

Ashley Shantoria Williams

Email: asw0049@auburn.edu

Education

PhD in Biological Sciences

Auburn University | Auburn, AL

Expected 05/2023

Dissertation: Investigating the tradeoff between reproduction and longevity:

Oxidative stress, cellular senescence, and mtDNA quality in the aging reproductive female house mouse

Master of Science in Biology

Alabama Agricultural & Mechanical University | Normal, AL

08/2015-05/2017

Bachelor of Arts in Anthropology

Florida International University | Miami, FL

06/2010-12/2013

Certifications: Certificate in Spirituality

Teaching Experience

Graduate Teaching Assistant (GTA) | Auburn University (Auburn, AL)

Course: BIOL-2100-Undergraduate Professional Development

01/2023- Present

- Maintained attendance for undergraduate course designed to aid students in the planning of their academic careers by exposing students to scientists related to their majors and aiding them in the development of career materials
- Assisted in the development of student eportfolios and added a inclusion, equity, and diversity unit with the aim of increasing student cultural competency to encourage them to foster welcoming workplace environments

Course: BIOL-1021-Course-based Undergraduate Research Experience (CURE)

01/2022- 12/2023

- Developed lecture content, experimental designs, and laboratory assignments for Freshman course adopting the Tiny Earth framework while training students in deductive and inductive research approaches, scientific writing, and communication for the purpose of discovering new sources of antibiotics in a laboratory setting
- Developed GTA training technical manual explaining and depicting techniques used in microbial sciences including culturing cells, streak plating for isolation, antimicrobial screening, colony morphology and cell type identification, colony counting, how to use compound-light microscopes, aseptic technique, safety and disposal procedures in addition to explanations of how-to setup and conduct experiments with students

Course: BIOL-1021-Principles of Biology

08/2017- 12/2023

- Instructed and graded materials for freshmen in lab designed to reinforce lecture content of basic biological principles

Graduate Teaching Assistant (GTA) | Alabama Agricultural and Mechanical University (Normal, AL)

Course: BIO-100-Introduction to Biology Lab

- Taught classes of 15-30 students in Principles of Biology, a course designed to introduce students to basic biological concepts through lecture and experimentation.
- Designed lab course curriculum, midterm, and finals materials.

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Course: BIO-513-Research Ethics

- Taught classes of 9-12 graduate students in Research Ethics, a course designed to introduce graduate students to ethical concepts in research and the history of ethics through traditional lecture.
- Updated Research Ethics required text

Course: BIO-595-Introductory Mycology

- Taught classes of 9-12 students in Mycology, a course designed to introduce graduate students to mycology through traditional lecture
- Updated Mycology required text

Research Experience

Graduate Research Assistant (GRA) | Auburn University (Auburn, AL) 08/2017- Current

- Introduced and troubleshoot brain mitochondrial isolation method to laboratory under Dr. Wendy R. Hood
- Troubleshoot T-haplotype sterility genotyping protocol and improved reproductive success of Mus colony
- Performed Western Blots for senescence and oxidative stress markers (SIRT1, PINK1, PARKIN, SOD1, SOD2 and 4HNE) in Mus brain, liver, and muscle homogenates
- Performed ELISA for IL-6 and colorimetric assay for NAD⁺/NADH
- Managed and maintained 180 (4 subgroups) Mus in both traditional laboratory and semi-natural enclosures settings
- Performed bioinformatics on 1TB of raw read Fastq-formatted data for Mus musculus mitochondrial SNV identification (<https://github.com/asw0049/>)
- Trained graduate and undergraduate students in laboratory procedures and protocols

Graduate Student Assistant | Auburn University (Auburn, AL) 08/2017 -02/2019

- Maintained, passaged, and transfected HEK primary cells with knockdown siRNA oligonucleotides for SLC25A1 and SLC25A11 to investigate copper transport across the Mitochondrial membrane under the supervision of Dr. Paul Cobine

Graduate Assistant (GA) | Alabama Agricultural & Mechanical University (Normal, AL) 01/2016-05/2017

- Inoculated and maintained cultures *Aureobasidium pullulans* and *Candida albicans* for essential oil antifungal susceptibility testing under the direction of Dr. Jeanette Jones
- Managed mycological laboratory equipment and cultures

Graduate Research Intern | University of California Los Angeles (Los Angeles, CA) 06/2016 -08/2016

