Curriculum Vitae

Mandana Pahlavani, USDA NIFA Postdoctoral Research Fellow

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EDUCATION:

2018-2020 **USDA NIFA Postdoctoral Fellow**, Nutrigenomics, Inflammation & Obesity Research (NIOR) Laboratory, Department of Nutritional Sciences, **Texas Tech University**

2017- 2018 **Postdoctoral Research Fellow,** Nutrigenomics, Inflammation & Obesity Research (NIOR) Laboratory, Department of Nutritional Sciences, **Texas Tech University**

2013-2017 **Ph.D. Nutritional Sciences,**
Department of Nutritional Sciences, **Texas Tech University**

2009 **M.S. Food Science and Technology,**
Department of Food Science and Technology, College of Agriculture Engineering, **Ferdowsi University of Mashhad** (Iran)

1998 **B.S. Food Science and Technology,**
Department of Food Science and Technology, College of Agriculture Engineering, **University of Urmia** (Iran)

POSTDOCTORAL TRAINING:

2018-2020 United States Department of Agriculture (USDA), National Institute of Food and Agriculture (NIFA), Postdoctoral Fellowship
Texas Tech University, Lubbock, TX
PI: Mandana Pahlavani
Mentor: Dr. Naima Moustaid-Moussa
" Integrated gene and microRNA networks mediating anti-inflammatory effects of omega 3 fatty acids in diet-induced obesity "
In this study we perform genomic approaches to dissect dose-dependent effects of fish oil in obesity, using an animal model of diet-induced obesity. This work addresses a novel area of molecular nutrition that determines how omega 3 fatty acids in fish oil can be used to prevent and/or decrease obesity, by reducing inflammation at fat cells, leading to decreased inflammation in the overall human body.

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2017-2018 **Department of Nutritional Sciences; College of Human Sciences**
Texas Tech University, Lubbock, TX
Mentor: Dr. N. Moustaid-Moussa
"Anti-obesity effects of omega-3 fatty acids in brown adipose tissue"
This project was funded by the National Institutes of Health/National Center for Complementary and Integrative Health (NIH/NCCIH) (PI: Dr. N. Moustaid-Moussa). The focus of this study is elucidating the anti-obesity effects of omega-3 fatty acids in brown adipose tissue and the role of UCP1. We used both wild type (WT) and UCP1 knockout (KO) mice to determine whether the anti-obesity effects of EPA are mediated in part by UCP1. For dissecting mechanisms by which EPA activates BAT and UCP1 we used murine and human cell culture models as well.

Ph.D. DISSERTATION RESEARCH:

2013- 2017 Department of Nutritional Sciences; College of Human Sciences
Texas Tech University, Lubbock, TX
Mentor: Dr. N. Moustaid-Moussa
" Cellular and Molecular Basis for Omega 3 Polyunsaturated Fatty Acid Regulation of Brown Adipose Tissue"
My dissertation research focused on mechanisms by which omega 3 polyunsaturated fatty acids (primarily eicosapentaenoic acid, EPA) activate brown adipose tissue to reduce dietary obesity in mice. We demonstrated that EPA increased several master transcriptional regulators of brown fat thermogenesis in high fat-EPA fed mice compared to high fat diets alone and in cultured brown adipocytes. Also, we performed two powerful methods, RNA sequencing and microRNA profiling to discover the unique pathways and networks interaction, which regulated by EPA in BAT. We were able to dissect the mechanisms underlying activation of BAT to increase thermogenesis and energy expenditure by identifying and characterizing some novel key target pathways and genes.

M.S. THESIS RESEARCH:

2009 **R&D Laboratory of Zam Zam Co, Tehran (Iran)**
Ferdowsi University of Mashhad (Iran), College of Agriculture Engineering
Mentor: Dr. N. Sedaghat
"**The preserving effect of sodium diacetate on carbonated beverage**"
My thesis focused on using sodium diacetate (SDA) in soft drinks as an alternative and safe preservative to replace sodium benzoate as an artificial preservative. I also determined the minimum inhibitory concentration (MIC) of SDA to effectively minimize the growth of *Saccharomyces Cerevisiae, Candida krusei, Leuconostoc mesenteriodes* and *Lactobacillus delbrukii* in culture media and orange beverage.

