

Curriculum Vitae

Meli'sa S. Crawford

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EDUCATION

- 08/16-5/2019 Ph.D. **Arizona State University (ASU)**, Biology, focus in Physiology
School of Life Sciences
Advisor: Dr. Karen L. Sweazea
- *08/14-05/16 **Arizona State University**, Biological Design
Ira A. Fulton Schools of Engineering
Advisor: Dr. Karen L. Sweazea
- 8/08 – 5/12 B.S. **University of Arizona**, Psychology/Molecular and Cellular Biology
- *Applied and accepted into the School of Life Sciences (ASU) Biology, Ph.D. program

EMPLOYMENT

- 2020-present Postdoc **University of California, Riverside**
School of Medicine, Division of Biomedical Sciences
Advisor: Dr. Declan F. McCole

RESEARCH EXPERIENCE

- 2020-present **University of California, Riverside**
Postdoctoral Fellow
Research: Effects of agricultural dust on intestinal homeostasis
Principle Investigator: Dr. Declan F. McCole
Co- Principle Investigator: Dr. Tara M. Nordgren
- 06/17-5/19 **Arizona State University**
Graduate Student Researcher
Research: Novel soil-derived compound alleviates metabolic risk factors
Principle Investigator: Dr. Karen L. Sweazea
- 02/15-10/18 **Arizona State University**
Graduate Student Researcher
Research: Poor Nutrition Promotes Simple Hepatic Steatosis in Adolescents
Principle Investigator: Dr. Karen L. Sweazea
- Arizona State University**
Graduate Student Researcher
Research: Impact of shifting gut microbiota on the development of simple steatosis during a high-fat diet
Principle Investigator: Dr. Karen L. Sweazea

PAST RESEARCH TRAINING AND POSITIONS

- 6/11 – 5/12 **University of Arizona, Department of Psychology**
Undergraduate Research Assistant
Research: Neuropsychology, memory and memory aging in older adults
Principle Investigator: Dr. Elizabeth Glisky

BIOMEDICAL TECHNIQUES AND SKILLS

- DNA isolation for Gut Microbiome Analysis
 - Familiar with QIIME and LefSe
 - Experience in metagenomic data analysis and microbiome analytical tools
 - 16S rDNA and shotgun metagenomic data
- Rodent models of obesity
- Mouse models of intestinal bowel disease
- Immunohistochemistry
- Fluorescence Microscopy
- Polymerase Chain Reaction
 - Genotyping
 - Gene/Protein Expression
- RT-qPCR
- Primer design
- Absorbance and colorimetric assay
- Western Blot
- Cell Culture
- Animal Handling
 - Mice and rats
 - Transgenic models

RESEARCH GRANTS

2021 Western Center of Agricultural Health and Safety- UC Davis (\$10,000)

Graduate and Professional Student Association Jumpstart Grant-ASU (\$2,000.00)

Graduate and Professional Student Association Research Grant- ASU (\$2,000.00)

Sigma-Xi Grant-in-Aid Research Grant (\$1,000.00)

Arizona State University RTI Research Grant (\$1,500.00)

