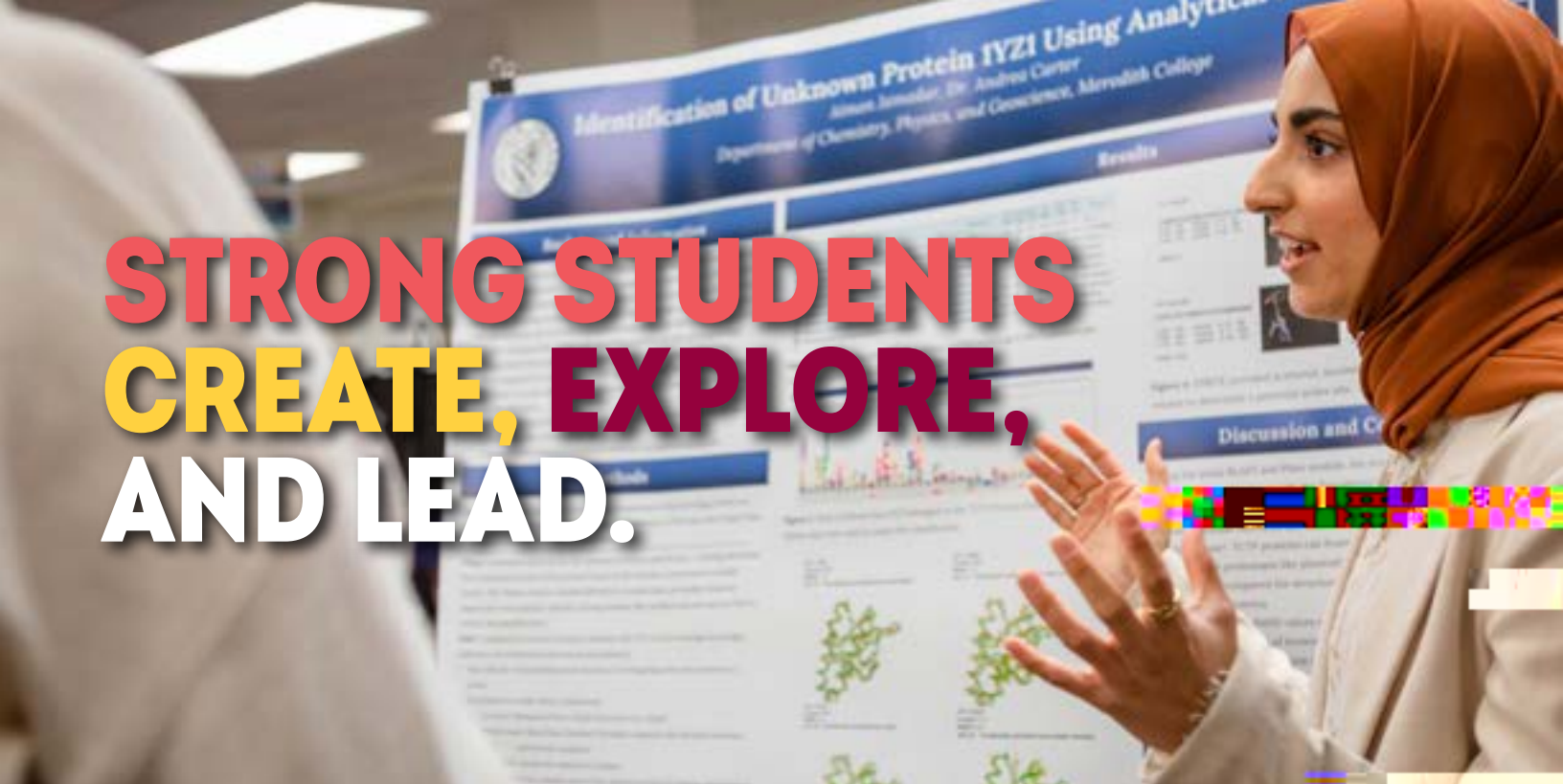


# STRONG STUDENTS CREATE, EXPLORE, AND LEAD.



## 22ND ANNUAL



Program of Events  
Thursday, April 18, 2024

# WELCOME

Another CSA Day and another opportunity to be amazed by what Meredith students accomplish in their quest for knowledge and information. More important, it is a day to celebrate students' realizations that they can and do have the intellect, curiosity, and discipline to actually pose important questions and generate hypotheses and possible responses.

Whether a scientist, artist, or humanist, students on CSA Day demonstrate the many ways their learning crosses from classroom or lab or library into application—from reading and conversation into doing—from asking into answering and, perhaps, asking another question after that.

All around us today, we witness evidence of the journey of those truly taking control of their learning. For faculty, there is little more exciting than the glimpse CSA presentations and performances give us of our students' growth and of their evolution into top thinkers and practitioners in their areas of study. It is the difference between being able to answer test questions about concepts to being able to build, expand, or even deconstruct those concepts for various purposes.

Ultimately, one of the questions CSA Day encourages us to ask hinges on relevance: Why does this matter? What does the answer mean for whatever next steps our inquiry leads? Does (and how does) this new information or process or application benefit humanity or this discipline?

Frustrating for some is that we don't always know the answers to those questions or how the answers may affect our lives. Indeed, history provides numerous examples of pharmaceuticals intended for treatment of one ailment, only to discover they have far more powerful results treating a different ailment. The side effect, in many cases, becomes the primary use. Just as bubble wrap was originally intended as textured wallpaper, toy slinkies were originally used as naval equipment to protect equipment on rough seas, and Listerine was originally intended as a post-surgical antiseptic to prevent infection, today we see discoveries and new information for which we may not find a use for years.

But just as researchers knew the basic chemical composition for treatment of viruses and vaccines that came to our service during the height of the COVID years, meaning the tweaking of that composition gave us treatments and support months and perhaps years or even decades before we would have had those answers, it is a good reminder that asking questions—even if we don't have an immediate application for the answers—is one of progressive civilization's greatest assets. It is perhaps even its greatest advantage in being able to survive. Those are heady and serious ideas. Today, we celebrate our capacity to wonder, to appreciate how our minds work, to enjoy the collaborative spirit between students and their faculty, to engage in the excitement of new knowledge and techniques and outcomes.

Evidence of the value of education is never more front-and-center than on CSA Day. Here's to the tradition of engagement, inquiry, and excellence that abounds at Meredith College.

