

# CURRICULUM VITAE

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**Position:** Graduate Research Assistant  
Dr. Liz Worthey's lab  
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## EDUCATION

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**Doctor of Philosophy in Graduate Biomedical Sciences, 2020 – Present**  
*University of Alabama at Birmingham, Birmingham, Alabama*

- Graduate Student Government (GSG) President, Informatics Club, Black Graduate Student Association, Graduate Student Advisory Council, Hackin' Omics Co-Chair, GBS Peer Mentor, GSG Professional Development and Leadership Chair

**Master of Science in Biological Sciences, 2010 – 2012**  
*Mississippi College, Clinton, Mississippi*

- Dean's List, American Society for Microbiology

**Bachelor of Science in Biology Premed, 2006 – 2010**  
*Xavier University of Louisiana, New Orleans, Louisiana*

- Dean's List, Student Government Association President, Peer Dean, Alpha Epsilon Delta, Junior Class President, Sophomore Class President, Freshman Class Vice-president, SpringFest Concert Co-Chair

## RESEARCH EXPERIENCE

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**Graduate Research Assistant, 2020 – Present**  
*Department of Genetics*  
*Center for Computational Genomics and Data Science*  
*University of Alabama at Birmingham, Birmingham, Alabama*

- Designed R shiny and Streamlit apps to aid in the analysis and visualization of genomic variants.
- Identified and analyzed novel variants across patient cohorts for Cystic Fibrosis, Prader-Willi Syndrome, and Pulmonary Arterial Hypertension.
- Analyzed quality control metrics and performed differential gene expression analysis on a cohort of patients with ME/CFS.
- Developed reproducible workflows and analyses using tools such as renv, workflowr, and conda.

**Researcher III, 2015 – 2020**  
*Department of Psychiatry and Human Behavior*  
*University of Mississippi Medical Center, Jackson, Mississippi*

- Planned and performed experiments related to the study of the role of SNPs in psychiatric disorders.
- Implemented memory efficient genomics pipelines using Python and Bash scripting.
- Performed complex data analysis on large data sets of over 1 TB.
- Developed a Python library which employs object-oriented principles and emphasizes modernized algorithms for orthology inference.
- Designed a Python CLI which parallelizes commands and simplifies PBS job submissions for existing tools.

*Updated on June 14, 2023*

- Redesigned and refactored Python code while implementing multiprocessing to improve scalability and increase the speed of a computational pipeline six-fold.
- Integrated testing techniques to improve the robustness of computational workflows.
- Built, deployed, and maintained a lab website on a NGINX server.
- Founded and organized a bioinformatics working group to hold seminars and journal discussions for faculty, students, and staff.

**Researcher II, 2013 – 2013**

*Cancer Institute*

*University of Mississippi Medical Center, Jackson, Mississippi*

- Performed experiments related to the study of Geminin in ovarian and breast cancer metastases.
- Conducted experiments such as western blots, immunofluorescence analysis, extraction and purification of DNA and protein, transfections, chromatin purification and immunoprecipitation, PCR, and ELISA.
- Maintained primary cell culture lines, bred mice, and oversaw the mice colonies.

**Student Research Assistant, 2009 – 2010**

*Department of Biology*

*Xavier University of Louisiana, New Orleans, Louisiana*

- Assisted in research involving tumor angiogenesis.
- Managed the environment and status of the chick embryos.
- Prepared chick embryos for injection by using a small electric saw to expose the outer membrane.

**Student Research Assistant, Summer 2009**

*Department of Biochemistry*

*Tulane University School of Medicine, New Orleans, Louisiana*

- Conducted research on monoclonal antibody 5B2 and its binding properties.
- Prepared lab reagents and performed assays such as ELISA and BCA.

## TEACHING & MENTORING EXPERIENCE

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**Graduate Research Assistant, 2020 – Present**

*University of Alabama at Birmingham, Birmingham, Alabama*

- Onboarded students as they rotated in our lab and assisted in the completion of their rotation projects.
- Tutored peers in various data science topics such as R programming, conda environment setup, and biostatistics.
- Organized computational biology and programming workshops for students and staff.
- Served as a mentor for incoming GBS students and helped them matriculate into the program.
- Established a weekly meetup for students and staff titled “Code, Chat, & Collab” to aid in learning computational biology concepts.

**Guest Lecturer, April 2022**

*GBS 748 Special Topics*

*University of Alabama at Birmingham, Birmingham, Alabama*

- Taught introductory concepts about the R programming language to graduate students.

