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G. LOGAN BARTHOLOMEW

## EDUCATION

# University of California, Berkeley

Ph.D. Candidate, Organic Chemistry Advisor: Professor Richmond Sarpong

# George Washington University

Bachelor of Science in Chemistry, ACS Certified Biochemistry concentration, Biology minor Advisor: Professor Cynthia Dowd

#### EXPERIENCE

# University of California-Berkeley Department of Chemistry

Graduate Student (Group of Prof. Richmond Sarpong)

- Developed a method for pyrimidine-to-pyrazole ring contraction by formal carbon deletion
- Developed a method for <sup>15</sup>N core-labeling of nitrogen heteroaromatics
- Developed four generations of new organic halogenation reagents
- · Planned and worked toward the enantioselective total synthesis of the haplomintrin diterpenoid natural products
- Developed a method for the transaminative synthesis of N-malonyl azinium ylides
- · Investigated a method for visible-light mediated N-atom transposition of pyrazoles and indazoles
- Prepared an Organic Syntheses protocol for the ring contraction of pyrimidines to pyrazoles

# Collaborative Work

- With the Sigman Group, U. Utah: performed MLR and classification analysis for predictive model development
- With the Coley Group, MIT: consulted for retrosynthetic prediction software for natural products synthesis
- With the Paton, Sigman Groups; CSU, U. Utah: developed a cheminformatic platform the analysis of skeletal edits
- With the Grzybowski Group, UNIST-gil: evaluated a programmatic platform for multidirectional reaction prediction

# Teaching Experience

- Graduate Student Instructor for CHEM 12A and Lab (Organic Chemistry for Chemistry Majors, Prof. Alanna Schepartz)
- Graduate Student Instructor, Lecturer, and Course Design for CHEM 115 (Advanced Organic Chemistry, Prof. Dean Toste)
- · Mentored one junior graduate student, two visiting students, and one undergraduate

George Washington University Department of Chemistry	Washington, DC
Undergraduate Researcher, Dr. Cynthia Dowd	December 2017 – May 2020
• Synthesized a large library of fosmidomycin derivatives as antimatarial and antitubercular agents	
• Investigated the bioactivity of the derivatives (and prodrugs thereof) as bisubstrate inhibitors of Dxr	
• Developed a short, modular synthesis for the derivatives	
Vertex Pharmaceuticals, Inc.	Boston, MA
Process and Cheminformatics Intern, Dr. Stefanie Roeper and Dr. Rebecca Swett	May 2020 – August 2020
• Computationally evaluated the Buchwald-Hartwig amination in the synthesis of a stage 2 API	
• Parameterized ligands for multiple and non-linear regression analysis	
• Built Python and Excel packages for data analysis distributed interdepartmentally	
Process Chemistry Intern, Dr. Stefanie Roeper	June 2019 – August 2019
• Developed, executed, and optimized the synthesis of a polysubstituted pyrroloindazole Stage 2 API	
Developed chromatography-free protocols key intermediate isolations	
• Worked closely with chemical engineering interns to complete joint projects	

August 2020 – May 2025 (Anticipated) GPA: 3.95/4.00

> August 2016 – May 2020 GPA: 3.95/4.00 Major GPA: 3.98/4.00

October 2020 - Present

Berkeley, CA

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# PUBLICATIONS

- <u>Bartholomew, G. Logan</u>, Kraus, Samantha L.; Karas, Lucas J.; Carpaneto, Filippo; Bennett, Raffeal; Sigman, Matthew S.; Yeung, Charles S.; Sarpong, Richmond. "<sup>14</sup>N to <sup>15</sup>N Isotopic Exchange of Nitrogen Heteroaromatics through Skeletal Editing" *J. Am. Chem. Soc.* **2024**, *146*, 2950–2958.
- <u>Bartholomew, G. Logan</u>, Carpaneto, Filippo; Sarpong, Richmond. "<u>Skeletal Editing of Pyrimidines to Pyrazoles by Formal Carbon</u> <u>Deletion</u>" *J. Am. Chem. Soc.* **2022**, *144*, 22309-22315.