**President Jo Allen, '80**

## ACKNOWLEDGEMENTS

***The commitment and dedication of Meredith students, COM 316 students, Student Technology and Training (STAT) team, faculty and staff make this day of celebrating student achievement possible. Special thanks go to —***

Jo Allen, '80, President

Matthew Poslusny, Senior Vice President and Provost

Jean Jackson, '75, Vice President for College Programs

Carolina Perez-Heydrich, Director of Undergraduate Research

Cheryl Jenkins, Director, Office of Student Leadership and Service

Kathryn Pleasant, Administrative Assistant for Undergraduate Research

The Undergraduate Research Advisory Committee

Marissa McCauley, Vanessa Harris, Charloë McKinney, and Jimmy Boston, Department of Marketing

Laura Davidson, Jeffrey Waller, and the Reference staff of Carlyle Campbell Library

Brian Thornburg and Rick McBane, Media Services

Bill Brown, Jim Frick, Eric Leary, Savi Swiggard, Meredith Events

***The faculty mentors who have given concentration, care, and many extra hours to encourage and support today's student presenters and performers.***

#MEREDITHCSA

# Day at a Glance

8:30 – 9:15 a.m. **Morning Poster Presentation Session**

*Carlyle Campbell  
Library Ground Floor*

8:45 - 11:15 a.m. **Oral Presentations: Music**



# Schedule of Events

MORNING CONFERENCE SESSIONS

MORNING POSTER PRESENTATIONS



- 9:30 – 9:40 a.m. *Reshaping Elegance: The Evolution of the Corsetry in Contemporary Fashion*  
Jennifer Bruton
- Politics and Public Policy**  
**Science and Math Building (SMB) 162**
- 9:15 – 9:25 a.m. *Exploring Health Outcomes, Food Security, and Resilience Strategies among Latinx Residents in N.C. High Country*  
Anna-Moriah Fung
- 9:30 – 9:40 a.m. *Thematic Analysis: West Virginia v. Environmental Protection Agency and Subsequent Climate Policy*  
Ashton-Bre e Rusthoven
- 9:45 – 9:55 a.m. *A Machine Learning-Based Approach to Predict the User Engagement of a Tweet During an Election Season in Kenya*  
Wanjiru Mambo
- 10 – 10:10 a.m. *The Evolution of Pro-Democracy Movements in China 1989-2014*  
Danielle Dance
- Art History**  
**Harris 214**
- 9:15 – 9:25 a.m. *The Duality of Love Within Caravaggio's Victorious Cupid*  
Breonna Harris
- 9:30 – 9:40 a.m. *On Caravaggio's Boy with a Basket of Fruit*  
Perla Gerez Hernandez
- 9:45 – 9:55 a.m. *Elevating Work; Vermeer's Lacemaker*  
Rachel Smith
- 10 – 10:10 a.m. *Americans in Rome: Edmonia Lewis and Harriet Hosmer*  
Sara-Rose Spann
- 10:15 – 10:25 a.m. *The Fan Bearers: Exploring Women's Roles as Models and Curators in Japonisme*  
Avery Williams
- Gender and Sexuality**  
**Science and Math Building (SMB) 118**
- 10 – 10:10 a.m. *Discerning and Living the Label: A Comparative Study of Sexual Identity Recognition and Expression in Heterosexually- and Non-Heterosexually-Identified Individuals*  
Georgia Meade
- 10:15 – 10:25 a.m. *From Dionysus to Drag Race: A History of Genderqueer Expression in Theatre*  
Sky Symonds
- 10:30 – 10:40 a.m. *Traditional Roles and Modern Constraints on Chinese Women*  
Jordan Johnson

**Student Mental Health  
Ledford 101**

- 10:15 – 10:25 a.m.** *Barriers to On-Campus Counseling for Meredith College Students Experiencing Symptoms of Anxiety and Depression*  
Alexandria Crank
- 10:30 – 10:40 a.m.** *Moving for your Mind: The Effects of Movement Improvisation on the Mental Health of College Students*  
Jordan Harrell
- 10:45 – 10:55 a.m.** *Stuck in the Mirror: Does a Mirror in Learning Choreography Affect the Mental Health of Dancers?*  
Savannah Stainback

**Applications in Data Science  
Science and Math Building (SMB) 162**

- 10:15 – 10:25 a.m.** *Examining Women's Health Equity with Machine Learning Techniques*  
Emma Brooks
- 10:30 – 10:40 a.m.** *Forecasting Energy Stock Prices Utilizing Historical Data and Time Series Analysis*  
Jessica Tan
- 10:45 – 10:55 a.m.** *Unlocking AI Potential in Bankruptcy Forecasting: Examining Artificial Intelligence's Efficacy with Altman's Z-Score Model with Publicly Traded Manufacturing Companies in the United States with Revenue Under \$500 Million Prior to 2020*  
Madison Helton

**AFTERNOON CONFERENCE SESSIONS**

**AFTERNOON POSTER PRESENTATIONS**

**Carlyle Campbell Library, Ground Floor**

- 3 – 3:45 p.m.** *The Impact of the 2022 Dobbs Decision on Voting Behavior in the 2024 Presidential Election*  
Bella Allen
- The Impact of Internship Experience on Individuals' Chosen Career Path and Identity Development*  
Laura Beltran
- Embarking on a Francophone Expedition: Tracing Cameroon's Cultural Threads*  
Nafissa Bia
- Effects of Applied Behavior Analysis Knowledge on One's Opinion of the Field*  
Ruth Cates
- Reasons for Greater Interpersonal Relationship Quality During Periods of Prolonged Anxiety in Young Adults Aged 18-25*  
Freya Dahlgren





**Effects on Learning**  
**Ledford 101**

- 1:30 – 1:40 p.m. *Interactions Between Language Experience and the Development of Language Prototypes*  
Constance Wesley
- 1:45 – 1:55 p.m. *TikTok and its Effects on the Sustained Attention of College Students*  
Kurstin Howe
- 2 – 2:10 p.m. *The Effect of Active Learning on Student Engagement*  
Margaret Golliher
- 2:15 – 2:25 p.m. *The Effect of Acute Exercise on Cognitive Performance*  
Shae-Lynn Henderson and Eliza Lewis

**Literature and Culture**  
**Harris 214**

- 2 – 2:10 p.m. *Coiling Catalysts: Tracing the Alchemical Dragon's Visual Traditions*  
Avery Williams
- 2:15 – 2:25 p.m. *Toxic Masculinity in The Great Gatsby*  
Kelsie Nesselrode
- 2:30 – 2:40 p.m. *From Confines to Freedom: Location as a Reflection of Anne Elliot's Internal World and Emotional Development in Jane Austen's Persuasion*  
Constance Wesley

