Olivia C. Haley

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SUMMARY

- Award-winning researcher in food safety with specializations in food microbiology and 6+ years of experience in agriculture-related research
- Creative and self-motivated researcher with a passion for data-driven solutions and incorporating machine learning for innovative food safety strategies
- Engaging leader with expertise in produce safety, agricultural water microbial quality, and non-thermal treatments against foodborne pathogens

RESEARCH INTERESTS

- Bioinformatics & Computational Biology,
- Genomic & Systems Biology
- Data Mining & Machine Learning
- Nonthermal Antimicrobial Interventions
- Agricultural Water & Produce Safety

EDUCATION

Kansas State University, Olathe, KS, USA
Ph.D. Horticulture and Natural Resource Sciences, GPA 4.0, *Expected Graduation:* May 2023

- *Food Security Scholar: Programming for devising solutions to improve community food security*
- *Certificate in Data Science and Machine Learning: Making Data-Driven Decisions*

University of Guelph, ON, Canada
Ph.D. Food Science, GPA 4.0, 2019 – Aug 2020

McGill University, Montreal, QC, Canada
M.Sc. Plant Science, GPA 3.5, 2015 – 2018

University of South Carolina, Columbia, SC, USA
BSc Biological Sciences, GPA 3.74, 2011 – 2015

- *Graduation with Leadership Distinction in Research*
- *Graduation with Leadership Distinction in Global Learning*

TECHNICAL SKILLS

- **Data Analysis**: Python, SAS, R, Qualtrics, Quantitative/Qualitative Data Analysis
- **Machine Learning**: Supervised & Unsupervised Learning, Deep Learning, Artificial Neural Networks
- **Microbiology**: Culture, Detection (Agar, Petrifilm, PCR), and Enumeration of Foodborne Pathogens
- **Communication**: Peer-Reviewed Manuscripts, SOP's, Grant Writing, Technical Reports,
- **Project Management**: Needs Assessment, Project Planning, Implementation, Evaluation, Reporting

SCHOLARSHIPS, HONORS & AWARDS

- *Kansas State University Research and the State Poster Forum Winner (2022), $250*
- *International Association for Food Protection (IAFP) Student Travel Scholarship (2022)*
- *Kansas City Section IFT Outstanding Graduate Student Scholarship (2022), $800*
- *Three Minute Thesis (3MT) Competition Finalist (2022)*
- *Dan and Kathy Richardson Graduate Student Support Fund (2021),* $3,000

- *One Health Day Poster Presentation Graduate Student 2nd Place Award (2021),* $200
- *Adam's Family Scholarship* (2019), $11,800
- *Hugh Baily Award (2016),* $650
- *Graduate Excellence Award in Agricultural and Environmental Sciences (2016)*
- *Graduate Excellence Award in Plant Science (2015)*
- *Magellan Scholar Award (2014),* $5,000
- *Discovery Day Biomedical Sciences II 2nd Place Award (2014), $200*
- *Purple Heart S.C. Tuition Assistance Program (2011 – 2015),* Full tuition
- *Legislative Incentive for Future Excellence (LIFE) Scholarship (2011 – 2015),* $27,500

RESEARCH EXPERIENCE

Department of Horticulture and Natural Resources, Kansas State University, KS, USA
Graduate Research Assistant, Aug 2020 to present

- Designed, managed, and analyzed data of multiple, simultaneous projects exploring the use of ultraviolet light in agriculture to reduce the application of enviro-toxic agrochemicals in fresh produce production.
- Studied the survival and inactivation kinetics of model organisms (i.e., *E. coli*) in response to non-thermal treatments in fresh produce and agricultural soils
- Mentored 3 MS. students and 2 high school students on experimental design, data analysis and reporting, and scientific writing including short reports and laboratory manuals.
- By graduation will have authored 6 first-authored papers, 2 second-authored papers, 11 presentations at scientific conferences, 4 technical reports, 2 educational handouts, 1 peer-reviewed protocol, and 1 educational video.
- Assisted in the writing and revision of 3 major grant applications for federal, industry, and secondary education funding agencies.
- Led demonstrations to groups of ~25 growers and ~20 elementary school students to raise awareness for safe water practices in agriculture.
- Taught virtual and in-person modules for growers in safe agricultural practices outlined by the Food Safety Modernization Act (FSMA) Produce Safety Rule (PSR).
- Featured in and created informational and promotional videos on food safety topics for extension education initiatives and general audiences.

