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Prepared: August 1, 2025

Present Position

07/2025 – Assistant Professor
Department of Integrative Biology and Physiology
Medical School
University of Minnesota

Education

05/2014 B.S. Movement Science
University of Michigan, Ann Arbor, MI
Mentor: Gregory Cartee, Ph.D.

07/2020 Ph.D. Nutrition & Integrative Physiology
University of Utah, Salt Lake City, UT
Mentor: Katsu Funai, Ph.D.

Postdoctoral Training

08/2020 – 02/2025 Beth Israel Deaconess Medical Center, Harvard Medical School.
Mentor: Shingo Kajimura, Ph.D.

Highlighted Publications

1. **Verkerke ARP**, Shi X, Li M, Higuchi Y, Yamamuro T, Katoh D, Nishida H, Auger C, Abe I, Gerszten RE, Kajimura S. SLC25A48 controls mitochondrial import and metabolism. *Cell Metabolism*. 2024; 36(9). 3 September 2024. PMID: 39111307

   - Mitochondrial metabolite fluxes contribute to more than the generation of cellular energy. However, metabolite flux across the inner mitochondrial membrane requires transport proteins, of which several are uncharacterized. I identified SLC25A48 as a mitochondrial choline carrier. My work characterized the importance of SLC25A48 function in mitochondrial respiration, lipid metabolism, purine nucleotide homeostasis, and cancer cell survival.

2. **Verkerke ARP***, Wang D*, Yoshida N, Taxin ZH, Shi X, Zheng S, Li Y, Auger C, Oikawa S, Yook JS, Granath-Panelo M, He W, Zhang GF, Matsushita M, Saito M, Gerszten RE, Mills EL, Banks AS, Ishihama Y, White PJ, McGarrah RW, Yoneshiro T, Kajimura S. BCAA-nitrogen flux in brown fat controls metabolic health independent of thermogenesis. *Cell*. 2024; 187. 9 May 2024. PMID: 38653240. *Co-first authors

   - Elevated branched-chain amino acids (BCAA) in circulation are predictive in the development of type 2 diabetes. However, no mechanism linking BCAA to the development of type 2 diabetes had been defined.

My work identified that mitochondrial BCAA-flux is necessary to regulate the production of nitrogen-containing metabolites that are essential for regulating insulin resistance.

3. **Verkerke ARP**, Ferrara PJ, Lin CT, Johnson JM, Ryan TE, Maschek JA, Eshima H, Paran CW, Laing BT, Siripoksup P, Tippetts TS, Wentzler EJ, Huang H, Spangenburg EE, Brault JJ, Villanueva CJ, Summers SA, Holland WL, Cox JE, Vance DE, Neufer PD, Funai K. Phospholipid methylation regulates muscle metabolic rate through Ca^{2+} transport efficiency. *Nature Metabolism*. 2019; 1(9): 876-885. PMID: 32405618

   - Membrane lipids can affect the structure, function, and stability of membrane bound proteins. Changes in choline phospholipids protects mice from diet induced obesity, however the mechanism was uncharacterized. My work identified tri-methylation of phosphatidylethanolamine to phosphatidylcholine in skeletal muscle controlled the energy efficiency of the sarco/endoplasmic reticulum Ca^{2+}-ATPase (SERCA) to regulate skeletal muscle energy expenditure and protection from diet induced obesity.

Research Support

Pending

K01 DK144653
NIH/NIDDK – K01 07/2025 – 06/2030
Title: *Defining choline metabolism in metabolic health* $753,680
Role: PI

Expired

Charles A. King Trust Postdoctoral Fellowship 10/2023 – 07/2025
Title: *Role of mitochondrial metabolite flux in cancer* $201,800
Role: PI
Payline: 9.5%

T32DK007516 07/2021 – 09/2023
NIH/NIDDK
Title: *Integrated Endocrine and Metabolic Research Training*
PI: Barbara Kahn, M.D.
Role: Trainee

