

Caitlin J. Risener

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Atlanta, Georgia 30322

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SUMMARY

- Ph.D. Candidate in Molecular and Systems Pharmacology with 8+ years of experience working in a molecular laboratory setting
- Specialization in pharmacology, microbiology, and cell biology
- Proven management, leadership, problem-solving, and communication skills
- Passionate about teaching and mentoring undergraduates and junior graduate students

EDUCATION

Emory University

Ph.D. Candidate, Molecular and Systems Pharmacology

Atlanta, GA
August 2018 - Present

Lipscomb University

Master of Science in Biomolecular Science

Nashville, TN
May 7, 2016

Lipscomb University

Bachelor of Science in Molecular Biology

Nashville, TN
May 7, 2016

RESEARCH EXPERIENCE

Ph.D Candidate, Advisor Cassandra Quave, PhD

Department of Anthropology, Emory University

Atlanta, GA
January 2020-Present

- *Exploring Natural Products Potential to Inhibit COVID-19 Infection*
- *Preclinical evaluation of dietary botanical natural products for drug interactions*
- *Synergy of natural products and oxacillin against MSSA/MRSA*
- Application of basic pharmacological techniques on bacteria, viruses, and fungi
- Mentor undergraduate students and junior graduate students

Graduate Research Student, Advisor Stefan Sarafianos, PhD

Department of Pediatrics, Emory University

Atlanta, GA
April 2019-December 2019

- *Role of Deoxycytidine Kinase (dCK) in activation of EFdA for HIV inhibition*
- *HIV Capsid protein interactions with dNTPs*
- *Mechanisms of NNRTI-resistant HIV hypersusceptibility to EFdA*
- Application of structural biology techniques such as protein crystallography and cryo-electron microscopy
- Application of biochemical techniques such as kinase assays

Research Assistant I, Advisor Erkan Karakas, PhD

Department of Molecular Physiology and Biophysics, Vanderbilt University

Nashville, TN
April 2017-July 2018

- *Structural Biology of Calcium Signaling and Transport through Biological Membranes*
- *Structural Biology of Sweet Taste Recognition*
- Protein expression in insect and mammalian cell lines
- Application of basic molecular biology techniques
- Protein purification for crystallization
- Mentor undergraduate student and train all incoming lab members

Graduate Research Student, Advisor Jon Lowrance, PhD

Department of Biology/Biomolecular Science, Lipscomb University

Nashville, TN
August 2015-May 2016

- *Short Chain Fatty Acid Stimulation of TLR4 in Intestinal Epithelial Cells*
- Applied molecular biology techniques such as protein extraction and western blotting to better understand the location of TLR4 within intestinal epithelial cells after stimulation with short chain fatty acids.

Undergraduate Research Student, Advisor Beth Conway, PhD

Department of Biology, Lipscomb University

Nashville, TN
August 2014-May 2015

- *Epigenetic Change by CpG Island Methylation in the CD10 Promoter Region Contributes to the Invasive Nature of Breast Cancer Cells.*
- Applied molecular techniques such as bisulfite conversion and sub-cloning to analyze sequencing data of CpG islands within the promoter region of CD10.
- Independent and team research, independent troubleshooting, communication

TEACHING EXPERIENCE**Emory College, Department of Human Health****Atlanta, GA**

Teaching Assistant

- Health-440 Botanical Medicine and Health Fall 2020, Spring 2023
- Health-340 Food Health and Society Fall 2021, Fall 2022
- Responsibilities for both courses include recording attendance, attending all lectures, generating quiz and exam questions, grading assignments, setting up lecture room for demonstrations, guiding online discussions, and holding weekly office hours.

Emory University, GDBBS**Atlanta, GA**

Teaching Assistant

Fall 2019

- IBS-531 Introduction to Molecular and Systems Pharmacology I
- Responsibilities include leading review sessions, grading all assignments and exams, generating module quizzes, attending all assigned lectures, and lecture preparation
- Prepared module, quiz, and lecture titled “Dietary Antioxidants”

MSP Tutor

2021-2022

- Reviewing first year lectures with student and filling in any academic gaps to improve student success
- Students: William Crandall (2020); Kristy Wen (2021)

Lipscomb University, Department of Biology**Nashville, TN**

Adjunct Professor

Spring 2018

- Undergraduate
 - o BY 3101-01 Biomolecular Research Methods
- Graduate
 - o BMS 5103-41 Introduction to Research
 - o BMS 5113-41 Biomolecular Laboratory I
- Responsibilities for all 3 courses included syllabus generation; preparing all assignments, projects, and exams; ordering lab supplies for course labs; planning experiments for students; and grading all assignments and exams. The three courses were centered on laboratory techniques and experience, so course content also included data organization, lab notebook management, ethical dilemmas in the lab, and encouraging teamwork in the lab.

