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2022

## 2022 Program

University of Missouri-St. Louis

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UNIVERSITY OF MISSOURI-ST. LOUIS

**UNDERGRADUATE**  
**RESEARCH**

*symposium*

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**APRIL 29, 2022**

**MILLENNIUM STUDENT CENTER**

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Celebrating student research,  
independent studies, exploration,  
& achievements from all disciplines

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# Thank You

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Susan Brownell	Matias Enz	Lesley Sieger-Walls
Ryan Carpenter	Dan Gerth	Ann Torrusio
Bettina Casad	Bruce Hamper	Kimberly B. Werner
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The Entire Honors College Faculty, Staff, & Student Workers  
(But especially Kim Baldus, Ann Marie Klues Jenna Haddock, & Ann Torrusio)

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**11:00-12:30**

Student Lunch  
MSC Century Rooms B&C

**12:00-2:30**

Oral Presentations  
MSC Room 313, 315, & 316

**1:00-3:00**

Visual Presentations  
MSC 3rd Floor Rotunda

**3:10-3:40**

Sponsor Speakers Panel  
*Thinking Outside the Lab*  
MSC SGA Chambers

**3:30-5:00**

Social Hour &  
Recognition Reception  
MSC Century Rooms B & C

# ORAL PRESENTATIONS

## Anthropology Senior Seminar

12:00-1:15, MSC 313

Jesse James' Hideout or Civil War Midden?  
Steven Meyer, Tim Evers, & Ben Ebert

A New Life for UMSL's African Instrument Collection  
Brandon Elliott, Shane Devine, & Keith Stephens

Giving of One's Self: Perceptions, Experiences, and  
Motivations in United States Blood Donation  
Allison Huene, Jamie Jones, Hayden Steingrubby, & Alexis Warnecke

## Presentations from Honors History

12:00-12:55, MSC 315

How Suzanne Collins' Hunger Games Can Change the World  
Jacob Fox

The Original Kim: A Deep Dive on the Founder of the DPRK  
Joseph Lee

Totalitarian Tendencies of Orbán's Hungary  
Rachel Reiss

1:00-1:40, MSC 315

Vasily Grossman and Ilya Ehrenberg:  
Soviet Jews on the Nazis and Soviets

Joshua Heisel  
Putin's Russia: Lineage of Totalitarianism  
Micah Hillier

1:45-2:25, MSC 315

The Diversification of the Anti-Vietnam War Movement:  
An Analysis of the St. Louis Peace Information Center Files  
Reagan Elkhatab

The McCarthy Subcommittee: A Case Study  
Hudson Levanos

## Independent Projects

12:00-12:55, MSC 316

Ignorance is Far from Authentic Bliss:  
Consequences of Death Avoidance in Western Culture  
Natalie Bishop

Comparative Performance of Food and  
Nutrition Security Operations  
Maya Harter

Successful Women Majoring in STEM Have  
Higher Optimism and Lower Stigma Consciousness  
Bridget Muise & Dr. Bettina Casad

1:00-1:40, MSC 316

Mythos Modernized: Echoes of the Literary Past in  
Robert Eggers' *The Lighthouse* (2019)

Kayla Burrows  
A Study of Brain Cell Loss in the Student Body of UMSL:  
Brain Stew.

Cullen Landolt, Mya Horn, Aimee Q. Pieper, Abby 6. Wall, & Kenny "Special K" Miller Esq

# VISUAL PRESENTATIONS

## Posters 1-16

The Role of Omission in Self-Deception  
Natalie Bishop

Cinema Exhibition In St. Louis, 1920: A Thriving Business  
Sarah E. Boslaugh

Bridging the Gap: Informal Sex Education on TikTok  
Anne Brown

Tritons United: Against Gender-Based Violence  
Campus Programming  
Mackenzie A. Chrun & Maggie M. Gross

The Synthesis of Deuterated Isohumulones for Use as  
Internal Standards in LC-MS Stable Isotope Dilution Assays  
Patrick Gleason & Dr. Bruce Hamper

Analysis of SoxS in *S. typhimurium* by  
Transposon Mutagenesis  
Joel Hanns, Brenda Pratte, Dr. Lon Chubiz, & Lauren Daugherty

Competition Between Honey Bees (*Apis Mellifera*) and  
Native Bees: An Investigation in  
Urban Community Gardens in St. Louis, Missouri  
Owen Ireton

Assessing Student & Teacher Readiness for Online Learning  
Using a Dynamic Online Survey Coded in JavaScript  
Ryan Kelly

Resolving the Repression Pathway of  
Virulence Gene *hilA* in *Salmonella*  
Alexandra King, Dr. Lon Chubiz, Brenda Pratte, & Lauren Daugherty

The Effects of Floral Attributes and  
Conspicifics on Bumble Bee Forager Memory  
Lucas Lauter & Tiffany Dinh

Mow It or Grow It?  
Neighborhood Survey of UMSL Sustainability  
CRT Moorhead

Externalizing Behavior Predicts Differential Patterns  
of Substance Use among Adolescents by Race  
Andrea Palacios

Analyzing the Variable Pain  
Payton Ruediger, Dr. Ryan W. Carpenter, & Melissa Nance

The Relationships Between Perceived Social Support,  
Discrimination, Distress, and Alcohol Usage  
Kylie Thorwardson, Dr. Ryan Carpenter, & Melissa Nance

DNA Methylation May Be Associated with  
Childhood Adversity in Community Samples  
Elizabeth Whitmore & Dr. Sharlee Climer

Synthesis of Curcumin Derivatives:  
Increasing Compound Stability  
Chloe Wilke

# VISUAL PRESENTATIONS FROM THE DISEASE OF FEAR AND THE FEAR OF DISEASE

## Posters 17-32

Alzheimer's: The Invisible Second Victim  
Emma Alberty

Polio: Healthcare Workers Murdered  
or Eradication Efforts  
Emily Beauto

Malaria: Existence Perpetuated by a  
Counterfeit Drug Industry  
Nicholas Black

Eating Disorders: Creating a New Standard  
Bree Carlton

Tuberculosis: Illegal Immigrants and  
Deadly Spread  
Abigail Foust

Staph Infection: Hospitals Battle Against a  
Deadly Menace  
Mckenzie Lamos

Schizophrenia and Social Stigma:  
How Society Views Those With Mental Illness  
Rebecca Littrel

Asthma in St. Louis: A Crisis of Equity  
Ashley Maempa

E. coli: The 1993 Jack in the Box Nightmare  
Jared Morton

Rabies lyssavirus: A Vector for Stories  
Daniel Olejniczak

The Demise of the Beef Industry  
Natalie Powers

Leprosy: How it Defined a King  
Paul Sanders

Respiratory Diseases:  
Results of 9/11 Rescue and Recovery Effort  
Isabel Schnittker

Gender Dysphoria:  
The Widespread "Social" Disease of the 21st Century  
Aria Spencer