Department of Food Science, University of Guelph, ON, Canada
Graduate Research Assistant, Sept 2019 to Aug 2020

- Explored methods and developed SOPs for the capture-filtration and detection of *Salmonella* spp. and *E. coli* O157:H7 from water, sprouts, and leafy greens.
- Investigated the development of methods for the simultaneous detection of *E. coli* STEC (O26, O45, O103, O111, O121, and O145) using whole genome sequencing techniques

IEH Laboratories and Consulting, Produce and RTE Division, Annapolis
Laboratory Lead, December 2017 to August 2019

- Managed a team of 5-6 laboratory personnel in qualitative and quantitative microbiology techniques
- Increased team productivity while integrating new clients and techniques within the lab, effectively minimizing turn-around-time while increasing laboratory revenue.
- Oversaw the entry and communication of data and results from the Laboratory Information Maintenance System (LIMS) to international, national, and regional clientele.

Department of Plant Science, McGill University, Montreal, QC, Canada
Graduate Research Assistant, June 2015 – February 2018

- Coordinated with industry experts to design and lead projects investigating herbicide-induced stress in *Zea mays*, *Triticum aestivum*, and *Glycine max* (corn, wheat, soybean).
- Documented a >10% crop yield improvement in *Triticum aestivum* through foliar nutrient supplementation instead of conventional agricultural pesticides.

Department of Biological Sciences, University of South Carolina, Columbia, SC, USA
Undergraduate Research Assistant, August 2013 – May 2015

- Investigated defects in petal initiation and growth in Arabidopsis thaliana *ant*-4, *ant*-4 *ail*5, *ant*-4 *ail*6, and *ant*-4 *ail*7 mutants
- Gained experience using molecular biology techniques including PCR and gel electrophoresis, DNA extraction, genetic transformation of plants and Agrobacterium tumefaciens
- Conducted quality control of mutants by collecting detailed qualitative and quantitative data.

TEACHING EXPERIENCE

Department of Horticulture and Natural Resources, Kansas State University, KS, USA
Graduate Teaching Assistant, August 2022 to December 2022

- Served as a teaching assistant for two courses in urban agriculture
- Led two lectures as a Guest Lecturer for topics in on-farm produce safety
- Co-led the planning and execution of urban farm tours for undergraduate and graduate students to experience the urban agricultural landscape in New Orleans, Louisiana

Department of Food Science, University of Guelph, ON, Canada
Graduate Teaching Assistant, Jan 2020 to May 2020

- Co-led laboratory course to introduce ~40 students to fundamental techniques in industrial and fermentation microbiology (e.g., malt extraction/pitching, wine analysis, kombucha fermentation, etc.)
- Led two lectures as a Guest Lecturer for topics in industrial microbiology
- Managed the preparation of reagents, organisms, and laboratory materials.

