



# URAC•2023

## PROGRAM OF ABSTRACTS

Wednesday, April 19, 2023  
Sponsored by the Drinko Center for Undergraduate Research



**Stephen Adametz**

English

Patterson Hall 105, 2:10-2:30

Faculty Sponsor: Trisha Cowen

**Etna's Gilded Age: From Street to Screen**

Etna, Pennsylvania is a community in Western Pennsylvania that began as a stop going north from Pittsburgh. Over time, Etna became an important place in the Gilded Age history of Pittsburgh. "Etna's Gilded Age: From Street to Screen" details the critical and creative capstone of Stephen Adametz, a senior English major. In the critical portion, one may learn how Etna's history related to that of another local steel town, Braddock, as portrayed in Thomas Bell's 1941 novel "Out of This Furnace." The creative portion is a fictional portrayal of Etna's history, beginning in the months following the Johnstown Flood, and ending with the conclusion of World War Two. Like Bell's novel, the three-part miniseries titled "Gold and Guts," follows multiple generations of a family living through the Gilded Age and Industrial Era that defined Western Pennsylvania through the latter part of the nineteenth century and the former part of the twentieth.

**Joseph Armstrong**

History

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Angela Lahr

**Cold War Memory and the Russian Invasion of Ukraine**

The fall of the Soviet Union in 1991 marked a victory for the West and a defeat for Russia in the Cold War. In the years after the Cold War, Russian leaders like Vladimir Putin have sought to maintain Russian influence over former Soviet republics. In the case of Ukraine, that has led to the 2014 Russian annexation of Crimea and the 2022 Russian invasion. This project analyzes the Ukrainian nationalist movement in conjunction with Russian attitudes toward its satellite states during and after the fall of the USSR to understand why Russia launched a full-scale invasion. It explores primary sources that address Ukrainian nationalism, especially at the end of the Cold War, and primary sources about Russian foreign policy toward Ukraine, including Putin's speeches. This research links Soviet attitudes toward nationalism in Ukraine at the end of the Cold War with recent events that reflect how contemporary Russian objectives have been influenced by Cold War memory and history.

**Stacey Badman**

Biology

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: John Robertson

### **The Shocking Facts of Anaphylaxis**

Anaphylaxis is a rapid onset of severe and potentially life-threatening symptoms caused by the exposure to an allergen. The goal of this presentation is to bring awareness to what anaphylaxis is, what can trigger anaphylaxis, and how anaphylaxis turns into anaphylactic shock. In anaphylaxis, your immune system overreacts by releasing chemicals like histamine - causing itchy, watery eyes and a runny nose. More severe reactions can lead to anaphylactic shock; this can occur within minutes to hours of exposure. Anaphylactic shock is when anaphylaxis goes untreated and the blood pressure drops extremely low, causing trouble with circulation. It is not uncommon for someone that we know to have at least one allergy. Over 40% of children with food allergies have experienced a severe reaction and over 39% have experienced multiple severe reactions. This condition affects people everyday and it is important to know triggers, symptoms, and what to do when anaphylaxis occurs.

### **Ashley Baldwin**

Creative Media Production

Co-author(s): Bethany Edwards, Ri Lewis

McKelvey Campus Center 275, 9:00-10:00

Faculty Sponsor: Brittany Rowe-Cernevicius

### **School of Communication Capstone Trailers**

During this market research-type session, participants will get a sneak peek of the Broadcasting & Sports Production and the Creative Media Production capstones. During this focus group session, participants will get to watch trailers for several documentary capstone projects and view preliminary graphic design work before being asked to give feedback that students will be able to use to improve their final projects.

### **Charlie Barefield**

English

Co-author(s): Victoria Harden, Jaden Sowers

McKelvey Campus Center Cultural Center, 1:00-2:00

Faculty Sponsor: David Swerdlow

### **SCRAWL Release Party**

Scrawl will select students who submitted to the Spring 2023 edition of Scrawl to share their works -- what inspired them, the writing/creation process, and field any questions from the audience. Approximately six students (not yet selected) will share their work.

**Charlie Barefield**

English

Co-author(s): Victoria Harden, Jaden Sowers

McKelvey Campus Center Cultural Center, 9:00-4:00

Faculty Sponsor: David Swerdlow

SCRAWL Spring 2023 Release

Scrawl's Spring 2022 edition will debut on the day of URAC. This table will be an opportunity for us to pass out the free copies of Scrawl to anyone who wants one.

**Breanna Becker**

Environmental Studies

Co-author(s): Patrick Baumann, Brendan Donnelly, Wave San Miguel, Owen Martin

Patterson Hall 107, 10:20-10:40

Faculty Sponsor: Peter Smith

Mitigating Water Runoff: The Environmental and Economic Impacts of Green Roofs.

The use of "Green roofs" to offset the environmental impacts of urbanization is an increasingly relevant topic in the 21st century. A variety of benefits come from green roofing and water mitigation including topics such as the purification of air, insulation, and improvement of urban runoff drainage. However, there are several setbacks that are not well known, like the economic costs of water mitigation, and potential mitigation leaks into urban buildings. In our research, we are looking at the costs and benefits of green roofs in both an environmental and economic sense, as well as possible alternatives to water mitigation with the help of a local expert.

**Grace Bell**

Mathematics

Patterson Hall 205, 10:00-10:20

Faculty Sponsor: Pamela Richardson

A Game with Shadows and Knots

In this presentation, we will discuss strategies for playing a game on knots. A knot can be pictured by taking a piece of string, tying it into a knot, then connecting the ends so that it is a continuous piece of string. Our game is played on a shadow of a knot. A shadow of the knot is the same idea of your own shadow, where you can see the outline but cannot determine the details. We will provide an overview of knots and game theory and discuss the optimal strategy for players in our game.

**Izayah Bojanac**

Biochemistry

McKelvey Campus Center Mueller, 12:00-12:30

Faculty Sponsor: Patrick Lackey

**Investigating Breakdown of Histone mRNA Using Advanced Molecular Dynamics**

The cellular flow of genetic material is highly dependent upon the “packaging” of DNA. This dense packaging is organized by a structure known as the histone, which is encoded for by a unique and conserved mRNA structure. Histone mRNA, which produces the proteins that form chromosomes during replication, is highly regulated and quickly breaks down during the G2 phase of the cell-cycle. It is still unknown, however, what the precise mechanisms for this degradation are. This work addresses this knowledge gap, featuring a method that uses supercomputer processing called molecular dynamics. This technique has emerged as a prominent and reliable method for analysis of micro-scale cellular systems in the past few decades. Applying these techniques to our systems, we investigate the intermolecular forces and minuscule interactions that characterize how histone mRNA degrades in the cell.

**Izayah Bojanac**

Professional Communication &amp; Leadership

McKelvey Campus Center Berlin, 1:20-1:30

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

**War Told in Words: Exploring the Minds of Conscripted Men Through Prose Interpretation**

Prose performance is a speaking event that utilizes excerpts from short stories, essays, novels, and journals to build a compelling narrative around a topic of interest. While prose does not necessarily have a topical scope, it typically focuses on modern issues, whether they be philosophical, existential, or political. This performance focuses on the nature of war, taking inspirations from modern conflict to explore the moral questions that all soldiers ask. As conscription continues in Moscow and Kiev, the selected stories invite us to consider the lives of these men, the cost of all conflict, and the life or death decisions that will impact us all. Tim O’Brien offers us a window into these conflicted contemplations with excerpts from his short story “On the Rainy River” from his collection of short stories “The Things they Carried”.

**Hannah Burtner**

Fine Art

Patterson Hall 205, 10:20-10:30

Faculty Sponsor: Summer Zickefoose

### **The Challenge of Beauty Within Horror**

This powerpoint presentation focuses on the conflict between what our society defines as beautiful, and what we define as horror. Specifically, I challenge the idea as to why our society feels the need to define art. Art is much more than adjectives such as beautiful, scary, etc.

### **Morgan Byers**

Sports Management

Co-author(s): Tommy Howell

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Robert Zullo

### **Putting on the Blitz: The NFL's Effort to Improve Environmental Sustainability**

The United States is no stranger to having faults in its sustainability practices. From the amount of food wasted to materials that are disposed of improperly, a change needs to happen. While food is a huge part of our culture within the United States, another is our country's following of professional sports teams, for one, being the National Football League. The NFL is one of the most popular sports leagues in the United States, with players that are well known around the world. The National Football League and its contestants have an opportunity to inspire environmental change not only at their specific venues but neighborhoods and communities far away from where the game is being played. This poster examines some of those examples of positive changes implemented by the NFL with respect to environmental sustainability.

### **Kiera Callaway**

Neuroscience

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Deanne Buffalari

### **Studying the Effect of Exercise on Anxiety in Zebrafish**

Abstract Anxiety disorders are the most common form of psychological disorder in the human population. Due to such high prevalence of these disorders, a noninvasive treatment route should be examined. It was proposed that exercise regimens may be a good substitution for pharmacological and psychotherapy. In the present study we took 25 zebrafish test subjects and analyzed the effect of exercise on anxiety-like behavior. 13 control subjects were netted and put into a control beaker while 12 experimental subjects were put in swim tunnels and forced to swim against a current 30 minutes a day, four times a week, for three weeks. All subjects were tested for anxiety in a novel tank diving test. It was found that this exercise regimen was not effective in lowering anxiety-like behaviors in the experimental group. More testing is suggested to evaluate these findings.

**Sean Casey**

History

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Angela Lahr

**The Cold War, The Role of Nazi Scientists and Morality**

After World War II, the attention of both the Soviet Union and the US turned towards developing the world's leading arms and space technology to gain an advantage in the Cold War. Nazi scientists, who had developed technology such as the V2 rocket, were hired by each country to help with the Cold War effort. What were the implications of employing Nazi scientists in the space and arms races during the Cold War, and what were the debates over the morality of that science? This research analyses the impact German scientists had on the development of arms and space technology during the Cold War, noting that neither side would have made such substantial advancements without German influence. It examines public reactions about the morality of the decision to hire Nazis in both the US and USSR. While popular scholarship has justified the Cold War hiring of Nazi experts, this research questions the morality of overlooked German war crimes in exchange for technological advances.

**Stephanie Cimini**

Accounting

Co-author(s): Ryan Greer

Patterson Hall 207, 10:00-10:20

Faculty Sponsor: Jesse Ligo

**Steelers vs. Commanders vs. Rams (In a CPA's eyes)**

As graduation approaches, analyzing the choice of your future home city for the greatest value for your hard earned dollar is almost as important as who you cheer for on football Sundays. We will chart out a comparison between three popular cities while considering population, salaries, and expenses which include things such as food, housing, transportation, healthcare, and utilities. Researchers will display differences in the cost-of-living in Pittsburgh, Washington D.C., and Los Angeles.

**Jonas Clark**

Environmental Studies

Co-author(s): Joey Wright, Alex Nyiri, Cameron McConnell

Patterson Hall 107, 10:00-10:20

Faculty Sponsor: Peter Smith

**Environmental and Economic Impact of Bitcoin**

Ever since its launch in 2009, Bitcoin has been making international headlines. Many users praise its electronic and decentralized nature. However, the impact of Bitcoin stretches far beyond the electronic realm. Bitcoin consumes increasing amounts of energy and produces growing amounts of e-waste. The mining process is computationally difficult, and Bitcoin currently consumes an estimated 110-Terawatt Hours per year of global energy production. In addition, Bitcoin produces 30,000 metric tons of annual e-waste. Due to the specialized nature of bitcoin-mining hardware, the technology has no other use and is generally discarded within 1.3 years. This study aims to bring awareness to the environmental and economic impacts of the creation, production, and usage of bitcoins while exploring potential alternatives and solutions for issues caused by the existence of cryptocurrency.

**Kimberly Cora**

Sports Management

Co-author(s): Gia Francisco, Tommy Howell

Patterson Hall 207, 10:20-10:40

Faculty Sponsor: Robert Zullo

Funding Received from the Drinko Center

**Sports Management Competes in National Case Study Competition**

These Sports Management students will share their presentation from the recent 2023 Alliance for Sport Business Conference where they competed in a national case study competition. This national conference is held annually and brings together sports management faculty and students who are enrolled in programs housed with the business departments. The students competed against students from many other schools, including those of R1 classification (highest level of research), in Columbus, Ohio, on Sunday, April 2nd through Tuesday, April 4th.

**Psychology**

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Jessica Rhodes

Funding Received from the Drinko Center

**ADHD and Nicotine: Sleep Quality and Activity Levels as Possible Mediators**

ADHD is a neurological development disorder that is commonly associated with substance use disorders and often associated with the use of nicotine. Increased sleep quality and activity levels have been associated with improvements in executive functioning, alleviating symptoms of ADHD. The current study hypothesized that poor sleep quality and activity levels mediate the relationship between ADHD and nicotine-related behaviors. Participants (n = 100) were recruited from a college campus and completed measures of ADHD symptoms, smoking history, sleep quality, and activity levels. ADHD was associated with worse e-cigarette withdrawal severity and poor sleep quality. Sleep quality and activity levels did not significantly mediate the



relationship between ADHD and e-cigarette withdrawal. The results of the current study suggest that there are other constructs that play a role in the complex relationship between ADHD and nicotine withdrawal symptoms.

### **Ethan Cunningham**

Chemistry

Patterson Hall 210, 10:00-10:20

Faculty Sponsor: Peter Smith

Funding Received from the Drinko Center

#### **The Recovery of Critical Elements from Magnets Using Osorb**

I am researching the extraction of rare earth metals from aqueous solutions using Osorb. Osorb is a silica based media that is meant to replace kerosene in the standard extraction process because kerosene is volatile and expensive to dispose of. Osorb in contrast is reusable. I extracted SmCo from solution using the Osorb and multiple extractants such as DEHPA. I analyzed my results using ICP-OES to determine how much of the metal was successfully removed from the solution.

### **Sadie Cunningham**

Psychology

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Jessica Rhodes

Funding Received from the Drinko Center

#### **ADHD and Smoking-Related Behaviors: An Examination of Emotional Intelligence as a Possible Mediator**

ADHD is a disorder characterized by inattention, impulsivity, and hyperactivity. Individuals with ADHD are known to participate in nicotine consumption and have a hard time quitting due to severe withdrawal symptoms. Reduced emotional intelligence (EI) has been associated with ADHD and may play a role in the ADHD and nicotine consumption relationship. To test this theory, Westminster students (n=100) completed measures of ADHD symptoms, impulsivity, emotional intelligence, and nicotine usage and withdrawal. It was found that ADHD was associated with more intense withdrawal symptoms and reduced EI. It was also discovered that EI does not significantly mediate the relationship between ADHD and smoking withdrawal symptoms. The results of the present study suggest that emotional intelligence has somewhat of a connection between ADHD and smoking withdrawal. Further research needs to be conducted to find the dominating mediator in the ADHD and nicotine consumption relationship.

**Sadie Cunningham**

Biology

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: John Robertson

**Insulin Required- A Look into Type 1 Diabetes**

Type 1 diabetes (T1D) is a chronic autoimmune disease that is usually diagnosed in younger individuals. This disorder occurs when the body's own immune system destroys insulin-producing cells in the pancreas, leading to debilitating symptoms and severe bodily damage to those with T1D. There are no current prevention measures for T1D, and treatment options are costly. By becoming more knowledgeable about the physiological features of T1D, further research into prevention can be produced. A review of current T1D literature was collected and analyzed to be included in this presentation. There are some known risk factors associated with the development of T1D including family history, genetics, and possibly geography. There are also some successful treatments like insulin shots/pumps and insulin checking devices. It's clear that T1D is a complex, somewhat uncharted disorder that would benefit from increased attention and understanding.

**Connor Dale**

Environmental Science

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Kerri Duerr

**Wonders of an Invisible Society: Birds**

WONDERS OF AN INVISIBLE SOCIETY: BIRDS 3 Goals Teach buddy how to find birds The different birds of New Wilmington Why birds are important to the environment In "Wonders of an invisible society: Birds", I set out into the valleys of northwest PA with my Buddy to teach them about birding and connect them to a world that often times gets overlooked. I will show my Buddy an efficient way to look for birds, and how to identify them through sight and sound. I will also explain the migratory habits of the birds of New Wilmington, and why some may stay year round. I hope to emphasize the importance of birds to our local ecosystem, and perhaps cultivate a new hobby for my Buddy.

**Erin DaRe**

History

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Angela Lahr

**The Cold War: Ballet's Cultural Effect**

Cultural diplomacy was used during the Cold War to ease tensions between many countries (not just the United States and the Soviet Union). This consisted of a variety of cultural exchanges of sports teams, art works, and even exhibits. Ballet, a dance that brought prestige to Russia, was the focus of numerous exchanges. Scholarship on Cold War ballet describes the different political and social motivations of Cold War countries that promoted it. This research goes beyond the political and diplomatic objectives of cultural diplomacy involving ballet and asks about the publics' roles. How important were these exchanges to shaping how audiences around the world understood the Cold War? Primary sources that reveal reactions to specific troupes in an array of countries, including newspaper critiques, are analyzed to answer this question. Public perception concerned and encouraged government officials, reinforced beliefs, and variously heightened and mitigated Cold War tensions.