Gonorrhea: Tragic Effects on Women  
Aleah Thompson

Generalized Anxiety Disorder:  
Challenges in Everyday Life  
Chloe Wilke

## Alzheimer's: The Invisible Second Victim

Emma Alberty

*Faculty Sponsor: Rob Wilson*

Alzheimer's Disease (AD) is a progressive illness characterized by severe brain atrophy and accumulation of neurofibrillary tangles and neurotic plaques in the cerebral cortex. These symptoms lead to severe memory loss and confusion for the individual with AD, but this loss of memory also has a great effect on the family members caring for them. In the past the consequences of caring for someone with AD have been largely ignored and overshadowed by AD itself, however one should not ignore the drastic life changes the caregiver of an AD patient must make. Caregivers of AD patients must not only cope with the diagnosis of a loved one, but may also need to step up and take care of the logistics of the disease. This includes everything from paying for doctor's appointments, to designating a durable power of attorney (DPOA) to finding a nursing home for the individual with AD. Also, the financial burden of Alzheimer's treatment and care often falls onto the family. All these factors lead to a range of emotions and stress for the caregiver that should not be ignored by society.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 32**

## Polio: Healthcare Workers Murdered for Eradication Efforts

Emily Beauto

*Faculty Sponsor: Rob Wilson*

This project will examine the main reasons why polio eradication campaigns failed in Afghanistan and Pakistan. An expository approach was taken to discuss the social story of why southern Asia's distrust in American medicine was further solidified by the Osama bin Laden vaccine guise. These two countries' reactions were very similar in the fact that people who were trying to distribute the polio vaccine were often killed. The first reason was the wide insecurity within the countries after the search for Osama bin Laden was disguised as a vaccine campaign. The second reason was the misconceptions people had about the polio vaccine since most sources were deemed credible without reliable data. The last portion of the project focuses on the poor healthcare system in place at the time of these campaigns.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 31**

## The Role of Omission in Self-Deception

Natalie Bishop

*Faculty Sponsor: Gualtiero Piccinini*

Whether or not a self-deceiver has the intention of deceiving themselves is a highly debated topic. According to intentionalist theories, the individual does intend to deceive themselves; according to revisionist theories, they deceive themselves without the direct intention to do so. Kevin Lynch provides a non-intentionalist, revisionist account of self-deception which holds that self-deception is due to biased systematic processing. What this amounts to is that, according to Lynch, self-deception occurs because the self-deceiver intentionally seeks favorable evidence and critically scrutinizes unfavorable evidence while at the same time they unintentionally omit to scrutinize favorable evidence and seek unfavorable evidence, forming a bias that the self-deceiver is unaware of (biased systematic processing). While this depicts many cases of self-deception, there are also circumstances where the self-deceiver intentionally avoids opposing and unwelcome evidence, intentionally ignoring it. Lynch recognizes this, but doesn't include it within his model, vaguely stating that oftentimes people operate without such reflective awareness of their biases. Thus, my objective for this research was to uncover how intentional omissions fit within non-intentionalist, revisionist theories such as Lynch's. I argue that cognitive dissonance theory and the belief-disconfirmation paradigm within it shed light on these intentional omissions. When people are confronted with evidence that contradicts pre-established beliefs, they may intentionally omit to scrutinize evidence for their belief, or intentionally omit to seek out evidence for the contradictory belief due to the discomfort of cognitive dissonance.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 1**

## Ignorance is Far from Authentic Bliss: Consequences of Death Avoidance in Western Culture

Natalie Bishop

*Faculty Sponsor: Kate Votaw*

Authentic being-towards-death is a phrase taken from German Philosopher Martin Heidegger, who believed that avoiding death is avoiding a natural part of existence, creating an inauthentic reality. Within the current framework of western culture, confrontation of human finitude is replaced with death avoidance, creating that aforementioned inauthentic reality. This avoidance of death restricts certain abilities to mourn and grieve for the dead, creates an environment where it is difficult to observe death in relation to the self, and heavily restricts discourse on the topic that would spread and impact cultural understanding. Assuming the true pursuit of authenticity is the mission to define meaning in relation to one's own finitude, one can also assume that authentic being directly relates to confrontation with finitude. There has been a large body of research dedicated to examining the impact of mortality salience (awareness of the inevitability of one's death), and the lack of, on feelings and perceptions of reality. Alongside previous research, this research aims to establish evidence of death as foundational to perception and neurocognitive development, demonstrate that conceptualization of death and related ultimate concerns of existence is fundamental in identity and life-planning, and suggest, based on the evidence of my research, that death avoidance within 'western' society represents a lack of authentic being-towards-death. In conclusion, I assert that western culture's lack of a widespread sense of authentic being-towards-death has negative consequences such as isolation and an inability to attune one's life to inevitable and unpredictable finitude, and will discuss how to increase feelings of support and community surrounding confrontation with, and anticipation of, death.

**MSC Room 316, 12:00-12:55**

## Malaria: Existence Perpetuated by a Counterfeit Drug Industry

Nicholas Black

*Faculty Sponsor: Rob Wilson*

Malaria is a mosquito-borne disease that has plagued society for thousands of years. Malaria is often overlooked from the perspective of wealthier industrialized countries due to prevention efforts largely eliminating malaria from these locations. However, overlooking malaria's continued global relevance is misinformed to the fact that nearly half the global population lives in regions at risk of malarial transmission. According to the CDC and WHO, such a high number of people at risk has subsequently led to an estimated 241 million cases and over 627 thousand deaths in 2020 alone. The purpose for the present research is to examine the continued prominence of malaria and highlight an often-ignored contributory factor to malaria's perpetuated existence: the production of counterfeit antimalarial medications and treatments. This issue is a main contributor to the continued existence of malaria, a largely preventable disease. Manufacturer greed is at the heart of this industry and is further exacerbated by inadequate international regulations. A plethora of issues are the byproduct of this industry. Namely, perpetuated poverty levels, increased child morbidity and mortality rates, and the development of treatment-resistant strains of malaria. In order to prevent global ramifications from occurring, countries must see this industry as problematic to the world as a whole and not just to malaria endemic regions.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 30**

## Cinema Exhibition In St. Louis, 1920: A Thriving Business

Sarah E. Boslaugh

*Faculty Sponsor: Lesley Sieger-Walls*

In 1920, St. Louis was the 6th largest city in the United States, with a population of 772,897, and density of 11,684/square mile (twice today's density). The population was primarily (90.9%) white, with 14.7% of the white population foreign born. The city had a dense trol-

ley network, while private ownership of automobiles was relatively rare (15.8 residents per car). Cinema exhibition was a thriving business in the city, with 120 cinemas and 29 film exchanges (as compared to, for instance, 12 live theatres in the same year).

