

# Robert H. Coker

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## Professional Memberships

American College of Sports Medicine - Fellow  
The Obesity Society - Fellow  
American Physiological Society  
Wilderness Medical Society

## Professional Education

2020- MBA (online completion 06/22), Washington State Univ., Pullman, WA  
1998-1999 Visiting Fellow in Physiology, Bispebjerg Hospital, Copenhagen, Denmark  
1995-1998 Postdoctoral Fellow in Physiology, Vanderbilt University, Nashville, TN  
1991-1995 Ph.D. in Exercise Science, University of Mississippi, University, MS  
1988-1989 M.Ed. in Physical Education, University of North Georgia, Dahlonega, GA  
1982-1986 B.S. in Physical Education, University of North Georgia, Dahlonega, GA

## Professional Experience

2018-present - **Professor (Tenured)**, Departments of Biology, Chemistry and Biochemistry, and Institute of Arctic Biology, University of Alaska Fairbanks (UAF), Fairbanks, AK

- Established research capacity for the first federally funded clinical trials at UAF.
- Secured over \$20M in external funding as a Principal and Co-Investigator from the National Institutes of Health (NIH), National Dairy Council and private sources.
- Built logistical infrastructure for conducting remote field studies to study metabolic responses to arduous environmental conditions (temperatures below -54° F)
- Developed top-ranked curriculum that included Medical Physiology, Exercise Physiology, Clinical Research Methods, and Internship in Physical Therapy
- Mentored and trained numerous undergraduate and graduate students
- Inducted into the Alaska Innovators Hall of Fame by the State Committee for Research
- Received the Nanook and Invent Alaska Awards for top invention disclosures at UAF
- Chair of the Northwest Clinical Interactions Network that provides rural and remote patient access to over 700 clinical trials in the Pacific Northwest.
- Invited member of the Joint Health Care Committee, Limited Submissions Committee, and Academic Program Review Committee at UAF
- Member of the Regional Executive Council and Scientific Success Committee at the University of Washington Institute for Translational Health Sciences
- Regular Member of the National Institutes of Health-National Institute of Diabetes and Digestive and Kidney Disease study section for the 2020-2024

2017-2019 - **Ambassador**, Office of Intellectual Property and Commercialization, UAF

- Mentored faculty to funding for three Phase I Small Business Innovations in Research (SBIR) grants from the NIH and the United States Department of Agriculture (USDA)
- Taught "Hacking for Defense" course through School of Management at UAF

2014-2015 - **Consultant**, United States Air Force, Department of Defense, USA

- Co-managed the reconstruction of a physical training facility on Eielson Air Force Base to stabilize temperature and humidity conditions for testing of Airmen qualifications

2013-present - **Associate Professor (Tenured)**, Departments of Biology, Chemistry and Biochemistry, and Institute of Arctic Biology, UAF, Fairbanks, AK

2013-present - **Managing Partner**, Essential Blends, LLC, Fairbanks, AK

- Led the state of Alaska in funding from the NIH SBIR program; raised over \$2M in assets, submitted three provisional patents and recently licensed intellectual property

2013-present - **Adjunct Associate Professor**, Department of Geriatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR

- Co-led the Career Development Core and the Physiology and Metabolism Cores

2013-2015 - **Director**, Experimental Design, Biostatistics, and Data Services Core, Center for Alaska Native Health Research, UAF, Fairbanks, AK

- Managed biostatistical consultations and cataloging of data for several Federally funded investigators; including child nutrition projects funded by the USDA

2007-2013 - **Associate Professor (Tenured)**, Department of Geriatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR.

- Secured funding from NIH, American Heart Association & the National Dairy Council
- Conducted the first studies to demonstrate the superior benefits of exercise-induced weight loss on hepatic metabolism and visceral fat.
- Completed first studies that illustrated the detrimental impact of bed rest on regulation of glucose, fat and protein metabolism and physical function in the elderly.
- Established stable isotope laboratory for use in clinical research studies.

2008-2009 - **Consultant**, Healthspan Solutions, LLC, Little Rock, AR

- Led two clinical trials that contributed to the acquisition of two patents and the commercialization of two medical nutrition products.

2008-2010 - **Research Health Scientist**, Veterans Administration Health System, Little Rock, AR.

- Secured merit review grant to study the impact of caloric restriction on insulin resistance.

2004-2013 - **Consultant**, Pfizer Global Research and Development, New London, CT

- Led hyperinsulinemic, euglycemic clamp studies in several Phase I-III trials to evaluate the influence of Exubera, including the influence of smoke on insulin pharmacokinetics.

2001-2007 - **Assistant Professor**, Department of Geriatrics, University of Arkansas for Medical Sciences, Little Rock, AR

1999-2001 - **Assistant Professor**, Department of Exercise Science, University of Mississippi, University, MS.

- Established Exercise Physiology and Metabolic Regulation courses
- Created stable isotope laboratory to study glucose kinetics during exercise.

1999 - **Visiting Fellow**, Sports Medicine Research Unit and Department of Clinical Physiology, Bispebjerg Hospital, Copenhagen, Denmark.

- Completed arterio-venous balance and isotopic studies that established the importance of glucagon and insulin in the regulation of glucose kinetics during exercise in humans.

1995-1999 - **Postdoctoral Fellow**, Department of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine, Nashville, TN.

- Characterized the importance of glucoregulatory hormones in the regulation of glucose metabolism during exercise under conditions of exceptional metabolic stress.

1995-1999 - **Exercise Physiologist**, Methodist Hospitals of Memphis, Memphis, TN

- Provided inpatient and outpatient clinical care to cardiac and pulmonary patients.

## **Certifications and Awards**

2020 Alaska Innovators Hall of Fame, Alaska SCoR, Juneau, AK  
2020 Excellence in Instruction and Outreach Award, UAF, Fairbanks, AK  
2019 Nanook Award, Best Invention Disclosure, UAF, Fairbanks, AK  
2018 Fellow status, The Obesity Society, Silver Spring, MD  
2018 Certificate – Hacking for Defense, Purdue University, West Lafayette, IN  
2018 Certificate – Lean LaunchPad, BMNT and UAF, Fairbanks, AK  
2018 Distinguished Visiting Scholar Award, University of Montana, Missoula, MT  
2016 Invent Alaska Award for Innovation in Research, UAF, Fairbanks, AK  
2005 Clinical Research Success Award, UAMS, Little Rock, AR  
2000 Faculty Research Award, University of Mississippi, University, MS  
1999 Fellow status, American College of Sports Medicine, Indianapolis, IN  
1998 Travel Award, American Diabetes Association, Arlington, VA  
1999 Visiting Fellow Award, Bispebjerg Hospital, Copenhagen, Denmark  
1997 Juvenile Diabetes Foundation Fellowship Award, New York, NY  
1995 Graduate Honors Fellowship, University of Mississippi, University, MS  
1994 Graduate Honors Award, University of Mississippi, University, MS

## **Service**

2019- Regular Member, National Institutes of Health, National Institute of Diabetes, Digestive and Kidney Diseases – B study section, Bethesda, MD  
2019- Invited Member, Institute of Translational Health Sciences (ITHS) Scientific Success Committee, University of Washington, Seattle, WA  
2019- Regional Director, ITHS Translational Workforce Development Program, University of Washington, Seattle, WA  
2019- Chair, Translational Advisory Committee, Center for Transformative Research in Metabolism, UAF, Fairbanks, AK  
2019- Reviewer, Ad Hoc, National Institutes of Health, Endocrinology, Metabolism, Nutrition and Reproductive Sciences, CSR Anonymization Study  
2019- Search Committee, Faculty position, Department of Veterinary Medicine, UAF  
2018- Site Director, Accelerating Solutions for Commercialization and Entrepreneurial Development in the Mountain West IDEa states, UAF  
2018- Chair, Steering Committee, University of Washington Northwest Participant and Clinical Interactions Network, Seattle, WA  
2018- Reviewer, Ad Hoc, National Institutes of Health, Aging Systems and Geriatric Study Section  
2018- Reviewer, Office of Intellectual Property and Commercialization, UAF  
2017- Representative Assembly, United Academics  
2017- Internal Advisory Committee, Ad Hoc, University of Nevada Las Vegas Clinical Translational Research Infrastructure Network  
2017- Reviewer, Institute of Translational Health Sciences-Research Scholars Program, University of Washington School of Medicine  
2017- Reviewer, Ad Hoc, National Institutes of Health, Diabetes, Endocrinology and Metabolic Diseases  
2017- Executive Committee Member, American College of Sports Medicine  
2017- Reviewer, Journal of Cachexia, Sarcopenia and Muscle  
2016- Representative, Program Review Faculty Committee, UAF  
2016- Reviewer, University of Utah-Washington University at Saint Louis Diabetes Research and Training Center; Collaborative Pilot and Feasibility Program  
2016- Reviewer, Ad Hoc, National Institutes of Health, Integrative Nutrition and Metabolic Processes Study Section  
2016- Member, United Academics AAUP/AFT Joint Health Care Committee  
2016-2017 Chair, Graduate Admission Committee in Biomedical/Physiology, UAF  
2016- Reviewer, NIH: Clinical and Translational Science Awards  
2016 Reviewer, Center for the Advancement of Science in Space, “Organs on Chips”  
2016 Chair of Organizing Committee, Northwest and Alaska ACSM annual meeting

