological kinetics	1 lecture 1 demonstration
2009	Spring	Biology 352	Muscle physiology and biological kinetics	1 lecture 1 demonstration
2010	Spring	Biology 352	Muscle physiology and biological kinetics	1 lecture 1 demonstration
2011	Spring	Biology 352	Muscle physiology and biological kinetics	1 lecture 1 demonstration
2012	Spring	Biology 352	Muscle physiology and biological kinetics	1 lecture 1 demonstration
2013	Spring	Biology 352	Muscle physiology and biological kinetics	1 lecture 1 demonstration
2014	Spring	Biology 352	Muscle physiology and biological kinetics	1 lecture 1 demonstration

Vanderbilt University

2012	Fall	Biomedical engineering 253	Mathematical modeling of sarcomeres	1 lecture
2014	Spring	Biomedical engineering 253	Mathematical modeling of sarcomeres	1 lecture
2015	Fall	Biomedical engineering 253	Mathematical modeling of sarcomeres	1 lecture

Teaching awards

2006, 2010, 2014	Holsinger Award for Excellence in Teaching Department of Physiology, University of Kentucky
2007	Abraham Flexner Master Educator Award Outstanding Teaching Contribution or Mentorship College of Medicine, University of Kentucky
2014	Abraham Flexner Master Educator Award Educational innovation and Curriculum Development College of Medicine, University of Kentucky

TRAINEES

High school students

2007 – 2008	Rahul Sharma	Paul Dunbar High School, Mathematics and Science Training Center	No data
2010	Mary Combs	Henry Clay High School	Went to study physics at Rhodes College, Memphis, TN
2013 - 2014	Joseph Schneider	Paul Dunbar High School, Mathematics and Science Training Center	Received US Presidential Scholarship (only 2 from Kentucky). Went to study physics at Cal Tech.
2015 - 2017	Chase Vickery	Paul Dunbar High School, Mathematics and Science Training Center	Went to study computer engineering at the University of Kentucky
2020 – current	Chandler Zhu	Paul Dunbar High School, Mathematics and Science Training Center	

Undergraduate students

2006	Andrew Fryman	Bio 395 Research in Biology	No data
2006 - 2007	Eric M. Reid	UK Bucks for Brains Summer Student and BIO395 Research in Biology	Went to Medical School
2007 - 2008	Philip A. Montague		Went to Medical School
2008 - 2009	Jennifer Peterson	UK Bucks for Brains Summer Student and BIO395 Research in Biology	Went to Teach for America
2010	Calen M. Smith	BIO395 Research in Biology	No data
2010 - 2011	William K. Snapp	BIO395 Research in Biology	Went to Medical School
2011	Alexandria Jarrells	Chellgren Fellow	Went to MPH program
2011	Justin Penny	Chellgren Fellow	Went to DO School
2012 - 2013	Kristofer Nava	BIO395 Research in Biology	Went to Medical School
2012 - 2014	Byron Hempel	Chellgren Fellow, Summer Research Fellowship, and CHE395	Went to PhD program in Environmental Science
2012 – 2013	Kurtis Mann	HHMI Undergraduate Research Student	Went to PhD in Mathematics
2013	Heidi Gorbrandt	HHMI Undergraduate Research Student	No data
2014 - 2015	Travis Park	Undergraduate	Went to Medical School
2015 - present	Tori Buckley	BIO395	American Physiological Society Summer Research Fellowship, went to Medical School
2015 - present	Joslyn Isaac	BIO395	American Physiological STRIDE Fellowship, went to Medical School
2015 - 2016	Ross Owen	BIO395	Went to Medical School
2015 - 2016t	Faith Evans	Chellgren Fellow and BIO395	Went to Medical School

2017 – 2019	Greg Milburn	Chellgren Fellow	AHA Summer Research Award, accepted into UK MD/PhD program 2019
2017 – 2018	Autumn Conger	BIO395	American Physiological Society Summer Research Fellowship, went to Medical School
2018 – 2019	Chase Vickery	BIO396	Returned to classes
2018 – 2019	Sarah Kelly		Returned to classes
2019 – present	Ashley White		

Interns

2014	Koen van der Poll	Delft University of Technology, Netherlands
2018	Suhail Dada	University of Cape Town, South Africa

