

CURRICULUM VITAE

Saame 'Raz' Shaikh, Ph.D.

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EDUCATION:

Postdoctoral Training in Immunology The Johns Hopkins University Department of Biology Advisor: Dr. Michael Edidin	2004 – 2008
Ph.D. Medical Biophysics Indiana University Dissertation: The Role for Docosahexaenoic Acid in Lipid Raft Phase Separation: Implications for Cellular Signaling Advisor: Dr. Bill Stillwell	2004
M.S. Biology Purdue University Thesis: Lipid Phase Separation in a Model Plasma Membrane	2001
B.S. - Biology (2 nd major) Purdue University	1998
B.S. - Psychology (1 st major) Purdue University	1997

PROFESSIONAL EXPERIENCE:

University of North Carolina at Chapel Hill, Gillings School of Global Public Health

- Chair 2023-
- Professor of Nutrition 2022-
- Co-Director, SPLENDOR-NC 2022-
- Co-Director, Nutrition Research Obesity Center (NORC) 2021-
- Co-Director, Pilot & Feasibility Program, Nutrition Research Obesity Center 2020-2022
- Associate Chair for Research 2018-2023
- Associate Professor of Nutrition 2017-2022
- Co-Director, Animal Metabolism Phenotyping Core 2017-

East Carolina University, Department of Biochemistry, East Carolina Diabetes & Obesity Institute, Brody School of Medicine

- Adjunct Associate Professor of Microbiology & Immunology 2015-2017
- Associate Professor of Biochemistry & Molecular Biology (early tenure granted 7/01/14) 2014-2017
- Assistant Professor of Biochemistry & Molecular Biology 2008-2014

HONORS:

American Society for Nutrition (ASN) Board of Directors (Director-at-Large for Basic Mechanisms)	2022-2024
International Society for the Study of Fatty Acids and Lipids (ISSFAL) Board of Directors	2021-2025
UNC Dept. of Nutrition Impact Award	2019
Mary Swartz Rose Young Investigator Award from American Society for Nutrition (ASN)	2018
ECU – University Scholar Award	2017
ECU Five-Year Achievement for Excellence in Research and Creative Activity Award	2016
Recipient of Early Career Award from ISSFAL	2012
President of Nutritional Immunology – Experimental Biology	2012-2013
USDA Advisory Panel on n-3 PUFAs – Human Health and Disease	2010-2016
Secretary of Nutritional Immunology – Experimental Biology	2010-2012
Howard Hughes Teaching Fellowship – Johns Hopkins University	2006
Avanti Lipids Founders Award for Best Abstracts	2001

PUBLICATIONS:

*indicates students or post-docs mentored by SR Shaikh

Research Articles

93. Zhang C, Steadman M, Santos HP Jr, **Shaikh SR**, Xavier RM. GPAT1 activity and abundant palmitic acid impair insulin suppression of hepatic glucose production in primary mouse hepatocytes. *J Nutr* 154 (2024) 1109-1118.

92. Gabor K, Mesev EV, Madenspacher J, Meacham JM, Rai P, Moon S, Wassif CA, **Shaikh SR**, Tucker CJ, Karmaus PW, Bianconi S, Porter FD, Fessler MB. Sterol biosynthesis regulates TLR signaling and the innate immune response in Smith-Lemli-Opitz syndrome model. *J Clin Invest* 134 (2024) e167633.

91. Muntis FR, Crandell JL, Evenson KR, Maahs DM, Seid M, **Shaikh SR**, Smith-Ryan AE, Mayer-Davis E. Pre-exercise protein intake is associated with reduced time in hypoglycaemia among adolescents with type 1 diabetes *Diabetes Obes Metab.* 25 (2024) 1366-1375.

90. *Pal A, Lin Chien-Te, Boykov IN, Benson E, Kidd G, Fisher-Wellman KH, Neuffer PD, and **Shaikh SR**. High fat diet-induced obesity dysregulates splenic B cell mitochondrial activity. *Nutrients* 15 (2023) 4807.
89. Muntis FR, Mayer-Davis EJ, **Shaikh SR**, Crandell J, Evenson KR, Smith-Ryan AE. Post-exercise protein intake may reduce time in hypoglycemia following moderate-intensity continuous exercise among adults with type 1 diabetes. *Nutrients* 15 (2023) 4268.
88. Reynolds KM, Horimoto ARVR, Lin BM, Zhang Y, Kurniansyah N, Yu B, Boerwinkle E, Qibin Q, Kaplan R, Daviglius M, Hou L, Zhou L, Cai J, **Shaikh SR**, Sofer T, Browning SR, Franceschini N. Ancestry-driven metabolite variation provides insights into disease states in admixed populations. *15 Genome Med* (2023) 52.
87. Sanders AE, E. Wallace ED, Ehrmann BM, Soma PS, Shaikh SR, Preisser JS, Ohrbach R, Fillingim RB, Slade GD. Non-esterified erythrocyte linoleic acid, arachidonic acid, and subjective sleep outcomes. *Prost, Leukot and Essent Fatty Acids* 195 (2023) 102580.
86. Mooney SM, Billings E, Mcnew M, Munson CA, **Shaikh SR**, Smith SM. Behavioral Changes in FPR2/ALX and Chemr23 Receptor Knockout Mice Are Exacerbated by Prenatal Alcohol Exposure. *Frontiers Neuroscience* 17 (2023) 1187220.
85. Muntis FR, Smith-Ryan AE, Crandell J, Evenson KR, Maahs DM, Seid M, **Shaikh SR**, Mayer-Davis EJ. A high protein diet is associated with improved glycemic control following exercise among adolescents with type 1 diabetes. *Nutrients* 15 (2023) 1981.
84. Cavazos AT, *Pennington ER, *Dadoo S, Gowdy KM, Wassall SR, and **Shaikh SR**. OxPAPC stabilizes liquid-ordered domains in biomimetic membranes. *Biophys J.* 122 (2023) 1130-1139.
83. Dunigan-Russel K, Yaeger M, Hodge M, Kilburg-Basnyat B, Reece S, Birukova A, Guttenburg M, Novak C, Chung S, Ehrmann BM, Wallace ED, Tokarz D, Majumder N, Li X, Christman W, Shannahan J, Ballinger M, Hussain S, **Shaikh SR**, Tighe R, Gowdy KM. Scavenger receptor BI attenuates oxidized phospholipid-induced pulmonary inflammation. *Toxi Applied Pharmacol.* 462 (2023) 116381.
82. Psaltis CE, Fussner LY, Yaeger M, Aloor JJ, Reece SW, Kilburg-Basnyat BJ, Varikuti S, Luo B, Inks M, Sergin S, Schmidt CA, Neuffer PD, *Pennington ER, Fisher-Wellman KH, Chowdhury SM, Fessler MB, Fenton JI, Anderson EJ, **Shaikh SR**, Gowdy KM. The prohibitin complex regulates macrophage fatty acid composition, plasma membrane packing, and lipid raft-mediated inflammatory signaling. *Prostaglandins, Leukot, and Essent Fatty Acids.* 190 (2023) 102540.
81. Sanders AE, E. Weatherspoon ED, Ehrmann BM, Soma PS, **Shaikh SR**, Preisser JS, Ohrbach R, Fillingim RB, Slade GD. Circulating polyunsaturated fatty acids and pain intensity in five chronic pain conditions. *J Pain.* 24 (2023) 478-489.

80. *Virk R, *Buddenbaum N, *Al-Shaer A, Armstrong M, Manke J, Reisdorph N, Sergin S, Fenton JI, Wallace ED, Ehrmann BM, Lovins HB, Gowdy KM, Smith MR, Smith GJ, Kelada SNP, and **Shaikh SR**. Obesity reprograms the pulmonary polyunsaturated fatty acid-derived lipidome, transcriptome, and gene-oxylin networks. *J Lipid Res* 63 (2022) 100267.
79. Green WD, Alwararawrah Y, *Al-Shaer AE, Shi Q, Armstrong M, Manke J, Reisdorph, N, Farrell TM, Hursting SD, Maclver NJ, Beck MA, and **Shaikh SR**. Inflammation and metabolism of influenza-stimulated PBMCs from adults with obesity following bariatric surgery. *J Infect Dis.* 227 (2022) 92-102.
78. Sanders AE, E. Weatherspoon ED, Ehrmann BM, Soma PS, **Shaikh SR**, Preisser JS, Ohrbach R, Fillingim RB, Slade GD. Circulating polyunsaturated fatty acids, pressure pain thresholds, and nociplastic pain conditions. *Prostaglandins Leukot Essent Fatty Acids.* 184 (2022) 102476.
77. *Al-Shaer AE, *Pal A, Shi Q, Carson MS, Regan J, *Behee M, *Buddenbaum N, Drawdy C, Davis T, *Virk R, and **Shaikh SR**. Modeling human heterogeneity of obesity with diversity outbred mice reveals a fat mass-dependent therapeutic window for resolvin E1. *FASEB J.* 36(6) (2022) e22354.
76. Sanders AE, E. Weatherspoon ED, Ehrmann BM, Soma PS, **Shaikh SR**, Preisser JS, Ohrbach R, Fillingim RB, Slade GD. Circulating omega-6 and omega-3 polyunsaturated fatty acids in painful temporomandibular disorder and low back pain. *J Pain.* In press. 23 (2022) 1724-1736.
75. Sanders AE, Weatherspoon ED, Ehrmann BM, Soma PS, Shaikh SR, Preisser JS, Ohrbach R, Fillingim RB, Slade GD. Ratio of omega-6/omega-3 polyunsaturated fatty acids associated with somatic and depressive symptoms in people with painful temporomandibular disorder and irritable bowel syndrome. *J Pain.* 23 (2022) 1737-1748.
74. *Al-Shaer AE, *Regan J, *Buddenbaum N, Tharwani S, *Drawdy C, *Behee M, Sergin S, Fenton JI, Maddipati KR, Kane S, Butler E, **Shaikh SR**. Enriched marine oil supplement increases specific plasma specialized pro-resolving mediators in adults with obesity. *J Nutr* 152 (2022) 1783-1791.
73. Masood S, Pennington ER, Simmons SO, Bromber PA, **Shaikh SR**, Rice R, Gold A, Zhang Z, and Samet J. Live cell imaging of oxidative stress in human airway epithelial cells exposed to isoprene hydroxyhydroperoxide. *Redox Biol.* 51 (2022) 102281.
72. *Al-Shaer A, *Pal A, and **Shaikh SR**. Resolvin E1-ChemR23 axis regulates hepatic whole genome and exon level metabolic/inflammatory variants in diet-induced obesity. *Front Nutr.* 8 (2022) 799492 (p. 1-12)
71. *Pal A, Sun S, Armstrong M, Manke J, Reisdorph N, Adams VR, Kennedy A, Zu Y, Moustaid-Moussa M, Carroll I, and **Shaikh SR**. Beneficial effects of eicosapentaenoic acid on the metabolic profile of obese female mice entails upregulation of HEPes and increased

abundance of enteric *Akkermansia Muciniphila*. *Biochim Biophys Acta Mol Cell Biol Lipids*. 1867 (2022) 159059. (p. 1-13)

70. Green WD, *Al-Shaer AE, Shi Q, Gowdy KM, Maclver N, Milner J, Beck MA, and **Shaikh SR**. Metabolic and functional impairment of CD8⁺ T cells from the lungs of influenza-infected obese mice. *J Leukoc Biol* 111 (2022). 147-159. Green and Al-Shaer co-authors. (p. 1-9)

69. *Vander Ploeg M, Quinn K, Armstrong M, Manke J, Reisdorph N, and **Shaikh SR**. SPM pathway marker analysis of the brains of obese mice in the absence and presence of eicosapentaenoic acid ethyl esters. *Prostaglandins Leukot Essent Fatty Acids*. 175 (2021) 102360. (p. 1-6)

68. Reece SW, Yaeger M, Kilburg-Basnyat B, Hodge MX, *Pal A, Dunigan-Russel K, Luo B, You D, Bonner J, Spangenburg E, Tokarz D, Hanna J, Armstrong M, Manke J, Reisdorph N, Tighe RM, **Shaikh SR**, and Gowdy KM. Sex differences in pulmonary eicosanoids and specialized pro-resolving mediators in response to ozone exposure. *Tox. Sci* 183 (2021) 170-183. (p. 1-13)

67. Gowdy KM, Kilburg-Basnyat B, Hodge MX, Reece SW, Yermalitsk V, Davies SS, Manke J, Armstrong ML, Reisdorph N, Tighe RM, and **Shaikh SR**. Novel mechanisms of ozone-induced pulmonary inflammation and resolution, and the potential protective role of scavenger receptor BI. *Res Rep Health Eff Inst*. 204 (2021) 1-49. (p. 1-49)

66. Ferrara PJ, Rong X, Maschek JA, Verkerke ARP, Siripoksup P, Song H, Greene TD, Krishnan KC, Johnson JM, Turk J, Houmard JA, Lusic AJ, Drummond MJ, McClung JA, Cox JE, **Shaikh SR**, Tontonoz P, Holland WL, and Funai K. The Lands cycle modulates plasma membrane lipid organization and insulin sensitivity in skeletal muscle. *J Clin Invest* 131 (2021) 135963. (p. 1-13)

65. Armstrong M, Manke J, Nkrumah-Elie Y, **Shaikh SR**, and Reisdorph N. Improved quantification of lipid mediators in plasma and tissues by liquid chromatography tandem mass spectrometry demonstrates mouse strain specific differences. *Prostaglandins Other Lipid Mediat*. 151 (2020) 106483. (p. 1-8).

64. Allen ME, *Pennington ER, Perry JB, Dadoo S, Makrecka-Kuka M, Dambrova M, Moukdar F, Patel HD, Han X, Kidd GK, Benson EK, Raisch TB, Poelzing S, Brown DA, **Shaikh SR**. The cardiolipin-binding peptide elamipretide mitigates fragmentation of cristae networks following cardiac ischemia reperfusion in rats. *Commun Biol*. 389 (2020) 3(1). (p. 1-12)

63. *Pal A, *Al-Shaer AE, *Guesdon W, Torres MJ, Armstrong M, Quinn K, *Davis T, Reisdorph N, Neuffer PD, Spangenburg EE, Carroll I, Bazinet RP, Halade GV, Clària J, and **Shaikh SR**. Resolvin E1 derived from eicosapentaenoic acid prevents hyperinsulinemia and hyperglycemia in a host genetic manner. *FASEB J*. 34 (2020) 10640-10656. (p. 1-16)

62. Tourki B, Kain V, **Shaikh SR**, Leroy X, Serhan CN, Halade GV. Deficit of resolution receptor magnifies inflammatory leukocyte directed cardiorenal and endothelia dysfunction with signs of cardiomyopathy of obesity. *FASEB J.* 34 (2020) 10560-10573. (p. 1-13)
61. Perry JB, Davis GN, Allen ME, Makrecka-Kuka M, Dambrova M, Grange RW, **Shaikh SR**, and Brown DA. Cardioprotective effects of idebenone do not involve ROS scavenging: evidence for mitochondrial complex I bypass in ischemia/reperfusion injury. *J Mol Cell Cardiol.* (2019) 135:160-171. (p. 1-11)
60. Heden TD, Johnson JM, Ferrara PJ, Eshima H, Verkerke ARP, Wentzler EJ, Sigipoksup P, Narowski TM, Coleman CB, Lin C-T, Ryan TE, Reidy PT, de Castro Brás LE, Karner CM, Burant CF, Maschek A, Cox JE, Maschek 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. *Sci Adv.* 5 (2019) eaax8352. PMID: 31535029. (p. 1-11)
59. *Crouch JM, *Kosaraju R, *Guesdon W, Armstrong M, Reidorph N, Jain R, Fenton J, and **Shaikh SR**. Frontline Science: A reduction in DHA-derived mediators in male obesity contributes toward defects in select B cell subsets and circulating antibody. *J Leukoc Biol.* 106 (2019) 241-257. **Featured article of the month.** (p. 1-16)
58. Ryan TE, Yamaguchi DJ, Schmidt CA, Zeczycki TN, **Shaikh SR**, Brophy P, Green TD, Tarpey MD, Karnekar R, Goldberg EJ, Sparagna GC, Torres MJ, Annex BH, Neufer PD, Spengenburg EE, McClung J. Extensive skeletal muscle mitochondriopathy distinguishes critical limb ischemia patients from claudicants. *JCI Insight.* 3 (2018) e123235 (cover of the journal). (p. 1-17)
57. *Pennington ER, *Sullivan EM, *Fix A, *Dadoo S, Zeczycki TN, DeSantis A, Schlattner U, Coleman RA, Chicco AJ, Brown DA, and **Shaikh SR**. Proteolipid domains form in biomimetic and cardiac mitochondrial vesicles and are regulated by cardiolipin concentration but not monolyso-cardiolipin. *J Biol Chem.* 293 (2018) 15933-15946. (p. 1-14)
56. Sanders AE, **Shaikh SR**, and Slade GD. Long-chain omega-3 fatty acids and headache in the U.S. population. *Prostaglandins Leukot Essent Fatty Acids.* 135 (2018) 47-53. (p. 1-6)
55. Wassall SR, Leng X, Canner SW, *Pennington ER, Kinnun JJ, Cavazon AT, *Dadoo S, Johnson D, Heberle FA, Katsaras J, and **Shaikh SR**. Docosahexaenoic acid regulates the formation of lipid rafts: A unified view from experiment and simulation. *Biochim Biophys Acta.* 1860 (2018) 1985-1993. (p. 1-8)
54. **Shaikh SR**, Shaver PR, and Shewchuk B. High fat diet dysregulates hypothalamic-pituitary axis gene expression levels which are differentially rescued by EPA and DHA ethyl esters. *Mol. Nutr. Food. Res.* 62 (2018) e1800219. (p. 1-10)
53. Kilburg-Basnyat, Reece S, *Crouch M, Luo B, Boone A, Psaltis C, Yaeger M, Hodge M, Hannan J, Armstrong M, Reisdorph N, Tighe R, **Shaikh SR**, and Gowdy K. Specialized pro-

resolving lipid mediators regulate ozone-induced pulmonary and systemic inflammation (2018). *Tox Sci.* 163 (2018) 466-477. (p. 1-11)