Cinemas were located throughout the city, primarily on or near trolley lines. This was a practical necessity given that people of all ages and income classes went to the movies, and car ownership was rare. The film exchanges, which were the primary way cinema owners would obtain the films they showed in their theatres, were located along the central corridor, often in small clusters in business districts. This was also practical, because these exchanges were frequented by people working in the cinema exhibition industry, and because nitrocellulose film stock posed a fire hazard that would be unacceptable in a residential neighborhood. The lone exception among distributors was a distributor of religious films, located in Benton Park (South Saint Louis), whose customer base likely differed from that of the commercial film exchanges. The experience of "going to the movies" was more varied in 1920 than it is today. Film programs often consisted of a mix of short films, features, cartoons, and newsreels, and might also include live entertainment. All films were silent, but were frequently accompanied by live music, and sometimes by actors speaking the dialogue of the film. Cinemas themselves were also more varied, including custom-built buildings, some quite luxurious, adapted buildings, and air-dromes (open-air or tented facilities).

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 2**

## **Bridging the Gap: Informal Sex Education on TikTok**

Anne Brown

*Faculty Sponsor: Elaina Johns-Wolfe*

This study will explore the United States' lack of adequate and explicit sex education policy, and how adolescent and young adults' use social media to bridge their knowledge gap. I will perform content and discourse analyses of videos related to sex education on the online media platform TikTok. In particular, I will analyze the frequency and topic of videos and comments to understand how users interact in the platform. I expect to show how TikTok usage is representative of the evolution of informal sex education in the digital age. In particular, I expect that my analysis will allow us to understand how informal sex education, via forums like TikTok, might bridge the knowledge gap many adolescents and young adults experience (Teen Pregnancy and Prevention Partnership, 2019). Inadequate sex education can create disparities and stratification throughout our society, furthering producing inequalities.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 3**

## **Mythos Modernized: Echoes of the Literary Past in Robert Eggers' The Lighthouse (2019)**

Kayla Burrows

*Faculty Sponsor: Ann Torrusio*

During a 2020 interview, Robert Eggers' mentions his film *The Lighthouse* (2019) was inspired by Edgar Allen Poe's unfinished short story of the same name. Although the critical reception of *The Lighthouse* was primarily positive, critics struggled to categorize this film about two lightkeepers stationed on a remote New England island in the 1890s within a specific genre. Indeed, the film consistently slips between reality and dream, and the mounting tension throughout the film culminates in a final haunting vision that is never explained. This paper explores Eggers' literary inspirations for *The Lighthouse*, not only examining the obvious influences of Edgar Allen Poe, but also less obvious literary allusions from H. P. Lovecraft, folktales, and Greek mythologies. Through the analysis of the film *The Lighthouse* and its myriad influences, this paper argues how Eggers was able to successfully achieve this film's unique stylistic tone through its complex interplay between literary and mythical inspirations, thus creating a film that effectively bends genres to create an unsettling, uncanny effect on the viewer.

**MSC Room 316, 1:00-1:40**

## **Eating Disorders: Creating a New Standard**

Bree Carlton

*Faculty Sponsor: Rob Wilson*

Eating disorders are perhaps one of the most misunderstood diseases. Unlike other diseases, there has never been an epidemic of eating disorders. Rather, there has been an ebb and flow in the awareness surrounding them and the support for those that suffer. This research details eating disorders and the stereotypes regarding who falls victim to them, causes, the effect society has on eating disorders, and the effect disordered eating has on society. This study assessed the relationship sociocultural factors like culture, social media, and age have on eating disorders. Also assessed was the relationship between biological factors like gender and race and the role these factors play in perpetuating eating disorders. Eating disorders like anorexia nervosa and bulimia nervosa were assessed regarding the impact they have on aspects of society like family and beauty standards. The intent in analyzing these disorders is to not only develop a deeper understanding of the disease but to create a new standard of beauty. This new model would include inclusion and acceptance of all sizes and races.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 29**

## **Tritons United: Against Gender-Based Violence Campus Programming**

Mackenzie A. Chrun and Maggie M. Gross

*Faculty Sponsor: Kimberly B. Werner*

Tritons United Against Gender-based Violence is a programming grant funded by the Department of Justice office on Violence Against Women. This presentation will introduce the UMSL community to grant activities and the work I have supported throughout this semester as an undergraduate research assistant on the project. The project is led by a Coordinated Community Response Team (CCRT) that includes key members both within and outside the UMSL campus and in the surrounding community from professionals in areas of victim services, prevention & education, law enforcement/safety, and student conduct. The overall goal of Tritons United is to reduce gender-based violence and promote victim safety by increasing trainings & education on college campus, and to complete campus campaign events promoting victim services, effective responses, and safety protocols following a gender-based event on UMSL campus. This presentation will discuss current and upcoming activities to support gender-based violence prevention and education at UMSL. Opportunities for collaboration and engagement with the CCRT will be provided.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 4**

## **The Diversification of the Anti-Vietnam War Movement: An Analysis of the St. Louis Peace Information Center Files**

Reagan Elkhshab

*Faculty Sponsor: Christoph Schiessl*

The St. Louis Peace Information Center (STLPIC) was founded in 1967 as part of an outreach effort of the St. Louis chapter's Vietnam Summer opinion poll. The center in St. Louis was founded to coordinate anti-Vietnam War groups based nationally and locally, as well as to inform the public about its anti-war mission and activities. The archives of the Peace Center were donated to the State Historical Society of Missouri by former member, secretary, and board director Yvonne Logan. The records contain administrative records, flyers, newsletters, event advertisements, and more pertaining to the organizations the STLPIC partnered with throughout its seven years of activity. STLPIC hosted a variety of organizations appealing to different target audiences and encouraging them to protest the Vietnam War, including the Women's International League for Peace and Freedom, the Student Mobilization Committee, and the Vietnam Education Project. Although the St. Louis Peace Information Center was a small sector of the anti-Vietnam war movement, it represented a microcosm of the national movement. Its individual organizations targeted towards subgroups



enlarged the movement while also diversifying its efforts, overall increasing its effectiveness at enacting change and deescalating American involvement in Vietnam.

**MSC Room 315, 1:45-2:25**

### A New Life for UMSL's African Instrument Collection

Brandon Elliott, Shane Devine, & Keith Stephens

*Faculty Sponsor: Susan Brownell*

How should a collection of West African musical instruments - currently in the possession of an eliminated Anthropology department at the University of Missouri-St. Louis (UMSL) - be properly conserved, repaired if needed, and should they be displayed, stored, or donated to another home? The collection, located in the entry foyer of 501 Clark Hall on the UMSL campus, consists of eleven West African drums, three stringed instruments, and one lamellophone. Our team seeks to answer this question to preserve the musical culture of the peoples associated with these instruments. It is important to protect these instruments from degradation or misuse -- In the United States, where a large proportion of the population is descended from West Africans, they are part of the national heritage and have the opportunity to serve as powerful educational tools. The research methodologies will include online and library research to determine the cultural background of the instruments, their relative value, rarity, and the cost of repairs and transport; policy research into relevant UMSL policies and best practices in the relevant areas of preservation; semi-structured interviews of the items' donor and of area experts; photography of the instruments and visual research to assist identification; and analysis of the aesthetics, condition, and playability of each instrument. This research will result in a catalogue of the instruments, and will allow our team to make an informed recommendation to the University as to where and how the items should be stored, maintained, and/or best put to use.