PEER-REVIEWED PUBLICATIONS

1. **Crawford, MS.**, Ulu, A., Ramirez, B., Santos, AN., Chatterjee, P., Canale, V., Manz, S., Lei, H., Nordgren, TM., McCole, DF. (2022). Respiratory Exposure to Hog Dust Extract Increases Intestinal Permeability and Promotes Systemic Inflammation in Mice. (submitted for publication).
2. Spalinger, MS., Canale, V., Becerra, A., Shawki, A., **Crawford, MS.**, Santos, A., Chatterjee, P., Li, J., Nair, M., McCole, DF. (2023) PTPN2 regulates bacterial clearance in a mouse model of enteropathogenic and enterohemorrhagic E. coli infection. *JCI Insight*. [10.1172/jci.insight.156909](https://doi.org/10.1172/jci.insight.156909)
3. Mohr, A., **Crawford, MS.**, Jasbi, P., Fessler, S., Sweazea, KL. (2022) Lipopolysaccharide and the gut microbiota: Considering serotype. *FEBS Letters*. <https://doi.org/10.1002/1873-3468.14328>
4. Kozlova EV, Carabelli B, Bishay AE, Liu R, Denys ME, Macbeth JC, Piamthai V, **Crawford MS**, McCole DF, Zur Nieden NI, Hsiao A, Curras-Collazo MC. (2022) Induction of distinct neuroinflammatory markers and gut dysbiosis by differential pyridostigmine bromide dosing in a chronic mouse model of GWI showing persistent exercise fatigue and cognitive impairment. *Life Sciences*. <https://doi.org/10.1016/j.lfs.2021.120153>
5. Lei, H., **Crawford, MS.**, McCole, DF (2021). JAK-STAT Pathway Regulation of Intestinal Permeability: Pathogenic Roles and Therapeutic Opportunities in Inflammatory Bowel Disease. *Pharmaceuticals*. <https://doi.org/10.3390/ph14090840>
6. Spalinger MR., **Crawford MS.**, Bobardt SR., Li J., Sayoc-Becerra A., Santos AN., Shawki A., Chatterjee, P., Nair MG., McCole DF. (2021). Loss of protein tyrosine phosphatase non-receptor type 2 reduces IL-4-driven alternative macrophage activation. *Mucosal Immunology*. <https://doi.org/10.1038/s41385-021-00441-3>
7. **Crawford MS.**, Nordgren TM., McCole DF (2021). Every Breath You Take: Impact of Environmental Dust Exposure on Intestinal Barrier Function-From the Gut-Lung Axis to COVID-19. *American Journal of Physiology-Gastrointestinal and Liver*. <https://doi.org/10.1152/ajpgi.00423.2020>.

8. **Crawford MS.**, Mohr, A., Sweazea KL (2020). Novel organic mineral complex prevents high-fat diet induced changes in the gut and liver of male Sprague-Dawley rats. *Journal of Nutrition and Metabolism*, 2020, 8846401. <https://doi.org/10.1155/2020/8846401>
9. **Crawford MS**, Gumprich E, Sweazea KL (2019). A novel organic mineral complex prevented high fat diet-induced hyperglycemia, endotoxemia, liver injury and endothelial dysfunction in young male Sprague-Dawley rats. *PLOS One*. 2019 <https://doi.org/10.1371/journal.pone.0221392>.
10. **Crawford M**, Whisner, C, Al-Nakkash, L, Sweazea, K. L. (2019). Six-Week High-Fat Diet Alters the Gut Microbiome and Promotes Cecal Inflammation, Endotoxin Production, and Simple Steatosis without Obesity in Male Rats. *Lipids*. 54 (2-3), 119-131. <https://doi.org/10.1002/lipd.12131>
11. Gadau, A., **Crawford, MS.**, Mayek, R., Giraudeau, M., McGraw, KJ., Whisner, CM, Sweazea, KL. (2019). A comparison of the nutritional physiology and gut microbiome of urban and rural house sparrows (*Passer domesticus*). *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology*, 237, 110332. <https://doi.org/https://doi.org/10.1016/j.cbpb.2019.110332>
12. Mohr, A., Carpenter, K., Basile, A., **Crawford, M.**, Sweazea, KL. (2019). Probiotic supplementation has a limited effect on circulating immune and inflammatory markers in healthy adults: a systematic review of randomized controlled trials. *Journal of the Academy of Nutrition and Dietetics*. 120(4), 548-564. <https://doi.org/10.1016/j.jand.2019.08.018>
13. Grilli, MD., Woolverton, CB., **Crawford, M.**, Glisky, EL. (2016). Self-Reference and Emotional Memory Effects in Older Adults at Increased Genetic Risk of Alzheimer's Disease. *Aging, Neuropsychology and Cognition*. <https://doi.org/10.1080/13825585.22016.1275508>

