

Student Achievements

An important measure of student achievement is our ability to publish and present original research in the field of forensic science at local, regional, national, and international forums. Our students not only presented but won awards for their research presentations.

SCHOLARSHIP

RESEARCH EXPERIENCE: An undergraduate (BSFS) degree in our program is the foundation for success, professionally as well as academically. Program success can be determined through scholarship, internship, and career placement, etc.

1. Student Name: Victoria Ocasio-Reed.

Research title: Comparative Toxicity of Peppermint Oil Against Adult and Larval Litter Beetles *Alphitobius diaperinus*. **Mentor:** Shirley Chao. Ph.D.

Location: Fayetteville State University.

Dates of research: June 2023 – May 2023.

2. Student Name: Alexandra M. González Villanueva

Research title: Disruption of NG2 Cell Differentiation in a Mouse Model of Pitt-Hopkins Syndrome. **Mentor:** Daniel K. Mulkey

Location: University of Connecticut, Storrs, CT.

Dates of research: May 26, 2024 - August 2, 2024.

3. Student Name: Shirley Jacquet

Research title: Research alternative phytochemicals with anti-cancer properties to be a chemo-preventive agent against Inflammatory Breast Cancer. **Mentor:** Dr. Willietta Gibson

Location: Fayetteville State University, NC.

Dates of research: June 2023- May 2024.

4. Student Name: Kiara Smith

Research title: The Impact of *Toxoplasma gondii* Infection on Estrogen Receptors.

Location: STEM Summer Scholars Institute - Indiana-Purdue University at Indianapolis School of Medicine Department of Toxicology and Pharmacology.

Dates of research: June 2023 – July 2023.

Research title: Characterization of Phase Formation in Uterine Fibroids using Three-Dimensional (3D) Co-cultures of Human Uterine Leiomyoma and Myofibroblasts Cells Following BPAF Exposure.

Location: National Institute of Environmental Health Sciences Scholars Connect Program, Durham, NC.

Dates of research: June 2024 - April 2025.

5. Student Name: Joshua McLaurin

Research title: The effects iron on pyocyanin production and motility.

Mentor: Justin Graham, PhD.

Location: Fayetteville State University.

Dates of research: September 2024- present.

Research title: Antimicrobial tolerance and its relevance to bacterial genetics in mucobstructive airway diseases.

Location: UNC HBCU BRIDGE SROP at UNC Chapel Hill.

Dates of research: May 2024 - July 2024.

Research title: Linking bacterial communication to defense: A shortcut to bacterial modern warfare.

Location: GSK Research Foundation Program at East Carolina University.

Dates of research: September 2022 - April 2023.

Research title: Fibrinogen-Related Protein, FGL2, of Hamster Cauda Epididymal Fluid Purification.

Location: URISE- Fayetteville State University.

Dates of research: August 2022 - July 2023.

6. Student Name: Saniya L. Lyles

Research title: Structural stability and electronic structure of (Ti,Ta)₂C MXenes.

Mentor: Bhoj Gautam, Ph.D.

Location: Fayetteville State University.

Dates of research: October 2021 – Present.

Research title: Studied vibrational spectra of macromolecules, namely, DNA and RNA.

Location: Fayetteville State University. **Mentor:** Bhoj Gautam, Ph.D.

Dates of research: October 2021 – Present.

Research title: Worked in collaboration to increase the open-source databases on forensic footwear.

Location: CSAFE (Center for Statistic Application in Forensic Evidence) at Iowa State University, IA.

Dates of research: May 2023 - August 2023.

7. Students Name: Tjuana R Spruill & Xavier Scott

Research title: Interior Spatial Distribution of Bed Bugs (*Cimex Lectularius*) – GIS Approach. **Mentors:** Drs. Tran Trung & Khalid Lodhi

Location: Fayetteville State University, NC.

Dates of research: May 26, 2024 - Present.