**Iris Davis Hall**

Professional Communication & Leadership

McKelvey Campus Center Berlin, 12:10-12:20

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

**Escaping the Radical Cage: A Persuasive**

Persuasive speaking calls attention to important issues, explores causation and offers practical solutions. This speech addresses the development of extremism within the GOP. The radicalization of the GOP poses a threat to American democratic thought and practice. This is clear by the extremists within the party's attempt to undermine free and fair elections, burgeoning political violence, and an acceptance of extremist and dangerous groups. This rise of extremism is attributed to the global rise of populism, dangerous right wing media and social media silos, and a political primary system designed to reward extremes. The left, however, is not without blame as they have benefited from both sensationalizing radical views and unbalanced primary systems. In order to address this growing issue, citizens must be willing to call for political and educational reforms which include altering the political primary system, enhancing civics education and media literacy, and demanding media reform.

**Iris Davis Hall**

Professional Communication & Leadership

Co-author(s): Izayah Bojanac, Sean Casey, Kent Dunn, Ellis Moore, Alyjah McHugh, Krysta

Germanoski, Katie Magee

McKelvey Campus Center Berlin, 3:00-4:00

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

## Parliamentary Debate

Parliamentary Debate is a civil style of debate generally associated with the British Parliament. It features an extemporaneous style, which means the debaters are not aware of the topic to be debated until approximately 20 minutes before the debate. Topics may include anything from contemporary social and political issues to philosophical propositions. Topics may reflect questions of fact, value, or policy. Students compete as a two-person team with debaters alternating sides from round to round speaking in defense of the resolution on the Government side and then against the proposition on the Opposition team. Generally speaking, in each round debaters contest over matters of topicality, inherency, harm, and solvency. Parliamentary Debate requires a comprehensive knowledge of current events as well as the ability to apply argumentation and debate theory.

## **Srioviya Deivaprakash**

Biology

Co-author(s): Kenzie Dunn, Julia Redilla

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Kristen Amick

Funding Received from the Drinko Center

Detecting Antibiotic Resistant Genes via Whole Genome Sequencing of *Pseudomonas asiatica*  
Ampicillin is an antibiotic that is used to treat bacterial infections. Several species of bacteria have acquired resistance to ampicillin through a variety of mechanisms. Our study aimed to determine the mechanism(s) of ampicillin resistance in an unknown bacterial species using whole genome sequencing and bioinformatics. Our results revealed that our bacteria was of the species *Pseudomonas asiatica*. Through genome annotation, the gene that codes for beta lactamase was found to be present, which means that our sample is able to resist ampicillin. Efflux pump systems are another mechanism that triggers ampicillin resistance used by *P. asiatica*. Efflux pump systems transport toxic substances out of the cell. Further research can be done to see which ampicillin resistant pathway is more favored or if there is a specific pathway activated in different circumstances.

## **Grace Deschand**

Accounting

Co-author(s): Jad Jadallah

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Jesse Ligo

## Move in Condition

If you're thinking about buying your first house, a 30-year mortgage commitment can be very intimidating. As interest rates continue to rise, it is hard for young first-time homebuyers to

decide which route is best for them. As accounting majors, we will discuss some of the costs and challenges that come with buying your first house: interest rates, down payments, and Private Mortgage Insurance (PMI). No matter if you plan on buying a mansion in the city or the white picket fenced house in the suburbs there is an option for you. But only if your finances are in move in condition.

### **Marcus Diniaco**

Biology

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Marosh Furimsky

**The Plastic Problem: An Analysis of the Effects of Microplastics on Danio rerio Development**  
The ubiquity of plastic usage is revealing a profoundly dark side in the form of microplastics. These particles, pieces of plastic smaller than 5 mm in diameter, are present in nearly every ecosystem. Naturally, they are incorporated into the many food webs, and have been detected in primary producers, apex predators, and the consumers in between them, as well as the medium that surrounds them. Our current understanding of how microplastics may affect these many species has yet to be fully realized, though recent studies have reported the plastic particles negatively affecting such aspects as metabolic processes, embryonic development, tissue health, and organism fitness. This study aims to investigate the potential consequences of microplastics on developing freshwater fish, with a particular focus on the cardiovascular system morphology and physiology.

### **Marcus Diniaco**

Biology

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: John Robertson

### **A Realization of Rhabdomyolysis: Am I Eating Myself?**

Rhabdomyolysis is a potentially fatal disease with a wide range of causes and an even wider range of symptoms. Though it is characterized by destruction of muscle tissue, it often leads to kidney failure, which is a top killer in the United States. The goal of this project is to provide the public with a simple yet comprehensive description of rhabdomyolysis, its causes, symptoms, and treatments. It will involve the synthesis of numerous experiments, reports, case studies, and reviews to provide a biological explanation of the causes and effects of the disease from the molecular/cellular level to the organismal level, as well as describing treatments and prevention. This overview will offer any observer not only an understanding of rhabdomyolysis, but a greater appreciation of the relationship between seemingly distinct parts of the body, as well as a resounding reminder of the importance of a healthy lifestyle.

**Christopher Dombrowski**

Environmental Science

Patterson Hall 110, 10:20-10:40

Faculty Sponsor: Patrick Krantz

Funding Received from the Drinko Center

**A Pilot Study on the Potential Remediation of PFOA from Water Sources**

Per- and polyfluoroalkyl substances also known as PFAS, are a group of over 9,000 manmade organic compounds that are heavily relied on and used today. PFAS are found in virtually everything ranging from, non-stick pans, firefighting foam, clothing, water bottles, waterproof coatings on clothing, Teflon and a plethora of other things. Since everyone has gained such a strong reliance on these substances for almost 92 years, it is contributing to serious health and environmental issues that have gone undetected until recent. Since PFAS is virtually found everywhere and is causing a serious health and environmental issues, I decide that it would be fitting to target PFOA because it is predominantly found in the water we drink and local waterways due to the use of firefighting foams. For my study, I will be using a low temperature degradation process and the use of a granule and powdered activated carbon filtration system to create a new remediation method for PFOA contaminated water.

**Malia Duffy**

Strategic Communication & Social Media

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Bradley Weaver

**More Than Just a Hobby**

In "More Than Just a Hobby" I taught an amateur the basic skills of bird watching including how to use binoculars and identify species. Included are safety features such as always wearing the strap with the binoculars, appropriate birding attire, and techniques to ensure correct identification. This project emphasizes the connection to science while raising awareness for real world nature conservation efforts and heightening my buddy's appreciation for the Aves class.

**Patrick Ekeu**

Environmental Science

Co-author(s): Marcus Diniaco

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Bradley Weaver

Funding Received from the Drinko Center



### Leaving a "Marc"-us on Ornithology

Did you know about the multiple benefits of birding outdoors? Teaching my buddy Marcus, gave him a greater insight on the importance of bird watching in 2023, while also going out in the field to give him real world experience. First, I explain the drastic decline of birds over the years and how we can help “save the birds” from extinction. Next, I teach him birding etiquette, i.e. the correct way to utilize binoculars outside and how to adjust them. Finally, we discuss our own prior experiences with bird species. From travelling to wetlands to forested areas, we go out birding to spot various species. After 2 hours of birding outside in different environments, we go back inside and reflect on Marcus's initial experience birding. Ultimately, we discuss how relaxing birding can be while also making you more in tune and appreciative of nature.

### **Dayshawn Elliott**

Marketing & Professional Sales

Co-author(s): Dayshawn Elliott

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Robert Zullo

### Marketing & Sustainability in the Automobile Industry

Tesla, BMW, Nissan and Dodge are all major car companies but whether or not these companies are producing products that can, and in some instances are polluting and harming the eco system around us can be found through research. In my poster presentation I will be showing if major car companies like Tesla, BMW, Nissan, and Dodge are actively making positive changes to contribute towards helping to make the world a cleaner and safer place or if the major car companies are staying stagnant in older manufacturing ways.

### **Adriana Emili**

Nursing

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Joni Darby

### Decreasing Catheter Associated Urinary Tract Infections

Foley catheters can be a great tool that is utilized in healthcare. An unfortunate occurrence is Catheter Associated Urinary Tract Infections. This can occur with improper insertion, maintenance, or hygiene with the catheter care. Another factor is the length of time the catheter is in place. This study looks into an adult medical-surgical floor that implements reeducation to staff for insertion, hygiene, maintenance, and patient education if they are in an acceptable cognitive state. The goal is to reduce the percentage of CAUTIS on the 2200 Med-Surge floor on UPMC Jameson Hospital in New Castle, PA by 15-20% from January 2023 to January 2024. Data will be collected using random audits with patients' medical record number

to check if there is a sticker with an insertion date on the Foley bag, charted assessment on insertion as well the necessity for a Foley to remain in place. Data will also be collected from the charts looking for education on hygiene and maintenance to patients.

### **Michael Everhart**

Music

Patterson Hall 210, 1:30-2:15

Faculty Sponsor: Timothy Winfield

One-Man Band (What I've Learned My First Year at Westminster College)

Culminating with a 13-minute performance of my original 10-part Les Misérables Medley arrangement, my project will explore the steps I took to combine elements from my Music Education Degree, Music Recording Technologies Degree, and wider Liberal Arts Education to arrange, play, record, engineer, video, edit, compile, and present my final product. My time in college thus far has allowed me to make connections across my field and with other classes to improve my work and reassess my future goals. Beginning as messing around with arranging and recording as a byproduct of time during the Coronavirus Pandemic, I have successfully turned a hobby into something unique and with a lot of potential. Utilizing a slide show presentation, I will explore different projects and educational discoveries that helped lead me to where I am today. In addition, I will recognize how the accessibility of resources and encouragement from Westminster faculty played a major role in my personal endeavors.

### **Marina Felasco**

Nursing

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Joni Darby

Decreasing Mortality Risk in Emergency Department Boarding Patients

Emergency Departments around the world are suffering from lack of bed access, and in turn, having to “board”, or hold patients in their rooms for extended periods until proper placement. Boarders in the ED are assigned to a nurse, as well as the typical ED patients, and the occasional critical care patient. As a result, nurses are becoming too overwhelmed to provide adequate care. In the UPMC Horizon Shenango Valley ED, data was drawn from mortalities in the months July-December 2022. 30% of the patients that died at this hospital were admitted patients, or “boarders”, that were waiting for proper bed placement while in the ED. They suffered nearly a 10-hour difference in comparison to those who were received on their designated units prior to expiration. The intervention of a float nurse was implemented from February-April 2023, in order to evaluate and treat ED patients in hall beds while the remainder of staff could accommodate needs of boarder patients to reduce mortality risk.

**Sam Ferguson**

Biology

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Diana Ortiz

Risk factors associated with health inequities in Arizona from 1950 to 1972

Our cross-sectional study primarily focuses on the risk factors impacting the mortality of both rural and urban populations within Arizona during the 1950s to 1972. Previous research into this topic focused exclusively on White populations, disregarding other ethnic groups, however, their methods of data collection were similar to ours. Utilizing a publicly available database, we collected demographic and cause of death data from historical death certificates and then evaluated potential risk factors that could have influenced mortality among several racial/ethnic groups in Arizona between 1950 and 1972. The data was analyzed using a Mann-Whitney U-Test and odds ratio statistics. The potential risk factors were compared between African Americans, Native Americans, Caucasians, and Mexican/Mexican Americans throughout Arizona and further analyzed between urban versus rural counties, as defined by the United States Office of Management and Budget between 1950 and 1970.

**Sean Fitzpatrick**

Sports Management

Co-author(s): Aaron Alderette, Luca Botti

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Robert Zullo

Happy Gilmore Wants You to Keep Green: Environmental Sustainability on Top Golf Courses

Many people think that golf is just a sport where you go and hit balls into a hole. There is so much more to it than that including how to manage the course and make it a healthy environment for the Earth through incorporating environmentally sustainable practices. In this poster, we will be sharing some of the top golf courses in the world, and how they keep their course so unique and safe for the environment. While the game can be challenging, being environmentally friendly keeps future generations on the course.

**Jacob Forrest**

History

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Angela Lahr

The Effects of the Bombing of the Ho Chi Minh Trail During the Vietnam War

During the Vietnam War, the United States dropped millions of tons of explosives on the Ho Chi Minh Trail, the supply line that wound from North Vietnam, Laos, and Cambodia to South Vietnam. The trail was used to send troops and weapons from North Vietnam to allies in the South. This research asks how the bombing of the Ho Chi Minh Trail affected the American war in Vietnam and how it influenced the Cold War prestige of the United States. It argues that the United States suffered, internally and externally, both during and after the war, as a result of the campaigns. Primary sources that go beyond enumerating casualty rates, including state department documents, newspaper accounts, and transcripts of congressional hearings, show that the secret bombings of the Ho Chi Minh Trail harmed the U.S. more than they helped by making the U.S. look weak and untrustworthy to its citizens and the world.

**Erin Fosgreen**

Professional Communication & Leadership

McKelvey Campus Center Berlin, 12:00-12:10

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

**Free The Slaves, Again**

Slavery in the United States is a human tragedy that was abolished over a century and a half ago. However, if you are among the over 2.3 million Americans in prison, the horrid practice may not be a remnant of the past. This is particularly the case if you happen to be in a private prison facility. My work for this conference is on the subject matter of prison labor in the United States and how the thirteenth amendment is allowing for workers to go unpaid, essentially working as slaves. I am advocating that changes need to be made on behalf of the enslaved prison workers in order for them to have the option to deny work if they want as well as actually get paid the federal minimum wage. I am also trying to bring more awareness to one of the many injustices going on in the prison systems. My work explores the problems associated with prison labor, the various causes that allow for this to go on, as well as possible solutions to this issue.

**Caroline Fox**

Biology

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Marosh Furimsky

Funding Received from the Drinko Center

**Exposure to butyl-paraben results in developmental abnormalities in zebrafish**

Parabens are chemicals commonly found in cosmetics as a preservative. Evidence has found that parabens have the ability to be absorbed through skin and can cross the uteroplacental barrier. Parabens are a form of endocrine disruptor, which can interfere with hormone

function. Using zebrafish embryos as my model organism, I sought to find if parabens can influence fetal development. At 24 hpf, dechorionated embryos were exposed to different concentrations of butyl-paraben [3.125  $\mu$ M, 6.25  $\mu$ M, 12.5  $\mu$ M, 25  $\mu$ M]. Zebrafish were also placed into two controls, the E3 solution and E3 with 0.1% DMSO. The fish were observed 48, 72, and 96 hpf for developmental defects. A decreased heart rate, enlargement of the pericardial sac and yolk sac, curved bodies, and pigmentation differences were observed upon treatment, particularly in the higher concentrations. This information indicates parabens may interfere with developmental processes, likely due to their endocrine disrupting properties.

**Gia Francisco**

Business Administration

Co-author(s): Michael Brilla, Karen Swartzentruber

Patterson Hall 210, 10:20-10:40

Faculty Sponsor: Robert Zullo

**The New Era of FNB Field**

We were given a week to research our topic of increasing the demographic of 20-25 age group to the Harrisburg Senators baseball game. FNB Field is located on an Island and has many benefits to explore more than just the field and games itself. We decided to take an "out of the box" approach and make our suggestions. The judges made great critiques and we learned from them as what we were missing within our presentation.

**Kellen Frazer**

Environmental Studies

Co-author(s): Ryan Feth, Quinn Morrow, Christopher Rotiroti, Sean Fitzpatrick

Patterson Hall 107, 10:40-11:00

Faculty Sponsor: Keith Bittel

**The Economic and Environmental Impact of Mining Critical Materials**

Our group will research the issues surrounding the mining of critical materials. Critical materials are non-fuel mineral or mineral materials essential to the economic or national security of the U.S. and which has a supply chain vulnerable to disruption. These materials are important for converting to clean energy sources, as they are an essential piece of every clean energy technology. They are becoming more scarce and as the world transfers to cleaner energy, the critical materials will become more valuable. Converting to clean energy will cause a high demand for these materials resulting in a steep increase in price. We will discuss the impact of the mining of these critical materials, and look for ways to limit the harm on the environment through more sustainable mining and recycling methods.

**Sophia Galletta**

Fine Art

Patterson Hall 207, 1:30-1:50

Faculty Sponsor: Summer Zickefoose

**The Beauty of Nature Through Land Art**

I present a curated collection of land art, which is a movement that became prominent in the 1960s and 70s. The pieces included in the presentation are all created by different artists who utilize natural materials as their medium. Nature being used as a medium offers a wide range of possible materials, with pieces in the collection made from sand, grass, branches, and rocks. Each piece uniquely accentuates nature while also connecting to one another through the themes of texture, movement, and repetition.