Post-baccalaureate students

2015	Akruti Patel	Research experience

Medical students

2009	Ayodele Osasona	Summer research rotation	Residency in General Surgery at UTMB
2012 - 2013	Tyler Holley	CTSA professional student	
2013	Eric M. Reid	Fourth year research rotation	Residency in Emergency Medicine at the University of Kentucky, now Attending Physician
2013-2014	Tara Shrout	CTSA professional student	Went to Research Year at the University of Kentucky
2014	Alex Williams	Fourth year research rotation	
	Nate Smith	Fourth year research rotation	
2015	Samaher Alsaad	Alfaisal University (Saudi Arabia), University of Kentucky Research Program	

Graduate students

Primary advisor for PhD students

2009 - 2014	Premi Shekar, now Premi Haynes	PhD awarded March 2014	Went to Post-doc with Daniel Miller at the University of Washington, now working for NanoString, Inc.
2013 - 2017	Cheavar Blair	PhD awarded October, 2017	Post-doc with Beth Pruitt at Stanford University
2021 onwards	Greg Milburn	MD/PhD student	
2021 onwards	Austin Wellete-Hunsucker	PhD student	

Committee member for PhD students

2007 - 2014	Mark Howarth	Center for Biomedical Engineering PhD awarded 2014	Working in industry
2009 - 2012	Gretchen Wolff	Physiology PhD awarded 2012	Postdoc at University of Miami
2008 - 2012	Mellani Lefta	Physiology PhD awarded 2012, in MD/PhD program	Returned to medical school
2011 - 2014t	A. Catalina Valez-Ortega	Physiology PhD awarded 2015	Postdoc, now Assist Prof at University of Kentucky
2015	Lance Riley	Physiology	Left institution
2016 – 2018	Yuan Wen	MD / PhD, Physiology PhD awarded 2018	Returned to medical school
2016 – 2020	Zheying Chen	MD / PhD, Physiology	Returned to medical school
2018 – 2021	Jordan Wean	Physiology	Postdoc
2018 – 2021	Charles K Manning	Mechanical Engineering	Postdoc at University of Kentucky
2018 – present	Kelly Jones	Pharmacology and Nutritional Sciences	
2019 – present	Zach Winder	MD/PhD, Physiology	
2020 – present	Hossein Sharifi	Mechanical Engineering	

Rotation mentor

2004	Amy McAnamey	Integrated biomedical sciences
2006	Megan Bardgett	Integrated biomedical sciences
	Lorenzo Frederico	Integrated biomedical sciences
	Joseph Whelan	Integrated biomedical sciences
2007	Valerie Reeves	Integrated biomedical sciences
2008	Wenjun Zhu	Integrated biomedical sciences
	Premi Shekar	Integrated biomedical sciences

2011	Robert Helsey	Integrated biomedical sciences
2012	Cheavar Blair	Integrated biomedical sciences
2014	Lance Riley	Integrated biomedical sciences
	Tyler Burton	Integrated biomedical sciences
2016	Hoda Saghaeiannejad-Esfahani	Integrated biomedical sciences
2019	Meagan Medley	Integrated biomedical sciences
	Kristen Miller	Integrated biomedical sciences
2021	Austin Wellette-Hunsucker	Integrated biomedical sciences

Outside examiner

2008	Leah Allen	Pharmaceutical sciences
2012	Candice Thomas	Nutritional sciences
2014	Jonathan Sims	Pharmacology
2015	Lisa Maggio	Nursing
2016	Joshua Brown	Pharmacy

Postdoctoral scholars

2007 - 2011	Mihail Mitov	Passive stiffness components in myocardium Funded by AHA Postdoctoral Fellowship and NIH R01 to KSC	Went to Staff scientist position at the University of Kentucky, Now Faculty at Idaho College of Osteopathic Medicine
2010 - 2012	Stuart Campbell	Single myocyte mechanics Funded by AHA Postdoctoral Fellowship and NIH R01 to KSC	Tenure-track Associate Professor at Yale University
2012 - 2015	Charles Chung	Myocardial relaxation Funded by NIH R01 and CTSA Pilot Award to KSC and AHA SDG to CC	Tenure-track Assistant Professor at Wayne State University
2018 - 2021	Faruk Moonschi	Multiscale modeling of cardiac function Funded by NIH U01	
2020 - present	Sarah Kosta	Multiscale modeling of cardiac function Funded by NIH R01	