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RESEARCH EXPERIENCE:

Postdoctoral:

2018-2020 **United States Department of Agriculture (USDA), National Institute of Food and Agriculture (NIFA), Postdoctoral Fellowship:** Integrated gene and microRNA networks mediating anti-inflammatory effects of omega 3 fatty acids in diet-induced obesity.
(PI: Mandana Pahlavani; Mentor: Dr. Naima Moustaid-Moussa)

2017-2018 **National Institutes of Health/National Center for Complementary and Integrative Health (NIH/NCCIH):** Anti-obesity effects of omega-3 fatty acids in brown adipose tissue
PI: Dr. N. Moustaid-Moussa; Role: Postdoctoral fellow

Doctoral:

2016-2017 **Texas Tech University Doctoral Dissertation Completion Fellowship, Dissertation title:** "Cellular and Molecular Basis for Omega 3 Polyunsaturated Fatty Acid Regulation of Brown Adipose Tissue Metabolism and Thermogenesis."
Mentor: Dr. N. Moustaid-Moussa

Summer 2016 **Summer Thesis Dissertation Research Award**, Texas Tech University
"RNA sequencing and miRNA profiling analyses"
Mentor: Dr. N. Moustaid-Moussa

Spring 2016 **Grant-in-Aid,** Office of Parent and Family Relations, the Graduate Student Advisory Council and the Graduate School, Texas Tech University: " RNA sequencing and miRNA profiling analysis."
Mentor: Dr. N. Moustaid-Moussa

Summer 2015 **Graduate Research Assistant**
"Genomics, Proteomics and Metabolomics"
Departmental of Nutrition Sciences; Texas Tech University
Mentor: Dr. N. Moustaid-Moussa

Summer 2014 **Graduate Research Assistant**
"Nutrient- Gene interactions in obesity"
Departmental of Nutrition Sciences; Texas Tech University
Mentor: Dr. N. Moustaid-Moussa

Spring 2014 **Graduate Research Assistant**
"Metabolic and gene expression studies in brown adipose tissue"
Department of Nutritional Sciences; Texas Tech University
Mentor: Dr. N. Moustaid-Moussa

Summer 2013 **Graduate Research Assistant**
"Nutritional regulation of lipid metabolism in obesity and insulin

resistance"
Department of Nutritional Sciences; Texas Tech University
Mentor: Dr. N. Moustaid-Moussa

TEACHING EXPERIENCE:

2014-2016 **Laboratory Instructor**, Department of Nutritional Sciences, Texas Tech University, Lubbock, TX

- Principles of food preparation (NS-2310)

2009-2012 **Invited lecturer,** Department of Food Science and Technology, Azad University, Varamin Branch (Iran)

Courses:

- Nut technology
- Packaging technology
- Sugar technology
- Principles of food preservation
- Environmental health
- Analytical Chemistry (Course and lab)

Mentoring Experience:

2014- 2016 **The Lauro Cavazos & Ophelia Powell-Malone Minority Mentoring Program (Mentor Tech)**

The mission of this program is to promote and encourage academic and personal growth, community involvement, and provide leadership in the promotion of multiculturalism. As a mentor, I hold weekly communications with protégé(s) and a minimum of two face-to-face interactions per month.

I mentored three undergraduate students in different majors:

2015-2016 **Claudia Bohanon**: Mechanical Engineering
Nelly Rubio Rayas: Biology

2014-2015 **Tina George**: Human Development & Family Studies

Graduate Research Co-Mentoring

Spring 2018-2019 **Shasika, Ph.D candidate in Nutritional Sciences**

Shasika is a Ph.D. candidate in NOIR lab, investigating synergistic effects of omega-3 fatty acids and tart cherry anthocyanins on obesity, inflammation and insulin resistance using both *in vivo* and *in vitro* models.

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Undergraduate Research Mentoring

Fall 2017- **Emily Miller,** Cell and Molecular Biology

Emily is an Honors and Pi^2 undergraduate student in Cell and Molecular Biology major, with a pre-med track and minors in Chemistry and Nutrition. She has been assisting me on the project focused on the anti-obesity effects of omega 3 fatty acids in brown adipose tissue, funded by NIH. She presented her research at the American Society of Nutrition (ASN) meeting in Boston and Texas Tech University, Undergraduate Conference in spring 2018.