**Chemistry and Mathematics**  
**Science and Math Building (SMB) 118**

- 2:15 – 2:25 p.m. *Topology of the Universe*  
Alexandra Cardoso-Garcia
- 2:30 – 2:40 p.m. *3D Printed Models of Electron and Molecular Geometry for Chemistry Education*  
Emily Angel
- 2:45 – 2:55 p.m. *Investigation of Tetrahydrocannabinol (THC) Analogues in North Carolina*  
Erika Vanada
- 3 – 3:10 p.m. *Synthesis of Fluorescein and its Derivatives*  
Grace Stutz
- 3:15 – 3:25 p.m. *Development of a Process Oriented Guided Inquiry Learning (POGIL) Style Lab Activity Using Förster Resonance Energy Transfer (FRET)*  
Sophia Bogan

## **The Impact of the 2022 Dobbs Decision on Voting Behavior in the 2024 Presidential Election**

**Bella Allen**

*Research Advisor: Dr. David McLennan;*

*Arts and Humanities*

After almost 50 years of Roe v. Wade (1973)  
precedent the U.S Supreme Court made the

## The Impact of Internship Experience on Individuals' Chosen Career Path and Identity Development

Laura Beltran

*Research Advisor: Dr. Mark O'Dekirk;  
Social and Behavioral Sciences*

Internships offer professional learning opportunities where students can work on real-world projects relevant to their subject of study or desired career path. Students can explore, improve their careers, and learn new skills during this time. The current study's goal was to demonstrate the relationship between internship experience and the current category of identity formation according to Marcia's theory of identity status. Students were expected to better understand the career they wanted to pursue and have developed a higher sense of identity achievement after completing an internship. Participants (N=7) completed a survey before and at the end of an internship experience with questions derived from the Development and Validation of the Occupational Identity Scale (Melgosa, 1987). These questions were rated on a 5-point Likert scale, with 1 being "strongly disagree" and 5 being "strongly agree." The second section of questions was adapted from a self-report instrument called the Objective Measure of Ego Identity Status (Adams et al., 1979). Statements were measured using a 6-point Likert scale, with 1 being "strongly disagree" and 6 being "strongly agree." Answers from both surveys were categorized into James Marcia's four identity statuses (i.e., foreclosure, achievement, diffusion, and moratorium). Due to the longitudinal nature of the design, we cannot yet make comparisons between the pre- and post-test measures. However, preliminary data shows that the majority of the participants fell under the identity status of moratorium.

## Embarking on a Francophone Expedition: Tracing Cameroon's Cultural Threads

Nafissa Bia

*Research Advisor: Dr. Veronica Machelidon;  
Arts and Humanities*

As the culmination of an independent study course in French, this presentation is the result of extensive research and exploration into the diverse cultural heritage of the Central African country of Cameroon. Attendees will be guided through an examination of Cameroon's ethnic groups and migration movements, contextualizing the country's cultural diversity within the broader narrative of colonization's lasting influence. Language emerges as a central theme, showcasing the diverse linguistic landscape that mirrors the complexity of Cameroonian society. Furthermore, a literary dimension will be introduced, featuring the poignant poetry of René Philombe, particularly his collection "Petite Gouffes de Chant pour Créer l'Homme," which offers profound insights into the human condition, with the themes of hypocrisy, hatred, racism, and xenophobia. Through Philombe's verses, we gain a heartfelt glimpse into the soul of the nation, as his words resonate with universal truths and timeless struggles. By considering these diverse perspectives, this presentation seeks to offer an authentic portrayal of Cameroon's cultural richness, celebrating its unique contributions to the global community.

less than 0.3% of delta-9-THC allowing domesticated animals access to delta-9-THC. Cannabinoids are metabolized differently in each species and there is little information about how they function within dogs, in which more research is needed. To explore these effects, a methodology was developed to extract and analyze delta-9-THC and its metabolites using HPLC from urine obtained from local animals who have ingested dog treats containing THC to determine how much THC is present within the sample and compare it to the pet's presenting symptoms.

### **Development of a Process Oriented Guided Inquiry Learning (POGIL) Style Lab Activity Using Förster Resonance Energy Transfer (FRET)**

**Sophia Bogan**

*Research Advisor: Dr. Andrea Carter;  
Natural and Mathematical Sciences*

The focus of this research is to develop a Process Oriented Guided Inquiry Learning

(POGIL) style laboratory activity



## **The Sounds and Dances of Eireann**

**Leah Bryant**

*Research Advisor: Dr. Demar Neal;*

*Arts and Humanities*

This presentation offers an insightful overview of the instruments and musical genres central to Irish dance. Highlighting various dance styles characterized by distinct time signatures, it provides a comprehensive exploration of Ireland's rich dance traditions. Delving into the historical evolution of instruments, from the ancient Irish harp to the contemporary button accordion, attendees gain a deeper understanding of the musical heritage underpinning Irish dance. By the presentation's conclusion, audience members will emerge with a nuanced appreciation for the diverse styles and historical significance of Irish dance music.

## **Topology of the Universe**

**Alexandra Cardoso-Garcia**

*Research Advisor: Dr. Phillip Andrae;*

*Natural and Mathematical Sciences*

Is there a limit to the size of the universe? Is it possible to travel very far in one direction and return to our starting point? To answer these and other questions about the topology of the universe, researchers have gathered data through satellites that have been sent into space to gather information on Cosmic Microwave Background (CMB). Studying the CMB is one way that researchers may be able to discover the topology of the universe. Many methods have been used, and while the data

## **Effects of Applied Behavior Analysis Knowledge on One's Opinion of the Field**

**Ruth Cates**

*Research Advisor: Dr. Candalyn Rade;  
Social and Behavioral Sciences*

Applied Behavior Analysis (ABA) is the science of behavior that can be used to help individuals with autism learn life skills (Kelly & Colon, 2022, p. 14). With growing practices and changes in empirical methods, the field of ABA has received some criticism and claims of lacking ethical parameters, making its application a hot topic of debate in recent years. Views of ABA may range based on personal experience, training, knowledge, and education. To that end, this study aims to explore the relationship between knowledge of ABA and one's opinion of the field.