ABSTRACTS AND PRESENTATIONS

1. **Crawford, MS**, Ulu, A., Nordgren, TM., McCole, DF. *Intranasal Exposure to Hog Dust Extract Promotes Endotoxemia and Increases Gene Expression of TNF- α and Secretory Epithelial Cell Markers in Mouse Intestine*. 2022 Experimental Biology Conference. April 2022. (Poster Presentation).
2. **Crawford, MS**, Ulu, A., Nordgren, TM., McCole, DF. *Intranasal Exposure to Hog Dust Extract Promotes Endotoxemia and Increases Gene Expression of TNF- α and Secretory Epithelial Cell Markers in Mouse Intestine*. 2022 Experimental Biology Conference. April 2022. (Abstract).
3. **Crawford, MS**, Ulu, A., Nordgren, TM., McCole, DF. *Exposure to Hog Dust Extract decreases barrier integrity in Caco-2 cells, induces airway inflammation and increases intestinal permeability in mice*. 2021 STEMNoire Inaugural Research and Holistic Wellness Conference. June 2021. (Talk).
4. **Crawford, MS**, Ulu, A., Nordgren, TM., McCole, DF. *Exposure to Hog Dust Extract decreases barrier integrity in Caco-2 cells, induces airway inflammation and increases intestinal permeability in mice*. 4th Annual BREATHE Spring Workshop. May 18, 2021. (Talk).
5. **Crawford, MS**, Ulu, A., Nordgren, TM., McCole, DF. *Exposure to Hog Dust Extract decreases barrier integrity in Caco-2 cells, induces airway inflammation and increases intestinal permeability in mice*. 4th Annual BREATHE Spring Workshop. May 18, 2021. (Abstract).
6. **Crawford, MS**, Ulu, A., Nordgren, TM., McCole, DF. *Exposure to Hog Dust Extract decreases barrier integrity in Caco-2 cells, induces airway inflammation and increases intestinal permeability in mice*. (invited talk). John Forte Distinguished Abstract Session. Virtual Experimental Biology 2021. April 2021.
7. **Crawford, MS**, Ulu, A., Nordgren, TM., McCole, DF. *Exposure to Hog Dust Extract decreases barrier integrity in Caco-2 cells, induces airway inflammation and increases intestinal permeability in mice*. (Abstract). John Forte Distinguished Abstract Session. Virtual Experimental Biology 2021. April 2021.
8. **Crawford, MS.**, Whisner C., Al-Nakkash L, Sweazea KL. *Implications of short-term high-fat intake on gut, liver, and cardiovascular health of adolescent male rats*. (oral presentation) Virtual 2020 AOCS Annual Meeting and Expo. June 2020. doi:10.21748/am20.99
9. **Crawford, M.**, Sweazea KL. *10-Week High-Fat Diet Promotes Endotoxemia and Alters Microbial Taxonomy in Male Adolescent Rats*. (oral presentation). Experimental Biology Conference. April 9, 2019.
10. **Crawford, M.**, Sweazea KL. *10-Week High-Fat Diet Promotes Endotoxemia and Alters Microbial Taxonomy in Male Adolescent Rats*. (poster). Experimental Biology Conference. April 7, 2019.
11. **Crawford, M.**, Sweazea KL. *10-Week High-Fat Diet Promotes Endotoxemia and Alters Microbial Taxonomy in Male Adolescent Rats*. (abstract). Experimental Biology Conference. April 2019.