**MSC Room 313, 12:00-1:15**

### Tuberculosis: Illegal Immigrants and Deadly Spread

Abigail Foust

*Faculty Sponsor: Rob Wilson*

Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis*. It most commonly affects the lungs, but it can develop elsewhere in the body. Untreated, tuberculosis usually leads to death. If tuberculosis is treated but consumption of the proper medicine is terminated prematurely, the bacteria can mutate into multi-drug resistant tuberculosis (MDR-TB). In the United States, the largest percentage of people with tuberculosis are foreign-born individuals. This is due to a number of factors, including cultural stigmas associated with tuberculosis and a hesitancy to get treatment. This is an especially prevalent issue in the case of illegal immigrants. First of all, these illegal immigrants probably were not screened for tuberculosis before arriving in the US, and therefore may not even know when they are infected. Second of all, even if they are aware that they are sick, most of them will avoid treatment because they fear being deported. The situation is only worsened by laws such as California's Proposition 187, introduced in 1994, which denies healthcare to illegal immigrants and requires doctors to report them to the immigration authorities. This law removes both the motivation and the resources for illegal immigrants to get treated for tuberculosis. Instead of fixing the problem of immigration, laws like Prop 187 make the tuberculosis situation in the United States worse, because they increase the likelihood that untreated immigrants will spread the disease to those around them.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 28**

### How Suzanne Collins' Hunger Games Can Change the World

Jacob Fox

*Faculty Sponsor: Christoph Schiessl*

A new form of government was introduced to the world in the 20th century: totalitarianism. This ideologically driven, power-hungry system was adopted by some of the most fearsome political leaders of

modern times: Hitler, Stalin, Mussolini, and Mao; each of these figures adopted his own form of totalitarianism, and each used it to run a terror-filled regime where his word was law. This presentation will be an examination of totalitarianism through the use of Suzanne Collins' series of novels, starting with *Hunger Games*. It will include an analysis of the regime presented within the books, an exploration of its representation of a totalitarian state, and an inquiry into how this work of literature can be used to promote social change and inspire action.

**MSC Room 315, 12:00-12:55**

### The Synthesis of Deuterated Isohumulones for Use as Internal Standards in LC-MS Stable Isotope Dilution Assays

Patrick Gleason & Dr. Bruce Hamper

*Faculty Sponsor: Bruce C. Hamper*

Humulones are compounds that are prevalent in the hops flowers (*Humulus Lupulus*) used in beer brewing. These compounds undergo isomerization during the brewing process, and the resulting isohumulones are considered to be the primary contributors to the bitter flavors present in beer. As such, quantifying their presence, and the relative presence of their homologs (n-, co-, ad-), is of great importance in the characterization of beer. In this effort, one of the homologs of humulone (co) was isolated before being subsequently isomerized and deuterated for the purpose of analyzing beer by stable isotope dilution assay mass spectrometry (SIDA-MS). The addition of this stable isotopically substituted isohumulone as an internal standard can potentially allow the comparative quantification of humulones, isohumulones, and oxidized humulinones present in a beer sample.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 5**

### Analysis of SoxS in *S. typhimurium* by Transposon Mutagenesis

Joel Hanns, Brenda Pratte, Lon Chubiz PhD, & Lauren Daugherty

*Faculty Sponsor: Lon Chubiz*

The mar-sox-rob regulon has been implicated in transcriptional regulation of several stress responses, such as efflux of antibiotics, enzymes that break down reactive oxygen species, repression of biofilm formation, or repression of motility through downregulation of flagellar expression. This system is conserved among enteric bacteria and has been studied in species, such as *E. coli* and *S. typhimurium*. Some of these mechanisms can be costly and slow cell growth while increasing the probability of survival through tolerance of toxic environments. SoxS works in coordination with SoxR to respond to redox stress encountered by the cell. Interestingly, the overexpression of SoxS in *Salmonella*, which may be due to some costly mechanism activated by SoxS. The exact identity of such a mechanism remains unknown. This study attempts to identify regions controlled by SoxS that are slowing growth through transposon mutagenesis in an inducible SoxS overexpression mutant. The inducible SoxS gene and transposon were transformed into the cell via electroporation. The mutants yielded from electroporation were then enriched for faster growing phenotypes using serially diluted culture. Mutants were then isolated from this culture and kinetically assayed for increased growth over the original, overexpression mutant. Kinetic assays are ongoing. Once mutants with increased growth patterns are identified and it is confirmed that the transposon is the cause of this increased growth, the mutants will be sequenced to identify genes that slow growth in the overexpression of SoxS.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Poster Number 6**

### Comparative Performance of Food and Nutrition Security Operations

Maya Harter

*Faculty Sponsors: Trilce Encarnacion, Matias Enz*

This research presents a systemic characterization of the different operational features of food and nutrition security supply chain opera-

tions. The results provide insight into the level of effectiveness of different approaches to mitigate food and nutrition insecurity. In-depth interviews were conducted in the St. Louis Metropolitan Area to gather data about the supply chain configurations employed by these organizations. Using a grounded theory approach, the authors extracted the common themes that characterize the organizational structures and supply chain dynamics from the organizations interviewed. The results discuss the chief conclusions and policy implications.

**MSC Room 316, 12:00-12:55**

## Vasily Grossman and Ilya Ehrenberg: Soviet Jews on the Nazis and Soviets

Joshua Heisel

*Faculty Sponsor: Christoph Schiessl*

Vasily Grossman and Ilya Ehrenberg were both significantly influential writers in the Soviet Union during and after World War II. Grossman and Ehrenberg were both Jewish war correspondents and witnessed Nazi war crimes. Prosecutors at the Nuremberg Trial used *The Hell of Treblinka*, written by Grossman, as evidence. Following the war, Joseph Stalin and the Soviet Union began to implement increasingly anti-Semitic policies. Jewish citizens faced discrimination, the Soviet state opposed “dividing the dead” of World War II, and it culminated in the Jewish Doctors Plot in 1953. Both writers covered extensively the Holocaust and how to treat Germany after the war. Grossman was more conciliatory compared to Ehrenberg’s fierce hostility. Both also elaborated on discrimination within the Soviet Union. Grossman, in particular, took it a step further and compiled highly damaging comparisons between Soviets and Nazi policies.

**MSC Room 315, 1:00-1:40**

## Putin's Russia: Lineage of Totalitarianism

Micah Hillier

*Faculty Sponsor: Christoph Schiessl*

Vladimir Putin is the current president of Russia and has taken many leadership cues from his country’s totalitarian past. Does Putin fit the mold of a classic 20th century totalitarian when one looks at examples like Hitler, Stalin, Mao, or the Kim dynasty? In what ways does Putin exhibit the telltale personality traits of these dictatorships? How does the current Russian administration’s policies, both foreign and domestic, mirror those of other authoritarian and totalitarian regimes?

