CURRICULUM VITAE

University of Idaho

NAME: Daniel P. Fitzsimons **DATE:** April 6, 2020
RANK OR TITLE: Assistant Professor

DEPARTMENT: Animal and Veterinary Science, College of Agricultural and Life Sciences

OFFICE LOCATION AND CAMPUS ZIP:
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EDUCATION BEYOND HIGH SCHOOL:

Post-Doctoral Fellow, Department of Physiology
University of Texas Southwestern Medical Center, Dallas TX
1992, Smooth Muscle Physiology / Biochemistry

Ph.D., Department of Physiology and Biophysics
University of California, Irvine
1989, Cardiovascular Physiology / Biochemistry

B.S., Biological Sciences
University of California, Irvine
1983, Striated Muscle Physiology

EXPERIENCE

Teaching, Extension and Research Appointments:

Associate Scientist: 2012- present; Department of Cell and Regenerative Biology, University of Wisconsin School of Medicine and Public Health, University of Wisconsin-Madison

Associate Scientist: 1998 – 2012; Department of Physiology, University of Wisconsin School of Medicine and Public Health, University of Wisconsin-Madison

Researcher: 1996 – 1997; Department of Physiology, University of Wisconsin School of Medicine and Public Health, University of Wisconsin-Madison

TEACHING ACCOMPLISHMENTS

Areas of Specialization:

General Physiology
Cardiac and Vascular Physiology

Courses Taught (University of Wisconsin)**:**

Physiology of Exercise
Biological Factors Influencing Exercise Performance
Human Physiology
Muscle Biology
Medical Physiology - Small Group

Students Advised/Supervised:

Undergraduate Students (18 total, ~ 1 per year)
Graduate Students (6 total, ~ 1 per 3 years)

Non-credit Classes, Workshops, Seminars, Invited Lectures, etc.:

Jackson Laboratory
Coordinator: Mouse Colony Management Conference (January 2018)
University of Wisconsin School of Medicine and Public Health, University of Wisconsin-Madison

Jackson Laboratory
Coordinator: Mouse Breeding Seminar Series (2015 - 2017)
University of Wisconsin School of Medicine and Public Health, University of Wisconsin-Madison

Publications, Peer Reviewed/Evaluated:

Gregorich ZR, JR Patel, W Cai, Z Lin, R Heurer, DP Fitzsimons, RL Moss, and Y Ge. (2019). Deletion of enigma homologue from the Z-disc slows tension development kinetics in mouse myocardium. *J. Gen. Physiol.* 151:670-679. PMCID: PMC6504290

Giles J, JR Patel, A Miller, E Iverson, D Fitzsimons, and RL Moss. (2018). Recovery of left ventricular function following in vivo re-expression of cardiac myosin binding protein C. *J. Gen Physiol.* 151:77-89. PMCID: PMC6314388

Moss RL, TL Lynch, and DP Fitzsimons. (2017). Acting on an impulse (or two or three): adaptive advantage of a high-frequency burst of action potentials at the onset of tetany in fast-twitch skeletal muscle fibers. *J Gen Physiol.* 149:297-300. PMCID: PMC5339515

Rosas PC, Y Liu, MI Abdalla, CM Thomas, DT Kidwell, GF Dusio, D Mukhopadhyay, R Kumar, KM Baker, BM Mitchell, PA Powers, DP Fitzsimons, BG Patel, CM Warren, RJ Solaro, RL Moss, and CW Tong. (2016). Phosphorylation of cardiac myosin-binding protein-C is a critical mediator of diastolic function. *Circ Heart Fail* 8:582-594. PMCID: PMC4447128

Moss RL, DP Fitzsimons, JC Ralphe. (2015). Cardiac MyBP-C regulates the rate and force of contraction in mammalian myocardium. *Circ Res* 116:183-192. PMCID: PMC4283578