18PRE33960491 07/2018 – 06/2020
American Heart Association: Predoctoral Fellowship $53,688
Title: *Muscle phospholipid methylation modulates SERCA energy efficiency to alter susceptibility for obesity*
Priority Score: 1.36, Percentile Rank: 9.13%
Role: PI

Honors

2025	Visscher Biomedical Scholar
2024	Outstanding Manuscript Award – Nutrition Obesity Research at Harvard (NORCH)
2023	Poster Award – Beth Israel Deaconess Medical Center
2023	Keystone Symposia Future of Science Fund Scholarship: Bioenergetics in Health and Diseases
2022	Best poster – Beth Israel Deaconess Medical Center: The Molecules of Metabolism
2021	NIH Ruth L. Kirschstein NRSA T32
2019	E. Wayne Askew Award – University of Utah exemplary student in research
2018	AHA Predoctoral Fellowship
2017	Keystone Symposia Future of Science Fund Scholarship: Diabetes
2017	Seahorse Travel Award, Agilent Technologies

2015 Keystone Symposia Future of Science Fund Scholarship: Systems of Lipid Biology
2015 Seahorse Travel Award, Seahorse Bioscience
2013 University Honors – University of Michigan
2010 B.J. Stupak Memorial Scholarship – Congressman Bart and Laurie Stupak
2010 Valedictorian – Menominee High School, Menominee, MI

Professional Experience

2025- Assistant Professor, Integrative Biology and Physiology, University of Minnesota
2025-25 Instructor in Medicine, Harvard Medical School
2020-25 Postdoctoral Fellow, Kajimura Laboratory, Beth Israel Deaconess Medical Center
2018-20 American Heart Association Predoctoral Fellow, Funai Laboratory, University of Utah
2017-18 Graduate Student Research Assistant, Funai Laboratory, University of Utah
2014-17 Graduate Student Research Assistant, Funai Laboratory, East Carolina Diabetes and Obesity Institute, East Carolina University
2013-14 Research Assistant, Muscle Biology Laboratory, University of Michigan

Affiliations

2014- American Physiological Society
2017- American Heart Association

Teaching Experience

2015 Physiology of Exercise, KINE 3805. East Carolina University.

Editorial Activity

Ad hoc Reviewer
Adipocyte
FEBS Journal
Frontiers in Endocrinology
Journal of Molecular Medicine
Journal of Physiology
Life Metabolism
Molecular and Cellular Biology
Nature Communications

Publications

Auger C, Li M, Fujimoto M, Ikeda K, Yook JS, O'Leary TR, Caycedo MPH, Xiaohan C, Oikawa S, **Verkerke ARP**, Shinoda K, Griffin PR, Inaba K, Stimson RH, Kajimura S. Identification of a molecular resistance that controls UCP1-independent Ca^{2+} cycling thermogenesis in adipose tissue. *Cell Metabolism.* 2025; 37, 1-15. DOI: 10.1016/j.cmet.2025.03.009

Verkerke ARP, Shi X, Li M, Higuchi Y, Yamamuro T, Katoh D, Nishida H, Auger C, Abe I, Gerszten RE, Kajimura S. SLC25A48 controls mitochondrial import and metabolism. *Cell Metabolism*. 2024; 36(9). 3 September 2024. PMID: 39111307

Verkerke ARP*, Wang D*, Yoshida N, Taxin ZH, Shi X, Zheng S, Li Y, Auger C, Oikawa S, Yook JS, Granath-Panelo M, He W, Zhang GF, Matsushita M, Saito M, Gerszten RE, Mills EL, Banks AS, Ishihama Y, White PJ, McGarrah RW, Yoneshiro T, Kajimura S. BCAA-nitrogen flux in brown fat controls metabolic health independent of thermogenesis. *Cell*. 2024; 187. 9 May 2024. PMID: 38653240. *Co-first authors

Ferrara PJ, Lang MJ, Johnson JM, Watanabe S, McLaughlin KL, Maschek JA, **Verkerke ARP**, Siripoksup P, Chaix A, Cox JE, Fisher-Wellman KH, Funai K. Weight loss increases skeletal muscle mitochondrial energy efficiency in obese mice. *Life Metabolism*. 2023 Apr;2(2):load014. Epub 2023 Apr 4. PMID: 37206438.