Department of Natural Resources, McGill University, Montreal, QC, Canada
Graduate Research Assistant, Aug 2015 – Dec 2015

- Led laboratory sections to instruct ~20 students on experimental approaches in animal physiology and microbiology
- Coordinated with other teaching assistants to prepare the laboratory materials as well as order and direct laboratory materials
- Assisted with updating the laboratory manual and communicating the updates to other teaching assistant

Department of Plant Science, McGill University, Montreal, QC, Canada
Graduate Research Assistant, Aug 2015 – Dec 2015, Aug 2016 – Dec 2016

- Led laboratory sections to instruct ~20 students on experimental approaches in plant growth, metabolism, and cell structure.
- Assisted with the creation of a new laboratory manual to enhance student participation and active learning
- Invigilated mid-term, final exam and assisted with the grading of the assessments

FIRST-AUTHORED PUBLICATIONS

- **Olivia C. Haley**, Yeqi Zhao, Joshua M. Maher, Sara E. Gragg, Valentina Trinetta, Manreet Bhullar, Londa Nwadike. (2022). *Comparative assessment of the microbial quality of agricultural water on Kansas and Missouri fresh produce farms*. Manuscript published.
- **Olivia C. Haley**, Yeqi Zhao, Manreet Bhullar. (2022). *Protocol for Evaluating the Microbial Inactivation of Commercial UV Devices on Plastic Surfaces*. Manuscript published.

- **Olivia C. Haley**, Yeqi Zhao, Manreet Bhullar. (2022). *Not 'berry' fruitful. The attenuation of UV-C LED microbial reduction efficacy due to fruit surface morphology.* Manuscript submitted for review.
- **Olivia C. Haley,** Tricia Jenkins, Patrick Abeli, Cary Rivard, Martin Talavera, Manreet Bhullar, Eleni Pliakoni. (2022). Improving the microbial safety, nutritional quality, and consumer acceptability of lettuce (*Lactuca sativa* L cv. 'New Red Fire') grown in movable high tunnels in Kansas. Manuscript in preparation.
- **Olivia C. Haley**, Manreet Bhullar, Londa Nwadike, Cary Rivard, Eleni Pliakoni (2022). *The Application of Ultraviolet Light Technologies in Fresh Produce Production and Processing: Trends and Challenges in Produce Safety and Quality.* Manuscript in preparation.
- **Olivia C. Haley**, Yeqi Zhao, Manreet Bhullar, Cary Rivard, Trevor Hefley. (2022). *The application of ultraviolet light to improve the microbial safety of agricultural surface water.* Manuscript in preparation.
- **Olivia C. Haley**, Manreet Bhullar, Londa Nwadike, Arlene Enderton (2022). *Grower Knowledge, Attitudes, and Perceptions Regarding the Use of Ultraviolet Light for Agricultural Water Disinfection.* Manuscript forthcoming.

SECOND-AUTHORED PUBLICATIONS

- **Yeqi Zhao,** Olivia C. Haley, Manreet Bhullar, Don Stoeckel, Londa Nwadike. (2022). *Knowledge and Current Practices Related to Agricultural Water Microbial Quality among Kansas and Missouri Produce Growers.* Manuscript accepted for publication.
- **Yeqi Zhao**, Olivia C. Haley, Manreet Bhullar, Cary Rivard. (2022). *Evaluating Antimicrobial Efficacy of Cover Crops to Reduce Pathogen Load in Contaminated Soil*. Manuscript in preparation.