Faculty Mentoring

2012 - 2014	Steve Leung, MD	Division of Cardiovascular Medicine University of Kentucky	CTSA KL2 Fellow
2013 - 2015	Moriel Vandsburger, PhD	Department of Physiology University of Kentucky	CTSA KL2 Fellow
2015 - 2019	Peter Kekenes-Huskey, PhD	Department of Chemistry University of Kentucky	Assistant Professor
2019 - 2021	Vedant Gupta, MD	Division of Cardiovascular Medicine University of Kentucky	CTSA PhD candidate
2021 – present	Gaurang Vaidya, MD	Division of Cardiovascular Medicine University of Kentucky	
2020 - present		Center for Clinical and Translational Science Translating ideas into REsEarch (TREE) faculty mentor	

Mentoring Awards

2014	Mentor recognition award	Center for Clinical and Translational Sciences University of Kentucky
202	Mentor Recognition award	Office of Biomedical Education, University of Kentucky

GRANT REVIEWING

US Federal Agencies

NIH

2012 - 2014	ZHL1 CSR-P (01)1 – Mentored Career Transition Scientist – Ad hoc reviewer
2013	NIH NHLBI PPG – Ad hoc reviewer
2014 – 2020	MTI (Mentored Transition to Independence) – Regular member
2016	BDMA (Biodata Management and Analysis) – Ad hoc reviewer
2019	ZRG1 F10B-B – Fellowship Panel – Ad hoc reviewer
2020	MIM (Myocardial ischemia and metabolism) – Ad hoc reviewer
2021	T32 and T35 – Ad hoc Reviewer

NSF

2007	Review panel reviewer (Foundation policy prevents identifying panel)
2012	Review panel reviewer (Foundation policy prevents identifying panel)
2014	Review panel reviewer (Foundation policy prevents identifying panel)
2017	Ad hoc reviewer (Foundation policy prevents identifying panel)

US Non-Federal

American Heart Association

2007 - 2009	Member, National Peer Review Committee: Cardiac biology and regulation
2011 – 2014	Member, National Peer Review Committee: Cardiac biology and regulation
2011 – 2012	Co-Chair, National Peer Review Committee: Cardiac biology and regulation
2013 – 2014	Chair, National Peer Review Committee: Cardiac biology and regulation
2015	Member, National Peer Review Committee: Established Investigator Awards

International

2008	Ad hoc reviewer for Swiss National Science Foundation: Biology and Medicine
2010	Ad hoc reviewer for Prinses Beatrix Fonds (Netherlands)
2018 - present	Ad-hoc reviewer for Wellcome Trust (Britain)
2021	Ad-hoc reviewer for Dutch Research Council (NOW)

Universities

2008, 2011	Ad hoc reviewer for the University of Kentucky Vice-President for Research
2010	Ad hoc reviewer for University of Michigan Geriatrics Center
2012 - present	Grant review panel for the University of Kentucky Center for Clinical and Translational Sciences

EDITORIAL BOARDS

2010 - present	Frontiers in Muscle physiology
2014 - 2019	VAD - the Ventricular Assist Device Journal
2017 - present	Life Sciences
2019 - present	Scientific Reports
2019	Guest Editor, Special Issue of the Biophysical Journal
2019 - 2020	Guest Editor, Special Issue of Archives of Biochemistry and Biophysics
2020 – present	Section Editor, Physiology and Pathology, Life

MANUSCRIPT REVIEWING

As of 2018, approximately 1 article every 2 weeks for journals including:

Acta Physiologica Scandinavica
Aging Cell
Archives of Biochemistry and Biophysics
American Journal of Physiology: Cellular Physiology
American Journal of Physiology: Endocrinology and Metabolism
American Journal of Physiology: Heart and Circulatory Physiology
Biophysical Journal
Circulation Research (Triage and Full Reviews)
European Journal of Applied Physiology
Experimental Physiology
International Journal of Cardiology
Journal of Applied Physiology
Journal of Biomechanics
Journal of General Physiology
Journal of Molecular and Cellular Cardiology
Journal of Pharmacology and Experimental Therapeutics
Journal of Physiology
Journal of Theoretical Biology
Journal of Visualized Experiments
Mathematical Biosciences
Pflügers Archiv
PLoS One

