

Tyler Chandross-Cohen

Ph.D. Candidate at The Pennsylvania State University
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Summary

Food microbiology researcher with a strong record of conducting interdisciplinary research at the interface of microbial genomics, molecular biology, and food safety. My work centers on the foodborne pathogen *Bacillus cereus*, with a particular focus on how genetic diversity and environmental conditions govern virulence expression and cytotoxic potential across diverse isolates, including psychrotolerant strains relevant to refrigerated foods. By integrating whole-genome sequencing with *in vitro* human cell-based cytotoxicity models, I assess virulence potential of *B. cereus* isolates originating from diverse environmental and food-associated sources. I employ integrated genomic, transcriptional, and phenotypic approaches to characterize *B. cereus* under food-relevant conditions, linking molecular signatures with functional outcomes in human intestinal epithelial cell models. In parallel with my research, I am actively engaged in mentoring undergraduate researchers and teaching.

Education and Training

<i>Institution</i>	<i>Degree</i>	<i>Year</i>	<i>Field of Study</i>	<i>GPA</i>	<i>Relevant Coursework</i>
The Pennsylvania State University	Ph.D.	TBD	Food Science	3.98	Applied Bioinformatics (852), Applied Statistics (500), Professional Skills for Graduate Students (503), Research Methods (501).
The Pennsylvania State University	B.S.	2022	Food Science with a minor in Microbiology	3.68*	Food Microbiology (408), Food Microbiology Lab (409), Communicating Research in Agricultural Sciences (422), Food Engineering (405), Food Law (497), Medical Microbiology (412), Microbial Genomic Epidemiology (517).

* Dean's List: Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, Spring 2022

Research Experience

<i>Experience</i>	<i>Year</i>
The Pennsylvania State University Food Science Department <i>Graduate Research Assistant</i>	Aug 2022 – Present
<ul style="list-style-type: none"> Conduct doctoral research on the foodborne pathogen <i>Bacillus cereus</i>, with emphasis on psychrotolerant isolates and targeted gene knockout strategies to better understand virulence gene mediated cytotoxicity. Design and perform growth experiments in skim milk broth across multiple temperature regimes to inform quantitative exposure assessment models. Quantify cytotoxicity of <i>B. cereus</i> isolates using human intestinal epithelial cell culture models to evaluate virulence potential under food-relevant conditions. Train and mentor undergraduate researchers; oversee laboratory operations including media preparation; and develop detailed laboratory protocols, standard operating procedures (SOPs), and experimental proposals. 	

The Pennsylvania State University Food Science Department*Undergraduate Research Associate*Jan 2021
– May
2022

- Collaborated with a graduate researcher to detect and quantify *Listeria monocytogenes* from environmental samples collected in ice cream manufacturing facilities.
- Isolated and characterized protective cultures and evaluated their inhibitory activity against *L. monocytogenes* using standard microbiological and analytical assays.

The Pennsylvania State University Food Science Department*Undergraduate Research Assistant*Oct 2018
– May
2022

- Conducted undergraduate research in the laboratory of Dr. Molly Kelly, focusing on experimental evaluation of the impact of the spotted lanternfly on wine quality and safety.
- Designed and performed experiments to assess effects of spotted lanternfly infestation on wine fermentation, chemical composition, and overall product quality.
- Analyzed yeast strain performance with respect to aroma and flavor development through controlled fermentation experiments and sensory-related analytical assays.
- Monitored daily wine production activities, including systematic sampling, chemical testing, and quantitative data collection and analysis.

The Pennsylvania State University Plant Science Department*Undergraduate Research Assistant*Sept
2019 –
Mar
2020

- Assisted with research projects in the laboratory of Dr. Michela Centinari, supporting viticulture and enology-focused experimental studies.
- Conducted experiments evaluating the effects of budburst-delay strategies in grapevines on grape composition and downstream wine chemistry.
- Performed berry sampling, grape juice chemical analyses, and carbohydrate profiling; managed data entry; assisted with grape processing; and monitored wine fermentations.

Teaching Experience*Experience****Semester*****The Pennsylvania State University Food Science Department***Fall 2025**Instructor on Record*

- Taught two laboratory sections per day, twice weekly (Tuesdays and Thursdays), providing instruction to undergraduate students on microbiological methods in food safety and quality.
- Delivered pre-lab lectures and guided students through exercises involving isolation, enumeration, and identification of foodborne pathogens and spoilage microorganisms.
- Implemented and maintained pre-established course curriculum, protocols, and assessments.
- Supervised and mentored students in aseptic technique, serial dilutions, plate counting, enrichment and selective culturing, and biochemical characterization.
- Managed biosafety and laboratory operations, ensuring compliance with BSL-2 practices and appropriate waste handling.
- Evaluated student progress through lab reports, quizzes, and practical exams.