**Braydon Gardner**

Biochemistry

Patterson Hall 207, 10:40-11:00

Faculty Sponsor: Patrick Lackey

**The expression and purification of 3' hExo**

Human 3' exonuclease, or 3'hExo, is an important protein in the regulation of the stability of histone mRNA. This project focuses on the purification of 3'hExo in E. coli in order to study how it interacts with histone mRNA. This process involves performing a transduction of pET 24d into E. coli cells. We perform multiple overnight in a large quantity for expression which we then induced with IPTG in order to purify the bacteria. After the culture we lysed and sonicated the cells, and then purified Ni-NTA resin. Once this was complete we analyzed our product with a SDS-PAGE. Our initial attempts at purification resulted in the protein was falling out of solution, indicating that the protein was purified at too high a level, on-going attempts are underway to prevent the protein from crashing.

**Shannon Geer**

Mathematics

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Natacha Merz

**Neural Networks**

A neural network is a system that is designed to look at data and recognize patterns. Neural networks can be used for facial recognition, speech recognition, and weather forecasts. In this presentation, I will discuss how I trained a neural network to classify handwritten digits,



recognize a letter from its American Sign Language image, predict the square of an integer, and determine the value of a logical implication.

**Krysta Germanoski**

Professional Communication & Leadership

McKelvey Campus Center Berlin, 12:20-12:30

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

**Just Say No to Drug Advertising**

Throughout this persuasive speech I will be explaining issues with direct to consumer drug advertisements and proposing healthy solutions that aid in solving the problem. With sources including the LA Times, Kaiser Permanente's Institute for Health Policy, and the National Center for Biotechnology, this speech walks through the problem of direct to consumer ads, the way they are perceived by consumers, how legislators are reacting, and possible solutions to the issue. By the end of this persuasive speech, viewers will have more knowledge about these ads and be equipped with information on how to proceed in the future.

**Joshua Glaser**

Marketing & Professional Sales

Co-author(s): John Menefee, Austin Stapleton, Connor Schmidt

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Robert Zullo

**Sustainable Drip**

Marketing teams from brands across every industry have worked tirelessly to find solutions to sustainability and prove to customers that their product protects our environment rather than destroying it. The clothing industry has always struggled with providing products that are sustainable and innovative to make their products in ways that don't harm the environment. However, companies clothing brands like Levi's and Patagonia have made strides in finding ways to make sustainable marketing a part of their brand. Tom's shoes and Vivobarefoot are also making progress in the shoe industry to provide sustainable shoes. All four of these brands are proving there are ways to protect our environment while still making quality products. Each will be examined in our poster.

**Kendra Granchi**

Strategic Communication & Social Media

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Kerri Duerr

### Save Yourself and Help Save the Birds

Birding is a way to spread awareness of birds and connect with nature. With all the busy schedules and tempting screens, people forget to pick their heads up and see a bird flying by. Through birding, you can connect with nature and practice mindfulness—the active process of being present. The benefits of mindfulness are endless, but the key takeaway is it helps alleviate stress in your life. By looking at that bird, you experience a much-needed escape. Now, how does stress relief help birds? When you practice identifying birds, you can easily participate in the data collection. Taking note of their size, shape, color, behavior, and habitat, you'll be able to identify and record them. By doing this, scientists can see the population and find new ways to protect the birds. So, save yourself and the birds with binoculars and some friends.

### **Mia Greco**

Biology

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Marosh Furimsky

Funding Received from the Drinko Center

### The Effect of Embryonic Exposure to Ibuprofen on Visual System Development

Ibuprofen is a commonly used to reduce fevers and relieve pain. Its use during pregnancy is debated, as studies have shown an association between prenatal drug exposure and an increase in premature births. Ibuprofen is a potential oculotoxin and is suspected to alter retinal blood flow during development as it inhibits COX enzymes, which function in synthesis of prostanoids. Prostanoids are cellular lipid mediators produced by the retina in development to regulate choroidal and retinal blood flow. The effect of Ibuprofen exposure to visual system development was investigated using transgenic line zebrafish exposed to increasing concentrations. Body and eye diameter measurements along with cell sections were obtained. A decrease in lens diameter was observed in higher concentrations, as well as abnormal retinal cell layering. This study could provide useful information to the field of developmental biology and physicians in their recommendation of Ibuprofen usage during pregnancy.

### **Mia Greco**

Biology

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: John Robertson

### Usher Syndrome: The Imbalance of Hearing and Vision

Usher Syndrome is a rare genetic disorder that results in hearing and vision impairment. The aim of this presentation is to educate people on Usher Syndrome- symptoms, causes, and treatments. Genetic mutations lead to hearing loss or deafness and retinitis pigmentosa (RP). RP is an inherited ocular degenerative disease that impairs central vision and can lead to blindness. Diagnostic tests used to assess for Usher Syndrome, examine auditory and visual abilities. RP is the shared symptom across the three types of Usher Syndrome, leading to a positive diagnosis from a medical professional. There is no cure for Usher Syndrome, however treatments target visual and auditory aids and rehabilitation, along with supplemental vitamin A to slow the progression of RP. Usher Syndrome accounts for more than 6% of childhood deafness and blindness. Further research regarding the genetic mechanism and potential therapies can work to improve the quality of life for over 17,000 people affected in the U.S.

**Aidan Guzma**

Neuroscience

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Deanne Buffalari

Funding Received from the Drinko Center

Effect of short-term hormone treatment on the behavioral anxiety response in adult zebrafish when exposed to acute stress

Chronic hormonal treatment may have significant effects on anxiety levels and, as a result, observable behavioral stress responses. Adult zebrafish were treated with a 25?M concentration of either 17-?estradiol or 11-ketotestosterone for 14 days, then exposed to an acute stressor before fish were placed in the novel tank test for observation. The zebrafish were randomly assigned among ten tanks that housed small groups consisting of no more than five and no less than three fish. Upon completion of the 14-day treatment period, all zebrafish groups were exposed to an acute stress, net chasing, for a total of two minutes, then were immediately placed in a novel tank to measure behavioral responses. No significant results were found based on analysis of treatment or gender differences in relation to modified behavioral stress responses.

**Aidan Guzma**

Neuroscience

Patterson Hall 110, 10:40-11:00

Faculty Sponsor: Deanne Buffalari

Funding Received from the Drinko Center

The Effects of External Short-term Estradiol Hormone Treatment on Reward Seeking Behaviors in Male Rats Exposed to Nicotine

Estradiol (E2), a derivative of estrogen, has been found to increase females' motivation to attain psychostimulants due to its dopamine agonistic properties. As such women were found to be more susceptible to nicotine addiction as they exhibit greater dependence, report greater difficulties in quitting, and less successful outcomes in nicotine replacement treatment. Most research has focused on the role of external estradiol hormone treatment within a female model, but none has observed the hormone within a male model. The mechanisms behind estradiol hormone usage and nicotine use remain unknown; however, researchers have found that individuals that receive hormone treatment are more likely to engage in nicotine use. Male rats were exposed to short-term estradiol treatment to observe reward seeking behaviors via consumption habits. After a treatment period, male rats were allowed 24 hours to freely consume sucrose water followed by nicotine water.

### **Dalton Hamm**

History

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Angela Lahr

### **El Efecto Castro**

With the world on the brink of a nuclear warfare, between the United States and Soviet Union, time felt at a standstill. In October 1962, the United States noticed Soviet missile sites being built in Cuba. The Cuban government, backed by communist rebel Fidel Castro, received nuclear missiles from the Soviets posing a threat to the Americans. The Cuban Missile Crisis, as it was later deemed, was the closest event in history to nuclear warfare. A last-minute agreement led to a promise that the U.S. would not invade Cuba in exchange for the Soviets removing their missiles from Cuba. Normally the Cuban Missile Crisis is studied from the American or Soviet viewpoint, but this research will focus on one big question: How much influence did Castro have in the missile crisis? The main sources are declassified American government documents along with various other sources as well. The actions taken by all parties involved helped from the modern world.

### **KayLee Hankins**

Environmental Science

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Helen Boylan

### **Use of Acoustic Monitoring to Study Bats in New Wilmington Pennsylvania**

Globally, more than 200 bat species are considered threatened by the IUCN. In Pennsylvania, one species of bats is considered threatened, and three species of bats are considered endangered. While some bat species populations have declined in response to human activity, other species have adapted to life with humans. This study seeks to explore the impact of

residential structures on bat populations in New Wilmington, Pennsylvania using acoustic monitoring. This study will be conducted as a population survey of bats in New Wilmington, Pennsylvania will be conducted using the Echo Meter Touch 2 and Echo Meter Touch 2 companion app. Data will be analyzed using KaleidoscopePro and species-area curves. As a result of this study, it is expected that more bats will be found in locations with few man-made structures when compared with sites with many man-made structures.

**KayLee Hankins**

Environmental Science

Patterson Hall 210, 2:10-2:30

Faculty Sponsor: Patrick Krantz

Restaurant Sustainability in the United States Mid- Atlantic Region: A Partnership with The Tavern on the Square New Wilmington

In recent years, restaurant sustainability has become a popular movement. The Tavern on the Square- a local restaurant undergoing a historic remodel- is working to reopen as a sustainable restaurant. This project explains the criteria a restaurant must meet in order to be considered sustainable, where sustainable restaurants are located in the Mid-Atlantic region, and what organizations exist to aid the efforts of sustainable restaurant owners. The project will also touch on the larger environmental impact of the hospitality industry. Special focus will be given to elements that can be applied to practices at The Tavern on the Square (especially in regards to the historic nature of the site).

**Victoria Harden**

History

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Angela Lahr

Nuclear Attitudes of Cold War Americans

While the potentiality of global war was never a happy one, in the early years after World War II, citizens bore the weight of this reality in solemn preparedness. In later years, there grew a movement supporting nuclear disarmament as people began to perceive a nuclear future as not survivable. While there were early examples of opposition to the arms race, as the creation of SANE demonstrates, dominant American efforts shifted from individual and community preparedness to activism. How and why did American sentiments regarding nuclear war shift from readiness to pessimism from the 1950s to the 1980s? This project will answer this question by analyzing American video and news sources from both the early and late Cold War periods. Not only will this research explore shifting attitudes about nuclear war, but it will also reveal broader social and cultural implications of the period, including American attitudes toward safety and government in a volatile world.

**Taylor Harman**

Biology

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: John Robertson

**Comparing Hemophilia A and B**

Hemophilia is usually an inherited bleeding disorder where the blood does not properly clot. Hemophilia is caused by mutations in the genes for certain clotting factors, which result in a decrease in those factors, which are necessary for normal blood clotting. Hemophilia A is the most common and occurs with a lack of clotting factor 8. In hemophilia B, there is a lack of clotting factor IX. The mutation a person has determines how much clotting factor is produced and how well it works. Many people with hemophilia develop an antibody (inhibitor) to the blood products used to stop/prevent a bleed. Knowing the mutation that a person with hemophilia has is important for genetic testing of family members. Inhibitors can make treatment of bleeding more difficult. It is important to know what hemophilia is and know if you have it or carry it. Since it is genetic it cannot be prevented but knowing your carrier status can assist in genetic testing for any children.

**Taylor Harman**

Neuroscience

Patterson Hall 107, 11:00-11:20

Faculty Sponsor: Deanne Buffalari

**Does Stimulant History Affect Acute Nicotine Response**

Amphetamine is a stimulant shown to produce behavioral responses consistent with increased anxiety in humans and rodents. Nicotine has been shown to increase the effectiveness of psychostimulants when used in combination; however, nicotine alone has varied effects on anxiety-like behaviors. This study will examine if a history of exposure to amphetamine influences acute nicotine responses. Rats will be treated with chronic amphetamine (versus a saline control), followed by a single nicotine injection. Following the nicotine injection, the rats will undergo an anxiety-related task known as the elevated plus maze. Results on this task will determine if the history of amphetamine affected the response to nicotine. Based on the results, further studies can be done to see if other combinations of stimulants and nicotine have the same effects. This research will help promote understanding of how prescription drugs and drugs of abuse that may be used simultaneously can contribute to anxiety.



**Keenan Heeter**

Marketing & Professional Sales

Co-author(s): Mikaela Crumlich, Gavin Hogue, William Levak

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Robert Zullo

**Fast Foods Embrace of Sustainability**

Sustainability in marketing has gained attention with growing interest in the impact that it has on the environment. In recent years, a push for more sustainable markets has been prevalent throughout the world. This has had numerous changes and impacts on various markets. In our research we will be diving into studies on how some popular fast food restaurant chains are doing their part by creating a more sustainable brand. These fast-food chains we have researched include McDonald's, Chick-fil-A, Panera Bread, and Starbucks.

**Lily Hefner**

Criminal Justice Studies

Patterson Hall 205, 2:20-2:40

Faculty Sponsor: Jamie Chapman

**"My Genes Made Me Do It": A History of Biological Theories of Crime**

19th century criminologist Cesare Lombroso suggested that criminals are genetically inferior to the average person. His theory of the "born criminal" has since been discredited but the idea of an inherent predisposition for criminal offending is the basis for many biological theories of crime. In the 1940s, William Sheldon suggested that development in the womb played a key role in determining the likelihood of offending. Later studies on twins indicated that environment during adolescence has a strong effect. Terrie Moffit proposed, in the 1990s, that there are two types of offenders: some are influenced by their delinquent peers while others have neurological abnormalities that predispose them to offend. This presentation will explore how biological theories of crime have changed significantly since the time of Lombroso and advancements in natural science have shifted the way we consider the possibility of predisposition to crime.

**Andrew Heider**

Accounting

Co-author(s): Boyd Foster

Patterson Hall 105, 10:20-10:40

Faculty Sponsor: Jesse Ligo

**Rust Bucket vs Shiner**

Cars are used throughout America every day and are a primary means of transportation. However, getting from point A to point B comes with a lot more steps than just driving a car off of the lot, and there are important questions to ask before you purchase including: "Should I buy a used or new car?" or "Should I lease or purchase a car?" There has been research showing the benefits to either side of each of these questions. But what options would be best for recent or soon-to-be college graduates? Being accounting and finance students we will provide our other college classmates with information to help them with their choice. As students transition from college life to work life, it is important that they understand which option would be most cost-efficient for their specific situation and show how the costs of each decision vary over time.

**Saige Heigel**

Creative Media Production

Co-author(s): Marcus Tokar

McKelvey Campus Center 275, 9:00-10:00

Faculty Sponsor: Brittany Rowe-Cernevicius

**School of Communication Capstone Trailer Preview**

During this market research-type session, participants will get a sneak peek of the Broadcasting & Sports Production and the Creative Media Production capstones. During this focus group session, participants will get to watch trailers for several documentary capstone projects and view preliminary graphic design work before being asked to give feedback that students will be able to use to improve their final projects.

**Saige Heigel**

Biology

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Bradley Weaver

**The Best Way to Learn is to Get Outside and Bird**

Scientists say we have lost three billion birds in North America since the 1970s. What are some causes of this? That is what one beginning birder, Marcus Tokar, starts to find out during his first birding adventure. This is the story of his first time learning how to watch and identify birds. He learns about size and shape, color and pattern, habitat and behavior, all the skills a birder needs. "The Best Way to Learn is to Get Outside and Bird" follows a Lawrence County native as he gets to know his neighbors better: birds. Marcus Tokar discovers how he can become more than just a local; he can support community science.

**Gage Hendrickson**

Biology

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: John Robertson

High Altitude Cerebral Edema, a potentially life-threatening condition

High altitudes can have a number of effects on the body, some classified as Acute Mountain Sickness (AMS). High Altitude Cerebral Edema (HACE) is a serious condition causing distortion of physical movements, fatigue, and mental deterioration that can progress rapidly to coma or death due to brain swelling or movement. Risk factors for HACE include history of high-altitude illness, heavy physical exertion, and abrupt ascent. Current research suggests HACE is a disruption of the blood brain barrier, but the exact mechanism for this condition is unknown. Continuous research is being done in order to fully understand this condition and how it can be prevented. Treatment is similar for all AMS conditions, but studies have shown with HACE it is extremely important to descend quickly from elevation. It is important to understand the signs and risks of AMS conditions like HACE because it may save lives prevent fatalities at high altitudes.

**Olivia Herman**

Environmental Science

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Kerri Duerr

Birding: The impact on everyday (and not just retired) life

Birding is a hobby that has the stereotype of being enjoyed by people with extra time on their hands, typically retired people. However, from being in the BIO 120C and BCSM 150C classes, the viewpoint can be changed. Birding itself has many positive impacts on multiple parts of life. By taking a buddy birding, an increased interest and appreciation was explored. Birding is also a way in which people who may not have a science background or interest in pursuing a scientific career can become scientists. The act of recording the birds seen and heard, and identifying which type of bird it was by using color, shape and size, behavior, and habitat was explained and taught. Submitting this data can help professional ornithologists understand migration patterns and location of birds throughout the year. Birding has also been found to be considered a mindful activity, with multiple positive impacts on every day, and not just retired, life.

