

Coby J. Rush | Ph.D. Student

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EDUCATION

Temple University | Philadelphia, PA Aug 2022 - Present
Ph.D. in Biology

DeSales University | Center Valley, PA Aug 2018 - May 2022
B.S. in Biochemistry-Molecular Biology, minor in mathematics
Summa cum laude

RESEARCH EXPERIENCE

Temple University Aug 2022 - Present
Using FRET to study NPC export of pre-ribosomal subunits using POPE microscopy
Increasing the efficiency of FRET assay to allow for validation of results

Lampire Biological Laboratories | Pipersville, PA May 2022 - Aug 2022
Biotechnology Intern

DeSales University Aug 2021 - May 2022
Neuroscience Research Assistant
Continued research from the Summer Undergraduate Research Fellowship program. Validated and further optimized the novel laser system. Developed methods of inducing hyperalgesia. Cared for the health and wellbeing of rodents.

Summer Undergraduate Research Fellow Jun 2021 - Jul 2021
Studied IR laser-stimulated nociceptive tail flick response times in rats. Designed and built a cost-effective apparatus for laser stimulation—including building electronic components, designing and printing 3D models, working with different lenses and diodes, and utilizing basic construction methods. Practiced coding using RStudio, an Arduino, and minimal Python. Optimized laser performance and conditions while following safety guidelines.

Biochemistry Research Assistant Aug 2020 - May 2022
Studied the antimicrobial peptide (AMP) Cathelicidin LL-37. Modified plasmids to express LL-37 in *E. coli*, with additional SUMO tag and His tag for the purposes of expression and purification respectively. Mutated the LL-37 peptide in order to increase its efficacy. Assembled and programmed ÄKTA Start Protein Purification System to run FPLC experiments. Performed size-exclusion and affinity chromatography, designed, ran, and troubleshot programs, prepared samples, and performed protein fractionation.

Chemistry Laboratory Aide Aug 2022 - May 2022
Prepping labs for chemistry and physics courses. Measuring and mixing solutions required for the labs. Sanitizing laboratories.

TEACHING EXPERIENCE**Temple University**

DNA: Friend or Foe - Lab

August 2022 - Present

Delivering short lectures on the basics of genetics. Assisting in the understanding and application of genetic analysis techniques. Grading assignments and providing additional academic assistance to students.

DeSales University

Peer Tutor

Biochemistry BI-435

Sep 2021 - May 2022

General Physics PH-201

Sep 2020 - May 2022

Introductory Physics PH-203

Sep 2020 - May 2022

Note Taker for The Office of Student Accessibility

Aug 2018 - Jun 2019

LEADERSHIP & OUTREACH**Lower Milford Township | Coopersburg, PA**

Elected Auditor

2021 - Present

DeSales University

Senior Leader of the DeSales Chemistry Demonstrations Program

2021 - 2022

Providing science education to elementary, middle, and high school students. Guiding new members to complete and perfect their demonstrations and skits. Collaborating with faculty to plan and execute the semester schedule of shows.

President of the DeSales Natural Science Club

2019 - 2022

Planning and executing yearly Earth Day event to teach elementary school children the about the environment, including; designing and making trifolds of various science topics, recruiting student volunteers, setting up tables for those volunteers to work at, and collaborating with other clubs such as the Green Team, the Association for Women in Science, and the Math Club. Planning science-related trips to zoos, wolf sanctuaries, and hiking areas. Giving underclassman science students opportunities to meet with upperclassmen of the same field in a little/big program.

Junior Leader of the DeSales Chemistry Demonstrations Program

2020 - 2021

Modified the program to account for restrictions resulting from the pandemic, including turning it into a live video and working around the spatial and schedule restrictions of the other members. Performed classic gallium spoon demonstration, showing the causes and effects of melting points on different metals.

President of the DeSales Tennis Club

2019 - 2020

Ensured that the club was practicing properly if the instructor was absent. Practiced three to six hours a week. Brought out and put away all materials.

American Cancer Society

2019 - 2022

Fundraising and volunteering

Youth Leadership Ethics Conference

2018

Developed leaderships skills discussing ethical dilemmas with high school students

Special Olympics Security

2018

Service projects with the Knights of Columbus

2018 - 2019

Rocky Ridge Mennonite Church | Quakertown, PA

Worship Leader

2019 - 2020

Head Usher

2016 - 2020

HONORS & AWARDS

DeSales University

The Lehigh Valley Section of the American Chemical Society Award in Chemistry	2022
Biochemistry-Molecular Biology Award for Excellence in Research	2022
Biochemistry-Molecular Biology Award for Academic Excellence	2022
Award for Excellence in the Chemistry Demonstrations Program	2022
Alpha Sigma Chi Award for Excellence in the Natural Science Club	2022
Dean's List	2019 - 2022
National Society of Leadership and Success	2021
Summer Undergraduate Research Fellowship grant	2021
Trustee Merit Scholarship	2018 - 2022
Leadership Scholarship	2018 - 2022
Departmental Scholarship	2018 - 2022
Nucor Foundation	
Nucor Foundation Scholarship	2018 - 2022

CONFERENCE PRESENTATIONS

Rush, C., Drauch, J., Harakal, B., Nguyen, T., Himmelberger, J. April 2022. *Optimization of Expression and Purification of Mutated Cathelicidin LL-37 Peptides*. ASBMB Annual Meeting, Philadelphia, PA.

Tyce, C., **Rush, C.**, Martin, C., Krupka, A. July 2021. *Design of a Novel Laser System for Assessing Thermal Nociception*. DeSales Summer Undergraduate Research Fellowship Presentation, Center Valley, PA.

Rush, C., Bartlett, E., Drauch, J., Himmelberger, J. *Optimization of Expression and Purification of Cathelicidin LL-37 using SUMO tag*. Lehigh Valley Molecular & Cellular Biology Society Symposium, Center Valley, PA.

AFFILIATIONS & MEMBERSHIPS

Temple University Graduate Student Union	2022 - Present
American Chemical Society	2020 - Present
United States Tennis Association	2016 - Present
American Cancer Society	2019 - 2021