18th ANNUAL

Student Research SYMPOSIUM

FRIDAY, APRIL 11, 2025

UNIVERSITY of ARKANSAS FORT SMITH

Acknowledgements

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Greetings!

The University of Arkansas - Fort Smith proudly welcomes you to the 18th Annual Student Research Symposium. Our faculty and staff are committed to fostering an environment that promotes learning and discovery. As you will see in today's presentations, our students have accepted the challenge, explored unique areas of research, and synthesized their results in the form of lectures, studio art, demonstrations, posters, and performances. These presentations represent the academic diversity of UAFS's programs and the intellectual excellence of our students and their faculty mentors. On their behalf, thank you for your participation. I invite you to engage the presenters during the question-and-answer segments of their presentations. Your active involvement ensures that UAFS remains a dynamic and engaged academic community.

Namárië

Dr. Shadow Robinson
Provost and Vice Chancellor for Academic Affairs

Oral Presentations

Library 122 – Presentations in History

Noon Rhett Carter-Williams – Hernando De Soto's Leadership and the Morale of his Expedition

12:30 Michael Deleplank – The Social and Political Impact of the Music of Phil Ochs

1:00 Embry Thornton – Victims and Traitors: The Conflicting Reactions to Japanese Internment in Arkansas

1:30 Kimber Campbell – Defending Arkansas Civil Rights: Scipio Africanus Jones and Fighting Racism from Within Arkansas

Library 202 – Presentations in Accounting, Finance, Economics, and International Business

Noon Christopher Neissl – The Great War and Wall Street: Why the NYSE Went Dark in 1914

12:30 Tommy Nguyen and Kaitlyn Cavaness – Disabled and Senior Americans Travel Patterns in Small and Medium-Sized Metropolitan Areas

1:00 Eddie Hunter – Expanding an Arkansas Business to a Culturally Challenging Market in the Middle East

1:30 Chelsie Wilmoth – Market Entry Strategy: Wings Drones' Journey to China

Library 203 – Presentations in Education and Community Research

Noon Mallory Howerton, Christopher Fisher, Quincy Efurd, Sofia Reyes, and Bethany Montague – Revamping Senior Send-Off

12:30 Abigail Barker, Katie Brown, and Victoria Frank – The Future of Alumni

1:00 Adysen Phelps – First Day of School from an Immigrant Perspective

1:30 Rebecca Maclin – Shaping the Future: The Role of Teachers in Inclusive Classrooms

Library 206 – Presentations in English, Literature, and Political Science/History

Noon Lyla Flint – This Will Hurt: Alliances Between Initiated, Inflicted, and Intensified Dystopia in "Mouthwashing"

12:30 Lacy Stephens – Reclaiming Gender as One's Own: Forming an Identity and Building Independence in Cate Shortland's "Marvel's Black Widow"

1:00 Gabriella Stokes – Records of Woman: Felicia Hemans's Development and Challenge of the "Cult of True Womanhood"

1:30 Mitchell Collins – The State of US, Our Politics, and Our Culture

Breedlove 105 – Presentations in History, Art History, Music Performance, and Music Education

Noon Emily Harris – Crittenden vs. Conway: Political Ambition and Dueling in Early Arkansas Politics

12:30 Grace Williams – Reinterpreting Geronimo: Indigenous Histories Through Painting

1:00 Gustavo Martinez Jr. – The Trumpet's Evolution - Design and Repertoire

1:30 Jeremiah Van Hook – Hi-Dro: A Water Purity Analysis System

Health Science 121 – Presentations in Electrical Engineering Technology and Automation

Noon Sean Jessee – Intelligent Intrusion Detection System

12:30 Marco Solis and Rafael Lira – Smart Roof Watering System

1:00 Jackson Molina and Josiah Stevens – Smart DM Screen

1:30 Darion Crawford and Brandon Cole – Delivery Protection

Health Science 124 – Presentations in Biology, Chemistry, and Computer Science

Noon Emily Kelley and Lily Hobbs – A Review of Herpetofaunal Distributions in Arkansas with Special Emphasis on Contributions from Citizen Science: Part II - Turtles, Lizards, and Alligator

12:30 Libbi Cusimano and Caden Fox – Identification of Species and Mating Types of Dictyostelium Wild Isolates from the Arkansas River Valley Using Molecular Techniques

1:00 Sully Sanford – Human Serum Albumin and its Interaction with Organochlorine Pesticide

1:30 Marco Garcia Montes, Cameron Taylor, and Josue Martinez – NumaWare: Process Automation Through Computer Vision and Robotics

Poster Presentations
Noon to 2 p.m., Boreham Library

Table 1 – Geoscience: Kaleb McLaughlin – Qualitative Groundwater Tracing in a Karst Aquifer, Hiawatha National Forest, Michigan

Table 2 – Geoscience: Perla Romero – Identifying and Mapping Karst in the Hiawatha National Forest, Upper Peninsula of Michigan

Table 3 – Geoscience: Tucker Kelly and Ross Bieker – Distribution of Detrital Sediment Captured in McKay Bay Member Knoll Reef, Upper Peninsula, Michigan

Table 4 – Geoscience: Bryan Rhamy – Revisiting the Petrogenesis of a Late Oligocene Volcanic Field in Southeastern California

Table 5 – Chemistry/Geoscience: Kylee Massingill – Microplastics in Karst Waters from the Hiawatha National Forest in Upstate Michigan

Table 6 – Chemistry: Seth Fields – Removal of Dichloromethane from Organic Chemistry Labs to Meet EPA Requirements

Table 7 – Genetics/Protein Biology: Jessie Boese – Using Open Reading Frames to Predict Possible Protein Structures

Table 8 – Genetics/Phylogenetics Biology: Zayne Dean – Phylogenetic Analysis of Rattus Species Using mtDNA and Nuclear DNA Sequences

Table 9 – Biology: Khurera Iqbal, Kristy Ortiz, and Sarah White – Collection of Soil Samples and Culturing of Dictyostelids from Western Regions of Arkansas

Table 10 – Biology: Zachary Rytting, Gini Vandalak, and Himanshi Shorie – Morphology of Dictyostelium Wild Isolates and Their Mating Dynamics and Social Behavior During Development

Table 11 – Biology: Chris Edwards, Jasmine Rosa, Vanessa Gonzalez, and Camelia Vela – Pollution Diffusion: A Look at Arkansas River Valley's Watersheds

Table 12 – Biology: Anna Carden, Jarrod Gossett, Arrington Rose, and Cullen Delaney – A Survey of E. coli Contamination in Fort Smith Restaurants

Table 14 – Psychology: Kristy Mead – Correlations in Physical Abuse, Sexual Abuse, and Psychology Disorders in Young Adults

Table 15 – Psychology: Malaree Skolarski – Correlations Between Social Media Usage, Mental Health Outcomes, and Academic Performance Among College Students

Table 16 – Theatre History: Jamarion Davidson – Spotlight on Legacy: Celebrating Black Pioneers in Theatre

Table 17 – Workforce Placement of Graduating High School Seniors: Steven Figueroa, Noah Addison, Summer Bright, Braydon Ross, and Peyton Edgar – Draft Day (1)

Table 18 – Workforce Placement of Graduating High School Seniors: Hieu Bui and Jaci Bonds – Draft Day (2)

Table 19 – Community Research: Kyha Starkey, Jayden Pena, Jeremy Tandoy, Estella Sananikone, and Evan White – Hope on the Green: Youth Golf in the Fort Smith Area

Table 20 – Community Leadership/Business Administration: Allyson Avery, Isaac Nichols, Joseph Sturgill, and Jackson Rotert – "SpIndL's Funky Spring Fling" Fundraising Event

Table 21 – Dental Hygiene: Ashlynn Flute, Erica Davis, and Mackenzie Brown – The Future of AI in Dentistry

Table 22 – Dental Hygiene: Bronwen Henderson, Kinsey McCrainie, and Deysy Vargas – Effects of Energy Drinks on Systemic and Oral Health

Table 23 – Dental Hygiene: Taylor Short, Faith Fulbright, Lauren Sikes, and Brooklyn Ray – The Use of Botox in Dentistry

Table 24 – Dental Hygiene: Brenci Marrufo, Mesa Miller, and Erica Mimbs – An Update on Dental Implant Maintenance

Table 25 – Biology: Shelby Zink – Effects of Disturbance on the Herpetofaunal Community in a Powerline Right of Way

Library 122 Presentations in History

Noon	Rhett Carter-Williams
12:30	Michael Deleplank
1:00	Embry Thornton
1:30	Kimber Campbell

Hernando De Soto's Leadership and the Morale of his Expedition

Presented by: Rhett Carter-Williams
Faculty Sponsor: Dr. Matt McCoy
Field of Research: History

The Hernando De Soto expedition is a fascinating research topic that has long been studied but existing scholarship overlooks De Soto's abilities as a leader. Accounts from De Soto's personal secretary Rodrigo Ranjel, the sole primary source covering the expedition, and more modern historiography provide the material for this evaluation. De Sotos's actions as a leader were important to the soldiers' morale. When morale was low, he would deceive his men by promising them that they would find riches beyond belief. If the men resisted his command, they faced his harsh temper and in extreme circumstances, execution. De Soto's leadership was excellent, but the longer the expedition continued without finding the tangible riches he promised his men the more their moral faltered, and they lost confidence in his leadership. Ultimately, Hernando de Soto was a flawed leader, and his inability to produce promised results slowly broke the morale of the expedition with disastrous consequences in the Mississippi.

Rhett Lee Chance Carter-Williams, 23, was born in Fort Smith and raised in Mansfield, Arkansas. He dropped out of school in ninth grade due to a troubled upbringing, but at 16 decided he wanted to become a history professor. He earned a GED in 2018 and an associate degree from Rich Mountain Community College in 2020. He joined the United States Army and served in the National Guard and ROTC for three years as an artilleryman and cadet. He will graduate from the UAFS in May 2025 with a bachelor's in history and plans to begin working on a master's degree in the fall of 2026.

The Social and Political Impact of the Music of Phil Ochs

Presented by: Michael Deleplank
Faculty Sponsor: Dr. Matt McCoy
Field of Research: History

To this day, in strikes and rallies, the sounds of people chanting rhymes and singing can be heard. The people in such rallies stand united in song for their cause. Music created a sense of unity and courage to movements of the past and helped to spread the cause. Folk music is often used for this purpose, for example the music of Pete Seeger, Woody Guthrie, and Bob Dylan. The life and work of Phil Ochs shows how music, particularly folk music, combined with politics. His music sometimes even created changes within politics and political culture. Ochs' writings and songs detail his political integration with music. The FBI reports on him and newspapers of the time reflect his political ambition and attempts to change the political scene. His music and activism primarily focused on the war in Vietnam, Civil Rights, and workers' rights, especially the miners in Kentucky. He also influenced the case of William Worthy and his re-entry to the United States without a valid passport through his song about the absurdity of the case. Ochs' musical participation in these topics highlighted the cooperation between politics and music.

Michael Deleplank II attended Van Buren (Arkansas) High School. He is a senior working on a Bachelor of Arts degree in history and intends to continue into graduate school. He is interested in labor history with an additional interest in Middle Eastern history and hopes to study Ottoman labor history in particular during his graduate work. Michael works in the Pebley Center Archives at UAFS. He attended an online summer program through Koç University in Istanbul where he learned the basics of cuneiform translation. He also reviewed Michael Cook's book "A History of the Muslim World" and has another book review forthcoming for H-Nationalism. He hopes to obtain a doctorate and continue research as a professor.

Victims and Traitors: The Conflicting Reactions to Japanese Internment in Arkansas

Presented by: Embry Thornton
Faculty Sponsors: Dr. Evan Rothera
Field of Research: History

On the Sunday morning of Dec. 7, 1941, the United States came under attack by the Japanese Imperial Navy. This attack on Ford Island, Hawaii, crippled a vital United States Navy harbor and more significantly struck fear into the United States population who had anticipated war with Japan, a rising world power. Fear turned to paranoia and hysteria as Japanese-Americans were labeled traitors to the country, leading President Franklin Roosevelt to pass Executive Order 9066 on Feb. 19, 1942. Ten Japanese internment camps become established and operated across the United States. Two of these camps were established in Southeastern Arkansas, one in Jerome and the other in Rohwer. The Japanese-American population found themselves removed from their homes and forced to move to camps hundreds if not thousands of miles away. Arkansans quickly voiced their concerns over the establishment of these camps for many different reasons. This paper argues that Japanese-American internees and Arkansans both found themselves conflicted over their reactions and feelings towards the internment process. Using the written and spoken testimonies of Japanese-Americans and Arkansans alike, this work seeks to explain the turmoil found within these groups in Arkansas. Many Japanese-Americans saw internment as a complete disregard for their civil liberties, others saw it as an opportunity to prove to the United States government that they were indeed loyal. Large populations of Arkansans opposed the camps due to racial prejudices and post Pearl Harbor paranoia. Other Arkansans spoke out against internment because they believed the internment of Japanese-American citizens unjust. This research helps address the lack of attention to how Japanese-American internees and Arkansans both dealt with the emotional and philosophical turmoil that the internment camps in Arkansas brought throughout the second World War, causing many to lose trust in the United States promise of justice and liberty for all.