The Pennsylvania State University Food Science Department*Short Course Graduate Teaching Assistant*Spring 2023,
Spring 2024,

- Teaching Assistant for the Ice Cream Short Course.

- Assisted in laboratory in ice cream freezing, mix calculation and vanilla flavor.
- Assisted in homework help sessions to ensure the success of the students.

Spring 2025,
Spring 2026

The Pennsylvania State University Food Science Department

Graduate Teaching Assistant

- Graduate Teaching Assistant for Food Microbiology Laboratory (FDSC 409).
- Present in class to assist in class discussions and troubleshooting student's experiments.
- Hosted weekly office hours to guide students and answer their questions.
- Graded laboratory reports, results sheets, and exams

Fall 2023,
Fall 2024

The Pennsylvania State University Chemistry Department

Learning Assistant and Grader

- Hosted two weekly LA sessions to review problem sets with students.
- Supported outside-of-classing learning and gave extra help to students.
- Graded midterm and final exams

Fall 2020,
Spring 2021,
Fall 2021,
and Spring
2022

The Pennsylvania State University Food Science Department

Undergraduate Teaching Assistant

- Undergraduate Teaching Assistant for Food Microbiology (FDSC 408).
- Present in class to answer questions and was involved in class discussions.
- Hosted weekly office hours to answer student's questions and support their learning. Reviewed and proctored exams.

Fall 2021

Peer Reviewed Publications

<i>Citation</i>	<i>Contribution</i>
P. Nguyen, T. Chandross-Cohen , J. Kovac, L. Restanio. Isolation and Characterization of <i>Bacillus cereus</i> Group Species in Powdered Infant Formula and Infant Cereal Using a Newly Developed Detection System, Journal of Food Protection (2025), DOI: https://doi.org/10.1016/j.jfp.2025.100677	Conducted experiments, Writing original draft, Writing review & editing, Visualization
A. Navarre, K. Rupert, T. Chandross-Cohen , J. Kovac. Low Prevalence and Concentrations of <i>Campylobacter</i> Detected on Retail Chicken Breasts, Journal of Food Protection (2025), DOI: https://doi.org/10.1016/j.jfp.2025.100635	Whole genome sequencing of isolates, Writing review & editing
T. Chandross-Cohen , T. Chung, S. Watson, M. L. Rolon, J. Kovac. Precision food safety: Advances in omics-based surveillance for proactive detection and management of foodborne pathogens. Trends in Food Science & Technology (2025) 105186, ISSN 0924-2244, DOI: https://doi.org/10.1016/j.tifs.2025.105186 .	Writing original draft, Writing review & editing, Visualization.
J. Su [*] , T. Chandross-Cohen [*] , C. Qian, L. Carroll, K. Kimble, M. Yount, M. Wiedmann, J. Kovac. Assessment of the exposure to cytotoxic <i>Bacillus cereus</i> group genotypes through HTST milk consumption. Journal of Dairy Science (2024) DOI: https://doi.org/10.3168/jds.2024-24703	Development of methods, conducted experiments, data analysis, and co-wrote and revised the manuscript

*Co-First authors

X. Wei, A. Hassen, K. McWilliams, K. Peitzen, T. Chung, M. Mendez Acevedo, **T. Chandross-Cohen**, E.G. Dudley, J. Vipham, H. Mamo, T. Sisay Tessema, A. Zewdu, J. Kovac. Genomic characterization of *Listeria monocytogenes* and *Listeria innocua* isolated from milk and dairy samples in Ethiopia. BMC Genomic Data 25, 12 (2024) DOI: <https://doi.org/10.1186/s12863-024-01195-0>

Re-confirmed the *Listeria spp.* at The Pennsylvania State University.