8. Student Name: Daziyahna Wilson

Research title: AI and Machine Learning based: Human blood and DNA profiling from Bed bugs prediction modeling. **Mentors:** Drs. Bogdan Czejdo, Sambit Bhattacharya & Khalid Lodhi

Location: Fayetteville State University, NC.

Dates of research: February 2024 - Present.

9. Student Name: Desiree Bliss

Research title: Determination of Metallic Ions by Swabbing from Unfired Brass Bullet Casings. **Mentors:** Drs. Zhiping Luo, Sangeetha Balabhadra, and Khalid Lodhi.

Location: Fayetteville State University, NC.

Dates of research: September 2023 – May 2024.

10. Student Name: Jania Jackson

Research title: Impact of Phytohormones on Wheat Resistance to Hessian Fly under Heat Stress. **Mentors:** Drs. Lieceng Zhu and Mohamed Maldani.

Location: Fayetteville State University, NC.

Dates of research: March 2022-May 2024.

Research title: Developing New Golden Braid Compatible Antibiotic and Herbicide Resistant Selectable Marker Constructs. **Mentors:** Drs. Anna Stepanova and Jose Alonso.

Location: North Carolina State University, NC.

Dates of research: May 2023- July 2023.

11. Student Name: Leslie Mendoza

Research title: ECG Monitoring on Chicken Embryos in Response to Ashwagandha.

Mentor: Dr. Eid Haddad

Location: Fayetteville State University, NC.

Dates of research: Feb 2023 – May 2024.

Research title: Enteroendocrine Cells Undergo Hyperplasia in High Glucose Jejunal Organoids. **Mentor:** Dr. Julie In

Location: University of New Mexico (UNM), Albuquerque NM

Dates of research: May 2023- August 2023.

Research title: Effects of Different Concentrations of Nano-Aluminum on Antioxidant Enzyme Activity of Cotton Seedlings. **Mentor:** Dr. Lijie Li

Location: East Carolina University (ECU), Greenville NC.

Dates of research: May 2024 – July 2024.

PRESENTATIONS:

- **Kiara Smith** North Carolina - Louis Stokes Alliances for Minority Participation Symposium - September 14, 2024. Poster Presentation.
- **Kiara Smith** Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) - November 13 - 16, 2024. Poster Presentation.
- **Kiara Smith** North Carolina Society of Toxicology Conference - October 9, 2024. Poster Presentation.
- **Kiara Smith** North Carolina Women of Color Research Network Conference- August 2, 2024. Poster Presentation.
- **Joshua-Emmanuel McLaurin** UCLA McNair Scholars Conference - July 2023. Oral Presentation
- **Joshua-Emmanuel McLaurin** State of North Carolina Undergraduate Research and Creativity Symposium (SNCURCS) - November 11, 2023. Poster presentation.
- **Joshua-Emmanuel McLaurin** Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) - November 15 - 18, 2023. Poster Presentation.
- **Saniya L. Lyles**, Sadhana Vattikuti, Bhoj R. Gautam, and Chandra M. Adhikari, Structural stability and electronic structure of Ti₂C and Ta₂C MXenes, ACS 2024 Southeastern Regional Meeting, Atlanta, GA, OCT 23-26, 2024. Oral Presentations:
- **Saniya L. Lyles**, and Chandra M. Adhikari, Crystallography and DFT investigation on Ti₂C MXene, ANPA Conference 2024, July 17-19, 2024. Oral Presentations:
- **Saniya L. Lyles**, and Chandra M. Adhikari, Vibrational Spectra of DNA and RNA Segments ANPA Conference 2023, July 17-19, 2023. Oral Presentations.
- **Saniya L. Lyles** and Chandra M. Adhikari, Electronic structures and magnetism of Sc₂C, MXene workshop, Fayetteville State University, May 10, 2024. Poster Presentations
- Andrew R. Smith, Gabriel J. Kinney, **Saniya Lyles**, and Chandra M. Adhikari, Electronic and magnetic properties of Sc₂C, Undergraduate Research Symposium at Fayetteville State University, May 3, 2024. Poster Presentations.
- **Desiree Bliss**; AJ Troyer, B.S; Khalid Lodhi, DSc; Zhiping Luo, PhD; Sangeetha Balabhadra, PhD; & Emily Prisaznik, M.S. Qualification of Metallic Ions Recovered from Swabbing Unfired Brass Bullet Casings. VIII Annual Cape Fear Research Symposium" on May 02, 2024. Oral Presentation.
- **AJ Troyer**; Julie Atashi; Heroux, Jenna; Prisaznik, Emily; Khalid Lodhi, DSc; Zhiping Luo, PhD; DNA Isolation and Analysis from Unfired Bullets. VII Annual Cape Fear Research Symposium" on April 26, 2023. Oral Presentation.
- **Victoria Ocasio-Reed** and Shirley Chao. Ph.D. Comparative Toxicity of Peppermint Oil Against Adult and Larval Litter Beetles *Alphitobius diaperinus*. VII Annual Cape Fear Research Symposium" on April 26, 2023. Oral Presentation.
- **Leslie Mendoza**: 3rd Annual Student Research Symposium (SRS) at FSU, First place winner, poster presentation. May 2024.
- **Leslie Mendoza**: Annual Biomedical Research Conference for Minoritized Scientist (ABRCMS), poster presentation. November 2023.
- **Jackson, J.***, VanGarven, M.*, Neupane, S., Bumbleburg, C., Schrecker, H., Udeme, A., Heifetz, M., Patel, K., Silverman, J., Miller, A., Lenski, J., and Langdon, CG. Combined XPO1 and PI3K pathway inhibition limits the viability of oncogenic fusion-driven pediatric sarcomas. MUSC Hollings Cancer Center Cancer Biology and Immunology Program Research Retreat. Mt. Pleasant, SC. October 21, 2024.