Embry Thornton is a 21-year-old from Carlisle, Arkansas. He is a first-generation college student seeking a degree in history with social studies teacher licensure. During his time at UAFS, he has cultivated a deep appreciation for contributing to Arkansas historiography and teaching history at the secondary level. He has also served several terms as an officer in the student-led History Club at UAFS, serving first as treasurer, vice president, and then president. After graduating he aims to become a worthy contributor to the academic and historical community through teaching history and social studies at the secondary level.

Defending Arkansas Civil Rights: Scipio Africanus Jones and Fighting Racism from Within Arkansas

Presented by: Kimber Campbell
Faculty Sponsors: Dr. Evan Rothera
Field of Research: History

As a foundational figure in Arkansas civil rights history, Scipio Africanus Jones fought for African American rights in the early twentieth century. Jones was among the first Black lawyers to work within the state and to represent a client in front of the Arkansas Supreme Court. Jones's early civil rights work paved the way for later Arkansans to desegregate the state in the 1950s and 1960s. Jones focused on dismantling the racism Black people faced within the judicial system of Arkansas. Jones was one of the top lawyers in the National Association for the Advancement of Colored People (NAACP).

Understanding the importance of Jones's life, impact, and how he has been commemorated allows Arkansans to expand their knowledge of the history of civil rights within Arkansas. Jones undeniably had a powerful influence on the Arkansas political and legal landscape, an influence that continues to be felt in modern cases that involve due process. Jones has never received the scholarly or popular attention that he deserves. This paper demonstrates that increased attention to the experiences of an important African American lawyer in Arkansas ultimately enriches our understanding of civil rights history and legal history.

Kimber Campbell is a senior history major with a minor in literary and cultural studies. Her focus in studies is race, gender, and class studies within the context of history. Kimber is a member of the History Club and Sigma Tau Delta. After graduation she plans to attend graduate school for a master's in history with a concentration in public history.

Library 202 Presentations in Accounting, Finance, Economics & International Business

Noon	Christopher Neissl
12:30	Tommy Nguyen and Kaitlyn Cavaness
1:00	Eddie Hunter
1:30	Chelsie Wilmoth

The Great War and Wall Street: Why the NYSE Went Dark in 1914

Presented by: Christopher Neissl
Faculty Sponsor: Dr. Randall Stone
Field of Research: Accounting and Finance

The late 19th and early 20th century was a period of economic growth, increasing nationalism, rising tensions, and social transformation. Ultimately, these changes culminated in the outbreak of the Great War. This paper examines the social aspects of the early 20th century, digging into the factors that fueled the outbreak of "the war to end all wars" in Europe. The power struggle, global militarization, and alliances played critical roles in starting the conflict. Unfortunately, Archduke Franz Ferdinand, heir to the Austro-Hungarian throne, was the first casualty of the war. Simultaneously, the New York Stock Exchange (NYSE) was experiencing turmoil across the Atlantic. The closure of the NYSE from July to December of 1914 profoundly impacted the global economy, and we will explore why the NYSE was shut down. The public responded by opening artificial financial institutions, the largest of which was the New Street Market. This new black market allowed investors to continue their occupation and trading of bonds and securities. By analyzing the deep interconnectivity of these events, this paper will show how geopolitics and economics shaped the early 20th century.

Christopher Neissl is a junior business administration student with a concentration in accounting and a minor in history. He is part of the Myles Friedman Honors Program and works at ArcBest as an accounting intern. Upon graduation from UAFS, he aspires to join the Air Force as a drone pilot, pursue a master's in accounting, and become a CPA.

Disabled and Senior Americans Travel Patterns in Small and Medium-Sized Metropolitan Areas

Presented by: Tommy Nguyen and Kaitlyn Cavaness
Faculty Sponsor: Dr. Bun Song Lee
Field of Research: Economics

In an ever fast-paced society traveling has become ever more important. The National Household Travel Survey and the U.S. Department of Transportation Federal Highway Administration have composed data regarding common forms of travel in the United States. The data used in this paper is specifically collected from the 2022, 2017, 2009, and 2001 data research from the NHTS. This includes data on travel patterns of individuals on frequencies, travel modes, duration of trips in minutes, and distances of trips in miles per day. The data also provide detailed socioeconomic characteristics of individuals on gender, ethnicities, age, regions of residences, education level, household income level, and whether the individual has medical difficulties. This paper discusses travel patterns and transportation mode choices of disabled and elderly adults residing in the United States in small and medium sized metropolitan areas. We first analyze differences in travel patterns and transportation mode choices according to various socioeconomic characteristics of individuals using descriptive statistics analysis. Then we investigate time trends of travel patterns and transportation mode choices according to various socioeconomic characteristics during the period of 2001, 2009, 2017 and 2022.

After we complete our descriptive statistics analysis, we may be able to define the research regarding this topic further. After compiling data to discuss and understand these patterns we may be able to understand the choices that disabled and elderly Americans make throughout their lifetime. It is important to further denote that disabled persons and elderly persons are not necessarily mutually exclusive. Although difficulties may occur due to traveling conditions under these categories further research may allow solutions to aid in travel efforts of disabled adults in small and medium sized metropolitan areas alike.

Keywords: Disabled, Elderly, Transportation, Travel Patterns

Tommy Nguyen is a sophomore at UAFS majoring in business administration with a concentration in accounting. This research project has been funded by the Arkansas Department of Higher Education through the Student Undergraduate Research Fellowship grant. He has received the UAFS Gold Scholarship and been invited to join Beta Gamma Sigma - a national honor society recognizing the highest achievement

of business students at AASCB-accredited institutions. After graduation he plans to sit for the CPA and later become an accountant.

Kaitlyn Cavaness is a junior at UAFS. She has been on the Chancellor's List five semesters in a row, is a recipient of the Myles Friedman Honors Scholarship, a member of Beta Gamma Sigma national business honor society, and the university's business peer tutor. This paper is the only one funded by the Arkansas Department of Higher Education through their Student Undergraduate Research Fellowship Grant this year. After obtaining a Bachelor of Business Administration with concentrations in economics and corporate finance, she intends to attend graduate school for economics.

Expanding an Arkansas Business to a Culturally Challenging Market in the Middle East

Presented by: Eddie Hunter
Faculty Sponsor: Dr. LiLee Ng
Field of Research: International Business

This research investigates the cultural elements and challenges involved in expanding an Arkansas-based Slim Chickens franchise into Bahrain, which I have identified as a premier location for potential expansion where Slim's has not yet had a franchising agreement signed. As a rapidly developing market in the Middle East, Bahrain presents unique opportunities and complexities for international fast-food brands. Many American chains are already operating in the island-nation. This study explores consumer behavior, the role of food in Bahraini social and family dynamics, and how Slim Chickens can adapt its offerings to resonate with local tastes and food traditions including dining habits while maintaining its unique American brand identity. This will foster brand acceptance and long-term success for the company, in a dynamic and vibrant market. In addition, it addresses potential challenges related to halal food certification, religious dietary restrictions, and the growing trend of health-conscious eating habits in the region.

Eddie Hunter is a senior expecting to graduate in December 2025 with a degree in business administration and concentrations in corporate finance and international management. He is a transfer student and graduated from Marion Military Institute in Alabama in 2022. He currently lives in Rogers, Arkansas, and commute to Fort Smith for classes weekly. He initially attended UAFS to play on a tennis scholarship, but after one season decided to devote himself to his studies and career. He is currently employed by Walton Whole Health and Fitness in Bentonville, Arkansas, as a racquet sports instructor in the recreation department. Upon graduation his goal is to stay in Northwest Arkansas and work for Walmart's corporate headquarters. He is involved in the real estate market in NWA where he has invested and helped build luxury Airbnb units in Bentonville. His hobbies include traveling and watching sports, in person and virtually.

Market Entry Strategy: Wings Drones' Journey to China

Presented by: Chelsie Wilmoth
Faculty Sponsor: Dr. LiLee Ng
Field of Research: International Business

The purpose of this research is to introduce a unique U.S. product, Wing drones into China. Drones have their birth during the war and a trajectory spanning over hundreds of years. Twenty-first century drones are continuously evolving in design sophistication and varying degree of technological features. They have integrated into the transportation ecosystem of commerce and consumers. This research deepens our understanding of how Wing drones are deployed to achieve delivery efficiency and effectiveness to connect products and customers. Wing has partnered recently with Walmart to create an innovative delivery system in the U.S. successfully. Thus, this research focuses on investigating the same business model in China's context. Secondary data is used to analyze the attractiveness of China, and the drones' industry. The research shows the viability of China due to its market size and its rapid technological adoption that tend to determine the market penetration rate. As a result of greater institutional distance between the U.S. and China, joint-venture is the most optimal mode of entry to reduce risks and uncertainties.

Chelsie Wilmoth is a senior at UAFS graduating this May with a bachelor's degree in business administration. She transferred in the fall of 2023 from Northeastern Oklahoma A&M College. Since transferring Chelsie has been focusing on supply chain management and international management concentrations. She has been involved and held leadership positions with the Student Government and Baptist Collegiate Ministry organizations on campus. She has been a student-worker in the athletic department, helping with game day operations. Last summer Chelsie did an internship with Amazon where she was able to develop her leadership skills and use the business skills she has learned from her education at UAFS. She hopes that she can continue to use and develop these skills in her future career while also pursuing her master's degree.

Library 203 Presentations in Education & Community Research

Noon Mallory Howerton, Christopher Fisher, Quincy Efurd, Sofia Reyes, and Bethany Montague

12:30 Abigail Barker, Katie Brown, and Victoria Frank

1:00 Adysen Phelps

1:30 Rebecca Maclin

Revamping Senior Send-Off

Presented by: Mallory Howerton, Christopher Fisher, Quincy Efurd, Sofia Reyes, and Bethany Montague
Faculty Sponsor: Josh Simonds
Field of Research: Education

Enhancing university alumni offices' ability to connect with alumni in the areas of volunteering, experience, communication, and philanthropy is essential for building lifelong relationships both before and after graduation. By offering opportunities tailored to both traditional and non-traditional students, our institution sets itself apart, creating unique ways to engage new graduates early and integrate them into the alumni network while they are still students. The primary challenge we aim to address is the university's lack of a structured approach to fostering student engagement and helping students understand the long-term value of alumni involvement. By cultivating meaningful relationships and enriching the student experience now, we can lay the foundation for stronger alumni connections in the future. To support this goal, our group, aligned with the alumni office's mission will conduct both quantitative and qualitative research on senior programming. This research will focus on enhancing the student experience before graduation, ultimately leading to increased alumni engagement and long-term institutional support.

Mallory Howerton is from Fayetteville, Arkansas. She is a senior studying business administration with concentrations in consumer marketing and management and a minor in criminal justice.

Christopher Fisher is from Alma, Arkansas. He is a senior studying business administration with concentrations in management and small enterprise management.

Quincy Efurd is from Siloam Springs, Arkansas. She is a senior studying business administration in digital and consumer marketing.

Sofia Reyes is from Fort Smith. She is a junior studying for a Bachelors of Business Administration with concentrations in digital marketing and management.

Bethany Montague is from Alma, Arkansas. She is a senior studying business administration with concentrations in digital marketing and management.

The Future of Alumni

Presented by: Abigail Barker, Katie Brown, and Victoria Frank
Faculty Sponsor: Dr. Kristin Tardif
Field of Research: Community Research

We will be researching what happens after Senior Send-Off. Do alumni come to events on the campus, those events where they are specifically invited, and if alumni come to sport and musical events hosted by the university. In addition, what is the process of the Alumni Office to stay in contact with our alumni? We will look at past programs, new programs to develop engagement in sporting and musical events and develop ideas for future programs. We will analyze are data and develop a report to give to the Alumni Office and present our work.

Abigail Barker is from Bentonville, Arkansas, She is a junior studying for a bachelor's in business administration with concentrations in management and digital marketing.

Katie Brown is from Northwest Arkansas and is a senior studying business administration with concentrations in digital marketing and management.

Victoria Frank is from Sallisaw, Oklahoma, and is a senior for the online business degree, but attends classes on Thursdays for the hybrid for community leadership class. She has an associate degree in business administration from Carl Albert State College and is currently work at 7Brew Sallisaw full time as a shift lead while occasionally working weekends at Crumbl in Fort Smith. In her free time she enjoys playing pickleball, fishing, and reading a good book.