52. Leng X, Kinnun JJ, Cavazos A, Canner SW, **Shaikh SR**, and Wassall SR. All n-3 PUFA are not the same: MD simulations reveal differences in membrane organization for EPA, DHA, and DPA. *Biochim Biophys Acta.* 1860 (2018) 1125-1134. (p. 1-11)

51. *Sullivan EM, *Pennington ER, Sparagna GC, Torres M, Neuffer PD, Harris M, Washington J, Anderson EJ, Zeczycki TN, Brown DA, and **Shaikh SR**. Docosahexaenoic acid lowers cardiac mitochondrial enzyme activity by replacing linoleic acid in the phospholipidome. *J Biol Chem.* 293 (2018) 466-483. (p. 1-17)

50. *Guesdon W, Kosaraju K, Brophy P, Clark A, Dillingham S, Aziz S, Moyer S, Wilson K, Dick JR, Patil SP, and **Shaikh SR**. Effects of fish oils on ex vivo B cell responses of obese subjects upon BCR/TLR stimulation: A pilot study. *J Nutr Biochem.* 53 (2018) 72-80. (p. 1-8)

49. Kinnun JJ, Bittman R, **Shaikh SR**, and Wassall SR. DHA modifies the size and composition of raft-like domains: a solid state 2H NMR study. *Biophys J.* 114 (2018) 380-391. **Featured article as new and notable.** (p. 1-11)

48. Torres MJ, Kew KA, Ryan TE, *Pennington ER, Kew KA, Lin C-T, Buddo K, *Fix AM, Smith CA, Gilliam LA, Karvonen S, Lowe DA, Spangenburg EE, Zezycki TN, **Shaikh SR**, and Neuffer PD. 17 β -Estradiol modulates mitochondrial membrane lipid packing and bioenergetic function in skeletal muscle. *Cell Metab.* 27 (2018) 167-179.e7. (p. 1-12)

47. Westerhold LE, Bridges LC, **Shaikh SR**, and Zeczycki TN. Kinetic and thermodynamic analysis of acetyl-CoA activation of staphylococcus aureus pyruvate carboxylase. *Biochemistry.* 56 (2017) 3492-3506. (p. 1-14)

46. Steagall RJ, Yao F, **Shaikh SR**, and Abdel-Rahman A. Estrogen receptor α activation enhances its cell surface localization and improves myocardial redox status in ovariectomized rats. *Life Sci.* 182 (2017) 41-49. (p. 1-8)

45. Kosaraju R, *Guesdon W, *Crouch MJ, *Teague HL, *Sullivan EM, Karlsson EA, Schultz-Cherry S, Gowdy K, Bridges LC, Reese LR, Neuffer PD, Armstrong M, Reisdorph N, Milner JJ, Beck MA, and **Shaikh SR**. B-cell activity is impaired in human and mouse obesity and is responsive to an essential fatty acid upon murine influenza infection. *J Immunol.* 198 (2017) 4738-4752. (p. 1-14)

44. *Sullivan EM, *Fix A, Brown DA, Zeczycki T, Sparagna G, and **Shaikh SR**. Cardiac mitochondrial phospholipid acyl chains are remodeled in murine obesity models but are not accompanied by impaired supercomplex formation or respiration. *J Nutr Biochem.* 45 (2017) 94-103. (p. 1-9)

43. Wang L, DeMarco S, Sanderson MS, Maiorana-Boutilier AL, Chen J, **Shaikh SR**, Phillips CM, and Bridges LC. RAR α /RXR synergism induces expression and function of the

trafficking receptors integrin β 7 and chemokine C-C motif receptor 9 (CCR9) in cutaneous T cell lymphoma. *Exp Dermatol.* 26 (2017) 1004-1011. (p. 1-7)

42. Aziz S, Wuensch KL, Gasperson J, and **Shaikh SR**. Exploring the link between work and health: Workaholism and family history of metabolic diseases. *Int J Work Health Manag.* 10 (2017) 153-163. (p. 1-10)

41. *Pennington ER, *Fix A, *Sullivan EM, Brown DA, Kennedy A, and **Shaikh SR**. Distinct membrane properties are differentially influenced by cardiolipin content and acyl chain composition in biomimetic membranes. *Biochim Biophys Acta* 1859 (2017) 257-267. (p. 1-10)

40. Harris M, Kinnun JJ, Kosaraju R, Leng X, Wassall SR, and **Shaikh SR**. Membrane disordering by eicosapentaenoic acid in B lymphomas is reduced by elongation to docosapentaenoic acid as revealed by solid-state nuclear magnetic resonance spectroscopy of model membranes *J Nutr.* 146 (2016) 1283-1290. (p. 1-7)

39. Alleman RJ, Tsang AM, Ryan TE, Patteson DJ, McClung JM, Spangenburg EE, **Shaikh SR**, Neuffer PD, Brown DA. Exercise-induced protection against reperfusion arrhythmia involves stabilization of mitochondrial energetics. *Am J Physiol Heart Circ Physiol.* 310 (2016) H1360-1370. (p. 1-10)

38. *Teague H, Harris M, *Whelan J, Comstock SS, Fenton JI, and **Shaikh SR**. Short-term consumption of n-3 PUFAs increases murine IL-5 levels but IL-5 is not the mechanistic link between n-3 fatty acids and changes in B cell populations. *J Nutr Biochem.* 28 (2016) 30-36. (p. 1-6)

37. **Shaikh SR**, Boyle S. and Edidin M. A high fat diet containing saturated but not unsaturated fatty acids enhances T cell receptor clustering on the nanoscale. *Prostaglandins Leukot Essent Fatty Acids.* 100 (2015) 1-4. (p. 1-4)

36. Gurzell EA, *Teague H, Duriancik D, Clinthorne J, Harris M, **Shaikh SR**, and Fenton JI. Marine fish oils are not equivalent with respect to B-cell membrane organization and activation. *J Nutr Biochem.* 26 (2015) 369-377. (p. 1-8)

35. Zeczycki T, Whelan J, Hayden WT, Brown DA, and **Shaikh SR**. Increasing levels of cardiolipin differentially influence packing of phospholipids found in the mitochondrial inner membrane. *Biochem Biophys Res Comm.* 450 (2014) 366-371. (p. 1-5)

34. **Shaikh SR**, *Sullivan EM, Alleman RJ, Brown DA, and Zeczycki TN. Increasing mitochondrial membrane phospholipid content lowers the enzymatic activity of electron transport complexes. *Biochemistry* 53 (2014) 5589-5591. (p. 1-2)

33. *Teague H, Harris M, Fenton J, Lalleman P, Shewchuk BM, and **Shaikh SR**. Eicosapentaenoic and docosahexaenoic acid ethyl esters differentially enhance B-cell activity in murine obesity. *J. Lipid Res.* 55 (2014) 1420-1433. (p. 1-13)

32. Anderson EJ, Thayne K, Harris M, **Shaikh SR**, Darden TM, Lark DS, Williams JM, Chitwood WR, Kypson AP, and Rodriguez E. Do fish oil omega-3 fatty acids enhance antioxidant capacity and mitochondrial fatty acid oxidation in human atrial myocardium via PPAR γ activation? *Antioxid Redox Signal*. 10 (2014) 1156-1163. (p. 1-7)
31. Brown DA, Hale SL, Baines CP, del Rio CL, Hamlin RL, Yueyama Y, Kijawornrat A, Yeh ST, Frasier CR, Stewart LM, Moukdar F, **Shaikh SR**, Fisher-Wellman KH, Neuffer PD, and Kloner RA. Reduction of early reperfusion injury with the mitochondria-targeting peptide Bendavia. *J Cardiovasc Pharmacol Ther*. 19 (2014) 121-132. (p. 1-11)
30. Teague H, Fhaner CJ, Harris M, Duriancik DM, Reid GE, and **Shaikh SR**. N-3 PUFAs enhance the frequency of murine B cell subsets and restore the impairment of antibody production to a T-independent antigen in obesity. *J Lipid Res*. 54 (2013) 3130-3138. **Cover of the journal and accompanying press release**. (p. 1-8)
29. *Rockett BD, *Melton M, Harris M, Bridges L, and **Shaikh SR**. Fish oil disrupts MHC class II lateral organization on the B-cell side of the immunological synapse independent of B-T cell adhesion. *J Nutr Biochem*. 24 (2013) 1810-1816. (p. 1-6)
28. *Teague H, *Rockett D, Harris M, Brown DA, and **Shaikh SR**. Dendritic cell activation, phagocytosis, and CD69 expression on cognate T cells are suppressed by n-3 long chain polyunsaturated fatty acids. *Immunology*. 139 (2013) 386-394. (p. 1-7)
27. Whelan JT, Chen J, Miller J, Morrow RL, Lingo JD, Merrell K, **Shaikh SR**, and Bridges L. 9-cis-Retinoic acid promotes cell adhesion through integrin dependent and independent mechanisms across immune lineages. *J Nutr Biochem*. 24 (2013) 832-841. (p. 1-9)
26. Gurzell EA, *Teague H, Harris M, Clinthorne J, **Shaikh SR**, and Fenton JI. DHA-enriched fish oil targets B cell lipid microdomains and enhances in vivo and ex vivo function. *J Leukoc Biol*. 93 (2013) 463-470. (p. 1-7)
25. *Teague H, Ross R, Harris M, Mitchell D, and **Shaikh SR**. DHA-fluorescent probe is sensitive to membrane order and reveals molecular adaptation of DHA in ordered lipid microdomains. *J Nutr Biochem*. 188 (2013) 188-195. (p. 1-7)
24. Williams JA, Batten SE, Harris M, *Rockett BD, **Shaikh SR**, Stillwell W, and Wassall SR. Docosahexaenoic and eicosapentaenoic acids segregate differently between raft and non-raft domains. *Biophys J*. 103 (2012) 228-237. (p. 1-9)
23. *Rockett BD, *Teague H, Harris M, *Melton M, Williams J, Wassall SR, and **Shaikh SR**. Fish oil increases raft size and membrane order of B cells accompanied by differential effects on function. *J Lipid Res*. 53 (2012) 674-685. (p. 1-11)
22. *Rockett BD, Harris M, and **Shaikh SR**. High dose of an n-3 polyunsaturated fatty acid diet lowers activity of C57BL6 mice. *Prostaglandins Leukot Essent Fatty Acids*. 86 (2012) 137-140. (p. 1-3)

21. Anderson EJ, Thayne K, Harris M, Carraway K, and **Shaikh SR**. Aldehyde stress and up-regulation of Nrf2-mediated antioxidant systems accompany functional adaptations in cardiac mitochondria from mice fed n-3 polyunsaturated fatty acids. *Biochem J*. 441 (2012) 359-366. (p. 1-7)
20. *Rockett BD, *Franklin A, Harris M, *Teague H, *Rockett A, and **Shaikh SR**. Lipid raft organization is more sensitive to disruption by (n-3) PUFA than nonrafts of EL4 and B cells. *J Nutr*. 141 (2011) 1041-1048. (p. 1-7)
19. *Rockett BD, *Salameh M, Carraway K, *Morrison K, and **Shaikh SR**. N-3 PUFAs improve fatty acid composition, prevent palmitate induced lipoapoptosis, and differentially modify B cell cytokine secretion in vitro and ex vivo. *J Lipid Res*. 51 (2010) 1284-1297. (p. 1-13)
18. **Shaikh SR**, LoCascio DS, Soni SP, Wassall SR, and Stillwell W. Oleic- and docosahexaenoic acid-containing phosphatidylethanolamines differentially phase separate from sphingomyelin. *Biochim Biophys Acta*. 1788 (2009) 2421-2426. (p. 1-5)
17. **Shaikh SR**, *Rockett BD, Salameh M, and Carraway K. Docosahexaenoic acid modifies the clustering and size of lipid rafts and the surface expression and lateral organization of MHC class I of EL4 cells. *J Nutr*. 139 (2009) 1632-1639. (p. 1-7)
16. Fooksman D, **Shaikh SR**, Boyle S., and Edidin M. PI(4,5)P2 concentration at the APC side of the immunological synapse is required for effector T cell function. *J Immunol*. 182 (2009) 5179-5182. Fooksman/Shaikh co-first authors. (p. 1-3)
15. **Shaikh SR**, Boyle S, Hua J, Li Z, and Edidin M. In vivo test of the vertical phase separation hypothesis: the display of major histocompatibility complex (MHC) class I molecules on membranes of B cells from mice fed high fat diets. *Br J Nutr*. 101 (2009) 804-809. (p. 1-5)
14. **Shaikh SR**, Mitchell D, Carroll E, Li M, Schneck J, and Edidin M. Differential effects of a saturated and a monounsaturated fatty acid on MHC class I antigen presentation. *Scand J Immunol*. 68 (2008) 30-42. (p. 1-12)
13. Weaver FE, **Shaikh SR**, and Edidin M. Plasma membrane lipid diffusion and composition of sea urchin egg membranes vary with ocean temperature. *Chem Phys Lipids*. 151 (2008) 62-65. (p. 1-3)
12. **Shaikh SR**, and Edidin M. Immunosuppressive effects of polyunsaturated fatty acids on antigen presentation by human leukocyte antigen class I molecules. *J Lipid Res*. 48 (2007) 127-138. (p. 1-11)
11. **Shaikh SR**, Cherezov V, Caffrey M, Sonni S, Stillwell W, and Wassall SR. Molecular organization of cholesterol in unsaturated phosphatidylethanolamines: X-ray diffraction and solid state ²H NMR reveal differences with phosphatidylcholines. *J Am Chem Soc*. 128 (2006) 5375-5383. (p. 1-8)

10. **Shaikh SR**, Dumauual AC, Castillo A, LoCascio D, Siddiqui RA, Stillwell W, and Wassall SR. Oleic and docosahexaenoic acid differentially phase separate from lipid raft molecules: A comparative NMR, DSC, AFM and detergent extraction study. *Biophys J.* 87 (2004) 1752-1766. (p. 1-14)
9. Siddiqui RA, **Shaikh SR**, Kovacs R, Ashour M, Haq S, Force T, Stillwell W, and Zaloga G. Inhibition of phenylephrine-induced cardiac hypertrophy: a possible role of docosahexaenoic acid. *J Cell Biochem.* 92 (2004) 1141-1159. (p. 1-18)
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2. Engleman EA, McBride WJ, Wilber AA, **Shaikh SR**, Eha RD, Lumeng L, Li TK., and Murphy JM. Reverse microdialysis of a dopamine uptake inhibitor in the nucleus accumbens of alcohol-preferring rats: effects on dialysate dopamine levels and ethanol intake. *Alcohol Clin Exp Res.* 24(6) (2000) 795-801. (p. 1-6)
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Invited Review Articles

39. **Shaikh, S.R.**, Beck, M.A., Alwarawrah, Y., MacIver, N.J. Emerging mechanisms of obesity-associated immune dysfunction. *Nature Reviews Endocrinology* 20 (2024) 136-148.
38. Sublette, M.E., Daray, F.M., Ganança, L., **Shaikh, S. R.** The role of polyunsaturated fatty acids in the neurobiology of major depressive disorder and suicide risk. *Molecular Psychiatry* 29 (2023) 269-286.
37. Lovins, H.B., Bathon, B.E., **Shaikh, S.R.**, Gowdy, K.M. Inhaled toxicants and pulmonary lipid metabolism: biological consequences and therapeutic interventions. *Toxicological Sciences* 196 (2023) 141-151.
36. Yaeger, M.J., **Shaikh, S.R.**, Gowdy, K.M. Making Mountains Out of Mole Hills: How Blocking Scavenger Receptors Prevents an Overexuberant Response to Oxidized Phospholipids. *American Journal of Respiratory Cell and Molecular Biology* 70 (2024) 3-4.
35. Shaikh Sr, Crott JW, Comstock SS, Yeruva L, Davis TA. Nutritional immunology across the lifespan: A Call for Papers. *J Nutr.* S0022-3166 (2023) 72414.
34. **Shaikh SR** and Bazinet RP. Heterogeneity in the response to n-3 PUFAs. *Curr Opin Clin Nutr Metab Care* 26 (2023) 284-287.
33. **Shaikh SR**, *Virk R, and Van Dyke T. Potential mechanisms by which hydroxyeicosapentaenoic acids regulate glucose homeostasis in obesity. *Advances in Nutrition* 22 (2022) 2316-2328.
32. **Shaikh SR**, MacIver N, and Beck MA. Obesity dysregulates the immune response to influenza infection and vaccination through metabolic and inflammatory mechanisms. *Annual Reviews in Nutrition.* 42 (2022) 67-89.
31. **Shaikh SR**, Stephenson CB, Hursting SD, and Comstock SR. The 2021 FASEB Science Research Conference on Nutrition, Immunity, and Inflammation: From model systems to human trials, July 27-29. *FASEB J.* 35 (2021) e21978 (p. 1-4)
30. *Al-Shaer A, *Buddenbaum N, **Shaikh SR.** Polyunsaturated fatty acids, specialized pro-resolving mediators, and targeting inflammation resolution in the age of precision nutrition. *Biochim Biophys Acta Mol Cell Biol Lipids.* 1866 (2021) 158936. (p. 1-9)
29. Gordon-Larsen P, French JE, Moustaid-Moussa N, Voruganti VS, Mayer-Davis EJ, Bizon CA, Cheng Z, Stewart DA, Easterbrook JW, **Shaikh SR.** Synergizing mouse and human studies to understand the heterogeneity of obesity. *Adv Nutr.* 12 (2021) 2023-2034 (p. 1-11)
28. *Pal A, Metherel AH, *Fiabane L, *Buddenbaum N, Bazinet RP, **Shaikh SR.** Do eicosapentaenoic and docosahexaenoic acid have the potential to compete against each other? *Nutrients* 12 (2021) 3718. (p. 1-12)

