

SOPHIA KATHARIOU

North Carolina State University, Department of Food, Bioprocessing & Nutrition
Sciences, Raleigh, NC 27695, USA

EDUCATION

Austin College, Sherman, Texas	Biology	B.A. 1975
University of California, Berkeley	Genetics	Ph.D. 1981

PROFESSIONAL APPOINTMENTS

09/01/00-now Professor (promoted, July 2008), Department of Food, Bioprocessing & Nutrition Sciences, North Carolina State University, Raleigh,

1990-2000 Associate Professor (tenure), Department of Microbiology, University of Hawaii, Honolulu, HI

1997-1998 Sabbatical Faculty, Center for Microbial Ecology, Michigan State University, E. Lansing, MI (host: James M. Tiedje)

1987-1990 Visiting Scientist, Centers for Disease Control & Prevention, Atlanta, GA

1988-1989 Temporary faculty, Department of Microbiology & Immunology, Emory University, Atlanta, GA

1984-1987 Research Associate, Department of Microbiology & Genetics, University of Würzburg, Germany (mentor: Werner Goebel)

1981-1984 Postdoctoral appointment, Department of Microbiology, Cornell University, Ithaca, NY (mentor: E. Peter Greenberg)

HONORS AND AWARDS

- Fellow, American Academy of Microbiology, 2017
- Recipient of the Heinz P.R. Seeliger Award on *Listeria* and listeriosis, 2007
- John N. Sofos Most-Cited Journal of Food Protection Review Publication Award, 2021 (First-Place Recipient)
- Gamma Sigma Delta Honor Society of Agriculture (2010-present)
- Phi Tau Sigma Food Science Honorary Society (2005-present)

PROFESSIONAL SOCIETY MEMBERSHIP

- American Society of Microbiology
- International Association for Food Protection (IAFP)
- Sigma Xi Scientific Research Honor Society
- Agriculture, Food, and Human Values Society
- IAFP Committee on Control of Foodborne Illness
- Emerging & Zoonotic Diseases Core group, Center for Comparative Medicine and Translational Research, North Carolina State University

GRANT REVIEW PANELS (past two years)

- Ecology and Evolution of Infectious Diseases, National Science Foundation, (2017, 2018, 2019)
- USDA-ARS NP 108 Panel 12: Poultry and Egg Systems (2015)
- Research & Innovation Seed Funding program, North Carolina State University (2014-2019)

EDITORIAL SERVICE (selected)

- Editor, Applied and Environmental Microbiology (2002-2012)
- Frontiers in Microbiology Review Editor (2013-present)
- Editorial Board, Applied and Environmental Microbiology (1997-2002; 2017-present)
- Editorial Board, J. Food Protection (1997-2007)
- Reviewer, numerous journals incl. Applied & Environmental Microbiology, Microorganisms, Molecular Microbiology peer-review service listed at: <https://publons.com/author/425997/sophia-kathariou#profile>)

OTHER SYNERGISTIC ACITIVITES

- Citizen science initiative, *Listeria* in urban surface waters
- Partnerships with wildlife groups to assess ecology of bacterial foodborne pathogens in the human-wildlife interface
- Membership in research consortium with focus on impacts of extreme weather events on the hydrology, incidence and dispersal of chemical and microbial contaminants in floodwaters
- Research, education and extension consortium on plant health and food safety
- Hatch-Multistate project membership, USDA, *Food systems, health, and well-being: understanding complex relationships and dynamics of change*
- Hatch-Multistate project membership, USDA, *Antimicrobial resistance in the food chain*
- Evaluation & Accreditation, Food Science & Technology, Biology and Agriculture Programs in Greece
- Multiple grant evaluations for international research programs
- College of Agriculture & Life Sciences summer research immersion program (CAL3-D) for high school students from under-represented ethnic groups
- Food Microbiology Curriculum amendment initiative, partnership with the Agricultural University of Athens, Greece

PATENT

US 6,503,747 B2. S. Kathariou And X.-H. Lei. Serotype-specific probes for *Listeria monocytogenes*

JOURNAL ARTICLES (peer-reviewed, selected, since 2017)

Brown P, Chen Y, Parsons C, Brown E, Loessner MJ, Shen Y, **Kathariou S**. 2021. Whole genome sequence analysis of phage-resistant *Listeria monocytogenes* serotype 1/2a strains from turkey processing plants. Pathogens. 10(2):199. doi: 10.3390/pathogens10020199.