Eshima H, Shahtout JL, Siripoksup P, Pearson MJ, Mahmassani ZS, Ferrara PJ, Lyons AW, Maschek JA, Peterlin AD, **Verkerke ARP**, Johnson JM, Salcedo A, Petrocelli JJ, Miranda ER, Anderson EJ, Boudina S, Ran Q, Cox JE, Drummond MJ, Funai K. Lipid hydroperoxides promote sarcopenia through carbonyl stress. *Elife*. 2023 Mar 23;12:e85289. PMID: 36951533.

Abe I, Oguri Y, **Verkerke ARP**, Monteiro LB, Knuth CM, Auger C, Qiu Y, Westcott GP, Cinti S, Shinoda K, Jeschke MG, Kajimura S. Lipolysis-derived linoleic acid drives beige fat progenitor cell proliferation via CD36. *Developmental Cell*. 2022; 57(23):2623-2637. PMID: 36473459

Wang Q, Li H, Tajima K, **Verkerke ARP**, Taxin ZH, Hou Z, Cole JB, Li F, Wong J, Abe I, Pradhan RN, Yamamuro T, Yoneshiro T, Hirschhorn JN, Kajimura S. Post-translational control of beige fat biogenesis by PRDM16 stabilization. *Nature*. 2022; 609(7925): 151-158. PMID: 35978186

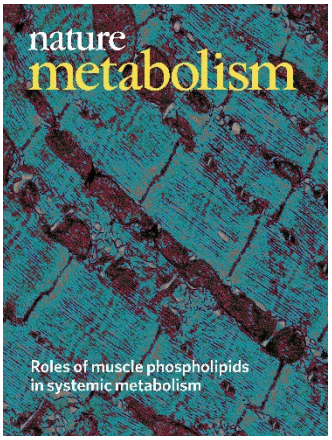
Ferrara PJ, **Verkerke ARP**, Maschek JA, Shahtout J, Siripoksup P, Eshima H, Johnson JM, Petrocelli JJ, Mahmassani ZS, Green TD, McClung JM, Cox JE, Drummond MJ, Funai K. Low lysophosphatidylcholine induces skeletal muscle myopathy that is aggravated by high-fat diet feeding. *FASEB J*. 2021; 35(9):e21867. PMID: 34499764

Verkerke ARP, Kajimura S. Oil does more than light the lamp: the multifaceted role of lipids in thermogenic fat. *Developmental Cell.* 2021; 56(10):1408-1416. PMID: 34004150

Ferrara PJ, Rong X, Maschek JA, **Verkerke ARP**, Siripoksup P, Song H, Green TD, Krishnan KC, Johnson JM, Turk J, Houmard JA, Lusis AJ, Drummond MJ, McClung JM, Cox JE, Shaikh SR, Tontonoz P, Holland WL, Funai K. Lysophospholipid acylation modulates plasma membrane lipid organization and insulin sensitivity in skeletal muscle. *Journal of Clinical Investigation*. 2021; 131(8):135963. PMID: 33591957

Verkerke ARP, Kajimura S. A new way to ignite thermogenesis in human adipose tissue. *Nature Reviews Endocrinology*. 2020; 16(9):475-476. PMID: 32641836

Eshima H, Siripoksup P, Mahmassani ZS, Johnson JM, Ferrara PJ, **Verkerke ARP**, Salcedo A, Drummond MJ, Funai K. Neutralization of mitochondrial ROS does not rescue muscle atrophy induced by hindlimb unloading in female mice. *Journal of Applied Physiology.* 2020; 129(1):124-132. PMID: 32552434



