Dr. Ling Zhao is an associated professor in Department of Nutrition, University of Tennessee, Knoxville. Dr. Zhao has been an active member and actively involved in the activities of NACSN since the society established in 2012. In particular, Dr. Zhao is a current NACSN faculty newsletter editor and responsible for making of all the past issues of newsletters. She will leave the editor post after the election. As a faculty in a public land granted university, Dr. Zhao is actively involved in teaching, research and public service in higher education in the area of nutritional sciences. Dr. Zhao's research focuses on elucidation of molecular mechanisms underlying obesity and obesity associated diseases and identification of nutritional strategies for the treatment and prevention of these diseases using cell and animal models. Dr. Zhao is affiliated with American Society of Nutrition, American Heart Association and American Diabetes Association and has been appointed to the editorial board for a number of scientific journals, including Journal of Nutritional Biochemistry. More information is available in Dr. Zhao's CV.

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EDUCATION

Ph.D., Molecular and Biochemical Nutrition, University of California, Berkeley, 2002
B.M., (M.D. equivalent), Specialty: Preventive Medicine, Peking University Health Science Center (formerly Beijing Medical University), Beijing, P.R. China, 1993.

PROFESSIONAL EXPERIENCE

- 1993-1996 Physician, Department of Family Care, Beijing Tiantan Hospital, P.R.China.
- 1996-2002 Graduate Student, University of California, Berkeley.
- 2002-2003 Postdoctoral Researcher, Department of Nutritional Science & Toxicology, University of California, Berkeley.
- 2003-2006 Postdoctoral Researcher, Department of Nutrition, University of California, Davis and Western Human Nutrition Research Center, Agricultural Research Service, United States Department of Agriculture.
- 2006-2008 Assistant Project Scientist, Step III, Department of Nutrition, University of California, Davis.
- 2008-2009 Assistant Project Scientist, Step IV, Department of Nutrition, University of California, Davis.
- 2009-2015 Assistant Professor, Department of Nutrition, University of Tennessee, Knoxville.
- 2015- Associate Professor (tenured), Department of Nutrition, University of Tennessee, Knoxville.

AWARDS

- 1996-1997 William and Flora Hewlett Foundation Fellowship, University of California, Berkeley
- 2001 Meyer Galler Scholarship, University of California, Berkeley.
- 2002 E.L.Robert Stokstad Memorial Award, University of California, Berkeley

HONORS

- 2009- Ad hoc reviewer for:
  American Journal of Physiology-Endocrinology and Metabolism
  British Journal of Nutrition
  British Journal of Pharmacology
  Differentiation
  Immunology
  Journal of Diabetes Research
  Journal of Endocrinology
  Journal of Medicinal Food
  Journal of Nutrition
  Journal of Nutritional Biochemistry
  Molecular Nutrition and Food Research
- 2012- Early Career Reviewer, the Center for Scientific Review, NIH
- 2013- Ad hoc grant reviewer for Lipids-Basic Sciences, American Heart Association
- 2013- Editorial Board of Journal of Human Nutrition and Food Science (Open access)
- 2015- Editorial Board of Journal of Obesity and Eating Disorders (Open access)
- 2015- Editorial Board of Journal of Obesity and Weight Loss (Open access)
- 2016 Editorial Board of Journal of Nutritional Biochemistry

PROFESSIONAL MEMBERSHIPS

- 2003- Member, American Society of Nutrition
- 2003- Member, The Obesity Society
- 2009- Member, American Diabetes Association
- 2009- Member, American Heart Association
- 2013- North America Chinese Society for Nutrition (NACSN)

PUBLICATIONS IN PEER-REVIEWED JOURNALS

(**corresponding author, underlines indicate student advisees)

1. Carpenter KJ, **Zhao L** (1999) Forgotten mysteries in the early history of vitamin D. The Journal of Nutrition 129:923-7. (review)

2. Smas CM, Chen L, **Zhao L**, Latasa MJ, Sul HS (1999) Transcriptional repression of pref-1 by glucocorticoids promotes 3T3-L1 adipocyte differentiation. Journal of Biological Chemistry 274: 12632-41.

