

Kenneth S. Campbell, PhD

Date of Birth: 19 September, 1972
Nationality: British

CONTACT DETAILS

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EDUCATION

- 1990 - 1993 **University of Oxford (University College), Oxford, UK**
B.A. (Hons) Physics, First Class. Advanced option in modern optics.
Special commendation for experimental work.
- 1993 - 1998 **Applied Physiology Research Group, University of Birmingham, Birmingham, UK**
PhD Thesis: "*The analysis of cross-bridge activity in a stiffening relaxed muscle fibre*"
Supervisor: Dr. Martin Lakie
External Examiner: Sir A.F. Huxley (Trinity College, Cambridge, UK)

POSTDOCTORAL TRAINING

- 1998 – 2003 **Postdoctoral Fellow, Department of Physiology,
University of Wisconsin-Madison, Madison, WI, USA**
Mentor: Dr. Richard L. Moss

EMPLOYMENT

- 2003 – 2004 **Assistant Scientist, Department of Physiology,
University of Wisconsin-Madison, Madison, WI, USA**
- 2004 – present **Assistant Professor, Department of Physiology,
University of Kentucky, Lexington, KY, USA**

FUNDING

Completed

- 1999 - 2001 **American Heart Association Northland Affiliate (Postdoctoral Fellowship)**
"*Thixotropic mechanical properties of relaxed cardiac muscle affect diastolic function.*"
- 2001 - 2002 **American Heart Association Northland Affiliate (Postdoctoral Fellowship)**
"*Myocardial diastolic compliance under conditions mimicking ischemic heart failure.*"

Current

- 2004 - 2007 **University of Kentucky Research Challenge Trust Fund**
- 2006 - 2009 **American Heart Association National Center (Scientist Development Grant)**
"*Cycling cross-bridges augment passive stiffness components during diastole.*"

Pending

- 2006 - 2008 **NIH 1R03AG02A162-01**
 "*Myocardial stiffness in aging associated diastolic heart failure.*"
 Priority Score 158 Percentile 11.5%
- 2006 - 2008 American Federation of Aging Research
 "*Mechanical and biophysical properties of aging myocardium.*"

TEACHING

University of Kentucky

- 2005 Physiology 604 - Advanced Cardiovascular Physiology (2 lectures)
 Physiology 502 - Muscle/Cardiovascular Physiology (10 lectures)
 Physiology 602 - Muscle/Cardiovascular Physiology (3 lectures)
- 2006 Physiology 630 - Advanced Skeletal Muscle Physiology (3 lectures)

Purdue University

- 2006 ANSC 551 - Skeletal and Cardiac Muscle Mechanics (2 lectures)

STUDENTS

- 2004 Integrated Biomedical Sciences, Rotating Student, Amy McAnarney

SERVICE

- 2005 - present Department of Physiology, Faculty Search Committee
2005 - present Department of Physiology, Graduate Affairs Committee

INVITED TALKS

- 1995 Practical Demonstration, Physiological Society, UK
1995 Oral Communication, Physiological Society, UK
1996 Oral Communication, Physiological Society, UK
1997 NIAMS, National Institutes of Health
 Department of Physiology, University of Wisconsin-Madison
2000 Department of Biochemistry, Molecular Biology and Biophysics, University of Minnesota
2001 Midwest Physiological Society
2002 National Institute for Medical Research, London, UK
2003 Cardiovascular Research Center, University of Wisconsin-Madison
 Department of Physiology, University of Kentucky
2004 Oral Communication, Physiological Society, UK
 Center for Biomedical Engineering, University of Kentucky
 Department of Anatomy and Cell Biology, Indiana University Purdue University Indianapolis
2005 Gill Heart Institute, University of Kentucky

HONORS AND OTHER EXPERIENCE

1993 - 1998 Wellcome Trust Prize Studentship
1999 - 2005 Invited Participant, Gordon Research Conference, Contractile Proteins
2000 Award for Best Oral Presentation, Midwest Physiological Society
2002 Invention Disclosure and Licensing/Patent discussions with
Wisconsin Alumni Research Foundation
"SLControl: a computer system that controls muscle physiology experiments."

REFEREEING

Acta Physiologica Scandinavica
Archives of Biochemistry and Biophysics
American Journal of Physiology: Endocrinology and Metabolism
American Journal of Physiology: Heart and Circulatory Physiology
Biophysical Journal
Circulation Research
European Journal of Applied Physiology
Journal of Applied Physiology
Journal of Pharmacology and Experimental Therapeutics
Journal of Physiology

PROFESSIONAL MEMBERSHIPS

1993 - present Physiological Society, UK
1998 - present Biophysical Society
2001 - present American Heart Association
2004 - present American Physiological Society

PUBLICATIONS

Published Peer Reviewed Articles

- 1) **CAMPBELL, K.S.** & LAKIE, M. (1998). A cross-bridge mechanism can explain the thixotropic short-range elastic component of relaxed frog skeletal muscle. *Journal of Physiology* **510.3**, 941-962.
- 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. *Journal of Physiology* **525.2**, 531-548.
- 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. *Journal of General Physiology* **117**, 133-148.
- 4) **CAMPBELL, K.S.** & MOSS, R.L. (2002). History-dependent mechanical properties of permeabilized rat soleus muscle fibers. *Biophysical Journal*. **82.2**, 929-943.
- 5) **CAMPBELL, K.S.**, PATEL, J.R. & MOSS, R.L. (2003). Cycling cross-bridges increase myocardial stiffness at sub-maximal levels of Ca^{2+} activation. *Biophysical Journal*. **84.6**, 3807-3815.
- 6) **CAMPBELL, K.S.** & MOSS, R.L. (2003). SLControl: PC-based data acquisition and analysis for muscle mechanics. *American Journal of Physiology: Heart and Circulatory Physiology*. **285**, H2857-H2864.