- Conducted research in Evolutionary Medicine investigating the mutant prevention concentration of antibiotics against multi-drug resistant (MDR) strains of *Staphylococcus epidermidis* under the supervision of Dr. Pamela Yeh
- Practiced proper aseptic technique and disposal of MDR microbes in a BSL-2+ wet laboratory
- Performed colony counts and calculations for colony forming units
- Prepared selective media and plated specimen on agar plates using the bead-beating method

Publications ORCID: 0000-0002-7930-7149

1. Kang Nian Yap, Victoria A. Andreasen, **Ashley S. Williams**, Kaylene Y. Yamada, Shelby Zikeli, Andreas N. Kavazis, Wendy R. Hood; The persistent effects of corticosterone administration during lactation on the physiology of maternal and offspring mitochondria. *J Exp Biol* 15 November 2022; 225 (22): jeb244171. doi: <https://doi.org/10.1242/jeb.244171>

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2. Park, N.R., Taylor, H.A., Andreasen, V.A. **Williams, A.S.** Niitepõld, K. Yap., K.N. Kavazis A.N., Hood, W.R. Mitochondrial physiology varies with parity and body mass in the laboratory mouse (*Mus musculus*). *J Comp Physiol B* 190, 465–477 (2020). <https://doi.org/10.1007/s00360-020-01285-2>
3. Wendy R Hood, **Ashley S Williams**, Geoffrey E Hill, *An Ecologist's Guide to Mitochondrial DNA Mutations and Senescence*, Integrative and Comparative Biology, Volume 59, Issue 4, October 2019, Pages 970–982, <https://doi.org/10.1093/icb/icz097>

Conferences

| | |
|---|------|
| American Aging Association Annual Meeting | 2022 |
| Society for Integrative and Comparative Biology | 2019 |

Scientific Service

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| American Aging Association Early Career Scholar Award Application Reviewer | 2023 |
| <i>Frontiers</i> Manuscript Reviewer | 2022 |

Grants and Award Funding

Running Total: \$1950.00

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| 2023 Auburn University COSAM Inclusive Excellence Award | \$250.00 |
| 2021 Auburn University Office of Inclusion and Diversity Inclusive Excellence Programming Grant | \$1,700.00 |

Inclusion, Equity and Diversity Efforts

AU OurSTEMstory Founder and Committee Chair | Auburn University (Auburn, AL) _____ 06/2020 -06/2022

A biannual seminar series designed to educate the public and members of the Science, Technology, Engineering and Mathematics (STEM) community of the unethical history of STEM and subsequent improvements while highlighting events impacting minorities and underrepresented groups.

| Date | Invited Speaker | Subject |
|---------------------|--|--|
| November 11th, 2021 | Dr. Janina Jeff, Geneticist and Senior Scientist at Illumina | Discussed the history of African-American/Black trauma and unethical medical practices to help the greater scientific community and public understand the hesitation African-Americans displayed towards the COVID-19 Vaccine, while presenting solutions to help rebuild trust with medical and research communities. |
| April 8th, 2021 | Mr. Endre “Andy” Sarkany, Holocaust Survivor | Discussed the events of Human experimentation during the Holocaust and the development of Human Subjects and Human Rights under the Nuremberg Code and Belmont Report. |
| November 30th, 2020 | Dr. Ram Seshadri, University of | Discussed Intellectual Property Theft while analyzing the contributions of Dr. Rosalind Franklin, Dr. James Watson, and Dr. Francis Crick to our understanding of the structure of DNA. |

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| | California Santa Barbara | |
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Funds obtained as donations to the committee were used for:

- Donated to Holocaust and Human Rights Education Center (\$400)
- Pettijohn Endowed Scholarship Fund, a fund providing scholarships to minority students majoring in STEM at Auburn University (\$400)

Relevant Employment

Graduate Assistant | Auburn University COSAM Office of Inclusion, Equity and Diversity |(Auburn, AL) 08/2022 – Current

- Provided consultation and developed programs to help students, faculty, and staff in COSAM meet inclusion, equity, and diversity goals as listed in the colleges' strategic plan

Writing Consultant | Auburn University Miller Writing Center |(Auburn, AL) 08/2021 – 12/2021