First Day of School from an Immigrant Perspective

Presented by: Adysen Phelps
Faculty Sponsor: Dr. Camille Wheeler
Field of Research: Education

This research presentation delves into the experiences of immigrant students during their first day in U.S. schools, shedding light on their initial encounters within the classroom and the cultural adjustments they navigate. By conducting in-depth interviews with immigrant students, the project captures the challenges, emotions, and cultural discrepancies they experience on this pivotal day. The narratives gathered will be transformed into a compelling story, maintaining confidentiality by altering identifying information to ensure student privacy. Ultimately, this project aims to enhance understanding of the immigrant student experience in the Fort Smith community, promoting greater cultural awareness and empathy within the school environment. The findings will serve as a valuable resource for educators and community members to better support and engage with immigrant students as they transition into their new educational settings.

Adysen Phelps is a senior majoring in elementary education at UAFS. She is an honors student currently interning in a 5th-grade classroom, where she has the opportunity to teach and learn from her students every day. During the week, she enjoys working as a pharmacy technician and ensuring patients receive safe and timely care. Outside of school, she is passionate about reading, writing, and learning about cultures different from her own. She especially enjoys reading and writing poetry, and some of her favorite poets include Robert Frost, Mary Oliver, and Bei Dao. She is excited to begin her career as a professional educator and cannot wait to see what the future holds.

Shaping the Future: The Role of Teachers in Inclusive Classrooms

Presented by: Rebecca Maclin
Faculty Sponsor: Dr. Jennifer Shure and Dr. Camille Wheeler
Field of Research: Education

Inclusive education aims to provide equitable learning opportunities for all students, regardless of ability, within general education classrooms. This literature review examines the evolution of inclusive education, its policy context, and the challenges that hinder its full implementation. While legislative frameworks such as the Individuals with Disabilities Education Act (IDEA) have advanced inclusion efforts, barriers such as insufficient teacher training, limited resources, and resistance to change persist. Research highlights the benefits of inclusive education for both students with disabilities and their general education peers, fostering academic growth, social development, and a more accepting school climate. However, successful implementation depends on structured co-teaching models, administrative support, and ongoing professional development. This review explores current strategies for effective inclusion, including assistive technology, tailored interventions, and whole-school approaches. Future research should investigate innovative teacher training methods and the role of AI in enhancing inclusive practices. Addressing these challenges is essential to ensuring meaningful participation and academic success for all students.

Rebecca Maclin is an early childhood education major with a strong interest in special education services. Passionate about creating inclusive learning environments, she is dedicated to supporting students with diverse needs. Rebecca plans to further her education by pursuing advanced degrees in special education, aiming to advocate for and implement effective strategies that enhance learning opportunities for all children.

Library 206 Presentations in English, Literature, Political Science & History

Noon	Lyla Flint
12:30	Lacy Stephens
1:00	Gabriella Stokes
1:30	Mitchell Collins

This Will Hurt: Alliances Between Initiated, Inflicted, and Intensified Dystopia in "Mouthwashing"

Presented by: Lyla Flint
Faculty Sponsor: Dr. Cammie Sublette
Field of Research: English

Dystopian literature customarily contains themes of oppression, control, environmental decline, and more featured in futuristic events. This literary genre is incorporated in the psychological horror video game, "Mouthwashing" (2024). Although not commonly classified as a dystopian video game, "Mouthwashing" contains similar themes within the genre that illustrate the shift from initiated to inflicted dystopia in accordance with Five-Man Band literary trope. The figures who fulfill each role are initially obvious, but they become skewed once their characters go off-script in this character-driven plot. Where dystopian literature often provides the comfort that this imagined state is only approaching, "Mouthwashing" expresses that dystopia is present and may be initiated in any setting. This video game's events are not specifically futuristic; however, the lack of explicit setting allows the story's conflicts to be instigated at any time. This literary analysis argues that the entirety of a fictional world does not need to be in an imagined state for a piece to be considered dystopian; instead, its common elements can create a singular dystopian environment. As a consequence, "Mouthwashing" qualifies as a dystopian video game for its overall portrayal of control gained through isolation and its themes of dehumanization, environmental decline, and economic inequality.

Lyla Flint graduated from UAFS with a Bachelor of Arts in English with a minor in professional writing in December 2024. Although she took a variety of courses throughout her undergraduate program, Lyla became especially intrigued by Southern literature and topics within popular culture. She finds great fulfillment in studying literature in multiple mediums including traditional text, film, television, and video games. Following her recent graduation, Lyla plans to continue her education and pursue a Master of Arts in English where she will primarily focus on American literature and adaptation studies.

Reclaiming Gender as One's Own: Forming an Identity and Building Independence in Cate Shortland's "Marvel's Black Widow"

Presented by: Lacy Stephens
Faculty Sponsor: Dr. Lindsy Lawrence
Field of Research: English

Furthering the work of Simone de Beauvoir, Stephanie McBride, and Ashley K. Dallacqua and David E. Low, this presentation expands on how director Cate Shortland created "Black Widow" (2021) to tell the story of women reclaiming their identity from a patriarchal society through gender and how that is relevant in today's world. Beauvoir claims that women are defined as "Other" within our society. Former Widow Natasha Romanoff and the other Widows were labeled as these others, and lesser, being by General Dreykov – the leader of the Red Room and main tormentor of the Widows. By forcing the Widows to be subjected to mind altering chemicals, lifelong grooming, and vigorous training, Dreykov made these girls and women their own species of beings. However, once Natasha gets out from under Dreykov's control, she uses her skills and knowledge developed from the lifelong grooming and deadly training to fight back and help other Widows still trapped. This presentation explores how by destroying the Red Room and freeing the remaining Widows — and clearing the red from her ledger – Natasha reclaims her gender as her own, finding her own strength in her gender identity instead of in brute force – like what was used against her

Lacy Stephens and is from Springdale, Arkansas, majoring in English with teacher licensure. She aspires to be a high school English teacher.

Records of Woman: Felicia Hemans's Development and Challenge of the "Cult of True Womanhood"

Presented by: Gabriella Stokes
Faculty Sponsor: Dr. Lindsy Lawrence and Dr. Laura Witherington
Field of Research: English Literature

In a letter to Mary Russel Mitford in March of 1828, Felicia Hemans confirms her connection to Records of Woman: "I have put my heart and individual feelings into it more than in anything else I have written" (Wolfson 329). This statement suggests that "Woman" in Records of Woman includes Hemans herself, though she does not receive a self-entitled poem; rather, images of Hemans's life are plainly visible through the 19 poems that make up the collection. Anne Mellor notes that Hemans "tried to reconcile her private and public personae, drawing on her personal experiences as subjects for her poetry" (124).

Hemans's examination of feminine grief, sorrow, and betrayal through the explication of historical accounts of women develops into an analysis of feminine sentimentality; specifically, the emotions that women experience that are not governed by men. Motherly love, examinations of fame and family, and the impact of legacy mark the latter half of the collection. By examining the intersections of individual sorrow and collective experience, Hemans not only advocates for the emotional depth of women's experiences but also challenges the prevailing societal norms of the early 1800s, emphasizing the transformative power of grief and love in the pursuit of redemption.

Gabriella Stokes is a senior English major with a minor in diversity studies at UAFS. She is a member of the Myles Freeman Honors College and works as the co-leader of the Community Outreach and Engagement Committee at the UAFS Writing Center. She is the founder and president of Anonymous Was a Woman Book Club, which aims to highlight women authors from diverse backgrounds and create a safe and engaging space for students to engage with both classic and contemporary works. She also serves as vice president for the Hmong Student Association and is the senior advisor for Pride Club. This past March, she presented at the annual Sigma Tau Delta conference in Pittsburgh with her essay "Subversion of the Final Girl in Nope." She is currently developing a digital humanities project that maps women authors in the state of Arkansas into an accessible digital format.

The State of US, Our Politics, and Our Culture

Presented by: Mitchell Collins
Faculty Sponsor: Dr. Steve Kite
Field of Research: Political Science and History

Governments live in symbiosis with their people. Centuries ago, America, alongside other nations born and reborn in the Age of Enlightenment, began again the experiment of democracy, shaped in the mythical likes of Ancient Greeks, Athens, and the Roman Republic. Thinkers and doers alike have contemplated the neogenesis of democracy from its origins, basis, and implementation to the collective (yet individualistic) state of mind its people have adopted regarding human rights, be it freedom from or freedom to. Yet how real is America's exceptionalism; how true is it that this great American experiment always strives to be a more perfect union? The mind of moral progress is known to meander from its long path toward progress, and throughout American history, we and our government have many-a-time strayed from symbiosis into something else, othering one another into enemies. Recent decades of distrust and division propagating throughout social and political society have fermented into a rage against the regime of American institutions, if not at least feelings of discontent, disregard, or disrespect for what tens of millions of people have come to see as a parasite government feeding off the American Dream or draining the Melting Pot from the bottom out. To further define this arc of history – a time of great decline in American's views toward their political and social institutions – discover its implications, and outline our countermeasures, this essay will make a case study of Arkansas, delving into how (much) the state's people have civically engaged with their government from its inception onward by consulting voter data, collecting personal accounts, and uncovering the narrative evolution of Arkansans' social and political conscience over time.

Mitchell Collins is a senior year political science major with a minor in professional writing minor, plus a couple of certificates, graduating in the fall of 2025 with plans to attend law school. Has been a tutor at the Writing Center for the past two years and works to be involved in the community and on campus through volunteering and organizing. He presented this project at last year's Student Research Symposium and the National Social Science Association and this year at the Southwest Social Science Association in Las Vegas. Mitchell loves spending time with family outdoors, traveling (including this summer to D.C. for an internship), and of course, dogs.

Breedlove 105 Presentations in History, Art History, Music Performance Music Education, & Electronics Technology

Noon Emily Harris

12:30 Grace Williams

1:00 Gustavo Martinez Jr.

1:30 Jeremiah Van Hook

Crittenden vs Conway: Political Ambition and Dueling in Early Arkansas Politics

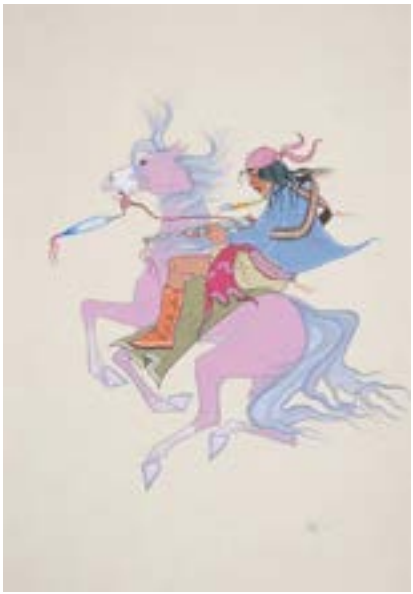
Presented by: Emily Harris
Faculty Sponsor: Tom Wing
Field of Research: History

As Arkansas transitioned into statehood, Robert Crittenden and Henry Conway were major contributors to settlement, infrastructure, and politics. Their once neutral political relationship deteriorated rapidly, ending in their infamous 1827 duel that would take Conway's life. This paper explores their backgrounds, political achievements, and the story of their fatal shoot-out. Both Crittenden and Conway held significant power at young ages, where they had to handle rivalry, greed, corruption, mudslinging, and the emergence of partisan media. The aftermath of Crittenden's fall from power and Conway's death is investigated as well. This piece of history reflects problems still seen today in American politics: polarization, factionalism, and the role of media in public opinion. Through primary and secondary sources, this study dives into the story of Robert Crittenden and Henry Conway, their impact on Arkansas politics, and what can be learned from them.

Emily Harris a senior majoring in biochemistry with plans to go into medicine. During her time at UAFS, she has served as a peer tutor and been involved in the Chemistry Club and Pre-Health Society, as well as being a member of the Myles Friedman Honors Program. She is from Keota, Oklahoma, but Fort Smith has been a huge part of her life, with the majority of her friends and family being from there. She has a passion for the sciences and spending time with those important to her.

Reinterpreting Geronimo: Indigenous Histories Through Painting

Presented by: Grace Williams
Faculty Sponsor: Dr. Emily Thames
Field of Research: Art History



In his painting of Geronimo, Jerome Tiger is doing something uncommon for the early 1960s. While a large body of indigenous work relates to historical native experiences, native artists from this time period are often criticized for their works supporting stereotypes within popular media. While Tiger's larger body of work does include paintings like this, Geronimo reframes the historical subject with a soft color palette to emphasize the humanity and nobility of Geronimo the Apache warrior and shaman, contesting his stereotypical representations. While there is no literature on this specific painting, this paper will discuss stereotypes within Native American artmaking and depictions of native historical figures to develop a moderate perspective of native artists working within the 60s. This research paper will be contributing to the small body of work on Jerome Tiger as well as the reframing of demonized historical figures, which have been overlooked or stereotyped in popular media. In doing so, this paper contributes to amending systemic issues in the discipline of art history and popular media more broadly. This research paper will discuss Tiger's work and life, the way he reframed Native histories, and the study of Geronimo's history, compared with his work. In the case of Geronimo, Tiger reframes the historical figure with his application of the Bacone style of art to emphasize the humanity and nobility of Geronimo the Apache warrior.