2016- Reviewer, PLoS One, Diabetologia, J Gerontology Medical Sciences  
2016. Moderator and Chair, Alaska High School Science Symposium  
2015-2016. President, American College of Sports Medicine, Alaska Chapter  
2015- Reviewer, Limited Submissions Committee, UAF  
2015 Organizer, SBIR/STTR Inventors Forum and Workshop, TREND, UAF  
2014- Member, Steering Committee, Institute of Translational Health Sciences,  
University of Washington School of Medicine, Seattle, WA  
2014 Search Committee, Faculty position, Department of Veterinary Medicine, UAF  
2014-2015 Session Judge, Alaska High School Science Symposium  
2013-2014 President Elect, American College of Sports Medicine, Alaska Chapter  
2013-2015 Director, Life Science Seminar Series, Institute of Arctic Biology, UAF  
2013- Reviewer, Clinical Nutrition; Nutrition, Metabolism and Cardiovascular Diseases;  
Diabetes Research and Clinical Practice; Experimental Gerontology  
2012- Reviewer, Veterans Administration Merit Review Program  
2011- Reviewer, American Journal of Physiology, Journal of Gerontology;  
Medical and Biological Sciences; Journal of Nutrition, Health and Aging  
2009-2012 Scientific Advisory Committee, TRI, UAMS, Little Rock, AR  
2009 - Reviewer, Diabetes Care; Journal of Physical Activity and Health  
2009- Reviewer, American Heart Association, National and Affiliate  
2009- Reviewer, Physician and Sportsmedicine, Am J Physiology  
2007- Voting Member, Veterans Administration Institutional Review Board  
2007-2016 Editorial Board, Journal of Applied Physiology  
2003-2006 Voting Member, Institutional Review Board, UAMS, Little Rock, AR  
2002-2007 Voting Member, VA Research and Development Committee, Little Rock, AR  
2004- Reviewer, Can J Physiology. Medicine and Science in Sports and Exercise  
1999- Reviewer, Metabolism; American J Physiology; Journal of Applied Physiology

### Provisional Patents

1. Nutritional formulation to ameliorate the metabolic consequences of excessive alcohol consumption, Inventors: Robert Harold Coker III, PhD, Robert Reese Wolfe, PhD, October, 2020.
2. Weight management for ideal body composition and functional capacity, Inventors: Robert Harold Coker III, PhD, Robert Reese Wolfe, PhD, September, 2020.

### Manuscripts in Preparation

1. Taber KR, Leonard K, Campbell, C, Flora L, Keshel T, **Coker RH**, SkiKu program: five year impact on physical activity and sleep quality in Alaska Native children. Med Sci Sports Exerc 2020.
2. Campbell C, Bogren L, Drew K, **Coker RH**, Determination of metabolic pathways in response to cycling versus vinyasa yoga, Metabolites, 2020.
3. Coker MS, Ladd KR, Schutzler SE, Murphy CJ, Newcomer BR, Wolfe RR, **Coker RH**, Consumption of essential amino acid meal enriched replacement maintains skeletal muscle and improves physical function in the elderly, Clinical Nutrition 2020.
4. **Coker RH**, Kim IY, Schutzler SE, Bodenner DL, Ferrando AA, Wolfe RR. Optimal infusion rate of amino acids for improving whole body net protein balance in cancer patients, Am J Clin Nutr 2020.
5. Crawford SG, O'Hara T, Breed G, Castellini M, **Coker RH**, Rea L, Suggestion of density dependent and density independent influences upon fasting status in dependent pups of a subarctic Otariid, Physiol Biochem Zoo 2020.

## In Review

1. Coker MS, Murphy CJ, Ruby BC, Shriver TC, Schoeller DA, Newcomer BR, Bartlett L, **Coker RH**. Alaska backcountry expeditionary hunting promotes rapid improvements in metabolic health in males and females, *Physiol Rep*, resubmitted 2020.
2. Coker MS, Ladd KR, Schutzler SE, Park SY, Williams RH, Deutz NEP, Wolfe RR, **Coker RH**. Ingestion of free-range reindeer promotes higher net protein balance compared to commercial beef metabolism in humans, *Int J Circum Health*, in initial review 2020.

## Published

1. Rice SA, Ten Have GAM, Reisz JA, Gehrke S, Stefanoni D, D'Alessandro A, **Coker RH**, Deutz NEP, Drew KL. Nitrogen recycling buffers against ammonia toxicity from skeletal muscle breakdown in hibernation. *Nat Metab*, in press 2020.
2. Coker MS, Ladd KR, Clark F, Murphy CJ, Newcomer BR, Wolfe RR, **Coker RH**. Essential amino acid enriched nutritional supplement promotes reductions in intrahepatic lipid in individuals with alcohol use disorder, *Nutrients*, 2020 Jan 19, 12, 25. doi: 10.3390/nu12010254.
3. Hassell L, Gregor C, Melvin A, Goss C, **Coker RH**, Laukes C, Albritton S, Brant J, Amoroso P, Whitener N, Tuttle KR. Feasibility of connecting regional research programs to national studies by the CTSA Trial Innovation Network. *J Clin Trans Sci* 2020 4 (2): 75-80. <https://doi.org/10.1017/cts2019.437>.
4. Gnaiger E, et al – MitoEAGLE Task Group (**Coker RH** as co-author), *Mitochondrial physiology*, *Bioenerg Commun*, 2020, 1; 1-44. Doi: 10.26124/bec:2020-0001.v1
5. **Coker RH**, Johannsen MM, Galvin G, Murphy CJ, Ruby BC. Wildland firefighting: adverse influence on indices of metabolic and cardiovascular health, *J Occup Environ Med*, 2019 61(3): e91-e94. doi.org/10.1097.JOM.0000000000001535.
6. **Coker RH**, Shin K, Scholten K, Johannsen MM, Kim I-Y, Schutzler SE, Tsigonis J, Wolfe RR. Essential amino acid-enriched meal replacement promotes superior net protein balance in older, overweight adults, *Clin Nutr* 2019 38(6): 2821-2816. doi.org/10.1016/j.clinu.2018.12.013.
7. Schalt A, Johannsen, MM, Kim J, Chen R, Coker MS, Gunga H-C, **Coker RH**, Steinach M. Negative energy balance does not alter fat free mass during the Yukon Arctic Ultra – the longest and the coldest ultramarathon. *Front Physiol* 2018 9:1761. doi.org/ 10.3389/fphys.2018.01761.
8. **Coker RH**, Coker MS, Bartlett L, Murphy CJ, Priebe K, Shriver TJ, Schoeller DA, Ruby BC. The energy requirements and metabolic benefits of wilderness hunting in Alaska. *Physiol Rep* 2018 6(21): e13925. doi 10.14814/phy2.13925
9. Johannsen MM, Shin K, Priebe K, **Coker RH**, Alaska Mountain Wilderness Ski Classic: alterations in energy expenditure and body composition, *Wilderness Environ Med*, 2018 29(2): 221-225. doi: 10.1016/j.wem.2018 02 005.
10. Ravussin E, Ryan DH, Hall KD, Church T, Martin CK, Davis RAH, Plaisance EP, Allison DB, **Coker RH**, Wolfe RR, Henson J, Edwardson CL, Morgan B, Horshfield MA, Khunti K, Davies MJ, Yates T. Triggers of the Obesity Epidemic, *Obesity (Silver Spring)* 2018 26(1).
11. Rundfeldt LC, Maggioni MA, **Coker RH**, Gunga H-C, Riveros-Rivera A, Schalt A, Steinach M. Cardiac autonomic modulations and psychological correlates in the Yukon Arctic Ultra: the longest and coldest ultramarathon. *Front Physiol* 2018 9:35. doi: 10.3389/fphys.2018.00035