12. Wood, C., **Crawford, M.**, Sweazea KL. *Novel Organometallic Complex Prevents High Fat Diet-Induced Liver Injury in Male Sprague-Dawley Rats.* (poster presentation) October 2018. Arizona Physiological Society Meeting.
13. Starr, A., **Crawford, M.**, Sweazea KL. *Examination of an Organometallic Complex on Insulin Resistance in Periadolescent Male Rats Following a 10-week High Fat Diet.* (poster presentation) Arizona Physiological Society Meeting. October 2018.
14. **Crawford, M.**, Clark, W., Sweazea KL. *Organometallic Complex Lowers Biomarkers of Inflammation and Improves Endothelium Dependent Vasodilation in Male Rats.* (poster presentation). Experimental Biology. April 2018.
15. **Crawford, MS.**, Clark, W., Sweazea, K. *Novel Organometallic Complex lowers non-HDL-c in Male Adolescent Rats Following 10-week High Fat Diet* (poster presentation) Arizona Physiological Society Meeting. October 2017
16. **Crawford, MS.**, Whisner, C., Sweazea, K. *Examination of Changes in Intestinal Microbiota Induced by High Fat Feeding in Male Adolescent Rats.* (poster presentation) Experimental Biology. April 2017
17. **Crawford, MS.**, Whisner, C., Sweazea, K. *Examination of Changes in Intestinal Microbiota Induced by High Fat Feeding in Male Adolescent Rats.* (poster presentation) Sigma Xi, The Scientific Research Honor Society-Community Meeting. November 2016
18. **Crawford, MS.**, Whisner, C., Sweazea, K. *Preliminary Examination of Changes in Intestinal Microbiota Induced by High Fat Feeding in Male Adolescent Rats.* (poster presentation) Arizona Physiological Society Meeting. October 2016.
19. **Crawford, MS.**, Liss, T., Calhoun, M., Sweazea, K. 2015. *In the Short Term, Poor Nutrition Promotes Simple Steatosis without Inflammation in Adolescent Rats.* (Abstract) Experimental Biology. April 2016
20. **Crawford, MS.**, Liss, T., Calhoun, M., Sweazea, K. 2015. *In the Short Term, Poor Nutrition Promotes Simple Steatosis without Inflammation in Adolescent Rats.* (Poster Presentation) Experimental Biology. April 2016
21. **Crawford, MS.**, Liss, T., Calhoun, M., Sweazea, K. 2015. *In the Short Term, Poor Nutrition Promotes Simple Steatosis without Inflammation in Adolescent Rats.* (Poster Presentation). LSAMP Research Symposium. February 2016
22. **Crawford, MS.**, Liss, T., Calhoun, M., Sweazea, K. 2015. *In the Short Term, Poor Nutrition Promotes Simple Steatosis without Inflammation in Adolescent Rats.* (Poster Presentation). Jumpstarting STEM Careers Conference- Central Arizona Association of Women in Science. January 2016
23. **Crawford, MS.** 2015. *You Are What You Eat!* (Lesson Plan). Graduate Partners in Science Education. December 2015
24. **Crawford, MS.**, Liss, T., Calhoun, M., Sweazea, K. *In the Short Term, Poor Nutrition Promotes Simple Steatosis without Inflammation in Adolescent Rats.* (poster presentation) Arizona Physiological Society Meeting. November 2015
25. **Crawford, MS.**, Liss, T., Calhoun, M., Sweazea, K. *In the Short Term, Poor Nutrition Promotes Simple Steatosis without Inflammation in Adolescent Rats.* (invited seminar) Arizona Physiological Society Meeting. November 2015
26. **Crawford MS**, Grilli M. *The Strengthening Effects of Self Imagination on Memory in Older Adults.* (poster presentation) University of Arizona UROC Presentations. Tucson, Arizona. July 2011.
27. Woolverton, CI., **Crawford, MS.**, Grilli M., Glisky, EL. *Self-Imagination Improves Memory in Older Adults.* (poster presentation) International Neuropsychology Society Conference. September 2014.

JOURNAL AD HOC REVIEWER

- 2023 Journal of Nutrition and Metabolism
- 2022 Cell Press- Heliyon
American Journal of Physiology- Lung Cellular and Molecular Physiology
- 2021 Nature Communications- Communications Biology
Journal of Nutrition and Metabolism
PLOS ONE
American Journal of Physiology-Lung

AWARDS AND RECOGNITIONS

- 2023 University of California Presidential Postdoctoral Fellowship
- 2021 John Forte Distinguished Abstract- Experimental Biology 2021
- 2019 John Forte Distinguished Abstract- Experimental Biology 2019
Martin Frank Diversity Travel Award- American Physiological Society
- 2018 2018 Caroline tum Suden/ Frances Hellebrandt Professional Opportunity Award
- 2017 3rd Place Poster Presentation at Arizona Physiological Society conference, Flagstaff, AZ
Graduate College Fellowship- Arizona State University
- 2016 Graduate Professional Student Association Travel Grant
Minority Travel Grant - American Physiological Society
- 2014 Bridge to the Doctorate Fellowship- National Science Foundation

INTERVIEWS AND PERSONAL COMMUNICATION

- July 2022 *American Physiological Society- "[American Toxic](#)" by Lauren Arcuri*
Interviewed about my postdoctoral work focusing on ambient air pollution exposure on gastrointestinal health.
- Jan 2022 *American Physiological Society- "[Staying Afloat](#)" by Glenn Cook*
Interviewed about transitioning to a postdoctoral position during the COVID-19 pandemic.

ACADEMIC SERVICE

- 2021- present *Animal Care and Experimentation Committee, American Physiological Society*
Bring relevant policy issues concerning the care and use of animals in research and teaching to the attention of the Society's Council and the membership. Three-year appointment beginning May 1, 2022.
- 2021-2022 *Postdoctoral Mentorship Program at UCR*
Served as a postdoc mentor for three PhD students who were in search of postdoctoral opportunities or industry positions following graduation.
- January 2021 *Quality Improvement Virtual Conference Judge, Riverside, California*
Supported this annual research conference by judging student presentations.
- 2020-2021 *UCR Biomedical Sciences Division Call to Action: Diversity Task Force*
This committee is responsible for evaluating Division practices, policies and opportunities. Additionally, we report to the Division and School of Medicine leadership the efficacy of implemented changes in expanding the growth and success of students, staff, fellows and faculty experiencing racism and prejudice.