- 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. *Mechanisms of Development* **121(11)**, 1301-1312.
- 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. *Journal of Muscle Research and Cell Motility* (In press).
- 9) **CAMPBELL, K.S.** (2006). Tension recovery in rat soleus fibers following rapid shortening and re-stretch. *Biophysical Journal* **90.4**, 1298-1294.

Published Abstracts

- 1) LAKIE, M. & **CAMPBELL, K.S.** (1995). A method of identifying small sudden force increments in a voluntary isometric contraction in man. *Journal of Physiology* **483**, 2P.
- 2) **CAMPBELL, K.S.** & LAKIE, M. (1995). Tension responses to imposed length changes in isolated relaxed muscle fibre bundles from *Rana temporaria*. *Journal of Physiology* **487**, 155-156P.
- 3) **CAMPBELL, K.S.** & LAKIE, M. (1995). Can the short range elastic component and thixotropy both be due to crossbridge activity in relaxed muscle? *Journal of Physiology* **491**, 130-131P.
- 4) **CAMPBELL, K.S.** & LAKIE, M. (1996). Sarcomere length measurement during thixotropic tension responses in relaxed amphibian muscle. *Journal of Physiology* **495**, 162P.
- 5) LAKIE, M., JUPP, N., **CAMPBELL, K.S.** & COMBES, N. (1996). The effect of percutaneous digital nerve stimulation on finger tremor in man. *Journal of Physiology* **495**, 183P.
- 6) LAKIE, M., KELLY, S.M. & **CAMPBELL, K.S.** (1997). A comparison of ankle torques in a fictive standing task in man. *Journal of Physiology* **501**, 42P.
- 7) **CAMPBELL, K.S.** & MOSS, R.L. (1999). Prior movement reduces the initial tension response to stretch in contracting skinned muscle fibers. *Biophysical Journal* **76.1**, 40A.
- 8) **CAMPBELL, K.S.** & MOSS, R.L. (2000). A theoretical model which can explain the thixotropic behaviour of contracting muscle. *Biophysical Journal* **78.1**, 230A.
- 9) FITZIMONS, D.P., PATEL, J.R. **CAMPBELL, K.S.** & MOSS, R.L. (2000). Cooperative mechanisms in activation of skeletal muscle contraction. *Biophysical Journal* **78.1**, 230A.
- 10) **CAMPBELL, K.S.** & MOSS, R.L. (2001). History dependent stiffness in slow twitch skeletal muscle. *Biophysical Journal* **80.1**, A273.
- 11) **CAMPBELL, K.S.** & MOSS, R.L. (2002). Cycling cross-bridges reduce myocardial compliance at very low levels of Ca^{2+} activation. *Journal of Molecular and Cellular Cardiology* **34(7)** A8.
- 12) **CAMPBELL, K.S.** & MOSS, R.L. (2002). History-dependent muscle stiffness at levels of Ca^{2+} activation that mimic myocardium during early diastole. *Biophysical Journal* **82.1** 1939A.
- 13) **CAMPBELL, K.S.** & MOSS, R.L. (2003). SLControl: PC-based data acquisition and analysis for muscle mechanics. *Biophysical Journal* **84.2** 448A.
- 14) **CAMPBELL, K.S.**, FITZSIMONS, D.P. & MOSS, R.L. (2003). Mechanical properties of slow twitch skeletal muscles during repeated length changes. *Biophysical Journal* **84.2** 449A.
- 15) FITZSIMONS, D.P., **CAMPBELL, K.S.** & MOSS, R.L. (2003). Effect of phosphate on loaded shortening in skeletal muscle fibers. *Biophysical Journal* **84.2** 246A.
- 16) **CAMPBELL, K.S.** & MOSS, R.L. (2004). Tension recovery in skeletal fibers following a rapid shortening-restretch protocol. *Biophysical Journal* **86.1** 215a.
- 17) WARREN, C.M., KRZESINSKI, P.R., **CAMPBELL, K.S.**, MOSS, R.L. & GREASER, M.L. (2004). Titin isoform changes in rat myocardium during development. *Biophysical Journal* **86.1** 210a.

- 18) **CAMPBELL, K.S.** & MOSS, R.L. (2004). Muscle stiffness transiently exceeds its steady-state value following a rapid shortening/re-stretch protocol. *Journal of Physiology (Proceedings)*. Glasgow, March 2004.
- 19) GREASER, M.L., KRZESINSKI, P.R., WARREN, C.M., **CAMPBELL, K.S.** & MOSS, R.L. (2005). A mutation in rats with altered developmental patterns of titin isoform expression. *Biophysical Society Abstract*.
- 20) **CAMPBELL, K.S.** (2006). Tension recovery in permeabilized rat soleus fibers following rapid shortening and re-stretch. *Biophysical Society Abstract*.
- 21) HOLBROOK, A.M. & **CAMPBELL, K.S.** (2006). Myocardial stiffness in experimental conditions that mimic ischemia. *Biophysical Society Abstract*.

Other Articles

- 1) **CAMPBELL, K.S.** & LAKIE, M. (1997). Aaaaaah - Why stretching feels so nice? *New Scientist* **153**, 2073.

Updated 9 February, 2006