

Dr. J. Lee Research Group in the Food Microbiology & Microbial Omics Laboratory

Welcome to the Jung-lim Lee's Research Group's (JLRG) page

The Food Microbiology & Microbial Omics laboratory is located in Agriculture Annex building in the Department of Human Ecology at Delaware State University (DSU), Dover. My major research interests at DSU are in Food Safety, Metagenomics, commercial development, etc. Nowadays, JLRG members focus on developing novel DNA-based amplification methodologies for the rapid quantification of viable bacterial communities derived from foods, navigating bacterial communities and mechanisms using Next Generation Sequencing (NGS), purifying and identifying extracellular enzymes from bacteria and its cloning using molecular biological approaches, studying antimicrobial activity derived from natural products and resources, and developing a multi-purpose assay to assess food safety and water quality.

The nature of our research is highly multidisciplinary, encompassing the fields of Aquaculture, Biostatistics/Bioinformatics, Soil Science, etc. We have been actively collaborating with scientists at USDA-ARS and aquaculture, poultry science, and bioinformatics experts at DSU, Delaware Biotechnology Institute, University of Maryland College Park, etc. The members of JLRG have been actively pursuing our mission statement through research, inter-/multi-disciplinary collaboration, and outreach. Our studies could give significant information to understanding the mechanism of food spoilage and our development of molecular assays could be applied to the rapid monitoring of food quality and food safety in the private sector.

Research Interests and Expertise

Major areas of research concentration have included (1) DNA and protein-based assays for the rapid detection of food born pathogen, (2) metagenomics and transcriptomics in foods and environments (3) isolation and identification of food spoilage bacteria, (4) fishery microbiology, (5) discrimination between viable and dead bacteria, (6) water quality and food safety assessment, (7) DNA recombination and gene cloning from bacterial or other genomic sources, (8) expression and purification of protein in GRAS, (9) fermentation technology and biomass, (10) commercial developments, etc.

Mission Statement of Food Microbiology & Microbial Omics at DSU

- Food poisoning and outbreaks are annually reported and have increased in the United States and other countries. The new Food Science & Biotechnology Program at Delaware State University must be strengthened through graduate research projects in Food Safety and Microbiology in order to follow national and international demands.

- By using cutting-edge techniques in molecular biology, the MS Food Science & Biotechnology Program will give students an excellent research opportunity in the Food Safety and Microbiology field and contribute to public safety and the health of citizens in Delaware and the North Atlantic region.

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