

Jessica Garofalo

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EDUCATION

University of Richmond

Aug 2018-Dec 2022

Bachelor of Science in Biology

Cumulative GPA: 3.83 | Major GPA: 3.86

- Minor in **Mathematics**
- Biology Department Honors Program

The School for Field Studies, Panama

Sept 2022-Dec 2022

EXPERIENCE

Research Assistant I

April 2023-Present

The Jackson Laboratory | Advisor: Paul Robson, PhD | Farmington, CT

- Optimizing high throughput screening protocols for characterizing the effects of endocrine disrupting chemicals on steroidogenesis of iPSCs differentiated into extra-embryonic cells.
- Differentiating human-derived iPSCs into primitive syncytium and ExM cells for the Molecular Phenotypes of Null Alleles in Cells (MorPhiC) initiative with the goal to characterize 250 protein-coding gene knockouts within its first five years.
- Disassociating human and mouse tissues for single cell RNA sequencing for the KAPP-Sen and JAX-Sen grants as part of the SenNet goals to better understand senescence in healthy tissues.

Laboratory Assistant

Jan 2023-March 2023

Special Hematology, Hartford Hospital | Hartford, CT

- Managed workflow by setting up tests to be used for flow cytometry in addition to transporting and tracking specimen and producing all reagents and antibody cocktails.
- Completed all clerical duties and created new organizational systems for the laboratory.

Student Researcher

Sept 2022-Dec 2022

The School for Field Studies | Advisor: Dagoberto Venera-Ponton, PhD | Bocas del Toro, Panama

- Collected health and size data on over 100 keystone *A. palmata* and *A. cervicornis* coral colonies in coral reefs throughout the Bocas del Toro Archipelago to use as an indicator of changes in general reef health.
- Compared health of colonies between locations relative to the borders of the national marine protected area.
- Presented findings in English and Spanish to over 30 local community members.

Summer Research Fellow

June 2022-Aug 2022

University of Colorado Cancer Center | Advisor: M Cecilia Caino, PhD | Aurora, CO

- Investigated the potential effect of the mitochondrial GTPase MIRO2 on cell growth, viability, and metastatic propensity in breast cancer cell line MDA-MB-231.
- Utilized successful transient siRNA MIRO2 knockdowns to alter protein expression, which was measured through colony formation and cell viability assays in anchorage-dependent and -independent conditions.
- Conducted rescue experiments through transfection of cDNA encoded in a plasmid vector in attempt to understand the mechanism in which MIRO2 functions in the context of cancer.

Undergraduate Research Assistant

Dec 2019-May 2022

Biology Department, University of Richmond | Advisor: B Daniel Pierce, PhD | Richmond, VA

- Quantified the signal response in mutants of the histidine kinase VirA in *Agrobacterium tumefaciens* using β -galactosidase assays.
- Designed and transformed novel VirA plasmid constructs into protein producing Rosetta (DE3) pLysS cells for investigations into the structural biology of VirA.
- Optimized production and purification protocols for VirA, which were then utilized for structural analysis through X-ray crystallography, circular dichroism, and fluorescence-based thermal shift assays.

Laboratory Teaching Assistant

Aug 2021-May 2022

Biology Department, University of Richmond | Richmond, VA

- Prepared all laboratory materials for the lab period and assisted students in use of technological equipment, including PCR thermal cycler, VIS spectrophotometer, gel electrophoresis instruments, gel image system, centrifuge, incubator, and automated cell counter.

- Supervised lab proceedings and facilitated student learning by answering questions, providing additional information, doing demonstrations, and collecting supplementary data for student use.

PUBLICATIONS AND PRESENTATIONS

- **Garofalo J** (2022). Investigation of the VirA Linker domain to characterize its phenol interactions. University of Richmond Honors Thesis.
- **Garofalo J**, Boulton D, Caino MC (2022). An *in vitro* investigation into the role of MIRO2 in metastatic breast cancer. Poster presentation at Cancer Research Summer Fellowship Annual Poster Session.
- Swackhammer A, Provencher E, Dohkor A, **Garofalo J**, Dowling S, Garchitorena K, Phyo A, Ramirez-Veliz N, Karen M, Diep R, Norris M, Safo MK, and Pierce BD (2022). Mechanistic analysis of the VirA sensor kinase using structural models. *Front. Microbiol.* <https://doi.org/10.3389/fmicb.2022.898785>
- **Garofalo J**, Barrett C, Swackhammer A, and Pierce, BD (2021). Biophysical and biochemical investigation of the VirA Linker domain to characterize its interaction with phenol. Poster presentation at the international Agrobacterium 2021 conference. Virtual.

GRANTS

- University of Colorado Cancer Center, National Cancer Institute Grant 1R25CA240122
- University of Richmond, Travel Grant
- University of Richmond, UR Summer Fellowship

HONORS AND AWARDS

- **Summa Cum Laude** graduate from the University of Richmond (2022)
- Invited member of **Omicron Delta Kappa**, the national leadership honors society (2022)
- **Dean's List**, achieved a semester GPA of at least 3.60 (2019-2022)
- **All A Grades** (2021-2022)

SKILLS

- **Laboratory:** Bacterial transformation, β -galactosidase assays, circular dichroism, CODEX antibody conjugation, construct design, data processing and statistical analysis, DNA/RNA/protein extraction, enzyme-linked immunosorbent assay (ELISA), FFPE tissue sectioning, high throughput screening, human and mouse tissue processing, immunofluorescent staining, iPSC differentiation, mammalian cell culture, microscopy, PCR/rt-PCR, plating and inoculating bacteria, protein purification, restriction enzyme digestion, spectrophotometry, thermal shift assays, western blot, zebrafish handling.
- **Software:** R Studio, Cell Profiler, ImageJ, Wolfram Mathematica (in progress)

INVOLVEMENT

English Tutor

Sept 2022-Dec 2022

The School for Field Studies | Bocas del Toro, Panama

- Assisted with the English language learning process for a local Spanish speaker through the creation of lessons and communication practice.

Vice President of Finance

Aug 2021-May 2022

GreenUR, University of Richmond | Richmond, VA

- Controlled all financial transactions and created budget for the following year in addition to being a participating member of the club and attending all environmentally based service events.

Club Member

Aug 2019-May 2021

Alpha Phi Omega, University of Richmond | Richmond, VA

- Conducted 25 hours of community service every semester which focused on becoming involved with the local Richmond community.