The presentation will be a panel style discussion where these questions will be discussed and debated with research backed conclusions. Using historical examples of 20th century dictators, a clearer definition will emerge about what totalitarianism means and whether or not Vladimir Putin meets that threshold. Understanding the symptoms of totalitarianism is the only way to ensure its early diagnosis in the future.

**MSC Room 315, 1:00-1:40**

## Giving of One’s Self: Perceptions, Experiences, and Motivations in United States Blood Donation

Allison Huene, Jamie Jones, Hayden Steingrubby,  
& Alexis Warnecke

*Faculty Sponsor: Susan Brownell*

Through our research on blood donation, we hope to answer the following questions: Why do people donate blood? Do they perceive it as an altruistic donation or gift?

Our methods include semiotic analysis, survey distributed online, semi-structured interviews, qualitative research over social media platforms, and participant observation done through donating blood ourselves. Through seeking to gain insight on blood donation as a type of standardized gift given in a market economy, as well as examining the way donors view themselves and their action of giving, we may be able to provide suggestions for how blood shortages could be alleviated, or at least lay potential groundwork for further research. Based on the gift-giving models we identify, we will make recommendations about how blood-collecting organizations could impact donor behavior, increase their donor pools, and ultimately alleviate blood shortages. This research needs to be done, but it needs to be done correctly, within

reasonable scope and in the limited timeframe given. Because this project involves human participants at many stages, maintaining strict ethical standards of confidentiality will be a top priority; expectations set in place by the American Anthropological Association, UMSL institutional review board, and CITI human subjects research training will be followed. Healthy people can survive perfectly well after giving blood, but the recipients who need the blood need it whether it is available or not, making blood shortages a life-or-death situation. Contributing any useful knowledge that could mitigate this problem is the goal.

**MSC Room 313, 12:00-1:15**

## Competition Between Honey Bees (*Apis mellifera*) and Native Bees: An Investigation in Urban Community Gardens in St. Louis, Missouri

Owen Ireton

*Faculty Sponsor: Aimee Dunlap*

The European honey bee (*Apis mellifera*), is considered one of the worlds more important pollinator species and is often the focal species for bee conservation. However, lesser known native bees are equally, if not more valuable for pollination services. Native bees are better pollinators for native crop plants, but often must compete with honeybees for floral resources. There has been an increase in support for including honeybee hives in private and public spaces, but recent studies suggest that interactions between resident native bees and introduced honeybees can have long lasting and detrimental effects on population persistence. These interactions have been well documented in natural landscapes, but competition between bee species in the context of urban agriculture remains unknown. Therefore the goal of this study was to document interactions between native bees and honeybees in urban community gardens to elucidate differences in the number of competitive interactions and the competitive behaviors used by bees in urban regions. To accomplish this, we filmed flowers in three community gardens in Saint Louis, MO, one of which has four managed honey bee colonies and two that do not. We quantified known competitive behaviors for bees including chasing, dive bombing, pollen robbing and attacks. We found significant differences in both the frequency and type of competitive interactions between bee species and across surveyed community gardens. This information is vital for understanding the effects of introduced honeybee colonies in local landscapes, particularly in urban regions with already high selection pressures.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 7**

## Assessing Student and Teacher Readiness for Online Learning using a Dynamic Online Survey coded in JavaScript

Ryan Kelly

*Faculty Sponsor: Kate Votaw*

Independent Research in Honors is a course offered to honors students who desire to work independently on a project that involves substantial reading, research, or field work. My independent research was meant to challenge myself to create an interactive website while also researching and informing users about the benefits and disadvantages of online learning. In order to complete the necessary work, I needed to improve my knowledge on JavaScript. In addition, literature reviews were conducted to explore what worked well for students and teachers in an online environment, as well as what does not work. Among other findings, relevant conclusions were realizing the importance of feeling as if your schooling matters, and is influenced by many personal factors, such as field of study, digital competency, and need for social interaction. Upon exploring coding techniques, psychological and educational literature, a functional website was created to help users determine how prepared they are for online learning, and what they can do to better prepare.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 8**

## Resolving the Repression Pathway of Virulence Gene *hilA* in *Salmonella*

Alexandra King, Lon Chubiz, Brenda Pratte, & Lauren Daugherty

*Faculty Sponsor: Lon Chubiz*

*Salmonella* is a relatively abundant, virulent species of bacteria that is most known for spreading gastrointestinal diseases through food. These illnesses result in approximately 1.35 million infections, including over 25,000 hospitalizations each year, in the U.S. alone (CDC.gov). As antibiotic resistance becomes an increasingly urgent public health problem, the importance of developing alternative treatment methods is only becoming more crucial. One of the genes responsible for this virulence is known as *hilA*. *HilA* is the main transcriptional regulator of *Salmonella* Pathogenicity Island-1 gene (UniProt). SPI-1 plays an important role in the invasion of *Salmonella* into epithelial cells. The proteins encoded for by this gene assemble into a "needle complex," which delivers bacterial proteins into host cells (Lou et al, 2019). Based off preliminary evidence that another protein, MarA ("Multiple Antibiotic Resistance Protein" A) indirectly represses the *hilA* promoter, the purpose of this experiment was to attempt to further resolve the repression process and identify additional genes that are required for MarA to repress *hilA*. Are there entirely separate proteins involved in a pathway started off by MarA's gene product, and if so, what genes can we attempt to begin to implicate in this pathway? Transposon mutagenesis was conducted in order to create mutants of a strain of *Salmonella* that both express *hilA* alongside a *lacZ* reporter, and overexpress the MarA protein. The purpose of this was to introduce a DNA sequence into the wild-type genome. Wherever the transposon was inserted would be disrupted. These electroporated mutants were then plated on X-gal media, and any that had a gene involved in *hilA* repression disrupted, would be able to express *hilA* and grow blue colonies. The *hilA* activity of these mutants was then measured via B-galactosidase kinetic assays, and mutations with high *hilA* expression were reinserted into the wild-type *salmonella* strain via transduction. *HilA* activity was then screened for once more, and those whose mutations had been confirmed to disrupt the repression pathway of MarA will then have their genomes sequenced for further study. Though this project is still in progress, we have identified several mutants that exhibit increased amounts of B-gal activity compared to the wild-type strain. Furthermore, variable amounts of B-gal activity across different cell samples implies that there are different routes to disrupt the repression of *hilA*, and that a multi-gene/gene product pathway is involved in this repression process. Future sequencing will allow us to resolve potential genes and gene products important for this process.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 9**

## A Study of Brain Cell Loss In the Student Body of UMSL: Brain Stew.

Cullen Landolt, Mya Horn, Aimee Q. Pieper, Abby 6. Wall, & Kenny "Special K" Miller Esq

*Faculty Sponsor: Dan Gerth*

Brain Stew is an UMSL publication distributed bi-weekly in both digital and print formats. Its mission is to provide a forum for uncensored free thought, commentary, and creativity for the UMSL student body, as well as news and event listings from PLCHSA and other related campus organizations. The current Brain Stew staff consists of editors Mya Horn, Kenny Miller, Aimee Pieper, and Abby Wall, with Dan Gerth serving as the faculty supervisor. During the semester, editors write their own content as well as harass their fellow students, alumni, faculty, and staff for submissions. The result is The Most Entertaining Team - edited Midwestern Satirical Collegiate Publication of April 2021, and the steady decline of braincells as these student-monkeys churn out content. Due to the loss of braincells, Brain Stew features content that some readers may find offensive. Viewer discretion is advised