27. Pal A*, Gowdy KM, Oestreich KJ, Beck M, **Shaikh SR**. Obesity-driven deficiencies of specialized pro-resolving mediators may drive adverse outcomes during SARS-CoV-2 infection. (2020). 11:1997. (p. 1-8)
26. Crouch M*, Al-Shaer A*, **Shaikh SR**. Hormonal dysregulation and unbalanced specialized pro-resolving mediator biosynthesis contribute toward impaired B cell outcomes in obesity. Special issue on Metabolic Inflammation, Mol Nutr food Res. 65 (2021) e1900924. (p. 1-32, open access version)
25. **Shaikh SR**. Omega-3s are a traffic light for T cells: lipid metabolites and membrane-related events at the crossroads of inflammation. Cardiovasc Res. 116 (2020) 874-875. (p. 1-2)
24. Bazinet RP, Metherel AH, Chen CT, **Shaikh SR**, Nadjar A, Joffre C, Layé S. Brain eicosapentaenoic acid metabolism as a lead for novel therapeutics in major depression. Brain Behav Immun. 85 (2020) 21-28. (p. 1-7)
23. *Pennington ER, Funai K, Brown DA, and **Shaikh SR**. The role of cardiolipin concentration and acyl chain composition on mitochondrial inner membrane molecular organization and function. BBA Molecular and Cellular Biology of Lipids. 1864 (2019) 1039-1052. (p. 1-13)
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21. *Sullivan EM, *Pennington ER, Green WD, Beck MA, Brown DA, and **Shaikh SR**. Mechanisms by which dietary fatty acids regulate mitochondrial structure-function in health and disease. Adv Nutr. 9 (2018) 247-262. (p. 1-15)
20. Brown DA, Perry JB, Sabbah HN, Stauffer BL, **Shaikh SR**, Cleland JGF, Colucci WS, Butler J, Voors AV, Anker SD, Pitt B, Pieske B, Filippatos G, Greene SJ, and Gheorghiadu M. Mitochondrial function as a therapeutic target in heart failure. Nat Rev Cardio. 14 (2017) 238-250. (p. 1-12)
19. **Shaikh SR**, Fessler MB, and Gowdy KM. Role of phospholipid acyl chain and cholesterol in pulmonary infections and inflammation. J Leukoc Biol. 100 (2016) 985-997. (p. 1-12)
18. *Whelan J, Gowdy KM, and **Shaikh SR**. N-3 polyunsaturated fatty acids modulate B cell activity in pre-clinical models: Implications for the immune response to infections. Eur J Pharmacol. 785 (2016) 10-17. (p. 1-7)
17. **Shaikh SR**, Wassall SR, Brown DA, Kosaraju R. N-3 polyunsaturated fatty acids, lipid microclusters, and vitamin E. Curr Top Membr. 75 (2015) 209-231. (p. 1-12)
16. **Shaikh SR**, Haas KM, Beck MA, and Teague H. The effects of diet-induced obesity on B cell function. Clin Exp Immunol. 179 (2015) 90-99. (p. 1-9)

15. **Shaikh SR**, Kinnun JJ, Leng X, William JA, and Wassall SR. How polyunsaturated fatty acids modify molecular organization in membranes: Insight from NMR studies of model systems. *Biochim Biophys Acta*. 1848 (2015) 211-219. (p. 1-8)
14. Brown DA, Sabbah HN, and **Shaikh SR**. Mitochondrial inner membrane lipids and proteins as targets for decreasing cardiac ischemia/reperfusion injury. *Pharmacol Ther*. 140 (2013) 258-266. (p. 1-8)
13. **Shaikh SR** and Brown DA. Models of plasma membrane organization can be applied to mitochondrial membranes to target human health and disease with polyunsaturated fatty acids. *Prost Leukot Essent Fatty Acids*. 88 (2012) 21-25. (p. 1-4)
12. **Shaikh SR** and *Teague H. N-3 fatty acids and membrane microdomains. From model membranes to lymphocyte function. *Prost Leukot Essent Fatty Acids*. 87 (2012) 205-208. (p. 1-3)
11. **Shaikh SR**, Jolly CA, and Chapkin RS. n-3 Polyunsaturated fatty acids exert immunomodulatory effects on lymphocytes by targeting plasma membrane molecular organization. *Mol Aspects Med*. 33 (2012) 46-54. (p. 1-8)
10. **Shaikh SR**. Biophysical and biochemical mechanisms by which dietary n-3 polyunsaturated fatty acids from fish oil disrupt membrane lipid rafts. *J Nutr Biochem*. 23 (2012) 101-105. (p. 1-4)
9. **Shaikh SR**. Zebrafish get ordered: New doors open for imaging membrane organization. *Biophys J*. 99 (2010) 1-2. (p. 1-2)
8. **Shaikh SR**. Diet induced docosahexaenoic acid non-raft domains and lymphocyte function. *Prost Leuk Essent Fatty Acids*. 82 (2010) 159-164. (p. 1-5)
7. Yaqoob P. and **Shaikh SR**. The nutritional and clinical significance of lipid rafts. *Curr Opin Clin Nutr Metab Care*. 13 (2010) 156-166. (p. 1-10)
6. **Shaikh SR**, and Edidin M. Polyunsaturated fatty acids and membrane organization. Elucidating mechanisms to balance immunotherapy and susceptibility to infection. *Chem Phys Lipids*. 153 (2008) 24-33. (p. 1-9)
5. **Shaikh SR**, and Edidin M. Polyunsaturated fatty acids, membrane organization, T cells and antigen presentation. *Am J Clin Nutr*. 84 (2006) 1277-1289. (p. 1-12)
4. **Shaikh SR**, and Edidin M. Membranes are not just rafts. *Chem Phys Lipids*. 144 (2006) 1-3. (p. 1-3)
3. Stillwell W, **Shaikh SR**, Zerouga M, Siddiqui R, and Wassall SR. Docosahexaenoic acid affects cell signaling by altering lipid rafts. *Reprod Nutr Dev*. (2005) 559-579. (p. 1-20)

2. Wassall SR, Brzustowicz MR, **Shaikh SR**, Cherezov V, Caffrey M, and Stillwell W. Order from disorder: corralling cholesterol with chaotic lipids. The role of polyunsaturated lipids in membrane raft formation. *Chem Phys Lipids*. 132 (2004) 79-88. (p. 1-11)

1. Siddiqui RA, **Shaikh SR**, Sech LA, Yount HR, Stillwell W, and Zaloga GP. Omega-3 fatty acids: cellular mechanism of its action against cancer and its use for general health benefits. *Mini-Rev Med Chem*. 4 (2004) 859-871. (p. 1-12)

Book Chapters

2. Stillwell W, **Shaikh SR**, LoCascio D, Siddiqui RA, Seo J, Chapkin RS, and Wassall SR. Docosahexaenoic acid. An influential membrane-altering omega-3 fatty acid. In: *Frontiers in Nutrition Research*. Julie D. Huang, Ed. Nova Science Publishers, Inc. (2006) 249-271.

1. Wassall SR, **Shaikh SR**, Brzustowicz MR, Cherezov V, Siddiqui RA, Caffrey M, and Stillwell W. Interaction of polyunsaturated fatty acids with cholesterol: A role in lipid raft phase separation. *A.C.S. Bio-Colloids Symposium, Macromolecular Symposium Series*, Danino D, Harries D, and Wrenn SP. Eds. Wiley-VCH. 219 (2005) 73-84.

Abstracts for Conferences (posters and oral presentations, including session chairs)

169. Virk R, Pennington ER, Gowdy KM, and **Shaikh SR**. Nutritional modulation of pulmonary inflammation: The role of DHA in lipid raft dynamics and respiratory health. American Society for Nutrition Annual Meeting, Chicago IL, July 1, 2024.

168. Stutts WL, Cabrera A, Webb T, Lyons S, **Shaikh SR**, Thaxton J, Redman E, Thompson JW, Herring LE. Evaluating microchip capillary electrophoresis-mass spectrometry for the quantification of metabolites from cells and tissues. Post presentation at SCIX2024, Raleigh NC, October 20-25.

167. Cabrera A, Webb T, Lyons S, **Shaikh SR**, Thaxton J, Redman J, Thompson W, Herring L. Utilization of a novel all-in-one CE-MS metabolomics platform for metabolite analysis from biological samples. Post presentation at American Society for Mass Spectrometry, Anaheim CA, June 2-6.

166. Leuenberger LA, Schott E, Cochran SJ, Yeager MJ, Horowitz JC, Pannu S, Bednash JS, **Shaikh SR**, Gowdy KM. Decreased circulating eicosapentaenoic acid is associated with increased risk of acute respiratory distress syndrome. Poster presentation at the American Thoracic Society International Conference, San Diego CA, May 17-22, 2024.

165. *Virk R, Behee M, *Bathon B, Beatty N, Davis T, Yeager M, Gowdy KM, **Shaikh SR**. ALX/FPR2 deficiency impairs glucose tolerance and dysregulates pulmonary inflammation. Poster presentation and flash talk (by Virk) at the FASEB Nutritional Immunology Across the Lifespan Conference. Melbourne, FL, July 30-August 3, 2023.

164. **Shaikh SR.** Dysregulation of polyunsaturated fatty acid metabolism contributes toward complications of obesity. Oral presentation at the FASEB Nutritional Immunology Across the Lifespan Conference. Melbourne, FL, July 30-August 3, 2023.

**Co-Organizer of the conference and Session Chair

163. **Shaikh SR.** Loss of an inflammation resolution receptor increases murine pulmonary PUFA-derived oxylipins and inflammation. Invited oral presentation at 15th International Society for the Study of Fatty Acids and Lipids Conference. Nantes, France, July 2-5, 2023.

162. **Shaikh SR,** *Pal A, and Carroll I. Ethyl esters of eicosapentaenoic acid improve glucose homeostasis in a host genome and sex-dependent manner through oxylipin and gut microbiome mediated mechanisms. Poster presentation at 15th International Society for the Study of Fatty Acids and Lipids Conference. Nantes, France, July 2-5, 2023.

161. Kadro ZO, Chilcoat A, and **Shaikh SR.** Omega-3 fatty acids and breast cancer: A scoping review of clinical trials. Society for Integrative Oncology, 20th Anniversary: September 2023. Banff, Canada (poster presentation). September 14-16, 2023.

160. Stein CS, Zhang X, Witmer NH, *Pennington ER, **Shaikh SR,** and Boudreau RL. Mitoregulin microprotein influences mitochondrial membrane integrity and myocardial ischemia-reperfusion injury. AHA Basic Cardiovascular Sciences 2023. Boston, MA. July 31-August 3, 2023.

159. Lovins HB, Schott E, Varikuti S, Yeager M, Russell KD, Hutton G, Kilburg-Basnyat, **Shaikh SR,** Gowdy DKM. ChemR23 axis regulates ozone-induced lung inflammation and injury. Society of Toxicology, Nashville TN, March 19-23, 2023.

158. Lovins HB, Schott E, Varikuti S, Yaeger M, Russel KD, Hutton G, Kilburg-Basnyat B, **Shaikh SR,** and Gowdy KM. Chemerin/ChemR23 axis regulates ozone-induced lung inflammation and injury. Poster presentation at the Davis Heart and Lung Research Institute Annual Meeting, Columbus OH, October 19, 2022.

157. Yeager M. Virk R, **Shaikh SR,** and Gowdy KM. DHA and ozone-induced inflammation. Poster presentation at the Bioactive Lipids in Cancer, Inflammation and Related Diseases Conference. 17th International Conference, New Orleans LA October 30-November 2, 2022.

156. Lovins HB, Schott E, Varikuti S, Yaeger M, Russel KD, Hutton G, Kilburg-Basnyat B, **Shaikh SR,** and Gowdy KM. Chemerin/ChemR23 axis regulates ozone-induced lung inflammation and injury. Poster presentation at the Bioactive Lipids in Cancer, Inflammation and Related Diseases Conference. 17th International Conference, New Orleans LA October 30-November 2, 2022.

155. *Bathon B, Gray R, Reisdorph N, Armstrong M, Manke J, Gowdy K. and **Shaikh SR.** Eicosapentaenoic acid lowers pulmonary alveolar MH-S cell IL-6 secretion through a mechanism independent of 5-HEPE, 18-HEPE, and 17(18)-EpETE. Poster presentation at the Bioactive Lipids in Cancer, Inflammation and Related Diseases Conference. 17th International Conference, New Orleans LA October 30-November 2, 2022.

154. *Bathon B, Coleman MF, *Virk R, Tlsty E, Hursting SD, and **Shaikh SR**. Murine obesity reduces pulmonary markers of immunosurveillance and the concentration of leukotrienes upon mammary cancer tumor burden. Poster presentation at the Bioactive Lipids in Cancer, Inflammation and Related Diseases Conference. 17th International Conference, New Orleans LA October 30-November 2, 2022.

153. *Virk R, Armstrong M, Manke J, Reisdorph N, *Bathon B, Gowdy KM, and **Shaikh SR**. The loss of ALX/FPR2 dysregulates the pulmonary oxylipin signature related to pathways of inflammation initiation and resolution. Poster presentation at the Bioactive Lipids in Cancer, Inflammation and Related Diseases Conference. 17th International Conference, New Orleans LA October 30-November 2, 2022.

152. *Virk R, Armstrong M, Manke J, Reisdorph N, Smith GJ, Kelada SNP, Gowdy KM, and **Shaikh SR**. Obesity dysregulates the pulmonary polyunsaturated fatty acid-derived lipidome, transcriptome, and gene-oxylipin networks. Poster presentation at the Bioactive Lipids in Cancer, Inflammation and Related Diseases Conference. 17th International Conference, New Orleans LA October 30-November 2, 2022.

*Virk R selected by the organizing committee for the Christopher C. Harris Travel Award.

151. *Virk R, *Bathon B, Gowdy KM, and **Shaikh SR**. Loss of the murine ALX/FPR2 receptor dysregulates the concentration of pulmonary oxylipins of inflammation initiation and resolution. Poster presentation at the Fredrickson Lipid Research Conference. September 8-10, 2022. Durham NC.

150. *Virk R, Gowdy KM, and **Shaikh SR**. Obesity impairs polyunsaturated fatty acid-derived metabolism related to inflammation initiation and resolution. Poster presentation at the Fredrickson Lipid Research Conference. September 8-10, 2022. Durham NC.

149. *Bathon B and **Shaikh SR**. Eicosapentaenoic acid lowers IL-6 secretion from pulmonary alveolar macrophages through a potential mechanism mediated by downstream hydroxylated oxylipins. Poster presentation at the Fredrickson Lipid Research Conference. September 8-10, 2022. Durham NC.

148. *Buddenbaum N, *Al-Shaer A, Armstrong M, Manke J, Reisdorph N, Sergin S, Fenton JI, Wallace ED, Ehrmann BM, Lovins HB, Gowdy KM, Smith RM, Smith GJ, Kelada SNP, **Shaikh SR**. Obesity dysregulates the pulmonary oxylipin signature prior to and after acute lung injury. Poster presentation at the Interdisciplinary Nutrition Sciences Symposium. Chapel Hill, NC, July 21-22, 2022.

147. *Virk R, *Behee M, *Al-Shaer A, Armstrong M, Manke J, Reisdorph N, *Bathon B, Davis T, Vargas DM, Kelada SNP, Gowdy KM, and **Shaikh SR**. Knockout of the inflammation resolution receptor ALX/FPR2 dysregulates the murine pulmonary oxylipidome prior to injury. Poster presentation at the Interdisciplinary Nutrition Sciences Symposium. Chapel Hill, NC, July 21-22, 2022.

146. McNew ML, Munson CA, **Shaikh SR**, Smith SM, and Mooney SM. Mice lacking the inflammation-resolution receptor, ALX/FPR2, have worsened behavioral deficits after prenatal alcohol exposure. *Alcoholism: Clinical and Experimental Research Suppl.* 2022. Poster presentation at the Annual Meeting of the Research Society on Alcoholism Orlando Florida June 25-29, 2022.
145. *Virk R, Behee M, *Al-Shaer A, Armstrong M, Manke J, Reisdorph N, Gowdy KM, and **Shaikh SR**. Deficiency of ALX/FPR2 receptor dysregulates murine lipid mediators of pulmonary inflammation. Poster presentation at Southeastern Regional Society for Developmental Biology Conference. Chapel Hill, NC June 1-3, 2022.
144. Zu Y, Mikhael M, Scoggin S, *Pal A, **Shaikh SR**, Moustaid-Moussa. 8-Hydroxyeicosapentaenoic acid reduces adipogenesis and inflammation in 3T3-L1 adipocytes. *American Society for Nutrition* 2022, Online June 16, 2022.
143. *Buddenbaum N, *Virk R, *Al-Shaer A, *Behee M, Armstrong M, Manke J, Reisdorph N, Fenton JI, Wallace ED, Gowdy KM, and **Shaikh SR**. The pulmonary polyunsaturated fatty acid lipidome and transcriptome are dysregulated with diet-induced obesity. *The American Thoracic Society Meeting*, San Francisco, CA, May 1-3, 2022.
142. Yaeger MJ, Dunigan-Russell K, Lovins H, Hutton G, Rahman N, *Pal A, Manke J, Armstrong M, Reisdorph N, Basnyat-Kilburg B, Tighe RM, **Shaikh SR**, Gowdy KM. Docosahexaenoic acid rich diet lowers pulmonary inflammation following ozone exposure differentially during acute and resolution phases of inflammation. Poster presentation for the Annual Society of Toxicology (SOT) Meeting. San Diego, CA, March 27-31, 2022.
141. *Pal A, *Virk R, Gowdy KM, **Shaikh SR**. Perfluorooctanoic acid targets B cell plasma membrane lipid raft organization and function. Poster presentation for the Annual Society of Toxicology (SOT) Meeting. San Diego, CA, March 27-31, 2022.
140. Cavazos AT, Wassall SR, *Pal A, **Shaikh SR**. A role for oxidized phospholipids in regulating membrane architecture? Poster presentation for the Annual Biophysical Society Meeting. San Francisco, CA. February 19-23, 2022.
139. **Shaikh SR**. Obesity drives a dysregulated specialized pro-resolving mediator signature: Implications for viral infection. *The FASEB Nutrition, Immunity, and Inflammation Conference: From Model Systems to Human Trials* (virtual, originally scheduled for Steamboat Springs, Colorado). July 27-29, 2021.
**Session Chair for Obesity: Impacts on Innate and Adaptive Immunity.
**Session Chair for Career Development Session for Early Career Scientists.
**Conference co-organizer.
138. *Virk R, *Buddenbaum N, *Al-Shaer A, Gowdy KM, **Shaikh SR**. Obesity dysregulates the pulmonary lipidome and transcriptome in a diet-dependent manner. Poster presentation at *The FASEB Nutrition, Immunity, and Inflammation Conference: From Model Systems to Human Trials* (virtual, originally scheduled for Steamboat Springs, Colorado). July 27-29, 2021.