University of Prishtina**Pristina, Kosovo**

Research Capacity Building Activities

February 2022

- Created educational materials to be used in training workshops for extracting plant DNA and performing PCR to for preliminary genotype testing. Provided remote (virtual platform) training to faculty and students on the use of this new instrumentation with the goal of advancing the research capacity of local scientists

PUBLICATIONS

- Sunmin Woo, Lewis Marquez, William Crandall, **Caitlin Risener**, Cassandra L. Quave. Modern Ethnobotany and Its Contribution to Anti-Infective Drug Discovery. *In Review* – Natural Product Reports.
- Samantha R. Brayton, Zachary E. A. Toles, Christian A. Sanchez, Marina E. Michaud, Laura M. Thierer, Taylor M. Keller, **Caitlin J. Risener**, Cassandra L. Quave, William M. Wuest, Kevin P. C. Minbiole. Soft QPCs: Biscationic Quaternary Phosphonium Compounds as Soft Antimicrobial Agents. *Accepted* – ACS Infectious Diseases
- **Caitlin J. Risener**, Tharanga Samarakoon, Sunmin Woo, Marco Caputo, Emily Edwards, Keivan Zandi, Shu Ling Goh, Jessica A. Downs-Bowen, Raymond F. Schinazi, Cassandra L. Quave. “Identification of botanical viral entry inhibitors for SARS-CoV-2” *Sci Rep* **13**, 1244 (2023). <https://doi.org/10.1038/s41598-023-28303-x>.
- Salam AM, Porras G, Cho Y-SK, Brown MM, **Risener CJ**, Marquez L, Lyles JT, Bacsa J, Horswill AR and Quave CL (2021) Castaneroxy A From the Leaves of Castanea sativa Inhibits Virulence in Staphylococcus aureus. *Front. Pharmacol.* 12:640179. doi: 10.3389/fphar.2021.640179.
- Gurnee EA, Xu M, **Risener CJ**, et al. Staphylococcal Hemolytic Potential Is Correlated with Increased Severity of Atopic Dermatitis in Children and Young Adults. *The Journal of Investigative Dermatology*. 2020 Dec. DOI: 10.1016/j.jid.2020.11.023.
- Dettweiler, M.; Melander, R.; Porras, G.; **Risener, C.**; Marquez, L.; Samarakoon, T.; Melander, C.; Quave, C., A Clerodane Diterpene from Callicarpa americana Resensitizes Methicillin-Resistant Staphylococcus aureus to β -Lactam Antibiotics. *ACS Infectious Diseases*, 2020.

- Caleigh M. Azumaya, Emily A. Linton, **Caitlin J. Risener**, Terunaga Nakagawa, and Erkan Karakas. “Cryo-EM structure of human type-3 inositol triphosphate receptor reveals the presence of a self-binding peptide that acts as an antagonist” J. Biol. Chem. jbc.RA119.011570.

FELLOWSHIPS

NCCIH Training Grant F31AT011988	April 2022 - Present
Anne S. Chatham Fellowship in Medicinal Botany – Garden Club of America	April 2022
Pharmacological Sciences NIH Training Grant T32-GM008602	2019 – 2020
Laney Graduate School Fellowship	2018 – Present
ASPET Washington Fellow 2023	January 2023 – Present

HONORS AND DISTINCTIONS

ASPET Division of Drug Discovery and Development Poster Competition – 1 st Place Graduate Poster	April 2022
MSP Advanced Student Seminar Elevator Pitch Competition Winner	May 2021
Keynote Speaker at ASP2020 Younger Members Virtual Symposium	August 2020
Lipscomb University Biology Department - Outstanding Graduate Award: Leadership	May 2016
Lipscomb University Student Scholars Symposium – 2 nd Place Graduate Poster	May 2016
Kristina Wagner Memorial Scholarship Recipient	2014-2015
Lipscomb University Merit Award	2012-2016
Lipscomb University Academic Scholarship	2012-2016

