Lan Wei-LaPierre, Ph.D.

Assistant Professor
University of Florida | College of Health and Human Performance, Department of Applied Physiology and Kinesiology| 1864 Stadium Road, FL Gym Room 120| Gainesville, FL 32611

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EDUCATION

PhD; Molecular Bioscience | John Curtin School of Medical Research, Australian National University, Canberra | *2008* | Attended: *August 2003 - April 2008*

Master; Clinical Medicine (Orthopaedics) | Liaoning University of Traditional Chinese Medicine | Shenyang, China | *2002* | Attended: *September 2000 - July 2002*

Bachelor; Medicine (Orthopaedics) | Liaoning University of Traditional Chinese Medicine | Shenyang, China | *1998* | Attended: *September 1993 - July 1998*

POST-DOCTORAL TRAINING

Postdoctoral Research Associate, Department of Pharmacology and Physiology, University of Rochester Medical Center | *August 2008 - July 2014*

Postdoctoral Fellow, John Curtin School of Medical Research, Australian National University | *November 2007 - July 2008*

FACULTY APPOINTMENTS

Assistant Professor| Department of Applied Physiology and Kinesiology| College of Health and Human Performance, University of Florida| *2020-present*

Research Assistant Professor | Department of Pharmacology and Physiology | School of Medicine and Dentistry, University of Rochester Medical Center | *2014 - 2020*

FELLOWSHIP AWARDS
POST-DOCTORAL

Academia Dei Lincei Fellow, sponsored by Academia Dei Lincei Fund, Italy | *2009 - 2014*

MEMBERSHIPS

Member of the Biophysical Society | *2009 - present*

Member of the Australian Physiological Society | *2003 - 2008*

AWARDS AND HONORS

Travel Award | Australian Physiological Society, New Castle, Australia | *December 2007*

Poster prize | Hot topics forum poster competition, John Curtin School of Medical Research, Canberra, Australia | *June 2005*

Travel Award | The 2nd Australian Health and Medical Research Congress (AHMRC), Sydney, Australia | *November 2004*

1st grade Scholarship for Academic Excellence | Liaoning University of Traditional Chinese Medicine, Shenyang, China | *December 1993 - December 1996*

Ad-hoc reviewer

Archives of Biochemistry and Biophysics

RESEARCH GRANTS

Pending

PI: Lan Wei-LaPierre | Title: Using mitochondrial Ca^{2+} uptake as a therapeutic target for ALS| Grant Type: NIH-NINDS R01| Grant ID: NS117429-01 | 08/*16/2021 - 08/15/2026*

Completed

PI: Lan Wei-LaPierre | Title: The Impact of Mitochondrial Ca^{2+} Uptake in Skeletal Muscle on ALS Pathogenesis | Grant Type: NIH-NINDS R21 | Grant ID: NS099545| *12/01/2017-8/31/2020*
PI: R. Dirksen (Subcontract) and S.L. Hamilton | Co-Investigator: Lan Wei-LaPierre (Subcontract) | Title: Basis of Muscle Dysfunction in Malignant Hyperthermia and Central Core Disease | Grant Type: NIH-NIAMS R01| Grant ID: AR053349 | *04/01/2016 - 03/31/2021*
PI: Joe V. Chakkalakal |Co-Investigator: Lan Wei-LaPierre | Title: Interrelationships Between Age-Related Skeletal Muscle Stem Cell and NMJ Decline | Grant Type: NIH-NIA R01| Grant ID: AG051456 | *09/01/2015 - 08/31/2020*

INVITED PRESENTATIONS

Invited seminar: University of Minnesota, Department of Integrative Biology and Physiology —"The Physiological and pathological role of store-operated Ca^{2+} entry in skeletal muscle" |February 2019

Invited short talk at Keystone Symposia: Mitochondrial Biology in Heart and Skeletal Muscle (J1)--"Regulation of mitoflash and pHlash activity in skeletal muscle by uncoupling protein 3" | *January 2019*

Invited short talk at Gordon Research Conference: Muscle: Excitation-Contraction Coupling--"Store-operated Ca^{2+} entry: A double-edged sword in muscle function and damage in RyR1-Y524S mice." | *June 2017* (Unable to attend meeting due to personal reasons)

Invited oral presentation at Gordon Research Seminar: Muscle: Excitation-Contraction Coupling--"Altered EC coupling and mitochondrial functionality in dominant negative Orai1 mice lacking store operated Ca^{2+} entry" | *June 2015*

Guest speaker, Department of Medicine and Aging Science, University of Gabriele d'Annunzio, Chieti, Italy,--"Mitochondrial Superoxide Flashes: Metabolic Biomarker of Skeletal Muscle Activity and Disease" | *September 2011*

Invited presentation at the Annual meeting of Italian physiological Society, Sorrento, 2011, in symposium titled "Signaling between mitochondria and Ca^{2+} stores in skeletal muscle function and disease". Presentation title: Activity-dependent mitochondrial Ca^{2+} uptake and superoxide generation in skeletal muscle. | *September 2011*

