



**Exponent**<sup>®</sup>  
Engineering & Scientific Consulting

## Vashti Campbell, Ph.D.

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### Professional Profile

Dr. Vashti Campbell is a scientist in Exponent's Center for Chemical Regulation and Food Safety. She possesses expertise in food processing, safety, and quality. She is certified in acidified foods manufacturing. Dr. Campbell provides clients with engineering and scientific proficiency in food processing systems, sustainability, antimicrobial intervention technologies, and food quality solutions. Furthermore, she applies her knowledge of chemistry toward solutions for food packaging and materials challenges.

Before joining Exponent, she conducted research on applied polymeric synthesis, spectroscopic characterization analyses (FT-IR, SEM, and UV-Vis), and AOAC food quality measurements in the development of a colorimetric, inkjet-printed sensor for the detection of spoilage compounds in seafood. Dr. Campbell also conducted studies on plasma-activated simulated seawater for application in static depuration systems for live oysters to reduce internal bacteria for raw seafood consumption. Other research includes development and validation of a potentiometric biosensor for bacteria in foods, determining the effects of cryogenic and air blast freezing techniques on the quality of crawfish minced meat, synthesis and characterization (FT-IR and TEM) of gold nanorods and their nanoscale ionic materials, and synthesis and characterization (GC-MS, NMR, and column chromatography) of solution-processable squaraines as donors for organic photovoltaics.

Dr. Campbell was a quality assurance laboratory technician for a U.S.-based, packaged food and beverage company. She routinely monitored and reported the physical, chemical, microbiological, and organoleptic properties of dairy-based, plant-based, cold brew coffee, and creamer beverage products, their packaging, and raw food materials. Further she conducted environmental microbiological testing and performed inspections and audits on packaging and processing systems throughout the facility to comply with standard operating procedures and FDA good manufacturing practices.

She has published research in and served as a reviewer for peer-reviewed scientific journals and presented at professional society conferences.

### Academic Credentials & Professional Honors

Ph.D., Biological and Agricultural Engineering, North Carolina State University, 2022

M.S., Biological and Agricultural Engineering, Louisiana State University, 2018

B.S., Chemistry, Norfolk State University, 2012

ASABE John C. Nye Fellowship Recipient, 2021

The National GEM Consortium Associate Fellow, 2018

North Carolina State University Provost's Doctoral Fellow, 2018

NSF LS-LAMP BD Fellow, 2016

## Licenses and Certifications

Acidified Foods Manufacturing School Certification

## Academic Appointments

Adjunct Assistant Professor, Dept. of Biological and Agricultural Engineering, NCSU

Editorial Board Member, Aquacultural Engineering, Elsevier, 2024

Guest Lecturer, Aquacultural Engineering, Biological and Agricultural Engineering, NCSU, 2021-2022

Guest Lecturer, Food Process Engineering, Biological and Agricultural Engineering, NCSU, 2020-2021

Teaching Assistant, Agricultural Electrification Laboratory, Biological and Agricultural Engineering, NCSU, 2020

Teaching Assistant, Food Engineering, School of Nutrition and Food Science, LSU, 2017-2018

Teaching Assistant, Food Preservation, School of Nutrition and Food Science, LSU, 2017-2018

Teaching Assistant, Quantitative Biology in Engineering, Biological and Agricultural Engineering, LSU, 2017

Teaching Assistant, Chocolate Science, Food Science and Technology, Ohio State University, 2012-2013

## Prior Experience

Research and Teaching Assistant, North Carolina State University, 2018-2022

Quality Assurance Laboratory Technician, Danone North America, 2014-2016

## Professional Affiliations

Institute of Food Technologists (IFT)

Society of Food Engineering (SoFE)

American Society of Agricultural and Biological Engineers (ASABE)

## Publications

Hall, S., Campbell, M., Smith, D., Campbell, V., Smith, E., Pascual, C., & Newsom, L. (2024). Toward a Theology of Sustainable Aquaculture: Wisely Producing Safe Abundant Seafood While Enhancing Fruitfulness of Aquatic Creatures. *Perspectives on Science & Christian Faith*, 76(2), 107-124.

