

Diandra Vaval Taylor

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Education

University of Illinois at Chicago, PhD Microbiology and Immunology

University of Chicago, Post-Baccalaureate Research Scholar

Chicago State University, B.S Chemistry, with Biochemistry Emphasis

Dissertation

Two roles, One pheromone: A *Listeria* Peptide That Contributes to Both Vacuole Escape and Viability

Graduate Thesis Advisor: **Nancy E. Freitag, PhD**

Research Experience

Vacuolar Escape and Viability of *Listeria monocytogenes*

Under the Mentorship of Dr. Nancy Freitag, we are investigating the mechanism by which *Listeria monocytogenes* (*Lm*) escapes from host cell vacuoles by deciphering the role of bacterial peptide pheromones, utilizing genetic tools to elucidate key genes in this process.

Mar 2016-present

Chondrocyte Differentiation

Under the mentorship of Dr. Miriam Domowicz, we are trying to understand how the extracellular matrix in particular proteoglycans, influences the state of chondrocyte differentiation under the control of the transcription factor Sox9.

Jul 2014-June 2015

Adopting a Traditional Phytochemical Approach to Solve the Riddle of Nutmeg

Under the mentorship of Dr. Ehab Abourashed I conducted a study that was determining what chemical compounds were present in nutmeg that bind to selected CNS receptors that give side effects similar to the effects of marijuana

Jan 2012-Dec 2012

Cardiolipin Bax Protein Impact

Under the mentorship of Dr. Juanita Sharpe I conducted a study using site directed mutants in order to express the Bax protein as well as test to see how the expressed proteins affect an artificial membrane by determining the impact and function.

Sept 2010-Jan 2012

Dictyostelium Cell Growth

Under the mentorship of Dr. Kevin Swier I conducted a study to determine at what cell concentration will the discoidin gene be turned on, using *Klebsiella aerogenes* as a bacterium food source to determine if the food source inhibits the presence of discoidin.

Jul 2010

Neutrophil Superoxide Generation

Under the mentorship of Dr. Rong Lucy He I conducted an experiment to observe the reaction that neutrophils will have to peptides that come from bacteria, using Formyl peptide and W-peptide, I studied if either peptide will make the Neutrophils generate superoxide in the same fashion that it would with an encounter with bacteria.

Jun 2010

Relevant Coursework

- General Chemistry I&II
- Biochemistry I&II
- Micro Physical Chemistry
- Calculus I&II
- Microbiology
- Physiology
- General Biology
- Cell Biology
- Integrative Biology: Development, Immunology, and Cancer
- Organic Chemistry I&II
- Analytical Chemistry I&II
- Macro Physical Chemistry
- Physics with Calculus I&II
- Human Anatomy
- Zoology
- Advanced Organic Synthesis
- Molecular Genetics
- Scientific Integrity
- Essentials for Animal Research

Laboratory Skills

- Cell Fractionation
- Gel Electrophoresis
- Make Solutions/Buffers
- TLC
- PCR
- Microscopy
- Cell culture
- Western Blot
- Transformation
- Protein Purification
- Reverse Transcription
- *In situ* Hybridization
- Plaque Assay
- Intracellular Growth Assay
- Allelic Exchange
- Phage Transduction
- Molecular Cloning
- Antibody Purification
- Colorimetric Assays
- Compound Isolation

Skills

- Catalogued Inventory
- Laboratory Management
- Outreach
- Mentoring
- Data Analysis and management
- Scientific Writing
- Project Management
- Organizational

Honors/Awards

Travel award to attend the International Conference on Gram-positive Pathogens (ICG+P)	2022
NIH Selected Abstract Award to attend 2022 Midwest Microbial Pathogenesis Conference	2022
Carl Storm Underrepresented Minority Travel Award	2022
Travel award to attend ASM Microbe 2022	2022
Travel award to attend 2019 Midwest Microbial Pathogenesis Conference (MMPC) (selected by abstract)	2019
Travel award to attend the International Conference on Gram-positive Pathogens (ICG+P)	2018
Merit Award in Chemistry	2011
Dean's List	2009