Grace Williams is a fourth-year student at UAFS studying studio art in the Department of Art and Design with minors in art history and business administration. She is part of the Miles Friedman Honors Program and currently works as a lead tutor at the UAFS Writing Center. Her current research focuses on printed ephemera from the suffragette movement in London. As an artist, she received the Judith Wrappe Award, and her work involves research-based artwork in printmaking, painting, and textile art disciplines. She intends to further her studies in art and work in art museums.

The Trumpet's Evolution - Design and Repertoire

Presented by: Gustavo Martinez Jr.
Faculty Sponsor: Dr. Alexandra Zacharella
Field of Research: Music Performance and Music Education

This lecture recital will explore the historical development of the trumpet and its repertoire, showcasing its transformation from ancient instruments to the modern piston valve trumpet. The trumpet traces its origins back to conch shells, animal horns and early cylindrical pipes made of wood. These artifacts are amongst the earliest known instruments producing sound through lip vibration/ buzzing.

With the advent of Bronze Age, the Byzantine Empire and Mesopotamian dynasties shaped the concept of brass instruments, including the transition from the natural trumpet with crooks to the keyed and valved trumpet. These advancements revolutionized the trumpet's repertoire and its role as a solo instrument. This recital highlights significant works representing the trumpet's evolution in repertoire and its manufacturing with the following works: Henry Purcell's Sonata from Trumpet and Strings in D Z 850, Joseph Haydn's Concerto per il Clarino (Concerto for Eb Trumpet), and Paul Hindemith Sonate for Trumpet. The lecture recital will combine performance, historical analysis, and insights into how design innovations influenced the repertoire and elevated the trumpet as a virtuosic solo instrument.

Gustavo Martinez Jr. is a senior instrumental music education major at UAFS. He has been a member of the UAFS Wind Ensemble as principal trumpet, Athletic Band student director, Brass Ensemble, and Jazz Ensemble lead trumpet. He has served as the vice president and president of the NAfME Collegiate chapter at UAFS. Gustavo has participated in the Arkansas All-State Intercollegiate Band and been a member of the College Band Directors National Association Southwestern Honor Band. In addition to being president of NAfME, he is a member of Omnia Vox and a small group leader for Lions for Christ. He has served as a counselor and chair for Cub Camp and is a brother of Sigma Nu Fraternity, Nu Alpha Chapter. He also has a successful freelance private trumpet studio.

Hi-Dro: A Water Purity Analysis System

Presented by: Jeremiah Van Hook
Faculty Sponsors: Dr. Kiyun Han
Field of Research: Electronics Technology

Water quality continues to be a global issue today. Traditional water analysis requires chemical reagents, laboratory testing, or expensive sensors. Hi-Dro provides real-time, on-site water quality monitoring in compliance with EPA standard 40 CFR 143.3. These standard states that the Total Dissolved Solids (TDS) in potable water must not exceed 500 mg/L. Mathematically, this corresponds to 3.15 kilo-Ohms of resistance for a probe area of 0.3175 cm2. This relationship shows that higher resistance corresponds to lower TDS, while a lower resistance corresponds to higher TDS, indicating free ions in the test sample. By collecting this data and transmitting it via Bluetooth, Hi-Dro allows for real-time analysis of TDS and water quality.

Jeremiah Van Hook is a senior at UAFS pursing a bachelor's degree in electrical engineering technology. Ever since he was a young child, he has always been attracted to the STEM field. He decided to pursue a STEM degree to gain the knowledge needed to start his own research and development company. He aims to use the knowledge and experience he has gained at UAFS to create innovative technologies that will benefit the world.

Health Science 121 Presentations in Electrical Engineering Technology & Automation

Noon	Sean Jessee
12:30	Marco Solis and Rafael Lira
1:00	Jackson Molina and Josiah Stevens
1:30	Darion Crawford and Brandon Cole

Intelligent Intrusion Detection System

Presented by: Sean Jessee
Faculty Sponsor: Dr. Kiyun Han
Field of Research: Electrical Engineering Technology and Automation

The Intrusion Detection and Object Tracking System is designed to enhance automated security monitoring by detecting and identifying unauthorized objects in real time. This system integrates computer vision, machine learning, and servo-controlled laser tracking to provide a responsive and intelligent security solution. The system operates by continuously scanning an area using a Raspberry Pi 5 AI Camera, detecting objects within the field of view, and classifying them based by their shape. Authorized known objects are allowed, whereas unauthorized objects are flagged as potential intrusions.

Upon detecting an unauthorized object, the system activates a servo-controlled laser pointer to highlight the anomaly and provide a visual alert. Simultaneously, the system updates a live feed on a 7-inch touchscreen display, overlaying real time tracking data to enhance situational awareness of the monitored area. Additional alert mechanisms, such as email/SMS or audio/visual alert notifications, can be integrated to notify monitoring teams of any anomalies detected. The system is designed to function in varied lighting conditions using adaptive image processing techniques to minimize false positives and improve detection accuracy.

By leveraging low-cost embedded hardware and AI driven analytics, this system provides an automated, scalable, and efficient security solution suitable for industrial facilities, warehouses, and restricted-access environments. Future enhancements include AI based object classification, remote accessibility, and integration with existing security infrastructure for a more robust and intelligent surveillance system.

Sean Jessee is a U.S. Marine Corps veteran, having served five years. He completed an Associate of Applied Science in electrical systems technology from Walla Walla Community College in Washington State, an Associate of Applied Science in electronics technology from UAFS, and will finish a Bachelor of Science in electrical engineering technology in May.

Smart Roof Watering System

Presented by: Marco Solis and Rafael Lira
Faculty Sponsors: Dr. Kiyun Han
Field of Research: Electrical Engineering Technology and Automation

This project presents a smart roof watering system designed to reduce roof temperatures and improve energy efficiency during any warm day. Our idea came from the fact that people have been doing this for a while but watering a home's roof with a standard water hose can only offer short term relief at the expense of a lot of wasted water. Our smart roof watering system optimizes water usage by activating only when roof shingle temperatures exceed a threshold and deactivating when optimal cooling is detected. Key components include an Arduino, custom PCB, infrared temperature, a water valve, and a PVC water distribution network. The system reduces attic heat, alleviating strain on air conditioning and lowering energy costs. This sustainable solution enhances cooling efficiency while conserving water.

Marco Solis currently works as a maintenance technician at ABB, where he applies his hands-on skills to maintain and optimize equipment and systems. Alongside his work, he is in his senior year studying electrical engineering technology at UAFS. He is passionate about combining his practical experience with the knowledge he's gained through his studies at UAFS to excel in the electrical engineering field and maintenance and contribute to meaningful solutions in the industry.

Rafael Lira currently works as the refrigeration superintendent at OK Foods. He is currently studying electrical engineering technology at UAFS, where has has gained a lot of knowledge that he applies to many electrical/electronics problems at his current job.

Smart DM Screen

Presented by: Jackson Molina and Josiah Stevens
Faculty Sponsor: Dr. Kiyun Han
Field of Research: Electrical Engineering Technology

In Dungeons and Dragons, the Dungeon Master (DM) serves as both storyteller and referee, guiding players through immersive adventures. However, frequent rule lookups, flipping through notes, and searching for item descriptions can disrupt game flow and break immersion, making it harder to keep players engaged. This handheld wireless device is a game-changing tool designed specifically for Dungeon Masters. Featuring custom software, it provides instant access to rules, storytelling aids, and essential DM resources, streamlining gameplay and eliminating unnecessary distractions. Instead of juggling stacks of rulebooks, multiple dice sets, score counters, and scattered notes, DMs can manage everything from a sleek, compact interface. By condensing all necessary tools into one efficient device, this innovation ensures smoother sessions, allowing Dungeon Masters to focus on storytelling and player engagement. With quick access to everything needed to run a game seamlessly, this device enhances the RPG experience—keeping the story moving, the players immersed, and the adventure unforgettable.

Jackson Molina is 22 years old and in his last year at UAFS going for a bachelor's in electrical engineering technology. He lives in Van Buren, Arkansas, where he currently works part-time at Citizens Bank.

Josiah Stevens is 21 years old and pursuing a bachelor's degree in electrical engineering technology (EET) at UAFS. In 2020 he completed an apprenticeship at ABB through UAFS, which led to his employment with the company. Throughout his time at UAFS, he has developed valuable skills that he aims to utilize not only for personal growth but also to benefit his future employers.

Delivery Protection

Presented by: Darion Crawford and Brandon Cole
Faculty Sponsor: Dr. Kiyun Han
Field of Research: Electrical Engineering Technology

This project focuses on creating a portable ultrasonic dog deterrent using an Arduino Nano and 40kHz ultrasonic transducers. The device emits a high-frequency sound that, while inaudible to humans, is uncomfortable for dogs. It provides a practical solution for personal safety and animal control. A push button activates the device, which in turn triggers the ultrasonic transducers through a MOSFET controlled circuit for a one-minute duration, after which it automatically turns off. Powered by a 12V rechargeable Li-ion battery, the system is built for extended use and portability. Its compact, durable enclosure allows it to be worn on the hip, making it especially useful for joggers, cyclists, delivery drivers or anyone who needs a hands-free way to deter dogs without causing harm.

Darion Crawford is a senior at UAFS studying electronics engineering technology.

Brandon Cole is a senior at UAFS studying electronics engineering technology.

Health Science 124 Presentations in Biology, Chemistry & Computer Science

Noon	Emily Kelley
12:30	Libbi Cusimano and Caden Fox
1:00	Sully Sanford
1:30	Marco Garcia Montes, Cameron Taylor, and Josue Martinez

A Review of Herpetofaunal Distributions in Arkansas with Special Emphasis on Contributions from Citizen Science: Part II - Turtles, Lizards, and Alligator

Presented by: Emily Kelley and Lily Hobbs
Faculty Sponsor: Dr. Ragupathy Kannan
Field of Research: Biology

We update and present a comprehensive review of the distributions of the 16 species of lizards, one alligator, and the 17 species of turtles in Arkansas. We compare historical and current distributions with citizen science data uploaded and verified in iNaturalist, a leading biodiversity monitoring online citizen science database. The Arkansas Herpetological Atlas, a website maintaining species occurrence records, is also used and compared. We highlight the role played by iNaturalist in enhancing our knowledge of the distributions of these species in Arkansas. As of 13 February, 2025, verified and vetted Research Grade (RG) iNaturalist observations from Arkansas include 7,462 observations of turtles and 5,345 observations of lizards and alligator, expanding the known distributions of 28 of the 34 species (82%). This is the second paper in a planned three-part series documenting the current distribution of all herpetofaunal species in Arkansas.

Emily Kelley is a junior at UAFS. She has a strong passion for science and research and aspires to pursue a career in environmental science, focusing on research and conservation. With a deep appreciation for the natural world, she hopes to make a positive impact by advancing scientific knowledge and promoting sustainability.

Lily Hobbs is an undergraduate student at UAFS pursuing a degree in biomedical sciences. She is the founder and president of the Pre-Health Society, where she works to create opportunities for students interested in healthcare through guest lectures, volunteer events, and professional development workshops. Her strong commitment to academic excellence and scientific inquiry and her passion for research, leadership, and service, reflect her broader goal of pursuing a career in medicine, where she hopes to combine her genuine interest in helping others with her love for learning.

Identification of Species and Mating Types of Dictyostellum Wild Isolates from the Arkansas River Valley Using Molecular Techniques

Presented by: Libbi Cusimano and Caden Fox
Faculty Sponsor: Dr. Sandhya N. Baviskar
Field of Research: Biology

Soil amoeba Dictyostelium transit back and forth between unicellular and multicellular stages during its life cycle and hence axenic strains of Dictyostelium are commonly used as a model to study cell biology and development. In recent years, there is growing interest in studying wild isolates to understand how these bactivorous amoebae interact with soil microbes and impact soil microbial composition and dynamics. Studies show that both asexual developmental cycle and sexual reproduction are common among wild isolates, and two genetically distinct isolates from the same location can undergo developmental cycle where one isolate could be a cheater, producing mainly spores but inducing the other to produce stalk. Thus, cheaters have an evolutionary advantage. The goals of this project are 1) to isolate wild-type Dictyostelium from the River Valley region of Arkansas and Oklahoma and study their morphology and social behavior. 2) to identify species and mating types of the wild isolates using molecular techniques. This is a continuation of previous research in which we isolated five wild isolates from Sebastian County, AR, and LeFlore County, OK, and conducted morphological and behavioral studies of these isolates. Results of the DNA-based species and mating type identification will be presented at the conference.

Libbi Cusimano is a senior at UAFS earning her bachelor's degree in biology with a concentration in biomedical professions. She is set to graduate in December 2025 and plans to pursue a career in the medical field where she hopes to make a meaningful impact on her rural community. She graduated as a valedictorian from Poteau (Oklahoma) High School in 2022. Her academic journey has been guided by a strong interest for the sciences and a desire to help others through medicine..