describing negative perceptions or experiences, and some describing both negative and positive perceptions and experiences. To overcome these attitudinal barriers to care, more information about the benefits of mental health counseling, Counseling Center services, staff, and protocols should be made available to students so they can better understand the

## **The Evolution of Pro-Democracy Movements in China 1989-2014**

**Danielle Dance**

*Research Advisor: Dr. Jeffrey Matinson;  
Arts and Humanities*

Internal pro-democracy protest movements around the globe have resulted in laws being enacted, changed how governments function, and brought global awareness to what is going on in those countries. Protests in post-Mao China have happened for many years in multiple cities, two examples of which are the 1989 Tiananmen Square Protest in Beijing and the 2014 Umbrella Movement in Hong Kong. Three dynamic components involved in Chinese protests have been state authority, popular resistance, and global audience. I analyzed these three components of protest in the 1989 and 2014 cases. I find that their nature and impact have evolved in several ways between the 1989 and 2014 protests. From 1989 to 2014, the use of social media and protective gear were major factors in the Umbrella Movement. However, there was an increased use of censorship from the Mainland Chinese government. In the 1989 Tiananmen Square protest, the state authority used extreme force to end the protest. In both protest movements, the state authority was successful in their goals of condemning and ending the protest. In terms of popular resistance, the population was unsuccessful in their goals of creating change; however, they were able to get the global audience to support their movements.

## **How Bibliotherapy Can Be Used as a Healing Tool**

**Jessica Daugherty**

*Research Advisor: Dr. Pamela Norcross;*



were obesity (40.2%) and anxiety (33.0%). A majority (77.8%) experienced symptoms of at least one disease state. A majority of participants (53.1%) were categorized as food insecure. 49.5% of the sample used federal FA programs, 52.8% used food pantries, and 36.9% used additional community FA programs. Food insecurity and the use of federal FA were predictive of experiencing a health outcome (OR 3.29, 95% CI: 1.07-10.07; OR 0.58, 95% CI: 0.38-0.91). When controlling for language, only the use of federal FA remained significant, showing a 42% decrease in the odds of at least one negative health outcome with each additional federal FA program used. In conclusion, federal FA participation was found to be protective against negative health outcomes. However, use of community FA programs was more common among this sample, indicating a need to help Latinx communities overcome barriers to federal FA program use.

### **On Caravaggio's Boy with a Basket of Fruit**

**Perla Gerez Hernandez**

*Research Advisor: Dr. Beth Mulvaney;  
Arts and Humanities*

The Italian Baroque artist Caravaggio is known for the use of non-traditional imagery, the heavy reliance on models as a reference for paintings, the naturalist use of color, and the dramatic use of light and shade. His early work, paintings such as *Boy with a Basket of Fruit* (c. 1593), *Youth bitten by a Green Lizard* (c. 1594), and *The Lute Player* (c. 1596), depicted young boys and still lifes of flowers, fruits, and instruments. Sixteenth-century Italian critics criticized the stillness of Caravaggio's figures, his dependence on visual reference, and the lack of background of his paintings that were characteristic of his early work because they believed this demonstrated a lack of imagination. In his painting, *Boy with a Basket of Fruit* (c. 1593), Caravaggio transcends the mundane qualities associated with still lifes and genre scenes. While scholars focus on the

sexually suggestive nature of the painting, I will focus on his use of light, shade, color, and symbolism to create a tension between vitality and mortality. I will argue that the painting presents a visual antithesis between the naturalist depiction of the decaying fruit and the blemishless skin of the model being portrayed. Through research and analysis of Caravaggio's portrayal of youth, and the portrayal of fruit and in his paintings, the patronage under which the painting was created, and the symbolism of fruits in late sixteenth-century baroque art and literature, I will provide a further understanding of the symbolism in the painting *Boy with a Basket of Fruit*.

### **The Effect of Active Learning on Student Engagement**

**Margaret Gollither**

*Research Advisor: Dr. Cecilia Toole;  
Social and Behavioral Sciences*

This study explores the impact of active and passive learning on student engagement. Active learning places the responsibility for learning on students while educators facilitate, whereas passive learning leaves educators responsible for student learning. Student engagement is a critical factor in student achievement, making it important to understand the learning process that best supports it. The study involved observations of first-grade students as they participated in multiple active and passive learning experiences. The researcher gathered data on student engagement during multiple sessions of each lesson type. Observations showed that active learning strategies resulted in student engagement more often through more occurrences of on-task behaviors than occurred during passive lessons. The results of this study can help educators understand why it is important to implement active learning strategies in classrooms to boost student engagement and subsequently student achievement.

## **The Relationship Between Bilingualism and Communication Style in Conversation**

**Yakira Gonzalez**

*Research Advisor: Dr. Mark O'Dekirk;  
Social and Behavioral Sciences*

Gesturing has been shown to play a crucial role in human communication (Frick-Horbury & Guentag, 1998). The present study compared levels of self-reported language proficiency (monolingual vs. bilingual) on the amount of filler words and gestures used when conversing. The aim of the study was to demonstrate if monolingual individuals (English speaking only) will gesture and use filler words more than bilingual individuals (English and Spanish speakers). Participants (N=16) were divided into two groups depending on if they spoke English only or English and Spanish. Using a 7-point Likert scale, participants who spoke both English and Spanish were asked to assess their degree of proficiency in both languages. Participants were then read a short story (The War of the Ghosts; Bale, 1932) that contained significant detailed information. Participants were then asked to retell as many details as they could remember about the story while being videotaped. The variables that the study examined were their use of "filler words" (e.g., like, and then, so, um) and their use of gesturing when attempting to recall information from memory. Data collection is ongoing, but preliminary data (N = 16) suggests no differences between the two groups in terms of the number of filler words used between monolinguals and bilinguals (e.g., "and then"). Also, there appears to be early evidence that monolingual subjects utilized more gesturing when retelling the story than bilinguals, however due to the large amount of variability in the data the difference was not statistically significant.

## **A History of Colombian Salsa**

**Jordan Greenway**



financial analysts who fear AI may evolve into a technology that could overtake their jobs. However, as AI grows increasingly more popular in job functions, many people are becoming more concerned about reliability, as artificial intelligence has often provided inaccurate facts, outdated information, and biased results. One way that AI has evolved in the workplace is as a data analysis tool. Generative AI technology, like ChatGPT, can take a data set and analyze the data however the user specifies. The user could have generative AI run analysis on financial data and determine profitability and liquidity ratios, trend and risk analyses, and forecasting. One area of analysis that concerns many financial analysts and stockholders is bankruptcy analysis. This research seeks to determine if generative AI can predict bankruptcy using Altman's Z score model for publicly traded manufacturing companies in the United States, prior to year 2020, with annual revenues under \$500 million. To achieve this, balance sheets, income statements, and 10-k forms undergo Altman's Z-Score analysis through ChatGPT. The subsequent results are then compared to an Altman's Z-score analysis performed by a human. Then, by comparing the two analyses, we can determine if AI can accurately predict bankruptcy in this sector.