- **Jackson, J.**, Maldani, M., Zhu, L. Impact of phytohormones on Wheat Resistance to Hessian fly under Heat Stress. 3rd Annual Student Research Symposium. Fayetteville State University. Fayetteville, NC. May 1, 2024.
- **Jackson, J.**, Vollen, K., Fenech, M., Zhao, C., Alonso, J., Stepanova, A. Developing New GoldenBraid Compatible Antibiotic and Herbicide Resistant Marker Constructs. Annual Biomedical Research Conference for Minoritized Scientists 2024 Symposium. Phoenix, AZ, November 15-18, 2023.
- **Shirley Jacquet**: 2023 ABRCMS (Annual Biomedical Research Conference for Minority Scientists)- Phoenix, AZ- Nov. 2023. Individual Effects of Gallic Acid and Curcumin in Inflammatory Breast Cancer.

PUBLICATIONS: Forensic students (highlighted) are among the co-authors on published papers in peer reviewed journal:

1. **Saniya L. Lyles**, Sadhana Vattikuti, Gabriel Kinney, Andrew Smith, Bhoj R. Gautam, and Chandra M. Adhikari, Structural stability and electronic structure of (Ti,Ta)₂C MXenes, accepted for publication in Journal of Nepal Physical society 2024.
2. Chen, M., Zhu, L., Maldani, M., **Jackson, J.**, Capers, D., Pankey, H., Rania, N., Gore, C., & Walker, J. (July 2024). *Impact of phytohormones on wheat resistance to Hessian fly under Heat stress*. *Frontiers in Agronomy*.
3. **Shirley Jacquet**, Shuxian Li, Rouf Mian, My Abdelmajid Kassem, Layla Rashad, Sonia Viera, Francisco Reta, Juan Reta, and Jiazheng Yuan. Evaluating the Response of Glycine soja Accessions to Fungal Pathogen *Macrophomina phaseolina* during Seedling Growth. *Plants* **2023**, *12*(22), 3807; <https://doi.org/10.3390/plants12223807>

CAREER PLACEMENTS

Total forty-seven (47) students graduated with a degree in Forensic Science in the last three (3) academic years 2021-24. A survey of the graduates showed that of the 28 (59.6%) respondents, 12 entered the biotechnology industry (25.5%); 10 went to graduate school (21.3%); 3 are confirmed working in forensic agencies (6.4%); 2 are working non-professional jobs (4.3%); and 1 is working in research (2.1%). The remaining 19 (40.4%) graduates did not share their post-graduation status. Therefore, 55.3% either entered career placements or pursuing graduate studies. However, 92.9% of respondents entered career jobs or graduate school.

