

# Gracie S. Flake (Thompson)

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## EDUCATION

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### Bachelor of Science in Forensic Science

December 2024

Arizona State University, Barrett the Honors College, Glendale, Arizona

4.19 GPA

- Minor: Personal Health
- Dean's List: All Semesters
- Honors Thesis - “*A Developmental & Genomic Study to Strengthen Forensic Entomology Baseline Data*”

### STEM Honors High School Diploma

May 2021

American Leadership Academy High School, Queen Creek, Arizona

4.54 GPA

- *Valedictorian*

## WORK EXPERIENCE

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March 2025 - Present    **Forensic Scientist I**, Mesa Police Department, Forensic Services - Biology Department, Mesa, AZ

Laboratory Skills Serology: evidence handling, screening (microscopy & ALS), presumptive tests (KM, HemaTrace, BCIP, AP spot, p30, Christmas Tree Stain, RSID), Report Writing

- Received serology training including verbal, written, and practical competency for all serological modules – Evidence handling, Screening, Blood, Amylase, Semen, Mock Court Testimony.
- Perform visual, microscopic, and serological testing on items of evidence related to police investigations in Serology.
- Write serology reports summarizing laboratory findings and analyses for forensic casework

Aug. 2024 - March 2025    **Forensics Crime Lab Intern**, Arizona Department of Public Safety - Scientific Analysis Bureau, Phoenix, AZ

Laboratory skills: Qiagen EZ1 extraction, PCR, qPCR, Kastle Meyer, O-tol, RSID, microscopy, photography)

- Became familiar with the serology/DNA lab protocols and safety precautions within the lab area.
- Learned and practiced proper clean techniques for setting up work benches and handling materials, while ensuring proper PPE is worn.
- Assisted one serologist and one DNA analyst in completing 2 validation studies.

### **Validation Study 1**

- Practiced liquid extractions of alpha-amylase from saliva, followed by RSID testing and photography of results.
- Prepared diluted saliva samples for DNA work and performed DNA extractions, quantification, and amplification.

### **Validation Study 2**

- Created dilutions of blood samples and prepared stains on a white t-shirt, then treated the shirt with BlueStar reagent.
- Performed Kastle Meyer and Ortho-tolidine testing on samples over several time markers.
- Performed DNA extractions and quantification on cuttings from each dilution stain over several different time markers.

## **RESEARCH EXPERIENCE**

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Jan. 2023 - **Undergraduate Researcher, *Forensic Entomology/Genetics Research Lab***

Jan. 2025

Arizona State University, Glendale, Arizona

Laboratory Skills: Qiagen DNeasy extraction, Invitrogen Trizol RNA extraction, PCR, qPCR, Gel Electrophoresis, Microscopy

### **FOR 499: *Detection of Food Source in C. megacephala by PCR Analysis***

*January 2023 - August 2023*

- Maintained blowfly populations and practiced proper clean techniques.
- Performed DNA extractions, PCR, and gel electrophoresis.
- Learned communication skills while working in a shared lab space.
- Gained problem-solving skills when troubleshooting issues that arose.

**New College Undergraduate Inquiry & Research Experiences (NCUIRE) Research Assistant: *A Genetic Survey of Phoenix, AZ, Blow Fly (Diptera: Calliphoridae) Populations***

*August 2023 - March 2024*

- Set up fly traps in Central Arizona to collect blowfly samples for analysis.
- Performed DNA extractions, PCR, gel electrophoresis, and phylogenetic modeling of the barcoding region.
- Created a DNA barcoding database of blowfly species.

**New College Undergraduate Inquiry & Research Experiences (NCUIRE) Research Assistant: *A Developmental and Genomic Study to Strengthen Forensic Entomology Baseline Data***

*January 2024 - December 2024*

- Conducted a developmental study at two different temperatures on *C. coloradensis* collected from Arizona and Texas for 5 generations.
- Examined the effect that developmental generation has on the development of *C. coloradensis*.
- Extracted and sequenced the genomic and mitochondrial barcoding regions of the forensically important blowfly *C. coloradensis*.

**Forensic Botany Lab Research: *Analysis of the Pollen Community at ASU West Valley***

*January 2024 - May 2024*

- Developed a protocol for sampling pollen based on published peer-reviewed articles.
- Sampled pollen communities from different fabrics, local honeybees, the soil, and a Burkhead spore sample.
- Microscopically analyzed, identified, and compared pollen communities sampled by each method.

**New College Undergraduate Inquiry & Research Experiences (NCUIRE) Research Scholar: *A validation study of microRNA genes in the forensically important blowfly *Chrysomya rufifacies* (Diptera: Calliphoridae) for use in post-mortem interval estimations***

*May 2024 - December 2024*

- Reared *C. rufifacies* at 25C and collected samples according to standard operating procedures across the pupal development stage.
- Extracted total RNA from the forensically important blow fly *C. rufifacies* at the early, mid, and late pupal stage.