## **Antibiotic Resistance Found in Soil Samples**

Charlotte Hemby and Elizabeth Per and liqSO gs.36 qlorEMC P Kang (en-US)MCID 175 BDC BT0.584 0.0

potential self-selection bias, and participation in different activities across the teams may influence results.

## **Fast Fashion's Negation of Cultural and Environmental Sustainability and The Lasting Impact on Minority Communities**

**Tiani Hinnant**

*Research Advisors: Dr. Jessica Palmer and Dr. Hyojung Cho; Social and Behavioral Sciences*

According to James (2022), The Fast fashion industry “[seeks] to bring the newest trends to consumers at the lowest prices possible.” (p. 247-248) and is known for having thousands of new styles presented to consumers weekly (Kluth, 2022, p. 787). In recent years, the fashion industry has also been known for many negative and unethical practices. Many of these practices fall into the realm of culturally unsustainable, and they include design piracy, child labor, and environmental harm. It is important to highlight the areas within cultural sustainability where the fast fashion industry falls short because fast fashion affects our world. The fashion industry has one of the biggest global carbon footprints and fast fashion's wasteful nature is a major contributor to that (Kluth, 2022 p.788) This literature review can shed light on the unethical practices of an entire industry and spread awareness of a problem affecting many people.

The focus of this review will include highlighting the practices of the fashion industry that fall into the category of culturally unsustainable and show the intersection of fast fashion's unsustainable practices with minority communities. The criteria used for selecting literature for this review included nine peer-reviewed journal articles that defined the fast fashion industry and cultural sustainability, described ways fast fashion has not been sustainable and tied the fast fashion industry to cultural and environmental sustainability.

## **TikTok and its Effects on the Sustained Attention of College Students**

**Kurstin Howe**

*Research Advisor: Dr. Mark O'Dekirk; Social and Behavioral Sciences*

Academic performance requires one to give their undivided attention for various tasks. Research has shown that academic performance in college students can be negatively impacted by social media usage when used for social reasons (Lau, 2017). This study investigated the effect of TikTok on one's sustained attention span. Participants (N = 22) were traditionally aged college students who completed one of two tasks (watching TikTok for 10 minutes vs. watching a 10 minute TedTalk video). They then completed a 30-minute (1200 trials) sustained attention task where each trial consisted of a number presented on a computer screen that increased by one number on each successive trial. Occasionally, the number would skip two places rather than the expected one place. This event was considered the “target event” where the subjects were required to press the spacebar as fast as possible. The dependent variable was measured in average response times to the target event (msec) and the percentage of trials with a mistake (a missed target or a false positive response). The results were broken into three periods of time; 0-10 minutes (Block 1), 11-20 minutes (Block 2), and 21-30 minutes (Block 3). I predicted that using TikTok will result in an increased reaction time and more errors compared to watching a TedTalk video. Results for the TedTalk group showed significantly slower responses and significantly more errors as the task continued. There were no significant differences for the TikTok group.



## Evaluating Trust in Physicians with a QuantCrit Lens

Claire Jacoby

*Research Advisor: Dr. Candalyn Rade;  
Social and Behavioral Sciences*

Many factors, including trust in their physician, may serve as barriers to birthing peoples' disclosure of their mental health symptoms during the perinatal period (Bell et al., 2011). This may be especially apparent in the US, where financial poverty is a predictor of postpartum depression (Segre et al., 2007). People of minority races face unique barriers to disclosing symptoms, such as fear of social service involvement (Adlington et al., 2023), or racism (Mishra et al., 2009). Quantitative Critical Race Theory (QuantCrit) emphasizes disaggregating racial categories to avoid masking important differences, which may occur when heterogeneous groups are treated as uniform (Castillo & Gillborn, 2023). Thus, the current study explores the use of QuantCrit to examine the relationship between trust in physicians, income level, and race. Participants (N = 125) were birthing people recruited from a multi-site study assessing prenatal care. Data were collected at six-weeks postpartum from all participants via online surveys.

## **Traditional Roles and Modern Constraints on Chinese Women**

**Jordan Johnson**

*Research Advisor: Dr. Angela Robins;  
Arts and Humanities*

This presentation will consider how traditional gender roles, influenced by filial piety, a concept dating to Confucius, have constrained women and feminist activists in China's Modern period (1980s-present.) Confucian ideology has persisted throughout Chinese history and has adversely affected women, most notably in the practices of widow chastity and footbinding. Under Mao (1949-1976) and communism, religion was ousted as one of the four "olds". The "olds" were concepts from pre-communism that Mao and his government wanted to abolish, giving women an illusion of gender equity. However, we see the re-emergence of Confucian ideology in the late 70s and early 80s, as the country left communist policies behind. Various primary and secondary sources allow an examination of the evolving societal expectations of women in Chinese history, and help explain why modern Chinese women and feminist activists have consistently faced setbacks in advocating for themselves, including ongoing oppression of women under current president Xi Jinping's government.

## **Online Journaling and its Effects on Stress and Mood**

**Sarah Johnson**

*Research Advisor: Dr. Andrea McPherson;  
Social and Behavioral Sciences*

This study explores the potential benefits of online journaling on an individual's stress and mood, specifically focusing on the impact of online engagement through comments and how that can improve stress and mood. Twenty-two undergraduate students (N=22) were asked to complete a modified version of The Brief Perceived Stress Questionnaire (BPSQ; Cohen, Kamarck, & Mermelstein, 1983), a global measure of perceived stress as a pretest. After the pretest, groups were split into a control group and experimental group.