Johnson JM, **Verkerke ARP**, Maschek JA, Ferrara PJ, Lin CT, Kew KA, Neufer PD, Lodhi IJ, Cox JE, Funai K. Perinatal splicing of UCP1 by non-cell autonomous action of PEMT. *Molecular Metabolism.* 2020; 31:55-66. PMID: 31918922

Verkerke ARP, Ferrara PJ, Lin CT, Johnson JM, Ryan TE, Maschek JA, Eshima H, Paran CW, Laing BT, Siripoksup P, Tippetts TS, Wentzler EJ, Huang H, Spangenburg EE, Brault JJ, Villanueva CJ, Summers SA, Holland WL, Cox JE, Vance DE, Neufer PD, Funai K. Phospholipid methylation regulates muscle metabolic rate through Ca^{2+} transport efficiency. *Nature Metabolism*. 2019; 1(9): 876-885. PMID: 32405618

Heden TD, Johnson JM, Ferrara PJ, Eshima H, **Verkerke ARP**, Wentzler EJ, Siripoksup P, Narowski TM, Coleman CB, Lin CT, Ryan TE, Reidy PT, de Castro Brás LE, Karner CM, Burant CF, Maschek JA, Cox JE, Mashek DG, Kardon G, Boudina S, Zeczycki TN, Rutter J, Shaikh SR, Vance JE, Drummond MJ, Neufer PD,

Funai K. Mitochondrial PE potentiates respiratory enzymes to amplify skeletal muscle aerobic capacity. *Science Advances.* 2019; 5(9). PMID: 31535029

Johnson JM, Ferrara PJ, **Verkerke ARP**, Coleman CB, Wentzler EJ, Neufer PD, Kew KA, de Castro Brás LE, Funai K. Targeted overexpression of catalase to mitochondria does not prevent cardioskeletal myopathy in Barth syndrome. *Journal of Molecular and Cellular Cardiology.* 2018; 121:94-102. PMID: 30008435

*Ferrara PJ, ***Verkerke ARP**, Brault JJ, Funai K. Hypothermia decreases O_2 cost for ex vivo contraction in mouse skeletal muscle. *Medicine and Science in Sports and Exercise*. 2018; 50(10):2015-2023. PMID: 29787474 *Co-First Authors

Wang H, Arias EB, Yu CS, **Verkerke ARP**, Cartee GD. Effects of calorie restriction and fiber type on glucose uptake and abundance of electron transport chain and oxidative phosphorylation proteins in single fibers from old rats. J*ournals of Gerontology Series A: Biological Sciences and Medical Sciences*. 2017; 72(12):1638-1646. PMID: 28531280

Paran CW, **Verkerke ARP**, Heden TD, Park S, Zou K, Lawson HA, Song H, Turk J, Houmard JA, Funai K. Reduced efficiency of sarcolipin-dependent respiration in myocytes from humans with severe obesity. *Obesity*. 2015; 23(7):1440-9. PMID: 25970801

Conference Abstracts

†Abstract was selected for an award. *Abstract was selected for a short talk

***Verkerke ARP**, Wang D, Yoshida N, Taxin ZH, Shi X, Li Y, Auger C, Oikawa S, Granath-Panelo M, Gerszten RE, Mills EL, Banks AS, Ishihama Y, White PJ, McGarrah RW, Yoneshiro T, Kajimura S. BCAA flux in brown fat supports metabolic health via BCAA nitrogen derived metabolites. *Cell Symposia: Exercise metabolism.* Lisbon, Portugal, 2024.

Verkerke ARP, Shi X, Abe I, Gerszten RE, Kajimura S. SLC25A48 mediated mitochondrial choline import regulates purine nucleotide pools. *Keystone Symposia: Tumor metabolism*. Banff, Canada, 2024.