137. Yaeger MJ, Dunigan-Russell K, Varikuti S, Lovins H, Hutton G, Rahman N, *Pal A, Manke J, Armstrong M, Reisdorph N, Kilburg-Basnyat B, Tighe RM, **Shaikh SR**, Gowdy KM. Docosahexaenoic acid rich diet lowers pulmonary inflammation following ozone exposure differentially during acute and resolution phases of inflammation. Poster presentation at The FASEB Nutrition, Immunity, and Inflammation Conference: From Model Systems to Human Trials (virtual, originally scheduled for Steamboat Springs, Colorado). July 27-29, 2021.

136. Invited Panelist and Session Leader for “Specialized Pro-Resolving Mediators (SPMs) and Their Role in Actively Resolve Inflammation: Physiological Mechanisms and Immune-Nutrition Solutions for the Increasing Challenge of Inflammatory Health Conditions”. ASN Annual Meeting (Virtual) June 10, 2021.

135. **Shaikh SR**, Oestreich KJ, and Gowdy K. Specialized pro-resolving mediators are a missing link between obesity and impaired humoral immunity in the context of inflammation and influenza infection. Poster presentation at the Joint Conference of ISSFAL and The American Oil Chemists’ Society, May 10-14, 2021 (virtual, originally scheduled for Nantes, France).

134. **Shaikh SR**. Resolvin E1 has therapeutic potential for improving glucose homeostasis in a host-genome dependent manner. Invited speaker for the Joint Conference of ISSFAL and The American Oil Chemists’ Society, May 10-14, 2021 (Virtual, originally scheduled for Nantes, France).

**Also session chair for Eicosanoids & Lipid Mediators Platform Session, May 10, 2021.

133. Cavazos AT, Wassall SR, *Pal A, *Dadoo S, and **Shaikh SR**. Molecular organization of lipid rafts is modified by oxidized phosphatidylcholines. Poster presentation at The Annual Biophysical Society Meeting (virtual due to COVID). Feb 22-26, 2021.

132. **Shaikh SR**. Obesity drives a signature of impaired immunometabolism upon influenza infection. Talk and session chair for the Nutrition Obesity Research Center (NORC)/The Obesity Society Joint Symposium: Obesity and the Immune Response in the Age of COVID. Virtual Conference due to the COVID pandemic, The Obesity Society Meeting, November 6, 2020. ** also served as session organizer and chair.

131. Varikuti S, Yaeger M, Stewart E, Kilburg-Basnyat B, *Pal A, Dunigan K, **Shaikh SR**, and Gowdy K. Chemerin/chemR23 axis regulates ozone induced lung inflammation and injury. Poster presentation at the Society of Toxicology Annual Meeting (virtual due to COVID). March 15-19, 2020.

130. Reece SK, Hodge MX, Browder EA, Kilburg-Basnyat BJ, Luo B, Armstrong M, Reidorph N, Fenton J, Spangenburg EE, Hanna JL, Tighe RM, **Shaikh SR**, Gowdy KM. Sex differences in pulmonary eicosanoid metabolism in response to ozone exposure. Bioactive Lipids in Cancer, Inflammation and Related Diseases. Poster presentation at the 16th International Conference in St. Petersburg, Florida Oct. 20-23, 2019.

129. *Pal A, *Al-Shaer A, Armstrong M, Reisdorph N, and **Shaikh SR**. Eicosapentaenoic acid prevents hyperinsulinemia and hyperglycemia in obese mice through the host-genetic dependent effects of resolvin E1. Bioactive Lipids in Cancer, Inflammation and Related Diseases. Poster presentation at the 16th International Conference in St. Petersburg, Florida Oct. 20-23, 2019.
128. *Al-Shaer AA, *Crouch MJ, and **Shaikh SR**. Metabolites of the SPM family inhibit the enrichment of pro-inflammatory B cells in adipose tissue of obese mice. Bioactive Lipids in Cancer, Inflammation and Related Diseases. Poster presentation at the 16th International Conference in St. Petersburg, Florida Oct. 20-23, 2019.
127. **Shaikh SR** and *Crouch MJ. Obesity impairs humoral immunity in a sex-specific manner due to impaired production of lipid metabolites of the pro-resolving family. Oral presentation at the American Society for Nutrition Annual Meeting, June 8-11, 2019. Baltimore, MA.
126. *Pal A, *Guesdon W, and **Shaikh SR**. Eicosapentaenoic acid improves fasting insulin in murine obesity through the production of resolvin E1. Poster presentation at the 4th Annual Diversity in STEM conference. George Watts Hill Alumni Center, November 8, 2018. Chapel Hill, NC.
125. Allen ME, Pennington ER, **Shaikh SR**, Han X, and Brown DA. Preservation of mitochondrial structure-function with the cardiolipin-aggregating peptide Elamipretide. 20th European Bioenergetics Conference. August 25-30, 2018. Budapest, Hungary.
124. **Shaikh SR**. Obesity impairs B cell responses due to defects in the production of n-3 fatty acid derived mediators in a sex-specific manner. Invited oral presentation for FASEB Nutritional Immunology Conference. June 24-29, 2018. Leesburg, VA.
123. *Crouch MJ, *Guesdon W, and **Shaikh SR**. Docosahexaenoic acid-derived mediators regulate the B cell repertoire in murine obesity in a sex-specific manner. Poster presentation for FASEB Nutritional Immunology Conference. June 24-29, 2018. Leesburg, VA.
122. *Pal A, Armstrong M, Reisdorph N, and **Shaikh SR**. Eicosapentaenoic acid restores glucose and insulin homeostasis in obese mice: A potential role for the microbiome? Poster presentation for FASEB Nutritional Immunology Conference. June 24-29, 2018. Leesburg, VA.
121. *Pennington ER, Zeczycki T, DeSantis A, Brown DA, and **Shaikh SR**. Dietary docosahexaenoic acid remodels the cardiac mitochondrial phospholipidome and decreases respiratory enzymatic activity, which is rescued with linoleic acid. Poster presentation at the American Society for Nutrition Annual Meeting, June 8-11, 2019. Boston, MA.
120. Davis T, Dillingham S, Vannice G, and **Shaikh SR**. Palmitoleic acid levels are lowered in metabolically impaired humans and mice and dietary supplementation improves murine adipose inflammatory gene expression. Poster presentation at the American Society for Nutrition Annual Meeting, June 8-11, 2019. Boston, MA.

119. *Guesdon W, *Kosaraju R, Davis T, Dillingham S, Aziz S, Moyer F, Dick JR, Armstrong M, Reisdorph N, and **Shaikh SR**. B cell cytokine secretion and antibody production are modulated by fish oils in obese subjects. Poster presentation at the American Society for Nutrition Annual Meeting, June 8-11, 2019. Boston, MA.

118. *Pal A, *Guesdon W, Amorese AJ, Torres MJJ, Neuffer PD, Spangenburg EE, Armstrong M, Reisdorph N, and **Shaikh SR**. EPA-derived mediators are lowered in murine obesity and rescued with dietary intervention to improve glucose clearance. Poster presentation at the American Society for Nutrition Annual Meeting, June 8-11, 2019. Boston, MA.

117. *Crouch, MJ, Kosaraju R, *Guesdon W, Armstrong M, Reisdorph, and **Shaikh SR**. Docosahexaenoic acid-derived metabolites regulate bone marrow and splenic B cell populations in obesity in a sex-specific manner. Poster presentation at the American Society for Nutrition Annual Meeting, June 8-11, 2019. Boston, MA (*selected for additional 5-minute oral presentation given by SR Shaikh).

116. *Crouch, MJ, Kosaraju R, *Guesdon W, and **Shaikh SR**. Obesity drives an impaired B cell response in males but not females. Poster presentation at the American Society for Nutrition Annual Meeting, June 8-11, 2019. Boston, MA (*selected for additional 5-minute oral presentation given by SR Shaikh).

115. *Crouch M, Kosaraju R, Armstrong M, Reisdorph N, and **Shaikh SR**. B cell subset frequencies and functional responses are impaired in human and mouse obesity in a sex-specific manner due to a potential decrease in specialized pro-resolving lipid mediators. Poster presentation at the International Society for the Study of Fatty Acids and Lipids (ISSFAL), May 27-31, 2018. Las Vegas, Nevada.

114. *Crouch M, *Guesdon W, Armstrong M, Reisdorph N, and **Shaikh SR**. Docosahexaenoic acid improves the decrement in antibody production of obese mice upon influenza infection through a mechanism mediated by 14-HDHA. Oral presentation at the International Society for the Study of Fatty Acids and Lipids (ISSFAL), May 27-31, 2018. Las Vegas, Nevada.

113. *Pal A, *Guesdon W, Amorese AJ, Torres MJ, Neuffer PD, Spangenburg EE, Armstrong M, Reisdorph N, and **Shaikh SR**. EPA-derived mediators are lowered in murine obesity and rescued with dietary intervention to improve glucose clearance by potentially enhancing muscle force production. Poster presentation at the International Society for the Study of Fatty Acids and Lipids (ISSFAL), May 27-31, 2018, Las Vegas, Nevada.

112. *Pennington ER, Zeczycki T, DeSantis A, Brown DA, and **Shaikh SR**. Mitochondrial cardiolipin domains form in the presence of cytochrome c in biomimetic and cardiac mitochondrial vesicles in an acyl chain dependent manner. Poster presentation at the International Society for the Study of Fatty Acids and Lipids (ISSFAL), May 27-31, 2018. Las Vegas, Nevada.

111. *Pennington ER and **Shaikh SR**. Docosahexaenoic acid lowers cardiac mitochondrial respiratory enzyme activity by replacing linoleic acid in the phospholipidome. Oral presentation at the International Society for the Study of Fatty Acids and Lipids (ISSFAL), May 27-31, 2018. Las Vegas, Nevada.

110. *Pennington ER, *Sullivan EM, Sparagna G, Washington J, Zeczycki T, Brown DA, **Shaikh SR**. Docosahexaenoic acid lowers cardiac mitochondrial respiratory enzyme activity by replacing linoleic acid in the cardiolipin lipidome. Poster presentation at the International Society for the Study of Fatty Acids and Lipids (ISSFAL), May 27-31, 2018. Las Vegas, Nevada.

109. *Guesdon W, Kosaraju R, Davis T, Dillingham S, Aziz S, Moyer F, Dick JR, Armstrong M, Reisdorph N, and **Shaikh SR**. Fish oils exert immunomodulatory effects on B cell cytokine production and antibody production in obese subjects. Poster presentation at the International Society for the Study of Fatty Acids and Lipids (ISSFAL), May 27-31, 2018. Las Vegas, Nevada.

108. Davis T, Dillingham S, Vannice G, and **Shaikh SR**. Palmitoleic acid levels are lowered in metabolically impaired humans and mice and dietary supplementation improves murine adipose inflammatory gene expression. Poster presentation at the International Society for the Study of Fatty Acids and Lipids (ISSFAL), May 27-31, 2018. Las Vegas, Nevada.

107. Perry JB, Sullivan EM, Allen ME, Bandara AB, Moukdar F, Stauffer BL, **Shaikh SR**, Brown DA. Supercomplex-dependent improvements in mitochondrial function with the mitochondria-targeting peptide elamipretide. Heart Failure 2018, May 26-29, 2018. Vienna Austria.

106. *Crouch MJ, *Pal A, Armstrong M, Reisdorph N, and **Shaikh SR**. Targeting pathways of inflammation resolution through precision nutrition to improve metabolic and immunological outcomes in obesity. Precision Nutrition Symposium, May 1-2, 2018. Kannapolis, NC.

105. **Shaikh SR**. Targeting inflammation resolution through precision nutrition to improve metabolic outcomes. Regional Diabetes Research Symposium. Oral 5 minute presentation on omega-3s and precision nutrition. North Carolina A&T State University, March 16, 2018.

104. Reece SW, Kilburg-Basnyat BJ, Hodge M, Psaltis C, Yaeger M, Juo B, Armstrong M, Reisdorph N, Spangenburg EE, Hanna JL, Tighe RM, **Shaikh SR**, Gowdy K. Sex differences in pulmonary eicosanoid metabolism in response to ozone exposure. Poster presentation at Society of Toxicology, March 11-15th, 2018; San Antonio, TX.

103. Basynat-Kilburg BJ, Reece S, Hodge M, Luo B, Yaegers M, Odom MR, Psaltis C, Armstrong ML, Hannan JL, Reisdorph N, Tighe RM, **Shaikh SR**, and Gowdy KM. Dietary DHA mitigates ozone induced pulmonary inflammation and reductions in specialized pro-resolving mediators. Society of Toxicology, March 11-15th, 2018; San Antonio, TX.

102. *Pennington ER, *Sullivan EM, Sparagna GC, Washington J, Anderson EJ, Zeczycki TN, Brown DA, and **Shaikh SR**. Docosahexaenoic acid remodels the cardiac mitochondrial

phospholipidome and impairs respiratory enzymatic activity by disrupting lipid domain formation and lipid-protein binding. Poster presentation at Biophysical Society Annual Meeting, February 17-21, 2018. San Francisco, CA.

101. *Pennington ER, Sullivan EM, Brown DA, **Shaikh SR**. Cytochrome c-induced phase separation in biomimetic mitochondrial membranes and cardiac vesicles is dependent on cardiolipin concentration and acyl chain composition. Poster presentation at Biophysical Society Annual Meeting, February 17-21, 2018. San Francisco, CA.

100. Reisdorph, N, *Crouch MJ, Armstrong M, and **Shaikh SR**. Diet-induced obesity suppresses B cell development and impairs antibody production. NCI Metabolomics Workshop, October 2017, San Diego CA.

99. Basynat-Kilburg BJ, Reece S, Hodge M, Luo B, Yaegers M, Odom MR, Psaltis C, Armstrong ML, Hannan JL, Reisdorph N, Tighe RM, **Shaikh SR**, and Gowdy KM. Dietary docosahexaenoic acid mitigates ozone induced pulmonary inflammation and reductions in specialized pro-resolving mediators. North Carolina Society of Toxicology, Oct 30th, 2017, RTP, NC.

98. *Crouch M, *Guesdon W, Armstrong M, Reisdorph N, and **Shaikh SR**. Diet-induced obesity impairs murine B cell development and antibody production accompanied by a defect in production of SPMs. Immunology 2017 (AAI). May 12-17. Washington DC.

97. *Guesdon W, *Crouch M, Kosaraju R, Armstrong M, Reisdorph N, and **Shaikh SR**. Docosahexaenoic acid improves the decrement in antibody production upon influenza infection in murine obesity through the production of pro-resolving lipid mediators. Immunology 2017 (AAI). May 12-17. Washington DC.

96. *Guesdon W, *Crouch M, Kosaraju R, and **Shaikh SR**. B cell cytokine secretion and antibody production are impaired in human obesity upon anti-BCR/TLR9 stimulation in a sex-dependent manner. Immunology 2017 (AAI). May 12-17. Washington DC.

95. *Guesdon W, *Crouch M, Kosaraju R, Armstrong M, Reisdorph N, and **Shaikh SR**. Docosahexaenoic acid improves the decrement in antibody production upon influenza infection of obese mice through the production of pro-resolving lipid mediators. Experimental Biology Annual Meeting, April 22-26, 2017. Chicago IL.

94. Kosaraju R, *Guesdon W, and **Shaikh SR**. B cell cytokine secretion and antibody production are impaired upon BCR/TLR9 stimulation in obese subjects. Experimental Biology Annual Meeting, April 22-26, 2017. Chicago IL.

93. *Crouch MJ, Kosaraju R, *Guesdon W, and **Shaikh SR**. Obesity suppresses B cell development and impairs antibody production upon antigen challenge. Experimental Biology Annual Meeting, April 22-26, 2017. Chicago IL.

92. *Sullivan EM, *Fix A, Sparagna GC, Zeczycki TN, Brown DA, and **Shaikh SR**. Cardiolipin remodeling through dietary intervention is associated with impaired formation of cardiac

mitochondrial supercomplexes and enzyme activities. Experimental Biology Annual Meeting, April 22-26, 2017. Chicago IL.

91. *Pennington ER, *Fix A, *Sullivan EM, Kennedy A, Brown DA, Zeczycki TN, and **Shaikh SR**. Cardiolipin content has a stronger influence than acyl chain composition on select membrane properties of biomimetic mitochondrial membranes. Experimental Biology Annual Meeting, April 22-26, 2017. Chicago IL.

90. Kilburg-Basnyat BJ, Reece SW, Hodge M, Armstrong ML, Hannan JL, **Shaikh SR**, Gowdy KM. Alterations in pulmonary and systemic specialized pro-resolving lipid mediator production after ozone exposure. Society of Toxicology Annual Meeting, March 12-16, 2017. Baltimore, MD. (oral presentation).

89. Kilburg-Basnyat , Reece SW, *Crouch MJ, Luo B, Hodge M, Armstrong ML, Hannan JL, **Shaikh SR**, Gowdy KM. Alterations in pulmonary and systemic specialized pro-resolving lipid mediator production post-ozone exposure. Center for Human Health and the Environment Symposium, NC State, February 16, 2017. Raleigh, NC.

88. Kinnun JJ, Leng X, Johnson D, *Pennington ER, Meador A, **Shaikh SR**, Wassall SR. Raft-like domains are driven together by PUFA. Biophysical Society Annual Meeting. February 11-15, 2017, New Orleans, LA (oral presentation).

87. Ferrara PJ, Hedan TD, *Sullivan EM, **Shaikh SR**, Houmard JA, and Funai K. Lysophospholipid metabolism as a potential mediator for the pathogenesis of skeletal muscle insulin resistance. Poster presentation at Keystone Symposia: Diabetes/Obesity and Adipose Tissue Biology. January 22-26, 2017, Keystone CO.