The control group participants were given a prompt to talk about their day, whereas the experimental group was given the same prompt but then asked to comment and read others' prompt responses. At the end of each day, both groups were asked to complete the same BPSQ. The researcher hypothesized that the experimental group would show a lower post BPSQ score showing that they had lower stress levels after reading and responding to others journal entries. The study was initially planned for seven days; however, due to technical error, this was limited to three. Given observations made by the researcher, dropout percentages for each group were calculated to gauge overall participation. The experimental group had the highest dropout rate (drop out rate=54%). The control group also had a noticeable percentage of dropouts (drop out rate=27%);

a quantitative and qualitative comparison between the two beetles as a way to evaluate which would be best suited for taxidermy and skeleton preparation. For this study, we created

back to the influence of ritual and rhythm brought by African slaves. Through this African influence came the evolution and significance of Afro-Cuban genres such as Rumba, Danzón,

does not indicate it is more vulnerable to collisions. This highlights the need to protect birds from window collisions in general and not just during the migration season. With this data, I advocate for Meredith to install anti-bird strike window film on its buildings, starting with the Science and Math Building, which had the highest number of bird strikes on campus.

### **Discerning and Living the Label: A Comparative Study of Sexual Identity Recognition and Expression in Heterosexually- and Non-Heterosexually-Identified Individuals**

**Georgia Meade**

*Research Advisor: Dr. Amie Hess;  
Social and Behavioral Sciences*

In the years since the American Gay Rights Movement began in the early 1900s, individuals that identify as sexual minorities have gained a degree of mainstream acceptance in American society. For example, according to a recent poll from PEW Research, about 61% of Americans hold positive views of same-sex marriage (Borelli 2022). Despite this, LGBTQIA+ individuals continue to face difficulties recognizing their sexuality and feeling comfortable expressing their sexual identity. Research in this field indicates the presence of a sexual hierarchy in American society that values and rewards heterosexuality above other identities (Rubin 1984; Marchia and Sommer 2017). In this study, I analyze the influence of sexual identity and race on the age at which individuals first identify and first feel comfortable expressing their sexuality. The project uses data from 16 in-depth interviews with a mix of LGBTQIA+ and straight individuals between the ages of 18-52. The sample includes seven White and nine non-White respondents. I find that sexual identity and race have notable impacts on the age at which individuals recognize and express their sexuality with an average recognition age of 4.928 years for heterosexual individuals and 11.833 years for non-heterosexual individuals, respectively. The mean age difference is even greater when looking at the non-White sample.

This research contributes to a body of work that increases understanding of cultural differences and barriers for White and non-White queer individuals.

### **Toxic Masculinity in *The Great Gatsby***

**Kelsie Nesselrode**

*Research Advisor: Dr. Kelly Roberts;  
Arts and Humanities*

This project discusses toxic masculinity in Fitzgerald's classic novel *The Great Gatsby*.

The project offers insights by literary critics that a 21st century understanding of how

toxic masculinity is portrayed in the novel.1 (ch c)30 (on)20

had reached out to staff/faculty for help, and if they received mental health support from another source such as the chaplain's office or counseling center. It was hypothesized that students would not feel comfortable reaching out to faculty and staff regarding mental health. Participants completed a 26-item survey that asked questions related to their mental health and their relationships with faculty and staff on campus. Contradictory to the hypothesis, the correlations suggest that participants do feel supported by faculty and staff at Meredith College ( $p < 0.001$ ). These results were statistically significant. Implications that are discussed will be ways to help improve faculty/staff's mental health training and build stronger student-faculty/staff relationships.

### **The Synthesis of Oleanolic Acid and its Derivatives in Yeast Cell Cycles**

**Katie Juarez Olvera, Jakelin Santos Reyes, and Vanessa Jaimes Bustos**

*Research Advisors: Dr. Walda Powell and Dr. Karthik Aghoram; Natural and Mathematical Sciences*

The project will focus on the synthesis of derivatives of Oleanolic acid and investigate their effect on yeast cell proliferation as a model for anti-cancer drugs. Anticancer drugs are often identified by their ability to alter or slow down cell proliferation. The natural

## **Revitalizing Student Housing: A Case Study of Redesigning Student Housing and Lounge Spaces at Meredith College**

**Claire Parker**

*Research Advisor: Dr. Julie Watkins;  
Social and Behavioral Sciences*

Approximately eighteen million American students are enrolled in US colleges. Residence halls, on-campus apartments, and off-campus housing options should promote personal, social, and academic growth. This study investigates the transformative process of redesigning student housing and lounge spaces at Meredith College and in Raleigh, aiming to create environments that foster holistic student well-being, social interaction, and academic success. Through an approach involving student feedback and prior research, a comprehensive redesign was formulated using digital media software. The redesigned spaces focus on integrating architectural innovations, ergonomic furnishings, and technological advancements tailored to meet contemporary students' evolving needs and preferences. Key factors considered in the redesign process include functionality, aesthetics, comfort, accessibility, and technology integration. Traditional dormitories are reimaged to offer enhanced privacy, communal areas for socialization, and study spaces conducive to academic pursuits. On-campus apartments are evaluated for their suitability as study environments, examining factors such as noise levels, furniture arrangements, and amenities. Additionally, off-campus apartment options are explored to provide insights into students' living arrangements beyond the campus borders.

## **Investigating Milk's Protective Influence on Probiotic Bacteria in Low pH Environment**

**Honeysa Patel**

*Research Advisor: Dr. Jason Andrus;  
Natural and Mathematical Sciences*

The probiotics industry has witnessed substantial growth in recent decades and is poised for further expansion. Widely prescribed

for various conditions such as antibiotic-associated diarrhea and urinary tract infections, the efficacy of probiotics raises critical questions due to disparate and conflicting data supporting their role in different conditions. A pivotal factor influencing probiotics is the highly acidic pH of the stomach, ranging from 1.5 to 2.0, whereas probiotics thrive in a pH range of 5.5 to 6.2. Previous studies in this lab demonstrated the negative effects of low pH on probiotic supplement viability. The current work investigates the protective role of nonfat dried milk against a low pH environment mimicking the stomach's harsh conditions. The study involves exposing probiotic bacteria, *Lactobacillus rhamnosus* GG, to this solution with and without the milk powder. Subsequently, the collected data, counted colony-forming units (CFUs) at various time intervals and plated at different ratios, is analyzed. The outcomes aim to deepen the understanding of probiotic behavior in the human gastrointestinal system, especially when consumed with dairy products. This knowledge can have profound implications for the development of probiotics and the formulation of products with improved delivery systems, ultimately enhancing their efficacy and health benefits in humans.