PROFESSIONAL MEMBERSHIPS

American Society of Pharmacology and Experimental Therapeutics (ASPET)	2021 – Present
American Society for Biochemistry and Molecular Biology (ASBMB)	2022 – Present
American Society of Pharmacognosy (ASP)	2020 – Present
Society for Economic Botany (SEB)	2020 – Present

ABSTRACTS ACCEPTED FOR PRESENTATION

Experimental Biology 2022, Poster Session April 4, 2022

- Identification of Botanical Viral Entry Inhibitors for SARS-CoV-2
- **Caitlin J. Risener**, Samarakoon T., Woo S., Caputo M., Edwards E., Zandi K., Goh S. L., Downs-Bowen J. A., Schinazi R. F., Quave C. L.
- Affiliated with the American Society for Pharmacology and Experimental Therapeutics
- Pennsylvania Convention Center – Philadelphia, PA

COVID-19 Response: Celebrating the Contributions of Emory Graduate Students, November 12, 2021 Poster Session

- “Novel Natural Product Extracts as Immunomodulators to Target COVID-19 Induced Immune Dysregulation”
- Monica D. Reece, **Cate Risener**, Susan Ribeiro Pereira, Rafick P. Sekaly, Cassandra Quave, Christina Gavegnano
- Emory University – Atlanta, GA

Society for Economic Botany Summer Symposium, Oral Presentation August 6, 2021

- “Inhibition of drug metabolizing cytochrome P450 enzymes by common herbal dietary supplements”
- Emily G. Edwards, **Caitlin J. Risener**, Marco Caputo, Sunmin Woo, Gina Porras, Edward Morgan, Cassandra Quave
- Meeting held via Zoom, presentation given by mentee Emily G. Edwards

Society of Ethnopharmacology, India December 18, 2020

- “Exploring the Potential of Natural Products to Combat COVID19”
- **Cate Risener**, Cassandra Quave
- Held on Cisco Conference, hosted by Society for Ethnopharmacology, India

ASP2020 Younger Members Virtual Symposium August 13, 2020

- “A Clerodane Diterpene from *Callicarpa americana* Resensitizes Methicillin-Resistant *Staphylococcus aureus* to β -Lactam Antibiotics.”
- Micah Dettweiler, Roberta J. Melander, Gina Porras, **Caitlin J. Risener**, Lewis Marquez, Tharanga Samarakoon, Christian Melander, Cassandra L. Quave
- Meeting held on Zoom