**Ian Herr**

Music

Co-author(s): Ryan Bramson, Jada Brown, Stephen Kaib, Dylan Kresak, Katie Lyons, Lauren McTiernan, Madison Mueller-Howell, Ryan Shaw, Shannon Witkouski

Orr Auditorium Orr, 11:00-11:15

Faculty Sponsor: Perry Gatch

#### Westminster College Percussion Ensemble

The Westminster College Percussion Ensemble (MUS 406-01 or MUS 506-01) contributes beneficial opportunities for participation in percussion chamber ensembles (duets, trios, quartets, quintets, etc.), as the student enrollment dictates. This course does not satisfy the large ensemble requirement for collegiate music majors, and the permission of the instructor (Professor Perry Gatch, III) is necessary for participation. On Friday, February 24th, 2023, the Percussion Ensemble performed Thomas Gauger's original "Past Midnight" composition with the following ten percussionists: Ryan Bramson, Jada Brown, Ian Herr, Stephen Kaib, Dylan Kresak, Katie Lyons, Lauren McTiernan, Madison Mueller-Howell, Ryan Shaw, and Shannon Witkouski. Professor Gatch (conductor) is the Director of Percussion Studies and adjunct music education faculty member at Westminster College. He has presented clinics and masterclasses and has written education and performance articles for the PMEA.

#### **Ella Hildebrand**

Neuroscience

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Deanne Buffalari

Funding Received from the Drinko Center

Exercise as a modulator of behavior relevant to drug addiction in zebrafish

Physical exercise is a possible non-pharmacological treatment for drug addiction in both early and late stages of addiction. Previous studies have shown exercise can even be used as a preventative measure for drug addiction, inhibit drug seeking behaviors, as well as prevent relapse. We were interested in studying the preventative measures of exercise in nicotine addiction with an animal model that used zebrafish for testing. We subjected one group of zebrafish to exercise for ten days, and another group to no exercise for ten days. To model exercise, fish were subjected to swimming against a current for thirty minutes a day. After exposure to exercise, both groups were given the same dosage of nicotine for another ten days. On the eleventh day, both groups were tested for anxiety. We used the novel tank test to test for anxiety. We expected that exercise would serve as a preventative measure for addiction and reduce the effects of nicotine on anxiety-like behavior in zebrafish.

#### **Emily Hipolito**

Biology

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Joseph Balczon

16 S ribosomal gene sequencing to determine diversity of bacteria from B flat trumpets. Bacteria are ubiquitous, including on musical instruments. Approximately 40% of U.S households have two or more people actively involved in playing music. While most bacteria are harmless or beneficial to humans, some species can be harmful or deadly. Wind instruments, such as the B flat trumpet, provide a warm, wet environment for bacteria to survive and grow. Without regular cleaning, these bacteria could accumulate and cause infection or illness. These bacteria can affect the respiratory and digestive tracts because of the connection between the mouth, lungs, and stomach. This study aimed to use polymerase chain reaction to amplify the 16S ribosomal gene, followed by DNA sequencing to identify bacteria from sampled B flat trumpets. This information can be used to determine how often an instrument should be cleaned for the health and safety of the musician.

### **Daniel Horgan**

Environmental Science

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Bradley Weaver

### **The Benefits, Beauties, and Benevolence of Birding**

This production depicts Dan Horgan, a student in the Biology of Birds and Digital Media Studies cluster course, showing Westminster College faculty member Derek Buck the basics of birding. Birding is a form of community science and plays a vital role in the conservation of birds and the environment. The benefits of birding are mutual between the birder and the bird. The birder collects important data to aid in protection of bird species while the act of birding is shown to improve the mental and physical health of the birder. All the concepts and more shall be explored in the Birding Buddy production in an educational yet entertaining way.

### **Brooke Horvath**

Marketing & Professional Sales

Co-author(s): Gia Francisco, Dawson Yocum, Alessandra Zervanos

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Robert Zullo

### **Thirsty For Sustainability**

Sustainability and the environment are topics that many companies are now beginning to take seriously. Whether it's a large well known company like Coca-Cola or smaller companies like Boxed Water, Waterloo, and Honest Organic they are all improving their products and packaging for consumers. Each company has taken different approaches to make their companies more economically friendly. Beverage manufacturers are constantly identifying ways to become more friendly with the planet that we all live on. In this poster, we spotlight some of the more recent efforts these companies embrace to promote sustainability.

**Chloe Hudecki**

History

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Angela Lahr

**The Soviet Withdrawal from Afghanistan and the Taliban Reign**

In 1979, near the end of the Cold War, the Soviet Union invaded Afghanistan. Afghanistan consists of many ethnic and religious groups, and the Soviet occupation didn't consider a careful approach to maintaining a peaceful union. While the Soviets were in Afghanistan, Afghani nationalists formed a fundamentalist group, the Taliban, that sought to restore what they believed to be the true Afghan identity. Upon Soviet withdrawal in 1989, the country was left in shambles. Ensuing civil war led to the rise of the Taliban. Historians have shown how the Cold War and Soviet occupation of Afghanistan allowed for civil unrest, terrorist uprisings, and a future of Taliban reign. A lack of access to Soviet and Afghan sources slowed research into the conflict, but available firsthand accounts can provide a picture of the impact of the war. This research uses accessible sources to analyze and explain the Cold War effects on Afghanistan because of the Soviet occupation.

**Jessica Huff**

Nursing

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Joni Darby

**Reducing the Incidence of Hypothermic Newborns following Vaginal Deliveries**

Infants are at the highest risk for hypothermia during the time immediately following delivery to when they are placed skin-to-skin or placed under the radiant warmer. Hypothermic newborns are at an increased risk for morbidity, mortality, and NICU admissions. This study investigated reducing hypothermic newborns following vaginal deliveries. Baseline data from February 2022 to January 2023 showed an increase in the incidence of newborns with temperatures below 36.5°C on their first temperature thirty minutes following delivery. In early January 2023, we introduced education to all staff members on completely drying the baby before starting skin-to-skin and placing a new warm hat and blankets on the baby at one hour of life. Education was placed on bulletin boards around the unit for staff members to refresh. At the end of each month data was analyzed and the goal is to reduce the number of cold babies following vaginal deliveries to less than 200 babies per month.

**Brandon Hunsinger**



Computer Science  
Patterson Hall 107, 2:10-2:30  
Faculty Sponsor: John Bonomo

### AI Gets Its Driver's License - Analyzing Machine Learning Techniques To Operate Autonomous Vehicles

As self-driving cars have gained popularity due to their potential to bolster safer and more efficient transportation, testing these vehicles in real-world applications has proven to be costly and time-consuming. In this presentation, we will discover machine learning techniques such as NeuroEvolution of Augmenting Topologies (NEAT) to control self-driving cars in a video game environment as a safe and cost-effective alternative method of testing autonomous vehicle technologies. We made use of Python and the Pygame library to create all aspects of the test environment such as the car and track, and utilized the neat-python library for everything that we need regarding creating and training the neural network responsible for controlling the car.

### **Tyler Hunter**

Professional Communication & Leadership  
McKelvey Campus Center Berlin, 12:30-12:40  
Faculty Sponsor: Randy Richardson  
Funding Received from the Drinko Center

### Autism Speaking: A Poetry Program

Autism Spectrum Disorder is defined as 'a neurodevelopmental condition characterized by difficulties in social interaction, verbal and nonverbal communication, and the presence of repetitive behavior.' The hiding or masking of autism is frustrating at best and harmful at worst. Numerous contemporary poets focus attention on the trials and tribulations associated with Autism Spectrum Disorder. Poetry Interpretation is a competitive speech event in which student present published poems on a given theme. This performance explores discriminatory behavior towards autistic people, as well as stereotypes that hurt the Autistic community. I will be presenting an eight-minute oral interpretation performance I call "Autism Speaking." This program of poetry draws from Gabe Moses' "Stimming," Ashwin Kumar's "I am Different," and Poet From Another Planet's "Price of a Diagnosis," and "On Being Autistic."

### **Kara Hutchinson**

Fine Art  
Patterson Hall Foster Art Gallery, 10:00-10:30  
Faculty Sponsor: Summer Zickefoose  
Funding Received from the Drinko Center

Senior Capstone In Ceramics

When formatting the visual ideas of my senior capstone, I was unsure what path to take. I was excited to show the community an insight to my mind and how the Westminster community has impacted my life. I immediately gathered inspiration from an ancient Japanese art-form called, "Kintsugi". I first learned about Kintsugi from my internship at a ceramic Co-Op called the "Bean Pod". In plain terms, Kintsugi is the coming together of what was once broken. I began to think about the rollercoaster of my life at Westminster. Through my ceramic display of work, there are many broken pieces of pottery that represent each individual of Westminster's community, and they will be asked to take two pieces, one smaller piece for them to take, and the next to place on the wall with the others showing the symbol of the community coming back together after finding our new normal on campus. Our community is vast and ever changing, but we come together in the most beautiful way of uniquely shaped pieces.

### **Abigayle Hvizdak**

Nursing

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Joni Darby

### **Assessing Westminster's Campus Nutrition and Food Insecurity**

College and University campuses across the United States face many obstacles related to nutrition. One specific issue on Westminster College's campus is student food insecurity, which is a multifactorial problem. According to Feeding America, 34 million individuals in the United States are food insecure, 9 million children in the United States are food insecure, and 53 million individuals turned to food assistance in 2021. Food insecurity data will be collected on Westminster's campus by having students fill out a survey regarding campus nutritional options, information about the campus food pantry, and questions related to feeling hungry on campus. By collecting Westminster campus survey data, the expected outcomes and benefits of this QI project include decreased campus food insecurity, increased student wide engagement and education regarding food insecurity, and an increase in the usage of the campus resources that are in place to help students facing food insecurity.

### **Kevin Ivany**

Creative Media Production

Co-author(s): Hamish Mathwin, Saige Heigel, Ri Lewis, Vincent Funari, Brett Willcox, Marcus Tokar

McKelvey Campus Center Mueller, 9:45-10:00

Faculty Sponsor: Kandice Hartner

Funding Received from the Drinko Center

Sanctuary

We were given 48 hours to make a film of a specific genre, using an assigned prop and line. The genre we used for our film was Dystopia/ Utopia, our prop was a family ring, and our line was "I wish I loved you like I used to." We got assigned these at 7pm on Friday and our film was due at 7:30pm on Sunday. Our budget was \$250 after registration fees, we used that money on props and costuming in order to hold continuity throughout the film and get all the shots we needed, equipment provided by our advisor Kandice and through the school helped keep our budget small. Our group was very happy throughout the process as we formed really well as a team to fulfill all the roles on a set at different times in the process.

### **Ian Jackson**

History

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Angela Lahr

### **Cartoon Cold War: The Power of Propaganda**

Propaganda was an important part of the Cold War. While propaganda takes many forms, one such form is film and political cartoons. This research will analyze Cold War animated films and cartoons, asking how they became a medium of propaganda. This kind of propaganda was used to oppose communism in the United States. Soviets also used animation and political cartoons to push back against the United States.

### **Kaitlyn Johnson**

Nursing

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Joni Darby

**GCS Scores and Neurological Assessments on Patients with Head or Spine/Spinal Cord Trauma**  
The Emergency Department treats patients of all ages and medical acuities. Traumatically injured patients will include those with head and spine/spinal cord injuries. Head trauma can result from something as simple as a fall, which could also result in spine/spinal cord injuries. The purpose of this QI project is to improve the documentation of a Neurological assessment and Glasgow Coma Score (GCS) of head and spine/spinal cord injured patients. It is vital for the ED Registered Nurse to complete and document a baseline neurological assessment and GCS as this allows the clinician to recognize deviation of mental status. A current audit completed 4th quarter of 2022 showed that only 21/29 patients with a head and/or spine/spinal cord injury, had a documented neurological assessment and GCS. This QI project will provide ED RNs with a brief educational session along with a pocket card for reference. The goal is to improve the audit score to above an 85% by the 2nd quarter audit of 2023.

**Tiwan Jones**

Accounting

Co-author(s): Zachary Zydel

Patterson Hall 110, 11:00-11:20

Faculty Sponsor: Jesse Ligo

**Birth Control, Complements of Your CPA**

Soon after graduation, there are many important decisions to make. The choice of having a child is possibly one of those decisions. While determining to leave your legacy through the birth of a little human is ultimately rooted in love, a new parent cannot overlook the lifelong financial investment that will affect their future. Data will be collected through, primary and secondary sources which include documents, interviews, and online sources. This project will include data regarding the effect of conservative or lavish spending on the child. The intended audience is people who are thinking about having a child or already have children.

**Miguel Joseph**

Biochemistry

Patterson Hall 207, 2:10-2:30

Faculty Sponsor: Patrick Lackey

**Cloning SLBP For Expression in Mammalian Cell Extract**

My goal for my research with Dr. Lackey was to clone a DNA sequence using PCR and convert it from DNA to protein. Once the PCR was completed we would then hand our SLBP protein to mammalian cell extract and test for expression. We were successful in amplifying our specific DNA sequence with our first PCR template. However, we were not successful in copying our template of DNA during our second PCR. This means that we could not clone our DNA and hand it to mammalian cell extract. We were able to narrow down our areas of trouble to yield better results. Our results were not conclusive enough to take the next step in the research project; but we were able to give a general consensus on what went wrong and how the next student can improve.

**Nathan Kacey**

Environmental Science

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Bradley Weaver

**The Birding Experience**

Through the Bird Tok cluster, I have learned how rewarding the hobby of birding can be. Birding offers a great chance for people to go outdoors and contribute to meaningful projects. Birders

can join Cornell Lab's citizen science project and submit data all from their smartphones. Before entering the field, we were required to learn the essentials of birding. Techniques for using binoculars, bird identification, and field attire improved our ability to identify and document species. Species identification and data collection are completely optional, instead you can choose to spend your time interacting with wildlife. Birding offers a great chance for you to practice mindfulness to connect with yourself and others. Birds can be found everywhere, making birding an attainable hobby for many diverse groups. Modern-days birds are the last descendants that escaped the last extinction event. This information was new to me, and I made this video to share my experiences with others.

### **Anthony Kamenski**

History

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Angela Lahr

King Presley Turned Private Presley: How the Media Portrayed Private Elvis Presley

The "King of Rock n' Roll" Elvis Presley's popularity spiked exponentially in 1956 and 1957 following the release of his first hit songs and albums. Media fed off Presley's star power. Critics denounced his dance moves and his influence on young people, but with every article published and every television appearance, his name recognition continued to grow. Just as he was on the brink of reaching peak stardom, he was drafted into the United States Army. After serving for two years in two different armor battalions, he returned to civilian life to emphasize his movie career. Though Elvis took a break from the limelight, the critics never left him. Elvis's Cold War image, shaped by media attention to his service in the Army, influenced how consumers viewed celebrities. This research utilizes newspaper media sources to analyze how Cold War themes affected public perceptions of Elvis Presley before, during, and after his service in the U.S. Army.

### **Sophia Kaplan**

Neuroscience

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Deanne Buffalari

Funding Received from the Drinko Center

The effects of pre-exposure to cannabinoids on the susceptibility of zebrafish to scopolamine associated memory deficits

Memory relies on interactions among varied neurotransmitter systems; impairments can result from disruptions in this balance. Endogenous cannabinoids (CB) systems, also the target of THC, have been shown to effect systems important for memory. The current experiment measured how acute/chronic exposure to WIN 55, 212-2, a CB1 agonist, altered the ability of

scopolamine, a cholinergic antagonist, to impair spatial memory in zebrafish, as measured by exploration of a novel arm in a t-shaped maze. No significant effect on percent time in the novel arm was found following acute exposures, however a significant effect of acute exposure to WIN-55, 212-2 was found on total entries, showing a possible effect on locomotion. For chronic exposure, it is expected that the acute effects of WIN-55, 212-2 may diminish with repeated exposure. The goal of this research is to contribute to the understanding of the effects of chronic cannabinoid usage on memory deficits that may be the result of disease.

### **Maranda Kline**

Psychology

Patterson Hall 110, 1:50-2:10

Faculty Sponsor: Eric Fields

Funding Received from the Drinko Center

### **Autobiographical Episodic Memory and Personality**

The purpose of this experiment is to examine the link between autobiographical episodic memories and the Five-Factor Model personality traits. Students from Westminster were asked to recall a positive and a negative event and take the autobiographical memory questionnaire (AMQ). Participants were also asked to complete the IPIP-120 Personality Test. Their memories were run through LIWC to analyze emotional tone. Based on previous research, I predicted that the biggest differences in memory reliving will come from the personality facets rather than the broad personality trait. Previous research suggests that neuroticism will result in more detailed and vivid negative memories and that scoring high in extraversion and openness to experience will result in more vivid memories regardless of valence. Research has found that the more emotion words, the more immersed in the event one is, so I predicted that there will be higher scores in emotional tone in LIWC analysis in negative memories.