3. Sul HS, Smas CM, Mei B, and **Zhao L** (2000) Function of Pref-1 as an inhibitor of adipocyte differentiation. International journal of Obesity 24, Suppl. 4:S15-S19 (invited review)

4. **Zhao L**, Gregoire F and Sul HS (2000) Transient induction of ENC-1, a Kelch-related actinbinding protein, is required for 3T3-L1 adipocyte differentiation. Journal of Biological Chemistry 275: 16845-50.

5. Mei B*, **Zhao L***, Chen L and Sul HS (2002) Only the large soluble form of preadipocyte factor-1(Pref-1), but not the small soluble and membrane forms, inhibits adipocyte differentiation: role of Alternative Splicing. Biochemical Journal 364: 137-44. * Contributed equally.

6. Lee JY, Gao Z, Youn HS, Lee WH, **Zhao L**, Nywana S and Hwang DH (2003) Reciprocal modulation of Toll-like receptor-4 signaling pathways involving MyD88 and phosphatidylinositol 3-kinase/AKT by saturated and polyunsaturated fatty acids. Journal of Biological Chemistry 278: 37041-51.

7. Kim KH, **Zhao L**, Moon Y, Kang C, Sul HS. (2004) Dominant inhibitory adipocyte specific secretory factor (ADSF)/resistin enhances adipogenesis and improves insulin sensitivity. Proceedings of National Academy of Sciences USA 101: 6780-5.

8. Lee JY, **Zhao L**, Youn HS, Weatherill AR, Tapping R, Feng L, Lee WH, Fitzgerald KA and Hwang DH (2004) Saturated fatty acid activates but polyunsaturated fatty acid inhibits Toll-Like receptor 2 dimerized with Toll-like receptor 6 or 1. Journal of Biological Chemistry 279:16971-9.

9. Weatherill AR, Lee JY, **Zhao L**, Lemay D and Hwang DH (2005) Saturated and polyunsaturated fatty acids reciprocally modulated cytokine expression, maturatio, and T cell activation capabilities of dendritic cells mediated through Toll-like receptors. Journal of Immunology 174:5390-7.

10. **Zhao L**, Kwon MJ, Huang S, Lee JY, Fukase K, Inohara N and Hwang DH (2007) Differential modulation of Nods signaling pathways by fatty acids in human colonic epithelial HCT116 cells. Journal of Biological Chemistry 282:11618-28.

11. **Zhao L**, Lee JY and Hwang DH (2008) The Phosphatidylinositol 3-kinase/Akt pathway negatively regulates Nod2-mediated NF-kappa B pathway. Biochemical Pharmacology 75: 1515-25.

12. Chen J, Ahn K, Gee NA, Ahmed MI, Duleba AJ, **Zhao L**, Gee SJ, Hammock BD and Lasley BL (2008) Triclocarban enhances testosterone action: A new type of Endocrine Disruptor? Endocrinology 149: 1173-9.

13. Dasu MR, Devaraj S, **Zhao L**, Hwang DH and Jiala I (2008) High glucose induces Toll-Like receptor expression in human monocytes mechanism of activation. Diabetes 57: 3090-8.

14. Huang S, **Zhao L**, Kim K, Lee DS, Hwang DH (2008) Inhibition of Nod2 signaling and target gene expression by curcumin. Molecular Pharmacology 74: 274-81.

15. Adams SH, Hoppel CL, Lok KH, **Zhao L**, Wong SW, Minkler PE, Hwang DH, Newman JW and Garvey WT (2009) Plasma acylcarnitine profiles suggest incomplete long-chain fatty acid β-oxidation and altered tricarboxylic acid cycle activity in type 2 diabetic african-american women. Journal of Nutrition 139: 1073-81.