Guest speaker, China Medical University, Shenyang, China. --"How Calsequestrin Governs the Intracellular Calcium Release in Skeletal Muscle" | *November 2007*

COMMITTEES

University of Rochester Medical Center-Postdoctoral Association | *September 2011 - September 2012*

JOURNAL ARTICLES

* Equal contribution first authors; ^Corresponding author

1. Zhong R; Herms C and Wei-LaPierre L^. “Protective effect of reducing mitochondrial Ca^{2+} uptake in skeletal muscle on neuromuscular junction structure and muscle function in $hSOD1^{G93A}$ mice”. In preparation.
2. Sui J; Eichinger K; Hyman SL; Qiu X; Wei-LaPierre L^. “Reduced functional fitness in individuals with Down syndrome”. In preparation for The Journal of Pediatrics
3. Kim J-K; Jha NN; Feng Z; Faleiro MR; Chiriboga CA; Wei-Lapierre L; Dirksen RT; Ko C-P; Monani UR. “Low SMN protein in muscle acts in a cell-autonomous manner to trigger a late-onset neuromuscular disease phenotype”. Journal of Clinical Investigation. 2019 *In Press*
4. McMurray F; MacFarlane M; Kim K; Patten DA; Wei-LaPierre L; Fullerton MD; Harper ME. “Maternal diet induced obesity alters mu0 scle mitochondrial function in offspring without changing insulin sensitivity”. FASEB J. 2019;33:
5. Brennan S; Garcia-Castañeda; Michelucci A; Sabha N; Malik S; Groom L; Wei-LaPierre L; Dowling JJ; Dirksen RT. “Mouse Model of Severe Recessive RYR1-related Myopathy”. Human Molecular Genetics. 2019; 28(18) 3024-3036.
6. Wei-LaPierre L^; Ainbinder, A; Tylock, KM; Dirksen, RT. "Substrate-dependent and cyclophilin D-independent regulation of mitochondrial flashes in skeletal and cardiac muscle". Archives of biochemistry and biophysics. 2019;663:122-131
7. McBride S*; Wei-LaPierre L*; McMurray F; MacFarlane M; Qiu X; Dirksen RT; Harper M-E. "Skeletal muscle mitoflashes, pH, and the role of uncoupling protein-3". Archives of biochemistry and biophysics. 2019;663:239-248.
8. Liu W; Klose A; Forman S; Paris ND; Wei-LaPierre L; Cortés-Lopéz M; Tan A; Flaherty M; Miura P; Dirksen RT; Chakkalakal JV. "Loss of adult skeletal muscle stem cells drives age-related neuromuscular junction degeneration." eLife. 2017;6:e26464.
9. Wang W; Gong G; Wang X; Wei-LaPierre L; Cheng H; Dirksen RT; Sheu SS. "Mitochondrial Flash: Integrative Reactive Oxygen Species and pH Signals in Cell and Organelle Biology." Antioxidants & redox signaling. 2016;25(9):534-49.
10. Michelucci A; Paolini C; Canato M; Wei-LaPierre L; Pietrangelo L; De Marco A; Reggiani C; Dirksen RT; Protasi F. "Antioxidants protect calsequestrin-1 knockout mice from halothane- and heat-induced sudden death." Anesthesiology. 2015;123(3):603-17.
11. Liu W; Wei-LaPierre L; Klose A; Dirksen RT; Chakkalakal JV. "Inducible depletion of adult skeletal muscle stem cells impairs the regeneration of neuromuscular junctions." eLife. 2015;4:e09221.
12. Lamboley CR; Kake Guena SA; Touré F; Hébert C; Yaddaden L; Nadeau S; Bouchard P; Wei-LaPierre L; Lainé J; Rousseau EC; Frenette J; Protasi F; Dirksen RT; Pape PC. "New method for determining total calcium content in tissue applied to skeletal muscle with and without calsequestrin." The Journal of general physiology. 2015;145(2):127-53.
13. Paolini C; Quarta M; Wei-LaPierre L; Michelucci A; Nori A; Reggiani C; Dirksen RT; Protasi F. "Oxidative stress, mitochondrial damage, and cores in muscle from calsequestrin-1 knockout mice." Skeletal muscle. 2015;5:10.
14. Goonasekera SA; Davis J; Kwong JQ; Accornero F; Wei-LaPierre L; Sargent MA; Dirksen RT; Molkentin JD. "Enhanced Ca^{2+} influx from STIM1-Orai1 induces muscle pathology in mouse models of muscular dystrophy." Human molecular genetics. 2014;23(14):3706-15.
15. Wei-LaPierre L*; Gong G*; Gerstner BJ; Ducreux S; Yule DI; Pouvreau S; Wang X; Sheu SS; Cheng H; Dirksen RT; Wang W. "Respective contribution of mitochondrial superoxide and pH to mitochondria-targeted circularly permuted yellow fluorescent protein (mt-cpYFP) flash activity." The Journal of biological chemistry. 2013;288(15):10567-77.
16. Wei-LaPierre L; Carrell EM; Boncompagni S; Protasi F; Dirksen RT. "Orai1-dependent calcium entry promotes skeletal muscle growth and limits fatigue." Nature communications. 2013;4:2805.