## **Potential Effects of Influx of Cooling Tower Water on Meredith College Lake**

solution. This study aims to understand how the influx of this cooling tower water might affect the organisms in Meredith Lake by exposing the freshwater crustacean *Daphnia magna* to different test solutions of lake and cooling tower water and monitoring them for survivability. Water chemistry testing was also performed to determine the concentration of different compounds present; cooling tower water had the highest levels of all compounds tested. After running the experiment for 168 hours, 100% lake water had the highest survivability of *D. magna* and 100% cooling tower water had the lowest, showing a 33% decline in survivability relative to lake water. There was no significant difference between the survivability of a 50:50 lake:tower solution and a control of spring water. Based on the results of this experiment, it is possible that the addition of cooling tower water may have negative effects on macroinvertebrate life cycle stages, and careful monitoring will be needed to ensure the health and stability of the Meredith Lake ecosystem.

## **Image Processing Development of Coated Aluminum Corrosion**

**Kendall Putnam**



**Thematic Analysis: West Virginia v.  
Environmental Protection Agency and  
Subsequent Climate Policy**

**Ashton-Bre e Rusthoven**

*Research Advisor: Dr. David McLennan;  
Arts and Humanities*

In West Virginia v. Environmental Protection



whether or not they were infected with Bd and/or Bsal. Surveying for Bd and Bsal in Wake County amphibian populations is an important first step to understanding the overall health of local amphibians.

## **Americans in Rome: Edmonia Lewis and Harriet Hosmer**

**Sara-Rose Spann**

*Research Advisor: Dr. Beth Mulvaney;  
Arts and Humanities*

Edmonia Lewis and Harriet Hosmer were trailblazing American sculptors who gained prominence in Rome, Italy, during the nineteenth century; despite their shared dedication to the neoclassical style, their backgrounds and artistic approaches diverged significantly. Lewis, a woman of African American and Native American descent, infused her sculptures with heritage elements, celebrating marginalized identities and challenging prevailing norms. In contrast, Hosmer's sculptures were often rooted in classical themes and historical narratives, with less overt ties to personal or cultural identity.

The critical reception of their works also reflected societal attitudes of the time. Both faced accusations of taking credit for work produced by male counterparts or apprentices, a challenge exacerbated by prevailing gender biases. While such allegations were commonplace among their male contemporaries, Lewis and Hosmer faced heightened scrutiny due to their gender and minority status. Despite these obstacles, they persevered, navigating complex intersections of race, gender, and identity to carve out successful careers in a male-dominated field.

We can gain insight into these women's distinct artistic visions and personal journeys through a comparative analysis of specific works such as Hosmer's *Zenobia in Chains* and *Puck*, Lewis's *Poor Cupid*, and *The Death of Cleopatra*. Their ability to challenge conventions, confront adversity, and pave the way for future generations of women sculptors underscores their enduring legacy in the chronicle of Art History. In examining

their lives, works and primary documents, I will demonstrate each of these sculptors' paths to success. I will contextualize how Hosmer challenged traditional gender norms and social expectations and how Lewis included African and Native American heritage in her sculptures without risking financial or personal success.

## **Stuck in the Mirror: Does a Mirror in Learning Choreography Affect the Mental Health of Dancers?**

**Savannah Stainback**

*Research Advisor: Dr. Carol Finley;  
Behavioral Sciences*

This study aims to see if there is a difference in dancers' logged mental health after learning a Jazz, Ballet, and Modern/Contemporary dance 32-count phrase in a space with a mirror versus their logged mental health after taking a Jazz, Ballet, and Modern/Contemporary dance 32-count phrase in a space without a mirror. Mirrors are constantly used in Western dance technique classes to establish and give feedback about body alignment, timing, and movement qualities. However, mirrors are just as often a hindrance to dancers' self-esteem as they develop an unhealthy view of their bodies and abilities. In this study, college-trained modern dancers from Meredith College's Meredith Dance Theatre will be given a questionnaire about their current mental health state after learning a Jazz, Ballet, and Modern/Contemporary 32-count phrase in a dance studio with a mirror in front and to

## Synthesis of Fluorescein and its Derivatives

Grace Stutz

*Research Advisor: Dr. Alexandra Ormond;  
Natural and Mathematical Sciences*

Fluorescein is a well-known dye used in ophthalmology to detect eye problems including tears of the sclera and iris. Certain derivatives of fluorescein have been proven to have antimicrobial properties, which can potentially be used as antibiotics. This study was focused on the synthesis of fluorescein and fluorescein derivatives, with emphasis on analysis and comparison of optical properties and purity through use of H-NMR, UV-VIS, and FTIR. The derivatives were prepared using hydrazine monohydrate, methanol, ethanol, isopropanol, ethylene diamine, and acetic anhydride as reagents, respectively. The presentation will focus on results of synthesis and analysis of fluorescein

## **Investigation of Tetrahydrocannabinol (THC) Analogues in North Carolina**

**Clary Taylor and Peyton Vanada**

*Research Advisor: Dr. Jessica Thorpe;  
Natural and Mathematical Sciences*

Since the passing of the 2018 Farm Bill and the North Carolina Farm Act in 2021, the sale and recreational use of hemp-derived tetrahydrocannabinol (THC) products in North Carolina has skyrocketed. However, the market for these products is not federally regulated and production and quality vary wildly from company to company. Without regulation there is no accountability for actual versus advertised THC content in these increasingly popular commercially available products. Here we show the actual versus advertised cannabidiol (CBD), cannabinol (CBN),  $\delta$  THC and  $\gamma$  THC content of a variety of these products obtained from stores in the Raleigh, NC area. Using a variety of methods, we extracted THC from hemp-based products and, using Gas Chromatography-Mass Spectrometry (GC-MS), identified relevant compounds.

## **Memorable Melodies: The Intersection of Music and Mnemonics**

**SarahElla Trustman**

*Research Advisor: Chelsea Waddelow;  
Arts and Humanities*

As a student and teacher of mnemonics for the past decade, and a musician for over three decades, I am fascinated by the link between music and memory. Throughout history, elders, shamans, and scholars around the globe have traditionally used mnemonics (memory systems) to recall vast amounts of cultural knowledge. Modern psychological researchers are working to unlock these mysteries, although much of this research overlooks the incorporation of musical elements within ancient memory systems. This presentation covers my literature review of the existing research in this important interdisciplinary intersection. We will explore what makes a good musical mnemonic, what mistakes to avoid in creating one, and what best practices

are supported by current research. I will teach and demonstrate a few of my favorite musical mnemonics, and hope to inspire you to incorporate musical mnemonic devices into your teaching and learning. Finally, this presentation introduces my ideas for the future of research in this exciting area.