16. Lee JY, **Zhao L**, and Hwang DH (2010) Modulation of pattern recognition receptor-mediated inflammation and risk of chronic diseases by dietary fatty acids. Nutrition Reviews 68(1): 36-61. (invited review)

17. Wang Y, **Zhao L**, Smas C and Sul HS (2010) Pref-1 interacts with fibronectin to inhibit adipocyte differentiation. Molecular and Cellular Biology 30(14): 3480-92.

18. **Zhao L**, Lee JY and Hwang DH (2011) Inhibition of pattern recognition receptor-mediated inflammation by bioactive phytochemicals: a review of recent research. Nutrition Reviews 69(6):310-320. (invited review)

19. Dawson K*, **Zhao L***, Adkins Y, Vemuri M, Rodriguez RL, Gregg JP, Darshan S. Kelley DS, and Hwang DH (2011) Modulation of blood cell gene expression by DHA supplementation to hypertriglyceridemic men. Journal of Nutritional Biochemistry 23(6):616-21. *Contributed equally.

20. **Zhao L****,** Hu P, Zhou YJ, Purohit J, and Hwang DH (2011) NOD1 activation induces proinflammatory gene expression and insulin resistance in 3T3-L1 adipocytes. American Journal of Physiology-Endocrinology and Metabolism 301(4):E587-98.

21. Siriwardhana N, Kalupahana NS, Fletcher S; Xin W, Claycombe KJ, **Zhao L**, Saxton AM, Quignard-Boulange A, and Moustaid-Moussa N (2011) n-3 and n-6 polyunsaturated fatty acids differentially regulate adipose angiotensinogen and other inflammatory adipokines, in part via NF-κB dependent mechanisms. Journal of Nutritional Biochemistry 23(12):1661-7.

22. Burke SJ, Goff MR, Updegraff BL, Lu D, Brown PL, Minkin SC, Biggerstaff JP, **Zhao L**, Karlstad MD and Collier JJ (2012) Regulation of the CCL2 gene in pancreatic β cells by IL-1β and glucocorticoids: Role of MKP-1. PLoS One 7(10):e46986.

23. Hu P, Chen X, Whitener RJ, Boder E, Jones J, Porollo A, Chen J, and **Zhao L**** (2012) Effects of parabens on adipocyte differentiation. Toxicological Sciences 131(1):56-70.

24. Purohit J, Hu P, Burke SJ, Collier JJ, Chen J, and **Zhao L**** (2013) The effects of NOD1 activation on adipocyte differentiation. Obesity (Silver Spring). 2013 Apr;21(4):737-47

25. Zunino SJ, Storms DH, Freytag TL, Mackey BE, **Zhao L**, Gouffon JS, and Hwang DH (2013) Dietary strawberries increase proliferative response of CD3/CD28-activated CD8+ T cells and production of tumor necrosis factor-alpha in lipopolysaccharide-stimulated monocytes from obese humans. British Journal of Nutrition 18:1-9.

26. Purohit J, Hu P, Chen G, Whelan J, Moustaid-Moussa N and **Zhao L**** (2013) Activation of nucleotide-oligomerization domain containing protein 1 induces lipolysis through NF-κB and the lipolytic PKA activation in 3T3-L1 adipocytes. Biochemistry and Cell Biology 91(6);428-34.

27. Bae J, Ricciardi CJ, Esposito D, Komarnytsky S, Hu P, Curry BJ, Brown P, Gao Z, Biggerstaff JP, Chen J, **Zhao L**** (2014) Activation of pattern recognition receptors in brown adipocytes induce inflammation and suppress

uncoupling protein 1 expression and mitochondrial respiration. American Journal of Physiology-Cell physiology 306(10):C918-30.

