

ASHLEY ANN PETERSEN

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PROFILE

Ashley is a second-year chemistry Ph. D. student with 4 years of relevant research experience in organic chemistry and theory and computation. She is interested in pursuing a Ph.D. in computational chemistry to further technical skills while exploring employment opportunities in academic and industrial computational roles studying enzyme catalysis. Ashley has a strong research background in database management, organic synthesis, electrochemical studies, and additional teaching assistant roles.

EMPLOYMENT HISTORY

Undergraduate Research, Villanova University, Villanova, PA May 2020 – May 2023

- Created diagrams for over 720 organic compounds in SMILES format for external machine learning studies.
- Experience with NMR spectroscopy, IR spectroscopy, UV-Visible spectroscopy, gas chromatography, LC-MS, and organic synthesis.
- Presented posters at the Villanova Center for Research and Fellowships (2021, 2022) and ACS Conference (2023).
- Received the Summer Undergraduate Research Fellowship (2020, 2021, 2022) and the "O'Malley Fund for Undergraduate Research" fellowship in 2020.
- Completed 3 semesters of accredited research in addition to summer fellowship programs in the Minbiole Research Lab.

Graduate Research, University of California, Los Angeles, CA Aug. 2023 – Present

Graduate Teaching Assistant, University of California, Los Angeles, CA Sept. 2023 - Present

Manuscripts and Posters:

1. Moneya S. Leatherbury, Laura M. Thierer, Christian A. Sanchez, Germán G. Vargas-Cuebas, Ashley A. Petersen, Lauren E. Amoo, Elise L. Bezold, Keshyne C. Washington, M. Brody Mistrot, Michael J. Zdilla, William M. Wuest,* and Kevin P. C. Minbiole* Chimeric Amphiphilic Disinfectants: Quaternary Ammonium / Quaternary Phosphonium Hybrid Structures. *ChemMedChem* **2024** Published online. <https://doi.org/10.1002/cmdc.202300718>
2. Petersen, Ashley; Leitgeb, Austin; Alkhalifa, Saleh; Zhao, Liang; Shehu, Amarda; Wuest, William; Minbiole, Kevin. Incorporation of Machine Learning Strategies in the Development of Quaternary Ammonium Compounds, ACS Conference 2023.
3. Laura M. Thierer, Ashley A. Petersen, Marina E. Michaud, Christian A. Sanchez, Samantha R. Brayton, William M. Wuest, Kevin P.C. Minbiole Atom Economical QPCs: Phenyl-free Biscationic Quaternary Phosphonium Compounds as Potent Disinfectants. *ACS Infectious Disease*, **2023**, Accepted. <https://doi.org/10.1021/acsinfecdis.2c00575>
4. Bo Pan, Yinkai Wang, Xuanyang Lin, Muran Qin, Yuanqi Du, Shiva Ghaemi, Aowei Ding, Shiyu Wang, Saleh Alkhalifa, Kevin Minbiole, William M. Wuest, Ashley Petersen, Austin Leitgeb, Amarda Shehu, Liang Zhao. Property-Controllable Generation of Quaternary Ammonium Compounds. IEEE Intl Conf on Bioinformatics and Biomedicine (BIBM)

Workshops: Computational Structural Biology Workshop (CSBW), Las Vegas, Nevada, **2022**, pg. 1-8. Paper B338. DOI: [10.1109/BIBM55620.2022.9995064](https://doi.org/10.1109/BIBM55620.2022.9995064)