12. **Coker RH**, Wolfe RR, Weight loss strategies in the elderly: a clinical conundrum, *Obesity* (Silver Spring), Editor's Choice, 2018 Jan; 26(1): 22-28. doi: 10.1002/oby.21961
13. **Coker RH**, Robinette L, Kern PA, Minimal alteration in muscle lipid genes following stabilized weight loss, *Appl Physiol Nutr Metab* 2017 Aug 4: 1-6. doi: 10.1139/apnm-2017-0098.
14. Kim I-Y, Wolfe RR, Azhar G, Ferrando, AA, **Coker RH**, Short term elevation in dietary protein intake does not worsen insulin resistance in older adults with metabolic syndrome, *BMC Nutrition* 2017 3. pii 33. doi. 0.1186/s40795-017-0152-4.
15. Baldwin L-M, Laukes C, Doyle MM, Reedy A, Mollis BL, Albritton SA, **Coker RH**, Ramsey B, The Regional Clinical Research Centers Network: Increasing patient access to clinical and health services research across the northwestern US, *J Clin Trans Sci* 2017 Apr; 1(2): 94-100. doi: 10.1017/cs2016.18.
16. George, M, Azhar G, Pangle A, Peeler E, Dawson A, **Coker RH**, Coleman KS, Schraeder A, Wei J, Feasibility of conducting a 6-months long home-based exercise program with protein supplementation in elderly community-dwelling individuals with heart failure, *J Physiother Phys Rehabil* 2017; 2(2): pii: 137. doi 10.4172/2573-0312.
17. **Coker RH**, Weaver A, Coker MS, Murphy C, Gunga HC, Steinach M, Metabolic responses to the Yukon Arctic Ultra: longest and coldest ultramarathon in the world, *Med Sci Sports Exerc* 2017 Feb; 49(2):357-362, doi 10.1249/MSS.1095.
18. **Coker RH**, Schutzler S, Deutz NE, Wei J, Miller S, Wolfe RR, Nutritional supplementation with essential amino acids and phytosterols reduces the risk for metabolic syndrome and cardiovascular disease in overweight individuals with mild hyperlipidemia, *J. Endocrinol. Diabetes and Obes* 2015;3(2). pii: 1069. Epub 2015 Apr 15.
19. Keshel TE, **Coker RH**, Exercise training and insulin resistance: a current review, *J. Obes. Weight Loss Ther* 2015 Jul;5(Suppl 5). pii: S5-003. doi: 10.4172/2165-7904.S5-003
20. **Coker RH**, Hays NP, Williams RH, Wolfe RR, Evans WJ, Bed rest promotes reductions in walking speed, functional parameters, and aerobic fitness in older, healthy adults, *J Gerontol Series A: Bio Med Sci* 2015 70(1): 91-96. doi: 10.1093/gerona/glu123
21. Kim, IL, Williams RH, Schutzler SE, Lasley CL, Bodenner DL, Wolfe RR, **Coker RH**, Acute lysine supplementation does not improve hepatic or peripheral insulin sensitivity in older, overweight individuals, *J. Nutr Metab (Lond)* 2014 Oct 8(11): 49. doi: 10.1186/1743-7075-11-49
22. **Coker RH**, Williams RH, Xu, L, Schutzler S, Wolfe RR, Evans WJ, Bed rest promotes hepatic and peripheral insulin resistance through elevated lipolysis in the elderly, *J Gerontol Series A: Bio Med Sci* 2014 Mar;69(3):363-70. doi: 10.1093/gerona/glt100.
23. **Coker RH**, Miller S, Schutzler, S, Deutz N, Wolfe RR, Whey protein and essential amino acids promote the reduction of adipose tissue and increased muscle protein synthesis during caloric restriction-induced weight loss in elderly, obese individuals, *Highly Accessed. Nutr J* 2012 Dec 11;11:105. doi: 10.1186/1475-2891-11-105. doi: 10-.1186/1475-2891-11-105
24. **Coker RH**, Wolfe RR, Bedrest and sarcopenia, *Curr Opinion Clin Met Care* 2012 15(1):7-11. doi: 10.1097/MCO.0b013e32834da629.

25. Yao-Borengasser, A, Varma V, **Coker RH**, Ranganathan G, Phanavanh B, Rasouli N, Kern PA, Adipose triglyceride lipase (ATGL) expression in human adipose tissue and muscle. Role in insulin resistance and response to training and pioglitazone, *Metabolism* 2011 60: 1012-1020. doi: 10.1016/j.metabol.2010.10005
26. **Coker RH**, Williams RH, Yeo SE, Kortebein PM, Bodenner DL, Kern PA, Evans WJ, The impact of exercise training compared to caloric restriction on hepatic and peripheral insulin resistance in obesity, *J Clin Endocrinol Metab* 2009 Nov; 94(11):4258-66. doi: 10/1210/jc.2008-2033
27. **Coker RH**, Invited Commentary: Caffeine, cycling performance & exogenous CHO oxidation, *Med Sci Sports Exer* 2009 Sept; 41(9):1743. doi: 10.1249/MSS.0b013e3181ae37e7.
28. **Coker RH**, Williams RH, Kortebein PM, Sullivan DH, Evans WJ, Influence of exercise intensity on regional fat distribution and adiponectin in elderly adults, *Metab Syn Relat Dis* 2009 Aug;7(4):363-8. doi: 10.1089/met.2008.0060
29. **Coker, RH**, Williams, RH, Yeo, SE, Kortebein, PM, Bodenner, DL, Kern, PA, Evans WJ, Visceral fat and adiponectin: associations with insulin resistance are tissue-specific in obese, post-menopausal women, *Metab Syn Relat Dis* 2009 7(1) 61-67. doi: 10.1089/met2008.0060
30. Hays, NP, Galassetti, PR, **Coker, RH**, Invited Review: Prevention and treatment of type 2 diabetes: current role of lifestyle and pharmacological and natural product interventions, *Pharmacol Ther* 2008 118(2): 181-191. Doi: 10.1016/j.pharmthera.2008.02.003
31. Yeo, S, **Coker RH**, Aerobic exercise training versus the etiology of insulin resistance, *Eur J Sci Sport* 2008 8(1): 3-14. doi: 10.1080/17461390701832645
32. Yeo, S, Hays, NP, Dennis, RA, Kortebein PM, Sullivan, DH, Evans, WJ, **Coker RH**, Fat distribution and glucose metabolism in elderly, obese men and women, *J Gerontol Series A: Bio Med Sci Dec* 2007 62(12):1393-401. Doi: 10.1093/gerona/62.12.1393
33. Carrithers, JA, Carroll, CC, **Coker, RH**, Sullivan, DH, Trappe TA, Concurrent exercise and muscle protein synthesis: implications for exercise countermeasures in space, *Aviat Space Environ Med* 2007 78(5): 457-62.
34. Hays NP, Starling RD, Sullivan DH, Fluckey JD, **Coker RH**, Williams RH, Evans WJ, Effects of an ad libitum high carbohydrate diet and aerobic exercise training on insulin action and muscle metabolism in older men and women. *J Gerontol Series A: Bio. Med. Sci* 2006 61(3): 299-304. doi: 10.1093/gerona/61.3.299
35. **Coker RH**, Williams RH, Freeling SA, Brown AD, Kortebein PM, Sullivan DH, Evans WJ. Exercise-induced changes in insulin action are reliant on glycogen metabolism in elderly adults, *Med Sci Sports Exer* 2006 38(3): 433-8. doi: 10.1249/01.mss.0000191417.48710.11
36. Hays NP, Starling RD, Sullivan DH, Trappe TA, Fluckey JD, **Coker RH**, Evans WJ. Comparison of insulin sensitivity assessment indices with euglycemic-hyperinsulinemic clamp data after a dietary and exercise intervention in older adults. *Metabolism* 2006 55(4): 525-32. doi: 10.1016/j.metabol.2005.11.005
37. **Coker RH**, Kjaer M, Glucoregulation during exercise, *Sports Med* 2005 35(7): 575-83. doi: 10.2165/00007256-200535070-003