**Researcher III, 2015 – 2020**

*University of Mississippi Medical Center, Jackson, Mississippi*

- Taught undergraduate, graduate, and medical students molecular biology techniques.
- Served as a resource for students as they completed projects during their rotations and during the summer.

- Introduced students to the basics of data management.

### **Teaching Assistant, 2010**

*Chemistry 1010 Lab*

*Xavier University of Louisiana, New Orleans, Louisiana*

- Assisted the assistant professor by grading course assignments.
- Guided students through experiments and course assessments.
- Prepared and delivered a lecture for the course.

### **Drill Instructor, 2007 – 2008**

*Chemistry 1010/1020*

*Xavier University of Louisiana, New Orleans, Louisiana*

- Delivered timed quizzes to students and monitored students during quizzes.
- Graded quizzes and worked through answers for the class.
- Tutored students on upcoming quiz content.

## **HONORS AND AWARDS**

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- Awarded the Inclusive Campus Commitment Award by UAB's Office of Student Involvement & Leadership in April 2023.
- Received the Scientific Excellence Award to cover travel expenses for the 2022 CCTS Translational Training Symposium.
- Selected as a project leader for UAB's Hackin' Omics hackathon in 2022.
- Awarded the GSG Professional Development and Travel Award for Summer 2022.
- Winner of the Health Equity Award at UAB's AI against Cancer Data Science Hackathon in 2021.
- Selected to participate in Cold Spring Harbor Laboratory's Biological Data Science Hackathon in 2020.
- Winner of hackseq18, a hackathon focused on genomics, at the University of British Columbia in 2018.
- Leadership Key Award at Xavier University of Louisiana in 2010.
- Minority Access to Research Careers Scholar at Xavier University of Louisiana from 2008 to 2010.
- Inducted into Alpha Epsilon Delta at Xavier University of Louisiana in 2008.
- Gold and White Leadership Award from Xavier University of Louisiana in 2008.
- Howard Hughes Biomedical Honor Corps Scholar at Xavier University of Louisiana from 2006 to 2010.

## **EDITORIAL SERVICE**

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- Reviewer, Journal of Open Source Software (2022–present)

## **PUBLICATIONS**

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1. Ogawa LM, **Hutchins SD**, Rando JM, Johnson AM, Ling B, Vallender EJ. Functional consequences of a CCR5 regulatory polymorphism in Chinese-origin rhesus macaques. (in preparation)
2. Vallender EJ, Gilmore RA, **Hutchins SD**, Zhang X, Mahajan GJ, Athey AJ, Overholser JC, Jurjus G, Dieter L, Rajkowska G, Stockmeier, et al. Gene expression in the prefrontal cortex associated with impulsivity. (in preparation)
3. Zhang X, Gilmore RA, **Hutchins SD**, Vallender EJ. Stress induced alteration in gut microbiota composition of rhesus macaques (in preparation).
4. Zhang X, **Hutchins SD**, Blough BE, Vallender EJ. In vitro effects of ligand bias on primate mu opioid receptor downstream signaling. *International Journal of Molecular Sciences*, 21(11), 3999. 2020.
5. Gilmore RA, **Hutchins SD**, Zhang X, Vallender EJ. MicrobiomeR: An R Package for Simplified and Standardized Microbiome Analysis Workflows. *Journal of Open Source Software*, 4(35), 1299. 2019.

## PRESENTATIONS

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1. **Hutchins SD**, Worthey EA. Identification of Drug Repositioning Targets for Pulmonary Arterial Hypertension (2022). 2022 CCTS Translational Training Symposium, Mobile, AL.
2. **Hutchins SD**, Worthey EA. Network-based Analysis on Genetic Variants Involved in Heritable Pulmonary Arterial Hypertension (2021). Graduate Biomedical Sciences Symposium, Birmingham, AL.
3. Gilmore RA, **Hutchins SD**, Grande B, Lin S. beRi: A Suite of Command Line Tools for Managing R (2019). BioIT World Conference and Exposition, Boston, MA.

## TECHNICAL SKILLS

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Linux (openSUSE, Ubuntu), Windows OS, macOS

Python, R, Bash, JavaScript, PHP

Big Data Manipulation, RNA-Seq & WGS Analysis

MySQL, SQLite

Conda, AWS, APIs, HPC

Operating Systems

Programming Languages

Bioinformatics

Databases

Technologies