THREE YEARS SUCCESS RATE

Field of work	Years	2021-22	2022-23	2023-24	Total
	No of Graduates	10	19	18	47
Crime Scene Investigation (CSI) Or Forensic Crime Lab		1	1	1	3
Biotechnology		3	7	2	12
Graduate/Professional School		2	2	5	10
No response		3	8	8	19
Research		0	1	0	1
*Others		0	0	2	2
Success rate (%)		60.0	52.6	44.4	55.3

Table 1. Enrollment/Graduates Data

Degree Program Name Forensic Science Criminalist	Academic Year 2021-22	Academic Year 2022-23	Academic Year 2023-24
# of FT students enrolled in degree program	61	62	49
# of FT students enrolled in Pre-Forensic Science	57	62	76
# of graduates reported in each year	10	19	18

Table 2. Post – Graduation Survey Data

Degree Program Name Forensic Science Criminalist	Academic Year 2021-22	Academic Year 2022-23	Academic Year 2023-24
# of graduates with job offers	4	9	3
# of graduates admitted into advanced degree program	3	2	5
# of graduates unreachable / did not respond	3	8	9

Table 3. Internship / Research Project/ Capstone Experience Information

Academic Year	Type of Experience (internship, research, or capstone)	Title or Topic of project / area of study	Location (applicable if internship is the 'type of experience')
2021-22	Capstone (FORS 460) is a required course. All students (with a few exceptions) take the capstone course during their senior year.	Each student is assigned a customized case scenario with various types of evidentiary items (collected and packed). Students performed laboratory analysis in respective forensic disciplines such as latent print, trace evidence, biology, etc.	Capstone (FORS 460) course is offered in the department of biological and forensic sciences (DBFS) at Fayetteville State University (FSU).
	A student had the opportunity to work in faculty research.	Research title: Structural stability and electronic structure of (Ti,Ta) ₂ C MXenes. Research title: Studied vibrational spectra of macromolecules, namely, DNA and RNA.	Fayetteville State University.
2022-23	Capstone (FORS 460) is a required course. All students (with a few exceptions) take the capstone course during their senior year.	Each student is assigned a customized case scenario with various types of evidentiary items (collected and packed). Students perform laboratory analysis in respective forensic disciplines such as latent print, trace evidence, biology, etc.	Capstone (FORS 460) course is offered in the DBFS at FSU.
	A few students had the opportunity to work in faculty research.	Research title: Developing New Golden Braid Compatible Antibiotic and Herbicide Resistant Selectable Marker Constructs. Research title: Worked in collaboration to increase the open-source databases on forensic footwear.	at FSU and/or external institutions such as NCSU, Iowa State University, etc.
2023-24	Capstone (FORS 460) is a required course. All students (with a few exceptions) take the capstone course during their senior year.	Each student is assigned a customized case scenario with various types of evidentiary items (collected and packed). Students perform laboratory analysis in respective forensic disciplines such as latent print, trace evidence, biology, etc.	Capstone (FORS 460) course is offered in the DBFS at FSU.
	A few students had the opportunity to work in faculty research.	Research title: Effects of Different Concentrations of Nano-Aluminum on Antioxidant Enzyme Activity of Cotton Seedlings. Research title: Enteroendocrine Cells Undergo Hyperplasia in High Glucose Jejunal Organoids.	at FSU and/or external institutions such as University of New Mexico, etc.