86. Kilburg-Basnyat BJ, Reece SW, Hodge M, Armstrong ML, Hannan JL, **Shaikh SR**, Gowdy KM. Alterations in pulmonary and systemic specialized pro-resolving lipid mediator production after ozone exposure. North Carolina Society of Toxicology Annual Meeting, October 25, 2016, Research Triangle Park, NC.

85. *Crouch M, *Guesdon W, Kosaraju K, Armstrong M, Reisdorph N, and **Shaikh SR**. B-cell activity is impaired in human and mouse obesity and improved with docosahexaenoic acid in a murine model of influenza infection. Poster presentation. FASEB Immunological Aspects of Obesity. July 31- August 5, 2016, Big Sky, MT.

84. Gabor KA, Madenspacher JH, Wassif CA, **Shaikh SR**, Bushel PR, Porter FD, and Fessler MB. Smith-Lemli-Opitz syndrome reveals requirement for sterol biosynthesis in the innate immune response. AAI meeting, May 3-17. Seattle Washington 2016.

83. *Guesdon W, *Teague H, *Crouch M, Kosaraju K, Armstrong M, Reisdorph M, and **Shaikh SR**. Docosahexaenoic acid improves the decrement in antibody production associated with murine obesity upon influenza infection through the production of CD138⁺ cells. Lipidomics Impact on Metabolic, Cancer, Cardiovascular, and Inflammatory Diseases. May 17-18, La Jolla, CA. 2016.

82. *Crouch M, Kosaraju K, *Guesdon W, Armstrong M, Reisdorph N, and **Shaikh SR**. Obesity is associated with impaired B cell activation and antibody production in humans upon TLR9 plus BCR stimulation. Lipid MAPS Annual Meeting. Lipidomics Impact on Metabolic, Cancer, Cardiovascular, and Inflammatory Diseases. May 17-18, La Jolla, CA. 2016.
81. **Shaikh SR**. DHA improves the decrement in antibody production associated with murine obesity upon influenza infection. The 12th FACS conference: From genes to human physiology. October 25-27th, 2015, Toronto, Canada. *oral presentation and co-organizer with R. Bazinet.
80. **Shaikh SR**, Beck MA, Bridges L, Gowdy K, and *Teague H. Docosahexaenoic acid ethyl ester enhances antibody levels upon influenza infection in murine obesity accompanied by a reduction in circulating resolvin D1. The 48th Annual Meeting of the The Society for Leukocyte Biology "Immunity in Health and Disease". September 27-29, 2015. Raleigh, NC. Poster presentation.
79. *Sullivan EM, *Fix A, Brown DA, and **Shaikh SR**. Lipid microdomains containing supercomplexes are enriched with multiple phospholipids including cardiolipin: A detergent extraction study. August 10-13, 2015, Greenville, NC. Poster.
78. **Shaikh SR**, *Teague H, Bridges L, and Harris M. N-3 polyunsaturated fatty acids disrupt lipid rafts and enhance the B cell activity in murine obesity upon influenza infection. FASEB Nutritional Immunology. July 26-31, 2015, Lisbon, Portugal. Oral presentation.
77. Tsang AM, Alleman RJ, **Shaikh SR**, Brown DA. Protection of post-ischemic mitochondrial bioenergetics by targeting cardiolipin-dependent membrane fluidity. 2015 Mitochondrial Physiology School Meeting March 24-28, 2015 Cape Town, South Africa. Poster.
76. Kinnun, JJ, Williams JA, Stillwell W, Bittman R, **Shaikh SR**, and Wassall SR. DHA disorders raft-like domains as revealed by solid state 2H NMR. Biophysical Society Annual Meeting, Baltimore MD 2015, February 7-11th, 2015 . Poster.
75. **Shaikh SR**, Moukdar F, Alleman RJ, Lark DS, Neuffer PD, and Brown DA. The cardiolipin-targeting peptide Bendavia improves post-ischemic mitochondrial energetics by sustaining native respiratory protein complexes. American Heart Association Meeting, November 15-19, 2014, Chicago IL. Oral.
74. Brown DA, Moukdar, F, Alleman RJ, Lark DS, Neuffer PD, and **Shaikh SR**. The cardiolipin-targeting peptide Bendavia preserves post-ischemic mitochondrial energetics by sustaining respiratory supercomplexes. Mitochondrial Physiology Society Meeting, Obergurgl, Austria, September 8-12, 2014. Oral
73. Brown DA, Moukdar ME, Sullivan M, Sloan RC, Alleman RJ, Patel DH, Lark DS, Neuffer P, and **Shaikh SR**. The mitochondria-targeting peptide Bendavia restores mitochondrial function in diabetic hearts by normalizing cardiolipin content. European Society of Cardiology Meeting, August 30- September 3, 2014, Barcelona, Spain. Oral.

72. Brown DA, Moukdar F, Alleman RJ, Lark DS, Neuffer PD, and **Shaikh SR**. The cardiolipin-targeting peptide Bendavia improves post-ischemic mitochondrial energetics by sustaining native respiratory supercomplexes. AHA Basic Council on Cardiovascular Sciences Meeting, July 14-17, 2014 Las Vegas, NV.
71. **Shaikh SR**, Moukdar F, Harris M, Patel HD, and Brown DA. The cardiolipin-targeting peptide Bendavia restores mitochondrial function by augmenting mitochondrial membrane fluidity. United Mitochondrial Disease Foundation 2014. June 4-7, Pittsburg, PA.
70. *Teague H, Harris M, and **Shaikh SR**. Eicosapentaenoic and docosahexaenoic acid differentially enhance humoral immunity in murine diet-induced obesity. International Society for the Study of Fatty Acids and Lipids Meeting, Stockholm June 28-July 2nd, Stockholm Sweden, 2014. Oral presentation.
69. Brown DA, Patel HD, Moukdar F, **Shaikh SR**, Harris M, Fisher-Wellman KH, Neuffer PD, Hale SL, Dai A, and Kloner RA. Cardioprotective efficacy of the cardiolipin-targeting peptide Bendavia. Wellcome Trust Conference on Mitochondrial Disease: Translating biology into new treatments; Cambridge UK 2013.
68. Brown DA, **Shaikh SR**, Harris M, He Q, and Sabbah HN. The mitochondria-localizing peptide Bendavia improves myocardial bioenergetics in heart failure and diabetes by targeting cardiolipin. Cachexia Conference, Kobe Japan 2013.
67. Brown DA, Harris M, Moukdar F, Patel HD, and **Shaikh SR**. The mitochondria-localizing peptide Bendavia reduced cardiac injury by targeting cardiolipin. AHA Basic Council on Cardiovascular Sciences Meeting, July 22-25, 2013 Las Vegas, NV. (poster)
66. *Teague H, Gurzell E, *Rockett BD, Fenton J, and **Shaikh SR**. EPA and DHA do not exert equivalent effects on B lymphocyte plasma membrane organization: implications for developing biomarkers of fish oil for targeting B cell immunity. Poster presentation at Experimental Biology, Boston MA, April 20-24, 2013
65. *Rockett BD, *Melton M, *Teague H, Harris M, and **Shaikh SR**. Fish oil disrupts B cell MHC class II lateral organization in the murine immunological synapse. Poster presentation at Experimental Biology, Boston MA, April 20-24, 2013.
64. *Teague H, Harris M, *Rockett BD, and **Shaikh SR**. Fish oil differentially regulates B cell and dendritic cell activation in response to a T-independent antigen. Poster presentation at Experimental Biology, Boston MA, April 20-24, 2013.
63. Brown DA, Hale SL, Del Rio C, Hamlin R, Frasier CR, Stewart LM, Patel HD, Collins MC, Muller-Borer BJ, **Shaikh SR**, Harris M, Fisher-Wellman KH, Neuffer PD, and Kloner RA. Bendavia, a mitochondria-targeting peptide, reduces reperfusion injury and reactive oxygen species levels through a mechanism independent of direct oxygen radical scavenging: A multicenter study. American Heart Association (November 2012 in LA).

62. **Shaikh SR.** N-3 fatty acids and membrane microdomains. From model membranes to lymphocyte function. Early Career Award Talk at the International Society for the Study of Fatty Acids and Lipids Meeting, Vancouver Canada, May 26-30, 2012. (All expenses paid).
61. **Shaikh SR.** Fish oil disrupts B cell lipid microdomain organization accompanied by differential effects on function. Invited seminar at the International Society for International Society for the Study of Fatty Acids and Lipids Meeting, Vancouver Canada, May 26-30, 2012.
60. *Teague H, *Rockett H, Harris M, Ross R, Mitchell D, and **Shaikh SR.** DHA-labeled fluorophores is sensitive to membrane phase behavior and ordered domains. Poster presentation at the International Society for Fatty Acids and Lipids Meeting, Vancouver Canada, May 26-30, 2012.
59. *Rockett BD, *Teague H, *Melton M, Harris M and **Shaikh SR.** N-3 PUFAs increase cholera toxin induced lipid raft size in vitro and ex vivo. Poster presentation at the International Society for Fatty Acids and Lipids Meeting, Vancouver Canada, May 26-30, 2012.
58. Wang L, Whelan JT, Chen J., Miller J, Morrow RL, **Shaikh SR,** Bridges LC. Retinoic acid promotes cell adhesion through distinct mechanisms across immune lineages. Oral presentation at Experimental Biology Annual Meeting, San Diego, CA, April 21-25, 2012.
57. Whelan JT, Chen J, Morrow RL, Miller J, Merrell KS, Lingo JD, **Shaikh SR,** Bridges LC. 9-cis-Retinoic acid induces integrin-independent immune cell adhesion. Poster presentation at Experimental Biology Annual Meeting, San Diego, CA, April 21-25, 2012.
56. *Rockett BD, *Teague H, Harris M, and **Shaikh SR.** n-3 Polyunsaturated fatty acids reorganize B cell membrane rafts and molecular order accompanied by differential effects on B cell function. Experimental Biology Annual Meeting, San Diego, CA, April 21-25, 2012 (oral presentation by D. Rockett).
55. **Shaikh SR,** *Rockett D, *Teague H, Williams J, and Wassall SR. Connecting model membrane experiments to in vivo studies: DHA acyl chains incorporate into raft-like membranes more than epa in model membranes, in vitro, and in vivo. Annual Biophysical Society Meeting Feb 25-29, 2012 San Diego, CA.
54. Stottrup B, Ly Nathan, Anderson J, and **Shaikh SR.** A systematic investigation of the phase behavior of Langmuir monolayers containing polyunsaturated fatty acids. Poster presentation by the Stottrup lab the Annual Biophysical Society Meeting, Feb 25-29, 2012. San Diego, CA.
53. **Shaikh SR,** *Rockett BD, *Teague H, Williams J, and Wassall SR. Connecting model membrane experiments to in vivo studies: DHA acyl chains incorporate into raft-like membranes more than EPA in model membranes, in vitro, and in vivo. Poster presentation by the Wassall lab on behalf of Shaikh lab the Annual Biophysical Society Meeting, San Diego, CA, Feb 25-29, 2012.

52. **Shaikh SR.** Fish oil manipulates B cell function accompanied by membrane domain remodeling. Invited speaker at 10th Fatty Acids and Cell Signaling (FACS) Meeting “Docosahexaenoic Acid in Translational Medicine” (by invitation only, all expenses paid). New Orleans, LA, November 6-9, 2011.

51. **Shaikh SR.** N-3 polyunsaturated fatty acids selectively disrupt the spatial distribution of lipid rafts: An in vitro and ex vivo imaging study of EL4 and B cells. FASEB Nutritional Immunology: Role in Health and Disease. Carefree Arizona, July 10-15, 2011.

50. Anderson EJ, Thayne K, Harris M, Carraway K, and **Shaikh SR.** Adaptation of mitochondrial function and glutathione status in hearts of mice fed n-3 PUFA's is dependent on time. Poster presentation at NHLBI Mitochondrial Symposium, May 16-17, 2011. Washington DC.

49. *Rockett BD, *Franklin A, Harris M, *Teague H, Williams J, Wassall SR, Nguyen AH, Stottrup BL, and **Shaikh SR.** EPA and DHA modify non-raft organization on the micrometer and nanometer scale by increasing cell size and avoiding molecular interactions with surrounding lipid rafts. Poster presentation at Experimental Biology Annual Meeting, Washington DC, April 9-13, 2011. (Rockett BD received Poster Award from Nutritional Immunology RIS).

48. *Rockett BD, Harris M, *Teague H, and **Shaikh SR.** Mixed fish/flaxseed oil diets promote body weight gain by lowering whole body energy expenditure in a dose-dependent manner. Poster presentation at Experimental Biology Annual Meeting, Washington DC, April 9-13, 2011.

47. *Rockett BD, *Franklin A, Harris M, *Teague H, Williams J, Wassall SR, Nguyen AH, Stottrup BL, **Shaikh SR.** N-3 polyunsaturated fatty acids disrupt micron and nanometer scale non-raft organization by increasing cell size and minimizing molecular interactions with surrounding rafts. Poster presentation at Annual Biophysical Society Meeting, Baltimore, MD, March 5-9, 2011.

46. Williams JA, Batten SE, McCabe A, Stillwell W, **Shaikh SR,** and Wassall SR. EPA and DHA interact differentially with cholesterol: Solid state 2H NMR of PUFA-containing phospholipids in mixtures with lipid raft molecules. Poster presentation at Annual Biophysical Society Meeting , Baltimore, MD, March 5-9, 2011.

45. *Rockett BD, *Morrison K, Carraway K, and **Shaikh SR.** An n-3 PUFA diet lowers liver triglycerides but increases weight gain and triggers some pro-inflammatory responses. Poster presentation at the 9th Congress of the International Society for the Study of Fatty Acids and Lipids, Maastricht, Netherlands, May 29-June 2, 2010.

44. *Rockett BD, Carraway K, *Franklin A, and **Shaikh SR.** EPA and DHA differentially modify the organization of non-raft and raft domains of immune cells. Poster presentation at the 9th Congress of the International Society for the Study of Fatty Acids and Lipids, Maastricht, Netherlands May 29-June 2, 2010.

43. **Shaikh SR**, Carraway K, and *Rockett BD. High fat diets enriched in n-3 polyunsaturated fatty acids do not suppress B cell activation but increase spleen size and accumulation of adipose tissue and lower liver triglycerides. Poster presentation at Experimental Biology Annual Meeting, April 24-28, 2010, Anaheim, California.
42. *Rockett BD, Carraway K, and **Shaikh SR**. Docosahexaenoic acid disrupts lipid raft clustering and enhances proliferation and survival of EL4 lymphomas. Poster presentation at Experimental Biology Annual Meeting, April 24-28, 2010, Anaheim, California.
41. William JA, **Shaikh SR**, LoCascio DS, Gogulu ST, Heerklotz H, Stillwell W, and Wassall SR. α -Tocopherol and polyunsaturated fatty acid membrane domains. San Francisco, California (National). Biophysical Society Annual Meeting, Poster presentation. Feb 20-24, 2010.
40. *Rockett BD, Carraway K, and **Shaikh S.R**. N-3 PUFA incorporates directly into lipid rafts to disrupt domain clustering and MHC lateral organization of antigen presenting cells. Biophysical Society Annual Meeting, San Francisco, CA, Feb 20-24 2010. Oral presentation.
39. **Shaikh SR**. Biophysical properties of docosahexaenoic acid, non-raft domains, and lymphocyte function. Invited speaker, The Ninth Fatty Acids and Cell Signaling Meeting (FACS) July 13-16, 2009, Keble College, Oxford, UK.
38. **Shaikh SR** and Edidin M. High fat diets increase nano-scale clustering of the T cell receptor. Experimental Biology, New Orleans, LA 2009.
37. **Shaikh SR**, Li M, Schneck J, and Edidin M. Lipid overload with saturated and monounsaturated fatty acids has differential effects on MHC class I antigen presentation. Experimental Biology, April 5-9, 2008. San Diego CA. Oral presentation.
36. **Shaikh SR**, Carroll E, Li M, Schneck J, and Edidin M. Differential effects of saturated and monounsaturated fatty acids on antigen presentation. 42nd Annual Southeastern Regional Lipids Conference, Cashiers, NC, November 7-9, 2007. Oral presentation.
35. **Shaikh SR**. Oral presentation - Lab meeting at the NIH Laboratory of Membrane Biochemistry and Biophysics. October 2007.
34. **Shaikh SR** and Edidin M. Dietary Fatty Acids Downregulate Antigen Presentation: Implications for Obesity and Inflammation. Poster presentation at FASEB Meeting: Nutritional Immunology. July 28-August 2, 2007. Tucson, Arizona.
33. **Shaikh SR**, and Edidin M. Elevated free fatty acids inhibit MHC class I antigen presentation to T lymphocytes. Poster presentation at Gordon Conference: Molecular and Cellular Biology of Lipids. August 2007.

