

# CLAIRE M. MARIK

724-316-0672 · [cmarik@vt.edu](mailto:cmarik@vt.edu) · 33446 Research Drive · Painter, VA

## EDUCATION

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**Virginia Polytechnic Institute and State University** | Blacksburg, VA

Masters of Life Sciences, Food Science and Technology  
Emphasis in Food Safety and Food Microbiology

Expected graduation: May 2020

**University of Delaware** | Newark, DE

Bachelors of Science with Distinction, Food Science  
Minors: Public Health, Chemistry

May 2018

## PROFESSIONAL EXPERIENCE

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**Virginia Tech Eastern Shore AREC** | Department of Food Science and Technology *August 2018 – Present*  
*Graduate Research Assistant* | Advisor: Dr. Laura Strawn

### **Systematic Review on *Listeria monocytogenes* Growth and Survival on Fruit and Vegetable Surfaces**

- A comprehensive, systematic review was conducted to identify and characterize previously published data on the growth and survival of *L. monocytogenes* on intact fruit and vegetable surfaces. The review provides an inventory of the current *L. monocytogenes* growth data on intact whole produce at handling and storing conditions in order to identify critical data gaps.

### ***Listeria monocytogenes* Growth and Survival of Produce at Different Storage Conditions**

- *L. monocytogenes* growth and survival experiments were performed on intact fruit and vegetable surfaces to fill critical data gaps based on the systematic literature review. Quantitative data on growth and survival potential of *L. monocytogenes* at optimal and abusive storage conditions was generated in order to develop quantitative risk models for selected commodities that demonstrate behavior and survival potential under varying conditions.

### **Carbon Source Dependent Effects of Anaerobic Soil Disinfestation on the Recolonization Ability of *Salmonella* spp.**

- A growth chamber study was conducted examining the varying carbon sources used in Anaerobic Soil Disinfestation treatment, a process of disinfecting soil by creating anaerobic soil condition, and the survival and recolonization potential of *Salmonella*. Additionally, the risks associated with each carbon source were quantified.

**Virginia Tech** | Department of Food Science and Technology

*Spring 2019*

*Graduate Teaching Assistant* / Food Microbiology – BIOL/FST 3604

- Facilitated a pre-lab tutorial, supervised weekly laboratory experiments, enforced safety regulations and actively provided advice and assistance to students as they conducted laboratory work
- Graded laboratory worksheets and reports
- Assisted in preparation of equipment, cultures and media needed for laboratory experiments and maintained a clean and orderly laboratory environment
- Proctored exams and assisted in creation of weekly quizzes, kept records of student grades, updated the on-line grade book and held weekly office hours

**University of Delaware** | Department of Animal and Food Science

*September 2014 – May 2018*

*Undergraduate Researcher* | Advisor: Dr. Kalmia Kniel

### **Manure Pathogen Survey Project**

- Surveyed microbial content in 500 land applied manure and compost samples used for risk-based approaches to set a standard for safe use of biological soil amendments in corporation with the Food Safety Modernization Act's Produce Rule

### **Watermelon and Soil Amendments Project**

- Food safety risks of watermelons grown using poultry manure were examined in field trials from May till November 2015/2016 to determine the factors that contribute to persistence of *Salmonella*

### **Efficiency of Zero Valence Iron Filters**

- Zero Valent Iron filters were engineered and tested on the reduction of *Escherichia coli* 353 and *Listeria monocytogenes* in surface water. Filters were studied over a 6-month period to determine reduction of pathogens and life of filters. Additionally, filters were used to study the effects of ZVI treated water for irrigation of leafy greens.