## HONORS & AWARDS

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- May 2021     **New American University Merit Scholarship - President's Award**  
*Arizona State University*
- May 2021     **Scholastic Excellence Award**  
*The United States Marine Corps*
- April 2023    **NCUIRE Research Assistant Award**  
*Arizona State University - New College Undergraduate Inquiry & Research Experiences Program*
- Nov. 2023    **NCUIRE Research Assistant Award**  
*Arizona State University - New College Undergraduate Inquiry & Research Experiences Program*
- April 2024    **1st Place Student Choice Award - “Analysis of the Pollen Community at ASU West Valley”**  
*NCUIRE Research Symposium*
- April 2024    **2nd Place Student Choice Award - “A Genetic Survey of Phoenix, AZ, Blow Fly (Diptera: Calliphoridae) Populations”**  
*NCUIRE Research Symposium*
- April 2024    **2nd Place NCUIRE Judge Awards - “Analysis of the Pollen Community at ASU West Valley”**  
*NCUIRE Research Symposium*
- May 2024     **NCUIRE Research Scholar Award**  
*Arizona State University - New College Undergraduate Inquiry & Research Experiences Program*
- Nov. 2024    **Moeur Award**  
*Arizona State University - ASU Alumni Association*

## PROFESSIONAL AFFILIATIONS

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Feb. 2026 - Present    *American Academy of Forensic Sciences (AAFS)*, Trainee Affiliate.

## MEETINGS ATTENDED

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April 2023    *New College Undergraduate Inquiry and Research Experiences (NCUIRE)*, Arizona State University, Glendale, AZ.

April 2024    *65th Annual Meeting of Arizona-Nevada Academy of Science (ANAS)*, Glendale, AZ.

April 2024    *New College Undergraduate Inquiry and Research Experiences (NCUIRE)*, Arizona State University, Glendale, AZ.

Nov. 2024    *Entomology 2024 - Entomological Society of America (ESA)*, Phoenix, AZ.

## MEETING PRESENTATIONS

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April 2024    A Genetic Survey of Phoenix, AZ, Blow Fly (Diptera: Calliphoridae) Populations. Presented at *65th Annual Meeting of Arizona-Nevada Academy of Science (ANAS)*, Glendale, AZ.

April 2024    A Genetic Survey of Phoenix, AZ, Blow Fly (Diptera: Calliphoridae) Populations. Presented at *Entomological Society of America Pacific Branch Meeting (ESA)*, Waikoloa, HI.

April 2024    A Genetic Survey of Phoenix, AZ, Blow Fly (Diptera: Calliphoridae) Populations. Presented at *New College Undergraduate Inquiry and Research Experiences (NCUIRE)*, Arizona State University, Glendale, AZ.

April 2024    Analysis of the Pollen Community at ASU West Valley. Presented at *New College Undergraduate Inquiry and Research Experiences (NCUIRE)*, Arizona State University, Glendale, AZ.

Nov. 2024    A Genetic Survey of Phoenix, AZ, Blow Fly (Diptera: Calliphoridae) Populations. Presented at *Entomological Society of America (ESA)*, Phoenix, AZ.

- Nov. 2024 A Developmental & Genomic Study to Strengthen Forensic Entomology Baseline Data. Presented at *Entomological Society of America (ESA)*, Phoenix, AZ.
- Feb. 2025 A Developmental & Genomic Study to Strengthen Forensic Entomology Baseline Data. Presented at *American Academy of Forensic Science (AAFS)*, Baltimore, MD.

## PUBLICATIONS

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### Abstracts

1. **Thompson, G.**; Brossia, A.; Parrott, J.J. A Genetic Survey of Phoenix, AZ, Blow Fly (Diptera: Calliphoridae) Populations [abstract]. In: Proceeding of the 65th Annual Meeting of the American-Nevada Academy of Sciences; 2024 April 13; Glendale, AZ. Arizona-Nevada Academy of Sciences, Volume 56, 2024-04. Abstract #118. <https://repository.arizona.edu/handle/10150/672280>

### Articles

1. **Thompson, G.**; Parrott, J.; Weidner, L.; (December 2024) A Developmental and Genomic Study of Blowfly (Diptera: Calliphoridae) Populations to Strengthen Forensic Entomology Baseline Data. Honors Thesis. Arizona State University - Barrett Honors College. <https://keep.lib.asu.edu/items/199073>

### Other Works

1. Parrott, J. J.; Brossia, A.; **Thompson, G.** (2025) Chapter 31: Death, History, and Archaeology *In* Carrion Ecology, Evolution, and Their Applications Second Edition. CRC Press. Boca Raton, FL.

*Last updated: March 10, 2026*