32. **Shaikh SR**, and Edidin M. Antigen presenting cells modified with polyunsaturated fatty acids evade T cell mediated lysis by extracellular release of lipids. Poster presentation at 2007 AAI Meeting, Miami Beach, FL. May 2007
31. **Shaikh SR**, and Edidin M. MHC class I antigen presentation is downregulated by polyunsaturated fatty acids. 2007 Experimental Biology Meeting, Washington D.C. FASEB. J. 21(5) A63. April 28-May 2, 2007. Oral presentation
30. **Shaikh SR**, and Edidin M. Polyunsaturated fatty acids downregulate antigen presentation to T cells: Implications for adjuvant immunotherapy. Biophysical Society Meeting, Baltimore, MD Biophys. J. Supl.S. 197A. March, 2007. Oral presentation.
29. **Shaikh SR**, and Edidin M. Polyunsaturated Fatty Acids Downregulate MHC Class I Antigen Presentation: A Potential Drawback for Immunotherapy. Poster presentation at 41st Annual Southeastern Regional Lipids Conference, Cashiers, NC, November 1-3, 2006.
28. **Shaikh SR** and Edidin M. Downregulation of immune responses with polyunsaturated fatty acids: Consequences for Immune Therapy. Poster presentation at FEBS Special Meeting: New concepts in lipidology: from lipidomics to disease. Noordwijkerhout, Netherlands, October 21-25, 2006.
27. **Shaikh SR**, and Edidin M. Polyunsaturated fatty acids lower B cell susceptibility to CTL lysis and HLA class I surface expression levels. Poster presentation at 2006 AAI Meeting, Boston, MA. May 12-16, 2006 J. Immunol. 176 S66.
26. **Shaikh SR**, and Edidin M. Omega-3 and omega-6 polyunsaturated fatty acid-containing phosphatidylcholines have equal effects on membrane microviscosity, expression of a surface protein, and antigen presentation to T lymphocyte. Poster presentation at Biophysical Society Meeting, Salt Lake City, UT. February, 2006.
25. LoCascio DS, **Shaikh SR**, Wassall SR, and Stilwell W. PEs containing docosahexaenoic acid and oleic acid differentially phase separate from lipid raft molecules: A DSC study. Poster presentation at Biophysical Society Meeting. Long Beach, CA. Feb 12-16, 2005 88(1): 71A.
24. Soni SP, LoCascio DS, **Shaikh SR**, Liu YD, Bittman R, and Wassall SR. A role for docosahexaenoic acid (DHA) in lipid raft separation: A solid state H-2 NMR study of [H-2(31)]palmitoyl sphingomyelin in phosphatidylethanolamine/cholesterol mixtures. Poster presentation at Biophysical Society Meeting. Long Beach, CA. Feb 12-16, 2005 88(1):78A-79A.
23. **Shaikh SR**, Cherezov V, Soni SP, Caffrey M, Stilwell W, and Wassall SR. Cholesterol solubility and orientation in phosphatidylethanolamine membranes: Degree of acyl chain unsaturation may modulate lipid raft phase separations. Poster presentation at Biophysical Society Meeting. Long Beach, CA. Feb 12-16, 2005.

22. **Shaikh, S.R.**, Dumauual, A.C., Wassall, S.R., Cherezov, V., Caffrey, M., Siddiqui, R., and Stillwell, W. Docosahexaenoic and oleic acid differentially phase separate from lipid rafts in model membranes and cells. American Chemical Society 36th Central Regional Meeting, Indianapolis, IN, June 2004.
21. Jackson K, Siddiqui R, **Shaikh SR**, and Stillwell W. Synthesis and characterization of novel fatty acid-conjugated anti-cancer drugs. Poster presentation at American Chemical Society 36th Central Regional Meeting, Indianapolis, IN, June 2004.
20. **Shaikh SR**, Wu M, Siddiqui R, Wassall SR, and Stillwell,W. Docosahexaenoic acid (DHA)-lipid raft phase separation II: Implications for cellular signaling in cardiomyocytes. Biophys. J. (86) 203a. Poster presentation at Biophysical Society Annual Meeting, Baltimore, MD, February 2004.
19. **Shaikh SR**, Cherezov V, Caffrey M, LoCascio D, Wassall SR, and Stillwell W. Docosahexaenoic acid (DHA)-lipid raft phase separation I: Biophysical characterization of a DHA-Containing Phosphatidylethanolamine with Sphingomyelin and Cholesterol. Biophys. J. (86) 203a. Poster presentation at Biophysical Society Annual Meeting, Baltimore, MD, February 2004.
18. Dumauual AC, Siddiqui R, **Shaikh SR**, and Stillwell W. Identification of Docosahexaenoic (DHA)-enriched lipid microdomains by cold detergent extractions, epifluorescence microscopy and AFM. Biophys. J. (86) 201a. Poster presentation at Biophysical Society Annual Meeting, Baltimore, MD, February 2004.
17. Jackson K, Siddiqui R, **Shaikh SR**, Zerouga M, and Stillwell W. The Mediterranean diet: A molecular study. 38th Annual Southeastern Regional Lipids Conference, Cashiers, NC, November 2003.
16. **Shaikh SR**, Siddiqui R, Wu M, Castillo A, Wassall SR, Dumauual A, and Stillwell W. A role for docosahexaenoic acid in phase separation from lipid rafts: Implications for Cellular Signaling. 38th Annual Southeastern Regional Lipids Conference, Cashier, NC, November 2003. Oral presentation.
15. **Shaikh SR**, Stillwell W, and Wassall, S.R. Role for docosahexaenoic acid in lipid raft formation? Biophys. J. (84) 370a. Poster presentation at Biophysical Society Annual Meeting, San Antonio, TX, March 2003.
14. **Shaikh SR**, Siddiqui RA, Stillwell W, and Wassall SR. Fish Oils, membranes, and eternal Life. 37th Annual Southeastern Regional Lipids Conference, Cashier, NC, November 2002. Oral presentation.
13. **Shaikh SR**, and Stillwell W. Fish Oils and membranes, Graduate Student Symposium, October 2002. Oral presentation.

12. **Shaikh SR**, Brzustowicz MR, Stillwell W. and Wassall SR. Acyl chain monounsaturations does not confer raft stability. Poster presentation at 2002 Fifth Congress of the International Society for the Study of Fatty Acids and Lipids, Montreal, Canada, May 2002.
11. Naumann C, Deverall M, **Shaikh, SR**, Ke PC. Hindered diffusion of proteins and lipids in a model membranes studied at the single molecule level. Poster presentation at American Physical Society Meeting, Indianapolis, IN, March 2002.
10. **Shaikh SR**, Stillwell W, and Naumann C. Single molecule lateral mobility and membrane organization in DMPC/cholesterol mixtures. American Physical Society Meeting, Indianapolis, IN, March 2002. Oral presentation.
9. **Shaikh SR**, Stanley M, Stillwell W. and Naumann C. Lateral diffusion of DMPC/cholesterol mixed monolayers as observed by single molecule fluorescence imaging. *Biophys. J.* (82) 153a. Poster presentation at 2002 Biophysical Society Annual Meeting, San Francisco, CA, February 2002.
8. **Shaikh SR**, Brzustowicz MR, Stillwell W, and Wassall SR. Solid state ^2H NMR study of 'lipid raft' model membranes. *Biophys. J.* (82) 153a. Poster presentation at 2002 Biophysical Society Annual Meeting, San Francisco, CA, February 2002.
7. **Shaikh SR**, Brzustowicz MR, Wassall SR, and Stillwell W. Docosahexaenoic acid involvement in membrane domains. 36th Annual Southeastern Regional Lipids Conference, Cashiers, NC, November 2001. Oral presentation.
6. **Shaikh SR**, Brzustowicz MR, Dumauval AC, Stillwell W, and Wassall, S.R. Docosahexaenoic Acid Involvement in Membrane Structure. Graduate Student Symposium, October 2001. Oral presentation.
5. **Shaikh SR**, Brzustowicz MR, Wassall SR, Dumauval AC, Janski LJ and Stillwell, W. Docosahexaenoic acid involvement in membrane structure. Poster presentation at Cellular and molecular aspects of omega-3 fatty acids and cancer, Breckenridge, CO, June 2001.
4. **Shaikh SR**, Brzustowicz MR, Wassall SR. and Stillwell W. (2001) Solid state ^{31}P NMR detection of cholesterol-induced lipid microdomain formation in mixed sphingolipid/phospholipid bilayers. *Biophys. J.* (80) 517a-518a. Poster presentation at 2001 Biophysical Society Annual Meeting, Boston, MA, February 2001.
3. **Shaikh SR**, Dumauval AC, Janski LJ and Stillwell W. Lipid phase separation in a model plasma membrane. *Biophys. J.* (80) 521a. Poster presentation at 2001 Biophysical Society Annual Meeting, Boston, MA, February 2001.
2. Engleman EA, McBride WJ, Wilber AA, **Shaikh SR**, Eha RD, Lumeng L, Li T-K, and Murphy JM. Ethanol drinking experience potentiates the increase in extracellular dopamine (DA) in alcohol-preferring (P) rats. *Alcoholism: Clinical and Experimental Research*, 23(5), 48A. Annual Meeting of the Research Society on Alcoholism, Santa Barbara, CA, July, 1999.

1. Engleman EA, McBride WJ, Wilber AA, **Shaikh SR**, Eha RD, Lumeng L, Li T-K, and Murphy JM. Reverse microdialysis of dopamine (DA) uptake inhibitors into the nucleus accumbens of alcohol preferring rats: effects on extracellular DA levels and ethanol intake. Society for Neuroscience Abstract 24(2) 478. Poster presentation at Society for Neuroscience Annual Meeting, Los Angeles, CA, November, 1998.

Seminars (University, Industry, Government)

(invited talks associated with specific conferences are listed above under Abstracts)

34. Dysregulation of polyunsaturated fatty acid metabolism contributes toward complications of obesity. NIEHS, April 22, 2024.

33. Eicosapentaenoic acid, in the absence of docosahexaenoic acid, improves glucose homeostasis in obesity through an oxylipin mediated mechanism. NIH Office of Dietary Supplements (ODS). November 7, 2023. Online.

32. Resolving chronic inflammation in obesity by enhancing production of specialized pro-resolving mediators: Moving from mouse models to human trials. Seminar series in Human Nutrition, Bloomberg School of Public Health, The Johns Hopkins University. November 8, 2022. Online.

31. Eicosapentaenoic acid ethyl esters prevent obesity-driven impairments to glucose homeostasis through the biosynthesis of downstream hydroxylated metabolites. Invited keynote for Bioactive Lipid Mediators and Nutritional Availability Session at American Oil Chemists Society (AOCS) Annual Meeting, Atlanta May 1-4, 2022 (in person).

30. Eicosapentaenoic acid and its metabolites improve glucose homeostasis in a host-genome dependent manner. Department of Psychiatry, Columbia University, February 14, 2022. Online.

29. The eicosapentaenoic acid-resolvin E1 axis is a lead for preventing obesity-driven impairments to glucose homeostasis. Division of Pulmonary, Critical Care, and Sleep Medicine. College of Medicine. Ohio State University. November 5, 2021. Originally scheduled in Columbus, OH but shifted to virtual due to COVID.

28. The EPA-resolvin E1 axis prevents obesity-driven impairments to glucose homeostasis in a host genome dependent manner. Skaggs School of Pharmacy and Pharmaceutical Sciences, University of Colorado Anschutz Medical Campus. October 21, 2021. Originally scheduled in Aurora, CO but shifted to virtual due to COVID.

27. Activation of the EPA-ChemR23 axis improves glucose homeostasis in a host genome and fat mass-dependent manner. Department of Nutritional Sciences. PUFA-interest group. University of Toronto. October 15, 2021.

26. Obesity drives a signature of SPM precursor deficiency: Implications for viral infection and glucose homeostasis. Invited seminar speaker to the monthly "International Seminar Series"

of the International Society for the Study of Fatty Acids and Lipids". April 21, 2021. Conducted virtually.

25. Omega-3 fatty acid derived metabolites control inflammatory, infectious, and metabolic outcomes in obesity. Invited seminar for the Department of Molecular and Structural Biochemistry, NC State, Raleigh NC. November 12, 2020. Virtual seminar due to the COVID pandemic.

24. Unresolved inflammation, chronic diseases, and dietary intervention. Durham-Chapel Hill Dietetic Association. March 18, 2020. Chapel Hill, NC.

23. Inflammation resolution is orchestrated by ω -3 fatty acid-derived metabolites. Department of Endocrinology. February 27, 2020. Chapel Hill, NC.

22. The mitochondrial phospholipidome is a target for therapeutic intervention. Mitochondrial Interest Group of Virginia Tech and Mitochondrial Solutions LLC. Blacksburg VA. December 12, 2019.

21. Specialized pro-resolving lipid mediators improve metabolic and inflammatory outcomes in obesity. Environmental Protection Agency, NC. September 10, 2019.

20. The current state of omega-3 fatty acids and their metabolites for clinical outcomes. Department of Family Medicine, University of North Carolina at Chapel Hill. April 10, 2019. Chapel Hill, NC.

19. The pro-resolution metabolome in obesity: A tale of omega-3 derived metabolites, infection, and inflammation. March 29, 2019 Catalyst Symposium at the Nutrition Research Institute. Kannapolis, NC.

18. A tale of two lipid families in metabolic disorders: Pro-resolving metabolites and the mitochondrial phospholipidome are therapeutic targets. Center on Diabetes, Obesity, and Metabolism. Wake Forest School of Medicine. May 20, 2019. Winston Salem, NC.

17. A tale of two lipid families in metabolic disorders: Pro-resolving metabolites and the mitochondrial phospholipidome are targets for therapeutic intervention. Fraternal Order of Eagles Diabetes Research Center. University of Iowa. March 3-5, 2019. Iowa City, IA.

16. N-3 polyunsaturated fatty acids improve the decrement in antibody production associated with murine obesity. Department of Nutrition. December 7, 2015. Chapel Hill, NC.

15. N-3 polyunsaturated fatty acids disrupt lipid raft formation and enhance B cell activity in murine obesity upon influenza infection. Nutritional Sciences. University of Michigan. September 9, 2015. Ann Arbor, MI.

14. Developing therapies for the treatment of complications associated with obesity. Invited speaker on behalf of the Brody Brothers Foundation to the select members of the General

State Assembly. Brody School of Medicine. East Carolina University. June 12, 2015. Greenville, NC.

13. N-3 polyunsaturated fatty acids enhance immunity in lean and obese mice. Department of Pediatrics. West Virginia University School of Medicine. July 25, 2014, Morgantown, WV.

12. N-3 polyunsaturated fatty acids, lipid microdomains and B cell function in lean and obese mice. Laboratory of Membrane Biochemistry and Biophysics. NIAAA, NIH, September 30, 2014. Bethesda, MD.

11. Insane in the membrane – How studies on membrane biophysical organization led to experiments on obesity, influenza, and mitochondria. Department of Chemistry, East Carolina University, February 27, 2013. Greenville, NC.

10. Developing n-3 fatty acids for simultaneously suppressing inflammation and boosting humoral immunity. Microbiology and Immunology. September 11, 2013 Wake Forest School of Medicine. Winston-Salem, NC.

9. Developing n-3 fatty acids for simultaneously suppressing inflammation and boosting humoral immunity. Department of Nutrition, UNC Chapel Hill, August 13, 2013. Chapel Hill, NC.

8. Developing omega-3 fatty acids for suppressing inflammation and boosting humoral immunity. Department of Comparative Medicine. East Carolina University, December 10, 2013. Greenville, NC.

7. Fish oil manipulates B cell function accompanied by an increase in lipid raft size and order. Department of Food Science and Human Nutrition. Michigan State University. December 6, 2011. East Lansing, MI.

6. N-3 polyunsaturated fatty acids disrupt lipid raft clustering in vitro and in vivo. Membrane Interest Group, Department of Physics. Indiana University-Purdue University Indianapolis. July 24, 2011. Indianapolis, IN.

5. Development of fish oil as a nutraceutical for suppressing inflammation. College of Health and Human Performance. East Carolina University. March 18, 2011. Greenville, NC

4. Development of n-3 polyunsaturated fatty acids as adjuvant treatment for inflammation. March 8, 2011. Grand Rounds, Department of Surgery, Pitt County Community Hospital. Greenville, NC.

3. Effects of a fish/flaxseed oil diet on immunity and metabolism. Nestle Purina. Division of Animal Studies. June 22, 2010. St. Louis, MO.

2. Development of fish oil as a nutraceutical for suppressing inflammation. May 5, 2010. Department of Anatomy and Cell Biology, East Carolina University. Greenville, NC.

1. Testing the biophysical model of omega-3 fatty acid modification of MHC class I membrane organization: How fats modify immunity. Department of Microbiology and Immunology. April 16, 2009. Greenville, NC.

TEACHING EXPERIENCE:

UNC Chapel Hill (courses)

1. Course co-director for Nutrition 880 Elements of Being a Scientist (2021-) Co-directed the course with Drs. Gordon-Larsen and Mayer-Davis in 2021. Co-directing with Dr. Mayer-Davis in 2022. Review assignments, direct readings, administer lectures, facilitate discussions, grade assignments, and participate in mock study sections. Total number of students for 2021 is 16 and 9 for 2022.

2. Guest lectures for Nutrition 600 Human Metabolism: Macronutrients (2021). Administer two lectures related to inflammation resolution and provide questions for the exam. Total number of students for 2021 was 50.

3. Guest lecture for Nutrition 705 Human Nutrition (2021-). Administer a lecture and in-class activities related to omega-3 fatty acids and their metabolites. Total number of students (MPH) for 2021 was 20.

4. Course director for Nutrition 600 Human Metabolism: Macronutrients (2018-2020). Direct the course (write/grade exams, develop in class exercises, group assignments, meet with students) and administer lectures on carbohydrate and lipid metabolism. Number of students for this class has ranged from 50-74. There were also additional students that audited the course.

5. Guest lecture for Nutrition 845 Nutrition Metabolism (2018, 2020): Nutritional Lecture given on obesity and dietary fatty acids to graduate students. Graded an assignment on lipidomic analyses.

6. Director for Nutrition 695 (2018-): Nutrition Research (MPH). One MPH student is currently being mentored (Zachary Kudro).

7. Director for Nutrition 910/993/994 (2017-): Nutrition Research (PhD). Directed this for two PhD students in the laboratory (Anandita Pal and Abrar Al-Shaer) from 2017-2021. Rafia Virk and Brooke Bathon are being mentored since 2021.

8. Nutrition 295 (2017-): Undergraduate Research Experience in Nutrition. On average, 1-2 students are mentored per year.

East Carolina University (courses)

1. Graduate Biochemistry I (2012-2017): Lectures given on lipid metabolism and thermodynamics.
2. Graduate Biochemistry II (2009-2017): Lectures and discussion of literature pertaining to membrane structure, immuno-metabolism, and nutrition.
3. Research Proposal Strategies & Preparation (2013-2017): Lectures given on developing the approach section for an NIH grant.
4. Medical Biochemistry (2008-2017): Lectures given to 1st year medical students on proteins, overview of metabolism, prostaglandins, and nutrition. Also facilitated small group clinical conferences.
5. Course Director for Topics in Nutrition Elective for 4th year medical students (2009-2010).

