CURRICULUM VITAE

Shaurita D. Hutchins, M.S.

Position: Graduate Research Assistant
Dr. Liz Worthey's lab
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Center for Computational Genomics and Data Science
Department of Genetics
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EDUCATION

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

- **Service & Leadership:** 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, Graduate Student Stipend and Benefits Task Force, UAB Cares Suicide Prevention Leadership and Implementation Team, Faculty Senate Curriculum Committee, GBS Admissions Committee, Student Health Insurance Plan Committee

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

- **Academic Honors:** Dean's List
- **Service & Leadership:** American Society for Microbiology

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

- **Academic Honors:** Dean's List
- **Service & Leadership:** 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

Graduate Research Assistant, 2020 – Present
Department of Genetics
Center for Computational Genomics and Data Science
Graduate Biomedical Sciences Doctoral Program
University of Alabama at Birmingham, Birmingham, Alabama
Principal Investigator: Dr. Liz Worthey

- Designed R shiny and Streamlit apps to aid in analyzing and visualizing genomic variants.
- Identified and analyzed novel variants across patient cohorts for Cystic Fibrosis, Prader-Willi Syndrome, and Familial Pulmonary Arterial Hypertension.
- Analyzed quality control metrics and performed differential gene expression and pathway analyses on a cohort of patients with ME/CFS.
- Developed reproducible pipelines, workflows, and analyses using tools such as nextflow, renv, workflowr, and conda.
- Created and maintained internal software packages and scripts to improve the reproducibility of pipelines and analyses.

Researcher III, 2015 – 2020
Department of Psychiatry and Human Behavior

University of Mississippi Medical Center, Jackson, Mississippi
Principal Investigator: Dr. Eric J. Vallender

- 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 that employs object-oriented principles and emphasizes modernized algorithms for orthology inference.
- Designed a Python CLI that parallelizes commands and simplifies PBS job submissions for existing tools.
- 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 an 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
Principal Investigator: Dr. Wael M. ElShamy

- 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
Principal Investigator: Dr. Harris McFerrin

- 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
Principal Investigator: Dr. Diane A. Blake

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

TEACHING & MENTORING EXPERIENCE

Instructor, The Carpentries, 2023 – Present
University of Alabama at Birmingham, Birmingham, Alabama
- Taught sections covering vectorization in R, data manipulation with dplyr, and creating reports with knitr for UAB's Biological Data Science Core self-hosted Software Carpentry workshop in December 2023.
- Maintained and contributed to our self-hosted workshop's website.
- Gained useful perspectives and adaptability through teaching audiences with different levels of skill.
- Deepened my understanding of equity and inclusion principles through Software Carpentry's ethos and Code of Conduct.

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, creating publication-ready plots with ggpubr, and biostatistics.
- Conducted computational biology and programming workshops, focusing on R and Python, catering to students and staff.
- Participated as a helper during UAB's Biological Data Science Core Software Carpentry workshop in February 2023.
- 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 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.

PUBLICATIONS

1. Birch CL, **Hutchins SD**, Wilk BM, Brown DM, Hodgin KS, Turgut A, Gajapathy M, Kaur G, Mamidi TKK, Younger JW, Worthey EA. A "n-of-1" approach reveals a monogenic and multifactorial basis of ME/CFS. (submitted)
2. 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)
3. 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)
4. Zhang X, Gilmore RA, **Hutchins SD**, Vallender EJ. Stress-induced alteration in gut microbiota composition of rhesus macaques. (in preparation)
5. 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.
6. Gilmore RA, **Hutchins SD**, Zhang X, Vallender EJ. MicrobiomeR: An R Package for Simplified and Standardized

CONFERENCE PRESENTATIONS

1. **Hutchins SD**, Wilk B, Gajapathy M, Mamidi T, Worthey EA. Identification of Genetic Modifiers and Drug Repositioning Targets for Pulmonary Arterial Hypertension (2023). Systems biology: from large datasets to biological insight, European Bioinformatics Institute, Hinxton, England, United Kingdom.
2. **Hutchins SD**, Worthey EA. Identification of Drug Repositioning Targets for Pulmonary Arterial Hypertension (2022). 2022 CCTS Translational Training Symposium, Mobile, AL.
3. **Hutchins SD**, Worthey EA. Network-based Analysis of Genetic Variants Involved in Heritable Pulmonary Arterial Hypertension (2021). Graduate Biomedical Sciences Symposium, Birmingham, AL.
4. 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.

GRANTS

1. **MED220019 (Co-PI, with Dr. Blake Joyce and Dr. Tarun Mamidi):** XSEDE Cloud Computing Resources for Hackin Omics 2022 Hackathon. Award amount: $66,150.

HONORS AND AWARDS

- Awarded the UAB GSG Professional Development and Travel Award for Fall 2023.
- Awarded the 2022-2023 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 UAB 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 Colombia 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

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

TECHNICAL SKILLS

Linux (openSUSE, Ubuntu), Windows OS, macOS	Operating Systems
Python, R, Bash, JavaScript, PHP	Programming Languages
Data Integration & Manipulation, RNASeq & WGS Analysis	Bioinformatics
MySQL, SQLite	Databases
Conda, AWS, Jetstream2, APIs, Lmod	Technologies
Nextflow, Snakemake	Workflow Managers