RYAN M. BOWSER

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EDUCATION

M.S. University of Arizona, Molecular and Cellular Biology — Expected: May 2025
Advisor: Dr. Carol Gregorio

B.S. University of Arizona, Molecular and Cellular Biology — 2020-2024
Summa Cum Laude
Minor in Biochemistry

HONORS AND AWARDS

BRAVO! Award Recipient 2023

Highest Academic Distinction 202

Highest Academic Distinction 2022

Dean's List with Distinction 2021

Dean's List 2020

Badger Foundation Scholarship 2020

RESEARCH EXPERIENCE

University of Arizona, Tucson — May 2022 - Current
Undergraduate/Graduate Researcher, Dr. Gregorio

- *In-vitro* motility (IVM) assays
- Single cell cardiomyocyte mechanics
- Implemented lab-wide NIH-compliant electronic lab notebooks (ELNs)
- Created the fully automated IVM analysis software, Philament (saving >$10,000 annually in labor)

STAR Lab, Tucson — August 2023 - March 2024
Laboratory Coordinator, Dr. Stover

- Assisted high school students with individual projects and experimental setup
- Taught student's fundamentals of R and Python, for data analysis
- Graded and provided feedback for research papers and presentations

- Mentored students one-on-one
- Created lesson plans to teach complex subjects such as Principle Component Analysis and Machine Learning at high school level.

Max Delbrück Center for Molecular Medicine, Berlin May – August 2023
Visting Scientist (BRAVO!), Dr. Gotthardt

- Functional analysis of human induced pluripotent stem cell cardiomyocytes (hiPSC-CMs) contractility with calcium fluorophore FURA-2 and CytoCypher system
- Imaged hiPSC-CM α-actinin structure via immunofluorescent microscopy
- Prototyped Python software for extraction of contractility data from arrhythmic cells, using wavelet transforms
- Shared findings with BRAVO! funders and University of Arizona faculty

University of Arizona, Tucson January – May 2022
Undergraduate Researcher, Dr. Nagy

- Embryo transposase/plasmid microinjections, working to establish transgenic lines in *Tribolium castaneum*
- Imaged fluorescent protein expression in *Drosophila* embryos, analyzing enhancer expression

University of Arizona, Tucson May – July 2019
Summer Intern, Dr. Arnold

- Designed and carried out independent project on endophytes within *Cupressus sempervirens*
- Plated ~1,600 leaf and stem samples, using sterile technique
- Categorized phenotypes of endophytic bacteria and fungi
- Collaborated with the University of Puget Sound, researching microbiomes of plateau lizards

TEACHING EXPERIENCE

University of Arizona, Tucson AZ Spring 2024
Learning Assistant, Molecular and Cellular Biology

- Assisted instructors in Cell & Development Biology (MCB 305), an undergraduate course with >100 students, covering: cell signaling, protein trafficking, morphogens, induced stem cells, cloning, and ethics
- Gave feedback and tutoring to small groups
- Organized exam study materials for students, coordinating with teaching assistants and professors
- Added content to D2L page and sent out regular announcements to students

Students Advised

Benite Luhando, "Comparative Analysis of Machine Learning Algorithms Expression Level", Saguaro High School (Fall 2023/Spring 2024)

PUBLICATIONS

Research Articles

Bowser, R. M., Farman, G. P., & Gregorio, C. C. (2024). Philament: A Filament Tracking program to quickly and accurately analyze in vitro motility assays. Biophysical Reports, 100147. https://doi.org/10.1016/j.bpr.2024.100147

Conference Posters

Bowser, M.R., Farman, G.P., and Gregorio, C.C., "Philament: A Filament Tracking Program to Quickly and Accurately Analyze In Vitro Motility Assays," 35th Annual UBRP Conference, Jan. 20, 2024

Bowser, M.R., Gregorio, C.C., and Farman, G.P., "The Impact of Leiomodin2 (Lmod2) on Actin-Myosin Interactions" 34th Annual UBRP Conference, Nov. 17-18, 2024

PRESENTATIONS AND TALKS

Presentation, "Career Week: Scientist!"
Miller Elementary School, April 2024

Presentation, "BRAVO! Datablitz"
University of Arizona, October 2023

Article "From Lab Coats to Berlin Streets: Unveiling the Heart of Scientific Discovery with BRAVO!" UBRP Gazette, September 2023

Informational Talk, UBRP Advisory Board
University of Arizona, April 2023

Radio Interview, "KXCI 91.3's Thesis Thursday"
Tucson AZ, March 2023

Informational Talk, "College & Career in Science"
Tucson Magnet High School, August 2022

PROFESSIONAL TRAINING

Information Security Awareness
University of Arizona, May 2024

Life Sciences Laboratory Skills – From DNA Extraction to PCR Mastery
University of Arizona, April 2024

Bloodborne Pathogens and Universal Precautions
University of Arizona, May 2023

Intermediate Python 3 Course
Codecademy, April 2023

General Laboratory Chemical Safety
University of Arizona, May 2022

Basic Biosafety Protection
University of Arizona, January 2022

COMMUNITY SERVICE

UBRP Small Group Leader
Volunteered as a mentor for students beginning the undergraduate biology research program (UBRP), University of Arizona, May 2024 – August 2024

Volunteer
Preparing and serving food for migrant people, Kino Border Initiative, Nogales MX, August 2022

LANGUAGES

English: Native Language

Spanish: Novice Speaker/Listener

German: Novice Speaker/Listener

COMPUTER SKILLS

Programming: Intermediate-Advanced Python (Pandas, Sci-kit learn, SciPy, Tkinter, NumPy, Matplotlib); Intermediate R (mlr, tidyverse, ggplot2), Git; Novice HTML/CSS, Bash/SLURM, MATLAB

Applications: Microsoft Office, Photoshop, DigitalOcean, Graphpad Prism

Platforms: Windows, Linux/HPC

OTHER

United States Citizen
Arizona Department of Public Safety Level 1 IVP Clearance

REFERENCES

Dr. Carol Gregorio, Senior Associate Dean for Basic Science; Director and Founder, Center for Cardiac Muscle Biology, Cardiovascular Research Institute; Vice Chair of Medicine for Strategic Innovation; Professor of Medicine
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Dr. Gerrie Farman, Assistant Research Scientist
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