28. Kennedy R, Menn F, Healy L, Fecteau K, Hu P, Bae J, Gee N, Lasley B, **Zhao L**, and Chen J (2014) Early life triclocarban exposure during lactation affects neonate rat survival. Reproductive Science 2014 May 6. [Epub ahead of print]

29. Hu P, **Zhao L**, and Chen J (2014) Physiologically achievable doses of resveratrol enhance 3T3-L1 adipocyte differentiation. European Journal of Nutrition 2014 Jul 17. [Epub ahead of print].

30. Ricciardi CJ, Bae J, Esposito D, Komarnytsky S, Hu P, Chen J, and **Zhao L**** (2014) 1, 25-dihydroxyvitamin D3/Vitamin D receptor suppresses brown adipocyte differentiation and mitochondrial respiration. European Journal of Nutrition 2014 Oct 9. [Epub ahead of print].

31. Bae J, Chen J, and **Zhao L**** (2015) Chronic activation of pattern recognition receptors suppresses brown adipogenesis of multipotent mesodermal stem cells and brown preadipocytes. Biochemistry and Cell Biology 2015 Jun; 93(3):251-61.

BOOK CHAPTERS

1. Sul HS, Smas CM, Chen L, Mei B, and **Zhao L** (2000) Pref-1, an inhibitor of adipogenesis. Book chapter in J. M. Ntambi (Eds), 27th Steenbock Symposium: Adipocyte Biology and Hormone Signaling, The University of Wisconsin Press, Madison, Wisconsin.

2. Lee JY, **Zhao L** and Hwang DH (2011) Modulation of pattern recognition receptor-mediated signaling pathways by green tea epigallocatechin-3-gallate. Book chapter in V. R. Preedy (Eds.), Tea in Health and Disease Prevention, Academic Press, London, UK.

3. **Zhao L** (2012) Pattern recognition receptor, inflammation and obesity. Book chapter in W.C. Chang (Eds.), Chronic Inflammation: Causes, Treatment Options and Role in Disease. NOVA Science Publishers, Hauppauge, New York.

ABSTRACT PUBLISHED IN CONFERENCE PROCEEDINGS (*corresponding author)

1. Smas CM, Chen L, **Zhao L**, Latasa MJ, and Sul HS Transcriptional repression of preadipocyte factor-1 by glucocorticoids promotes 3T3-L1 adipocyte differentiation. Abstracted in American Society for Biochemistry and Molecular Biology Annual Meeting, San Francisco, California. May 16-20, 1999. FASEB J. 13(7):A1460, 1999.

2. Lee JY, **Zhao L**, Youn HS and Hwang DH. Reciprocal modulation of Toll-like receptor signaling pathways and inflammatory target gene expression by saturated and polyunsaturated fatty acids. Abstracted in ASBMB Annual Meeting and 8th IUBMB Conference, Boston, Massachusetts. June 12-16, 2004.

3. **Zhao L**, Kwon MJ, Huang SH, Lee JY, Fukase K, Inohara N and Hwang DH. Differential modulation of Nods signaling pathways by fatty acids in human colonic epithelial HCT116 cells. Abstracted in Experimental Biology Annual Meeting, Washington DC. April 28-May 2, 2007.

4. **Zhao L**, Lee JY and Hwang DH. The PI3K-Akt pathway negatively regulates Nod2 mediated NF-κB signaling pathway. Abstracted in Experimental Biology Annual Meeting, San Diego, California, April 5-9, 2008.

5. **Zhao L***, Hu P, Purohit J, and Hwang DH. NOD1 activation induces proimflammatory gene expression and insulin resistance in 3T3-L1 adipocytes. Abstracted in Experimental Biology Annual Meeting, Washington DC, April 9-13, 2011.

6. Purohit JS, Hu P, Chen J, and **Zhao L***. Leptin and adiponectin are both suppressed upon activation of Nucleotide Oligomerization Domain Containing Protein 1 during adipocyte differentiation. Abstracted in Experimental Biology Annual Meeting, San Diego, California, April 21-25, 2012.