M. L. Rolon, **T. Chandross-Cohen**, K.E. Kaylegian, R.F. Roberts, J. Kovac. Context Matters: Environmental Microbiota of Ice Cream Processing Facilities Affects the Inhibitory Performance of Two Lactic Acid Bacteria Against *Listeria monocytogenes*. ASM Microbiology Spectrum Vol. 12, No.1 (2023) DOI: <https://doi.org/10.1128/spectrum.01167-23>

Conducted experiments, conducted data analysis, and co-wrote and revised the manuscript

Poster Presentations

Presentation	Contribution
M. Lyons, E. Biernbaum, T. Chandross-Cohen , Y. Cavalcante, J. Kovac, E. Dudley. Targeted Nanopore Sequencing of the O-Antigen Region in <i>E. coli</i> using CRISPR Cleavage at <i>gndA</i> , 2025 Allegheny branch of the American Society of Microbiology Annual Meeting. November 7-8, 2025, California, PA.	Method development, conducted experiments, data analysis.
T. Chandross-Cohen , B. Praul, J. Kovac. Effects of Protein Stress Factors on the Cytotoxicity of Supernatants from Psychrotolerant <i>Bacillus cereus</i> isolates. 2025 IAFP European Symposium. May 6-8, 2025, Madrid, Spain.	Development of methods, conducted experiments, conducted data analysis and presented .
T. Chandross-Cohen , B. Praul, J. Kovac. Effects of Protein Stress Factors on the Cytotoxicity of Supernatants from Psychrotolerant <i>Bacillus cereus</i> isolates. 2025 Gamma Sigma Delta Symposium. March 27, 2025, University Park, Pennsylvania.	Development of methods, conducted experiments, conducted data analysis and presented .
T. Chandross-Cohen , M. Yount, E. Readinger, C. Prince, K. Kimble, C. Centeno, J. Kovac. Cytotoxicity Assessment of Psychrotolerant <i>Bacillus cereus</i> Isolates Across Varied Temperatures. 2024 Allegheny branch of the American Society of Microbiology Annual Meeting. November 1-2, 2024, Greensburg, PA	Development of methods, conducted experiments, conducted data analysis, and presented .
B. Praul, T. Chandross-Cohen , J. Kovac. Effects of Protein Stress Factors on the Cytotoxicity of Psychrotolerant <i>Bacillus cereus</i> isolates. 2024 Allegheny branch of the American Society of Microbiology Annual Meeting. November 1-2, 2024, Greensburg, PA	Development of methods, conducted experiments, conducted data analysis.
T. Chandross-Cohen , M. Yount, E. Readinger, C. Prince, K. Kimble, C. Centeno, J. Kovac. Cytotoxicity Assessment of Psychrotolerant <i>Bacillus cereus</i> Isolates Across Varied Temperatures. 2024 International Association for Food Protection Annual Meeting. July 15-17, 2024, Long Beach, California	Development of methods, conducted experiments, conducted data analysis, and presented .
T. Chandross-Cohen , J. Kovac. Variation in <i>Bacillus cereus</i> Hemolysin Bl Transcription Associated with a SNP in Transcription Regulatory Region. 2024 Gamma Sigma Delta Symposium. March 27, 2024, University Park, Pennsylvania.	Development of methods, conducted experiments, conducted data analysis, and presented .