Johns Hopkins University (courses)

1. Instructor for 'All Fats Are Not Created Equal: An Introduction to the Structure and Function of Biological Membranes' (2006). (Funded by a Howard Hughes Teaching Fellowship).
2. Guest lecturer on 'Evolutionary Perspectives, Lipid diversity, and Membrane Structure' (2006) for Graduate Advanced Cell Biology.

Indiana University (courses)

Guest lecturer on 'Lipid Rafts and Implications for Cellular Signaling' (2003, 2004) for Graduate Course on Biomembranes.

Mentoring of Graduates, undergraduates, and post-doctoral fellows:

Ph.D. Students in the Shaikh lab at UNC Chapel Hill

- Rosemary Gray (2023-present). Department of Nutrition.
- Rafia Virk (2021-present). Department of Nutrition.
- Brooke Bathon (2021-present). Department of Nutrition.
- Abrar Al-Shaer (2018-2021). Department of Nutrition.
- Anandita Pal (2017-2021). Department of Nutrition.
- Miranda Crouch (2017-2019). (ECU student who finished her lab work as a visiting scholar at UNC)
- Ross Pennington (2015-2018). (ECU student who finished his lab work at UNC)

M.S. Students in the Shaikh lab at UNC Chapel Hill

- Nari Beatty (2022-). Department of Nutrition. Chair: Raz Shaikh
- Nicole Buddenbaum (2020-2021). Department of Nutrition. Chair: Raz Shaikh

Medical Students in the Shaikh lab at UNC Chapel Hill

- Sahil Dadoo (2019-2022). Department of Nutrition.

MPH Students in the Shaikh lab at UNC Chapel Hill

- Zachary Kadro (Nutrition 695, fall 2020, spring 2021, summer 2021, fall 2021).

Undergraduate Honor's Thesis Students in the Shaikh lab at UNC Chapel Hill

- Reva Kodre (2022-2023). Department of Nutrition. Co-Chair with Dr. Justin Miller (Department of Microbiology and Immunology).
- Zijian Li (2021-2022). Department of Nutrition. Chair: Raz Shaikh is chair of undergraduate honors thesis.
- Madeline Behee (2019-2021). Department of Biology. Chair: Raz Shaikh is chair of undergraduate honors thesis.
- Jennifer Regan (2020-2021). Department of Nutrition. Raz Shaikh is Chair of SURF recipient.

M.S. Student Committees at UNC Chapel Hill

- Lydia Eisenbeis (2020-2021). Department of Nutrition. Chair: Steve Hursting
- Jakob Hamilton (2020-2021). Department of Nutrition. Chair: Erik Klett
- Alyssa Ho (2020-2021). Department of Nutrition. Chair: Steve Hursting

Undergraduate Honor's Thesis Committees at UNC Chapel Hill

- Nivetha Senthil Ramasamy (2023). Department of Nutrition. Chair: Steve Hursting (Shaikh:reader)
- Alex Pfeil (2020-2021). Department of Nutrition. Chair: Steve Hursting (Shaikh:reader)
- Willow Liu (2019-2020). Department of Nutrition. Chair: Ian Carroll (Shaikh:reader)
- Morgan Cody (2022). Department of Nutrition. Chair: Steve Hursting (Shaikh:reader)

Ph.D. Dissertation Committee Member at UNC Chapel Hill

- Hannah Malian (2022). Department of Nutrition. Advisor: Steve Hursting.
- Meredith Carson (2023-). Department of Nutrition. Advisor: Steve Hursting
- Joyce Tzeng (2022-). Department of Nutrition. Advisor: Damaris Lorenzo.
- Emily Devericks (2021-). Department of Nutrition. Advisor: Steve Hursting.
- Ashley Aguiard (2021-). Department of Nutrition. Advisor: Dr. Damaris Lorenzo. (Receipt of NIH F31 with Dr. Shaikh as co-sponsor).
- Syed Masood (2021-2024). Department of Environmental Sciences and Engineering. Advisor: Avram Gold & Jim Samet (EPA)
- Laura Smith (2019-2020). Department of Nutrition. Advisor: Steve Hursting.
- Melissa Orenduff (2019-2020). Department of Nutrition. Advisor: Steve Hursting.
- Evan Paules (2019-2023). Department of Nutrition. Advisor: Steve Zeisel.
- Shannon Bruce McDonell (2019-present). Department of Nutrition. Advisor: Steve Hursting.
- Will Green (2018-2020). Department of Nutrition. Advisor: Melinda Beck.
- Liyang Zhao (2017-2018). Department of Nutrition. Advisor: Rosalind Coleman.

Three-person Committee Member for Doctoral Exams at UNC Chapel Hill

- Hannah Malian (2022). Department of Nutrition.
Advisor: Steve Hursting.
- Meredith Carson (2021). Department of Nutrition.
Advisor: Steve Hursting.
- Frank Muntis (2021). Department of Nutrition.
Advisor: Beth Mayer-Davis
- Ashely Aguilard (2021). Department of Nutrition.
Advisor: Damaris Lorenzo
- Emily Devericks (2020). Department of Nutrition.
Advisor: Steve Hursting.
- Laura Smith (2018). Department of Nutrition.
Advisor: Steve Hursting.
- Will Green (2017). Department of Nutrition.
Advisor: Melinda Beck.

Awards to Ph.D. Students/Visiting Scholars in the Shaikh lab at UNC

- Ethel J. Coleman Endowed Scholarship in Nutritional Biochemistry for the 2023-2024 academic year (Rafia Virk, 2024).
- Bioactive Lipids in Cancer, Inflammation, and Related Diseases travel award for 3-minute talk winners (Rafia Virk, 2022)
- FASEB Nutritional Immunology Poster Abstract Award (Rafia Virk, 2021)
- ISSFAL travel award (Anandita Pal, 2018)
- ISSFAL travel award (Miranda Crouch, visiting scholar, 2018)
- ISSFAL travel award (Ross Pennington, visiting scholar, 2018)
- FASEB Nutritional Immunology travel award for best abstract presentation (Anadita Pal, 2018)

Undergraduate students in the Shaikh lab (credit, not Honor's thesis) at UNC Chapel Hill

- Jenifer Regan (2020-2021)
- Nicole Buddenbam (2019-2020)
- Kathy Chan (2017-2019)
- Sahil Dadoo (2017-2019)

Rotating Ph.D. students at UNC Chapel Hill

- Matthew Vander Ploeg (2021) - BBSP
- Meredith Carson (2020) - Nutrition
- Stephanie Anne Brock (2019) - BBSP
- Anandita Pal (2017) - Nutrition

MPH/RD Masters Paper Advisor at UNC Chapel Hill

- Lauren Fiabane (2020) – EPA and DHA exert differential effects on membrane structure.
- Sheng-Luen Shikh (2020) – The role of oxidized phospholipids on lipid raft formation of lymphocytes

- McKenzie Caldwell (2018) – The Jovanovic diet for gestational diabetes: a review of its biochemical function and discussion of the psychological impacts of a restrictive diet on expectant mothers during pregnancy.
- Ella Heathman Stephan (2018) – The role of lipid mediators in systemic inflammation and type 2 diabetes.
- Ridley Stewart Zook (2017) – Early referral and the role of the dietitian in alcoholic liver disease.

Post-doctoral advisor at UNC Chapel Hill

- Dr. Ross Pennington (2018-2019). Department of Nutrition.

Mentoring committee at UNC Chapel Hill

- Dr. Kathleen Walter (2021-2022). Postdoctoral fellow in Dr. Sandra Mooney's lab

External Ph.D. Dissertation Committee Member for student at Ohio State University

- Michael Yaeger (2021-). Division of Pulmonary, Critical Care and Sleep Medicine, College of Medicine, Ohio State University. Advisor: Dr. Kym Gowdy
- Hannah Hartzler Lovins (2022-). Division of Pulmonary, Critical Care and Sleep Medicine, College of Medicine, Ohio State University. Advisor: Dr. Kym Gowdy

Ph.D. and M.S. Theses/Dissertations Chaired at ECU

- Miranda Crouch (2015-2019). Department of Biochemistry & Molecular Biology. Ph.D. Dissertation: The role of pro-resolving metabolites in regulating humoral immunity in obesity.
- Ross Pennington (2015-2018). Department of Biochemistry & Molecular Biology. Ph.D. Dissertation: Discriminating between cardiolipin concentration and acyl chain composition on membrane biophysical organization.
- Madison Sullivan (2013-2017). Department of Biochemistry & Molecular Biology. Ph.D. Dissertation: The influence of dietary fatty acids on cardiac mitochondrial phospholipids and respiratory function.
- Heather Teague (2009-2014). Department of Biochemistry & Molecular Biology. Ph.D. Dissertation: N-3 polyunsaturated fatty acids differentially enhance B-cell mediated immunity in lean and obese mice.
- Mark Melton (2010-2013). Department of Biochemistry & Molecular Biology. M.S. Thesis: Using TIRF microscopy to analyze stimulated and basal state B-cell MHC II clustering in response to aging and dietary fish oil.
- Benjamin Drew Rocket (2009-2012). Department of Biochemistry & Molecular Biology. Ph.D. Dissertation: Fish oil disrupts B cell plasma membrane lateral organization and immunological synapse formation.

Awards to Ph.D. Students in Shaikh lab at ECU

- ISSFAL award for research presentation and runner-up for best talk (Ross Pennington 2018)
- Carol F. Volkman Award for excellence in research presentation (Ross Pennington 2018).

- Best Nutritional Immunology Abstract at Experimental Biology Annual Conference Heather Teague, 2013).
- Best Nutritional Immunology Abstract at Experimental Biology Annual Conference (Drew Rockett 2011 & 2012)

Ph.D. Dissertation Committee Member at ECU

- Patrick Ferrara (2017). Department of Kinesiology
Advisor: Dr. Katsu Funai.
- Tony Verkerke (2017). Department of Kinesiology
Advisor: Dr. Katsu Funai.
- Jordan Johnson (2017). Department of Kinesiology
Advisor: Dr. Katsu Funai.
- Rick Alleman (2012-2016). Department of Physiology.
Advisor: Dr. David Brown.
- Lei Wang (2011-2015). Department of Biochemistry & Molecular Biology.
Advisor: Dr. Lance Bridges.
- Alan Curtis (2011-2015). Department of Microbiology & Immunology.
Advisor: Dr. Mark Mannie.
- Lalage Katunga (2011-2015). Department of Pharmacology & Toxicology.
Advisor: Dr. Ethan Anderson.
- Eman Soliman (2011-2014). Department of Pharmacology & Toxicology.
Advisor: Dr. Rukiyah Van Dross.
- Fatiha Moukdar (2011-2014). Department of Physiology.
Advisor: Dr. David Brown.
- Anusha Penumarti (2011-2014). Department of Pharmacology & Toxicology.
Advisor: Dr. Abdel Abdel-Rahman.
- Michelle Robinson (2009-2015). Department of Biochemistry & Molecular Biology.
Advisor: Dr. David Cistola.
- Todd Weber (2009-2012). Department of Kinesiology.
Advisor: Dr. Joe Houmard.

M.S. Thesis Committee Member at ECU

- Jessica Viscomi (2013-2016). Department of Biochemistry & Molecular Biology.
Advisor: Dr. Tonya Zeczcyki.
- Jennifer Worley (2011-2012). Department of Kinesiology.
Advisor: Dr. Carol Witczak.

Post-doctoral advisor at ECU

- Dr. Heather Teague (2014). Department of Biochemistry & Molecular Biology
- Dr. William Guesdon (2015-2017). Department of Biochemistry & Molecular Biology.

Mentoring of Faculty (assigned faculty mentoring):

External Mentoring committee for physician-scientist at Ohio State University

- Dr. Laura Leuenberger (2022-), Medical Fellow of Pulmonary and Critical Care Medicine

UNC Mentoring

- Dr. Ximena Bustamante-Marin (2022-), Assistant Professor, Department of Nutrition
- Dr. Anna Kahkoska (2023-), Assistant Professor, Department of Nutrition
- Dr. Yazan Alwarawrah (2023-). Assistant Professor, Department of Pediatrics in Dr. Nancie Maclver's lab.
- Dr. Heather McCauley (2023-). K01DK125341-01 (Enteroendocrine Regulation of Intestinal Metabolism) Primary Mentor. Assistant Professor, Department of Cell Biology.

LEADERSHIP TRAINING:

- Peer Coaching Groups, 2021-present
- Faculty Leadership Training Course With Certification, 2020-2021
- Faculty Professional and Leadership Skills Series Session One: Listening and Giving/Receiving Feedback. October 24, 2019
- Faculty Professional and Leadership Skills Series Session Two: Managing Conflict Effectively. Nov 21, 2019

FUNDING:

Ongoing Research Support

NIH/NIDDK 04/01/24 – 03/31/25
 UNC NORC Supplement to Host the 2024 National NORC Directors Meeting.
 Role: PI
 Total: \$9337 (direct costs)

Metagenics (contract pending) Dates TBD
 Concentration of monohydroxylated fatty acids in adults with obesity with SPM Active.
 Role: PI
 Total: \$25,000 (direct costs)

NIH/NIDCR, R34DE033563 09/14/23 – 9/13/24
 PUFA metabolism for prevention and treatment of TMD pain: an interdisciplinary, translational approach.
 Role: co-Investigator
 Total: \$8,400 (direct costs)

Hevolution Foundation 09/14/23 – 9/13/24
 Grant support for the INSS conference on obesity and the brain
 Total: \$10,000. Role: MPI (Batsis/Shaiikh)

NIAID, R13AI179134 07/14/23 – 06/30/24
FASEB Nutritional Immunology Across the Lifespan. This supports a FASEB conference focused on how diet and age control the immunological response. Role: MPI (Crott/Shaiikh/Yeruva/Comstock).
Total: \$35,000 (direct costs)

NIEHS, R21ES034458-A1 07/12/23 – 06/30/25
PFOA targets B cell lipid raft organization and function. This high risk/high reward study investigates how PFOA controls naïve B cell plasma membrane lipid raft formation and function. Role: PI
Total: \$275,000 (direct dollars)

NIDDK, U24 DK132715-01 04/01/22 – 03/31/27
North Carolina Consortium for Diversity Career Development in Nutrition, Obesity, and Diabetes Research. This project will build a pipeline of investigators from under-represented groups in science for NIDDK. Role: MPI (Truesdale, Onger, Shaikh)
Total: \$4,147,798 (direct dollars)

NIDDK, P30DK056350-22S1 09/01/22 – 08/31/23
NORC Supplement to Expand NORC Central. This supplement is for expanding the NORC Central. Role: MPI (Mayer-Davis/Shaiikh)
Total: \$32,680 (direct dollars)

R13AI172267-01 07/13/22 – 06/30/23
Interdisciplinary Nutrition Sciences Symposium: Diet and Chronic Unresolved Inflammation: Implications for Obesity-Associated Complications. Role: MPI (Shaiikh/Gordon-Larsen)
Total: \$5000 (direct dollars)

NIH Office of Dietary Supplements 07/01/22 – 06/30/23
[NCE 06/30/25]
Supplement to R01ES031378
EPA mitigates pulmonary inflammation through the ChemR23 axis. This study teases apart the role of the EPA-ChemR23 axis on pulmonary inflammation. Role: MPI (Gowdy/Shaiikh)
Total: \$48,501 (direct dollars)

Total: \$149,560 (direct+indirect)

NIEHS, R01ES031378 05/20/20 – 02/28/25
Dietary DHA mitigates ozone induced pulmonary inflammation. This proposal tests the hypothesis that DHA can improve murine pulmonary inflammation in response to ozone through the reorganization of macrophage lipid rafts and the biosynthesis of SPMs. Role: MPI (Gowdy/Shaiikh)
Total: \$2,777,567 (direct+indirect)

NIDDK, P30DK056350 04/01/21 – 03/31/26

Nutrition Obesity Research Center (NORC). This center provides a critical resource to investigators within and outside of UNC. The NORC contributes toward public health by providing a framework, tool, and expertise needed to engage in interdisciplinary research to improve health outcomes as they relate to obesity and nutrition. Role: MPI
Total: \$5,610,260 (direct+indirect)

Organic Technologies 05/01/19 – 11/30/24
Effects of palmitoleic acid on C-reactive protein in humans. This project is a phase I double-blind placebo controlled clinical trial that will test the effects of two doses of palmitoleic acid in humans. Role: PI
Total: \$360,515.38 (direct+indirect)

Completed Research Support

Sanofi Inc. 06/01/23 – 05/31/24
Sponsorship for obesity and the brain across the lifecourse
Total: \$20,000 (direct dollars only)

NIDDK, 3U24DK132715-02SI 06/01/23 – 05/31/24
SPLENDOR-NC Supplement to Develop BRIDGES Consortium Brand Guide and Website. This supplement supports developing a website for the NIDDK-funded BRIDGES program.
Total: \$54,805 (direct) + 30,417 indirect. Role: PI

NHLBI, R01HL143885 04/01/19 – 03/31/23
Leveraging multi-omics approaches to examine metabolic challenges of obesity in relation to cardiovascular diseases. This project proposes that metabolic pathways may underlie genetic and epigenetic influences on CVD risk factors and downstream sequelae and that obesity may stress some of these critical metabolic pathways, thus accelerating CVD risk. Role: Co-I from 04/01/22 – 03/31/22).
Total: \$21,152 (direct costs)

NIAID, R03AI159308 01/28/21 – 12/31/22 [NCE 12/31/23]
SPMs, linoleic acid, and antibody levels in obesity. This pilot study investigates the hypothesis that those humans that have poor antibody levels to the influenza vaccine have diminished levels of SPMs and elevated levels of linoleic acid. This study sets the basis for future precision nutrition clinical trials focused on SPMs and linoleic acid. Role: PI.