- Provided consultation on any form of written materials to university students, faculty, and staff
- Reviewed client work for clarity, conciseness, organization, proper formatting, and good grammar while maintaining the client's original voice
- Aided clients in the development of written works
- Assisted clients in the development and maintenance of their portfolios and the online marketing of their skillsets

Science Education Outreach Efforts

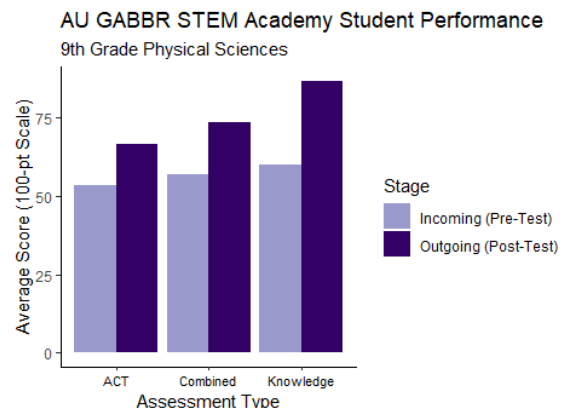
Greater Alabama Black Belt Region Summer Academy Instructor | Auburn University (Auburn, AL) 06/2021 – 7/2022

NSF-funded Program designed to combat socioeconomic disparities in education with aims to improve academic performance of K-12 students based on statewide standards in the Greater Alabama Black Belt Region.

- Instructed K-12 students for two 75-minute class periods each day virtually.
- Developed lessons, activities, and assessments in Physical Sciences based upon guidance of the Alabama State Curriculum Guides.
- Reinforced concepts of biology and physics through grade-appropriate experimentation in collaboration with Alabama Science in Motion.
- Attended and participate in student enrichment activities.
- Monitored and track progress of students through traditional graded coursework.

Significant Outcome

- On average, all students under my instruction improved 29-51% in general knowledge and in standardized test preparedness despite having reduced internet quality, access to fewer resources, lack of home support, and working to improve their mathematics skills.



06/2021-07/2021

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Bullock County Summer Academy Instructor | Auburn University (Auburn, AL) 05/2018 – 06/2018

- Instructed 9th Grade Physical Sciences and 10th Grade Biological Science for two 75-minute class periods each day.
- Developed lessons, activities, and assessments.
- Reinforced concepts of biology and physics through grade-appropriate experimentation in collaboration with Alabama Science in Motion.
- Attended and participated in student enrichment activities.
- Monitored and tracked progress of students through traditional graded coursework.

ALSAMP Program Assistant | Alabama Agricultural & Mechanical University (Normal, AL) 05/2017 – 07/2017

Alabama Louis Stokes Alliance for Minority Participation (LSAMP) Program NSF-Funded Minority Program

- Designed and instructed program to introduce incoming minority students to STEM and university experience during Summer sessions

Bullock County Summer Academy Instructor | Auburn University (Auburn, AL) 05/2018 – 06/2018

Collaboration between American Association of University Women and University of Alabama in Huntsville to introduce young girls to Science, Technology, Engineering, and Mathematics (STEM) with the aim of increasing female interest and representation in STEM.

- Participated in all female S.T.E.M. camp-centered activities, application design, robotics, and field trips to the Huntsville, AL Space and Rocket Center while monitoring 4 campers ages 10-12.

Memberships

American Aging Association
Gamma Beta Phi National Honors and Service Society
Society for Integrative and Comparative Biology
Genetics Society of America

Awards and Recognitions

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|---|-------------------------|
| Inclusive Excellence in STEM Award Auburn University COSAM Auburn, AL | January 2023 |
| Frank Sturm Memorial Fellowship Recipient Auburn University Graduate School Auburn, AL | March 2022 |
| American Aging Association Early Career Scholar Virtual Travel Award | March 2022- 2024 |
| Auburn University Miller Writing Center Safe Environment Award Auburn University Auburn, AL | 2021 |
| Department of Biological Sciences Graduate Student Service Award Auburn University Auburn, AL | 2021 |
| Gamma Beta Phi National Honor and Service Society | 2019 |

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Auburn University | Auburn, AL