Caden Fox is a senior biology major at UAFS. He graduated valedictorian from Poteau (Oklahoma) High School and is pursuing a career in the medical field. After graduating with a bachelor's degree in biology, he plans to continue his education in medical school. Caden has a love for people and science that is motivated by the pursuit of Christ's glory in all things. He enjoys hunting, fishing, and reading old books. He is heavily involved with the Baptist Collegiate Ministries on campus as well as the Pre-Health Society, Native American Student Association, and Samaritan's soup kitchen in Poteau.

Human Serum Albumin and Its Interaction with Organochlorine Pesticide

Presented by: Sully Sanford
Faculty Sponsor: Dr. Archana Mishra
Field of Research: Chemistry

Human serum albumin (HSA) is the most abundant blood plasma protein, playing a crucial role in drug transport and physiological homeostasis. Its highly flexible structure consists of three domains with multiple binding sites lined with hydrophobic and hydrophilic residues. These structural dynamics make HSA a robust receptor for drug delivery and the transport of various endogenous and exogenous compounds. Organochlorine pesticides (OCPs) are a subclass of pesticides distinguished by their chlorine content. Once widely used, these compounds remain persistent in the environment and biological systems despite regulatory restrictions in many developed nations. The strong ligand-binding affinity of HSA, while beneficial for drug transport, also allows for interactions with persistent small molecules like OCPs. These interactions can lead to structural and functional alterations in the protein, potentially impacting its physiological role. Changes in HSA structure caused by OCP binding may influence its ability to transport essential molecules, disrupt normal biological functions, and contribute to toxicological effects in exposed organisms.

Sully Sanford is a junior chemistry major interested in computational chemistry research. He is a resident assistant and president of the Residence Hall Association at UAFS.

NumaWare: Process Automation Through Computer Vision and Robotics

Presented by: Marco Garcia Montes, Cameron Taylor, and Josue Martinez
Faculty Sponsor: Andrew Mackey and Israel Cuevas
Field of Research: Computer Science

Autonomous robotic systems powered by artificial intelligence and computer vision provide solutions to major challenges that inventory warehouses face. In this work, we present NumaWare, an autonomous robotic system that is capable of automating heavy equipment in a simulated warehouse enviroment using artificial intelligence, computer vision, and deep learning. Our proposed system autonomously manages inventory movement for vital warehouse operations, including heavy lifting, inventory selection, and inventory management. Through real-time monitoring of warehouse inventory to automated inventory retrieval, NumaWARE seeks to improve efficiency, productivity, and saftey for one of the largest industries.

Marco Garcia Montes is a computer science student at UAFS specializing in data science and artificial intelligence and minoring in mathematics. His academic areas of interest are artificial intelligence, machine learning, deep learning, and data science. He is currently an active member of the UAFS Artificial Intelligence Research Lab and intends to pursue a graduate degree with a specialization in artificial intelligence and data science.

Cameron Taylor is a computer science student at UAFS specializing in data science and artificial intelligence and minoring in mathematics. His academic areas of interest are in artificial intelligence, machine learning, deep learning, robotics, and data science. He is currently an active member of the UAFS Artificial Intelligence Research Lab and intends to pursue a graduate degree with a specialization in artificial intelligence and data science.

Josue Martinez is a computer science student at UAFS specializing in data science and artificial intelligence and minoring in mathematics. His academic areas of interest are computer vision and graphics, machine learning, and robotics. He is currently an active member of the UAFS Artificial Intelligence Research Lab and intends to pursue a graduate degree with a specialization in artificial intelligence and data science.

Poster Presentations

Boreham Library

Qualitative Groundwater Tracing in a Karst Aquifer, Hiawatha National Forest, Michigan

Presented by: Kaleb McLaughlin
Faculty Sponsor: Dr. Maurice Testa
Field of Research: Geoscience
Table 1

Fluorescent dyes have been used to track groundwater movement in karst aquifers for a long time, however, this has never been done in the Eastern Unit of the Hiawatha National Forest, Upper Peninsula Michigan. The underlying geology is early Silurian dolostones which host significant epikarst; namely grikes, alvar, sinkholes, and springs. No known solutional caves are in the Forest, though there are many littoral caves associated with previous lake levels.

Two qualitative dye traces were conducted on the Forest to demonstrate that the technique worked there to prepare for future dye tracing efforts. Prior to dumping the dyes, charcoal packets were placed downstream of the expected resurgence locations to act as blanks and to ensure there was no dye already present. Approximately 2.5 weeks elapsed between dumping the dye and collecting the charcoal packets.

The first dye trace was conducted at Petey's Sink, a sinkhole on the western edge of the Forest. Two pounds of Fluorescein pre-dissolved in water were added to the sinkhole and carried in with the water flowing into the sinkhole. Charcoal packets were set out along the Carp River (approximately 750 meters away) to determine where the water was discharging. Dye was observed at two of the locations along the river.

The second dye trave was conducted at Biscuit Sink, a sinkhole near the Mackinac – Chippewa County line. Two pounds of Eosine pre-dissolved in water were added to the sinkhole and carried in with the water flowing into the sinkhole. A charcoal packet was set up in Biscuit Spring (approximately 400 meters away), and dye was observed there after the trace.

This work allows us to demonstrate the dye tracing is effective in the area and serves as a bridge for future efforts in the area. The main future goals are to: conduct a more detailed and focused survey along the Carp River to check for where exactly the dye is coming from, and map all of the springs along it; and to conduct a qualitative trace in the Biscuit Sink / Spring system to begin determining rate of groundwater movement in the area.

Kaleb McLaughlin is a senior geoscience major. After graduating from UAFS, he plans to pursue a Ph.D. in environmental geology.

Identifying and Mapping Karst in the Hiawatha National Forest, Upper Peninsula of Michigan

Presented by: Perla Romero
Faculty Sponsors: Dr. Maurice Testa
Field of Research: Geoscience
Table 2

The Hiawatha National Forest (HIF) is about 1.0 million acres located in the Upper Peninsula of Michigan. The forest geomorphology is characterized by glacial deposits from the last Ice Age about 11,000 to 9,000 years ago. The retreat of miles-thick continental ice sheets created glacial lakes and are associated to the deposited unconsolidated boulders and sediment. Sedimentary bedrock consisting of primarily dolomite and sandstone are common sources for ground water in the HIF.

This project expands on previous karst identification and mapping for the HIF. Research is in collaboration with the Geological Society of America GeoCorps America program and the HIF. Areas of interest were identified using LiDAR (Light Detection and Ranging) and 1-foot resolution satellite imagery. The LiDAR data was analyzed for key features resembling sinkholes, outcrops, boulders, ledges, sinking streams, and caves. Information on depth to bedrock was also analyzed to determine zones of industrial hazards for development. Potential karst features from LiDAR analysis were field verified for map accuracy.

Karst mapping is important for conservation of groundwater aquifers, unique flora and fauna ecosystems, and heritage sites. It is also necessary for machine operability and for regular forest operations that pose risks for groundwater contamination and soil disturbance. Heavy machinery fluids could leach into soils and travel through groundwater conduits into the water table. Areas of shallow soil coverage overtop carbonate bedrock are also sensitive to heavy equipment operations due to the direct compaction.

Perla Romero is a senior geoscience major. After graduating from UAFS, she plans to is pursue a master's degree in karst geology.

Distribution of Detrital Sediment Captured in McKay Bay Member Knoll Reef, Upper Peninsula, Michigan

Presented by: Tucker Kelly and Ross Bieker
Faculty Sponsor: Dr. Maurice Testa
Field of Research: Geology
Table 3

Research on the pinnacle reef systems of the Michigan Basin dates back to the 1930s, yet little attention has been paid to its outcropping knoll reefs. These carbonate mounds develop in shallow waters, limiting vertical growth and compelling horizontal expansion instead. The knoll reefs under investigation are situated within the McKay Bay Member of the Bush Bay Formation, part of the early-Silurian Engadine Group. They are located within the Hiawatha National Forest at the south-eastern tip of Michigan's Upper Peninsula.

The first phase of the project in 2023 collected over 120 samples from the main knoll reef (Reef A) and two neighboring smaller reefs to its south/southeast, (Reef B and Reef C). The samples and cores were collected at 1-meter intervals in a transected grid pattern every 22.5 degrees. Fossil identification was also collected for biostratigraphic analysis.

This project investigates the origin and distribution of detrital sediment captured in the largest knoll reef in the study area. Each sample was prepared into a thin section. The thin sections were then analyzed and point-counted for detrital sediment that was originally captured in the reef. The counted detrital sediment per thin section was used to create rose diagrams and determine direction of sediment influx to the main reef. The petrographic analysis shows direction of sediment influx and also shows areas of intra-reef currents between the main reef and the two smaller reefs.

Tucker Kelly is a junior geoscience major. He plans to pursue GIS and is interested in forestry after graduation.

Ross Bieker is a sophomore geoscience major. His plans to pursue a career in petroleum geology after graduation.

Revisiting the Petrogenesis of a Late Oligocene Volcanic Field in Southeastern California

Presented by: Bryan Rhamy
Faculty Sponsor: Dr. Dave Mayo
Field of Research: Geoscience
Table 4

We are reevaluating the petrogenesis of the 26 Ma Little Chuckwalla Mountains (LCM) volcanic section – about 1500 meters of southeast-dipping volcanic and sedimentary in the western Little Chuckwalla Mountains of southeastern California. The LCM section includes a diverse suite of lava flows, breccias, and pyroclastic deposits of calc-alkaline, metaluminous basaltic andesite, andesite, and dacite to trachydacite, with subordinate basalt and rhyolite. Mayo (1990, unpublished M.S. thesis) suggested a subduction-related origin for the LCM volcanic rocks based on petrography, major element chemistry, and limited trace element chemistry. We collected fresh samples for petrographic analysis and acquired new whole-rock chemistry, including Sr and Pb isotopic analyses, for the LCM basaltic andesite and trachydacite. Results reveal a close affinity between the geochemistry of the LCM suite and volcanic rocks from modern continental volcanic arcs. Petrogenetic models are consistent with the basaltic andesite, andesite, and trachydacite being related by fractional crystallization. The Sr ratio of the basaltic andesite ($^{87}Sr/^{86}Sr$ = 0.705650 ±9, 2σ) is compatible with partial melting of an enriched mantle source or assimilation of lower continental crust or both. In contrast, the slightly higher ratio for the trachydacite ($^{87}Sr/^{86}Sr$ = 0.707232 ±9, 2σ) suggests modest assimilation of continental crust.

Bryan Rhamy is a senior geoscience major interested in igneous petrology and applied geographic information systems. He is graduating in May 2025 and has conferred with potential graduate school advisors at several institutions in the western United States.

Microplastics in Karst Waters from the Hiawatha National Forest in Upstate Michigan

Presented by: Kylee Massingill
Faculty Sponsor: Dr. Martin Campbell
Field of Research: Chemistry and Geoscience
Table 5

Microplastic contamination has become a steady feature in headlines recently. Hardly a week goes by without scientists announcing finding microplastics in some new location, new animal species, or another part of the human anatomy. Although plastic pollution has been known for a long time, but only relatively recently have scientists become aware of the prevalence of tiny plastic fibers and bits collectively known as microplastics. Usually defined as particles less than 5mm in the largest direction, they had gone rather undetected until the past five years. Recently, Dr. Maurice Testa (UAFS geosciences program) began exploring the Karst landscape within the Hiawatha National Forest in the Upper Peninsula of Michigan. Part of the work involves groundwater tracking and analysis. We decided to carefully examine samples of these pristine waters to attempt to determine if microplastic pollution was present. Careful analysis suggests that it is. Herein we describe the preliminary results of analysis of eleven water samples obtained in April 2024. Sequential filtrations, extensive microscopic analysis, and plastic-specific dying techniques have revealed the presence of unidentified plastic fibers. Work continues to quantify the identity, diversity and abundance levels of these pollutants, which could help identify their entry points into the Karst system.

Kylee Massingill is a sophomore at UAFS majoring in biology with a concentration in biomedical professions. She transferred from Coastal Carolina Community College in North Carolina, where she was studying to become a nurse, but switched majors after being accepted to UAFS as she felt more drawn to research. Kylee has a passion for teaching and aims to earn a Ph.D. to pursue a career in academia so she can both conduct research and teach the next generation of scientists.

Removal of Dichloromethane from Organic Chemistry Labs to Meet EPA Requirements

Presented by: Seth Fields
Faculty Sponsor: Dr. Jordan Mader
Field of Research: Chemistry
Table 6

The Environmental Protection Agency (EPA) has mandated the removal of dichloromethane (DCM) from industrial and educational practices, where possible, by 2026. According to the EPA, "The primary health risks identified in the risk evaluation are neurotoxicity from short-term exposure to the chemical and liver effects and cancer from long-term exposure" (EPA.gov). While the proper use of PPE will mitigate most of these risks, non-compliance with PPE recommendations has led to the removal of DCM from most industrial workplaces. For teaching, DCM can be used but requires costly and time-consuming monitoring equipment not available at UAFS. This project explores replacing DCM as a common solvent in the organic chemistry laboratory teaching courses. Four labs that are used every year in the CHEM 2701 or CHEM 2711 courses were explored using alternative solvents. The relative solubilities of compounds and different isolation and characterization techniques were used to determine a successful solvent replacement. Three replacements for DCM were found, with the Recrystallization, Photochemistry of Benzophenone, and Synthesis of DEET labs being successful, and the Acid-Base Extraction lab still in progress.