### **Harris Kohl**

Chemistry

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Peter Smith

Funding Received from the Drinko Center

### **Extraction of lithium using Osorb as the extraction media**

The lithium-ion battery has revolutionized our technology; however, the lithium supply is being drained. The shortage of lithium has made the US label it a critical material, meaning the government is pushing for more domestic production of lithium. Lithium is more abundant in aqueous solution around the world, creating a demand for the most efficient method of extraction. This study shows how efficient Osorb®, a water permeable membrane that collects hydrocarbons from solution, extracts lithium from two aqueous solutions. In this study, Lithium

hydroxide and lithium chloride were used to create the lithium solutions. LIX-984N was added as the organic extracting agent and finally Osorb® as the extracting media. As the solution mixes, the Osorb® will pick up the lithium-ion trapped in LIX-984N and remove it from solution. After the Osorb® is removed the remaining solution is tested for lithium concentration using a beers law plot and a UV/Vis Spectrometer.

### **Joseph Kozlina**

Computer Information Systems  
Patterson Hall 207, 2:20-2:40  
Faculty Sponsor: John Bonomo

### **Ticket Aggregator Website**

When searching for tickets, many buyers browse a myriad of sites in order to find the best price, which can be extremely disorienting and time consuming. With the creation of my website, users will now be able to browse and compare tickets from the top resellers in the world. My website gathers data stored in company API's (Application Programming Interface), and displays the results in a simple layout for the user. In this talk I will describe the mechanisms in which I gather and display the information.

### **Ava Krensky**

Biology  
McKelvey Campus Center Witherspoon, 9:00-10:00  
Faculty Sponsor: Marosh Furimsky

The Effect of Niclosamide Lampricide on the Development of Zebrafish (*Danio rerio*)  
The Great Lakes have been controlling their invasive sea lamprey (*Petromyzon marinus*) problem since the 1960's with niclosamide (2', 5-dichloro-4'-nitrosalicylanilide). The specific aim of this study is to determine the effect of niclosamide on zebrafish (*Danio rerio*) development. The significance of this project is to determine if this chemical treatment could disrupt native freshwater fish development. Sub-lethal doses of niclosamide were used in a series of concentrations at 2µM, 1µM, 0.5µM, 0.25µM, and 0.125µM. Embryos were exposed 7.5 hours post fertilization (hpf), and found that at 2µM and 1µM concentrations, the larvae showed tail curvature, missing pigmentation, and ended up dying within four days. The lower concentrations showed less observable physical characteristics, but the fish were less buoyant and slower-moving. This study will increase the scientific community's knowledge of niclosamide's teratogenic effects on freshwater fish by using zebrafish as a model.

### **Hannah Krofcheck**

Nursing

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Melissa Baron

#### Increase In Flu Vaccine Uptake Among College Students

There has been a decline in flu vaccination rates within recent years here on campus. With students sharing common spaces it is easy for the transmission of influenza. With 5%-20% of people falling victim to the flu each year it is very important to take action to decrease our risk to the flu. In this quality improvement project, I am working with the Wellness Center to study how to increase flu vaccine uptake among college students. By gathering data from students, interventions will be put in place to help raise our rates. With incentives, reminders, and an increase in on campus flu vaccination clinics I am hoping to increase flu vaccine uptake next flu season.

#### **Emiley Kushner**

Nursing

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Joni Darby

#### Quality Improvement Project on Sublocade Injections

Gateway Rehabilitation Center in Aliquippa Pennsylvania had a recent uptake in necrotic skin due to improper administration and care of the Sublocade depot. The nurse educator and I are collaborating to collect the amount of Sublocade shots given daily and the number of shots which became necrotic and seeing if those patients continued to seek treatment after the skin became necrotic. We are working on a reeducation plan for the staff to teach the importance of properly inserting Sublocade shots and educating patients on how to care for the Sublocade depot by leaving it alone and not rubbing or massaging it and the importance of wearing appropriate clothes that does not rub or irritate the depot. Ending the cycle of opioid addiction is the goal by ensuring that Sublocade is given the chance to work properly.

#### **Ashlyn Lang**

Environmental Studies

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Patrick Krantz

#### Comparing Deer-Related Crashes in a Rural and Urban County in Pennsylvania

Deer-related collisions are the most common type of crash in the United States. Deer-related crashes are highly costly in the terms of animal mortality, property damage, and safety. The goal of this project is to compare the deer-related crashes in the two counties, one county is rural and the other is an urban county. Allegheny county is representing an urban county and



Butler is representing a rural county. Over the semester, I looked at deer-related crashes in the terms of the months, time of the day, location (roads, highways), countermeasures, and trail camera photos in each of the counties. I used the Pennsylvania Department of Transportation's Pennsylvania Crash Information Tool database to select the counties I wanted to look at and generated a map to determine where the crashes occurred. I talked to Pennsylvania Department of Transportation employees about the data and then the Pennsylvania Game Commission about the countermeasures.

### **Ashlyn Lang**

Environmental Science

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Kerri Duerr

The Bird World, Peace, and Conservation Awareness

Going out in nature and getting a new look at life by birding provides an escape from the world. This is called biophilia, which is the idea that human takes and wants to have a connection to nature. Erick Fromm says people need to connect with nature. To help my friend experience this I took them out birding. The Biophilia hypothesis will improve the health of the brain and body. The connection between people and nature can improve the conservation of birds. I will teach them how to appreciate the birds, listen to their songs, and identify them. There are three ways to identify birds; size and shape, color and markings, and behavior. Along with the biophilia hypothesis, there will be three goals around the birds: We want to bring awareness around birds and how they are environmental indicator species.

### **Jayneil Latham-Mason**

Computer Science

Patterson Hall 210, 10:40-11:00

Faculty Sponsor: John Bonomo

Titan Workout Tracker

At Westminster College, over half of the student population are athletes. Even if the student is not an athlete, they will most likely use workout facilities to stay in shape. My project creates an easy way for individuals to store their workouts in a web application and track their progressions. The app will also allow for coaches of teams to post workouts for the entire team to utilize. These progressions and workouts will all be stored in a database that individuals can access at any point in time through a user login. There are many apps on the market that may have some similar features, but this app will be specialized for Westminster students only.

**Riley Lewis**

Sports Management

Patterson Hall 205, 10:40-11:00

Faculty Sponsor: Robert Zullo

Funding Received from the Drinko Center

Marketing Strategies in Division III Intercollegiate Athletics: A Case Study of a Pennsylvania Liberal Arts Institution

Many smaller Division III schools use athletics to build their enrollment. Unlike their Division I counterparts, Division III sponsorship and licensing revenue are smaller due to a limited fanbase and television appeal. This research looks at a Division III school and the challenge of student retention. Because on-campus athletic contests can enhance the greater college experience this study examines these research questions: RQ1: what are students' motivation, and lack of, for attending home athletic contests RQ2: what are students' preferred methods for the advertising of home athletic contests RQ3: what are students' preferences towards social media RQ4: what promotions would and would not capture students' attention RQ5: what innovative marketing ideas would and would not capture students' attention Analysis of the findings can help enrollment-driven Division III schools seeking marketing strategies to help turn games into events, boosting campus retention.

**Charles Lisella**

Music Performance

Co-author(s): Tim Mulcahy Max Smith Kole Alcorn Liam Chute Michael Everhart

McKelvey Campus Center Tub, 9:00-9:15

Faculty Sponsor: Ryan Keeling

Barbershop Club

Hello My Baby, Beach Boys Wouldn't It Be Nice & I Get Around, Can You Feel The Love Tonight

**Charles Lisella**

Music Performance

Co-author(s): Timothy Mulcahy, Alayna Ford, Jeremy Beckinger, Isabella Dienes

McKelvey Campus Center Tub, 3:00-3:15

Faculty Sponsor: Timothy Winfield

Market Street Brass Quintet

The Chase- Dallas Brass Book 2:00 Colchester Fantasy: II. The Marquis of Granby, 5:45 Eric Ewazen Contrapunctus IX- J.S. Bach 3:26

**Christina Loewe**

Political Science

Co-author(s): Izayah Bojanac, Sean Casey, Erin Callahan-Cardin, Sarah Anil Cherian, Teddy Curcio, Gabriela Garza, Krysta Germanoski, Gabrielle DiDolce, Kent Dunn, Dalton Hamm, Caio Souza, Mateus Souza, Marcus Tokar, Kelsey Humes, Helen Moseley, Makyla Wheeler, Victoria Valcarcel Matos, Nicholas Smith

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Michael Aleprete

Funding Received from the Drinko Center

**Model United Nations Conference**

The Westminster Model United Nations club is a student organization open to all students and majors. Each November, the organization attends the American Model United Nations conference in Chicago, Illinois. In 2022, the club represented the Russian Federation and Turkmenistan.

**Ashley Madasz**

Biology

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: John Robertson

**Endocarditis- A Case Study**

Endocarditis is an inflammatory condition caused by bacteria that affects the lining of the chambers or valves of the heart. This report should raise awareness of proper tests and verification used to diagnose endocarditis in patients presenting symptoms that seem to indicate other illnesses. A 60-year-old female presented with symptoms including acute abdominal pain, cough, vomiting, altered mental status, and a low-grade fever. A series of tests (including an echocardiogram) were conducted to diagnose the patient with endocarditis. As treatment, the patient was given antibiotics intravenously. Although endocarditis is a relatively uncommon condition, its rarity should not discredit its severity. Therefore, it is essential to treat endocarditis since failure to do so may cause permanent damage to the heart leading to more severe problems like heart failure.

**Kaylee Madey**

Biology

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Kerri Duerr

Bring my Buddy Birding

Did you know that birding can not only help out our community but your mind? Exposing more people to this hobby increases the awareness of birds for community science. In the past few decades, our world has lost around three billion birds and counting. By expanding people's knowledge of birds, and using social media, we can figure out what is happening and stop it from continuing. People can upload birds they have seen and heard to databases on their phones. This helps show scientists migration patterns and problems that might be occurring. Birding also increases mindfulness. Sitting quietly and focusing on looking for birds helps draw people's thoughts away from everyday stressors. The classes, BC 150 and BIO 120 teach different aspects of social media and birds. Even though these two classes are not alike, they can benefit one another. Taking friends to experience what has been learned in these classes, can help increase the number of people learning about the benefits of birding.

**Katie Magee**

Professional Communication & Leadership

McKelvey Campus Center Berlin, 12:40-12:50

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

**The Notorious RBG and the Rhetoric of Fashionable Dissent**

Justice Ruth Bader Ginsberg stood out amongst her colleagues from the moment her five-foot-one-inch stature signaled the arrival of the first Jewish woman on the court. And while many of her words and opinions comprise much of her lasting legacy, it is a fashion accessory that has provided a voice beyond the grave, RBG's notorious dissent collar. A rhetorical analysis of Ginsberg's fashionable dissent explains how a fashion accessory transformed into a significant, iconic rhetorical artifact. I will be analyzing the dissent collar through the lens of Edwards and Winklers visual ideograph construct introduced in their 1997 Quarterly Journal of Speech article "Representative Form and the Visual Ideograph: The Iwo Jima Image and Editorial Cartoons." Two areas of analysis emerge; symbolic conversion and cultural immersion. Visual aids will be used to support the visual analysis covered in the 10 minute presentation.

**Franklin Manios**

History

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Angela Lahr

**Television as an Unlikely Weapon During the Cold War**

The Cold War shaped the world politically and economically, but the conflict also affected American culture. The Cold War's influence could be seen in film and television alike. As more and more Americans were purchasing televisions, they were also watching television shows that shaped how they understood the Cold War. One of those shows was I Led 3 Lives. Based

on the life and memoir of Herbert Philbrick, who joined the U.S. Communist Party as a secret agent for the FBI, the show aired from 1953 to 1956 and starred Richard Carlson. Historians have written about the ways that film and television were used as cultural weapons during the Cold War and have explained how *I Led 3 Lives* was influenced by the Cold War and how the show linked life in the United States to the broader Cold War. This research contributes to that literature by taking a closer look at *I Led 3 Lives*. In particular, it explores the ways the episodes portrayed countries around the world in a Cold War context.

### **Brittany Marburger**

Creative Media Production

Co-author(s): Kevin Ivany, Adrienne Offutt, Hamish Mathwin, Rob King, Noah Wolford

McKelvey Campus Center Mueller, 9:00-9:30

Faculty Sponsor: Kandice Hartner

### **Creative Media Production's Short Cuts Film Festival**

Entries for the Creative Media Production Short Cuts Film Festival come from both sections of 112, Digital Movie Making (01 and 02). 112 01 is taught by Kandice Hartner and 112 02 is taught by Bradley Weaver. The two classes have come together to create short films, in a total of seven different groups. A kickoff event marked the start of the project, where each team was required to pick a genre that cannot be changed after the kickoff event. The required prop was also introduced at this event, aluminum foil. Groups must show the foil on screen as part of the project. Videos are 2-3 minutes in length and should put an emphasis on storytelling. Outside of the genre and required prop, students bring their creativity to life in this exciting and collaborative project between two different classes.

### **Camryn Marshall**

Nursing

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Joni Darby

### **S.T.I.C.K. IV Infiltrate Bundle: Prevention of Pediatric IV Infiltrations**

**Objective:** The purpose of this study was to reduce the rate of IV infiltrations in pediatric patients by reeducating nurses. Pediatric patients are at an increased risk of IV infiltration. IV infiltrates can cause serious tissue damage, so their prevention is crucial to protect our patients from harm. **Methods:** Data was collected on the IV infiltrate rate on a pediatric unit. Nurses were educated on the S.T.I.C.K. IV Infiltrate Bundle. This education was done via pamphlets and badge cards. IV infiltration prevention was also presented during our monthly staff meeting. **Results:** The baseline data showed that there was an average of 15 infiltrates per month on our unit. The goal of implementing this education is to reduce the incidence of IV infiltration to 10 infiltrates per month. **Conclusion:** Educating nurses on IV assessments and related knowledge

will help reduce the incidence of IV infiltrates. This reduction will prevent unnecessary tissue damage and harm to our patients.

### **Owen Martin**

Biology

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: John Robertson

#### **Acute Lymphocytic Leukemia and its Treatment**

The American Cancer Society estimates that 6,540 Americans will be diagnosed with acute lymphocytic leukemia in 2023, and the disease will take the lives of 1,390. To fight for a world where 0 people die from this disease, we need to gain an understanding of acute lymphocytic leukemia and current treatment methods. This literature review provides an overview of the disease. This includes presenting the unique pathology of acute lymphocytic leukemia in the context of leukemia as a whole. Also described are the most common treatments, such as chemotherapy and radiation therapy, and how those treatment options act in the body to help treat the disease. This information can help those gain an understanding of the disease from an anatomical and physiological standpoint which can help the public be more informed when reading about advances in cancer research, with a specific emphasis on acute lymphocytic leukemia.

### **Hamish Mathwin**

Creative Media Production

Co-author(s): Bethany Edwards, Emma Gurley, Sabrina Slagle, Kevin Ivany, Mason Peck, Dani Soloski, Max Robinson, Ryan Thibault

McKelvey Campus Center Mueller, 9:30-10:00

Faculty Sponsor: Kandice Hartner

#### **Bunker**

Created for CMP310: Digital Video and Cinema, the short film Bunker showcases the story of a young woman and her father, who have been living in a Bunker since she was born. As with many curious teens, she begins to question life outside of the bunker and what life was like before. While her father answers questions to the best of his ability, it starts to become clear that not everything is as it seems.... As part of this assignment, the class is working together to create this short film. Required items as part of the process are a script, storyboards, production documents, mood-boards, and more. Each member of the class has a working position such as Director, Director of Photography, Production Designer, Writer, Key Gaffer, Editor, and others. As a small class, students work in not only these rolls, but help to fill in the gaps where needed in order to produce this short film and show off their film-making knowledge.

**Abigail McCardle**

Sociology

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Kristin Park

A Study of the Perceived Impact on Mental Health of College Students in Nature-Based Classes  
The research question asked was, "What is the level of impact for college student's mental health when they interact with nature via nature-based classes?" The goal was to analyze the benefits of college students' mental health by tracking people's thoughts and feelings as they are taking a nature-based course that focuses on interacting with nature. For research methods, participants completed qualitative audio diaries of their thoughts and emotions shortly after they had their nature-based class. For the findings, there was a positive impact on most of my participants enrolled in nature-based classes on their thoughts, emotions, and perceived mental health. The data supports participants positively responding to both the nature aspect of their classes and the hands-on learning environment, so there is a confounding effect that people's responses could be affected by the nature or the learning environment of their classes.