Citation of Commendation

2017

Alabama A & M University | Normal, AL

Websites, Portfolios, and Profiles

Scripting

<https://github.com/asw0049/>

Personal Website Links

<https://www.linkedin.com/pub/ashley-williams/40/78a/a36>

<https://twitter.com/toriegypt>

<https://www.ashleyswilliams.com/>

<https://scholar.google.com/citations?user=3Y1nVWcAAAAJ&hl=en>

OurSTEMstory

<http://ourstemstoryau.com/>

<https://www.youtube.com/channel/UCDUcTNsXPhabda9afaXiQm>

Trainings

Trained in Auburn University Safe Zone for LGBTQ+ Inclusion

03/2020-Present

- Educates faculty, staff, and students about sexual orientation and gender identity to create a safe space for LGBTQ+ students

Leadership

Auburn University | Auburn, AL

Graduate Studies Student Representative-Biological Sciences 2020-2022

Diversity, Equity, and Inclusion Committee Member-Biological Sciences 2020- 2021

OurSTEMstory Committee Chair and Founder 2020-Current

Graduate Student Council Senator-Biological Sciences 2019-2020

American Association of University Women (AAUW) Huntsville Branch | Huntsville, AL

Vice President of Membership 2016-2017

Community Service

Elections Poll Worker

11/3/2020

Frank Brown Recreation Center, 235 Opelika Rd | Auburn, AL

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- Set up Voting Stations.
- Sanitized voting stations regularly.
- Ensured COVID-19 Safety Protocols followed.
- Verified voter identification.
- Ensured election ballots were properly filled and successfully submitted by voters.

Standard Deluxe Boogie Volunteer

08/2018-08/2019

1015 Mayberry Ave | Waverly, AL

Biannual community event showcasing local talent and food vendors.

- Set up ticket stations and decoration for event.
- Assisted event manager with Vendor and Entertainment placement on event grounds.
- Collected and sold tickets to customers at event site.

Habitat for Humanity Volunteer Builder

01/2018 – 07-2018

Auburn Opelika Habitat for Humanity | Opelika, AL

Non-Profit designed to provide low-income families affordable housing through financial education and community building.

- Helped contribute to the physical building of a house for a first-time homeowner and their family while acquiring skills in carpentry, cabinet installation, painting, and wood priming.

Undergraduate Mentees

Auburn University | Auburn, AL

Brooke Bengert

Jan 2022- Current

- T-Haplotype Genotyping Project for *Mus musculus*
- Characterizing ROS-mediated mutations in mtDNA COX1, Control Regions, and Cyt-B
- Designing bash script to predict amino acid composition based on SNP and reference data

LouAnn Crosby

2018-2020

- Mouse House Husbandry
- T-Haplotype Genotyping Project for *Mus musculus*

James Pittman

2019-2020

- Mouse House Husbandry
- T-Haplotype Genotyping Project for *Mus musculus*

Thomas Creech

2019-2020

- Mouse House Husbandry
- T-Haplotype Genotyping Project for *Mus musculus*

Jack Fain

2019-2020

- Mouse House Husbandry
- T-Haplotype Genotyping Project for *Mus musculus*

Deel Amrit

2019-2020

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- Mouse House Husbandry
- T-Haplotype Genotyping Project for *Mus musculus*

Erin Lagrone

2019-2020

- T-Haplotype Genotyping Project for *Mus musculus*

Caitlin McIlwain

Summer 2020

- Mouse House Husbandry
- T-Haplotype Genotyping Project for *Mus musculus*

Matthew Holley

2019-2020

- Mouse House Husbandry

Brittany Gamble

2018-2019

Breanna Caldwell

2018-2019

References

1. Dr. Scott Bowling, GTA Supervisor, Auburn University, bowlisa@auburn.edu
2. Dr. Paul Cobine, Departmental Chair, Auburn University, pac0006@auburn.edu
3. Dr. Wendy R. Hood, PhD Advisor and PI, Auburn University, wrh0001@auburn.edu
4. Dr. Jeanette Jones, M.S. Graduate Advisor, Alabama Agricultural and Mechanical University, jeanette.jones@aamu.edu
5. Dr. Rebecca Riggs, CURE GTA Supervisor, Auburn University, dobsorm@auburn.edu
6. Dr. Scott Santos, PhD Committee Member and Bioinformatician, Auburn University, srsantos@buffalo.edu
7. Dr. Pamela Yeh, Internship Project PI, University of California Los Angeles, pamelayah@ucla.edu
8. Dr. Min Zhong, CURE GTA Supervisor, Auburn University, zhongmi@auburn.edu