38. Camacho R, Lacy DB, **Coker RH**, Wasserman DH, Hepatic glucose autoregulation: responses to small non-insulin-induced changes in arterial glucose, *Am J Physiol* 2004 Aug; 287(2): E269-74. doi: 10.1152/ajpendo.00040.2004
39. Simonsen, L, **Coker RH**, Mulla AL, Kjaer M, Bulow J, The effect of insulin and glucagon on splanchnic oxygen consumption, *Liver* 2002 22(6): 459-68. Doi: 10.1034/j.1600-0676.2002.01711.x
40. Koyama Y, Galassetti P, **Coker RH**, Pencek R, Lacy DB, Davis SN, Wasserman DH, Prior exercise and the response to insulin-induced hypoglycemia in the dog, *Am J Physiol* 2002 282: E1128-E1138. doi: 10.1152/ajpendo.00370.2001
41. **Coker RH**, Koyama Y, Denny JC, Lacy DB, Wasserman DH, Prevention of overt hypoglycemia during exercise: stimulation of endogenous glucose production, independent of hepatic catecholamine action and changes in pancreatic hormone concentration, *Diabetes* 2002 51: 1310-18. doi: 10.2337/diabetes/51.5.1310
- 41 Koyama Y, **Coker RH**, Denny JC, Lacy DB, Jabbour K, Williams PE, Wasserman DH, Role of carotid bodies in control of the neuroendocrine response to exercise, *Am J Physiol* 2001 281: E742-E748. doi: 10.1152/ajpendo.2001.281.4.E742
42. **Coker RH**, Simonsen L, Bulow, J, Wasserman DH, and M Kjaer, Stimulation of splanchnic glucose production during exercise in humans contains a glucagon-independent component, *Am J Physiol* 2001 280: E918-E927. doi: 10.1152/ajpendo.2001.280.6.E918
43. Koyama, Y, **Coker, RH**, Stone, EE, Lacy, DB, Jabbour, K, Williams, PE, and DH Wasserman, Evidence that carotid bodies play an important role in glucoregulation in vivo, *Diabetes* 2000 49: 1434-1442. doi: 10.2337/diabetes.49.9.1434
44. Krishna, MG, **Coker, RH**, Lacy, DB, Zinker BA, Halseth AE, Wasserman DH, Glucagon response to exercise is critical for accelerated hepatic glutamine metabolism and nitrogen disposal, *Am J Physiol* 2000 279: E638-E645. doi: 10.1152/ajpendo.2000.278.3.E444
45. **Coker RH**, Lacy DB, Williams PE, Wasserman DH, Hepatic alpha- and beta-adrenergic receptors are not essential for the increase in R(a) during exercise in diabetes, *Am J Physiol* 2000 278: E444-E451. doi: 10.1152/ajpendo.2000.278.3.E444
46. **Coker RH**, Koyama Y, Lacy DB, Williams PE, Rheaume N, Wasserman DH, Pancreatic innervation is not essential for exercise-induced changes in glucagon and insulin or glucose kinetics, *Am J Physiol* 1999 277 (Endocrinol Metab 40): E1122-E1129. doi: 10.1152/ajpendo/1999.277.6.E1122
47. Galassetti P, Koyama Y, **Coker RH**, Lacy DB, Cherrington AD, Wasserman DH, Role of a negative arterial-portal venous glucose gradient in the postexercise state, *Am J Physiol* 1999 277 (Endocrinol. Metab. 40): E1038-E1045. Roi: 10.1152/ajpendo.1999.277.6.E1038
48. Galassetti P, **Coker RH**, Lacy DB, Cherrington AD, Wasserman DH, Prior exercise increases net hepatic glucose uptake during a glucose load, *Am J Physiol* 1999 276(Endocrinol. Metab. 39): E1022-E1029. doi: 10.1152/ajpendo.1999.276.6.E1022
49. **Coker RH**, Lacy DB, Krishna MG, Wasserman DH, Splanchnic glucagon kinetics in exercising alloxan-diabetic dogs, *J Appl Physiol* 1999 86(5): 1626-1631. Doi: 10.1152/jappl.1999.856.5.1626

50. **Coker RH**, Krishna MG, Lacy DB, Bracy DB, Wasserman DH, Role of hepatic *a*- and *b*-adrenergic receptor stimulation on hepatic glucose production during heavy exercise, *Am J Physiol* 1997 273 (Endocrinol Metab. 36): E831-E838. doi: 10.1152.ajpendo.1997.273.5.E831

51. **Coker RH**, Krishna MG, Zinker BA, Allen EJ, Lacy DB, Wasserman DH, Sympathetic drive to liver and nonhepatic splanchnic tissue during prolonged exercise is increased in diabetes, *Metabolism* 1997 46(11): 1327-1332. Doi: 10.1016.s0026-0495(97)90239-0

52. **Coker RH**, Krishna MG, Lacy DB, Allen EJ, Wasserman DH, Sympathetic drive to liver and nonhepatic splanchnic tissue during heavy exercise, *J Appl Physiol* 1997 82(4): 1244-1249. Doi: 10.1152/jappl.1997.82.4.1244

53. **Coker RH**, Brown SP, Chitwood LF, Keith WB, Nicotine use and athletic performance, *J Strength Conditioning Res* 1996 10(4): 279-282.

### **First or Senior Author Abstracts**

1. Kowalski B et al., Modulation of Muscle Gene Expression and miRNA in Healthy Individuals during Alaska Backcountry Expeditionary Hunting, American Physiological Society: Integrative Physiology of Exercise conference, 2020.

2. Ladd KR, et al., Magnetic Resonance Imaging-Derived Measurement of Muscle Mass: Evaluation of Analytical Methods, American Physiological Society: Integrative Physiology of Exercise conference, 2020.

3. Coker MS et al., Essential Amino Acid Meal Replacement Improves Body Composition and Physical Function in Obese Elderly Adults, November 2-6, 2020.

4. Dodds PS et al., Deterioration of Lipid Metabolism despite Fitness Improvements in Wildland Firefighters, American College of Sports Medicine annual meeting, 2020.

5. Rice S, et al., Metabolite Shifts and In Vivo Tracing in Deep Torpor of the Arctic Ground Squirrel, 10<sup>th</sup> International Congress of Comparative Physiology and Biochemistry, Ottawa, Canada, 2019.

6. Coker MS, et al., Rapid Improvements in Metabolic Health: Effect of Alaska Wilderness Hunting, Obesity Week (International meeting of the Obesity Society and American Society for Metabolic and Bariatric Surgery), Las Vegas, NV 2019.

7. Coker MS, et al., Essential Amino Acid Supplement Lowers Intrahepatic Lipid Despite Excess Alcohol Consumption, One Health Conference of Alaska, Fairbanks, AK 2019.

8. Coker MS, et al., Dietary Ingestion of Reindeer versus Beef: Impact on Protein Metabolism in Humans, One Health Conference of Alaska, Fairbanks, AK 2019.

9. **Coker RH**, et al., Unique Profile of Essential Amino Acids Promotes a Superior Anabolic Response in Older Obese Adults, Obesity Week (International meeting of the Obesity Society and American Society for Metabolic and Bariatric Surgery), Nashville, TN, 2018.

10. **Coker RH**, et al., The Caloric Costs and Metabolic Benefits of Wilderness Hunting in Alaska, American College of Sports Medicine, Minneapolis, MN, 2018.

11. Johannsen MM, et al., Seasonal Changes in Body Composition and Blood Lipids in Wildland Firefighters, American College of Sports Medicine, Minneapolis, MN, 2018.

12. Johannsen MM, et al., The Potential Influence of Follistatin and Myostatin on Body Composition during the Yukon Arctic Ultra, Experimental Biology, San Diego, CA, 2018.
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21. Weaver AN, et al., Serum Myokine Levels during the 430 Mile Yukon Arctic Ultra, American College of Sports Medicine Meeting, Boston, MA, Med Sci Sports Exer 48(5 Suppl 1):565. 2016.
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27. **Coker RH, et al.**, Acute lysine supplementation does not improve hepatic or peripheral insulin sensitivity in older, obese individuals, *Experimental Biology*, San Diego, CA, 2014.
28. **Coker RH, et al.**, Essential amino acids and phytosterols promote improvements in metabolic risk factors in individuals with mild hyperlipidemia, Agricultural Circumpolar Conference, University of the Arctic, Girdwood, AK, 2013.
29. **Coker RH, et al.**, Dysregulation of fat and glucose metabolism is worsened by bedrest in older, obese adults, *American Diabetes Association*, Philadelphia, *Diabetes*, 61(1) Suppl., 2012.
30. **Coker RH, et al.**, Divergent exercise-induced responses of ATGL, CGI 58 and IMCL are dependent on weight loss in obese women and men, *American Diabetes Association*, New Orleans, LA, *Diabetes*, 58(1) Suppl., 2009.
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47. **Coker RH, et al.**, Assessment of sympathetic drive nonhepatic splanchnic and hepatic tissue during heavy exercise: norepinephrine spillover in the dog, American College of Sports Medicine, Cincinnati, OH, *Med Sci Sports Exer*, 28(5) Suppl., S195, 1996.

### **Grants in Review**

National Institutes of Health, National Institute of General Medical Sciences R01 resubmission, *Nutrient Specific Strategies for Health and Longevity* (PI: Coker); The proposed study will determine whether the provision of evidence based essential amino acids can effectively mitigate the risks of sarcopenic obesity in the obese elderly.