**Alyjah McHugh**

Professional Communication & Leadership

McKelvey Campus Center Berlin, 12:50-1:00

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

**Fostering Identity**

Our nation seems obsessed with identity. Everything from the development of political philosophies to the fad of ancestral searches builds on the foundation of identity. A Public Narrative is a speech which invites audience to engage in significant social issues, values, or campaigns through the telling of a personal anecdote. My personal search for self has spanned several years and involved lots of people. On the way, I have come to understand the importance of words like alienation, foster care, and adoption. My journey "home," like the word itself, ends in "me."

**Brooke McQuillan**

Criminal Justice Studies

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Kristin Park

### The Personality Types and Associations Within Greek Life, Athletes, and Unaffiliated Men and Women/Non-Student Athletes College Students

Many college students go through the recruitment process and become involved in Greek life with groups of men and women similar to themselves as a way to engage in campus life. In addition, student athletes get recruited to play for their university's sports teams. The intent of this research is to measure the relationships amongst Greek membership/interests, athletics, unaffiliated men and women/non-student athletes and personality types from the OCEAN personality test. Participants consisted of freshman to seniors/5th year students. This study consisted of 111 participants using a mixed-method approach with a qualitative survey to investigate 5 hypotheses that also help tie the quantitative aspects into the research. SPSS will be used in this research to examine the findings of this data.

#### **Jacob Medvitz**

History

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Angela Lahr

### For What It's Worth: Music and Counterculture During the Vietnam War

After World War II, Cold War tensions as well as the fear of the spread of communism led to American involvement in Vietnam. In the United States, thousands of young men were drafted into the military, effectively forced to risk their lives against their will. By the end of the 1960s, the antiwar movement in the United States grew. Young Americans who protested the war expressed themselves and their disapproval of the government's war through artistic means, especially music. This project will analyze songs and albums written in protest of the Vietnam War in order to explain how that war reflected attitudes about the Cold War as a whole in the 1960s and 1970s. I plan to analyze songs such as "I-Feel-Like-I'm-Fixin'-To-Die-Rag" by Country Joe and the Fish, "Ohio" by Bob Dylan, and "The Unknown Soldier" by The Doors. This research attempts to connect the antiwar music about the Vietnam War to the growing skepticism of the Cold War during the period.

#### **Jacob Miller**

Biology

Co-author(s): Daniel Blank, Michael Petronzio

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Kristen Amick

Funding Received from the Drinko Center

### Mechanisms of *Aeromonas hydrophila* Contributing to Antibiotic Resistance Determined by Whole Genome Sequencing and Bioinformatics Analysis



Bacteria produce antibiotics to outcompete other microorganisms in the environment for crucial resources for life. Since the 1920s, antibiotics have been prescribed to help fight bacterial infections. Resistance to such prescribed medications occurs naturally in bacteria. This is due to bacteria possessing different mechanisms to counter the antibiotics. As a result, some infections have become difficult or impossible to treat due to highly resistant bacteria. Here we investigate the antibiotic mechanisms in a bacterial species collected adjacent to the baseball field at Westminster College. The selected bacteria underwent whole genome sequencing and bioinformatic analysis to determine the mechanisms conveying resistance to ampicillin. We discovered that bacterial species was *Aeromonas hydrophila*. This species achieves antibiotic resistance to ampicillin by AmpC, beta-lactamase, and efflux porins.

**Jacob Miller**

Biology

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: John Robertson

**The Change of Acid-Base Equilibrium relating to Metabolic Acidosis**

Metabolic acidosis is a common and potentially fatal disease. The aims of the presentation are to inform how two forms of metabolic acidosis develop. An anion gap is the difference between negatively and positively charged electrolytes in the blood. High anion gap metabolic acidosis and normal anion gap metabolic acidosis are two different forms of metabolic acidosis. High anion gap metabolic acidosis is caused by having too many acids in the blood, which eliminates bicarbonate. Normal anion gap metabolic acidosis is caused by losing too much bicarbonate in the blood due to kidney disease or failure. Having a low body pH causes proteins to denature resulting in death or coma. A literature review will be used to investigate metabolic acidosis symptoms, treatments, and development. By understanding the causes of metabolic acidosis, we will be able to better understand how the body controls the acid-base balances and how to correct these imbalances.

**Lauren Millhorn**

English

McKelvey Campus Center Mueller, 3:00-3:30

Faculty Sponsor: Trisha Cowen

Funding Received from the Drinko Center

**"What Manner of Man is This?:" Representations of Vampiric 'Others' in Nineteenth-Century Literature**

This project begins with an overview of classic vampires in literature to provide insight on the physical and symbolic evolution of the vampire, and how concepts such as Freud's *unheimlich*, Said's 'Other,' and Cohen's *Monster Culture* present themselves in the portrayals of these

vampires. Thereafter, it closely analyzes John Polidori's "The Vampyre" (1819), Sheridan Le Fanu's Carmilla (1872), and Bram Stoker's Dracula (1897) to determine how the vampires within each text represent social 'Others' through the lenses of theology, postcolonialism, feminism, and eroticism. Further, the analysis examines the human characters in each novel to determine how their reactions to these various 'Others' signify societal fears of the unheimlich that lie dormant within all beings and evolve throughout time.

**Lauren Millhorn**

English

McKelvey Campus Center Cultural Center, 12:00-1:00

Faculty Sponsor: Kristianne Kalata

**Poetry Slam**

Join Sigma Tau Delta and Scrawl for the 2023 Poetry Slam! This year's selected participants read their poems aloud and are scored by a panel of judges, who will declare a winner. Stop by to enjoy light refreshments and great poetry!

**Madison Miller**

Nursing

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Tricia Ryan

Attitudes of Undergraduate Students at a Liberal Arts College Regarding the Covid-19 Vaccine  
COVID-19 revealed the importance of vaccination, especially on college campuses, where tight quarters and poor vaccine uptake can cause uncontrolled spread of COVID-19. To explore vaccine hesitancy and create possible solutions, it is beneficial to analyze the attitudes held by undergraduates toward vaccination, as well as their preferred way of learning. This data may help identify possible opportunities to improve vaccine outreach and vaccine uptake. A survey was developed to explore these topics. Understanding the causes of vaccine hesitancy among this demographic and gaining insight into favored methods of learning allows for the development of more effective vaccine outreach.

**Asia Morgenstern**

Mathematics

Patterson Hall 105, 2:20-2:40

Faculty Sponsor: Adam Blumenthal

Modeling Faults in Phasor Measurement Units Using Leaky Power Domination

Graphs are a useful and widely-applicable tool for modeling various relationships in the world around us, including social networks, linguistics, and power grids. Phasor measurement units (PMUs) follow a two-step process to calculate power usage throughout a power network, which we can model using the concept of power domination in graphs. While PMUs are a powerful tool, they are both expensive and have limited visibility. Our goal is to determine the minimum number of PMUs needed to observe an entire power network. We introduce a variant on power domination called leaky power domination, which accounts for failures or errors in the monitoring process. To this end, we have determined the minimum number of PMUs required to monitor certain network structures given some number of potential failures.

### **Asia Morgenstern**

Physics

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Craig Caylor

### **The Motion of Soap Film Bubbles & The Dynamic Viscosity of Air**

Modeling our experiment off of that of Alexandre Delvert, Pascal Panizza, and Laurent Courbin, we calculated the dynamic viscosity of air by analyzing the motion of a soap film bubble. After taking six runs, we applied a series of fits to obtain an experimental value of  $(18.4 \pm 1.7) \times 10^{-5}$  s/m<sup>3</sup>, which we compared to a calculated theoretical value of  $(9.9 \pm 2.7) \times 10^{-5}$  s/m<sup>3</sup>. Since the values are within 3.18 standard deviations each other, we could not use the aforementioned fits to calculate air viscosity. However, we can conclude that the fit is mostly accurate.

### **Katherine Mozelewski**

Psychology

Co-author(s): Lindsay Cotton

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Jessica Rhodes

Funding Received from the Drinko Center

### **You Can't Sit With Us: An Update to Rejection Sensitivity Assessment**

Rejection sensitivity is the tendency of an individual to perceive social rejection. High levels of rejection sensitivity have been shown to increase the risk of suicidal ideation and psychopathology. It is important to have a measure to identify individuals with high rejection sensitivity so measures can be taken to reduce the risk of negative outcomes. The most common assessment for this construct, the Rejection Sensitivity Questionnaire, demonstrates adequate psychometric properties but fails to address rejection scenarios regarding the internet and social media. A measure was created to assess rejection sensitivity that addresses these limitations. Pilot data on 18 Westminster students was collected, and the psychometric

properties of the updated measure were evaluated. Results suggested significant and comparable evidence of reliability and validity. This study aims to expand this preliminary work by collecting data on a larger and more generalizable sample using Mechanical Turk.

### **Katherine Mozelewski**

Neuroscience

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Deanne Buffalari

Funding Received from the Drinko Center

Sex differences in the interactions of nicotine and food deprivation on anxiety-like behavior  
Cigarette use is highly associated with weight loss, and many people begin smoking to lose weight. Calorie-restrictive diets are often used in conjunction with smoking, particularly in women. Yet, the interaction of nicotine and food deprivation in males and females is not fully understood. This study aims to analyze the impact that sex and calorie restriction may have on the body's response to nicotine through the observation of anxiety-associated behaviors in rodents. Food-deprived female rodents exposed to nicotine are expected to present fewer anxiety-associated behaviors than free-feeding female rodents and all male rodents. If our hypothesis is supported by the results, this will indicate that women who diet and use nicotine may experience less anxiety than non-dieting females and males. This may result in a more pleasurable smoking experience for female smokers and decreased rates of nicotine cessation, increasing smoking-associated health risks.

### **Jimmy Oberlin**

Biology

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: John Robertson

Funding Received from the Drinko Center

#### **Musculature of the Gill Arch of Paddlefish: A Role in Gill Raker-Based Filter Feeding**

Gill rakers in fish are crucial for obtaining food. The internal gill arch components that have been identified appear unlikely to assist in food acquisition, but the presence of skeletal muscle may explain how gill rakers are oriented to optimize filter-feeding. An investigation of the gill arches of paddlefish will be done to discover if the arches contain skeletal muscle. We hypothesize that the dissection of the gill arches of paddlefish will reveal skeletal muscle upon histological analysis. We hypothesize that a consistent location for skeletal muscle will be identifiable within the gill arch of the paddlefish and will support a role for skeletal muscle in gill raker-based feeding. Alternatively, skeletal muscle may not be found to be playing a role in gill raker form and function. Paddlefish are an evolutionary interesting species. This study could

provide useful information about gill raker orientation and the role of skeletal muscle in its manipulation for food acquisition.

**Austin O'Hara**

Mathematics

McKelvey Campus Center Mueller, 12:30-1:00

Faculty Sponsor: Heather Muchowski

Using Differential Equations to Model a Mass on a Spinning Wheel

The Lagrangian function is a quantity that characterizes the state of a physical system. Most commonly used in Classical Mechanics, the Lagrangian function is used to model the movement of a physical system. For the SCUDEM V 2020 modeling challenge, the challenge was to accurately and efficiently model a bird spinning on a bicycle wheel utilizing the appropriate mathematical and physical equations of rotational motion. In this work, we derive the equations to appropriately model the swing motion of the bird and movement of the wheel, and approximate the solutions using the fourth-order Runge-Kutta method.

**Lindsey Oliver**

Criminal Justice Studies

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Jamie Chapman

Funding Received from the Drinko Center

An Intersectional Approach to Understanding How Individual Biases are Related to Perceptions of Punitiveness

This research explores the relationship between racial and mental illness biases on perceptions of punitiveness within the criminal justice system. While previous research has established the individual effects of race and mental illness on sentencing, less is known about how sentencing may be impacted by the intersection of the two identities. The present study employs the Racial Attitudes Questionnaire and the Prejudice Against People with Mental Illness scale to examine individual attitudes towards racial minorities and those with mental illnesses. The study then compares the findings with perceptions of punitiveness, measured using vignettes manipulated for race, mental illness, and both, in sentencing to determine the impact that these biases have on criminal outcomes. Through an experimental design, the current study explores the impact of racial and mental illness biases on punitiveness, and specifically looks at how intersectionality effects sentencing outcomes.

**Michael Orsi**

Environmental Studies

Co-author(s): Mark Armile, John Colella

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Keith Bittel

Can mushrooms save the earth? A new take on sustainable packaging.

Plastic waste is one of the most pressing issues facing humans today. Roughly 14 million tons of plastic waste end up in the ocean every year. Efforts to solve this problem via plastic recycling have failed which means other solutions to plastic waste must be implemented. Our research is focused on alternative forms of packaging that do not involve plastic. An investigation into economically feasible production of more efficient and environmentally friendly forms of packaging such as mushroom foam, biodegradable packaging peanuts, seaweed packaging, and even cornstarch packaging will be undertaken. The sustainable packaging market is expected to continue growing at a rapid pace over the course of this decade. A conclusion regarding the most promising form of alternative packaging is the end-product of our research.

**Brady Page**

Marketing & Professional Sales

Co-author(s): Caden Rainey, Aidan Minnock, Sean Casey

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Robert Zullo

Got Beer? Environmental Sustainability in the Beer Industry

The beer industry is one of the largest industries across the world. With that being said there are a lot of factors in that industry that create a lot of pollution. Beer companies across the world are finding ways to switch to a more sustainable way of making their products. Beer companies are finding unique ways to make their products more economically friendly. Coors, Budweiser, Saltwater Brewery, and Carlsburg will be the companies we take a deep dive into within our poster and highlight all the ways these companies have taken the steps to become more sustainable to the earth and make the environment around us a better place.

**Haleigh Paolucci**

Biology

Patterson Hall 105, 11:00-11:20

Faculty Sponsor: Joshua Corrette-Bennett

The effect of ascorbic acid on the rate of wound healing, limb regeneration, and expression of *tgfb-1* and *col1A1* in *Ambystoma mexicanum*

My research was a two-fold project that focused on how ascorbic acid affects the rate of wound healing and consequent limb regeneration as well as the expression of  $\text{tgf}\beta\text{-1}$  and  $\text{col1A1}$ . A sample size of 24 axolotls was divided into three treatment groups, a high concentration of ascorbic acid (0.5 g/kg), a low concentration (0.05 g/kg), and a control (no ascorbic acid). Pictures were taken every three days and the limb stumps were measured to track growth. It was found that there was a significant decrease in the rate of limb regeneration, between days 24 and 53, in axolotls injected with the low concentration of ascorbic acid. RNA from the tissue samples taken from the initial amputation (non-regenerating tissue) and the amputation performed at 72 hours (treated, regenerating tissue) was converted to cDNA and qPCR was used to determine the effect of ascorbic acid on expression of  $\text{col1A1}$  and  $\text{tgf}\beta\text{-1}$  during the wound healing phase. Results for gene expression are underway.

**Emma Parker**

Biology

Co-author(s): Harmony Wilson

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Diana Ortiz

Funding Received from the Drinko Center

Determining the diversity and host preference of mosquitoes collected at the Tabogas Forest Reserve, Costa Rica

Several neotropical monkey species act as hosts for mosquito-borne pathogens and have a long co-evolutionary history with insect vectors and partaking in “fur rubbing” or “anointing.” This act of masticating plant and invertebrate parts across the fur is suspected to release insect-repelling volatile compounds. Most studies of it are behavioral; few exist on the ecological interface between organisms. This multiyear international collaboration was initiated in 2017 to better understand these ecological interactions. Field work began in July of 2022 near monkey habitats at Tabogas Forest Reserve in Guanacaste Province, Costa Rica with objectives to evaluate collection methods, determine the region’s mosquito diversity, and gather blood-fed samples for host preference studies. Collections occurred using multiple trapping methods to attract mosquitoes of various species and developmental states. Our preliminary data about the mosquito fauna diversity will be built upon in following years.

**Emma Parker**

Biochemistry

Patterson Hall 207, 11:00-11:20

Faculty Sponsor: Jessica Sarver

Production of mutant samples of Alpha synuclein for electron spin resonance structural study through protocol refinement.

Alpha synuclein (alphasyn) is an intrinsically disordered membrane binding protein functioning in vesicle transport and fusion between neural synapses. Its aggregation has been correlated to neurodegeneration. Notably, the order and structure of this protein depend on its binding target. The primary focus of this work is protocol refinement for the expression and nickel column chromatography purification of the protein, followed by the production of mutant samples for electron spin resonance structural study. Purification and sample production success is analyzed through SDS-PAGE and UV-Vis spectroscopy, which allows for qualitative and quantitative analysis to guide methodology improvement. Samples at each step of the growth and purification process are taken for SDS-PAGE visualization of alphasyn's growth and isolation progress. Once isolated, UV-Vis confirms the presence of this protein and reveals the concentration – and if the methods produced enough for further analysis.