2018-2109 **Alexandra Miranda,** Biology

Alexandra is an Honors junior pre-med undergraduate student with a Chemistry minor. She was working with me and her graduate mentor, Shasika Jayarathne to determine anti-inflammatory mechanisms of tart cherry anthocyanins in adipose cells and tissues from animals fed tart cherry. She presented her research at the Texas Tech University, Undergraduate Conference in spring 2018, and submitted an abstract for presentation at the National Undergraduate conference in spring 2019.

2016-2017 **Hussain Abidi,** Biology

Hussain was an Undergraduate Medical School Initiative Scholar (UMSI) at Texas Tech University. I mentored him for one academic year and he assisted me on parts of my project to learn brown fat cells culturing, differentiation, and treatment with various hormones and nutrients to study regulation of thermogenesis and brown fat metabolism, gene and protein expression. He presented his research at the Texas Tech University, Undergraduate Conference in spring 2017.

2014-2015 **Fitia Razafimanjato,** Nutritional Sciences

Fitia graduated from TTU in 2015. She received the CASH Family Medicine Award at the Engineering and Medicine Summer Institute in 2014, organized by the National Wind Ressource Center (NWRC) symposium, Texas Tech University. Fitia also won the Nutrition/Human Sciences Outstanding Undergraduate Senior award in 2015. She co-authored several abstracts and a peer-reviewed publication in the Journal of Nutritional Biochemistry, where we studied mechanism mediating effects of omega 3 fatty acids in brown adipose tissue thermogenic protein and gene expression. Fitia is currently pursuing a dental school degree in Madagascar.

Summer 2015 **Kenneth Pham**, high school student

Kenneth was a 2015 Clark Scholar sponsored by the Texas Tech Honors College. I mentored Kenneth on a project to determine microRNAs responsible for brown adipose tissue regulation during differentiation and in response to omega 3 polyunsaturated fatty acids. He presented his work at the end of his summer

internship at Texas Tech University, as Clark scholar. He is currently pursuing undergraduate studies at Columbia University in NY.

Awards and Scholarships:

2020-2022	**United States Department of Agriculture (USDA), National Institute of Food and Agriculture (NIFA), New Investigator Grant ($500,000):** Grape pomace bioavailability and effects on gut Microbiota **(Pending), PI: Mandana Pahlavani**
2018-2020	**United States Department of Agriculture (USDA), National Institute of Food and Agriculture (NIFA), Postdoctoral Fellowship ($165,000):** Integrated gene and microrna networks mediating anti-inflammatory effects of omega 3 fatty acids in diet-induced obesity **(PI: Mandana Pahlavani; Mentor: Dr. Naima Moustaid-Moussa)**
Spring 2018	Selected as one of the top 4 finalists in the **DSM Science & Technology Award International Competition** for outstanding dissertation work in innovative Ph.D. research in polyunsaturated fatty acid (PUFA). Congress of the international society for the study of fatty acid and lipids (ISSFAL, Las Vegas)
Spring 2017	**Outstanding Dissertation Award in Biological Sciences category (First place),** Texas Tech University, Graduate School
2016-2017	**Doctoral Dissertation Completion Fellowship (Fall 2016 and Spring 2017),** Texas Tech University
Fall 2016	**Second place for 3 minutes thesis competition by Graduate School,** Texas Tech University
Fall 2016	**Research Assistant, National Institutes of Health/National Center for Complementary and Integrative Health (NIH/NCCIH) research grant** "Anti-obesity effects of omega-3 fatty acids in brown adipose tissue". (PI: Dr. Naima Moustaid-Moussa)
Summer 2016	**Summer Thesis Dissertation Research Award**, Texas Tech University
Spring 2016	**Travel Award**, American Society of Biochemistry and Molecular Biology (ASBMB) for Experimental Biology (EB) Annual Sessions
Spring 2016	**Grant-in-Aid,** Office of Parent and Family Relations, the Graduate Student Advisory Council and the Graduate School, Texas Tech University
Spring 2016	**Co-authored** a presentation at EB 2016 that won the **American Society for**