National Institutes of Health, National Institute of General Medical Sciences T32, *G-RISE at the University of Alaska Fairbanks* (PI: Bult-Ito; Co-I: Coker) The G-RISE Alaska program will contribute to the training of underrepresented students through completion of their Ph.D. degrees in biomedical research in an Alaska Native serving university.

Health Effects Institute, *Smoke-Screen: Standardized Monitoring of Wildfire Smoke Impact on Human Health using Nasal Cells* (Co-I: Coker); The objective is to determine if gene changes detected in nasal brushing of WLFs reveal consistent toxicological impact, and whether this can be correlated with additional impact on respiratory and/or systemic health.

## **Active Grants**

National Institutes of Health; National Institute of General Medical Sciences  
*Mammalian Hibernation Research- A Path Towards a Center for Transformative Research in Metabolism* (PI Drew); *Nutrient Strategies for Muscle Preservation in the Elderly* (PI: Coker);  
The purpose of my study is to determine the importance of essential amino acids in improvement of muscle and metabolic health during weight loss in older, obese adults.

National Institutes of Health; National Center for Advancing Translational Sciences, *Institute of Translational Health Sciences* (PI Disis; Co-I: Coker); The purpose of this initiative is focused on the translation of science from the bench to the bedside throughout Washington, Wyoming, Alaska, Montana and Idaho.

National Science Foundation, Track 1 MRI Research Grant, (PI: Tomco; Co-I: Coker) This proposal seeks to acquire a liquid chromatograph coupled to a hybrid quadrupole mass spectrometer, providing transformative capabilities to address scientific research objectives.

Pristine Ventures, LLC  
*Nutrient Management and Physiological Stress* (PI: Coker)  
The objective of this five-year, unrestricted private grant is to explore innovative opportunities related to nutrient delivery during physical and environmental stress in humans.

## **Equipment Grants**

Office of the Provost- University of Alaska Fairbanks  
*Instructional Equipment Award* (PI Coker)  
This equipment award provided our faculty with a Parvomedics Indirect Calorimetry System that is designed to measure respiratory gas exchange and energy expenditures in real time.

National Institutes of Health: Diversity Program Consortium  
*BLaST Equipment Grant* (PI Coker)  
The current grant provides an electronically braked cycle ergometer than be used in conjunction with the Parvomedics Indirect Calorimetry System.

## **Conference Grants**

TREND and Alaska EPSCoR  
*Enhancing Economic Development and SBIR/STTR Performance* (PI Coker)  
The purpose of this grant is to establish an Economic and Biotechnology Development Board in Alaska and to offer a workshop on preparing competitive SBIR and STTR proposals. Six SBIR proposals were submitted to various agencies from UAF, and USDA SBIR was funded. Held in the International Arctic Research Center at the University of Alaska Fairbanks.

Alaska Chapter of American College of Sports Medicine  
*Enhancing Physical Activity and Nutrition in the Teenage and Adult* (PI Coker)  
The purpose of this regional conference was focused on leveraging and planning partnerships to improve physical activity in youth that translate into adulthood.

## **Grants Awarded but Returned or Transferred**

National Institutes of Health  
Small Business Innovations in Research (Phase II)  
*Anabolic Countermeasures against Sarcopenic Obesity* (PI Coker)  
The aim of this award was to further investigate the long-term therapeutic efficacy of a meal replacement rich in essential amino acids in the treatment of sarcopenic obesity. This included a methods-based commercialization of the product into the private sector.

National Institutes of Health, Small Business Innovations in Research (Phase I), *Nutritional Countermeasures against Sarcopenic Obesity* (PI Coker)

The aim of this award was to determine the efficacy of a unique formulation of essential amino acids in protecting against the loss of lean mass during caloric restriction-induced weight loss.

American Heart Association; Heartland Affiliate

BGA 03653552

*Influence of Caloric Restriction and Exercise Training on Metabolic Syndrome* (PI Coker)

This proposal was funded on the first submission but was returned upon receipt of the Scientist Development Award from the American Heart Association.

## **Previous Grants**

OIPC Office of Naval Research Seed Fund (PI: Holdman; Project Director: Coker)

*Entrepreneurship for National Security/Hacking for Defense* course to support teaching assistantships for graduate students.

National Institutes of Health - National Institute of General Medical Sciences

*Accelerating Solutions for Commercialization and Entrepreneurial Development in Mountain West IDeA states* (PI: Holdman, Coker: Site Director)

National Institutes of Health; National Institute of Aging Small Business Technology Transfer Phase II Grant (R42AG050375)

(PI: Wolfe; Managing Partner: Coker)

*Nutritional Therapy in Elderly Individuals with Heart Failure*

This project evaluated the influence of an amino acid formulation called UpBeat; designed to promote physical function and quality of life in older individuals with heart failure.

United States Forest Service; National Technology and Development Center

*Metabolic Resilience in Wildland Firefighters* (UAF PI: Coker)

The objective of this study was to evaluate pre- and post-fire season changes in body composition, tissue lipid and metabolic health in Alaskan local and hot-shot wildland firefighters.

BUILD-funded Biomedical Learning and Student Training (BLaST) Curriculum Development Grant; *Exercise Physiology Laboratory Topics* (PI Coker)

The objective of this award was focused on providing students with “hands-on” experience in the use of indirect calorimetry systems and dual x-ray absorptiometry scanners as part of BIOL 412.

IDeA Network of Biomedical Research Excellence: Alaska (INBRE) Curriculum Development Project *Exercise Physiology Laboratory Course* (339943-60212 - FIN016) (PI Coker)

The goal of the project was to develop laboratory experiences linked to the measurement of mitochondrial function and tissue lipid in humans.

BLaST 2016 Faculty Pilot Project

*Influence of SkiKu on Resilience in Alaska Native Youth* (PI Coker)

This proposal utilized the measurement of physical activity (using state-of-the-art Actigraph technology) and the assessment of behavioral health (in Alaska Native youth).

National Institute of Diabetes and Digestive and Kidney Diseases Small Business Innovations in Research (R43 AG051298-01) (PI: Wolfe; LCI and Managing Partner: Coker). This was the first NIH R43 with a subcontract to UAF.

*Muscle Preservation during Weight Loss in Older, Overweight Individuals*

This study evaluated the impact of a meal replacement on the loss of adipose tissue and the preservation of muscle during caloric restriction-induced weight loss in older, obese individuals.

National Institute of Aging Small Business Technology Transfer Phase I Grant  
(R41AG050375)

(PI: Wolfe; Managing Partner: Coker)

*Nutritional Therapy in Elderly with Heart Failure*

The Phase I project will formulate the beverage and perform the necessary studies to prepare for a Phase II randomized clinical trial related to this initiative.

Alaska TREND: Enhancing Economic Development and SBIR/STTR Performance

(Co-PIs: Drew K and Coker RH)

The purpose of this request was to support a 2-stage workshop to inform and guide PI's through strategic planning for and preparation of SBIR phase I proposals.

Alaska Phase Zero TREND: The Technology Research and Development Center of

Alaska (PI: Coker)

This grant was awarded to support the submission of a Phase II SBIR application focused on the clinical development and commercialization of an experimental meal replacement (EMR).

NIH 1P30AG028718-01A2

*Arkansas Claude Pepper Older Americans Independence Center*

(Program Director: Wei, JY); Resource Core 2 (RC2) (Co-Leader: Coker)

Goals: This RC2 (*Nutrition, Metabolism and Physiology Core*) provided many key resources including body composition analysis, standardized testing for metabolic function, a dietician and a metabolic kitchen.

National Institutes of Health; National Institute of General Medical Sciences; Clinical Translational Research Infrastructure Network Grant G10288

*Nutritional Formulation for Alcohol Rehabilitation* (PI Coker)

This objective of this study was focused on the influence of a patent protected nutritional formulation on muscle protein synthesis in individuals recovering from alcohol use disorder.

National Dairy Association

*Macronutrients and Metabolic Syndrome* (Co-PI's Ferrando and Coker)

The purpose of this project was to determine the influence of dairy products in the prevention of metabolic syndrome.

National Institutes of Health, R01 DK034817

*Substrate Cycling in Energy Metabolism* (PI Wolfe) (Co-I Coker)

The goal of this study was to investigate the relationship between free fatty acid delivery to the liver and very low-density lipoprotein triglyceride production and secretion.

NIH 1RC2GM092277 National Institutes of Health

*Stable Isotope Analytical Core for Studies in Human Metabolism* (PI Wolfe) (Co-I Coker)

The primary purpose of this grant was to provide core laboratory offering routine and specialized sample analysis and assistance in methods development and training in use of stable isotopes in human metabolic studies.