***Verkerke ARP**, Wang D, Yoshida N, Taxin ZH, Shi X, Li Y, Auger C, Oikawa S, Granath-Panelo M, Gerszten RE, Mills EL, Banks AS, Ishihama Y, White PJ, McGarrah RW, Yoneshiro T, Kajimura S. BCAA flux in brown fat regulates insulin sensitivity independent of thermogenesis. *Keystone Symposia: Circulating metabolic intermediates as fuels and signals.* Snowbird, UT, 2023. *Selected for short talk

†**Verkerke ARP**, Wang D, Yoshida N, Taxin ZH, Shi X, Li Y, Auger C, Oikawa S, Granath-Panelo M, Gerszten RE, Mills EL, Banks AS, Ishihama Y, White PJ, McGarrah RW, Yoneshiro T, Kajimura S. BCAA flux in brown fat regulates insulin sensitivity independent of thermogenesis. *Beth Israel Deaconess Medical Center Retreat*, Boston, MA, 2023.

†**Verkerke ARP**, Taxin ZH, Yoneshiro T, Yoshida N, Auger C, Granath-Panelo M, Wang D, Shi X, White P, McGarrah R, Kajimura S. Mitochondrial BCAA flux in BAT controls insulin sensitivity via glutathione synthesis. *Keystone Symposia: Bioenergetics in health and diseases*. Keystone, CO, 2023.

†**Verkerke ARP**, Yoneshiro T, Kajimura S. Absence of mitochondrial BCAA carrier in BAT exacerbates insulin resistance without impairing thermogenesis. *Beth Israel Deaconess Medical Center Symposium – The molecules of metabolism: a focus on metabolomics*. 2022.

Verkerke ARP, Ferrara PJ, Lin CT, Johnson JM, Ryan TE, Maschek JA, Laing BT, Huang H, Cox JE, Neufer PD, Funai K. Phospholipid methylation regulates muscle metabolic rate through Ca^{2+} transport efficiency. *Keystone Symposia: Obesity and Adipose Tissue Biology*. Banff, AB, Canada, 2019.

†**Verkerke ARP**, Ferrara PJ, Lin CT, Heden TD, Ryan TE, Wentzler EJ, Balotti AH, Neufer PD, Funai K. Muscle phospholipid methylation modulates SERCA energy efficiency and alters susceptibility for obesity. *Keystone Symposia: Diabetes*. Keystone, CO, 2017.

Verkerke ARP, Ferrara PJ, Lin CT, Heden TD, Ryan TE, Wentzler EJ, Balotti AH, Neufer PD, Funai K. Absence of phosphatidylethanolamine methylation increases skeletal muscle energy expenditure and prevents obesity. *American Physiological Society: Integrative Biology of Exercise VII*. Phoenix, AZ, 2016.

Verkerke ARP, Johnson JM, Ferrara PJ, Lin CT, Heden TD, Ryan TE, Wentzler EJ, Narowski TM, Balotti AH, Neufer PD, Funai K. Phospholipid Methylation Deficiency Increases Skeletal Muscle Energy Expenditure and Prevents Obesity. *American Diabetes Association 76th Scientific Sessions*. New Orleans, LA, 2016.

Verkerke ARP, Johnson JM, Lin CT, Ryan TE, Ferrara PJ, Heden TD, Wentzler EJ, Neufer PD, Funai K. Mitochondrial uncoupling-independent increase in muscle respiration likely mediates anti-obesogenic phenotype of phosphatidylethanolamine methyltransferase null mice. *Advances in Skeletal Muscle Biology*. Gainesville, FL, 2016.

Verkerke ARP, Paran CW, Atkinson JE, Funai K. Increased energy expenditure and insulin sensitivity, but not protection from obesity, in phosphatidylethanolamine methyltransferase knockout mice on long-term high-fat diet feeding. *FASEB J.* 29(Suppl 1): 824.5. *Annual Meeting for Experimental Biology*. Boston, MA, 2015.

[†]**Verkerke ARP**, Paran CW, Heden TD, Park S, Zou K, Lawson HA, Song H, Turk J, Houmard JA, Funai K. Reduced efficiency of sarcolipin-dependent respiration in myocytes from severely obese humans. K*eystone Symposia: Systems Biology of Lipid Metabolism*. Breckenridge, CO, 2015.