CONFERENCES & PRESENTATIONS

- **Olivia C. Haley**, Yeqi Zhao, Trevor Hefley, Logan Britton, Manreet Bhullar. (July 2022). *The Application of Ultraviolet Light Technology to Enhance the Safety of Agricultural Water on Kansas Fresh Produce Farms.* 2022 Produce Safety Consortium. Phoenix, AZ, USA.
- **Olivia C. Haley**, Yeqi Zhao, Trevor Hefley, Logan Britton, Manreet Bhullar. (July 2022). *The Application of Ultraviolet Light Technology to Enhance the Safety of Agricultural Water on Kansas Fresh Produce Farms.* 2022 Governors. Governor's Conference on the Future of Water in Kansas, Manhattan, KS, USA.
- **Olivia C. Haley**, Yeqi Zhao, Trevor Hefley, Logan Britton, Manreet Bhullar. (July 2022). *The Application of Ultraviolet Light Technology to Enhance the Safety of Agricultural Water on Kansas Fresh Produce Farms.* 2022 Kansas State University Research and the State Poster Forum, Manhattan, KS, USA.
- **Olivia C. Haley**, Yeqi Zhao, Trevor Hefley, Logan Britton, Manreet Bhullar. (July 2022). *The Application of Ultraviolet Light Technology to Enhance the Safety of Agricultural Water on Kansas Fresh Produce Farms.* 2022 International Association for Food Protection Annual Meeting. Pittsburgh, PA, USA.
- **Olivia C. Haley**, Yeqi Zhao, Trevor Hefley, Manreet Bhullar. (March 2022). *The Application of Ultraviolet Light Technology to Enhance the Safety of Agricultural Water on Kansas Fresh Produce Farms.* 2022 K-State Graduate Research, Arts, and Discovery (GRAD) Forum. Manhattan, KS, USA.
- **Olivia C. Haley**, Manreet Bhullar. (February, March 2022). *There's a photon in my water! UV Light, Food Safety, and You*. 2022 K-State Three Minute Thesis (3MT) Competition. Manhattan, KS, USA.
- **Olivia C. Haley**, Yeqi Zhao, Joshua M. Maher, Sara E. Gragg, Valentina Trinetta, Manreet Bhullar, Londa Nwadike. (January 2022). *Comparative assessment of the microbial quality of agricultural water on Kansas and Missouri fresh produce farms*. 2022 Great Plains Growers Conference. St. Joseph, MO, USA.
- **Olivia C. Haley**, Yeqi Zhao, Joshua M. Maher, Sara E. Gragg, Valentina Trinetta, Manreet Bhullar, Londa Nwadike. (December 2021). *Comparative assessment of the microbial quality of agricultural water on Kansas and Missouri fresh produce farms*. 2021 National Consortium for Produce Safety. (Virtual).

- **Olivia C. Haley**, Yeqi Zhao, Joshua M. Maher, Sara E. Gragg, Valentina Trinetta, Manreet Bhullar, Londa Nwadike. (November 2021). *Comparative assessment of the microbial quality of agricultural water on Kansas and Missouri fresh produce farms*. 2021 Kansas City One Health Day. Olathe, KS, USA.
- **Olivia C. Haley**, Yeqi Zhao, Joshua M. Maher, Sara E. Gragg, Valentina Trinetta, Manreet Bhullar, Londa Nwadike. (November 2021). *In wine there is wisdom, in water there is bacteria: An assessment of the microbial quality of agricultural water on fresh produce farms in Kansas*. Governor's Conference on the Future of Water in Kansas. (Virtual)
- **Olivia C. Haley**, Yeqi Zhao, Joshua M. Maher, Sara E. Gragg, Valentina Trinetta, Manreet Bhullar, Londa Nwadike. (September 2021). *Comparative assessment of the microbial quality of agricultural water on Kansas and Missouri fresh produce farms*. 2021 Midwest Women in Science Conference (WISC). (Virtual)
- **Olivia C. Haley**, Yeqi Zhao, Manreet Bhullar. (March 2021). *Antibacterial Activity and Microbial Inactivation Efficacy of UV-C Reactor Test Devices*. K-State Graduate Research, Arts, and Discovery (GRAD) Forum. (Virtual)
- **Olivia C. Haley** and Donald Smith. (June 2017). *The alleviation of herbicide-induced photosynthetic stress with foliar nutrient supplementation may lead to increased crop productivity in Triticum aestivum*. SPPQ 2017 Annual Meeting – Phytoprotection: The pilar of a sustainable agro-ecosystem. Sainte Anne de Bellevue, QC, Canada
- **Olivia C. Haley** and Beth Krizek. (April 2014). *Loss of petal initiation in Arabidopsis ant ail double mutants is not due to reduced auxin levels.* 2014 Annual University of South Carolina Discovery Day. Columbia, SC, USA