Campbell, V. M., Hall, S., & Salvi, D. (2023). Antimicrobial Effects of Plasma-Activated Simulated Seawater (PASW) on Total Coliform and *Escherichia coli* in Live Oysters during Static Depuration.

Fishes, 8(8), 396. <https://doi.org/10.3390/fishes8080396>

Campbell, V. M. (2022). Enhancing the Depuration Process for Bacterial Reduction in Live Oysters. NCSU Doctoral Dissertation.

Campbell, V., Chouljenko, A., & Hall, S. (2022). Depuration of live oysters to reduce *Vibrio parahaemolyticus* and *Vibrio vulnificus*: A review of ecology and processing parameters. *Comprehensive Reviews in Food Science and Food Safety*, 21(4), 3480–3506.

Campbell, V. M., Wang, Q., Hall, S. G., & Salvi, D. (2022). Physicochemical properties and antimicrobial impacts of plasma-activated simulated seawater (PASW) on *Escherichia coli*. *JSFA Reports*, 2(5), 228–235. <https://doi.org/https://doi.org/10.1002/jsf2.46>

Campbell, V. (2021). Moral Obligations of Aquaculture. In 2021 ASABE AIM. American Society of Agricultural and Biological Engineers.

Hall, S. G., Campbell, M. D., Campbell, V. M., Geddie, A., Frinsko, M. O., Greensword, M., Hasan, R., Kaseera, N., Malveaux, C., & Paul, D. (2021). Smart Systems to Enhance Sustainability and Add Value to Marine Aquaculture. In 2021 ASABE AIM. American Society of Agricultural and Biological Engineers.

Reyes, V., Chotiko, A., Chouljenko, A., Campbell, V., Liu, C., Theegala, C., & Sathivel, S. (2018). Influence of wall material on production of spray dried *Lactobacillus plantarum* NRRL B-4496 and its viability at different storage conditions. *Drying Technology*, 36(14), 1738-1748. <https://doi.org/10.1080/07373937.2017.1423324>

## Presentations

Campbell, V. Moral Obligations of Aquaculture. Conference presentation. American Society of Agricultural and Biological Engineers Annual International Meeting. 2021.

Campbell, V. Optimization of the Depuration Process for Oysters: Current Knowledge and Future Work. Conference presentation. American Society of Agricultural and Biological Engineers Annual International Meeting. 2021.

Campbell, V. Effect of novel oyster depuration treatment on bacterial inactivation. Research Presentation. NCALS Foundation Board Research Competition (3rd place award). 2020.

Campbell, V. How to make raw, Eastern oysters (*Crassostrea virginica*) safe for human consumption? Research poster presentation. BASF, Innovations in Agriculture. 2019.

Campbell, V. Synthesis of Gold Nanorods and their Nanoscale Ionic Materials. Conference presentation. Emerging Researchers National Conference in STEM. 2012.

Campbell, V. Solution-Processable Squaraines as Donors for Organic Photovoltaics. Research poster presentation. CSET at Norfolk State University. 2011.

## Project Experience

Investigated claims of defective fertility devices and documented client data for use in a health hazard evaluation.

Investigated recommended limits of mycotoxins in a U.S. agricultural food product.

Compiled client data detailing bacterial contamination in a foreign food plant for a summary report and recommendation advisory meeting with the client.

Generated models of depuration parameters for the optimal reduction of *Vibrio parahaemolyticus* and *Vibrio vulnificus* in Eastern oysters during depuration.

Conceptualized and designed a plasma-activated simulated seawater disinfection method for a depuration system for the reduction of *E. coli* in live oysters. Examined the physicochemical and antimicrobial properties of plasma-activated simulated seawater. Performed statistical analysis on data using R studio.

Conceptualized, designed, and constructed a polyaniline-based inkjet printed sensor for the detection of biogenic amines in packaged raw catfish fillets. Performed statistical analysis on data using SAS software.

## Peer Reviews

New Zealand Journal of Marine and Freshwater Research, Reviewer, 2024

Aquatic Living Resources, Reviewer, 2022

Aquacultural Engineering, Reviewer, 2020

FEMS microbiology letters