- M. Yount, **T. Chandross-Cohen**, G. Georgiana, E. Readinger, and J. Kovac. Surface colonization area was associated with phylogenetic group and hemolysin BL production in *Bacillus cereus sensu lato*. 2024 Gamma Sigma Delta Symposium. March 27, 2023, University Park, Pennsylvania. Development of methods, assistance with experiments, conducted data analysis.
- T. Chandross-Cohen**, J. Kovac. Variation in *Bacillus cereus* Hemolysin Bl Transcription Associated with a SNP in Transcription Regulatory Region. 2024 Food Science in Action Symposium. March 20, 2024, University Park, Pennsylvania. Development of methods, conducted experiments, conducted data analysis, and **presented**.
- T. Chandross-Cohen**, M. Yount, J. Su, C. Qian, M. Wiedmann, and J. Kovac. Growth Potential of *Bacillus cereus* Group Strains from Different Phylogenetic Groups in a Dairy Food Model. 2023 Allegheny branch of the American Society of Microbiology Annual Meeting. November 3-4, 2023, Williamsport, PA. Development of methods, conducted experiments, conducted data analysis, and **presented**.
- T. Chandross-Cohen**, M. Yount, J. Su, C. Qian, M. Wiedmann, and J. Kovac. Growth Potential of *Bacillus cereus* Group Strains from Different Phylogenetic Groups in a Dairy Food Model. 2023 International Association for Food Protection Annual Meeting. July 16-19, 2023, Toronto, Ontario, Canada. Development of methods, conducted experiments, conducted data analysis, and **presented**.
- J. Su, C. Qian, **T. Chandross-Cohen**, M. Yount, M. Wiedmann, and J. Kovac. An exposure assessment of cytotoxic *Bacillus cereus* strains from various phylogenetic groups in HTST milk. 2023 International Association for Food Protection Annual Meeting. July 16-19, 2023, Toronto, Ontario, Canada. Provided data used in growth modeling.
- T. Chandross-Cohen**, M. Yount, J. Su, C. Qian, M. Wiedmann, and J. Kovac. Growth Potential of *Bacillus cereus* Group Strains from Different Phylogenetic Groups in a Dairy Food Model. 2023 Food Science in Action Symposium. May 26, 2023, University Park, Pennsylvania. Development of methods, conducted experiments, conducted data analysis, and **co-presented**.
- T. Chandross-Cohen**, M. Yount, J. Su, C. Qian, M. Wiedmann, and J. Kovac. Growth Potential of *Bacillus cereus* Group Strains from Different Phylogenetic Groups in a Dairy Food Model. 2023 Gamma Sigma Delta Symposium. March 30, 2023, University Park, Pennsylvania. Development of methods, conducted experiments, conducted data analysis, and **presented**.
- M. L. Rolon, **T. Chandross-Cohen**, K.E. Kaylegian, R.F. Roberts, J. Kovac. Context Matters: Environmental Microbiota of Ice Cream Processing Facilities Affects the Inhibitory Performance of Two Lactic Acid Bacteria Against *Listeria monocytogenes*. 2022 Allegheny branch of the American Society of Microbiology Annual Meeting. November 4-5, 2022, Morgantown, West Virginia. Conducted experiments, conducted data analysis, and **presented**.
- M. L. Rolon, **T. Chandross-Cohen**, K.E. Kaylegian, R.F. Roberts, J. Kovac. Context Matters: Environmental Microbiota of Ice Cream Processing Facilities Affects the Inhibitory Performance of Two Lactic Acid Bacteria Against *Listeria monocytogenes*. 2022 International Association for Food Protection Annual Meeting. July 31 – August 3, 2022, Pittsburgh, Pennsylvania. Conducted experiments and conducted data analysis.
- T. Chandross-Cohen**, M. L. Rolon, J. Kovac. Isolation, Characterization, and Application of Antilisterial Isolates in a Raw Milk Cheese Model to Inhibit *Listeria monocytogenes*. 2022 Gamma Sigma Delta Symposium. March 31, 2022, University Park, Pennsylvania. Original ideas, conducted experiments, conducted data analysis, and **presented**.

Oral Presentations

<i>Presentation</i>	<i>Contribution</i>
T. Chandross-Cohen, M. Yount, E. Readinger, C. Prince, K. Kimble, B. Praul, C. Centeno, J. Kovac. Cytotoxicity, Transcription, and Stability of Virulence Factors Produced by Psychrotolerant <i>Bacillus cereus</i> Group Isolates. 2025 International Association for Food Protection Annual Meeting. July 28-30, 2025, Cleveland, Ohio.	Development of methods, conducted experiments, conducted data analysis, and presented .

Mentorship Experience

<i>Student</i>	<i>Year</i>
Lydia Weidner *	Nov 2024 – Current
Kailee Shotto *	Aug 2023 – May 2024
Elizabeth Henry *	Aug 2023 – Jan 2024
Erin Readinger *	Jan 2023 – May 2024
Mackenna Yount *	Aug 2022 – May 2024
Express Mentorship Group at Rutgers Preparatory School	Aug 2021 – Current

*Undergraduate Student at Penn State

Leadership Experience

<i>Role</i>	<i>Date</i>
President of the Penn State Chapter of Phi Tau Sigma	Apr 2023 – Current
Kovac Lab Safety Coordinator	Jan 2023 – Current
Treasurer of the IAFP Student Professional Development Group	May 2023 – July 2025
Treasurer of the Penn State Chapter of Phi Tau Sigma	May 2022 – Apr 2023