**MSC Room 316, 1:00-1:40**

## Staph Infection: Hospitals Battle Against a Deadly Menace

Mckenzie Lamos

*Faculty Sponsor: Rob Wilson*

Staph infection is caused by the staphylococcus bacteria, which is found on the skin or within the nose of even healthy individuals. This bacteria is usually harmless, but deadly infectious diseases may arise when it enters deep within the body. Staph infection is commonly treated with antibiotics, however the methicillin-resistant *Staphylococcus aureus* (MRSA) strain is resistant to antibiotics which further complicates treatment. This research provides insight on preventative measures to stop and slow the spread of staph infection in hospitals, along with what is being done to limit the number of MRSA infections. The CDC and NCBI both outline strategies to decrease the number of cases, such as maintaining a clean environment in hospitals and having nurses or physicians thoroughly wash their hands before coming into contact with a patient. New clinical medication and insight have emerged including ceftaroline and quinupristin-dalfopristin. It is important to recognize the action being taken to prevent the increase in staph infection cases because of how detrimental it can be on a hospital.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 27**

## The Effects of Floral Attributes and Conspecifics on Bumble Bee Forager Memory

Lucas Lauter and Tiffany Dinh

*Faculty Sponsor: Aimee Dunlap*

What do bees remember about flowers? These memories are important for both bees and flowers. The bees have better foraging success and gain more nectar and pollen from flowers when they remember the most rewarding flower types. More memorable flowers will be visited more frequently, resulting in more successful pollination for the plant. At the same time, bees can also learn about flowers from other bees and may remember this information differently. We are training and testing three floral cues and a single social cue to see how the different types of cues affect their learning and memory of rewarding flower types. Testing is being done by rewarding the bee for foraging on a specific floral or social cue while discouraging foraging of the control flower. A reward is high percentage sugar solution while discouraging is done through water. When the bee drinks the high percentage sugar solution it should observe the cue associated with the reward and use that information to forage on flowers of the same type. Once a cue has been learned the bee will be removed for a period of time and then tested again to observe memory length and foraging efficiency.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 10**

## The Original Kim: A Deep Dive on the Founder of the DPRK

Joseph Lee

*Faculty Sponsor: Christoph Schiessl*

This research is mainly focused on the origins of Kim Il Sung, the founder of North Korea. As someone whose family was personally impacted by his actions as a politician and leader of North Korea, this research speaks out to me. The sources cover material such as his policies and how they compared to the rest of the Kim Dynasty, as well as Kim Il Sung's relationship with Chairman Mao Zedong and the development of North Korea as a nation partnered with Mao's China. This research also refers to Kim Il Sung's own autobiography to provide clarity about his origins. While some of the information in it should be taken with a grain of salt, this book provides unique insight into his childhood and what influenced him into the totalitarian dictator that he became.

**MSC Room 315, 12:00-12:55**

## The McCarthy Subcommittee:

### A Case Study

Hudson Levanos

*Faculty Sponsor: Christoph Schiessl*

On March 10-11, 1954, the U.S. Senate Permanent Subcommittee on Investigation chaired by Sen. Joseph McCarthy heard the case of an Army employee named Annie Lee Moss who was accused of being a Communist subvert. Using primary sources from the W. Stuart Symington Papers supplemented with academic journals, I briefly describe the background of the major players of the hearings, the arguments made by each of these players, how the hearings transpired, and the case's aftermath.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number**

## Schizophrenia and Social Stigma: How Society Views Those With Mental Illness

Rebecca Littrel

*Faculty Sponsor: Rob Wilson*

Mental illness is one of the most stigmatized diseases in the media today. Patients diagnosed with schizophrenia are more likely to have depression, more likely to commit suicide, and less likely to hold a job and be covered by insurance companies. How society views mental illness needs to change. Mental health professionals often feel stigmatized for their jobs as well.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 26**

## Asthma in St. Louis: A Crisis of Equity

Ashley Maempa

*Faculty Sponsor: Rob Wilson*

Asthma is a common disease that causes airways to become inflamed and swell, which leads to difficulty breathing, wheezing, coughing, and asthma attacks. Asthma can be triggered by things such as dust, pollen, colds, pollutants, and household pests. In St. Louis, asthma is highly prevalent, with both cases and hospitalizations well above state and national averages. The asthma problem also reveals stark health disparities between St. Louis's white and African American populations, with African American children comprising a disproportionate majority of asthma hospitalizations and emergency department visits. This project is concerned with investigating the underlying causes behind St. Louis' asthma problem and its disparities. St. Louis is an automotive-friendly city with several industries, leading to higher amounts of industrial pollutants in residential areas. Additionally, asthma is managed by multiple interventions requiring access to supportive healthcare infrastructure, transportation, and adequate housing. Addressing these underlying social issues of equity and access is essential to dealing with asthma in St. Louis.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 25**

## Jesse James' Hideout or Civil War Midden?

Steven Meyer, Tim Evers, & Ben Ebert

*Faculty Sponsor: Susan Brownell*

Whether the infamous outlaw Jesse James (1847-1882) ever lived in Iron County Missouri during his post-Civil War crime spree is a highly debated issue shrouded in legend and myth. A plot of land called "The Hideout" in Southern Iron County is a prime source for these legends to be tested. Archaeologists Benjamin Ebert, Steven Meyer, and Tim Evers will attempt to answer the question "Could Jesse James have stayed at the Hideout?" Iron County is steeped in rich history dating back to the Civil War, and other historic landmarks add credence to the legends and help push tourism and preservation efforts. With constant urbanization and potential erosion as a looming threat to destroying the site, this research becomes more crucial with every passing day. A collection of approximately 100 artifacts previously recovered from the site will be cataloged and examined. Photography and oral interviews with local experts will create a timeframe for the site. Google

Earth and old maps will be researched to better understand the geography and historical context of the site during the late 19th century. Digital research and contemporary literature sources will create a living roadmap for the path and timeframe that Jesse James went through in Southern Missouri during his crime spree. Using these methods, a timeline will be established for both Jesse James and the "Hideout" to give credence to any possible link.