**CONSERVE** | University of Maryland & United States Department of Agriculture  
*Water Quality Analysis Intern*

*Summer 2017*

- Aided in the collection and distribution of large water samples collected in the lower counties of Delaware and utilized microbiological and molecular biology tools for the detection of viruses and protozoa from water samples
- Constructed zerovalent iron filters in the laboratory which included different filter designs and different combinations of sand and iron appropriate for different water types
- Used statistical analysis to communicate data in both written and oral form
- Mentored two visiting undergraduate researchers in summer research program

**University of Delaware** | Department of Animal and Food Science  
*Teaching Assistant / Food for Thought – ANFS 102*

*Spring 2016, Spring 2017, Spring 2018*

- Assisted in classroom lecture, proctoring exams, grading assignments, and working with students

### **PUBLICATIONS**

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**Marik, C. M.**, Zuchel, J., Schaffner, D. W., Strawn, L. K. 2019. Growth and Survival of *Listeria monocytogenes* on Intact Fruit and Vegetable Surfaces During Postharvest Handling: A Systematic Review. JFP-19-283:Accepted

**Marik, C. M.**, Anderson, B., Gartley, S., Craighead, S., Bradshaw, R., Kulkarni, P., Sharma, M., Kniel, K. E. 2019. The efficacy of zero valent iron-sand filtration on the reduction of *Escherichia coli* and *Listeria monocytogenes* in surface water for use in irrigation. *Environmental Research*. 173:33-39 Doi: <https://doi.org/10.1016/j.envres.2019.02.028>

Pinton, S. C., Bardsley, C. A., **Marik, C. M.**, Boyer, R. R., Strawn, L. K. 2019. Growth and Survival of *Listeria monocytogenes* on Broccoli and Cauliflower Held at Varying Storage Temperatures. *Under Review*.

Acuff, J. C., Wu, J., **Marik, C. M.**, Waterman, K., Gallagher, D., Huang, H., Williams R.C., Ponder, M. 2019. Thermal Inactivation of *Salmonella*, Shiga Toxin-Producing *Escherichia coli*, *Listeria monocytogenes*, and a Surrogate (*Pediococcus acidilactici*) Resulting from Low-Temperature, Vacuum-Assisted Steam Treatments on Raisins, Apricot Halves, and Macadamia Nuts. *Under Review*

### **PRESENTATIONS WITH PUBLISHED RESEARCH ABRSTRACT**

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#### **Peer Reviewed**

- Growth and Survival of *Listeria monocytogenes* on Intact Fruit and Vegetable Surfaces: A Systematic Review | International Association for Food Protection Annual Meeting: P1-37 | July 2019
- Reduction of Enteric Pathogens in Irrigation Water by Zero-Valent Iron (ZVI) and Sand Filtration | International Association for Food Protection Annual Meeting: P1-208 | July 2018
- Factors That Contribute to *Salmonella* Persistence in Field Soil Samples | International Association for Food Protection Annual Meeting: P2-148 | July 2017

#### **Non - Peer Reviewed**

- Growth and Survival of *Listeria monocytogenes* on Intact Fruit and Vegetable Surfaces: A Systematic Review
  - o Virginia Tech Food Science & Technology Poster Competition | April 2019
  - o Virginia Tech Graduate Student Assembly Research Symposium | March 2019
- The Efficacy of Zero Valent Iron Filtration on The Reduction of *Listeria monocytogenes* and *Escherichia coli* in Surface Water for Use in Irrigation | University of Delaware Senior Thesis Defense | April 2018
- Comparative Analysis of Multiple vs. Single Pass Filtration Technique Using Zero Valent Iron | Undergraduate Research and Service Scholar Celebratory Symposium | August 2017
- The Efficacy of ZVI Filtration in the Reduction of Gram-Negative and Gram-Positive Bacteria in Reclaimed Water | Undergraduate Research and Service Scholar Celebratory Symposium | August 2017

## **HONORS AND AWARDS**

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Safe Quality Food Institute Food Safety Auditing Scholarship and Education Travel Grant	<i>September 2019</i>
Center for Produce Safety Research Symposium Student Travel Award	<i>June 2019</i>
3-A Sanitary Standard Inc. Annual Meeting and Education Program Student Travel Award	<i>May 2019</i>
Feeding Tomorrow's Institute for Thermal Processing Specialist Scholarship	<i>April 2019</i>
Virginia Tech FST Poster Competition First Year Graduate Student Division – 1 <sup>st</sup> place	<i>April 2019</i>
Virginia Tech Graduate Student Assembly Poster Presentation Competition - 2 <sup>nd</sup> place	<i>March 2019</i>
International Association for Food Protection Undergraduate Research Competition - 2 <sup>nd</sup> place	<i>July 2018</i>
Produce Marketing Association Center for Growing Talent Career Pathways Student Travel Award	<i>May 2018</i>
University of Delaware Deans List	<i>Six Semesters</i>