7. Hu P, and **Zhao L***. Curcumin suppresses NOD1-mediated chemotactic genes expression in 3T3-L1 adipocytes. Abstracted in Experimental Biology Annual Meeting, San Diego, California, April 21-25, 2012.

8. Kennedy RC, Bae JY, Fecteau K, **Zhao L**, Gee NA, Benirschke K, Lasley BL and Chen J. Trichlocarban exposure in pregnancy and during female neonate period compromises lactation and reproductive development. Abstracted in The Endocrine Society's Annual Meeting (ENDO 2012), Houston, Texas, June 23-26, 2012.

9. Bae J, Ricciardi CJ, Chen J, and **Zhao L***. Activation of pattern recognition receptors in brown adipocytes induce proinflammatory genes and suppress uncoupling protein 1 mRNA expression. Orally presented at Experimental Biology Annual Meeting, Boston, Massachusetts, April 20-24, 2013.

10. Ono-Moore KD, **Zhao L**, Huang S, Kim J, Rutkowsky JM, Snodgrass RG, Schneider DA, Quon MJ, and Hwang DH. Improved insulin sensitivity and reduced adiposity with aP2 driven TLR4 overexpression in transgenic mice. Abstracted in Experimental Biology Annual Meeting, Boston, Massachusetts, April 20-24, 2013.

11. Kennedy RC, Healy L, Fecteau K, **Zhao L**, Hu P, Gee N, Lasley BL, Benirschke K, and Chen J. Early exposure to triclocarban during lactation alters survival rate in the female rat neonate. Orally presented at The Endocrine Society's Annual Meeting (ENDO 2013), San Francisco, California, June 15-18, 2013.

12. **Zhao L***, Hu P, Purohit J, Bae J, Ricciardi CJ, and Chen J. The role of nucleotide-oligomerization domain containing protein 1(NOD1) in adipose inflammation in obesity. Orally presented at the Fifth Scientific Meeting of the Chinese-American Diabetes Association (CADA), Chicago, Illinois, June 20-21, 2013.

13. Ricciardi CJ, Bae J, Hu P, Esposito D, Komarnytsky S, Chen J, and **Zhao L***. 1, 25-dihydroxyvitamin D3/Vit D receptor suppresses brown adipocyte differentiation and mitochondrial biogenesis. Abstracted in Experimental Biology Annual Meeting, San Diego, California, April 26-30, 2014.

14. Rayner H, Collier JJ, Gellar L, **Zhao L**, and Chen G. Effect of eating frequency on evening meal energy intake. Orally presented at Experimental Biology Annual Meeting, San Diego, California, April 26-30, 2014.

15. Kennedy RC, Healy L, Menn F, Fecteau K, **Zhao L**, Bae J, Hu P, Gee N, Lasley BL, Chen J. Mammary gland involution during lactation is a secondary effect of TCC induced neonatal loss. Abstract in the Endocrine Society's Annual Meeting, Chicago, Illinois, June 21-24, 2014.

16. Bae J, Chen J, and **Zhao L*** Chronic activation of pattern recognition receptors suppresses brown adipogenesis of pluripotent mesenchymal stem cells and preadipocytes Poster presentation at Southeastern Conference (SEC) Symposium 2014, Sept. 21-23, Hyatt Regency Atlanta, Georgia.
17. Li R, Howell M, **Zhao L**, Raynor H, and Chen G The effects of eating frequency on the rate of body weight regain phase of a rat obesity model. Poster presentation at Southeastern Conference (SEC) Symposium 2014, Sept 21-23, Hyatt Regency Atlanta, Georgia.

18. Bae J, Chen J, and **Zhao L*** Chronic activation of pattern recognition receptors suppresses brown adipogenesis of multipotent mesodermal stem cells and brown preadipocytes. Orally presented at Experimental Biology Annual Meeting, Boston, Massachusetts, March 28-April 1, 2015.