Colson BA, JR Patel, PP Chen, T Bekyarova, MI Abdalla, CW Tong, DP Fitzsimons, TC Irving and RL Moss. (2012). Myosin binding protein-C phosphorylation is the principal mediator of protein kinase A effects on thick filament structure in myocardium. *J Mol Cell Cardiol* 53:609-616. PMCID: PMC3472100

Chen PP, JR Patel, PA Powers, DP Fitzsimons and RL Moss. (2012). Dissociation of structural and functional phenotypes in cardiac myosin-binding protein C conditional knock-out mice. *Circulation* 126:1194-1205. PMCID: PMC3466088

Baltgavis KA, MA Jaeger, DP Fitzsimons, SA Thayer, DA Lowe and JM Ervasti. (2011). Transgenic overexpression of gamma-cytoplasmic actin protects against eccentric contraction-induced force loss in mdx mice. *Skeletal Muscle* 1:32 PMCID: PMC3214766

Moss RL and DP Fitzsimons. (2010). Perspectives on: SGP Symposium on Muscle in Health and Disease: Regulation of contraction in mammalian striated muscles—the plot *thick*-ens. *J. Gen. Physiol.* 136:21-27. PMCID: PMC2894544

Colson BA, MR Locher, T Bekyarova, JR Patel, DP Fitzsimons, TC Irving and RL Moss. (2010). Differential roles of regulatory light chain and myosin binding protein-C phosphorylations in the modulation of cardiac force development. *J. Physiol.* 588:981-993. PMCID: PMC2849963

Jaeger MA, KJ Sonnemann, DP Fitzsimons, KW Prins and JM Ervasti. (2009) Context-dependent functional substitution of alpha-skeletal actin by gamma-cytoplasmic actin. *FASEB J.* 23:2205-2214. PMCID: PMC2704599

Tsika RW, C Schramm, G Simmer, DP Fitzsimons, RL Moss and J Ji. (2008). Overexpression of TEAD-1 in transgenic mouse striated muscles produces a slower skeletal muscle contractile phenotype. *J. Biol. Chem.* 283:36154-36167. PMCID: PMC2606011

Colson BA, T Bekyarova, MR Locher, DP Fitzsimons, TC Irving and RL Moss. (2008). Protein kinase-A mediated phosphorylation of cMyBP-C increases proximity of myosin heads to actin in resting myocardium. *Circ.Res.* 103:244-251. PMCID: PMC2810832

Bunnell TM, MA Jaeger, DP Fitzsimons, KW Prins and JM Ervasti. (2008). Destabilization of the dystrophin-glycoprotein complex without functional deficits in alpha-dystrobrevin muscle. PLoS One 3:e2604. PMCID: PMC 2432020

Greaser ML, CM Warren, K Esbona, W Guo, Y Duan, AM Parrish, PR Krzesinski, HS Norman, S Dunning, DP Fitzsimons and RL Moss. (2008). Mutation that dramatically alters rat titin isoform expression and cardiomyocyte passive tension. *J. Mol. Cell. Cardiol.* 44:983-991. PMCID: PMC2501117

Fitzsimons DP and RL Moss. (2007). Cooperativity in the regulation of force and the kinetics of force development in heart and skeletal muscles: cross-bridge activation of force. *Adv. Exp. Med. Biol.* 592:177-189.

Colson BA, T Bekyarova, DP Fitzsimons, TC Irving and RL Moss. (2007). Radial displacement of myosin cross-bridges in mouse myocardium due to ablation of myosin binding protein-C. *J. Mol. Biol.* 367:36-41.

Brickson S, DP Fitzsimons, L Periera, T Hacker, H Valdivia and RL Moss. (2007). In vivo left ventricular functional capacity is compromised in cMyBP-C null mice. *Am. J. Physiol.* 292:H1747-H1754.

Sonnemann KJ, DP Fitzsimons, JR Patel, Y Liu, MF Schneider, RL Moss and JM Ervasti. (2006). Cytoplasmic gamma-actin is not required for skeletal muscle development but its absence leads to a progressive myopathy. *Dev. Cell.* 11:387-397.