Clinical Merit Review; (PI Coker)

Veterans Administration

*Weight Loss and Insulin Action*

The specific aim of this award was to elucidate the degree of weight loss necessary to reduce adipocyte inflammation and normalize insulin resistance in obese adults.

National Institutes of Health; National Institute on Aging P01 AG023591-01

*Bedrest and Aging, Evans* (Program Director)

*Insulin Resistance and Carbohydrate Metabolism*; (Project Leader Coker)

The major goal of this project was to examine the influence of bedrest on insulin action in the elderly and provide clinically useful strategies to prevent its deleterious influence.

National Institutes of Health; National Institute of Diabetes and Digestive and Kidney Diseases K01 DK 64716-01 (PI Coker)

*Therapeutic Adaptation of Insulin Action*

The goal of this grant was to determine the separate influence of weight loss from exercise training on hepatic and peripheral insulin action in obese persons.

American Heart Association

*Influence of Caloric Restriction and Exercise Training on the Pathogenesis of Metabolic Syndrome* (PI Coker)

The primary goal of this grant was to determine the influence of caloric restriction vs. exercise training on insulin action in persons with impaired glucose tolerance.

National Institutes of Health; National Institute on Aging

R01 AG 19346-01; (PI Evans) (Co-I Coker)

*Influence of Physical Activity on Insulin Resistance in the Elderly*

This grant was to determine the impact of exercise intensity on glucose metabolism.

Juvenile Diabetes Foundation, International

JDFI 397014; (PI Coker)

*Role of Adrenergic Drive in Regulation of Carbohydrate Metabolism during Exercise in Health and Diabetes*

The goal of this grant in combination with R01 DK50277 was to determine the role of adrenergic stimulation in carbohydrate metabolism during exercise in health and disease.

### **Grants Reviewed but not Funded**

Department of Defense, Strategic Environmental Research and Development Program

*Population Consequences of Multiple Stressors, or PCoMS, framework for investigating responses of an endangered marine mammal* (PI: Rea; Co-I: Coker)

The objective of this study was to utilize marine mammal health-based modeling system to advance knowledge of adverse effects of multiple environmental stressors.

Department of Defense - United States Army Medical Research and Materiel Command

*Sex Differences in Occupational Resilience: Measurement of Integrated Protein Turnover and Alterations in Skeletal Muscle during Arduous Field Operations* (PI: Coker)

The objective of this study was to investigate differences in protein metabolism and muscle health during conditions of operational stress in the female and male warfighter.

American Kennel Club Canine Health Foundation Acorn Application

*Validation of body condition scoring systems in elite canine athletes using dual-energy x-ray absorptiometry and total body water analysis* (PI: Hansen; Co-I: Coker)

This study proposed a comprehensive assessment of body condition and composition and will compare body condition scoring system with imaging and isotopic derived data in sled dogs.

Federal Emergency Management Association

*Optimizing pre-season preparedness of wildland firefighters: mitigation strategies to reduce musculoskeletal and heat related injury risk.* (PI: Ruby, Subaward PI: Coker)

The purpose of this project series was to identify individuals who are at greater risk for injuries, determine job specific fitness, and characterize musculoskeletal changes in wildland firefighters

University of Alaska, Faculty Initiative Fund

*Lean-Launchpad for Alaska* (Co-PIs: Coker and Webley)

The objective of this proposal was to develop courses on entrepreneurship and commercialization. One course will be part of the MBA program and focused on “Hacking for Defense” directives. A summer course will also be focused on sectors identified by the Alaska Department of Commerce: Marine, Energy, Aviation, Outdoor and Food Manufacturing.

University of Alaska, Enrollment, Retention and Graduation Rate Initiative

*Increasing Student Success through the Lean LaunchPad Program* (Co-PIs: Coker and Webley)

This proposal focused on addressing the need for diversification of the Alaskan economy.

National Institutes of Health R21; National Institute of Alcohol Abuse and Alcoholism

*Nutritional Therapy for Alcohol Use Disorder*. (PI Coker)

This proposal was directed towards the evaluation of a nutritional therapy designed to decrease fatty liver and improve physical function in individuals with alcohol use disorder.

National Aeronautics and Space Administration

IOS Physiological Mechanisms and Biomechanics

*Metabolic Suppression in a Large Hibernator* (Toien, O: PI) (Co-I Coker)

This proposal was focused on broadening our understanding of the metabolic flexibility in hibernating bears. We proposed to study the influence of hibernation on mitochondrial respiration and energy demand, and the link between risk factors related to metabolic disease.

National Institutes of Health; Alaska INBRE

*Nutritional Formulation for Alcohol Rehabilitation* (PI Coker)

The objective of this proposal was to evaluate the effectiveness of proprietary nutritional therapy on hepatic steatosis individuals with mild to moderate alcohol use disorder.

National Science Foundation

*RII Track 2 FEC: Advancing Neurotechnology and Research Infrastructure in Alaska and Kansas through Research, Education and Commercialization of Devices for Real-Time Monitoring* (PI Drew; Co-I Coker).

The long-term goal of this proposal was focused on the development of a new generation of separation-based sensors for monitoring intercellular signaling.

National Institutes of Health; National Institute on Aging Multi-Site R01 (PI Coker)

*Functional Benefits of Weight Loss in the Elderly*

This study was designed to evaluate the influence of weight loss on functional outcomes and quality of life in the elderly. We received permission to exceed the NIH cap on this proposal, and it involved 7 academic institutions across the United States.

National Institutes of Health; National Institute of Alcohol Abuse and Alcoholism (NIAAA) R21 (PI Coker)

*Therapeutic Nutrition for Alcohol Rehabilitation*

This proposal was written to support a NIH R21 application directed at the preservation of muscle mass, reduction of hepatic steatosis and normalization of plasma concentrations of the precursors of important neurotransmitters in individuals recovering from alcohol use disorder.

National Institutes of Health (NIA) R15 (PI Coker)

*Muscle Preservation during Weight Loss in Older, Overweight Individuals*

This proposal was focused on providing clinical research opportunities to undergraduate and graduate students in the field of sarcopenic obesity.

National Institutes of Health

National Institutes of Alcohol Abuse and Alcoholism (NIAAA) R43 (LCI Coker)

*Nutritional Formulation for Alcohol Rehabilitation*

This objective of this study was focused on the influence of a patent protected nutritional formulation on muscle protein synthesis in individuals recovering from alcohol use disorder. This proposal received an “intent to fund” but was ultimately not awarded this round.

National Institutes of Health FAST TRACK (LCI Coker) First and Second Submission  
*Muscle Preservation during Weight Loss in Older, Overweight Individuals* (PI Coker RH)  
Based on previous successful experience in the field, these submissions were focused on an aggressive combination of clinical research and commercialization.

National Institutes of Health NIAAA Phase I First submission  
*A Nutritional Formulation for Alcohol Rehabilitation* (PI Coker)  
This proposal was focused on a unique subset of the population that are largely underserved with respect to nutritional therapy. While it received a favorable score and an official “intent to fund” by NIH, it was ultimately not funded as an NIH SBIR.

National Science Foundation *Alaska Science, Technology, and Economic Development Center; Healthy Botanicals and Nutrition* (Kuhn, T: PI) (Co-I: Coker)  
The primary purpose of this proposal was to promote rigorous academic training and ignite economic development through enhancements in translational capacity. Though this proposal was not funded, it helped promote many entrepreneurial initiatives at UAF, including the recent TREND supported seminars, leading to multiple NIH SBIR submissions.

### **Television Interviews**

1. Health Report: UAF dietary study, interviewed by Katie Luper, aired on April 03, 2018.

### **Podcast Interviews**

1. Hunting Science podcast with Mark Lindberg, Health Benefits of Backcountry Hunting, <https://podcasts.apple.com/us/podcast/hunting-science/id1480745355>

2. On The Line with Drs. Charlie Palmer and Brent Ruby, Alterations in metabolic risk factors in Alaska Wildland Firefighters, <http://ontheline.libsyn.com/seasonal-alterations>.

### **Radio Interviews**

1. Nutrition and Aging, interviewed by Charlie O’Toole for iHeart Radio, 2016.

2. Physical Activity for Elderly Individuals, interviewed by Charlie O’Toole for iHeart Radio, 2015.

### **Web-based or Media Articles on Published Research**

1. The Ultramarathon So Brutally Cold that Mars Scientists are Studying It, Red Bull, <https://www.redbull.com/ie-en/montane-yukon-arctic-ultra-experience>, Feb 14, 2020.

2. Runner vs. Nature: What If Both Can Win?, pg 112, Fall 2019, Popular Science.

3. Mechanisms of Metabolism to Maximize Well-Being, KUAC Morning News, May 16, 2019, <https://fm.kuac.org/post/05-16-19-kuac-morning-news>.