# PRESENTATIONS

- **Poster Presentation**, "New Methods for Core Atom Transformations of Nitrogen Heteroaromatics", Gordon Research Conference Heterocycles, Salve Regina University, Newport, Rhode Island, 2024.
- **Oral Presentation** with Jihye Roh (Coley lab, MIT), "Higher-Level Computer-Aided Retrosynthesis for Complex Molecules", NSF Center for Computer Assisted Synthesis Annual Meeting, UCLA, Los Angeles, California, 2024.
- Oral Presentation, "New Methods for Core Atom Transformations of Nitrogen Heteroaromatics"; (a) College of Chemistry Symposium Day, University of California–Berkeley, 2024; (b) Corteva Agriscience Chemistry Scholars Symposium, Indianapolis, Indiana, 2024; (c) Gordon Research Seminar Heterocycles, Salve Regina University, Newport, Rhode Island, 2024.
- **Poster Presentation**, "<sup>14</sup>N to <sup>15</sup>N Isotopic Exchange of Nitrogen Heteroaromatics through Skeletal Editing", (a) Merck Pharmaceuticals & Gilead Sciences Days, University of California–Berkeley, 2024 (b) Bay Area Chemistry Symposium, University of San Francisco, 2023. *Awarded Best Poster*.
- **Poster Presentation**, "Formal Single Atom Manipulations for Pyrimidine Skeletal Editing", (a) Gilead Sciences Day, University of California–Berkeley, 2023; (b) Merck Pharmaceuticals Symposium, University of California–Berkeley, 2022; (c) National Organic Symposium, San Diego, California, 2022. *Awarded Best Poster*.
- Virtual Presentation, "MaxBridge: A Tutorial for Network Guided Analysis of Complex Polycyclic Natural Products", Center for Computer Assisted Synthesis, 2022.
- Oral Presentation, "New Reagents for Asymmetric Catalytic Halogenation", Graduate Research Seminar, University of California-Berkeley, 2021.
- Virtual Presentation, "A Computational Investigation of the Buchwald-Hartwig Amination in the synthesis of [a Stage 2 API]", Department of Chemical Development, Vertex Pharmaceuticals, 2020
- Undergraduate Thesis Defense, "Design and Synthesis of Fosmidomycin Analogues as Bisubstrate Dxr Inhibitors to Combat Malaria and Tuberculosis", Department of Chemistry, George Washington University, 2020.
- Virtual Presentation, "MEPicides; Natural Product Analogues as Potent Malaria Combatants", SciMeetings: Virtual Symposium, American Chemical Society Spring National Meeting and Expo, 2020
- Oral Presentation, "Novel Small Molecule Design and Synthesis to Selectively Inhibit Dxr and Combat Malaria and Tuberculosis", Gulf Coast Undergraduate Research Symposium, Rice University, 2019. Awarded Outstanding Presentation in Biomedical Chemistry.
- **Poster Presentation**, "Developing a Robust Synthetic Strategy to Prepare Poly-Substituted Indole Derivatives", Department of Process Chemistry, Vertex Pharmaceuticals, 2019.
- Poster Presentation, "Novel Small Molecule Design and Synthesis to Selectively Inhibit Dxr and Combat Malaria and Tuberculosis", Research Days, George Washington University, 2019; (b) Undergraduate Research Symposium, George Washington University 2019; (c) Frontiers in Chemistry and Biology Interface Symposium, National Institutes of Health, 2019.

## RECOGNITIONS

- NSF Graduate Research Fellowship, National, 2021
- ACS Division of Organic Chemistry Award, University, 2020
- Alpha Chi Sigma Prize; Highest Academic Record in Chemistry Courses, University, 2020
- American Chemical Society Prize; Division of Analytical Chemistry, National, 2020
- American Institute of Chemists Prize; Graduating Undergraduate Student, National, 2020
- Biomedical Chemistry: First Prize, Gulf Coast Undergraduate Research Symposium, 2019
- Enosinian Scholarship, Honors Thesis Fellowship, GWU, 2019
- Goldwater Scholarship, Senator Barry Goldwater Foundation, National, 2019
- A.D. Britt Scholarship, Research Fellowship, GWU, Awarded both 2018 and 2019
- Analytical Chemistry Award, National Academic Recognition, American Chemical Society, 2019
- Presidential Scholarship, 4 Year Academic Merit Scholarship, GWU, 2016

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#### ACTIVITIES

Merck Disruptive Chemistry Program	Berkeley, CA
Academic/Industrial Collaboration	January 2023 – Present
Center for Computer Assisted Synthesis (CCAS)	Berkeley, CA
Nationwide Symposium of Interdisciplinary Scientists	October 2021 – Present
Bay Area Scientists in Schools (BASIS)	Berkeley, CA
Outreach Program for Scientific Education	January 2021 – Present
George Washington Undergraduate Review	Washington, DC
Annual Undergraduate Research Publication	January 2018 – Present
Founder, Managing Editor	

SKILLSET

Chemistry

- Organic reaction setups, Schlenk and glovebox techniques; manual and automated flash column chromatography, crystallization, recrystallization, manual chiral separation, and preparative HPLC setup and analysis
- HPLC setup, analysis, and chiral separations, LCMS setup and analysis, GCMS analysis, HRMS
- NMR (<sup>1</sup>H, <sup>13</sup>C, <sup>15</sup>N, <sup>19</sup>F, <sup>31</sup>P, HSQC, HMBC, COSY, NOESY, DEPT, variable temperature, real-time NMR kinetics)
- Large scale reactions, semi-automated synthesis process development, high-throughput experimentation

Computational Chemistry and Data Science

- iQMol, QChem, Gaussian 16, Schrödinger Maestro (MacroModel, Jaguar, Glide), PyMol, and Mercury
- Standard DFT optimizations, excited state calculations, and transition state identifications
- Python proficiency (sklearn, RDKit, SciPy, datamol, numpy, and pandas modules)

• Git and GitHub

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