POST-PUBLICATION PEER REVIEW

2010 - 2015	Faculty of 1000

OTHER SERVICE

University of Kentucky

Institution

2009	Faculty mentor, Common reading experience
2011 - present	Undergraduate research advisory group
2011 - 2012	Center for Computational Sciences, Futures committee
2011 - 2013	Center for Clinical and Translational Science, Translational Technologies and Resources
2013- present	Center for Clinical and Translational Science, Core director: Biospecimens
2014 – 2015	University Senate
2014 – 2015	University of Kentucky, Academic Planning and Priorities Committee
2018 - 2019	Gill Women's Heart Health Initiative, Advisory Board
2020 – present	Director, University of Kentucky COVID-19 Biobank
2020 – present	CURE Alliance – panel coordinating COVID-related research on campus
2021 - 2024	University Senate

College of Medicine

2012 - 2014	MD/PhD Internal advisory/Admissions committee
2011 – 2013	Heart/Lung Section Curriculum Committee
2012 - 2014	MD/PhD Internal advisory/Admissions committee
2017 – 2018	Faculty Council
2020 - 2022	Faculty Council
2020 – present	Co-Director, Myocardial Recovery Alliance (MYRA)

Gill Heart and Vascular Institute

2017 - present	Principal Investigator: University of Kentucky Cardiovascular Biorepository

Department of Physiology

2005 - 2007	Faculty Search Committee
2005 – present	Graduate Affairs Committee
2006 - 2010	Graduate student open house Meeting coordinator
2007, 2011	Holsinger Award Committee
2007 - 2014	Information Technology Coordinator
2008 - 2011	Brian J. Hardin Research Award Committee
2010	50th Anniversary Celebration Committee
2010 - 2014	Founding Director of the Physiology Scholars Program
2010 - 2011	Developer, Physiology grant application database

2013 - 2014 New Chair search committee

2016 - present Director of Graduate Studies

Center for Muscle Biology

2008 Journal club coordinator

2008 - 2011 Webmaster, Center website

2009 - present Executive committee member

2010 - 2014 Co-Director, Function Core

Regional

2005 - present Volunteer, American Heart Association, Central Kentucky Heartwalk

2006 - present Volunteer, American Heart Association, “You are the Cure” Advocate

2006 Volunteer Judge, Kentucky Science and Engineering Fair, Richmond, KY

2008 -2012 Volunteer Judge, Fayette County Science and Engineering Fair, Lexington, KY

2008 -2012 Volunteer Judge, Central Kentucky Science and Engineering Fair, Lexington, KY

2009 American Heart Association Lobbyist, Kentucky State Government

National

2006 - 2012 Biophysical Society Early Careers Committee

2008/10/12 Biophysical Society Annual Meeting Career Workshop Coordinator

2009 Biophysical Society Annual Meeting Early Careers Evening Coordinator

2012 Biophysical Society Career Panel Member

PROFESSIONAL MEMBERSHIPS

1993 - 1998	Physiological Society, United Kingdom
1998 - present	Biophysical Society
2001 - present	American Heart Association
2004 - present	American Physiological Society
2008 - 2010	International Society for Heart Research
2012 - present	Fellow of the American Heart Association

HONORS AND OTHER EXPERIENCE

1993 - 1998	Wellcome Trust Prize Studentship
1999 - 2005	Invited participant, Gordon Research Conference Contractile Proteins
2000	Best oral presentation, Midwest Physiological Society
2007	Symposium Chair, Experimental Biology, Washington, DC
2008 - 2010	International Society for Heart Research
2008	Invited participant, Gordon Research Conference Cardiac Regulatory Proteins
2010	Symposium Chair, 6th World Congress on Biomechanics, Singapore
2010 - present	Faculty of 1000 Physiology – Muscle and connective tissue
2011	Director, Modeling workshop for trainees in muscle biology, University of Kentucky
2011	Co-Chair, Muscle: fiber and molecular mechanics and structure, Biophysical Society Annual Meeting, Baltimore, MD
2012	Co-Chair, Titin session, Experimental Biology, San Diego, CA
2013	Invited participant, Multi-scale physics of muscle workshop, University of Washington, Seattle
2014	Symposium speaker, Biophysical Society Annual meeting, San Francisco, CA
2014	Consultant, helped to create “The Ventricular Assist Device Journal”, an open-source clinical journal hosted by the University of Kentucky Library UKNow system
2018	University of Kentucky Chair’s Academy: Leadership training