4. This Race Tests the Limits of Human Endurance, REI CO-OP Journal, April 26, 2019, <https://www.rei.com/blog/news/this-race-tests-the-limits-of-human-endurance>.

5. The Obesity Society, Unique Profile of Essential Amino Acids, April 10, 2019, <https://www.youtube.com/watch?v=d0vCFqzD80E>.

6. Adaptations and Energy Requirements of Backcountry Hunting, Safari Club International, Anchorage, Alaska, Feb 25, 2019, <https://www.youtube.com/watch?v=0aE0799LY8o&t=577s>
7. Health Benefits of Backcountry Hunting in Alaska: The Scientific Evidence, Hunt Alaska, pgs 34-39, Spring 2019.
8. Eastman's E-Newsletter, Alaska Wilderness Hunt and Health Study, January 2019.
9. The Northern Herds: Beyond the Grid, Eastman's Hunting Journals, [https://www.youtube.com/watch?v=74LO9g8\\_VH4&t=428s](https://www.youtube.com/watch?v=74LO9g8_VH4&t=428s), December 25, 2018.
10. Calorie Counts, Hunt Alaska magazine, <https://www.huntalaskamagazine.com/calorie-counts-backcountry-health-study-pinpoints-caloric-demands-on-arduous-river-hunts/>. Spring 2019.
11. Why humans are optimized for endurance running, not speed, The Guardian, <https://www.theguardian.com/science/blog/2018/mar/14/why-humans-are-optimised-for-endurance-running-not-speed>, March 14, 2018.
12. Why people are swimming in freezing water, TIME magazine, <http://time.com/5159851/why-people-are-swimming-in-freezing-water/?iid=sr-link1>, February 15, 2018.
13. UAF Office of Intellectual Property and Commercialization, Nanook Innovations, Innovation Spotlight September 2017, Dr. Robert Coker. <http://www.uaf.edu/oipc/publications/Nanook-Innovation-News-September-2017.png>
14. A continued study: The Yukon Arctic Ultra 2017, August 2017. <http://charite-in-space.de/8399-2/>
15. Skiku: Program introduces village children to Nordic skiing, Alaska Magazine, October, 2016.
16. The Science of Play, The Montana Institute, <http://www.montanainstitute.com/blog/2016/3/16/u7x5o7frsyfb5uovbtp94d3ruksk1b>, 2016.
17. Science of play at heart of healthier, happier humans, written by Marie Thoms. <http://www.publicnow.com/view/C67F9737C77635C426F80C9DAA644DDF58DD929D?7559xx1455573733>, 2016.
18. Accelerating Innovation in Alaska, Protecting and developing new opportunities, written by Adam Krynicki, <http://www.akbizmag.com/Alaska-Business-Monthly/November-2014/Accelerating-Innovation-in-Alaska/>, Alaska Business Monthly, October 30, 2014.
19. Whey protein, amino acids may boost fat loss, Written by Kathleen Doheny and reviewed by Laura J. Martin, MD. <http://www.webmd.com/diet/news/20121212/whey-amino-acids-fat-loss>.

### **Invited Presentations**

1. Translational Biomedicine in Alaska, Center for Translational Research in Aging and Longevity, Texas A and M University, October 30, 2020.
2. Entrepreneurship in Biomedicine: A Multi-facted Approach, Institute of Translational Health Sciences, University of Washington School of Medicine, October 29, 2020.
3. Translational Biomedicine in the Mountain West, School of Pharmacy, University of Wyoming, February 13, 2020.

4. "Entrepreneurship and Translational Research," One Health Conference of Alaska, May 15, 2019, University of Alaska Fairbanks, Fairbanks, AK.
5. "Cracking the Code of Physiological Resilience," One Health Seminar Series, University of Alaska Fairbanks, Fairbanks, AK, February 4, 2019. [https://media.uaf.edu/media/t/0\\_8tf3tqIO](https://media.uaf.edu/media/t/0_8tf3tqIO)
6. "Hunt for Health," Safari Club International, Anchorage, AK, 2019.
7. "Innovation and Technology Transfer in Alaska," University of Alaska Fairbanks, Fairbanks, AK, November 2018.
8. "Epigenetics of Physical Activity," Society of Health and Physical Educators Alaska, Anchorage, AK, October 2018.
9. "Paleo Nutrition," Society of Health and Physical Educators Alaska, Anchorage, AK, October 2018.
10. "The Influence of Wildland Fire Operations on Metabolic Health," Alaska Interagency Fire Coordinating Group, October 2018.
11. "Clinical Trials in the Mountain West," University of Montana, Missoula, MT, October 2018.
12. "Appalachia to Alaska: Permutations in Metabolic Stress," Distinguished Visiting Scholar Award and Seminar Series, Department of Health and Human Performance, University of Montana, Missoula, MT, May 2018.
13. "Challenges of Physical Activity Programs in Alaska," Positive Leadership for Active Alaskan Youth, Alaska Native Tribal Health Consortium, Anchorage, AK, April 2018.
14. "Activity and Resilience in Alaska Native Youth," Positive Leadership for Active Alaskan Youth, Alaska Native Tribal Health Consortium, Anchorage, AK, April 2018.
15. "How are Northwest Participant Clinical Interaction Sites integrating Research and Healthcare? Institute of Translational Health Sciences. University of Washington, Seattle, WA, April 2018.
16. "Cold Exposure and Physiological Resilience," Arctic Survival School, Eielson Air Force Base, Alaska, 2017.
17. "Therapeutic Nutrition for Alcohol Rehabilitation," University of Nevada Las Vegas Annual Clinical Translational – Infrastructure Network meeting, Las Vegas, NV, 2016.
18. "Human Survival and Performance in the Extreme Environments of North America," Northwest/Alaska Regional Chapter Meeting of the American College of Sports Medicine, Tacoma, WA, 2016.
19. "The Efficacy of Physical Activity Programs for Alaska Native Children Living in the Remote Arctic," Positive Leadership for Active Alaskan Youth, Anchorage, AK, 2016.
20. "The Challenge of Human Movement: How and Why?," BLaST One Health Seminar Series, University of Alaska Fairbanks, Fairbanks, AK, 2015.
21. "Health and Longevity in the Last Frontier," Healthy Living Series, Fairbanks Memorial Hospital and the University of Alaska Fairbanks, 2014.

22. "Nutraceuticals in Alaska," Fairbanks Economic Development Corporation, Carlson Center, 2014.
23. "Muscle Preservation in the Elderly," Patient-Centered Outcomes Research Institute, Multi-Care Health System, Tacoma, WA, 2014.
24. "Anabolic Efficiency, Why does it matter?," Life Science Seminar Series, Institute of Arctic Biology, University of Alaska Fairbanks. 2014.
25. "Clinical Research and Technology Transfer in the Mountain West," Institute of Translational Health Sciences, University of Washington, Seattle, WA, 2014.
26. "Nutraceuticals and Metabolic Health," Inventors Forum sponsored by the Office of Intellectual Property and Commercialization, University of Alaska Fairbanks, 2014.
27. "Aging, Exercise and Disease Prevention," Public Lecture Series, Undergraduate Research and Scholarly Activity, University of Alaska Fairbanks, 2013.
28. "Interaction between Diet and Disease in Alaska Natives," Banner Health: Tanana Valley Clinic, Fairbanks, AK, 2013.
29. "Anabolic Efficiency and Muscle Preservation in Older Individuals," Alaska Interior Medical Education Summit, Murie Building, University of Alaska – Fairbanks, Fairbanks, AK, 2013.
30. "Therapeutic Efficacy of Exercise-Induced Weight on Systemic Insulin Resistance in Obesity," University of Alaska Fairbanks, 2012.
31. "Nutritional Countermeasures against Metabolic Disease" Claude Pepper Older Americans Independence Center-Sponsored Seminar, University of Arkansas for Medical Sciences, 2012.
32. "Influence of Activity and Nutrient Availability on Fat, Muscle and Insulin Resistance: A Multi-Faceted Approach," Georgia Southern University, 2011.
33. "Modulation of Hepatic and Peripheral Insulin Sensitivity through Diet and Activity," Department of Kinesiology, Auburn University, 2010.
34. The Impact of Lifestyle Interventions of the Etiology of Insulin Resistance in Obesity, Grand Rounds, University of Arkansas for Medical Sciences, Little Rock, AR, 2008.
35. "Lifestyle Interventions and Insulin Resistance," Department of Nutritional Sciences, Invited Seminar, University of Kentucky, Lexington, KY, 2009.
36. "Exercise and Weight Loss," Dean's Research Forum, University of Arkansas for Medical Sciences, Little Rock, AR, 2008.
37. "Exercise, Obesity, and Diabetes," Best Practices in the Continuum of Care: Management of Diabetes in Older Adults, Department of Veterans Affairs, Central Arkansas Veterans Healthcare System, Little Rock, AR 2007.
38. "Caloric Restriction versus Exercise Training: Effects on Hepatic and Peripheral Insulin Resistance," REAP Seminar on lipotoxicity and metabolic syndrome (Research Enhancement Award Program), UAMS, Little Rock, AR, 2007.
39. "Influence of Caloric Restriction versus Exercise Training on Metabolic Syndrome," Scientist Development Award Research Symposium, American Heart Association, Chicago, IL, 2006.