Seth Fields is an undergraduate biology major with the goal of attending medical school after graduation to become a cardiologist or study infectious diseases. He is from Fort Smith and in his spare time enjoys volunteering at the Good Samaritan Clinic, mountain biking area trails, running, and cooking.

Using Open Reading Frames to Predict Possible Protein Structures

Presented by: Jessie Boese
Faculty Sponsor: Dr. David McClellan
Field of Research: Genetics and Protein Biology
Table 7

This study compares open reading frames (ORFs) within genomes across different species to determine possible protein structures of hypothetical proteins. Many important tools such as the genome database, ORFfinder, and SmartBLAST provided by the National Library of Medicine, along with the Protein Data Bank, were used for this investigation. These tools allowed for an examination of an ORF that occurs in Heterodontus francisci and linked it to a hypothetical protein present in Dictyostelium discoideum. The discovery of this information led to the input of the mRNA sequence from the hypothetical protein into the Protein Data Bank to analyze protein structures with related mRNA sequences. Many examples of related proteins were provided, including that of Homo sapiens. Discovering protein structure is important in understanding possible functions of the protein across various organisms.

Jessie Boese is a senior from Fort Smith majoring in biology with a concentration in biomedical professionals. She will graduate in May 2025.

Phylogenetic Analysis of Rattus Species Using mtDNA and Nuclear DNA Sequences

Presented by: Zayne Dean
Faculty Sponsor: Dr. David McClellan
Field of Research: Genetics and Phylogenetics
Table 8

The evolution of species can be traced through the comparison of genomic nucleotide sequences. The online application MEGA facilitates sequence alignment and comparison, enabling evolutionary analyses. This study aimed to compare 10 species of Rattus by analyzing their mitochondrial COX1 and CYTB genes alongside a nuclear Globin gene to identify evolutionary divergence. After aligning the nucleotide sequences, a phylogenetic tree was constructed to trace evolutionary relationships among the species. These findings provide insights into patterns of descent within the genus Rattus.

Zayne Dean is a senior biology major with a concentration in biomedical sciences. He is Alma, Arkansas, and is driven by his deep appreciation for the natural world. He aspires to pursue a future in environmental science.

Collection of Soil Samples and Culturing of Dictyostelids from Western Regions of Arkansas

Presented by: Khurera Iqbal, Kristy Ortiz, and Sarah White
Faculty Sponsor: Dr. Sandhya N. Baviskar
Field of Research: Biology
Table 9

Soil plays an important role in the health of the environment. Dictyostelium amoebae thrive in forest soil by eating yeast and a variety of bacteria thereby controlling soil microbial populations and thus help in sustaining plant and animal growth. Scarcity of food forces unicellular amoebae to aggregate and form multicellular structures called fruiting bodies. Each fruiting body has a sorus on the top with live spore cells inside and stalk made of dead cells. To assess the species richness of dictyostelids in Western Arkansas region, our research team collected twenty-five soil samples from various locations of Sebastian, Washington, and Franklin counties. These soil samples were collected in sterile tubes and their GPS coordinates were accurately noted. To recover dictyostelids, soils were cultured in laboratory. To facilitate controlled growth of Dictyostelids, hay infused agar plates were used to provide organic nutrients and mimic Dictyostelium's natural environment while repressing excessive bacterial growth. We have discovered fruiting bodies of unidentified species on most principal culture plates. We will be sub-culturing these isolates for their identification. This study will not only increase our knowledge of the species diversity of dictyostelids in Western Arkansas region but also facilitate subsequent soil functional studies.

Khurera Iqbal is a senior at UAFS earning his degree in biology with hopes of attending medical school. His passion for medicine began early, inspired by family members in the field and solidified through his experiences volunteering in Pakistan during high school. Seeing the struggles of under-served communities firsthand made him determined to pursue a career where he could make a real difference in people's lives. Whether through research, leadership, or hands-on service, Khurera is committed to becoming a physician who not only treats patients but also works to improve healthcare access for those in need.

Kristy Ortiz is a third-year student at UAFS majoring in biological professions. She graduated from Elkins High School in 2022 and plans to graduate with her bachelor's degree in May 2026. Kristy is a biology and chemistry tutor at the Academic Success Center at UAFS and serves as secretary for the Pre-Health Society. After graduation, she hopes to attend the University of Arkansas for Medical Sciences (UAMS) to become an assistant physician with a focus on dermatology.

Her motivation for pursuing a career in healthcare stems from her desire to provide a better life for herself and her family while making a meaningful impact in patient care.

Sarah White is a senior first-generation student at UAFS pursuing a bio-medical degree. She is graduating this December and plans to attend a physician assistant program after graduation. She attended Hackett High School and intends to serve in the Fort Smith area as a medical professional. From a young age, she very much enjoyed reading and learning. She has a passion to learn the mechanisms of the human body to help those who come her way in the future. She is the now vice president of the Pre-Health Society at UAFS in hopes to enlighten others in the complicated process of applying to post-undergraduate studies.

Morphology of Dictyostelium Wild Isolates and Their Mating Dynamics and Social Behavior During Development

Presented by: Zachary Rytting, Gini Vandalak, and Himanshi Shorie
Faculty Sponsors: Dr. Sandhya N. Baviskar
Field of Research: Biology
Table 10

Dictyostelids are eukaryotic soil amoebae found in forested environments worldwide where they thrive in temperatures between 20-25°C. As bacterivorous organisms, they regulate microbial populations and contribute to soil health. Under starvation conditions, the unicellular amoebae undergo developmental cycle to form multicellular fruiting bodies for spore dispersal. This unusual but simple life cycle makes them ideal models for studying the evolutionary history of multicellularity. The goal of this study is to characterize the morphology, mating dynamics, and social behaviors of wild isolates of Dictyostelium from Washington, Franklin, and Sebastian counties in Arkansas. Wild isolates will be cultured on a non-nutrient agar medium with Klebsiella aerogenes as a food source. Morphological traits such as sporocarp structure, sori size, spore shape, and slug formation during development will be examined under inverted microscope and images will be captured. To study mating dynamics, wild isolates will be paired under conditions promoting macrocyst formation. Social behaviors such as cheating and cooperation will be studied by analyzing and comparing isolate specific and chimeric fruiting bodies. Findings will provide insights into Dictyostelium's morphological diversity, reproductive strategies and social behavior. This will contribute to discussions on microbial interactions, mating behaviors, and evolutionary strategies in social amoebae.

Zach Rytting is a senior at UAFS. He graduated from County Line (Arkansas) High School in 2021. He will graduate this spring with a major in biology and wants to pursue a career in trans-generational epigenetic inheritance to study how an individual's environment can influence differential gene expression. He plans on pursuing a master's and then a doctorate. Zach utilizes his free time researching how the epigenome can be influenced by one's diet and habits and how they can possibly be passed down to further generations. He also enjoys hiking with close friends and learning about the world around him.

Gini Vandalak is a senior biology major at UAFS graduating in May 2025. As a first-generation college student, she has embraced every opportunity to learn and grow, developing a deep appreciation for science and its role in improving lives. During her undergraduate years, she balanced academics with hands-on experience in healthcare, working as a medical assistant in pain management and volunteering in hospice care. She is also dedicated

to helping patients work through language barriers in medical settings. Outside of her studies, Gini enjoys cooking, taking long walks, and spending time with family and friends. She is grateful for the experiences that have shaped her and looks forward to continuing her journey in both science and service.

Himanshi Shorie is a sophomore at UAFS pursuing a Bachelor of Science in biology with a concentration in biomedical professions. With an excellent academic record, she is passionate about medical research and healthcare and plans to attend medical school. She is treasurer of the Desi Cultural Club, showcasing her leadership and commitment to cultural engagement. Additionally, she is a member of the National Society of Leadership and Success (NSLS) and is actively seeking clinical experience to further her medical aspirations. Outside academics she enjoys recreational MMA and volunteering at a dog shelter.

Pollution Diffusion: A Look at Arkansas River Valley's Watersheds

Presented by: Chris Edwards, Jasmine Rosa, Vanessa Gonzalez, and Camelia Vela
Faculty Sponsors: James Brandli
Field of Research: Biology
Table 11

Water quality degradation due to pollution diffusion and land-use changes is an increasing environmental concern, particularly in regions experiencing rapid urbanization and agricultural expansion. This study examines how organic and inorganic pollutants disperse in urban and rural watersheds of the Arkansas River Valley. During this semester, water samples were collected from over 20 sites representing diverse land-use types across the region.

We analyzed key water quality parameters, including water temperature, pH, chemical oxygen demand (COD), conductivity, salinity, total dissolved solids (TDS), and microbial contaminants such as E. coli and coliforms to assess pollutant diffusion patterns. To further investigate how land-use influences pollution spread, we designed an experiment using conductivity as a tracer for pollutant dispersion. Sampling sites were strategically placed along pollution gradients near suspected sources, such as agricultural runoff zones, urban stormwater drains, and wastewater treatment outflows. We aim to distinguish between point and non-point source pollution by tracking conductivity changes alongside other water quality metrics.

Chris Edwards graduated from Greenwood (Arkansas) High School in 2006 and returned to school to pursue his passion for science and discovery. He is currently a biology student at UAFS where he leads a research project developing a neural network model to assess the impact of land-use changes on water quality. He is also conducting research on pollution diffusion. Chris works at PetCo where he engages with animal care and customer education. In his free time, he enjoys playing disc golf and hiking local trails. He plans to pursue a postgraduate degree in marine or wildlife biology with the ultimate goal of working in conservation and research.

Jasmine Rosa is a senior biology major with a concentration in pre-med. She is seeking a physician assistant career post-graduation with goals to serve in obstetrics. She takes a particular interest in water quality research for the holistic approach and its impact on overall health, primarily with fetal development. Her focus is on the River Valley to narrow down the water quality and watersheds in a familiar area.

Vanessa Gonzalez is a senior biology major with a concentration in biomedical sciences. She is a pre-med college student seeking a career

as a physician after graduation. She took a particular interest in water quality research because she aims to better understand the public health implications of environmental factors on our community. Her goal is to be able to integrate this knowledge into her future clinical practice and advocate for the community.

Camelia R. Vela is currently in the spring semester of her sophomore year. She is a biology for biomedical professions major and plans on going to medical school to be a OB/GYN. This is her second year participating in the UAFS Student Research Symposium.

A Survey of E. coli Contamination in Fort Smith Restaurants

Presented by: Anna Carden, Jarrod Gossett, Arrington Rose, and Cullen Delaney
Faculty Sponsors: James Brandli
Field of Research: Biology
Table 12

Escherichia coli (E. coli) are a group of bacteria that are commonly found in the gut of humans and animals alike. There are more than 700 strains of this bacteria; most are relatively harmless but many can cause very serious and adverse effects on the body. Both harmful and neutral E. coli strains are often transmitted through consumption of contaminated foods. Our goal is to collect samples from food preparation areas in restaurants within a five mile radius from the University of Arkansas - Fort Smith campus. We plan to swab and test for E. coli strains on a variety of items, including soda fountains, ice machines, silverware, menu, edible garnishes, and more. If we obtain positive E. coli test results on any of our swabs, we plan to test further and attempt to identify the strain of E. coli to determine whether or not it is one of the harmful strains. We will be working in compliance with the laws of the Food and Drug Administration (FDA), the Food Safety and Inspection Service (FSIS), and Arkansas Department of Health (ADH). Additionally, we will ensure the privacy of individual businesses and franchises by not disclosing their personal information privately outside our research group or publicly in our findings. We will offer each business their own data once we have compiled our findings.

Anna Carden is a junior biology major at UAFS minoring in biomedical professions. She is a member of the Myles Friedman Honors Program and has been working under James Brandli, biological sciences instructor, as a research student for the past three semesters. After graduating with her Bachelor of Science in biology, she plans to attend graduate school out of state and start working toward obtaining a Ph.D. in a natural science-related field. Outside of class, she spends a lot of time at her retail-based job. She is an avid lover of the outdoors and likes to go hiking and swimming in her free time.

Jarrod Gossett is a junior biomed major at UAFS. He is the founder and former president of the Anatomy and Physiology Club at UAFS. He is currently employed by Cassie Duffin, the biological lab manager, in a student-worker position as a lab technician where he often assists his research instructor of two semesters, James Brandli, in teaching general biology labs for majors and biological science labs for non-majors. His goals after graduation are to pursue a master's in biology with a concentration in microbiology and to later attend the Arkansas College of

Osteopathic Medicine for a D.O. His ultimate goal is to start a clinic to practice osteopathic manipulative medicine and teach human anatomy and physiology and microbiology to undergrads. In his off time, he reads, listens to music, makes killer breakfasts, and enjoys outings with his friends.