	Nutrition (ASN) graduate student research award competition
2015-2016	**Dr. William J. Carter Scholarship Endowment,** Human Science, Texas Tech University
2014-2015	**Horton A. and Mildred Proctor Hobbs Endowed Scholarship** in Human Sciences, Texas Tech University
2014-2015	**Nutritional Sciences scholarship** in Human Science, Texas Tech University
Spring 2014	**Certificate of Award**, Third place in Twenty-Sixth Annual Student Research Week, Texas Tech University, Health Science center
Spring 2014	**Certificate of Award**, Third place in Thirteenth Annual Graduate Student poster competition, Texas Tech University
2013-2014	**C. R. and Virginia Hutcheson Scholarship Endowment** in Human Sciences, Texas Tech University
2013-2014	**H.S Desg Scholarship in Human Sciences***,* Texas Tech University
Spring 2013	**H.S Desg Scholarship in Human Sciences***,* Texas Tech University

TEACHING WORKSHOPS

1. **International Teaching Assistant Workshop (ITA)**, Texas Tech University, Summer 2013.
2. **Groundwork program workshop**, Texas Tech University, spring 2015.

PUBLICATIONS:

Full Peer-Reviewed Manuscripts:

1. **Pahlavani, M.**, Ramalingam, L., Miller K.E., Scoggin, S., Menikdiwela, K., Kalupahana, N.S., Festuccia, W.T., and Moustaid-Moussa, N. Eicosapentaenoic acid reduces adiposity, glucose intolerance and increases oxygen consumption independently of UCP1. ***Molecular Nutrition Food Research***, 2019, DOI: 10.1002/mnfr.201800821.
2. **Pahlavani, M.,** Wijayatunga, N.N., Kottapalli, R., Ramalingam, L., Preethi H. Gunaratne, P.H., Coarfa, C., Rajapakshe, K., Kalupahana, N.S., and Moustaid-Moussa, N. Transcriptomic and microRNA analyses of gene networks regulated by Eicosapentaenoic acid in brown and subcutaneous adipose tissue of diet-induced obese mice. ***BBA Molecular and Cell Biology of Lipids,*** 2018, 1863: p. 1523–1531

3. Wijayatunga, N.N**., Pahlavani, M.,** Kottapalli, R., Kottapalli, P., Ramalingam, L., Gunaratne, P.H., Coarfa, C., Kalupahana, N.S., and Moustaid-Moussa, N. An integrative transcriptomic approach to identify differentially expressed genes and miRNAs in visceral, subcutaneous, and brown adipose tissue from high fat fed mice. ***Oncotarget Journal,*** 2018. 9:9246-9261.

4. **Pahlavani M.**, Razafimanjato, F., Ramalingam, L., Kalupahana, N.S., Moussa, H., Scoggin, S., and Moustaid-Moussa, N. Eicosapentaenoic acid regulates brown adipose tissue metabolism in high-fat- fed mice and in clonal brown adipocytes. ***Journal of Nutritional Biochemistry,*** 2017. 39: p. 101-109.

5. **Pahlavani, M.,** Kalupahana, N.S., Ramalingam, L., and Moustaid-Moussa, N. Regulation and functions of the renin-angiotensin system in white and brown adipose tissue. ***Comprehensive Physiology,*** 2017.7:1137-1150.

6. **Pahlavani, M.,** Ramalho, T., Koboziev, I., LeMieux, M.J., Jayarathne, S., Ramalingam, L., Ribeiro L.F., and Moustaid-Moussa, N. Adipose tissue inflammation in insulin resistance: review of mechanisms mediating anti-inflammatory effects of omega-3 polyunsaturated fatty acids. ***Journal of Investigative Medicine***, 2017.0:1-7.

7. Razavi, M.A., Zaerzadeh, E., Khafajizad, N., and **Pahlavani, M.** Some physical properties of seed and splits of Desi chickpea (Kaka var). ***Journal of Pulses Research***, 2009, 1, 77-83.

8. **Pahlavani, M.,** Mousavi, M.A., Hamidi-Esfahani, Z., Sedaghat, N., and Shahidi. F. Determination of minimum inhibitory concentration (MIC) of sodium diacetate on spoilage microorganisms in carbonated beverages by culture media. ***Journal of Iranian Food Science and Technology***, 2008, 7, 51-59.