5. Yinkai Wang, Shiva Ghaemi, Aowei Ding, Yuanqi Du, Bo Pan, Kevin Qi, Xuanyang Lin, [Ashley Ann Petersen](#), Austin Leitgeb, Saleh Alkhalifa, Kevin Minbiole, William Wuest, Liang Zhao, Amarda Shehu. Generation and Characterization of Quaternary Ammonium Compounds via Deep Learning. IEEE Intl Conf on Bioinformatics and Biomedicine (BIBM) Workshops: Computational Structural Biology Workshop (CSBW), Las Vegas, Nevada, **2022**, pg. 1-8. Paper S22203. DOI: [10.1109/BIBM55620.2022.9995026](https://doi.org/10.1109/BIBM55620.2022.9995026)
6. Shiyu Wang, Xiaojie Guo, Xuanyang Lin, Bo Pan, Yuanqi Du, Yinkai Wang, Yanfang Ye, [Ashley Ann Petersen](#), Austin Leitgeb, Saleh Alkhalifa, Kevin Minbiole, Bill Wuest, Amarda Shehu, Liang Zhao. Multi-objective Deep Data Generation with Correlated Property Control. Advances in Neural Information Processing Systems (NeurIPS), New Orleans, LA, **2022**. <https://doi.org/10.48550/arXiv.2210.01796>
7. Kyle J. Sommers, Marina E. Michaud, Cody E. Hogue, Amber M. Scharnow, Lauren E. Amoo, Ashley A. Petersen, Robert G. Carden, Kevin P. C. Minbiole, and William M. Wuest. Quaternary Phosphonium Compounds: An Examination of Non-Nitrogenous Cationic Amphiphiles That Evade Disinfectant Resistance. ACS Infectious Diseases 2022, 8 (2), 387-397.

Graduate Teaching Assistant, University of California, Los Angeles, CA Sep. 2023 – Present

- Supervised 20 lab students in 30AL and graded lab reports for twice weekly 3-hour labs.
- Supervised 90 discussion students in 14B, gave discussion lectures 3 times weekly, and graded exams.

Physical Chemistry Teaching Assistant, Villanova University, Villanova, PA Jan. 2023 – May 2023

- Supervised 24 lab students and graded lab reports for weekly 3-hour labs.
- Assisted with organic synthesis, purification, and characterization experiments.
- Addressed student questions and concerns and provided materials for lab experiments.

Organic Chemistry Teaching Assistant, Villanova University, Villanova, PA Aug. 2021 – May 2023

- Supervised 24 lab students and graded lab reports for weekly 3-hour labs.
- Assisted with organic synthesis, purification, and characterization experiments.
- Addressed student questions and concerns and provided materials for lab experiments.

EDUCATION

Ph. D Chemistry Student, *Excellence in Chemistry Fellowship*, University of California, Los Angeles, CA Dec. 2023 - Present

B.S. Chemistry, *Cum Laude*; Ethics, Peace and Justice Minors, Villanova University, Villanova, PA Aug. 2019 - May 2023

SKILLS

- Python
- Mass Spectrometry
- NMR

- Organic Synthesis
- High-Performance Liquid Chromatography
- Database Management
- Gas Chromatography
- FTIR
- UV-Vis
- French - Bilingual Fluency

EXTRA-CURRICULAR ACTIVITIES

Panhellenic Executive Council, Villanova, PA Dec. 2020 – Jan. 2023

- President (2022), Diversity Equity and Inclusion Coordinator (2021, 2022), Executive VP (2021), Chief Justice of Judicial Board (2021), and SGA Senator (2021).
- Developed DEI education framework for Panhellenic Chapters.
- Facilitated communication with Office of Fraternity and Sorority Life and Villanova University administration.

LEVEL, Villanova, PA May 2020 - Present

- Member of a disability awareness club promoting social, academic, and physical well-being of disabled students.
- Selected LEVEL representative speaker for Special Olympics Pennsylvania DEI panel.
- Volunteered for the Special Olympics Olympic town booth and provided assistance to disabled students.
- Invited guest to the first Disability Inclusion in the Workplace Conference at Villanova University

Student Government Association, Villanova, PA Jan 2021 - Dec 2021

- Elected Panhellenic senator within the Student Government Association.
- Member of the Mission and Social Justice Committee.

HONORS AND AWARDS

- Cum Laude, B.S. Chemistry (May 2023)
- Dean's List, Villanova University (Dec. 2019, Jun. 2020, Jun. 2021, Dec. 2021, May 2022, Dec. 2022, May 2023)
- Charlotte Newcombe Scholarship for Disabled Students (Dec. 2023)
- Excellence in Chemistry Fellowship, UCLA Department of Chemistry and Biochemistry (Dec. 2022)
- Panhellenic Student Leader of the Year, Villanova University (May 2022)
- Core English Honor Roll, Villanova University (Oct. 2021)

- Heumann-Armstrong Award Semi-Finalist, Loyola Law School (Sep. 2021)
- Alpha Epsilon Delta, Villanova University (Nov. 2020)
- James J. and Ann M. O'Malley Fund for Undergraduate Research, Villanova University (Jan. 2020)