Moss RL and DP Fitzsimons. (2006). Myosin light chain 2 into the mainstream of cardiac development and contractility. *Circ. Res.* 99:225-227.

Stelzer JE, DP Fitzsimons and RL Moss. (2006). Ablation of myosin-binding protein-C accelerates force development in mouse myocardium. *Biophys. J.* 90:4119-4127.

Stelzer JE, L Larsson, DP Fitzsimons and RL Moss. (2006). Activation dependence of stretch activation in mouse skinned myocardium: implications for ventricular function. *J. Gen. Physiol.* 127:95-107.

Olsson MC, JR Patel, DP Fitzsimons, JW Walker and RL Moss. (2004). Basal myosin light chain phosphorylation is a determinant of Ca^{2+} sensitivity of force and activation dependence of the kinetics of myocardial force development. *Am. J. Physiol.* 287:H2712-H2718.

Moss RL, M Razumova and DP Fitzsimons. (2004). Myosin crossbridge activation of cardiac thin filaments: implications for myocardial function in health and disease. *Circ. Res.* 94:1290-1300.

Stelzer JE, JR Patel, MC Olsson, DP Fitzsimons, LA Leinwand and RL Moss. (2004). Expression of cardiac troponin T with COOH-terminal truncation accelerates cross-bridge interaction kinetics in mouse myocardium. *Am. J. Physiol.* 287:H1756-H1761.

Moss RL and DP Fitzsimons. (2002). Frank-Starling relationship: long on importance, short on mechanism. *Circ. Res.* 90:11-13.

Patel JR, DP Fitzsimons, SH Buck, M Muthuchamy, DF Wieczorek and RL Moss. (2001). PKA accelerates rate of force development in murine skinned myocardium expressing either alpha- or beta-tropomyosin. *Am. J. Physiol.* 280:H2732-H2739.

Fitzsimons DP, JR Patel and RL Moss. (2001). Cross-bridge interaction kinetics in rat myocardium are accelerated by strong binding of myosin to the thin filament. *J. Physiol.* 530:263-272.

Fitzsimons DP, JR Patel, KS Campbell and RL Moss. (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.

Fitzsimons DP, JR Patel and RL Moss. (1999). Aging-dependent depression in the kinetics of force development in rat skinned myocardium. *Am. J. Physiol.* 276:H1511-H1519.

Fitzsimons DP, JR Patel and RL Moss. (1998). Role of myosin heavy chain composition in kinetics of force development and relaxation in rat myocardium. *J. Physiol.* 513:171-183.

Fitzsimons DP and RL Moss. (1998). Strong binding of myosin modulates length-dependent Ca^{2+} activation of rat ventricular myocytes. *Circ. Res.* 83:602-607.

Morris GS, DP Fitzsimons, KM Baldwin and RJ Barnard. (1993). Exercise capacity of rats remains unaffected by chronic pressure overload. *Cardiovasc. Res.* 27:1346-1349.

Fitzsimons DP, BP Herring, JT Stull and PJ Gallagher. (1992). Identification of basic residues involved in activation and calmodulin binding of rabbit smooth muscle myosin light chain kinase. *J. Biol. Chem.* 267:23903-23909.

Herring BP, DP Fitzsimons, JT Stull and PJ Gallagher. (1990). Acidic residues comprise part of the myosin light chain-binding site on skeletal muscle myosin light chain kinase. *J. Biol Chem.* 265:16588-16591.

Fitzsimons DP, PW Bodell, RE Herrick and KM Baldwin. (1990). Left ventricular functional capacity in the endurance-trained rodent. *J. Appl. Physiol.* 69:305-312.

Fitzsimons DP, RE Herrick and KM Baldwin. (1990). Isomyosin distributions in rodent muscles: effects of altered thyroid state. *J. Appl. Physiol.* 69:321-327.

Fitzsimons DP, PW Bodell, RE Herrick and KM Baldwin. (1990). Effect of thyroid state on cardiac myosin P-light chain phosphorylation during exercise. *J. Appl. Physiol.* 69:313-320.