Grants/Fellowships

Diversity Supplement to Parent R01, NIAID funded
Bridge to the Doctorate Fellowship, NSF
Post-baccalaureate Research Education Program (PREP), NIGMS Funded
Minority Biomedical Research Support-Research initiative for Scientific Enhancement (MBRS-RISE) ERA Training Grant, NIH funded

Affiliations/Memberships/Student Organizations

Illinois Society for Microbiology	since 2022
ASM Future Leaders Fellow	since 2022
ASM Ambassador to Illinois	since 2020
American Society for Microbiology	since 2020
University of Illinois at Chicago (UIC) Graduate SACNAS Chapter	2018-2022
Black Graduate Student Association (BGSA)	2018-2022
Graduate Education in Medical Sciences Student Association (GEMSSA)	2015-2022
Beta Beta Beta Society	since 2012
Beta Alpha Society	since 2011

Workshops

Leadership and Management in Action Program (L-MAP) for postdocs- October 13- November 17, 2022

This 6-week long program provides active-learning training in leadership and management skills to postdocs. An expert in leadership and organizational dynamics will lead participants through

self-reflective exercises designed to help you build your leadership, management, and inclusive teamwork toolkit.

Data Management Implementation Program June-August 2019

This was an 8-week study to help students learn data management best practices and implement them, as well as proper file naming and indexing techniques

Training in Interdisciplinary Laboratory Techniques-June 2010

This was a nine-week summer workshop that introduces undergraduates to how to undertake biomedical research. The focus of the program is hands-on training in interdisciplinary biomedical laboratory techniques emphasizing advanced instrumentation

Publications

Vaval Taylor DM, Xayarath B, Freitag NE. Two Permeases Associated with the Multifunctional CtaP Cysteine Transport System in *Listeria monocytogenes* Play Distinct Roles in Pathogenesis. *Microbiol Spectr.* 2023 May 18:e0331722. doi: 10.1128/spectrum.03317-22.

Vaval Taylor DM, and Freitag NE. The Multifunctional Peptide Pheromone pPplA Contributes to Fitness of *Listeria monocytogenes*. In preparation

Vaval Taylor DM, Aman DK, Freitag NE. Identification of Essential Amino Acid Residues of the *Listeria monocytogenes* Peptide Pheromone pPplA. In preparation

Presentations/Conferences

Illinois Alliance for Minority Participation STEM Symposium. Early STEM Experiences. **Diandra Vaval Taylor**, Scientists that Elevate Me. February 25, 2023. Oral Presentation

International Conference for Gram Positive Pathogens. Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and Bacterial Viability, Authors: **Diandra M. Vaval Taylor**, Bobbi Xayarath, Nancy Freitag, October 9-12, 2022. Oral Presentation

Midwest Microbial Pathogenesis Conference. Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and Bacterial Viability, Authors: **Diandra M. Vaval Taylor**, Bobbi Xayarath, Nancy Freitag, September 29-30, 2022. Poster Presentation

ASM Microbe 2022. Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and Bacterial Viability, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy Freitag, June 12, 2022. Poster Presentation

Western Michigan University Upward Bound Program. Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and

Bacterial Viability, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy Freitag, July 22, 2020. Oral Presentation via Zoom

Monthly Micro Meeting. Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and Bacterial Viability, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy E. Freitag, April 07, 2020. Oral Presentation via Zoom

4th Annual GEMS Research Symposium at UIC. Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and Aggregation, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy Freitag, October 4, 2019. Poster Presentation

20TH International Symposium on Problems of Listeriosis (ISOPOL). Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and Aggregation, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy Freitag, September 25, 2019. Poster Presentation

26TH Annual Midwest Microbial Pathogenesis Conference (MMPC). Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and Aggregation, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy Freitag, September 21, 2019. Poster Presentation

Illinois LS-AMP Summer Research Training Program. Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and Bacterial Viability, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy E. Freitag, July 19, 2019. Oral Presentation

Monthly Micro Meeting. A *Listeria Monocytogenes* Pheromone that Contributes to Both Vacuole Escape And Bacterial Viability, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy E. Freitag, April 02, 2019. Oral Presentation