**MSC Room 313, 12:00-1:15**

## Mow It or Grow It?, Neighborhood Survey of UMSL Sustainability

CRT Moorhead

*Faculty Sponsor: Lara Zwarun*

What do UMSL's neighbors know, think, dislike, and appreciate about UMSL's groundskeeping? 41 door-to-door surveys were completed in the Summer and Fall 2021 in three neighborhoods with direct campus views from their property, some bordering the campus' low mow zones. While most had favorable opinions of the campus groundskeeping, a lot of UMSL's sustainability efforts are not common knowledge. The residents are open to more communication and an opportunity exists for UMSL's educational efforts to expand beyond its students to its neighboring community. Instead of fielding complaints about eyesores, UMSL can bolster an environmentally friendly community.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 11**

## E. coli: The 1993 Jack in the Box Nightmare

Jared Morton

*Faculty Sponsor: Rob Wilson*

The 1993 Jack in the Box E. coli incident stands among the most significant foodborne illness outbreaks in the history of the food industry, infecting over 700 people and causing multiple casualties from multiple states in 1993. A booming fast food industry and insufficient food preparation etiquette led directly to widespread disaster in the Jack in the Box restaurant chain. Massive legal action on the behalf of victims and momentous food safety reform secured this outbreak as a monumental catalyst to much needed changes in food safety in the fast food industry and beyond.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 24**

## Successful Women Majoring in STEM Have Higher Optimism and Lower Stigma Consciousness

Bridget Muise & Bettina Casad

*Faculty Sponsor: Bettina Casad*

Women are underrepresented in science, technology, engineering, and math (STEM) education. We had 607 women majoring in STEM complete an online questionnaire reporting levels of coping, rejection sensitivity, stigma consciousness, and optimism and grade point average (GPA) was collected from school records. Results showed that higher rejection sensitivity predicts lower GPA even with higher coping skills. This indicates that even with good coping skills, higher fear of rejection for one's gender had a stronger effect on the academic performance of women in STEM. Additionally, higher optimism predicts higher GPA, but only for women with lower gender stigma consciousness. Optimism seems to be a more significant indicator of better academic performance than coping skills. Schools need to focus on lowering stigma consciousness by creating a more gender inclusive environment and fostering greater optimism in women students by having women role models in STEM careers.

**MSC Room 316, 12:00-12:55**

## Rabies lyssavirus: A Vector for Stories

Daniel Olejniczak

*Faculty Sponsor: Rob Wilson*

Rabies, formally known as Rabies lyssavirus, is one of the deadliest viruses known to man. Rabies can cause those people who become infected with it to act in an animalistic way. Because of this obvious change from human to man, rabies is responsible for some of the most prominent half-human, half-animal monstrosities that run rampant in fiction. Most of these fictitious creations have a root in rabies because of how obvious it can be to correlate an animal's bite to a human's transformation. Rabies has become an icon of entertainment formed from humanities' fear and fascination with the idea that individuals can be changed from being homo sapiens into something horrific.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 23**

## Externalizing Behavior Predicts Differential Patterns of Substance Use among Adolescents by Race

Andrea Palacios

*Faculty Sponsor: Devin Banks*

Early substance use is associated with negative developmental outcomes and chronic disease. Adolescent externalizing behavior (e.g., rule-breaking, lying, aggression) is a consistent predictor of adolescent substance use. However, the association between externalizing behavior and different substances (e.g., alcohol, cannabis, nicotine) is unclear. It is important to clarify these relationships by race as previous research has demonstrated that substance use risk factors for Black youth differ from those for White youth, with whom much research has been conducted. Non-Hispanic Black (n=16) and White (n = 20) adolescents ages 14-18 who reported past 30-day substance use were recruited from schools and the local community. Participants were initially given a baseline survey that measured externalizing behavior, followed by daily surveys delivered to their cellphones for 14 consecutive days that measured daily use of alcohol, cannabis, and nicotine use. Among all participants, externalizing behavior was negatively associated with alcohol use, but was not associated with cannabis or nicotine use. However, there was a significant interaction between race and externalizing behavior for cannabis and nicotine use such that externalizing behavior predicted cannabis and nicotine use among White, but not Black adolescents.

Despite Black youth reporting similar rates of externalizing behavior use as White youth, it did not predict substance use among Black youth. Social and structural factors that disproportionately affect Black youth (e.g., high neighborhood violence and racial discrimination) may be more important risk factors for substance use among Black adolescents than individual factors. Further research is needed to improve culturally-relevant prevention among Black adolescents.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 12**

## The Demise of the Beef Industry

Natalie Powers

*Faculty Sponsor: Rob Wilson*

Bovine spongiform encephalopathy (BSE) is a neurological disorder commonly found in cows. The hypothesis for the causation of BSE surrounds a protein known as the prion protein. For the most part, prion proteins are not harmful to cattle. Yet, when it mutates, the protein begins attacking the central nervous system. The protein causes the infected cattle to lose coordination and become violent. This is where it gets its nickname, mad cow disease. The research in this project explores the economic impact of mad cow disease. The reactions from consumers surrounding BSE started the downfall of the economy. It also almost ruined the entire beef industry, twice. Procedures used to prevent the spread consisted of the destruction of infected cows and halting of imports. The BSE scare also created a long-term reduction in purchasing beef products. With that, it was detrimental to chains who frequently used and bought beef. BSE rattled most of the world to its core. The battle with BSE caused the loss of hundreds of lives and thousands of dollars in revenue.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 22**

## Totalitarian Tendencies of Orbán's Hungary

Rachel Reiss

*Faculty Sponsor: Christoph Schiessl*

In 2015, Hungary garnered worldwide attention after subjecting its refugees to tear gas and metal pens. Since then, the dire state of Hungary and its democracy have become clear. Viktor Orbán, the country's prime minister and leader of the Fidesz party, transformed Hungary into a state that undermines democracy, stresses Christianity, and uses this religious ideology to rally its people against refugees and other groups. In many ways, this newly reformed Hungarian state is reminiscent of totalitarian dictatorships. This project aims to investigate the totalitarian tendencies exemplified by Orbán's Hungary: a Hungary where democracy is dead.

**MSC Room 315, 12:00-12:55**

## Analyzing the Variable Pain

Payton Ruediger, Ryan W. Carpenter, & Melissa Nance

*Faculty Sponsor: Ryan W. Carpenter*

This presentation is a thorough analysis of participant physical pain and physical impairment within the given study. This data was conducted through an EMA study. The smartphone apps TigerAware and Qualtrics were used to give participants surveys throughout the course of ten days. The participants were undergraduate students at UMSL who received extra credit for participating in the study. Out of the 126 participants, 13 were male and 113 female. The surveys focused on comparing the relationship between alcohol usage and other variables. These surveys had questions relating to alcohol usage, marijuana usage, mood, pain, and questions about daily functioning. Participants' level of physical pain and physical impairment were analyzed in correlation to alcohol usage and other variables. In this study, the more pain someone experiences, the more physical impairment they will have. Other possible correlations are found, although the data was not significant, future research should be conducted to analyze the data further.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 13**

## Leprosy: How it Defined a King

Paul Sanders

*Faculty Sponsor: Rob Wilson*

King Baldwin IV of Jerusalem is a peculiar ruler because he was diagnosed with leprosy at a time when there was a great stigma against lepers. His success in ruling despite those stigmas make him a king that is still studied today.