Fitzsimons DP, PW Bodell and KM Baldwin. (1990). Myocardial functional correlates of cardiac myosin light chain 2 phosphorylation. *J. Appl. Physiol.* 68:2426-2433.

Fitzsimons DP, GM Diffee, RE Herrick and KM Baldwin. (1990). Effects of endurance exercise on isomyosin patterns in fast- and slow-twitch skeletal muscles. *J. Appl. Physiol.* 68:1950-1955.

Fitzsimons DP, PW Bodell and KM Baldwin. (1989). Phosphorylation of rodent cardiac myosin light chain 2: effects of exercise. *J. Appl. Physiol.* 67:2447-2453.

MacIntosh AM, WM Mullin, DP Fitzsimons, RE Herrick and KM Baldwin. (1986). Cardiac biochemical and functional adaptations to exercise in sympathectomized neonatal rats. *J. Appl. Physiol.* 60:991-996.

Peer Reviewed/Evaluated (currently scheduled or submitted):

Giles J, JR Patel, C Knudtson, Z Neuville, DP Fitzsimons, and RL Moss. cMyBP-C M-domain phosphoserine residues modulate the low-velocity phase of unloaded shortening in murine skinned myocardium. *J. Gen. Physiol.*

Fitzsimons DP, JR Patel, J Giles, J Wachholz, AJ Miller, ML Ackerman and RL Moss. A missense mutation within the C6-domain of cMyBP-C results in cardiac enlargement and depressed ventricular function. *Amer. J. Physiol.*

Fitzsimons DP, JR Patel and RL Moss. Cardiac and skeletal muscle fiber types exhibit a differential sensitivity to the activating effects of strong-binding cross-bridges. *J. Exp. Biol.*

Recent Professional Meeting Papers, Workshops, Showings, Recitals:

International Society for Heart Research – Halifax, Nova Scotia, Canada (2018)
Myofilament Conference – Madison, WI (2018)
International Society for Heart Research – New Orleans, LA (2017)
Myofilament Conference – Madison, WI (2016)
Biophysical Society – Los Angeles, CA (2016)
Myofilament Conference – Madison, WI (2014)
Myofilament Conference – Madison, WI (2012)
European Society for Muscle Research – Padova, Italy (2010)
Myofilament Conference – Madison, WI (2010)
Biophysical Society – San Francisco, CA (2010)

Grants and Contracts Awarded:

NIH RO1 HL139883 (PI's: Richard Moss, Ph.D., University of Wisconsin; Roger Craig, Ph.D., University of Massachusetts). Mechanism of regulation of cardiac contraction by phosphorylation of myosin binding protein C; Role: Key Personnel; Years: 2018 – 2022; Direct Costs: $900,000

MyoKardia Inc., San Francisco, CA (PI: Richard Moss, Ph.D., University of Wisconsin); Force production and relaxation transients in rodent myocardium; Role: Key Personnel; Years: 2019 – ongoing; Direct Costs: $150,000 per contract

NIH R37 HL082900 – Merit Award (PI: Richard Moss, Ph.D., University of Wisconsin); MyBP-C modulation of cardiac contraction; Role: Key Personnel; Years: 2005 – 2015; Direct Costs: $2,500,000

SERVICE

Professional and Scholarly Organizations:

University of Wisconsin Cardiovascular Institute (2000 – present); International Society of Heart Research; American Physiological Society; American Heart Association; Biophysical Society

(memberships renewed when attending national conferences).

PROFESSIONAL DEVELOPMENT

Scholarship:

Workshop on Colony Management: Principles and Practices (May 2004)
The Jackson Laboratory
Bar Harbor, ME

Webinars – The Jackson Laboratory (2014 – present)
Basics of Mouse Genetics
Cre-Lox Technology in Mouse Modeling
Designing and Optimizing Mouse Breeding Schemes
Protect Your Research – Know Your B6 Mouse
Generating Mouse Models Using CRISPR/Cas9 Technology
CRISPR/Cas9 – Moving From Founder Mice To Phenotyping