### **Emma Parker**

History

Co-author(s): Natalie Rose, Victoria Kattler, Haley Simcic

Patterson Hall 208, 1:30-2:15

Faculty Sponsor: Angela Lahr

Societal collective memory surrounding science in US history.

Public memory, group memory of a shared past that reflects sometimes conflicting values, is expressed in various forms. This roundtable discussion focuses on the public memory of science and well-being. We will share our research projects (which will include public memory site designs) on first responders during the COVID-19 epidemic, consent and informed consent in medical studies, the divergence of neuroscience as a separate field, and George Westinghouse, inviting discussion on the changing views of science in society.

### **Jacob Patton**

Chemistry

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Helen Boylan

Funding Received from the Drinko Center

Phosphorus Transport into Lake Brittain

Phosphorus Transport in Lake Brittain Plants need nutrients to grow more so, ortho-nutrients. One nutrient that causes rapid weed growth is phosphorus. In the lake at Westminster college, is surrounded by farmland which is nutrient loaded areas where potential phosphorus can be transported from. The Mehlich III method is used on nine soil locations and method 365.2 phosphorus, all forms (calorimetric ascorbic acid, single reaction) were used for 9 water samples. These methods use molybdenum antimony potassium tartrate and ascorbic acid by creating an antimony-phosphomolybdate complex which is reduced by the ascorbic acid to



bring about a bright blue color. This is then analyzed on a spectrophotometer. Also, water quality measurements were taken, pH, dissolved oxygen (DO) and water temperature. The results show that there is phosphorus input into the lake, but further testing will need to be done.

### **Shelby Pocono**

Music

Co-author(s): Peyton Aujay, Ashley Tarter, Shelby Pocono, Maeve Wonderly, Shawn Redmond, Jack Romocean, Dalton Stoops, Madison Mueller-Howell, Maddie George, Timothy Mulcahy, Jeremy Beckinger, Alayna Ford

Patterson Hall 210, 11:00-11:20

Faculty Sponsor: Tad Greig

Funding Received from the Drinko Center

Pennsylvania Intercollegiate Honors Band, The Process, the Product

URAC Presentation Pennsylvania Intercollegiate Band: The Process, the Product This presentation will involve a discussion related to the 1. selection process, 2. preparation prior, 3. chair auditions, 4. rehearsal /performance experience. The Pennsylvania Intercollegiate Honors Band is the longest running collegiate ensemble of this type in the country, boasting a 75-year history. As regular participants, our band students experience some of the finest and most challenging wind repertoire, and have a chance to network with others. This year, we have 12 students, the second largest contingent of musicians in the ensemble, other than the host, Mansfield University (Commonwealth East University). As we have a number of students, each aspect will be presented in tandem with all musicians represented

### **Zion Posey**

Philosophy

Patterson Hall 205, 1:30-1:50

Faculty Sponsor: Patricia Clark

Common Core and Child Centered Education

Education is a critical problem for the United States. It directly affects all Americans and therefore must be considered carefully. Out of this concern, Common Core was created and designed to help students become prepared for college. However, Common Core possesses flaws in its execution. The standards ascribed by the program are well meant, but students are taught to meet the standards and are inadvertently treated as statistics. This thinking harms students and negatively affects their ability to grow intellectually and socially. To address this problem, I will analyze methods and values from theories of education including child-centered education theories such as John Dewey's theory from Democracy and Education and Maria Montessori's theory from The Montessori Method, concluding ultimately that Common Core,

despite its good intent, treats students as a homogenous collective and fails to properly consider their distinct intellectual, social, and creative needs.

### **Shae-Lynn Quinn**

Nursing

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Joni Darby

#### **Boarding in the Emergency Department**

Emergency Department boarding is a worldwide issue in healthcare, which negatively affects patient and staff experiences. There is little-to-nothing that can be done about poor staffing, but there are other things that the ED staff can do to provide better care for patients, such as ensuring that their home medications are being given and that their admission orders are completed in a timely manner. I have created a checklist for admission orders, which would be kept in patient charts during their time boarding in the ED and implemented during shift report. It would have a checklist of orders that need to be completed on all admitted patients, and there would be date/time slots for each task in order to evaluate the efficacy of the checklist. In 2022, there were 4,388 boarding patients, with an average of 71.7% of the med-recs being completed within 90 minutes of admission. The goal of the checklist is that at least 90% of patients will have their med-recs done within 90 minutes.

### **Bahiyyah Richards**

History

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Angela Lahr

#### **The Cold War through the eyes of Joseph Stalin and George Kennan's Daughters**

Joseph Stalin and George F. Kennan played significant roles in shaping the early Cold War: Stalin as the communist leader of the Soviet Union and Kennan as an American diplomat who helped craft the American containment policy. When scholars discuss these two figures, they rarely take their family lives into account, but both Stalin and Kennan's daughters wrote memoirs that describe their fathers in a different light. Cold War kids grew up in a unique period. Using the daughters' memoirs of both Kennan and Stalin, this research will explore how the leaders' children perceived them. It will address how the Cold War affected the children of these two Cold War leaders and, in doing so, analyze the impact of the Cold War on children of the period. This project links the political and diplomatic histories of the Cold War with scholarship on the history of childhood

**Jamie Robertson**

Environmental Science

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Ann Throckmorton

**Preliminary Analysis of Drinking Water Quality at Westminster College**

For humans clean drinking water is crucial. Many contaminants cannot be seen, smelled, or tasted, so people can be exposed without their knowledge. The aim of this study was to do preliminary tests to determine if there are any heavy metal contaminants (iron, chromium, lead, copper, mercury) in the drinking water at Westminster College. Water samples were collected from the drinking fountains in the buildings on campus. The samples were taken once a week in the morning and in the evening. Reagent strips were used to test for the metals. Of the collected samples, 64.5% had levels of chromium and lead close to the action levels of PA. However, these tests are preliminary. Further study with a more accurate analytical method is necessary to ensure students and faculty at Westminster College are provided with clean, safe drinking water.

**Maxwell Robinson**

Creative Media Production

Co-author(s): Alex Marinski, Mark Mangino

McKelvey Campus Center 275, 1:00-2:00

Faculty Sponsor: Brittany Rowe-Cernevicius

**School of Comm: Capstone Trailers**

During this market research-type session, participants will get a sneak peek of the Broadcasting & Sports Production and the Creative Media Production capstones. During this focus group session, participants will get to watch trailers for several documentary capstone projects and view preliminary graphic design work before being asked to give feedback that students will be able to use to improve their final projects.

**Natalie Rose**

Biochemistry

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Patrick Lackey

Funding Received from the Drinko Center

**Examining the binding of 3'hExo to the histone mRNA stem loop**

Histone mRNAs end in a conserved stem loop rather than a poly-A tail and are rapidly degraded at the end of S-phase. The stem loop binding protein (SLBP) binds to the stem loop and controls all steps of histone mRNA metabolism, including degradation. Degradation of histone mRNA

ensures proper chromatin formation by controlling histone protein synthesis. During degradation a 3' exonuclease, 3'hExo, forms a ternary complex on the stem-loop with SLBP and trims the 3' end of the stem loop. While it has been shown that SLBP and 3'hExo both bind to stem-loop degradation intermediates, it is unknown how the intermediates influence the affinity of 3'hExo for the stem-loop. To test this, 3'hExo was purified from E. coli and gel shifts with 3'hExo and fluorescently tagged stem-loop degradation intermediates were run, with the ultimate goal of performing quantitative competition assays to measure the change in affinity for the different stem-loops.

### **Megan Routch**

Nursing

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Joni Darby

### **Longterm Analysis of Implementing a Protocol to Reduce CAUTIs Within a Healthcare System**

Cather associated urinary tract infections (CAUTI) are a serious problem that can lead to complications such as increased length of stays and comorbidities that are costly to both patients and hospitals. CAUTIs are infections of the urinary tract caused by the insertion of an indwelling urinary catheter. Examples include sepsis, urethritis, cystitis, urosepsis, repeated infections. Causes include poor sterile technique on insertion, poor catheter hygiene, inappropriate reasons for catheter use, length of use. In 2022 UPMC Jameson and Horizon hospitals conducted a quality improvement project implementing measures to help decrease the risk of CAUTIs. Interventions were developed to help decrease the number as compared to 2021. This project, as a result of the findings, has been continued to evaluate sustainability of measures initiated. The aim is to measure if interventions implemented previously continue to be effective in decreasing CAUTIs per patient stay. The data used in the original quality improvement project was explored for effectiveness. Before the quality improvement project UPMC Jameson had 7 CAUTIs and the goal of the project was to reduce that number to under 5 for 2022. Based on the data, the previous intervention plan was reviewed and enhanced. These interventions consisted of daily intervention checklists for staff to use as a tool to ensure proper use and care of urinary catheters. Documentation tools have also been implemented and data is currently being tracked for compliance and the aim of the project is to see a further decrease in incidence in 2023.

### **Emma Rudolph**

Molecular Biology

Patterson Hall 207, 1:50-2:10

Faculty Sponsor: Karen Resendes

### **G??12-coupled signaling in glioblastoma cells**

Glioblastoma Multiforme (GBM) is the most deadly and common occurring brain cancer. Recent research has revealed that the signal transduction pathways involving endogenous G-protein

coupled receptors (GPCR), G $\alpha$ 12/13, which couple to G12/13, mediate downstream targets to regulate cell proliferation, survival, and cancer progression. It was discovered that G $\alpha$ 12, the alpha subunit of G-protein 12, can be associated with the most aggressive GBM tumors and is a potential clinical marker for prognosis. Genes potentially mediated by G $\alpha$ 12 could be involved in proneural-to-mesenchymal transition (PMT) of GBM, including genes transcriptionally regulated by YAP-1 and MRTF-A. We hypothesize that G $\alpha$ 12-regulated gene expression in glioblastoma cells directly contributes to tumor invasion and PMT-like states. Use of the DREADD system, qPCR, and migration assays provided data that supports the importance of G $\alpha$ 12 as a major mediator of GPCR signaling in Glioblastoma progression.

### **Tyler Salvatore**

Environmental Studies

Co-author(s): Everett Lefever, Kai Haseyama, MacKenzie Meyer

Patterson Hall 107, 1:30-1:50

Faculty Sponsor: Keith Bittel

Electrification: Getting you to your destination.

Our research will dive into the complex factors related to the electrification of vehicles. The transition from gasoline-powered vehicles to electric vehicles is underway, but the progress has been slow due to many economic and environmental factors. Furthermore, we will be discussing feasible pathways to success in terms of having a smaller carbon footprint in the production and use of vehicles. Both the economic and environmental impacts of this massive shift in infrastructure and lifestyle are wide ranging. Our research provides a better understanding of these issues and a way to navigate towards the most sustainable solutions.

### **Jacob Scarff**

History

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Angela Lahr

Soviet Invasion of Afghanistan

The Afghan-Soviet War lasted from 1979 to 1989. This research explores the Cold War causes of the Soviet invasion of Afghanistan. Historians have offered various explanations, including Cold War competition and the Soviet desire to prop up the Communist Afghanistan government as the Mujaheddin threat to that government increased. The historical ties between the Soviet Union and Afghanistan will be explored as will evidence that reveals Soviet objectives and what they thought they could gain by invading Afghanistan. The history of this war helps us better understand the history of the Cold War in general as well as the subsequent rise of the Taliban and American involvement in the country after September 11, 2001.

**Madelyn Scarmack**

Biology

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Joshua Corrette-Bennett

Funding Received from the Drinko Center

The effect of B-alanine on the rate of Axolotl wound healing and limb regeneration  
Urodele amphibians, such as axolotls, are especially good at healing and regenerating certain tissues following damage or loss. Axolotl limb regeneration occurs in three stages: wound healing, de-development, and then redevelopment. This study focuses on the first and second stages because our treatment is thought to affect these stages the most. This study examined how beta-alanine affects the rate of wound healing and limb regeneration following amputation of a hind limb. Beta-alanine is a nonessential amino acid that is naturally produced in the body and converted to carnosine via carnosine synthetase. Carnosine is thought to act as a pH buffer, allowing the tissue to rebuild faster. In this study, we introduced high and low concentrations of beta-alanine via intramuscular injection on days 0 and 7, following amputation of the hind limb. Results show that injection of beta-alanine had a significant increase on the rate of limb regeneration and wound healing during that time period.

**Cherise Schultz**

Business Administration

Co-author(s): Michael Phillips, Kent Dunn, Ryan Armstrong, Ashlyn Lang

McKelvey Campus Center Mueller, 3:30-4:00

Faculty Sponsor: Brian Petrus

An ESG Analysis of Starbucks and the Global Coffee Industry  
Students studied the global coffee industry through a program designed to mirror the training and development progression of an associate analyst working for a Wall Street financial institution. Using industry-related analytical tools and methodologies, program participants analyzed the global coffee industry and completed an ESG analysis, a credit rating analysis, and an ESG-impact score calculation for the Starbucks Corporation.

**Jonathan Shaffer**

Nursing

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Joni Darby

Method for Reducing the Number of Patients who Leave the Hospital Without Being Seen

Hospitals across the nation are graded on various types of criteria in order to judge their safety and overall adherence to holistic patient care. One aspect of these criteria is the rate at which patients leave without being seen, or LWBS. This poses a significant risk to not only patient safety but also looks poorly upon the hospital. Current circumstances of staffing and the long-term ramifications of the Covid-19 pandemic have created problems which have been challenging to overcome. Many patients become frustrated with the lack of communication from staff regarding wait times, which causes many to leave the hospital prematurely. To combat this a proposed system of estimated wait times will be readily available to patients. This will be done to ensure that patients will feel a better sense of communication from the staff and be less likely to leave the hospital grounds prematurely.

### **Kylee Shannon**

Fine Art

Patterson Hall 205, 11:00-11:20

Faculty Sponsor: Summer Zickefoose

### **Color Theory**

This presentation is a curated collection of art pieces using color theory, then transitioning into how it is used in interior design. This presentation starts with a foundation of color theory and what can be achieved by understanding how to apply it. The pieces chosen for this collection show how with correct color theory use it creates unity and harmony.

### **Kate Sharp**

Biochemistry

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Erin Wilson

### **Monitoring and Understanding Early Stage Bone Mineralization**

In order to understand the process our bodies undergo to mineralize bone, we investigated early stage mineralization of hydroxyapatite (HA) crystals using infrared spectroscopy (FTIR). HA crystals are clusters of calcium and phosphate that form in the gap regions within collagen fibrils. In the extracellular matrix are non-collagenous proteins (NCPs) that aid in the maturation of HA by collecting early amorphous particles that exit the fibril prematurely thus controlling crystal size, location, and orientation to enhance the rigidity of bone. We monitored the formation of HA both with and without NCP Fetuin from time zero to 48 hours. We were able to see shifting of the phosphate peak on the IR spectra for the control that displays the different phases of HA maturation. However, when Fetuin was present, we were able to see deepening of the phosphate peak, showing a halt to crystal maturation, as well as the presence of a new phase not seen in the control - octacalcium phosphate (OCP).

**Brynn Shetterly**

Biochemistry

Patterson Hall 105, 1:30-1:50

Faculty Sponsor: Jessica Sarver

Funding Received from the Drinko Center

**The Antimicrobial and Antioxidant Properties of Kombucha**

Kombucha is a fermented tea that has gained in popularity due to the reported health benefits. Kombucha is made with green or black tea. After the tea has been sweetened with sugar, a SCOBY is added, and the tea is allowed to ferment over the course of 7-21 days. Kombucha is reported to display both antimicrobial and antioxidant properties, both of which are investigated in this research. The antimicrobial activity of kombucha was tested with acetic acid because it is believed to be the main contributor of antimicrobial activity in the beverage. A disc diffusion method was performed to test how well acetic acid in the pH range of kombucha was able to kill E. coli. The zone of inhibition around the plated disc was used to determine how strong the antimicrobial properties of acetic acid were. To measure the antioxidant capacity, a colorimetric assay using Trolox and DPPH was performed. Two brands of kombucha were tested and reported in Trolox equivalence units (TEAC).

**Jonathan Sibeto**

Environmental Science

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Patrick Krantz

Funding Received from the Drinko Center

**Pollution Sources and Mercury Contamination in the French Creek Watershed**

Mercury pollution impairs 91% of lakes and reservoirs in the United States. If the mercury is undetectable, it can be because of the short amount of time the fish spent in the watershed therefore not allowing a strong presence of mercury building up in the tissue of the fish. With that being said, the tissue will be tested for other pollutants that may be in the tissue of the fish. The goal of this study is to test the mercury levels and pollution contaminants in fish populations upstream of Meadville, PA, and compare them with downstream Franklin, PA, populations. Therefore, it will determine which population of fish in the creek has the lowest number of mercury/pollutants in its tissues. The study also used the EPA's Toxic Release Inventory, and this allowed for exploration of potential causes of mercury contamination and other pollutants ending up in the French Creek Watershed in the Franklin and Meadville area.