Manuscripts in preparation

1. Pahlavani, M., Ramalingam, L., Miller K. E., Scoggin, S., and Moustaid-Moussa, N. Dose-dependent anti-inflammatory and metabolic effects of eicosapentaenoic acid in diet-induced obese mice. In preparation for ***Journal of Nutrition***

2. **Pahlavani, M.,** Ramalho, T., Kalupahana, N.S., Ramalingam, L., Preethi H. Gunaratne, P.H., Coarfa, C., Rajapakshe, K., Jancarc, S., and Moustaid-Moussa, N. Investigation into the underlying molecular mechanisms of white adipose tissue through comparative transcriptome and microRNA analysis regulated by Eicosapentaenoic acid in diet-induced obese mice. In preparation for **PLOS One**.

3. **Pahlavani, M.,** Kalupahana, N.S., Ramalingam, L., Miller, K. E., and Moustaid-Moussa, N. Metabolic pathways and regulatory networks mediating effects of omega 3 fatty acids in development of brown/beige adipocytes. Review article. In preparation for ***Advances in Nutrition.***

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CONFERENCE PROCEEDINGS (Full manuscript):

1. Razafimanjato, F., **Pahlavani, M.,** and Moustaid-Moussa, N. Brown adipose tissue as a novel target for obesity and metabolic disorders: regulation by omega-3 polyunsaturated fatty acids. The National Wind Resource Center (NWRC) Engineering and Medicine Summer Research Institute; Program Proceedings Publication, 2014, Texas Tech University.

PRESENTATIONS (PUBLISHED AS ABSTRACTS):

Oral:

1. **Pahlavani, M.,** Ramalingam, L., Miller, E., Scoggin, S., and Moustaid-Moussa, N. Eicosapentaenoic acid regulates brown adipose tissue function, independently of UCP1. **American Society of Nutrition meeting, 2019**, Baltimore.
2. **Pahlavani, M.,** Ramalingam, L., Miller, E., Koboziev, I., Scoggin, S., and Moustaid-Moussa, N. Effects of Eicosapentaenoic acid in high fat fed UCP1-deficient male mice. **American Society of Nutrition meeting, 2018,** Boston.
2. **Pahlavani, M.** Cellular and molecular basis for omega 3 polyunsaturated fatty acid regulation of brown adipose tissue metabolism and thermogenesis. **DSM Science & Technology Award International Competition** for outstanding dissertation work in innovative Ph.D. research in polyunsaturated fatty acid (PUFA). **Congress of the international society for the study of fatty acid and lipids (ISSFAL), 2018,** Las Vegas.
3. **Pahlavani, M.** Integrated gene and microRNA networks mediating anti-inflammatory effects of omega 3 fatty acids in diet-induced obesity. **USDA NIFA PD meeting, 2018,** Boston.
4. Razafimanjato, F., **Pahlavani, M.,** and Moustaid-Moussa, N., Brown adipose tissue as a novel target for obesity and metabolic disorders: regulation by omega-3 polyunsaturated fatty acids. **The National Wind Ressource Center (NWRC) symposium, Engineering and Medicine Summer Research Institute 2015,** Texas Tech University, Lubbock, TX.

Posters:

1. **Pahlavani, M.,** Miller, E., Ramalingam, L., Scoggin, S., and Moustaid-Moussa, N. Dose-Dependent Anti-Inflammatory and Metabolic Effects of Eicosapentaenoic Acid in Diet-Induced Obese Mice. **Interdisciplinary Nutrition Sciences Symposium**. 2019. Chapel Hill, North Carolina.
2. **Pahlavani, M.,** Ramalingam, L., Miller, E., Scoggin, S., and Moustaid-Moussa, N. Eicosapentaenoic acid regulates brown adipose tissue function, independently of UCP1. **American Society of Nutrition meeting, 2019**, Baltimore.

3. Jayarathne, J., **Pahlavani, M.,** Ramalingam, Scoggin, S., and Moustaid-Moussa, N. Eicosapentaenoic acid increases browning markers in subcutaneous adipose tissue and primary adipocytes from wild type and UCP-1 deficient mice. **American Society of Nutrition meeting, 2019**, Baltimore.