Parsons C, Brown P, **Kathariou S**. Use of bacteriophage amended with CRISPR-Cas systems to combat antimicrobial resistance in the bacterial foodborne pathogen *Listeria*

monocytogenes. *Antibiotics (Basel)*. 2021 Mar 17;10(3):308. doi: 10.3390/antibiotics10030308. PMID: 33802904.

Lee S, Parsons C, Chen Y, Hanafy Z, Brown E, **Kathariou S**. Identification and characterization of a novel genomic island harboring cadmium and arsenic resistance genes in *Listeria welshimeri*. *Biomolecules*. 2021 Apr 11;11(4):560. doi: 10.3390/biom11040560. PMID: 33920493.

Fan S, Foster D, Miller WG, Osborne J, **Kathariou S**. 2021. Impact of ceftiofur administration in steers on the prevalence and antimicrobial resistance of *Campylobacter* spp. *Microorganisms*. 9(2):318. doi: 10.3390/microorganisms9020318.

Gorski L, Walker S, Romanolo KF, **Kathariou S**. 2021. Growth and survival of attached *Listeria* on lettuce and stainless steel varies by strain and surface type. *J Food Prot*. doi: 10.4315/JFP-20-434.

Parsons C, Azizoglu R, Elhanafi D, **Kathariou S**. 2021. Mutant construction and integration vector-mediated genetic complementation in *Listeria monocytogenes*. *Methods Mol Biol*. 2220:177-185. doi: 10.1007/978-1-0716-0982-8_14.

Niedermeyer JA, Miller WG, Yee E, Harris A, Emanuel RE, Jass T, Nelson N, **Kathariou S**. 2020. Search for *Campylobacter* spp. reveals high prevalence and pronounced genetic diversity of *Arcobacter butzleri* in floodwater samples associated with Hurricane Florence in North Carolina, USA. *Appl Environ Microbiol*. 86(20):e01118-20. doi: 10.1128/AEM.01118-20.

Jayeola VO, McClelland M, Porwollik S, Chu W, Farber J, **Kathariou S**. 2020. Identification of novel genes mediating survival of *Salmonella* on low-moisture foods via transposon sequencing analysis. *Front. Microbiol*. 11:726. doi: 10.3389/fmicb.2020.00726.

Parsons C, Lee S, **Kathariou S**. 2020. Dissemination and conservation of cadmium and arsenic resistance determinants in *Listeria* and other Gram-positive bacteria. *Mol Microbiol*. 113(3):560-569. doi: 10.1111/mmi.14470.

Rahimi S, **Kathariou S**, Fletcher O, Grimes JL. 2020. The effectiveness of a dietary direct-fed microbial and mannan oligosaccharide on ultrastructural changes of intestinal mucosa of turkey poults infected with *Salmonella* and *Campylobacter*. *Poult Sci*. 99(2):1135-1149. doi: 10.1016/j.psj.2019.09.008.

Musser ML, Berger EP, Parsons C, **Kathariou S**, Johannes CM. 2019. Vaccine strain *Listeria monocytogenes* abscess in a dog: a case report. *MC Vet Res*. 15(1):467. doi: 10.1186/s12917-019-2216-y.