40. "Mini Medical School: Obesity and Public Health," School of Medicine, University of Arkansas School of Medical Sciences, Little Rock, AR, 2005.
41. "Managing type 2 diabetes through diet and exercise," Department of Physical Medicine and Rehabilitation, Baptist Hospital, Little Rock, AR, 2005.
42. "Exercise and diabetes ,"Arkansas Rural Health Program, Little Rock, AR, 2004.
43. "Overcoming insulin resistance," Arkansas Nurses Association, Little Rock, AR, 2004.
44. "Diabetes and exercise," Southern Gerontological Nursing Association Convention, Little Rock, AR, 2003.
45. "Nutrition: facts about supplementation for high school athletes," University Sports Medicine Conference, University of Mississippi Medical Center, Jackson, MS, 2000.
46. "Regulation of metabolic fluxes under conditions of additional metabolic stress," Department of Biology, University of Mississippi, University, MS, 1999.
47. "Sympathoadrenal influence of metabolism during exercise in health and disease," Chair, Symposium, American College of Sports Medicine, Seattle, WA, 1999.
48. "Additional metabolic stressors during exercise: influence of adrenergic mechanisms," Howard Hughes Medical Institute, Vanderbilt University, Nashville, TN, 1999.
49. "Regulation of fuel metabolism during exercise," Coastal Systems Command, Naval Experimental Diving Unit, Scientific Seminar Series, Panama City, FL, 1999.
50. "Glucoregulation during exercise imposed on additional metabolic stressors," Department of Health and Human Performance, Auburn University, Auburn, AL, 1999.
51. "Glucoregulation during exercise," Symposium Speaker, Annual Meeting of the American College of Sports Medicine, Seattle, WA, 1999.

### **Courses Taught**

Human Anatomy & Physiology	One semester	Univ. of Alaska Fairbanks (UAF)
Clinical Physiology	Six sessions	Univ. of Arkansas for Medical Sciences (UAMS)
Medical Physiology	Seven semesters	UAMS, UAF
Exercise Physiology	Eleven semesters	Univ. of Mississippi (U of MS), UAMS, UAF
Metabolism	Two semesters	U of MS
Clinical Research Methods	Two semesters	UAF
Internship in Physical Therapy	Two semesters	UAF
Hacking for Defense	One semester	UAF

## **Graduate students**

Sarah Rice, PhD in Biochemistry, “Cross-Talk between the Central Nervous System and Metabolism in NMDAR Mediated Arousal from Hibernation in Arctic Ground Squirrels,” funded by NIH grant, University of Alaska Fairbanks, completed September, 2020.

Brandon Kowalski, MS Candidate in Biological Sciences, “Sex-Specific Differences in the Skeletal Muscle Proteome during Arduous Field Operations”, funded by NIH training grant and Sloan Fellowship grant, University of Alaska Fairbanks, 2019-2020.

Stephanie Crawford, MS candidate in Biological Sciences, “Nutrient Status in Alaskan Stellar Sea Lion Pups”, Funded by Alaska Fish and Game grant, University of Alaska Fairbanks, 2016-2020.

Aline Colin, PhD Candidate in Biochemistry, “Influence of Alaska Blueberry Extracts on Insulin Resistance in Mature Adipocytes”, University of Alaska Fairbanks, 2017-2020.

Kenneth Shin, MS student in Biological Sciences, “Condition-Specific Nutrition in Alcohol Rehabilitation”, University of Alaska Fairbanks; enrolled in PharmD program in Idaho, 2016-2017.

Michelle Johannsen, PhD candidate in Biological Sciences, “Physiological Resilience during Metabolic Stress”, Department of Biology; transferred to a pre-clinical laboratory, University of Alaska Fairbanks, 2017-2019.

Karen Jeans, PhD in Nursing, “A Descriptive Comparison of Human Research Protection Program Characteristics and Accreditation Outcomes in VA facilities,” College of Nursing, University of Arkansas for Medical Sciences, 2007-2010.

La'Tasha M. Smith, PhD in Molecular Physiology, “Comparative Profiling of Adipokines and Gene Expression of Adipocyte Differentiation Factors in Obese African-American and Caucasian Women,” Department of Molecular Physiology and Biophysics, College of Medicine, University of Arkansas for Medical Sciences, 2004-2008.

Chad Carroll, PhD in Molecular Physiology, “Human Muscle Specific Protein Synthesis with Amino Acids,” Department of Molecular Physiology and Biophysics College of Medicine, University of Arkansas for Medical Sciences, 2002-2004.

Rick H. Williams, MS in Molecular Physiology, “Application of Microdialysis for the Measurement of Skeletal Muscle Protein Degradation,” Department of Molecular Physiology and Biophysics College of Medicine, University of Arkansas for Medical Sciences, 2001-2003.

Kendal P. Honea, PhD, “The Effects of a 3-Hydroxy-3-Methylglutaryl Coenzyme-A reductase Inhibitor and Moderate Cardiorespiratory Exercise on Cholesterol Metabolism in Obese, Hypercholesterolemic Males,” Department of Health and Exercise Science, 1999-2001.

## **Undergraduate Students – Completed Capstone Projects and/or Internships at UAF**

Kaylee Ladd, BS in Biological Sciences, “Use of an OSIRIX-based Standard Operating Procedure to Provide MRI-derived Detection of Nutrient-Based Muscle Preservation in Obese, Elderly Individuals”, University of Alaska Fairbanks, Fairbanks, AK.

Andrew Choi, BS in Engineering, completed H4Di course at UAF; he has been recently accepted to Harvard University Law School.

Forrest Clark, BS in Biological Sciences, "Adequate Compliance in Nutritional Intervention Studies," University of Alaska Fairbanks, Fairbanks, AK, 2018.

Grant Galvin, BS in Biological Sciences, "Physiological Effects of the Alaska Wildland Firefighting Season on Firefighters," University of Alaska Fairbanks, Fairbanks, AK, 2018.

Connor Ito, BS in Biological Sciences, Internship at Bristol Bay Health Corporation, Kodiak, Alaska. Recently accepted to the Doctor of Physical Therapy program at the University of Southern California.

Richard Chen, BS in Biological Sciences, "Influence of MyoEon on Physical Activity in Older, Overweight Individuals," co-authored one manuscript and one abstract. Mr. Chen is a second-year student in the MS program in Bioengineering at Duke University.

Josh Kim, BS student in Biological Sciences, "Nutritional Formulation for Liver Health" study, Co-authored two manuscripts and three abstracts, He was a BLaST scholar at UAF and has multiple pending applications to medical school.

Farimang Touray, BS in Biological Sciences, First student to complete newly-developed internship in Physical Therapy through UAF at United Physical Therapy in conjunction with Providence Health Systems, Anchorage. Accepted into the Massachusetts General Hospital Doctor of Physical Therapy program, he is now in his third year.

Kira Leonard, BS in Biological Sciences, "Influence of SkiKu on Physical Activity in Alaska Native Youth." Presented several abstracts and drafted manuscript for publication and supported by URSA. Currently working at Fairbanks Memorial Hospital.

Hannah Wing, BS student in Biological Sciences, "Influence of SkiKu on Sleep Quality in Alaska Native youth." Currently enrolled as a BLaST scholar at UAF.

Alyssa Wells-Weaver, BS in Biological Sciences and former BLaST scholar, "Metabolic Regulation during Exercise under Extreme Cold Stress." Ms. Wells-Weaver is a fourth-year medical student at the University of Washington. Co-authored several abstracts and co-authored a 2017 manuscript.

### **Employees directly supported by Essential Blends, LLC**

Kristin Scholten-McMaster, BS in Biological Sciences from UAF, Worked as a Clinical Coordinator on NIH SBIR Phase I study, completed nursing school program at the University of Alaska and rehired as a Nurse.

Scott Schutzler, RN, Employed as a Research Nurse on multiple projects involving stable isotope tracer infusion studies designed to evaluate feeding-induced changes in protein metabolism.