INVITED TALKS

Intramural

University of Wisconsin-Madison

1997	Department of Physiology
2003	Cardiovascular Research Center

University of Kentucky

2003	Department of Physiology
2004	Center for Biomedical Engineering
2005	Gill Heart Institute Muscle Forum
2006	Department of Physiology Gill Heart Institute Muscle Forum
2007	Muscle Forum (x2) Center for Biomedical Engineering
2008	Gill Heart Institute, Cardiovascular Seminar Series Muscle Forum (x2) Clinical and Translational Science Fall Conference Department of Physiology
2009	Muscle Forum
2010	Research collaborations between Engineering and Medicine Muscle Forum Nutritional Sciences Seminar Series Department of Mathematics
2011	Cardiovascular Grand Rounds Center for Muscle Biology Research Retreat
2012	Muscle Forum
2013	Department of Computer Science
2017	Department of Physiology

Extramural

Before faculty appointment

1995	Practical demonstration, Physiological Society, United Kingdom
	Oral communication, Physiological Society, United Kingdom
1996	Oral communication, Physiological Society, United Kingdom
1997	NIAMS, National Institutes of Health
2000	Department of Biochemistry, Molecular Biology, and Biophysics, University of Minnesota
2001	Midwest Physiological Society
2002	National Institute for Medical Research, London, United Kingdom

After faculty appointment

2004 Calcium-dependent myocardial stiffness: Implications for Diastolic function
Department of Anatomy and Cell Biology
Indiana University Purdue University Indianapolis
11 November, 2004

2007 Acto-myosin kinetics: Tension overshoots and residual forces
Department of Physiology
Loyola University, Chicago, IL
11 April, 2007

Measurements and models of acto-myosin kinetics
Experimental Biology,
Washington, DC
30 April, 2007

Myocardial stiffness in aging-associated diastolic heart failure
NIH/NIA New Investigator's Workshop
San Antonia, TX
31 May, 2007

Myocardial stiffness: effect of simulated microgravity
Kentucky EPSCOR "Building Team Science" Conference
2 October, 2007

2008 Myocardial mechanics in animals of aging and obesity-associated cardiovascular disease
Department of Biomedical Sciences
Marshall University, Huntington, WV
6 June, 2008

Myofilament mechanics in animal models of diastolic dysfunction
University of Glasgow, United Kingdom
22 September, 2008

The short-range mechanical properties of myocardium
University of Birmingham, United Kingdom
24 September, 2008

2009 Computational models of acto-myosin interactions
2009 Workshop on multi-scale muscle mechanics

Marine Biological Laboratory, Woods Hole, MA
18-21 September, 2009

Emergent mechanical properties of skeletal and cardiac muscles
Department of Physiology
Loyola University, Chicago, IL
11 December, 2009

2010 Muscle fiber heterogeneity and heart function
Washington State University, Pullman, WA
8 June, 2010

Multi-scale models of muscle fibers
6th World Congress on Biomechanics
Singapore
1-6 August, 2010

Emergent mechanical properties of skeletal and cardiac muscle
Department of Molecular Physiology and Biophysics
University of Vermont
4 October, 2010

Emergent mechanical properties of skeletal and cardiac muscle
Department of Physiology and Cell Biology
The Ohio State University
8 December, 2010

2011 Emergent mechanical properties of skeletal and cardiac muscles
Department of Biology
Marquette University, Milwaukee, WI
18 February, 2011

2012 Mechanical modeling of Z-disk behavior in response to stretch
Experimental Biology, San Diego, CA
25 April, 2012

Sarcomere level dysfunction in heart failure
Vanderbilt University
12 October, 2012

2013 Sarcomere level dysfunction in heart failure
University of Florida
21 February, 2013

Activation dependent rates of force development simulated using a Huxley-type cross-bridge model with added cooperativity
Computer Methods in Biomechanics and Biomedical Engineering
Salt Lake City, UT
6 April, 2013