- Parsons C, Chen Y, Niedermeyer J, Hernandez K, **Kathariou S**. 2019. Draft genome sequence of multidrug resistant *Listeria innocua* strain UAM003-1A, from a wild black bear (*Ursus americanus*). *Microb Resource Announc.* 8(47). pii: e01281-19. doi: 10.1128/MRA.01281-19.
- Parsons C, Niedermeyer J, Gould N, Brown P, Strules J, Parsons AW, Bernardo Mesa-Cruz J, Kelly MJ, Hooker MJ, Chamberlain MJ, Olfenbuttel C, DePerno C, **Kathariou S**. 2019. *Listeria monocytogenes* at the human-wildlife interface: black bears (*Ursus americanus*) as potential vehicles for *Listeria*. *Microb Biotechnol.* doi: 10.1111/1751-7915.13509.
- Jayeola V, Parsons C, Gorski L, **Kathariou S**. 2019. Validation of an ampicillin selection protocol to enrich for mutants of *Listeria monocytogenes* unable to replicate on fresh produce. *FEMS Microbiol Lett.* 2019 Apr 1;366(7). pii: fnz076. doi: 10.1093/femsle/fnz076.
- Parsons C, Jahanafroozi M, **Kathariou S**. 2019. Requirement of *lmo1930*, a gene in the menaquinone biosynthesis operon, for esculin hydrolysis and lithium chloride tolerance in *Listeria monocytogenes*. *Microorganisms.* 7(11). pii: E539. doi: 10.3390/microorganisms7110539.
- Sai K, Parsons C, House JS, **Kathariou S**, Ninomiya-Tsuji J. 2019. Necroptosis mediators RIPK3 and MLKL suppress intracellular *Listeria* replication independently of host cell killing. *J Cell Biol.* 2019 Apr 11. pii: jcb.201810014. doi: 10.1083/jcb.201810014.
- Foster DM, Jacob ME, Farmer KA, Callahan BJ, Theriot CM, **Kathariou S**, Cernicchiaro N, Prange T, Papich MG. 2019. Ceftiofur formulation differentially affects the intestinal drug concentration, resistance of fecal *Escherichia coli*, and the microbiome of steers. *PLoS One.* 14(10):e0223378. doi: 10.1371/journal.pone.0223378. eCollection 2019.
- Good L, Miller WG, Niedermeyer J, Osborne J, Siletzky RM, Carver D, **Kathariou S**. 2019. Strain-specific differences in survival of *Campylobacter* spp. in naturally contaminated turkey feces and water. *Appl Environ Microbiol.* 85(22). pii: e01579-19. doi: 10.1128/AEM.01579-19. Print 2019 Nov 15
- Rahimi S, **Kathariou S**, Fletcher O, Grimes JL. 2019. Effect of a direct-fed microbial and prebiotic on performance and intestinal histomorphology of turkey poult challenged with *Salmonella* and *Campylobacter*. *Poult Sci.* pii: pez436. doi: 10.3382/ps/pez436.
- Parsons C, Lee S, **Kathariou S**. 2018. Heavy metal resistance determinants of the foodborne pathogen *Listeria monocytogenes*. *Genes (Basel).* 10(1). pii: E11. doi: 10.3390/genes10010011.
- Bolinger HK, Zhang Q, Miller WG, **Kathariou S**. 2018. Lack of evidence for *erm(B)* infiltration into erythromycin-resistant *Campylobacter coli* and *Campylobacter jejuni*

from commercial turkey production in eastern North Carolina: a major turkey-growing region in the United States. *Foodborne Pathog Dis.* doi: 10.1089/fpd.2018.2477.

Niedermeyer JA, Lynde R, Miller WG, Genger S, Parr Lindsey C, Osborne J, **Kathariou S.** 2018. Proximity to other commercial turkey farms affects colonization onset, genotypes and antimicrobial resistance profiles of *Campylobacter* in turkeys: suggestive evidence from a paired-farm model. *Appl Environ Microbiol.* 84(18). pii: e01212-18. doi: 10.1128/AEM.01212-18.