NIDCR, R21DE029746 07/08/20 – 06/30/22
Potential mechanisms underlying a relationship between long-chain polyunsaturated fatty acids and overlapping pain conditions in adults. This study investigates the relationship between fatty acid biochemistry and several chronic pain conditions including temporomandibular disorder. Role: co-I.
Total: \$426,250 (direct+indirect)

NIAID, R13AI161942 05/01/21 – 04/30/22

FASEB's The nutrition, immunity, and inflammation conference: From model systems to human trials. This grant supports a FASEB conference on nutrition and immunity organized by Dr. Shaikh. Role: PI.
Total: \$17,525 (direct costs)

UNC TraCS Award 550KR242033 02/01/21 – 01/31/22
Bioavailability of SPMs in humans with obesity. This is a pilot clinical study using 'SPM Active' to test the bioavailability of select SPMs in circulation of humans with obesity. Role: PI.
Total: \$36,563 (direct costs)

NIDDK, NIH R01DK107397 02/01/17 – 01/31/22
PE methylation in skeletal muscle energy efficiency. This project investigates the role of phosphatidylethanolamine methylation on skeletal muscle respiratory capacity using tissue-specific knockout mouse models. Role: Co-I.
Total: \$1,796,553 (direct+indirect)

NCCIH, NIH R01AT008375 NCE 12/31/21 04/01/15 – 12/31/21
Suppressing inflammation and boosting humoral immunity with n-3 PUFAs. The objective of this proposal is to test the hypothesis that n-3 polyunsaturated fatty acids enhance humoral immunity as a consequence of suppressing inflammation in lean and obese mice in response to varying antigens including influenza infection. Role: PI.
Total: \$1,807,823 (direct+indirect)

UNC Center for Environmental Health and Susceptibility 05/01/20 – 04/30/21
Membrane-mediated mechanism by which PFOA impairs antibody levels and mitigation with DHA. This project investigates the mechanism by perfluorooctanoic acid (PFOA) lowers antibody levels upon influenza infection and the potential for dietary docosahexaenoic acid to reverse the effects of PFOA. Role: PI.
Total: \$30,000 (direct)

NIH NIDDK P30DK056350 04/01/20 – 03/31/21
UNC NORC Pilot & Feasibility Program Supplement to Support URM Investigators and HBCUs. The project is a supplement award to the NIDDK funded NORC for developing pilot and feasibility awards that facilitate collaboration between UNC and HBCUs. Role: co-I.
Total: \$145,777 (direct+indirect)

NIH Office of Dietary Supplements, P30DK056350 04/01/19 – 03/31/21
Using DO mice to establish inter-individual differences with pure EPA and DHA. This project is a supplement award to the NIDDK funded NORC (Zeisel PI) that investigates how EPA and DHA regulate the microbiome and whole body metabolism in response to variation in host genetics. Role: PI of the supplement.
Total: \$145,800 (direct+indirect)

TTSA022P1 04/01/18-11/19/19
UNC School of Medicine & TraCS Translation Team Science Award & CTSA UL1TR002489.

Mechanisms by which gastric-bypass surgery improves lymphocyte immunometabolism. The objective of this grant is to determine how adipose tissue in response to gastric-bypass surgery influences T cell mitochondrial function and underlying lipid metabolism. Role: MPI.
Total: \$50,000 (no indirect dollars)

NHLBI, NIH R01HL12364701 NCE 06/30/21 07/01/15 – 06/30/19
Mitochondrial respirasomes in acute coronary syndromes. This project addresses how respiratory supercomplexes form in response to ischemia reperfusion injury in a rat model. Role: MPI
Total: \$1,369,883 (direct+indirect)

Office of the Director, NIH R01AT008375 04/01/18 – 03/31/19
Gender differences in B cell responses. This supplement award for the parent R01AT008375 was in response to PA-16-066 from NCI. The proposal tests the novel hypothesis that female mice are protected from impairments in their B cell responses in obesity due to changes in lipid metabolism. Role: PI.
Total: \$57,062 (direct+indirect)

Office of the Director, NIH R01AT008375 09/12/16 – 09/11/17
B cell metabolomics in diet-induced obesity. This supplement award for the parent R01AT008375 was in response to PA-16-005. The proposal tests the novel hypothesis that lymphocyte metabolism is modified by diet-induced obesity. Role: PI.
Total: \$161,244 (direct+indirect)

Alaskomega Organic Technologies 04/15/16 – 07/14/17
Regulating insulin sensitivity, infection, and inflammation with novel fatty acids. This proposal tested several novel fatty acid formulations on murine endpoints of infection and inflammation. Role: PI.
Total: \$22,500 (direct+indirect)

NIDDK, R03DK109888 07/01/16 – 06/30/17
Skeletal muscle mitochondrial phospholipids and aerobic capacity. This proposal investigated the role of mitochondrial phospholipid biosynthesis on skeletal muscle respiratory capacity and whole-body metabolic health. Role: co-I.
Total: \$147,500 (direct+indirect)

Caroline Raby Award 07/01/16 – 06/30/17
B cell activation in the metabolically unhealthy. This pilot grant from a private donor supported research on how B cell responses are impaired in metabolically unhealthy males and females. Role: PI.
Total: \$20,000 (direct only)

NHLBI, R15HL12292201 05/01/15 – 06/30/17
Treatment of cardiac reperfusion injury by optimizing the mitochondrial membrane environment. The objectives of this grant were to determine how ischemia-reperfusion injury disrupted the biophysical organization of the cardiac inner mitochondrial membrane and how a mitochondria-specific peptide rescued the decrement in membrane organization. Role: PI.

Total: \$442,500 (direct+indirect)

NIGMS, NIH K25GM100480

10/01/12 – 09/30/17

Label-free RF imaging of cell membrane heterogeneity in liquid. This grant developed an RF scanner that would ultimately measure the impact of fatty acids on membrane lipid rafts. Role: co-I.

Total: \$723,514 (direct only)

Alaskomega Organic Technologies

08/01/15 – 11/01/16

Omega-3 fatty acids and B cell activation in obese humans. This proposal addressed the influence of dietary supplementation with select omega-3 fatty acid on B cell activation ex vivo. Role: PI.

Total: \$35,000 (direct only)

Stealth BioTherapeutics

03/01/16 – 07/31/16

Mitochondrial effects of novel cell-permeable peptides. This proposal addressed how select peptides have therapeutic effects on mitochondrial function in the context of disease. Role: co-I. (5% salary coverage under a master research agreement)

NIAAA, NIH R01AA014441

07/01/11 – 06/30/16

Mechanisms for estrogen-dependent myocardial depressant effect of ethanol. This grant elucidated how estrogen transforms ethanol-evoked cardio-protection into cardio-depression in a female animal model. Role: co-I.

Total: \$1,943,442 (direct+indirect)

Brody Brothers Endowment Grant

11/01/14 – 05/01/16

Targeting B cell dietary fatty acids in obese humans to improve humoral immunity. This foundation grant determined how B cell activation differed between lean and obese humans. Role: PI.

Total: \$35,000 (direct only)

Methylation Sciences

02/15/15 – 10/14/15

Microglial activation and SAME. This proposal investigated how s-adenosylmethionine (SAME) suppressed pro-inflammatory cytokine secretion from microglial cells. Role: PI.

Total: \$17,710 (direct+15%only indirect)

Brody Brothers Endowment Grant

11/01/14 – 10/31/15

Biophysical organization and kinetics of cardiolipin microdomains in ischemia-reperfusion injury. This foundation grant addressed how cardiolipin microdomains were disrupted in a model of heart disease. Role: PI.

Total: \$40,000 (direct only)

NHLBI, NIH R56HL123647-01

09/01/14 – 08/31/15

Mitochondrial respirasomes in acute coronary syndromes. This bridge grant addressed how respiratory supercomplexes form in response to ischemia reperfusion injury in a rat model. Role: MPI

Total: \$295,000 (direct+indirect)

Methylation Sciences 03/01/14 – 09/30/14
Targeting macrophage inflammation with SAME through membrane reorganization. This proposal elucidated how s-adenosylmethionine (SAME) regulated macrophage inflammation by targeting membrane molecular organization. Role: PI.
Total: \$34,122 (direct+indirect)

The North Carolina Translational & Clinical Sciences Institute 12/01/13 – 05/31/15
Award 550KR51320 under the National Center for Advancing Translational Sciences (NCATS) NIH 1UL1TR001111. Developing n-3 fatty acids for enhancing immunity in the obese upon viral infection. This pilot proposal determined how n-3 polyunsaturated fatty acids at a 3:2 ratio could be developed to boost antibody production upon influenza infection. Role: PI.
Total: \$50,000 (direct only)

Brody School of Medicine Seed Grant Program 04/01/14 – 12/31/14
Protecting the myocardium by targeting lipid-dependent mitochondrial respirasomes. This proposal investigated how cardiolipin levels regulated mitochondrial respirasome activity in primary myocytes from humans. Role: co-I.
Total: \$25,000 (direct only)

Stealth BioTherapeutics 12/15/11 – 03/31/14
Effects of MTP-131 on inner mitochondrial membrane fatty acid composition. This grant determined how mitochondrial targeted peptides improved myocardial function by manipulating the function of cardiolipin in rat models of type I diabetes and ischemia-reperfusion injury. Role: PI (D. Brown, lead PI).
Total: \$239,157 (direct+indirect)

NCCAM, NIH R15AT006122 05/01/10 – 09/30/13
N-3 PUFAs and antigen presenting cells. This proposal investigated how n-3 PUFAs disrupted lipid microdomain and MHC organization on the surface of antigen presenting cells, ultimately suppressing the formation of the immunological synapse. Role: PI.
Total: \$435,000 (direct+indirect)

GlaxoSmithKline 12/01/09 – 12/01/12
Mitigating the mitochondrial dysfunction and apoptosis in hypertrophied left atrium of patients with severe mitral valve regurgitation via short-term Lovaza treatment prior to surgery. This proposal investigated how Lovaza administered to patients with severe mitral valve regurgitation improved mitochondrial function through changes in the biophysical organization of mitochondrial membranes. Role: MPI (Anderson/Shaiikh).
Total: \$157,518 (direct+indirect)

East – West Collaboration Award, East Carolina University 01/02/13 – 01/01/14
The use of differential scanning calorimetry for quantifying the impact of dietary intervention on cellular membranes. This pilot project award developed differential scanning calorimetry for quantifying thermodynamic changes in plasma membranes upon dietary intervention with high fat diets. Role: PI.

Total: \$10,000 (direct only)

East Carolina Diabetes & Obesity Institute

07/01/11 – 06/30/13

MHC I – Insulin receptor clusters as regulators of glucose uptake in adipocytes. This grant was an award through the East Carolina Diabetes and Obesity Institute. The aim here was to determine how knocking down MHC class I with siRNA impacted glucose uptake in 3T3L1 adipocytes in order to determine the potential role of MHC class I molecules on the molecular organization of the insulin receptor and GLUT4. Role: PI.

Total: \$25,000 (direct only)

Start-up Funds

07/01/08 – 06/30/11

Supported by East Carolina University, Brody School of Medicine.

Funds supported the general mission of the East Carolina Diabetes and Obesity Institute. The specific aims were to establish functional and mechanistic studies on how dietary fatty acids modify immune responses.

Total: \$560,000 (direct only)

Shared Resources Award

10/01/08

Office of the Associate Dean for Research and Graduate Studies, Brody School of Medicine, East Carolina University. Funds supported the acquisition of a gas chromatograph for fatty acid analysis. Role: PI.

Total: \$20,000 (direct only)

NIH training grant (5T32 AI07247 to Mark Soloski)

08/01/04 – 07/31/07

Johns Hopkins School of Medicine Competition for Postdoctoral Position (internal Hopkins review). The project aimed to elucidate the effects of dietary fatty acids on B cell mediated antigen presentation and T cell responses through changes in MHC class I lateral organization and trafficking in vitro and ex vivo.

Total: \$120,000 (direct)

EDITORIAL BOARDS:

Editorial Board Member, J Nutr	2022-
Editorial Board Member, Nutrients	2020-
Editorial Board Member, Frontiers - Nutritional Immunology	2014-
Editorial Board Member, J Nutr Biochem	2011-
Associate Editor, Prost Leukot Essent Fatty Acids	2011-2023
Editorial Board Member, Prost Leukot Essent Fatty Acids	2009-2010

PROFESSIONAL AFFILIATIONS:

Society of Toxicology	2021-
American Society for Biochemistry and Molecular Biology	2018-2020
American Association of Immunologists	2009-
American Society for Nutrition	2006-

International Society for the Study of Fatty Acids and Lipids Biophysical Society	2001- 2000-2019
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SERVICE:

<u>Chair</u> UNC Department of Nutrition	2023-
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<u>Associate Chair of Research</u> UNC Department of Nutrition	2018-2023
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<u>Departmental/University Committees at UNC</u>	
Graduate Student Experience Steering Committee	2023-2025
Public Health Leadership Program Search Advisory Committee	2023-2024
School of Medicine Deans Advisory Committee (DAC)	2023-
Dept. of Nutrition Faculty Search Committee Chair	2023
Review Committee for Carolina Postdoctoral Program for Faculty Diversity Candidates	2023
North Carolina Diabetes Research Center advisory committee	2022-
Summer undergraduate research fellowship committee	2021-2022
UNC DCM advisory committee	2021-
NRI director search committee chair	2020
Doctoral committee	2020-2023
Curriculum committee	2019-2020
P&T committee	2019-
INSS organizing committee	2019-2023
SPH research council	2019-2023
SPH conflict of interest committee	2019-2023
Retreat organizing committee	2018-
Chair's advisory committee	2018-2023
Departmental seminar series organizer	2018-2023
Dept. Chair 5 year Review Committee	2018
Member of junior faculty hiring committee	2018
Chair of the lipid interest group	2017-2020
NORC internal grant review panel	2017-2023
Executive committee	2017-2019
MPH/RD committee	2017-2019
Advancement committee	2017-2023

<u>Departmental/University Committees at ECU</u>	
Brody School of Medicine's Dean Search Committee	2016-2017
Department P&T Committee	2014-2017
Grant Advisory Panel Committee	2013-2017
Bioenergetics Executive Committee to the Dean	2013-2017
Vice Chairs of Diversity and Inclusion Committee	2009-2017
Biochemistry Doctoral Committee	2009-2017
Biochemistry Search Committee	2010-2012

Bioenergetics Search Committee	2010
Assessment of Biochemistry Graduate Programs Committee	2009

Conference Organizer at UNC

Co-organizer for 4th Annual Interdisciplinary Nutrition Sciences Symposium (INSS). Obesity and the Brain Across the Life Course. Sept 14-15, 2023, Chapel Hill, NC

Lead organizer for the FASEB Nutritional Immunology Across the Lifespan Conference. July 30-August 3, 2023, Melbourne, FL

Co-organizer for 3rd Annual Interdisciplinary Nutrition Sciences Symposium (INSS). Diet and Chronic Unresolved Inflammation: Implications for Obesity-Associated Complications. July 20-21, 2022. Chapel Hill, NC

Co-organizer for 2nd Annual Interdisciplinary Nutrition Sciences Symposium (INSS). Heterogeneity in obesity: Implications for cancer and related obesity-associated outcomes. June 21-22, 2021 Chapel Hill, NC

Co-organizer for the FASEB Nutritional Immunology Conference for 2021, July 25-29, Virtual (originally scheduled to be Colorado). PI of the NIAID R13 for this conference.

Co-organizer for 1st Annual Interdisciplinary Nutrition Sciences Symposium (INSS). Synergizing animal and human obesity research. July 24-25, 2019 Chapel Hill, NC.

Fundraising Chair for the FASEB Nutritional Immunology Conference, June 24-29, 2018. Leesburg, VA.

Conference Organizer at ECU

Co-organizer for The 12th Fatty Acids and Cell Signaling (FACS) conference: From genes to human physiology. October 25-27th 2015 Toronto, Canada.

External Reviewer for Tenure

2018 – External review for The University of Memphis

2016 – External review for University of Connecticut

Grant Reviewer

- *NIH POMD study section (ad hoc, 2022)
- *NIH/NCCIH (2022) ZAT1 SH(04) Early Phase Clinical Trials of Natural Products (NP)
- *NIH ZES1 VSM-K(R)2 U.S. India Collaborative Environmental Health Research Program (NIEHS, ad hoc, 2021).
- Gillings Review Panel (2020, 2021)
- *NIH CADO study section (ad-hoc, 2017, 2020)

- NORC P&F Grants (2019-)
- *NIH ZAT1 AJT (12) Special Emphasis Panel, Botanical Dietary Supplements Research Centers (BDSRC U19, NCCIH 2019)
- *Sir Henry Wellcome Trust Postdoctoral Fellowship Program (2019)
- *ZDK1 GRB-S (M1) RFADK-19-014: NIDDK Catalyst Award in Diabetes, Endocrinology and Metabolic Diseases (DP1) (2019)
- *NIH R15 Review Panel ZRG1 CVRS-Q Cardiovascular and Respiratory Sciences (ad-hoc, 2018)
- Natural Sciences and Engineering Research Council of Canada (2017)
- Sigma Delta Epsilon (2016, 2017)
- NIH INMP study section (ad-hoc, 2016)
- NIH NCCIH Training and Education Review Panel (ad-hoc, 2016)
- National Science Foundation (2012)

*Since joining UNC

Journal Reviewer

*Advances in Nutrition, American Journal of Physiology, Biochemistry, Biochimica et Biophysica Acta, *Biomedicine & Pharmacotherapy, Biophysical Journal, British Journal of Nutrition, British Journal of Pharmacology, Cancer Immunology Immunotherapy, *Cardiovascular Research, *Cell Reports, Chemistry and Physics of Lipids, *Frontiers in Immunology, *Frontiers in Nutrition, Food Research International, *Gene, Journal of Biological Chemistry, *Journal of Clinical Investigation, Journal of Immunology, *Journal of Lipid Research, *Journal of Nutritional Biochemistry, *Interdisciplinary Topics in Gerontology and Geriatrics, Langmuir, Lipids, Molecular Cancer, Molecular Membrane Biology, Molecular Nutrition & Food Research, Nature, *Nutrients, Obesity, PLoS One, *Prostaglandins Leukotrienes and Essential Fatty Acids, Science, Scientific Reports.

*Since joining UNC

CONSULTING:

Consultant for development of targets for non-alcoholic liver steatosis, Anavex Life Sciences, 2015.

Consultant for isothermal titration calorimetry studies, Stealth BioTherapeutics, 2014.