**MSC 3rd Floor Rotunda, 1:00-3:00**

**Presentation Number 21**

## Respiratory Diseases: Results of 9/11 Rescue and Recovery Effort

Isabel Schnittker

*Faculty Sponsor: Rob Wilson*

After the Twin Towers collapsed on September 11, 2001, first responders assisted rescue and recovery efforts. While clearing debris and searching for survivors at Ground Zero, first responders inhaled particulate matter (PM). PM included pulverized cement, glass fibers, asbestos, and lead. Although first responders had respiratory protective equipment (RPE), the organizations that oversaw the rescue and recovery efforts emphasized neither the necessity of wearing respirators nor the threat of toxins in the air. As a result, many first responders developed respiratory diseases, such as gastroesophageal reflux disease (GERD), chronic obstructive pulmonary disease (COPD), and asthma. For instance, James Zadroga was the first New York Police Department (NYPD) officer to die of respiratory failure acquired from participating in the rescue and recovery mission. The severity of these diseases prompted legislative action. In 2011, President Barack Obama signed the James Zadroga 9/11 Health and Compensation Act of 2010 (Zadroga Act) into law. The Zadroga Act included the 9/11 Victims Compensation Fund (9/11 VCF), which provided medical treatment and financial assistance for first responders. While the cost of

these measures was a concern for some politicians, first responders and their allies' fervent activism persuaded Congress to fund the Act until 2090.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 20**

## Gender Dysphoria: The Widespread "Social" Disease of the 21st Century

Aria Spencer

*Faculty Sponsor: Rob Wilson*

There has been a supposed increase in the cases of Rapid Onset Gender Dysphoria (ROGD) in the past 10 years. The term 'ROGD' is a non medical phrase that has been widely adopted by members of anti transgender groups. This harmful classification has been the baseline for many anti transgender youth legislature that have been introduced in Americans states as recently as February of 2022. Gender dysphoria has been discredited as a 'social media' disease, and the fear of having LGBTQ+ people in communities has caused the harm and mistreatment of both the transgender youth and adults in America. Gender dysphoria was viewed as a disease until 1994, and it wasn't until 2013 that gender dysphoria stopped being classified as a disorder. While it seemed that the acceptance of transgenderism was becoming more prevalent, a recent increase of trans related hate crimes has risen alongside the anti trans bills. Gender Dysphoria has been wrongly classified as a trend or an attention seeking mental disease. The social impact of these ideas have caused misconceptions that are continuing to be fueled by far right politicians, despite the historical and scientific evidence that shows gender dysphoria is a valid disorder.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 19**

## Gonorrhea: Tragic Effects on Women

Aleah Thompson

*Faculty Sponsor: Rob Wilson*

Gonorrhea is a sexually transmitted infection. In the United States, women have a higher rate of being affected with gonorrhea than men. It's also more common for women that are the ages of 24 and younger that are being affected with gonorrhea. In this project, it will discuss the tragedies that women face while having gonorrhea. Women with gonorrhea often face serious health problems such as PID, if the infection is not treated. If the woman has an active infection of gonorrhea while pregnant, the infection can pass to the newborn at birth. Women with gonorrhea also struggle to get treatment because of the areas they live in or having low income.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 18**

## The Relationships Between Perceived Social Support, Discrimination, Distress, and Alcohol Usage

Kylie Thorwardson, Ryan Carpenter, and Melissa Nance

*Faculty Sponsor: Ryan Carpenter*

Those who identify with a sexual minority identity are more likely to experience stress in day to day life due to their identity. Given that alcohol use has been a recorded outlet for stress release, it was hypothesized that the discrimination and distress in those with a sexual minority identity would be positively associated with alcohol consumption. Additionally, it was hypothesized that there would be a negative association between perceived social support and alcohol consumption in individuals who identify as a sexual minority. Regression analysis failed to support all three hypotheses. However, significantly associated correlations were found between: Sexuality and Distress ( $r = -.368, p < .001$ ), Sexuality and Perceived Social Support ( $r = 1.90, p < .036$ ), Perceived Social Support and Discrimination ( $r = .296, p < .001$ ), Perceived Social Support and Distress ( $r = -.407, p < .001$ ), and lastly Distress and Discrimination ( $r = -.247, p < .006$ ). The only one found without a significant association was Sexuality and Discrimination. ( $r = 1.67, p < .066$ ). This could indicate that people are experiencing less discrimination based on their sexuality. These results also suggest that alcohol use may not be a stress outlet source for this

particular sample. For future research it is recommended that a larger sample size of sexual minority individuals are used as in this study the majority identified as bisexual.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 14**

## DNA Methylation May Be Associated with Childhood Adversity in Community Samples

Elizabeth Whitmore & Sharlee Climer, Ph.D.

*Faculty Sponsor: Sharlee Climer*

The effects of adversity on physicality has become an important subject of child advocacy research, and studies have found long-term physical consequences of various forms of adversity. This study's purpose is to isolate specific genes and markers related to different levels of childhood adversity. An analysis was conducted using publicly available data, which examined the relationship between socioeconomic status (SES), using two different scales, and adversity, using an established self-report measure, in a community sample. The adversity level data was collected when the children were in kindergarten, and the DNA data was collected when the children were between the ages of 9 and 13 years of age. Using network modeling software, the present study will construct networks of genes whose methylation rate is correlated with various adversity levels. This is an ongoing analysis, and results are still to come.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 15**

## Generalized Anxiety Disorder: Challenges in Everyday Life

Chloe Wilke

*Faculty Sponsor: Rob Wilson*

Generalized Anxiety Disorder is one of the leading mental illnesses in the United States, affecting 6.8 million adults. Having a mental disorder can lead to stigmatization, isolation, and changes in interpersonal relations. The recent psychiatric approach to these types of diseases equates them to physical illnesses in both importance and concern. This project will examine articles and journals that include social context for mental illness along with current issues that are prevalent in society such as treatments and social stigmas. Discrediting, rejection, and ostracization based on bias and prejudices result in lower self-esteem, contributing to the severity or presence of anxiety. Anxiety disorders also perpetuate self-stigmatization and personal beliefs of feeling inadequate, creating a cycle of negative reinforcement.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 16**

## Synthesis of Curcumin Derivatives: Increasing Compound Stability

Chloe Wilke

*Faculty Sponsor: Eike B. Bauer*

Curcumin (C21H20O6), the main active component in the spice Turmeric, has many recognized health benefits ranging from anti-inflammatory agents to the suppression of the proliferation of tumors. Curcumin has been used worldwide as an antiseptic and treatment for inflammatory conditions, arthritis, and sepsis. This water-insoluble molecule is unstable and degrades quickly upon entering the body. In order to preserve the beneficial structure of curcumin before it is broken down by the digestive system, carbohydrates are attached to alter the compound, increasing polarity and solubility. This topic was researched by analyzing multiple journal articles and research methods in order to synthesize useful variations of curcumin. The research conducted follows the acetylation of the cyclic regions and the addition of functional groups to the central carbon's hydrogen. Further stages of research could produce a curcumin derivative with potential medical applications.

**MSC 3rd Floor Rotunda, 1:00-3:00**  
**Presentation Number 17**