2019 Scientista Symposium (SciSymp). Two Roles, One Pheromone: A *Listeria monocytogenes* Pheromone that Contributes to both Vacuole Escape and Bacterial Viability, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy Freitag, March 30, 2019. Poster Presentation

Positive Thinkers Seminar. Investigation of a Putative Peptide Pheromone that Enhances Vacuolar Escape of *Listeria monocytogenes* within Host Cells, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy E. Freitag, February 13, 2019. Oral Presentation

International Conference for Gram Positive Pathogens. Investigation of a Putative Peptide Pheromone that Enhances Vacuolar Escape of *Listeria monocytogenes* within Host Cells, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy E. Freitag, October 15, 2018. Poster Presentation

Midwest Microbial Pathogenesis Conference: 2016, 2017, 2018

Investigation of the Components of the pPplA peptide-pheromone signaling pathway that enhance vacuolar escape of *Listeria monocytogenes* within host cells, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy E. Freitag. Poster Presentation

Departmental Research in Progress Seminars: Mar 2016, Feb 2017, Feb 2018, Jan 2019, April 2020

Investigation of a Putative Peptide Pheromone that Enhances Vacuolar Escape of *Listeria monocytogenes* within Host Cells, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy E. Freitag. Oral Presentation

GEMS Symposium: 2017, 2018

Investigation of the Components of the pPplA peptide-pheromone signaling pathway that enhance vacuolar escape of *Listeria monocytogenes* within host cells, Authors: **Diandra Vaval**, Bobbi Xayarath, Nancy E. Freitag. Poster Presentation

Annual Biomedical Research Conference for Minority Students, San Jose, California
November 2012

David J. Slatkin Symposium. Adopting a Traditional Phytochemical Approach to Solve the Riddle of Nutmeg, authors: Triejaye McDowell, **Diandra Vaval**, Nataliya Sidelnikova, and Ehab Ebourashed, October 19, 2012. Poster Presentation

TILT End of Summer Symposium. Dictyostelium Cell Growth, Authors: **Diandra Vaval**, Rodney Onwuharonye, Sheila Mahon, James Gutierrez, Joanna Griffin, Kiara Fenner

Teaching Experience

GEMSAA Biomedical Seminar Series (Richard T. Crane Medical Preparatory High School) Topic: Introduction to Microbiology and Immunology, May 13, 2021

Chemistry 1600 (Chicago State University). Topic: Investigation of a putative peptide pheromone that enhances vacuolar escape of *Listeria monocytogenes* within host cells. March 6, 2019

Microbial Pathogenesis (MIM 560) (Graduate level). Topic: Specific Mechanisms for Bacterial Infection (*First Contact: Epithelial Cell Adherence and Invasion*), April 17, 2018

Mentoring Experience

Professional Affiliate in I CAN PERSIST (ICP) STEM Initiative- Promoting academic persistence among girls and women of color in STEM, February, 2022-present

Post-baccalaureate Research Scholar (PREP)- Agnero (Omar) Niagne

Research project: *Connecting the Dots: Uncovering the role of a potential L. monocytogenes toxin* (Accepted to Stanford University Cell & Molecular Biology graduate program, 2021)

Volunteer Experience

Boys and Girls club of America- Chicago Antibiotic Discovery Lab, Weekly STEM program that teaches grade school aged students, microbiology, biology, chemistry, engineering, robotics, medicine, and many other topics through hands-on learning and experiments, October 2022-present

2022 LSMRCE Annual Conference - STEM Ecosystem: Diversity, Partnership, and Empowerment, Conference Volunteer, October 28-30, 2022

71st Annual Exhibition of Student STEM Research
Volunteer Judge for Chicago Public School Students, March 13-20, 2021

2019 Midwest-Louis Stokes Alliances for Minority Participation (LSAMP) Symposium
Volunteer Judge for Undergraduate Posters, and Panelist, February 23, 2019

2017 Midwest-Louis Stokes Alliances for Minority Participation (LSAMP) Symposium
Volunteer Judge for Undergraduate Posters, February 25, 2017

66th Annual Chicago Public Schools Science Fair
Volunteer Judge for Chicago Public School Students, March 18, 2016