## **PROFESSIONAL MEMBERSHIPS, AFFILIATIONS AND INVOLVEMENT**

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International Association for Food Protection	<i>Member Since 2016</i>
Institute of Food Technologists	<i>Member Since 2016</i>
Virginia Tech Food Science Club	<i>September 2018 – Present</i>
University of Delaware Food Science Club	<i>September 2014 – May 2018</i>
- Vice President - <i>September 2017 – May 2018</i>	
- Fundraising Chair - <i>September 2016 - May 2017</i>	

## **CONFERENCES**

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Safe Quality Food Institute International Conference	<i>November 2019</i>
International Association for Food Protection Annual Meeting	<i>2017, 2018, 2019</i>
Center for Produce Safety Research Symposium	<i>June 2019</i>
3-A Sanitary Standard Inc. Education Program and Annual Meeting	<i>May 2019</i>
Produce Marketing Association Tech Knowledge Symposium	<i>May 2018</i>

## **TRAINING COURSES AND CERTIFICATIONS**

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**Produce Safety Alliance** | Grower Training and Certification | Christiansburg, VA | January 2019  
**Mapping with Drones** | Regulations, Data Acquisition and Image Processing | Blacksburg, VA | October 2018

## **LEADERSHIP AND SERVICE**

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**University of Delaware Residence Life and Housing** | **Resident Assistant** *January 2016 – May 2018*

- Promoted academic excellence, addressed student needs, resolved conflicts, and encouraged involvement among residents in a way that supported the mission of the University and the Department of Residence Life and Housing
- Developed and lead programs to promote social, educational, diversity, health, and emotional growth
- Implemented and enforced all University and Residence Life and Housing policies

### **Gamma Sigma Sigma National Community Service Sorority**

*September 2016 – May 2018*

- Performed minimum of 25 hours of community service per semester
- Chapter President *Spring 2018*
  - o Oversaw activities for 250 members
  - o Presided over chapter and officer meetings using parliamentary procedure
  - o Worked with collegiate members, alumnae advisors, national headquarters, campus administrators and executive officers
- Corresponding Secretary *Fall 2017*
  - o Handled all correspondences for the Beta Gamma chapter
  - o Wrote the weekly newsletter delivering an easy-to-read version of chapter news

### **Best Buddies Delaware**

*September 2014 – May 2018*

- Participated in one-to-one friendships with individuals with intellectual and developmental disabilities offering social mentoring
- Helped those with IDD form meaningful connections, gain self-confidence and self-esteem, and build friendships

### **YMCA Camp Kon-O-Kwee/Spencer**

*Summer 2014, Summer 2015, Summer 2016*

- Summer Program Director
  - o Organized and implemented daily program schedule for all campers and staff
  - o Designed, planed, and organized camp wide programing for 200 campers ages 7-15
  - o Managed and supervised program staff to ensure programs are performed safely and successfully
- Camp Counselor and Lifeguard
  - o Ensured the safety of campers' ages 7-15 while campers attend residential summer camp
  - o Collaborated with other counselors on the creation of activities for campers and demonstrated how to play them
  - o Conducted pool surveillance and enforce aquatic rules

## **REFERENCES**

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**Laura K. Strawn, Ph.D.** | Assistant Professor, Extension Specialist Produce Food Safety | Eastern Shore Virginia Tech Agricultural, Research and Extension Center | lstrawn@vt.edu

**Monica Ponder, Ph.D.** | Associate Professor, Microbial Food Safety | Virginia Tech | mponder@vt.edu

**Kalmia E. Kniel, Ph.D.** | Professor, Microbial Food Safety | University of Delaware | kniel@udel.edu

**Manan Sharma, Ph.D.** | Research Microbiologist, Environmental Microbial & Food Safety Laboratory | United States Department of Agriculture - Agricultural Research Service | manan.sharma@ars.usda.gov