Haddad N, Johnson N, **Kathariou S**, Métris A, Phister T, Pielaat A, Tassou C, Wells-Bennik MHJ, Zwietering MH. 2018. Next generation microbiological risk assessment-Potential of omics data for hazard characterisation. *Int J Food Microbiol.* pii: S0168-1605(18)30166-1. doi: 10.1016/j.ijfoodmicro.2018.04.015.

Lee S, Chen Y, Gorski L, Ward TJ, Osborne J, **Kathariou S.** 2018. *Listeria monocytogenes* source distribution analysis indicates regional heterogeneity and ecological niche preference among serotype 4b clones. *MBio.* 9(2). pii: e00396-18. doi: 10.1128/mBio.00396-18.

Price R, Jayeola V, Niedermeyer J, Parsons C, **Kathariou S.** 2018. The *Listeria monocytogenes* key virulence determinants *hly* and *prfA* are involved in biofilm formation and aggregation but not colonization of fresh produce. *Pathogens.* 2018 Feb 1;7(1). pii: E18. doi: 10.3390/pathogens7010018.

Rantsiou K, **Kathariou S**, Winkler A, Skandamis P, Saint-Cyr MJ, Rouzeau-Szynalski K, Amézquita A. 2017. Next generation microbiological risk assessment: opportunities of whole genome sequencing (WGS) for foodborne pathogen surveillance, source tracking and risk assessment. *Int J Food Microbiol.* pii: S0168-1605(17)30500-7. doi: 10.1016/j.ijfoodmicro.2017.11.007

Parsons C, Costolo B, Brown P, **Kathariou S.** 2017. Penicillin-binding protein encoded by *pbp4* is involved in mediating copper stress in *Listeria monocytogenes*. *FEMS Microbiol Lett.* 364(20). doi: 10.1093/femsle/fnx207.

Lee S, Ward TJ, Jima DD, Parsons C, **Kathariou S.** 2017. The arsenic resistance-associated *Listeria* genomic island LGI2 exhibits sequence and integration site diversity and a propensity for three *Listeria monocytogenes* clones with enhanced virulence. *Appl Environ Microbiol.* 83(21). pii: e01189-17. doi: 10.1128/AEM.01189-17.

Dutta V, Lee S, Ward TJ, Orwig N, Altermann E, Jima DD, Parsons C, **Kathariou S.** 2017. Genome sequences of *Listeria monocytogenes* strains with resistance to arsenic. *Genome Announc.* 5(19). pii: e00327-17. doi: 10.1128/genomeA.00327-17.

Bolinger H, **Kathariou S.** 2017. The current state of macrolide resistance in *Campylobacter* spp.: Trends and Impacts of resistance mechanisms. *Appl Environ Microbiol.* 83(12). pii: e00416-17. doi: 10.1128/AEM.00416-17.

Dutta V, Altermann E, Crespo MD, Olson JW, Siletzky RM, **Kathariou S**. 2017. Identification of a *Campylobacter coli* methyltransferase targeting adenines at GATC sites. FEMS Microbiol Lett. 364(7). doi: 10.1093/femsle/fnw268.

Gkana EN, Giaouris ED, Doulgeraki AI, **Kathariou S**, Nychas G-N. 2017. Biofilm formation by *Salmonella* Typhimurium and *Staphylococcus aureus* on stainless steel under either mono- or dual-species multi-strain conditions and resistance of sessile communities to sub-lethal chemical disinfection. Food Control 73: 838-846

COMMUNITY OUTREACH -TRADE MAGAZINES

Bolinger HK, Carver DK, **Kathariou, S**. 2017. Reducing *Campylobacter*: A look at turkey industry management practices. Poultry Times, 63(8), 15-19.

Bolinger HK, Mann KM, Carver, D.K., **Kathariou, S**. 2017 Biosecurity practices in *Campylobacter*-negative & -positive commercial turkey farms.
Meating Place
<<http://www.meatingplace.com/Industry/TechnicalArticles/Details/70916?allowguest=true>>