LEADERSHIP EXPERIENCE

- *Student Representative,* Food Microbiology Division, Institute for Food Technologists, August 2022 – present
- *Marketing Committee Member, Scientific Committee Member,* 2022 Urban Food Systems Symposium, December 2021 – September 2022
- *Graduate Student Liaison,* Kansas City Section, Institute for Food Technologists, October 2021 – present
- *Water Safety and Quality Professional Development Group Student Liaison*, International Association for Food Protection, June 2021 – present
- *Certified Produce Safety Alliance Trainer*, Produce Safety Alliance, June 2021 – present
- *Laboratory Manager,* Food Safety Lab of K-State Olathe, August 2020 – present
- *Networking and Student Engagement Subcommittee Co-Lead*, One Health Student Committee, One Health Institute, University of Guelph, January 2020 – August 2020
- *Food Science Graduate Representative*, Joint Health and Safety Committee, Department of Food Science, University of Guelph, January 2020 – August 2020
- *Delegate*, Department of Natural Resource Sciences, Association of Graduate Students Employed at McGill (AGSEM), August 2016 – August 2017

EXTENSION & OUTREACH EXPERIENCE

Willie and the Salad Bonanza Contest (November 2022)

- Helped design and implement an interactive activity for ~40 elementary, middle school, and high school students to get them excited about food production/food science and segue to discussions on the programming provided by K-State's Food Science Institute.

K-State Olathe Horticulture Center Commercial Fruit & Vegetable Day (August 2022)

- Presented the latest results on the efficacy and cost-effectiveness of two commercial UV-assisted water decontamination devices to a group of 20 to 40 local fresh produce growers
- Answered technical/practical questions about the devices and their different roles in helping growers achieve agricultural water with a lower microbial risk.

Produce Safety Alliance Grower Training (In person – November 2021; Remote delivery – October 2021)

- As a certified trainer, delivered in-person and remote modules to fresh produce growers regarding the federal regulatory requirements and recommendations for growing and storing fresh produce

Santa Fe Trail Middle School Field Experience (November 2021)

- Promoted safe food production practices to a group of 15-20 middle school students interested in growing tomatoes for sale at the local farmers' market.
- Facilitated an interactive demonstration agricultural water quality and the role of ultraviolet light in reducing the microbial risk of irrigated crops.

Willie and the Salad Bonanza Contest (November 2021)

- Helped design and implement an interactive activity for ~40 elementary, middle school, and high school students to get them excited about food production/food science and segue to discussions on the programming provided by K-State's Food Science Institute.

K-State Olathe Horticulture Center Commercial Fruit & Vegetable Day (August 2021)

- Presented to a group of 20 to 40 local fresh produce growers about the use of UV light to disinfect agricultural water
- Answered technical/practical questions and facilitated discussion regarding UV systems and how they can fulfill federal water quality regulation and recommended practices.

Willie and the Salad Bonanza (October 2020)

- Spoke to ~20 middle and high school students about the programming provided by K-State's Food Science Institute
- Assisted in the Volume Determination Station to determine the volume of potting medium used by each competing group.

MEDIA FEATURES

- *Food Security Scholar Spotlight: Olivia Haley.* (2022). The Loop. Staley School of Leadership Studies. Kansas State University, https://blogs.k-state.edu/leadership/2022/02/11/food-security-scholar-spotlight-olivia-haley/
- *Seed Grant Features: Olivia Haley*. (2022). Global Food Systems. Kansas State University, https://www.k-state.edu/research/global-food/seed-grant/graduate-student-feature/Olivia-Haley.html
- *Magellan + GLD: Putting Together the Puzzle*. (2015). My Magellan Story. Office of the Vice President for Research, University of South Carolina. https://sc.edu/about/offices_and_divisions/research/internal_funding_awards/students/undergraduate/magellanten/my_magellan_story/Olivia_Haley.php