Arrington Rose is a freshman biomedical professions major at UAFS. This is her second semester working under Instructor James Brandli as a research student. After graduating in May 2028 with her bachelor's degree, she plans to attend medical school. She is pursuing a career in either general surgery or anesthesiology with a goal of becoming a D.O. She is currently working on getting involved in different organizations on campus and is job shadowing professions in the medical field. In her free time, she likes to spend quality time with her family, go on nature adventures, and bake. She also loves to play video games and creates the best playlists ever.

Cullen Delaney is a junior biology major at UAFS. He has been working as a physical therapist assistant for the past year at an orthopedic outpatient clinic and a pediatric clinic. He went back to school after graduating with his associate degree in physical science and technical certificate in physical therapy assistant to pursue a bachelor's. After graduating in May 2026, he plans to attend Arkansas College of Health Education where he will pursue a doctorate in physical therapy. He is currently assisting with the management of company meetings and department resource creation at the pediatric clinic. In his free time, he researches topics in his line of work, plays video games with friends and family, works outside on his family's property, plays music, inline skates, and solves Rubik's cubes.

Correlations in Physical Abuse, Sexual Abuse, and Psychology Disorders in Young Adults

Presented by: Kristy Mead
Faculty Sponsors: Dr. Nicha Otero
Field of Research: Psychology
Table 14

Neglect and child abuse are significant issues that change societies and people around the world. This leads to serious long-term consequences for behavior and mental health. People who experience child abuse, whether it's sexual, emotional, or physical, have a heightened risk of developing several different types of psychological disorders. These include depression, PTSD, anxiety, and dissociative disorders. These individuals may also be more prone to engaging in self-harm and violent behavior. This turns into a terrible continuation of the cycle of abuse that harms the next generation. The purpose of this study is to dive into the connections between childhood trauma and negative outcomes later in life. Drawing on current research about trauma-focused therapies, patterns of intergenerational abuse, and intimate partner violence. The evidence of these studies reveals that therapeutic methods such as trauma-focused cognitive behavioral therapy can be effective. It's notable that systemic challenges like accessibility and the shortcomings of protective services hinder broad recovery efforts. Additionally, studies that examine male perpetrators of intimate partner violence highlight how PTSD symptoms and dynamics of dominance contribute to this cycle of abuse. A deeper understanding of this issue can enhance mental health services, help reform policies, and implement tailored outreach initiatives.

Kristy Anne Mead is a senior at UAFS majoring in psychology and minoring in social work. She earned an associate degree in arts last semester and is currently working at the only Christian bookstore remaining in Fort Smith, but plans to work as a clinical psychologist or psychology professor after she gets her doctorate. While she is not working or at school, she works on planning her wedding, which is set for June 14 of this year. She also hangs out with her five roommates and her brother, who lives next door. Her life is filled with school and work that she enjoys, planning the rest of her life with her best friend, and music and conversation that her roommates spread throughout the house.

Correlations Between Social Media Usage, Mental Health Outcomes, and Academic Performance Among College Students

Presented by: Malaree Skolarski
Faculty Sponsors: Dr. Nicha Otero
Field of Research: Psychology
Table 15

The rise of social media has transformed the way college students engage with their peers, academics, and daily life. While social media platforms provide opportunities for connection, they have also been associated with increased anxiety, depression, and academic difficulties. This study examines the correlation between social media usage, mental health outcomes, and academic performance among students at the University of Arkansas - Fort Smith. Using a correlational research design, participants will complete surveys assessing their social media habits, psychological well-being, and academic performance. The study aims to determine whether higher levels of social media engagement contribute to increased psychological distress and lower academic success. By analyzing these relationships, this research seeks to provide insight into the role of social media in students' lives and inform strategies for fostering digital well-being and academic achievement.

Malaree J. Skolarski is a senior at UAFS, graduating in May 2025 with a Bachelor of Arts in psychology and a minor in social work. She is passionate about mental health research, particularly the impact of social media on well-being and academic performance. Her research aims to contribute to a better understanding of the challenges college students face in a digital world. Following graduation she plans to pursue a master's degree in social work at Arkansas State University where she will continue exploring mental health interventions and support systems for young adults.

Spotlight on Legacy: Celebrating Black Pioneers in Theatre

Presented by: Jamarion Davidson
Faculty Sponsors: Sally Story
Field of Research: Theatre History
Table 16

"Black Pioneers in Theater: Celebrating Legacy" aims to shine a spotlight on the remarkable contributions of Black artists, playwrights, directors, and actors who have shaped the landscape of theater. This symposium will delve into the rich history and cultural impact of these trailblazers, exploring their stories, struggles, and triumphs. Through a series of engaging discussions, we will celebrate the enduring legacy of these pioneers, acknowledging their vital role in the evolution of the performing arts. Join us as we honor the past, inspire the present, and pave the way for future generations in the world of theater.

Jamari Davidson is a graduating theater major with a true passion for the performing arts. Growing up in Oklahoma, his love for theater really took root in middle school, where he first experienced the magic of storytelling and performance. He is an avid singer and feels there's nothing quite like expressing his emotions through song and stage. One of his greatest joys is spending time with his niece, who means the world to him and inspires him every day. With a strong foundation in faith and a deep commitment to theater, he is excited to honor the legacy of Black pioneers in the arts and hopefully inspire future generations with his work and passion.

Draft Day (1)

Presented by: Steven Figueroa, Noah Addison, Summer Bright, Brayden Ross, and Peyton Edgar
Faculty Sponsors: Dr. Kristin Tardif
Field of Research: Workforce Placement of Graduating High School Seniors
Table 17

Our team is researching the Draft Day process in which companies interview high school seniors for immediate employment after they graduate. We will be interviewing teachers and businesses during our time at Draft Day. We are scheduled to be working at Draft Day March 11th. Each of us will be assigned specific duties in the effort of supporting the twelve different schools that will be present at this event. Our team will interview companies present at the event to ask what they are looking for future employees. In addition, we will interview teaches and school counselors present to determine how they prepared students for the event. Afterward we will be compiling and analyze our data to write a report and develop our poster for the Research Symposium.

Steven Figueroa is a senior in college currently studying for a bachelor's in business administration. He will graduate in the spring with concentrations in human resources and leadership. He is from Fort Smith and currently works at Chick-fil-A.

Noah Addison is a senior at UAFS majoring in business administration with concentrations in leadership and human resources. He currently lives in Fort Smith and has an internship with Rheem Manufacturing while finishing my degree.

Summer Bright is a senior, set to graduate in May with a bachelor's degree in business administration. She is from Alma, Arkansas.

Brayden Ross isa senior on pace to graduate in May with a bachelor's degree in business administration. He is from Charleston, Arkansas.

Peyton Edgar is a business administration student with concentrations in human resources and leadership from Muldrow, Oklahoma.

Draft Day (2)

Presented by: Hieu Bui and Jaci Bonds
Faculty Sponsors: Dr. Kristin Tardif
Field of Research: Workforce Placement of Graduating High School Seniors
Table 18

Our team is researching the Draft Day process in which companies interview high school seniors for immediate employment after they graduate. We will be interviewing teachers and businesses during our time at Draft Day. We are scheduled to be working at Draft Day March 11. Each of us will be assigned specific duties in the effort of supporting the 12 different schools that will be present at this event. Our team will interview companies present at the event and the Fort Smith Chamber to determine the future of Workforce Leadership in the Fort Smith area. Afterward we will be compiling and analyze our data to write a report and develop our poster for the Student Research Symposium.

Hieu Bui is a senior finishing a bachelor's idegree n business administration with a concentration in finance and graduating in the spring.

Jaci Bonds is a senior from Fort Smith receiving a Bachelor of Business Administration with a concentration in management.

Hope on the Green - Youth Golf in the Fort Smith Area

Presented by: Kyha Starkey, Jayden Pena, Jeremy Tandoy, Estella Sananikone, and Evan White
Faculty Sponsors: Dr. Kristin Tardif
Field of Research: Community Research
Table 19

We will be researching youth sports in the Fort Smith area, what opportunities are available, and if golf is prevalent. In addition, our team aims to engage kids in the Fort Smith area through a golf clinic in partnership with the local Boys & Girls Clubs, Hardscrabble Country Club, and the UAFS Men's Golf Team for this event. The clinic will provide the youth an opportunity to learn the basics of golf. However, this event is about more than just providing a fun opportunity for kids. Instead of a traditional monetary entrance fee, participants and their families are asked to bring donatable items such as toiletries and non-perishable food, which will be donated to Hope Campus, a local homeless shelter. Through this event, we hope to connect with the community of Fort Smith, all while making an impact to the community.

Kyha Starkey is from Fort Smith majoring in business administration with concentrations in management and human resources management.

Jayden Pena is from West Branch, Michigan, and is a business major who is also currently in the Air Force.

Jeremy Tandoy is from Tulsa, Oklahoma, and is a business major at UAFS.

Estella Sananikone is from Fort Smith and is a senior business administration major with concentrations in digital marketing and management.

Evan White. is a junior currently working toward a degree in business administration; He is from Centerton, Arkansas, and play sbasketball for UAFS.

"SpIndL's Funky Spring Fling" Fundraising Event

Presented by: Allyson Avery, Isaac Nichols, Joseph Sturgill, and Jackson Rotert
Faculty Sponsor: Dr. Kristin Tardif
Field of Research: Community Leadership and Business Administration
Table 20

Roughly one in 43 children have been identified with autism spectrum disorder (ASD) in Arkansas as of 2020 (CDC, 2023.) For adults with autism, reaching independent living can be present challenges. Influential factors in the ability of adults identifying with ASD to live independently can include financial and responsibility management, employment, social behavior, and more (Moller, 2024.) The Non-Profit organization, SpIndL (Spectrum Independence Living) is dedicated to elevating young autistic adults to independence through affordable services and support in the River Valley area of Fort Smith. Through SpIndL and community partners individuals with neurodivergent conditions will receive comprehensive support and coaching in these influential factors to empower them to live independently and confidently.

Our community leadership team has performed ongoing research into autism spectrum disorder, has begun to partner with SpIndL and many other community leaders to plan a SpIndL's upcoming fundraising event, "SpIndL's Funky Spring Fling," which will take place on April 3, 2025. A night of live music, dancing, food, drinks and more will ignite this 70's psychedelic themed spring fling! Through this event, we hope to promote the vital programs of SpIndl.

Allyson Avery is in the last semester of her junior year. She is pursuing a bachelor's degree in business administration with concentrations in management and digital marketing and plans to graduate in the spring of 2026. She works at Walmart in the apparel department and lives on a farm near Clarksville, Arkansas, where they raise beef cattle, chickens, and a large garden.

Isaac Nichols is a dedicated salesman at Liberty Roofing, where he helps homeowners and businesses find the best roofing solutions. He is from Van Buren, Arkansas, and takes pride in serving his local community with high-quality, durable, and energy-efficient roofing options. He is currently a junior at UAFS, balancing his education with hands-on experience in the roofing industry. He has a strong passion for sales, customer service, and staying up to date with the latest advancements in roofing technology, including smart and eco-friendly solutions. His goal is to continue growing in the industry, using his knowledge and experience to make a lasting impact. Whether he is helping customers choose the right roofing system or studying market trends, he is always focused on providing value and excellence in everything he does.

Joseph Sturgill is a student-veteran majoring in business administration. He enjoys golfing and anything outdoors. After graduation he plans to open a small business.

Jackson Rotert is currently a senior in his second year at UAFS. He is originally from Van Buren, Arkansas, and graduated from Van Buren High School before initially enrolling at the University of Central Arkansas to pursue a degree in finance. After some time at UCA, he decided to transfer to UAFS for better opportunities and a more suitable academic and professional path. A significant factor in this decision was securing a student-worker position at ArcBest Logistics in Fort Smith, which has provided him with valuable experience in the logistics and transportation industry. Through his time at UAFS and ArcBest, he has been able to develop important skills, build connections, and prepare for his future career. He looks forward to completing his degree and seeing where his journey takes him next.

The Future of AI in Dentistry

Presented by: Ashlynn Flute, Erica Davis, and Mackenzie Brown
Faculty Sponsor: Roxy Reed
Field of Research: Dental Hygiene
Table 21

Artificial intelligence (AI) is making its way into dentistry, bringing insight into diagnosis, treatment planning, and patient care (Kukalakunta et al., 2012). By using technologies like machine learning and computer vision, dentists can analyze dental images more effectively, catch early signs of dental issues, and predict patient outcomes more highly (Kukalakunta et al., 2012). AI tools enhance patient comfort, provide valuable ways to improve patients' health and promote dental professionals' career span.