17. Tang ZZ; Yarotskyy V; Wei L; Sobczak K; Nakamori M; Eichinger K; Moxley RT; Dirksen RT; Thornton CA. "Muscle weakness in myotonic dystrophy associated with misregulated splicing and altered gating of $CaV_{1.1}$ calcium channel." Human molecular genetics. 2012;21(6):1312-24.
18. Rossi AE; Boncompagni S; Wei L; Protasi F; Dirksen RT. "Differential impact of mitochondrial positioning on mitochondrial Ca^{2+} uptake and Ca^{2+} spark suppression in skeletal muscle." American journal of physiology. Cell physiology. 2011;301(5):C1128-39.
19. Wei L; Salahura G; Boncompagni S; Kasischke KA; Protasi F; Sheu SS; Dirksen RT. "Mitochondrial superoxide flashes: metabolic biomarkers of skeletal muscle activity and disease." FASEB journal: official publication of the Federation of American Societies for Experimental Biology. 2011;25(9):3068-78.
20. Tae H*; Wei L*; Willemse H; Mirza S; Gallant EM; Board PG; Dirksen RT; Casarotto MG; Dulhunty A. "The elusive role of the SPRY2 domain in RyR1." Channels. 2011;5(2):148-60.
21. Beard NA; Wei L; Dulhunty AF. "Ca^{2+} signaling in striated muscle: the elusive roles of triadin, junctin, and calsequestrin." European biophysics journal : EBJ. 2009;39(1):27-36.
22. Wei L; Gallant EM; Dulhunty AF; Beard NA. "Junctin and triadin each activate skeletal ryanodine receptors but junctin alone mediates functional interactions with calsequestrin." The international journal of biochemistry & cell biology. 2009;41(11):2214-24.
23. Wei L; Hanna AD; Beard NA; Dulhunty AF. "Unique isoform-specific properties of calsequestrin in the heart and skeletal muscle." Cell calcium. 2009;45(5):474-84.
24. Beard NA; Wei L; Dulhunty AF. "Control of muscle ryanodine receptor calcium release channels by proteins in the sarcoplasmic reticulum lumen." Clinical and experimental pharmacology & physiology. 2009;36(3):340-5.
25. Beard NA; Wei L; Cheung SN; Kimura T; Varsányi M; Dulhunty AF. "Phosphorylation of skeletal muscle calsequestrin enhances its Ca^{2+} binding capacity and promotes its association with junctin." Cell calcium. 2008;44(4):363-73.
26. Wei L; Abdellatif YA; Liu D; Kimura T; Coggan M; Gallant EM; Beard NA; Board PG; Dulhunty AF. "Muscle-specific GSTM2-2 on the luminal side of the sarcoplasmic reticulum modifies RyR ion channel activity." The international journal of biochemistry & cell biology. 2008;40(8):1616-28.
27. Kimura T; Pace SM; Wei L; Beard NA; Dirksen RT; Dulhunty AF. "A variably spliced region in the type 1 ryanodine receptor may participate in an inter-domain interaction." The Biochemical journal. 2007;401(1):317-24.
28. Wei L; Varsányi M; Dulhunty AF; Beard NA. "The conformation of calsequestrin determines its ability to regulate skeletal ryanodine receptors." Biophysical journal. 2006;91(4):1288-301.
29. Beard NA; Casarotto MG; Wei L; Varsányi M; Laver DR; Dulhunty AF. "Regulation of ryanodine receptors by calsequestrin: effect of high luminal Ca^{2+} and phosphorylation." Biophysical journal. 2005;88(5):3444-54.

BOOKS AND CHAPTERS

Wei, L, Dirksen RT.. "Ryanodinopathies: RyR-Linked Muscle Diseases". Current Topics in Membranes: Structure and Function of Calcium Release Channels. Irina I. Serysheva. Academic Press, 2010. 139-167.

REVIEW ARTICLES AND COMMENTARIES

Wei-LaPierre L; Dirksen RT. Isolating a reverse-mode ATP synthase–dependent mechanism of mitoflash activation. Journal of General Physiology. 2019;151(6):708

Dulhunty AF; Wei-LaPierre L; Casarotto MG; Beard NA "Core skeletal muscle ryanodine receptor calcium release complex." Clinical and experimental pharmacology & physiology. 2017; 44(1):3-12.

Wei L; Dirksen RT "Perspectives on: SGP symposium on mitochondrial physiology and medicine: mitochondrial superoxide flashes: from discovery to new controversies." The Journal of general physiology. 2012; 139(6):425-34.

Dulhunty A; Wei L; Beard N "Junctin - the quiet achiever." The Journal of physiology. 2009; 587(Pt 13):3135-7.