Myofilament level dysfunction in heart failure
University of Iowa
27 August, 2013

Short-range properties of striated muscles and cross-bridge modeling
Leiden University Medical Center
Leiden, The Netherlands
26 September, 2013

Cellular level dysfunction in heart failure
Wayne State University
10 October, 2013

2014 Effects of transmural region and heart failure on the contractile properties of human myocardium
Symposium presentation, Biophysical Society Annual Meeting
17 February, 2014

Transmural variation in the contractile properties of human myocardium
Cardiovascular Research Center
University of Wisconsin-Madison
10 April, 2014

Sarcomere level dysfunction in heart failure
Penn State Medical Center, Hershey, PA
23 April, 2014

Cellular level function in human heart failure
Imperial College, London
29 August, 2014

Myocardial strain rate modulates the speed of relaxation in dynamically loaded twitch contractions
Workshop on Mathematics and Biology
Wolfgang Pauli Institute
Vienna, Austria
22 September, 2014

Myofilament function in human heart failure
Stanford University
Palo Alto, CA
2 October, 2014

Sarcomere level function in human heart failure
University of Missouri
Columbia, MO
14 October, 2014

Molecular mechanisms of heart failure
University of Sydney
Sydney, Australia
November, 2014

Molecular mechanisms of heart failure
University of Auckland
Auckland, New Zealand
November, 2014

Instrumentation and measurement of cardiac cells
New Zealand IEEE Instrumentation and Measurement Society
Auckland, New Zealand
24 November, 2014

2015 Sarcomere level function in human mycardium
St. Louis University
St. Louis, MO
23 February, 2015

Mathematical modeling of sarcomeres
Vanderbilt University
Nashville, TN
5 October, 2015

Adventures in translational research
Georgetown College
Georgetown, KY
12 November, 2015

2016 Contractile properties of human myocardium
Washington State University
Pullman, WA
11 February, 2016

Contractile dysfunction in human heart failure
Eastern Kentucky University
Richmond, KY
29 April, 2016

Contractile properties of human myocardium
Yale University
New Haven, CT
1 June, 2016

Contractile dysfunction
Pfizer, Inc.
Cambridge, MA
22 November, 2016

2017 Contractile dysfunction in human heart failure
Eli Lilly
Indianapolis, IN
11 April, 2017

Cross-bridge function in human heart failure
Hershey Medical Center, Pennsylvania State University
Hershey, PA
9 May, 2017

Ventricular function in human heart failure
University of Utah
Salt Lake City, UT
30 May, 2017

Inter-ventricular differences in human hearts
The Ohio State University
Columbus, OH
8 September, 2017

Cell-level dysfunction in heart failure
King's College

London, United Kingdom
9 October, 2017

2018 Computational cardiology: the potential of the field and barriers to progress
University of Missouri
2 March, 2018

Contractile function in human heart failure
Texas A&M
April, 2018

Collecting biospecimens for translational research: My experience running 2 IRBs at the University of Kentucky
Loyola University, Chicago
17 April, 2018

Contractile function in human heart failure
Loyola University, Chicago
19 April, 2018

Force-dependent recruitment from the myosin OFF state contributes to length-dependent activation
Biophysical Society Special Topic Meeting
Berlin, Germany
8 September, 2018

Multiscale modeling of cardiac function
NIH Systems Biology Meeting
Bethesda, MD
22 October, 2018

Towards better therapies for heart failure: insights from translational research
University of Missouri
13 November, 2018

2019 Towards better therapies for heart failure: insights from translational research
University of Florida
Gainsville, FL
24 January, 2019

Towards better therapies for heart failure: insights from translational research
Augusta University
Augusta, GA
28 January, 2019

Fickle Heart
Multiscale modeling of cardiovascular function
Cambridge, UK
May, 2019

Length-dependent activation in human heart failure
Mechano-electrical meeting
Freiberg, Germany
September, 2019

Length-dependent activation in human heart failure
Cardiac Physiome Meeting
Maastricht, Netherlands
7th December, 2019

2020 Invited talks cancelled due to COVID-19

2021 Towards data-driven optimization of therapy for heart failure
University of California Santa Barbara
30 November, 2021

Towards data-driven optimization of therapy for heart failure
University of Nebraska Medical Center
3 December, 2021