2018-2019 **Arizona Physiological Society Graduate Councilor**

Assisted with planning the 2018 Arizona Physiological Society Meeting. Attended committee meetings, responsible for taking photographs, judged abstracts, created badges and facilitated registration.

APS Barbara A. Horwitz and John M. Horowitz Undergraduate Research Awards Judge

As a judge for the undergraduate research awards, I had the responsibility of reviewing posters and gauging scientific understanding for the American Physiological Society at the annual Experimental Biology Meeting in San Diego, CA. (April 22, 2018)

Experimental Biology Meeting Tour Guide for High School Groups, April 23, 2018

Volunteered to serve as a tour guide for the APS Physiology Workshop for High School Students and Teachers at the Experimental Biology 2018 in San Diego, CA. Additionally, encouraged and participated in discussions with high school students about scientific career paths. (April 22, 2018)

2015-2018 **Graduate and Professional Student Association Travel Grant Reviewer, ASU**

Responsible for reviewing up to 10 travel grant applications a month.

UNDERGRADUATE MENTORING

Role	Student	Research Topic
Postdoctoral Mentor 2021-2022	Brianna Ramirez	MYD88 pathway following HDE exposure
Committee Member 2016-2018	Alice Gadau	Urban vs Rural House Sparrow Microbiome
Committee Member 2016-2019	Ashlee Starr	Measuring insulin signaling in skeletal muscle
Committee Member 2016-2019	Courtney Wood	Examining the effects of HFD in liver disease

- 1. Science Fair Judge- Red Mountain High School, Mesa, Arizona**, February 7, 2019
Served as a judge and interviewed students at the annual science fair project held at Red Mountain High School in Mesa, Arizona.
- 2. Your Vote, Your Voice Volunteer**, October 2, 2018
Volunteered setting up voter registration tables as well as talking to young adults about the importance of voting.
- 3. Alpha Kappa Alpha Playground Renovation**, November 2017-2020
I am a member of the Environmental Ownership committee in Alpha Kappa Alpha Sorority, Incorporated. For the last year we have chosen church playgrounds in South Phoenix that have to renovate. We pick up trash, paint and clean the playground equipment.
- 4. Feed My Starving Children Volunteer**, October 2016-2020
Every month, I volunteer for the Christian organization, Feed My Starving Children, where we package food for children all around the world with more emphasis on third world countries.
- 5. Ask a Biologist Graduate Student Writer-Arizona State University**, August 2016-2019
I have the responsibility of answering science-related questions from students all around the world.
- 6. A.S.C.E.N.D College Prep Mentor**, January 2018-May 2018
A.S.C.E.N.D (Achievement, Self-Awareness, Communication, Networking and Development) This monthly college preparatory program was created by Alpha Kappa Alpha Sorority, Incorporated to encourage girls who were raised in underprivileged areas to pursue a higher education. As a mentor, I was responsible for teaching students how to write personal statements, give oral presentations and fill out college applications.
- 7. Graduate Partners in Science Education Mentor**, August 2015-May 2016
During the school year, I created lesson plans and presented science topics (i.e. Nutrition, Digestive Health and Food Quality) to students in underprivileged areas.

Crawford, Meli'sa S. – CV

8. *Night of the Open-Door Presenter*, February 2017
I created a nutrition-related activity for students and their families.
9. *Girls in Stem Mentor -Arizona Science Center*, November 2017
As a mentor for Girls in Stem, I had the honor of discussing my career path with middle school girls who are interested in science as a career. We listened to a panel of distinguished female scientist and also participated in a D.I.Y. rocket launch.

PROFESSIONAL MEMBERSHIPS

- 2021- present American Society for Microbiology (ASM)
- 2020-present Society for Mucosal Immunology (SMI)
- 2017-present Alpha Kappa Alpha Sorority, Incorporated.
- 2015-present American Gastrointestinal Association (AGA)
- 2015-present American Physiological Society (APS)
Association for Women in Science (AWIS)
Graduate Women in Science (GWIS)