## **Soundtracking Concentration: Investigating the Impact of Music on Attention and Distraction**

**SarahElla Trustman, Tiffany Millner,  
Josephine Mulveny, and Harini Sivaraman**

*Research Advisor: Dr. Candalyn Rade;  
Social and Behavioral Sciences*

Whether music aids in concentration or introduces distraction is a topic of great debate, both within and outside the research literature. The aim of this study was to explore the effects of familiar music on distraction and, conversely, attention. Hypotheses predicted that music would reduce attention and increase distraction. Additionally, influence was predicted to vary depending upon the level of familiarity of the music and lyrics. Seventeen undergraduate students participated in a post-test dependent design. Participants

different musical conditions exploring these dimensions would further illuminate the best musical practices to improve attention and aid in cognitive tasks.

(1817) is one of her most emotionally mature works. The novel examines the capable yet unappreciated Anne Elliot, who crosses paths with her former fiancé, Captain Frederick

## **Investigation of Tetrahydrocannabinol (THC) Analogues in North Carolina**

**Erika Vanada**

*Research Advisor: Dr. Jessica Thorpe;  
Natural and Mathematical Sciences*

Since the passing of the 2018 Farm Bill and the North Carolina Farm Act in 2022, the sale and recreational use of hemp-derived tetrahydrocannabinol (THC) products in North Carolina has skyrocketed. With the increase in sales, the market for these products must continue to pass federal regulation to maintain legality. This becomes an issue when production and quality vary from company to company. Through this project, we are testing how these local commercial products' actual versus advertised THC content compare. Over three semesters we worked to develop a method to analyze these products by Gas Chromatography-Mass Spectrometry (GC-MS) and created a library of cannabidiol (CBD), cannabinol (CBN),  $\delta$  THC and  $\gamma$  THC, Hexahydrocannabinol (HHC) and Cannabigerol (CBG). This method and library allowed us to use our extractions from various products and identify the cannabinoids they contained. A calibration curve was created to quantify how much  $\gamma$  THC is present. Through testing these products, we have found products that tend to contain unlisted and unadvertised cannabinoids; however, using our calibration curve we have yet to find products above the legal 0.3%  $\gamma$  THC limit.

## **From Confines to Freedom: Location as a Reflection of Anne Elliot's Internal World and Emotional Development in Jane Austen's Persuasion**

**Constance Wesley**

*Research Advisor: Dr. Robin Colby;  
Arts and Humanities*

Out of all her novels, Jane Austen's *Persuasion*

conceptualizes language as a prototypical category based on an individual's previous language experience and their perception of linguistic patterns within a particular language. Utilizing a lexical decision task, English-speaking participants with varying levels of Spanish language experience (N = 26) categorized stimuli as real Spanish words or pseudowords according to their knowledge and perceptions of the Spanish language. I hypothesized that participants with greater Spanish experience would have a higher percentage of correct responses and quicker response times compared to their peers with less Spanish experience. I also hypothesized that participants with a moderate level of Spanish experience would incorrectly categorize pseudowords as real Spanish words at a higher rate compared to participants with little to no Spanish experience and participants who are fluent or nearly fluent Spanish speakers. Data collection is ongoing, but preliminary analysis shows that participants who claim to be bilingual Spanish and English speakers demonstrate an improved ability to discriminate between word and nonword stimuli. Additionally, preliminary observations suggest that people with some Spanish experience are more likely to incorrectly categorize nonwords as real Spanish words.

## Japanese Music

**Natalie Wiese**

*Research Advisor: Dr. DeMar Neal;*  
*Arts and Humanities*

Japanese music has a very distinct sound. This may be due to its ancient musical roots. One of the earliest genres of music in Japan is the Min'yo style of music. Min'yo music sounds different from Western music because it uses foreign instruments. Min'yo instruments include the koto (similar to a harp), shamisen (similar to a banjo), shakuhachi (similar to a recorder), and the taiko (Japanese drum).

Different regions have their own distinctive style of Min'yo music. The Tsugaru region is famous for its instrumental shamisen style. I will play a recording of an instrumental shamisen

style piece and give a brief analysis about what makes it sound different from Western music.

Music is constantly changing. The Okinawa region is famous for being able to update its music with more modern elements while still not losing their Japanese musical identity. Soul Flower Union is a rock band that uses traditional Japanese instruments but combines them with more Western instruments like the keyboard. I will play a short recording of their song "Mungetsu no Yuube" and analyze the song's unique harmonic style.

Through the analysis of Japanese music, I hope to showcase what makes Japanese music sound so different from Western music.

## Coiling Catalysts: Tracing the Alchemical Dragon's Visual Traditions

**Avery Williams**

*Research Advisor: Dr. Shannon Grimes;*  
*Arts and Humanities*

Alchemy, the historical progenitor of chemistry, is a complex and ancient practice consisting of religious and chemical traditions that span various epochs and cultures. Pursuing the secrets of transmutation, Alchemists created a sophisticated visual language of symbols to veil their work in mystery and allegory. The scholarship on alchemy's rich visual language has remained understudied, leaving a gap in understanding regarding its intricate symbolism and cultural significance. This essay delves into the visual evolution of a critical alchemical symbol: the dragon. It traces the continuity and changes of the alchemical dragon from its origins in ancient Egyptian mythology through the realm of Greco-Egyptian alchemy. Subsequently, it explores the symbol's evolving contexts influenced by European folklore and the symbolic backgrounds of Christian dragon-slaying traditions. The essay further examines the widespread use of the alchemical dragon as a physical and mystical symbol during the early modern period in Europe. This research aims to illuminate the symbolic significance and transformative symbolism inherent in the alchemical dragon—an ancient symbol

that encapsulates mythological and religious importance, embodying the essence of alchemical transmutation and spiritual enlightenment that has retained its remarkable consistency from its first use in an alchemical context over nearly two millennia ago.

## **The Fan Bearers: Exploring Women's Roles as Models and Curators in Japonisme**

**Avery Williams**



antimicrobial resistance in bacteria associated with domesticated cows, offering critical information for public health and food safety considerations. The methodology involves a comprehensive examination of ground beef samples through serial dilution techniques, with subsequent biochemical characterization of bacterial isolates to evaluate their susceptibility to a range of antimicrobials. The findings aim to enhance our understanding of antimicrobial resistance dynamics in meat products and provide a basis for informed strategies in mitigating potential risks associated with the consumption of such products.

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