19. Brown S, Sant KE, and Timme-Laragy AR. Butylparaben affects pancreatic development in Zebrafish (Danio Rerio) embryos. Poster presentation in The Society of Toxicology 55th Annual Meeting, New Orleans, LA, March 13-17, 2016.

20. Kennedy R, Fling R, Robeson M, Saxton AM, Bemis D, Liu J, **Zhao L**, and Chen J. 3,4,4′-Trichlorocarbanilide exposure induces gut microbial dysbiosis in neonatal rats. Oral and poster presentation in Endocrine Society's Annual Meeting, Boston, MA, April 1-6, 2016.

21. Bae J, Kearns J, Overby H, Chen J, and **Zhao L*** Naringenin, a citrus flavanone, enhances isoproterenol-stimulated thermogenic activation of 3T3-L1 adipocytes. Poster Presentation at Experimental Biology Annual Meeting, San Diego, CA, April 1-6, 2016.

INVITED OR REFERRED PRESENTATIONS

1. BIT's First World Congress of Endocrinology and Metabolism Theme: Revealing a New World from Cell to Glands, Xiamen, China - *Controlling inflammation: a Nutritional Perspective* - Jan 2011

2. University of Tennessee, Knoxville, Tennessee - College of Veterinary Medicine Comparative & Experimental Medicine Seminar Series - *Role of Innate Immune Receptors in Insulin Resistance and Obesity: A NOD1 Pill for Diet-Induced Obesity?* - October 2011

3. The Fifth Annual Research Day, The Boshell Diabetes and Metabolic Diseases Research Program, Auburn University, Auburn, Alabama - *Role of Nucleotide-Oligomerzation Domain Containing Protein 1 (NOD1) in Inflammation and Insulin Resistance in Adipocytes* - March 2012

4. The Fifth Scientific Meeting of the Chinese-American Diabetes Association (CADA), Chicago, Illinois - *Role of Nucleotide-Oligomerzation Domain Containing Protein 1 (NOD1) in Adipose Inflammation in Obesity* - June 2013

5. Cancer Research Symposium, University of Tennessee Graduate School of Medicine and UTK Office of Research and Engagement, Knoxville, Tennessee - *Obesity and Cancer: What's the link?* - October 2013

6. The 45th Asia Pacific Academic Consortium for Public Health (APACPH): Global Health, Wuhan, P.R. China - *Effects of Parabens on Adipocyte Differentiation and Adipogenesis In Vivo: Is There An Environmental Link to Obesity?* - October 2013

7. Cancer Research Symposium for Early Career /Assistant Professors, Cancer Community of Scholars, University of Tennessee, Knoxville, Tennessee - *Role of Stromal Induction by Chronic Exposure to Low Doses of Carcinogens in Obesity-Associated Breast Cancer: Intervention by Nano-Resveratrol* - September 2014

GRANTS AND PROJECTS

1. Zhao, L. (PI); Center for Health and Nutrition Research (CHNR) Professional Award, University of California, Davis: TLR4-mediated adipose tissue inflammation, insulin resistance and dietary interventions: 01/01/08-12/31/09.

2. Zhao, L. (PI); Ralph E Powe Junior Faculty Enhancement Award, Oak Ridge Associated Universities (ORAU): Environmental carcinogen induced-adipocyte dysfunction: a link between obesity and cancer?: 07/01/11-07/01/12.

3. Zhao, L. (PI); The Graduate School Professional Development Award: Do Parabens Have the Ability to Promote Obesity in Mice?: 01/01/11-06/30/12.

4. Zhao, L. (PI); Allen Foundation, Midland, Michigan: Role of nucleotide-binding and oligomerization containing protein (NOD) 1 in diet-induced adipose inflammation and obesity: 07/01/12-06/30/14.

5. Wang, S (PI) and Zhao, L. (Co-I); NIH/NCCIH: Anti-obesity effects of adipose-targeting resveratrol nanaocarriers: 04/01/15-3/31/18.