This research looks at how AI is being applied across different areas of dentistry, including early detection, diagnosing periodontal disease, and improving restorative options. It also discusses some of the challenges and ethical concerns, like data privacy and the importance of patients' information. The potential of AI will fundamentally change how patient care is managed and improve clinical efficiency. This is huge in the dental realm, making it an exciting area for ongoing research and development in the healthcare field.

Ashlynn Flute is a senior in the dental hygiene program at UAFS. She has been a member of the Eta Omicron Chapter of Delta Gamma and has been involved in Cub Camp for the past four years. She has been awarded several community-based scholarships through LionsShare, Degen Foundation, Cherokee Nation, and Indian Health Services. She is a first-generation college student and a proud Native American. Ashlynn's ability to discuss oral self-care and educate patients on how it affects one's overall health is her passion. In her free time, she spends time being outdoors, playing with her Jack Russell named Murphy, listening to podcasts, and spending time with the ones she loves most. After graduation she plans to serve a two-year commitment with Indian Health Services as a dental hygienist and possibly one day further her education with a master's degree in public health.

Erica Davis is a senior dental hygiene student at UAFS. She is from Waldron, Arkansas, and is a first-generation college student. She is the treasurer for the Student American Dental Hygienists' Association (SADHA) and is a member of the Myles Friedman Honors Program at UAFS. She was awarded two scholarships – the Myles Friedman Honors Program Scholarship and the Laurie Pendergraft Mason Endowed Scholarship. Erica chose the dental hygiene profession

to educate people about oral health and to help her patients feel more confident with their smiles. After graduating Erica plans to return to her hometown to serve her community. She aspires to eventually go back to school to get her master's degree and hopes to travel the world.

Mackenzie Brown is a UAFS dental hygiene student. She graduated from Greenland (Arkansas) High School and is a first-generation college student. Mackenzie was a dental assistant for two years before entering the dental hygiene program, gaining valuable hands-on experience in patient care and oral health. She is an active member of the Student American Dental Hygiene Association (SADHA), where she is increasing her knowledge on the field alongside her peers. Her academic achievements have been recognized through the Federal Pell Grant, the Laurie Mason Scholarship, the Arkansas Academic Challenge Non-Traditional Scholarship, and the Federal Supplemental Education Opportunities Grant (SEOG). After graduation she plans to work in Northwest Arkansas, providing high-quality dental care to her community. Outside of her studies, she enjoys spending time with her son, exploring nature through hiking, and playing basketball. Mackenzie is excited to impact dental hygiene by helping others achieve healthier smiles.

Effects of Energy Drinks on Systemic and Oral Health

Presented by: Bronwen Henderson, Kinsey McCranie, and Deysy Vargas
Faculty Sponsor: Roxy Reed
Field of Research: Dental Hygiene
Table 22

Energy drinks are growing in popularity among all age groups. Most individuals are unaware of the effects these drinks can have on their body. Energy drinks are not regulated by the Food and Drug Administration to ensure their safety. Many of the ingredients in energy drinks can cause an increase in blood pressure and heart rate, which can lead to cardiovascular disease. Energy drinks are harmful to the oral cavity because they increase acidity, which can lead to enamel erosion and formation of white spot lesions, an early sign of demineralization that can progress to decay. This acidity can compromise the adhesive bond between orthodontic brackets and the teeth, complicating orthodontic treatment. Additionally, these drinks can reduce the strength of restorative materials, such as crowns and fillings. Drinking energy drinks will lead to softened enamel, increased bacterial growth, and higher risks for gum disease, which can worsen systemic inflammation and conditions like heart disease. Several simple options for combating their effects include limiting intake, rinsing with water, using fluoride, and delay brushing for at least 30 minutes after consumption. Some healthy choices that could give similar benefits and at the same time lower the oral risks are coffee, green tea, and coconut water. Dental professionals should provide individualized treatment plans to help educate patients on the unpleasant side effects of energy drinks and the importance for regular checkups, to lessen the oral and systemic effects of drinking energy drinks.

As a non-traditional student embarking on a new chapter in her career at 44, Bronwen Henderson is deeply motivated to obtain her degree in dental hygiene to expand her capacity to educate and empower patients in their preventative oral care. Her passion lies in informing individuals about the significance of preventive measures in reducing the risk of systemic diseases associated with oral inflammation. She aims to enhance patient outcomes through continuous learning and dedication while contributing to community health initiatives. She was the recipient of the John and Kim McFarland Health Sciences Endowed Scholarship, the Robert and Verna Cargile Vocational Training Endowment Scholarship, and the LauriePendergraft Mason Endowed Scholarship. Outside of academia, she enjoys spending quality time with her family, including her dogs, anywhere in nature. After graduation she intends to apply her newfound skills and knowledge to serve the community in Northwest Arkansas, prioritizing both professional fulfillment and cherished moments with loved ones.

Kinsey McCranie is a senior in the dental hygiene program at UAFS. She is from Springdale, Arkansas, where she has resided since childhood. She has been awarded the John McFarland and Baldor scholarships as well as the LaurieMason Scholarship at UAFS. Kinsey is a first-generation college student and enjoys educating the public on their health and putting her skills toward impacting the community in a positive way. She enjoys golfing, hiking, and watching soccer in her free time. After graduation she plans to work in Northwest Arkansas.

Deysy Vargas is a senior dental hygiene student at UAFS. She lives in Northwest Arkansas and plans to work in that area after graduation. She was awarded the Arkansas Academic Challenge and Phi Theta Kappa scholarships. Deysy is a first-generation college student and the second member of her family to graduate with a bachelor's degree. She would like to help the Hispanic community become more involved in their oral health as sometimes language can be a barrier. On her free days she likes to spend quality time with her husband Javier, and her three fur babies, Cocoa Chanel, Izzy, and Lexy.

The Use of Botox in Dentistry

Presented by: Taylor Short, Faith Fulbright, Lauren Sikes, and Brooklyn Ray
Faculty Sponsor: Roxy Reed
Field of Research: Dental Hygiene
Table 23

Botox was first introduced in the early 1980s. Since then, it has made huge advancements, including in the dental field. Dentists have used this for therapeutic and cosmetic reasons since the early two thousand. Since the introduction of botox into the dentistry field, there has been evidence that suggests it aids in therapeutic advancements of Temporomandibular Disorder (TMD). It has also been shown to help in bruxism, salivary gland disorders, and excessive gingival display. Dentists in over two dozen states can administer Botox, while only hygienists in two states can. The risks of botox are minimal and rare compared to the significant positive effects on therapeutic uses. This research paper will provide a review of how botox was introduced and how it has progressed over time. It is now being used in dentistry for therapeutic and cosmetic purposes, as opposed to other alternatives.

Taylor Short is a senior dental hygiene student at UAFS. She is from Muskogee, Oklahoma, and studied at Connors State College before entering the dental hygiene program. Taylor was awarded the Laurie Pendergraft Mason Endowed Scholarship and served as historian for the Student American Dental Hygienists' Association for her graduating class of 2025. Taylor has dreamed of being a dental hygienist since she was a little girl. She is dedicated to helping patients enhance their health and gain confidence in their smiles. During her dental hygiene school journey, she has made lifelong friendships that she will value and cherish forever. In her free time, she likes spending time with loved ones, traveling, and baking sweet treats. After graduation she plans to pursue a job near her hometown and officially start her dream career.

Faith Fulbright is from Vian, Oklahoma. She graduated from Carl Albert State College in Poteau, Oklahoma, with her associate degree in allied health and science. Faith is a recipient of the Laurie Pendergraft Mason and the John and Kim McFarland Health Sciences endowed scholarships. She served as secretary of the Student American Dental Hygienists' Association for her 2025 class. She has wanted to be a dental hygienist since she was in high school and cannot wait to start her career and help the community improve their oral and overall health. Faith's hobbies include baking and hanging out with her friends. Her favorite thing about dental hygiene school is the friendships she has made for life that she will cherish forever. After graduation she plans to work in the River Valley and find an office that is the best fit.

Lauren Sikes is a senior in the dental hygiene program at UAFS. She is a member of the Alpha Sigma Lambda Honor Society and served as vice president of the Student American Dental Hygienists' Association (SADHA) at UAFS. Before being accepted into the program, she finished her associate degree at the University of Arkansas Rich Mountain Community College. She received the Chancellor's Transfer Scholarship upon transferring to UAFS. Lauren has wanted to be a dental hygienist since a young age. She loves building relationships with patients and helping them improve their oral hygiene. She is from Mena, Arkansas, where she has spent her whole life. In her free time, she enjoys spending time with her family and being outside. After graduation she plans on returning to Mena and finding a job.

Brooklyn Ray is a senior in the dental hygiene program at UAFS. Prior to getting accepted into the program, she was a dental assistant for one year. She served as president of the Student American Dental Hygienists' Association (SADHA) and was also a member of the UAFS Lionheart organization. She was awarded the Arkansas Academic Challenge, UAFS Academic Excellence, Laurie Pendergraft Mason Endowed, and Robert and Verna Cargile Vocational Training Endowed scholarships. Brooklyn is passionate about building lasting relationships with her patients and educating them on the importance of oral health. After graduation Brooklyn plans to move to Northwest Arkansas to work at a general practice. In her free time she enjoys spending time with her family, friends, and pet bird.

An Update on Dental Implant Maintenance

Presented by: Brenci Marrufo, Mesa Miller, and Erica Mimbs
Faculty Sponsor: Roxy Reed
Field of Research: Dental Hygiene
Table 24

Dental implants are considered the "gold standard" for replacing edentulous areas. Dental implants are a metal screw-like structure that is surgically inserted into the jawbone. They take the place of a missing tooth and function like a natural tooth. Dental implants are preferred by patients due to chewing ability and chewing functionality. Another advantage for a patient is that implants are a more permanent option compared to dentures, partials, or flippers. With dental implants taking over the dental field, it is important to educate patients and dental professionals to properly take care of them. This paper will assess the history of implants, how they are created, current updates of techniques for maintenance, implant health, risk factors, oral hygiene, advances in technology, and healthcare policy changes involving insurance. This paper is a literature review that will discuss the past, current, and future updates of dental implants, using resources from medical databases such as PubMed and CINAHL and an academic literary text.

Brenci Marrufo is a senior dental hygiene student at UAFS, where she has received the Pendleton Nancarrow Family and John and Kim McFarland Health Science scholarships. She is a member of the UAFS chapter of the Student American Dental Hygienists' Association (SADHA), currently serving as historian, and a member of the Arkansas Dental Hygiene Association (ADHA). In her free time, she enjoys spending time with her friends and family. After graduation she plans to work in under-served communities like her own in Southwest Arkansas.

Mesa Miller is a dental hygiene major at UAFS from Mount Ida, Arkansas. She previously worked for three years at Dr. Faulkner's office in Mount Ida as a registered dental assistant. Mesa is a member of SADHA and received two UAFS Foundation scholarships as well as the Arkansas Challenge and Bud and Katy Sampley Foundation scholarships. She likes to spend her free time with her family, friends, and fiance. Upon graduation she will return to Dr. Faulkner's office to work as a registered dental hygienist.

Erica Mimbs is a senior in the dental hygiene program at UAFS. She is from Farmington, Arkansas, and is a first-generation college student who has received a National Dental Hygiene Association scholarship due to her academic success. Erica has served more than 600 hours of community services in her college academic years. After graduation she plans to go back to Northwest Arkansas and work at a local office. Erica is passionate about oral disease prevention and patient education. She spends her free time with family and friends, traveling, and volunteering.

Effects of Disturbance on the Herpetofaunal Community in a Powerline Right of Way

Presented by: Shelbi Zink
Faculty Sponsor: Dr. Ragupathy Kannan
Field of Research: Biology
Table 25

The effects of powerline right of ways (ROWs) on the herpetofaunal communities they disrupt are poorly understood Three sites on Salt Pond Mountain in Giles County, VA, were used to study the effects of disturbance caused by powerline ROWs on these highly sensitive indicators of environmental change. Two 16m wide ROWs and one 46m wide ROW were used to compare disturbances of differing sizes. Nighttime and daytime surveys were conducted in ROWs and the immediate surrounding forest. Across all sites, 441 total individuals and 10 species of herps were observed. Of this total, 426 were salamanders. We found that salamander abundance is significantly lower in wide ROWs. Salamander abundance increases with distance from the disturbance edge. Increasing the width of a ROW negatively impacts abundance. We found that ROWs create an environmental edge effect, however this varies by site and by variable. Environmental measurements were recorded using the methods of Brannon et al. (2014) to determine if the sites produced an effect of edge. Variables differed between sites. Sunlight intensity consistently differed significantly between a ROW and the surrounding forest.

Shelby Zink is a junior biology major at UAFS with goals to continue her academic career post-graduation. She plans to work in a federal or academic institution studying wildlife biology and management. Shelby is passionate about research in avifauna, herpetofauna, physiological ecology, biology, reproductive ecology, animal behavior, and evolution.

Student Index

* Denotes first-generation student

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