4. **Pahlavani, M.,** Wijayatunga, N.N., Ramalho, T., Ramalingam, L., Kottapalli, R., Gunaratne, P.H., Coarfa, C., Rajapakshe, K., Kalupahana, N.S., and Moustaid-Moussa, N. Genomic profiling of genes and micro RNAs regulated by Eicosapentaenoic acid in brown and white adipose tissue from high fat fed mice. **Immunometabolism and Chronic Disease Conference, 2017**, Coral Coast, Fiji.

5. **Pahlavani, M.,** Wijayatunga, N.N., Kottapalli, R., Ramalingam, L., Gunaratne, P.H., Coarfa, C., Rajapakshe, K., Kalupahana, N.S., and Moustaid-Moussa, N. Transcriptomic and microRNA analyses identify gene networks regulated by Eicosapentaenoic acid in brown adipose tissue from diet-induced obese mice. **American Society of Biochemistry and Molecular Biology, Experimental Biology Conference, 2016**, San Diego, The FASEB Journal. vol. 30 no. 1 Supplement 626.5.

6. Wijayatunga, N.N., **Pahlavani, M.,** Kottapalli, R., Dawson, J.A., Ramalingam, L., Gunaratne, P.H., Coarfa, C., Rajapakshe, K., Kalupahana, N.S., and Moustaid-Mouss, N. Adipose depot-specific differences in transcriptome and microRNA expression in high fat diet induced obese mice. **American Society of Biochemistry and Molecular Biology, Experimental Biology Conference 2016,** San Diego, The FASEB Journal. vol. 30 no. 1 Supplement 626.2.

7. **Pahlavani, M.,** Razafimanjato, F., Kalupahana, N.S., Scoggin, S., Ramalingam, L., and Moustaid-Moussa, N. Eicosapentaenic acid increases thermogenic markers in brown adipose tissue from high fat fed mice and in cultured brown adipocytes. **The Obesity Annual Session, 2015,** Los Angeles, T-P-LB-3865.

8. **Pahlavani, M.,** Razafimanjato, F., Kalupahana, NS., Scoggin, S., Ramalingam, L., and Moustaid-Moussa, N. Eicosapentaenoic acid increases brown adipose tissue thermogenic markers in high fat fed mice. **(1) Experimental Biology Conference, 2015,** Boston, The FASEB Journal, Vol. 29 no. 1 Supplement 750.9. **(2) Obesity Research Cluster, Annual Meeting, 2015,** Texas Tech University, Lubbock, TX (Published as abstract in conference booklet)

9. **Pahlavani, M.,** Kalupahana, N.S., LeMieux, M.J., Aljawadi, A., Scoggin, S., Claycombe, K., and Moustaid-Moussa, N. Eicosapentaenoic acid regulates brown adipose tissue gene expression and metabolism in high fat fed mice. **(1) Experimental Biology Conference 2014,** San Diego, The FASEB Journal, Vol. 28 no. 1 Supplement 1037.5. **(2) 13th Annual Graduate Student Research Poster Competition**, Texas Tech University, 2014, Lubbock, TX; (Published as abstract in conference booklet). **(3) 26th Annual Student Research week**, **Biological Sciences Symposium,** Texas Tech University Health Sciences Center, 2014, Lubbock, TX; (Published as abstract in conference booklet)

10. Razafimanjato, F., **Pahlavani, M.,** Kalupahana, N.S., Scoggin, S., Ramalingam, L., and Moustaid-Moussa, N. Effect of and omega-3 fatty acids, eicosapentaenoic acid, on brown adipose tissue as a novel target for obesity and metabolic disorders. **Annual Undergraduate Student Research Poster**

Competition, 2014, Texas Tech University, Lubbock, TX; (Published as abstract in conference booklet).

EXTRACURICULLAR ACTIVTIES

Volunteer activities

1. **Early Career Member,** Council on Undergraduate Research, Texas Tech University, 2017-present
2. **Early Career Member,** American Association for the Advancement of Science (AAAS), 2015-Present
3. **Judge-South Plains Regional Science & Engineering,** 2014 and 2015
4. **Early Career Member,** American Society of Biochemistry and Molecular Biology (ASBMB), 2014-Present
5. **Early Career Member**, Graduate Nutrition Organization (GNO), Texas Tech University, 2014-Present
6. **Early Career Member**, The Obesity Society, 2013-Present
7. **Early Career Member**, American Society for Nutrition, 2013-Present