Awards and Honors

<i>Award/Honor</i>	<i>Year</i>	<i>Funding Source</i>
Gamma Sigma Delta Symposium First Place Winner Graduate Division	2025	*
Dr. Daryl B. & Mrs. Dawn L. Lund Student International Travel Scholarship of Phi Tau Sigma	2025	◇
Recipient of the WH Pierce Prize for Global Impact in Microbiology, One Health Microbiome Center, Presented by Applied Microbiology International.	2024	*
John H Hetrick Food Science Scholarship	2024	*
International Association for Food Protection Student Travel Award	2024	◇
Allegheny Branch, American Society of Microbiology Meeting Second Place Winner Graduate Division Poster presentation	2023	◇
Dudek Graduate Scholarship in Food Science	2023	*
Internal Agricultural Sciences Scholarship	2023	*
Food Industry Group Graduate Student Leadership Award	2023	*
Gamma Sigma Delta Symposium First Place Winner Graduate Division	2023	*

Internal Agricultural Sciences Scholarship	2023	*
PNC Financial Corporation Graduate Fellowship	2023	*
Robert Graham Endowment Graduate Fellowship	2022	*
Keeney Food Science Department Head Fund	2022	*
University Graduate Fellowship	2022	*
E&W Roskam Scholarship in Food Science	2022	*
Henry Pierce in Ag Science Scholarship	2022	*
Gamma Sigma Delta Symposium First Place Winner Undergraduate Division	2022	*
Virginia Dare Award	2021	◇
Zepp Family Food Safety Endowment	2021	*
Henry Pierce in Ag Science Scholarship	2021	*
American Society for Enology and Viticulture National Scholarship	2021	◇
Featured Author in Penn Statements Volume 39, Spring 2020 Edition	2020	*
Zepp Family Food Safety Endowment	2020	*
Keystone Institute of Food Technologists Scholarship	2020	◇
Henry Pierce in Ag Science Scholarship	2020	*
American Society for Enology and Viticulture National Scholarship	2020	◇
National Association of Flavors & Food Ingredient Systems Scholarship Award	2019	◇
Featured Student in the Penn State College of Ag Sciences “Ag Student Journeys”	2019	*

*Penn State Affiliated Scholarship/Fellowship/Award, ◇ External Scholarship/Fellowship/Award

Competitive Funding

<i>Date</i>	<i>Agency</i>	<i>Lead PI</i>	<i>Title</i>	<i>Role</i>	<i>Amount</i>	<i>Credit</i>	<i>Funded</i>
2024-2027	USDA NIFA Predoctoral Fellowship	Tyler Chandross-Cohen	#Assessing The Role of Hemolysin Bl in Cytotoxicity and Fitness of <i>B. cereus</i> in Food Systems	PI	\$180,000	100%	Yes
2023-2024	The Pennsylvania State University College of Agricultural Sciences	Tyler Chandross-Cohen	#Assessing the Effect of Polymorphisms in <i>hbl</i> Genes in <i>B. cereus</i> on Transcription of <i>hbl</i> and Cytotoxicity	PI	\$3,000	100%	Yes
2023-2026	NSF Graduate Research Fellowship Program (GRFP)	Tyler Chandross-Cohen	Characterizing the Ecological Role of <i>B. cereus</i> Hemolysin BL in biofilm formation and competition	PI	\$160,000	100%	No
2021-2022	The Pennsylvania State University Department of Food Science	Tyler Chandross-Cohen	*Evaluating the Antilisterial Activity of Protective Cultures in Food Processing Environmental <i>in vitro</i> Biofilms	PI	\$2,000	100%	No

2021	The Pennsylvania State University Department of Food Science	Tyler Chandross-Cohen	*Isolation, Characterization, and the Use of Protective Cultures in a Raw Milk Cheese Model to Inhibit <i>Listeria monocytogenes</i>	PI	\$6,000	100%	Yes
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*Undergraduate Research Funding, #Graduate Research Funding

Certifications

<i>Title</i>	<i>Year</i>
CITI OSHA Bloodborne Pathogens Hazard analysis and critical control points (HACCP)	2023
CITI Biosafety and Biosecurity (BSS)	2022
Responsible Alcohol Management Program (RAMP)	2019
Laboratory and Research Training	2018

Memberships

<i>Organization</i>	<i>Year</i>
International Association for Food Protection (IAFP)	2022 – Current
Penn State One Health Microbiome Center	2022 – Current
American Society for Microbiology (ASM)	2022 – Current
Allegheny Branch of the American Society for Microbiology (ABASM)	2022 – Current
Penn State Chapter of Phi Tau Sigma	2021 – Current
Phi Tau Sigma National Honors Society	2021 – Current
Institute of Food Technologists (IFT)	2018 – Current
Penn State Food Science Club	2018 – Current