NIGMS Structural Biology Related to HIV/AIDS – 2019, Poster Session	June 28, 2019
- “Activity of 4’-Ethynyl-2-Fluoro-2’-Deoxyadenosine Against Diverse Primary Isolates of HIV-1 and Putative Resistant and Hypersensitive Mutants”	
- Maria Cilento*, Philip R. Tedbury*, Obiaara B. Ukah*, Caitlin J. Risener , Kamal Singh, Ujjwal Neogi, Anders Sönnnerberg, Eiichi N. Kodama, Hiroaki Mitsuya, Michael A. Parniak, Karen A. Kirby, and Stefan G. Sarafianos	
- NIH – Natcher Conference Center – Bethesda, Maryland	
Emory University International Chemical Biology Society, Poster Session	April 12, 2019
- “Structure and Regulation of the Respiratory Syncytial Virus RNA Synthesis Machine”	
- Dongdong Cao, Yunrong Gao, Nohemi Trevino-Garrido, Cate Risener , Lauren Cook, Bo Liang	
- Emory University – Atlanta, GA	
Lipscomb University Student Scholars Symposium 2016, Graduate Poster Session	April 14, 2016
- “ULK1 Gene Expression Levels in Colorectal Cancer Patients”	
- Caitlin Couch , Chloe Wilson, Beth Conway	
- Lipscomb University – Nashville, TN	
Lipscomb University Student Scholars Symposium 2015, Undergraduate Poster Session	April 9, 2015
- “Epigenetic Change by CpG Island Methylation in the CD10 Promoter Region Contributes to the Invasive Nature of Breast Cancer Cells”	
- Caitlin Couch , Brandon Baxter, Heath Austin and Beth Conway	
- Lipscomb University – Nashville, TN	
ADDITIONAL PROFESSIONAL PRESENTATIONS	
Lipscomb University Biology Department Seminar Series - Invited Lecturer	February 19, 2021
“Exploring traditional medicinal plants as anti-infectives”	
Emory University Molecular and Systems Pharmacology Seminar	April 20, 2020
“Extracts from Native American Traditional Medicinal plants potentiate oxacillin in resistant <i>Staphylococcus aureus</i> ”	
Emory University Molecular and Systems Biology Seminar	April 15, 2019
“Characterization of Respiratory Syncytial Virus P protein and P/M2-1 complex”	
Lipscomb University Graduate Research Symposium	April 29, 2016
“Short Chain Fatty Acid Stimulation of TLR4 in Intestinal Epithelial Cells”	
Lipscomb University Undergraduate Biology Seminar	March 24, 2015
“Epigenetic Change by CpG Island Methylation in the CD10 Promoter Region Contributes to the Invasive Nature of Breast Cancer Cells”	
PROFESSIONAL ACTIVITIES	
Emory GDBBS MSP Program	
MSP Executive Committee Student Representative	2020-2022
Research in Progress Seminar Series Coordinator	2019-2021
Students in Pharmacology Committee	
- Vice President	2019-2020
- President	2020-2021
MSP Alumni Symposium Committee	2020-2021
Outreach/Volunteering	
- Oakgrove Elementary School – Emory Herbarium’s Plant Nomenclature Lesson	October 2021
Lipscomb University	
Mu Epsilon Delta pre-health profession organization	August 2013-May 2016
- <u>President</u> : August 2015 – May 2016	
Pi Kappa Sigma Service Club	December 2012-May 2016
- <u>Secretary</u> : December 2014 – December 2015	
Tutor	August 2015-January 2018
- Lipscomb Academy: EQUIP	
- Tutoring High School students in Statistics, Biology, and Algebra	

CLINICAL EXPERIENCE**Certified Dermatology Technician**

- Hamzavi Dermatology
 - o Shelby Township, MI and Center for Mohs and Dermatologic Surgery
 - o Specializing in Mohs surgical assistance
 - o Additional experience assisting in general dermatology including treatment of acne, psoriasis, vitiligo, fungal and bacterial infections, and assisting cosmetic procedures.
- Association of Certified Dermatology Technicians
 - o Certificate held September 2016-September 2018

Detroit, Michigan

May 2016-April 2017

RELEVANT GRADUATE LEVEL COURSEWORK**Emory University**

- Introduction to Molecular and Systems Pharmacology I Fall 2018
- Introduction to Molecular and Systems Pharmacology II Spring 2019
- Statistical Design/Analysis of Experiments Spring 2019
- Grant Writing – Molecular and Systems Pharmacology Fall 2019
- Ethical Issues in Pharmacology Fall 2018 - Current
- Introductory Graduate Seminar Fall 2018 – Spring 2019
- Advanced Graduate Seminar Fall 2019 – Spring 2020
- Technology in Pedagogy, Curriculum, and Research (ECDS) Spring 2022

Lipscomb University

- Molecular Biology Spring 2015
- Advanced Immunology Spring 2015
- Ethics – Science/Biotechnology Fall 2015
- Cancer Biology Fall 2015
- Special topics: Neurobiology Spring 2016
- Biostatistics Spring 2016

Workshops

- Graduate Workshop on Empowering Interdisciplinarity May 2022
Emory University – Institute for the Liberal Arts
- Inclusive STEM Teaching Project July – August 2021
Boston University – edX

SKILLS

Technical: Basic microbiological techniques (culturing, compound testing), mammalian cell culture, luciferase-expressing pseudotyped virus assays, cytochrome P450 inhibition assays, cytotoxicity assays, protein crystallization basics, kinase assays, protein expression, protein purification, ion-exchange chromatography, affinity chromatography, size-exclusion chromatography, baculovirus expression systems, insect cell culture, plasmid transfections, SDS-PAGE/western blot analysis, gel electrophoresis, PCR, targeted mutagenesis, vector cloning, DNA/RNA/protein extraction, plasmid DNA purification, Sanger sequencing analysis, primer design

Computer/software: Microsoft Office applications, GraphPad Prism 9, Endnote

Field Work: Locating previously collected plants for collection, preparing collected plants for extract preparation (separating parts, drying)