

Exponent®
Engineering & Scientific Consulting

Vashti Campbell, Ph.D.

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Professional Profile

Dr. Vashti Campbell is a scientist specializing in delivering expert engineering and scientific insights for food, beverages, dietary supplements, cosmetics, and devices. She has expertise within the realms of processing, safety, quality, and regulatory compliance, with a strong emphasis on good manufacturing practices. With substantial knowledge and hands-on experience in the food manufacturing and service industries, she is dedicated to helping clients achieve their goals.

Her specific areas of expertise include, but are not limited to:

- Plasma-based processing technologies for food application (i.e., non-thermal plasma products)
- Biocides for food application (i.e., hydroxyl radicals, ozone, UV, peroxides, chlorine dioxide, electrolyzed oxidizing water)
- Molluscan shellfish processing, safety, and regulations (particularly oysters and Vibrio spp.)
- Food and seafood processing (i.e., aquaculture RAS systems, general processing, depuration)
- Novel antimicrobial technologies for food application (edible coatings and films, sensors)
- Food safety, quality, and regulatory compliance (i.e., manufacturing and food service)
- Insurance and litigation support (i.e., technical, due diligence, on-site inspections, sampling)
- Experimental design
- Technical writing and communication

Dr. Campbell leverages both her previous industrial and academic experience in her consulting work. She applies her knowledge of food manufacturing from her time as a quality assurance/control laboratory technician at Danone, as well as her experience in food service as a crew member and manager at Jimmy John's.

Her academic research has encompassed food processing and food packaging including the development of biosensors for bacterial detection in food, optimization of depuration for raw oysters, blast and cryogenic freezing, and spray drying. Additionally, she has researched in the area of materials science engineering focusing on the synthesis and characterization nanoscale ionic materials and organic photovoltaics using spectroscopy techniques like UV, FT-IR, TEM, SEM, GC-MS, NMR, and column chromatography.

She currently serves as an adjunct assistant professor in the Department of Biological and Agricultural Engineering at NC State University and is an Editorial Board Member for Aquacultural Engineering (Elsevier). Dr. Campbell continues to publish research, serves as a reviewer for peer-reviewed scientific journals, and presents at professional society conferences.

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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

(Selected)

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

Foreign Supplier Verification Program Qualified (FSVP) Individual certification

Preventive Controls Qualified Individual (PCQI) certification

Academic Appointments

Adjunct Assistant Professor, Dept. of Biological and Agricultural Engineering, NC State University

Editorial Board Member, Aquacultural Engineering, Elsevier

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)

International Association for Food Protection (IAFP)

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., Kasera, 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

Hall, S., Campbell, M., Smith, D., Campbell, V., Smith, E., Pascual, C., & Newsom, L. Toward a Theology of Sustainable Aquaculture: Wisely Producing Safe Abundant Seafood While Enhancing Fruitfulness of Aquatic Creatures. Invited talk and discussion. The American Scientific Affiliation. 2024

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

Meat, Seafood, and Poultry

- Advised counsel concerning Vibrio-contaminated oysters served to a restaurant consumer
- Conducted an onsite inspection and sampling of recalled corned beef product

- Supported an insurance investigation into the food processing and safety of contaminated chicken finished product

Dairy

- Investigated the potential cause of foreign material contamination of cheese in a manufacturing plant
- Developed laboratory protocol to validate a novel antimicrobial technology for colostrum in preparation of a food additive petition to the FDA

Fruits and Vegetables

- Provided litigation support of regarding the allegation of a Salmonella illness due to consumption of onions
- Provided consulting support regarding contaminated pea protein in a warehouse
- Assisted in preparing a food additive petition to the FDA for a waterless technology intended to kill microbial pathogens and spoilage microorganisms on fruits and vegetables

Grains

- Investigated an insurance claim concerning the scope and effect of fiberglass contamination of a corn crop caused by a damaged wind turbine

Spices and Herbs

- Provided support concerning an insurance claim for moisture affected chili pieces

Beverages

- Developed a health hazard evaluation concerning potential microbiological and physical hazards associated with cold pressed fruit and vegetable juice

Probiotics

- Advised a manufacturing operation on the feasibility of introducing new strains of probiotics into its processing plant

Devices

- Developed protocol to assess the microbial burden on data monitoring devices (sensors) used for pharmaceutical companies and medical device manufacturers and identified a third-party laboratory for testing

Cosmetics

- Assisted in the evaluation of personal care products formulations to identify ingredients originating from animal products

Peer Reviews

Comprehensive Reviews in Food Science and Food Safety, 2025

Aquacultural Engineering, 2025