**Adam Silvis**

Computer Information Systems  
Patterson Hall 110, 2:10-2:30  
Faculty Sponsor: John Bonomo

**Tackling Basic Klondike Agents**

Dating back to around the 19th century, Klondike Solitaire is one of the most well-known and oldest card games known. It is a simple game to learn that requires equal parts skill and luck to complete as some games aren't winnable. I decided for my capstone project to write a basic agent to complete a winnable game of Klondike using a set of simple strategies as well as a simple learning agent to play and improve at completing a winnable game.

**Chloe Smith**

Sociology  
Co-author(s): Abigail Guiste, Kevin Walker  
Patterson Hall 108, 1:30-2:15  
Faculty Sponsor: Kristianne Kalata

**Justice for Minority Individuals**

Presenters in this honors-student roundtable will explore how their working definition of justice impacts views on underrepresented and minority individuals. Their idea of justice is the concept that every individual deserves the same, equal opportunities despite preconceived stigmas placed on their personal identities and experiences. In order for justice to exist, society must possess empathy to understand the backgrounds of these marginalized groups and individuals. Topics to be discussed within this roundtable include the rights of transgender athletes to compete along cisgender athletes in elite sports, the failures and injustice of the juvenile justice system, and the injustices at the southern border regarding migrant children and the rights they should have. Presenters will acknowledge and consider discrimination against these underrepresented groups. The roundtable will conclude by inviting audience members to formulate questions and discuss these instances of injustice.?

**Noah Sofran**

Environmental Studies  
Co-author(s): Ashlyn Lang, Kaylee Madey, Sean Perrone, Andrew Heider, Grace Deschand  
McKelvey Campus Center Mueller, 11:00-12:00  
Faculty Sponsor: Keith Bittel

Here's the DIRT on Hydroponics... you don't even need it.

ENACTUS's goal is to address problems that fall within the United Nations Sustainable Development Goals with solutions based on entrepreneurial and business concepts. The focus

of this group is to utilize hydroponics, which is an agricultural system dependent on a water system, and how this can help solve real-world problems both environmentally and economically. Hydroponics can meet multiple of the UN's goals and help solve multiple business problems. It can also help achieve the zero-hunger goal, responsible production and consumption, and climate action. Business problems it can help solve are that it saves money on water and resources over time.

### **Noah Sofran**

Biology

Patterson Hall 105, 10:00-10:20

Faculty Sponsor: Bradley Weaver

#### **Lindsey Goes Birding for First Time with WC Birder Noah**

We as a class are sharing how birding is not only good for the environment and community science purposes but is also good for the soul. I showed my friend Lindsey how to bird for the first time. I also showed her the basics of birding like proper binocular techniques, how to correctly identify birds in the field, and also talked about the benefits of birds and how they affect our ecosystems. We also touched on how to use this data from counting birds and apply it for community science. I did all of this while incorporating the idea of the biophilia hypothesis which is the idea that humans have an innate tendency to connect with nature and birding can help fill this void. Our cluster course has taught us to help inform the public on how to bird, the importance of birding, and how to show our personal journey through birding. I would like this exposure of our birding experience to help others get inspired to start their own birding journey and to preserve dying bird species.

Biology

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Bradley Weaver

#### **Two beginner birders connect mindfulness to birding**

The purpose of this project is to teach someone with no experience how to bird. The main focus the birding buddy project will take is mindfulness in birding. To mindfully bird, the birder should walk slowly or sit down and observe. They can also journal about or draw any bird they see. They should be quiet. Both birders in this project are mindfully birding and journaling about what they saw while birding that day. After completing the birding session, they discuss with each other what they saw, how they felt while birding, and how they feel after. Journaling about the birds connects birding mindfulness to the world of ornithology. The buddies write down the size, shape, color, and behavior which they use to identify the bird. The bird buddies use the Merlin Bird ID iPhone app which identifies the bird using the information they enter.

They submit their findings using the eBird iPhone app which logs what birds are in the area and the number of them to help with species conservation.

### **Jaden Sowers**

Professional Communication & Leadership

McKelvey Campus Center Berlin, 1:00-1:10

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

### **Non-fictional Heroes**

After Dinner Speaking is an oration that calls attention to a serious issue through the use of humor. In my oration, I speak on the effects and benefits of combining art and narrative therapy as a form of escape in current society. While there are many forms of art therapy, my speech concentrates specifically on comic book therapy by analyzing the themes and tropes of the popular Marvel movie franchise and its comic book origins to relate fictional characters to the issues and difficulties that many face in modern reality. As a creative and humorous touch, the rhetoric of popular heroes serves as a cohesive subtext throughout the speech. Audience members are encouraged to open their minds to the concept of comic book therapy and how these superheroes are just like us. Because at the end of the day, escape is a form of therapy all on its own.

### **Jaden Sowers**

Professional Communication & Leadership

Co-author(s): Iris Davis Hall, Tyler Hunter, Makyla Wheeler, Ellis Moore, Katie Magee, Kent Dunn, Alyjah McHugh

McKelvey Campus Center Berlin, 1:30-2:00

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

### **Banned in the USA: Giving Voice to the Voiceless**

Book banning in the United States has become all too common in the last few years. PEN America chronicled 2,532 instances of individual books being banned from July 2021 to June 2022, affecting 1,648 unique book titles. and while the practice is inherently undemocratic and opposed by majorities on both political sides, censorship efforts today derive from the right and the left. A reader's theatre presentation exposing the movement to ban books draws on contemporary essays, editorials, articles, and banned works themselves to highlight the dangers of closing minds through closing books.

**Emma Stewart**

Molecular Biology

Patterson Hall 110, 2:20-2:40

Faculty Sponsor: Karen Resendes

Funding Received from the Drinko Center

5-FU induces calpain mediated disruption of nuclear transport in cancer cells. Nuclear Pore Complexes (NPC) mediate travel of molecules across the nuclear envelope via nuclear transporters and a gradient of Ran GTPase. Disruption of this gradient causes apoptosis. The chemotherapy 5-Fluorouracil (5FU) disrupts the Ran gradient and nuclear transport by altering NPC permeability. The effects of 5FU are  $\text{Ca}^{2+}$  dependent, possibly due to  $\text{Ca}^{2+}$  activation of Calpain 1 or 2 proteases cleaving nucleoporins, altering NPC permeability. We found the cleaved active form of calpain 2, but not calpain 1, is present in HeLa cells with 5FU. Additionally, the calpain inhibitor calpeptin reduced 5FU induced NPC permeability. 5FU also induces cleavage of calpain 2 and calpain 1 in PANC1 cells, and we are investigating if 5FU induces leaky NPCs in PANC1 cells. These studies will further our understanding of 5FU induced apoptosis, helping develop mechanisms to counteract 5FU resistance in cancer, building on evidence that  $\text{Ca}^{2+}$  supplementation may enhance 5FU potency.

**Macy Stoddard**

Biology

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: John Robertson

Problems with Pregnancy: Preeclampsia

Low-income communities and developing countries have a high risk of maternal death. There are many things that can go wrong with childbirth. Preeclampsia is one complication. It is classified as high blood pressure when pregnant that usually starts at 20 weeks. In the United States, 5-8% of pregnancies cause preeclampsia. 10-15% of maternal deaths are associated with preeclampsia. The exact cause is unknown; however, experts hypothesize that it may have to do with improper development of placental blood vessels. The only way to get rid of this condition is to not be pregnant. One treatment is early delivery in the case of mild preeclampsia, yet preterm birth has its own health risks if the child is not fully developed and it not completely safe. Preeclampsia awareness and research fundraising efforts will go a long way to helping women have healthy pregnancies and healthy babies.

**Morgan Straw**

Environmental Science

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Jessica Sarver

Soil Quality Analysis Before and After a Prescribed Burn

Prescribed burns can be used as a means of suppressing fuel for wildfires or maintaining wildlife habitats. The goal of this study is to further understand how prescribed burns affect the soil underneath. The study focuses on analyzing changes in pH, total nitrogen, and available phosphorus levels in the soil. These components have been tested via a pH meter, and a field test kit for extracting and analyzing nitrogen. Phosphorus has been tested using the Mehlich 3 extraction followed by spectroscopic analysis of a colored molybdate-phosphorus complex. The research has shown a subtle increase in pH between burns, along with an increase in readily available nitrogen and phosphorus. All these changes contribute to a healthy ecosystem where the plants are well nourished and benefit from the increase in readily available nutrients. The hope is that this study promotes more research about prescribed burns and leads to a greater understanding of their benefits.

### **Megan Strohmenger**

Biology

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Ann Throckmorton

Funding Received from the Drinko Center

#### Determining the LC50 of octinoxate for *Aiptasia pallida*

Over the summer I worked with the sea anemones. The purpose of this experiment was to determine the LC50 of octinoxate for the sea anemone, *Aiptasia pallida*. A LC50 is the concentration of a chemical necessary to kill 50% of the population. Octinoxate is a chemical found in sunscreen which functions as an UV ray blocker. Octinoxate is an endocrine disruptor that can interfere with growth and reproduction. Tons of product containing this chemical enter the oceans yearly. Individual sea anemones were treated with octinoxate at different concentrations from 0 to 0.2 mg/L, increasing by 0.025 mg/L. The anemones were observed for 96 hours. At the end of the 96 hours, the alive and dead sea anemones were counted. A logistic regression determined the p-value to be 0.0136, the hypothesis was significant, concentrations of octinoxate can kill anemones. The LC50 for octinoxate in *Aiptasia pallida* is 0.22 mg/L. This value is significantly larger than current concentrations found in the oceans.

### **Megan Strohmenger**

Biology

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Ann Throckmorton

#### Effects of oxybenzone on reproduction in ramshorn snails and zooxanthellae count in *Aiptasia pallida*

The purpose of this research was to examine the effects of oxybenzone on reproduction in ramshorn snails and zooxanthellae count in the sea anemone, *Aiptasia pallida*. Oxybenzone is a

chemical found in sunscreen which functions as a UV ray blocker. Oxybenzone is a known endocrine disruptor and has effects on growth and reproduction. Zooxanthellae are photosynthetic algae that have a endosymbiotic relationship with *A. pallida*. Individuals of both organisms were treated with oxybenzone at different concentrations from 0 to 1 µg/L. After dosing the ramshorn snails were observed to see how many eggs were laid. A small portion of the anemones was removed at the beginning, 48 hours and 96 hours after dosing to determine zooxanthellae count. The importance of this research is to determine the negative effects concentrations of oxybenzone currently found in nature can have on aquatic organisms.

### **Emma Sukal**

History

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Angela Lahr

#### **Origins and Effects of the Term “Brainwashing” During the Cold War**

During the Cold War in 1950, Edward Hunter was the first to formally use the term brainwashing while talking about Chinese POWs in the Korean War. He believed that “the enemy” had been working feverishly to change soldiers’ beliefs. From that time on, the word grew in usage and popularity within the U.S. Examples of brainwashing began appearing in films and literature but also in politics. Many historians have debated the significance of the term during the early Cold War. Some argue that brainwashing became a political weapon used to scare Americans, even though the term was not necessarily backed by science. Others point out that it was the citizens more than politicians who hyped fears surrounding the new term. This research weighs into the debate by examining how the Cold War influenced early usages of the concept of brainwashing in American culture and society. Without the rising tensions between Western democracy and communism in the period, this term may have never been coined.

### **Karen Swartzentruber**

Sports Management

Co-author(s): Michael Brilla, Erika Hoover

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Robert Zullo

#### **Walk Off Grand Slam – Going Green in Professional Baseball**

Baseball is not only Americas past time, but they are much more than that. They are taking the steps needed to create a cleaner America. Major League Baseball is in the process of taking steps to provide clean, responsible and sustainable efforts to create a more positive impact within their community as well as the earth. They are currently promoting this through their Major League Baseball Green campaign and encouraging their franchises to follow suit as well, through the use awards, recognition, and incentives for their efforts. With that in mind we are

going to highlight four teams (Minnesota Twins, Pittsburgh Pirates, Savannah Bananas, and the Baltimore Orioles) that we consider to be the leaders in sustainable efforts within Major League Baseball as well as how/what actions they are taking to be environmentally sustainable.

### **Morgan Tenney**

Biology

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Joseph Balczon

Funding Received from the Drinko Center

#### **The Effects of Aspartame on Survival and Behavioral Profiles of Fathead Minnows**

Since the mid-1900s, artificial sweeteners such as aspartame have gained widespread popularity. Increased levels of aspartame metabolites can lead to impaired metabolic function in the brain leading to pre-mature brain tissue degeneration. The purpose of this study was to measure behavioral profiles and survival of fathead minnows exposed to aspartame. Following a four-week exposure period of varying concentrations of aspartame (0 mg/L, 10 mg/L, 100 mg/L, 1,000 mg/L), a novel tank diving test (NTD) and a light/dark preference test (LDP) were used to identify any behavioral abnormalities. ANOVA indicated a significant ( $p < 0.05$ ) impact on survival at the highest concentration. The NTD and LDP showed no significant differences ( $p > 0.05$ ), indicating no clear effect on behavioral profiles. Research has shown that aspartame has neurodegenerative properties in zebrafish, and our results suggest that behavioral effects due to aspartame exposure may be species-specific.

### **Morgan Tenney**

Neuroscience

McKelvey Campus Center Witherspoon, 9:00-10:00

Faculty Sponsor: Deanne Buffalari

Funding Received from the Drinko Center

#### **The Role of Nicotine and Stress in Sucrose Preference in Rats**

Nicotine drives usage through its ability to act as a primary reinforcer initiating neurobiological changes that strengthen smoking behavior. Nicotine can also reinforce already positively reinforcing rewards not directly associated with nicotine. In order to test how nicotine might impact aversive stimulus, this experiment will use rats to evaluate how the natural reinforcing properties of sucrose, which can be reduced after stress, are altered after nicotine administration. Preference for low percentage sucrose solutions will be measured, and then changes in preference will be measured after stress in the presence or absence of nicotine. Such work will promote our understanding of how nicotine and stress might interact to drive the usage of products that contain nicotine.

**Ryan Thibault**

Creative Media Production

Co-author(s): Andrew Tedesco, Alex Nyiri

McKelvey Campus Center 275, 3:00-4:00

Faculty Sponsor: Brittany Rowe-Cernevicius

School of Communication: Capstone Trailers

During this market research-type session, participants will get a sneak peek of the Broadcasting & Sports Production and the Creative Media Production capstones. During this focus group session, participants will get to watch trailers for several documentary capstone projects and view preliminary graphic design work before being asked to give feedback that students will be able to use to improve their final projects.

**Vanessa Tom**

Criminal Justice Studies

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Kristin Park

Effects of Religiosity, Political Affiliation, and Gender Role Identity on Men's Attitudes Toward Abortion

Abortion is a very controversial subject in the United States today. Although pregnancy and abortions are experienced by women, men are sometimes affected as well in the decision-making process and the aftermath of the decision. This research examines the effects of religiosity, political affiliation, and gender role attitudes on men's attitudes toward abortion. This research uses a mixed-method approach, with a primarily closed-ended survey but also an open-ended question option at the end of the survey to investigate four hypotheses. It was found that 76% of the participants stated that prayer is apart of their regular daily life. 52% of the respondents said they were strong Democrats. Compassionate (a feminine trait according to Bem) was the highest rated item overall on the gender role analysis. 65% of the respondents said that abortion is acceptable under any circumstance. 70% of participants stated that abortion is morally wrong.

**Biology**

Patterson Hall 107, 2:20-2:40

Faculty Sponsor: Joshua Corrette-Bennett

Reduction of *Staphylococcus aureus* Biofilm using siHybrids



Biofilm growth produced by many pathogenic bacteria causes infections in humans that are difficult to treat. This study investigates how suppressing genes involved in biofilm formation in *Staphylococcus aureus* can decrease biofilm production. SiHybrids will be used to suppress the target genes, *clfA*, and *sasG*, and then verified with RT-qPCR. *ClfA* codes for clumping factor A, which is a cell-wall anchored protein. *SasG* codes for surface protein G, which promotes cell-to-cell adhesion with the formation of dimers. Crystal violet staining will be used to quantify biofilm production after treatment with siHybrids. We predict that suppression of *sasG* or *clfA* using siHybrids will significantly decrease the amount of biofilm produced by *S. aureus*. Identifying novel ways to suppress the expression of these target genes will aid in efforts to reduce biofilm formation and make these pathogens more susceptible to antibiotics.

**Michael Tripp**

Computer Science

Patterson Hall 110, 10:00-10:20

Faculty Sponsor: John Bonomo

**Determining Your Location Using Wi-Fi**

In today's age of digital convenience, technologies that determine user location are becoming increasingly important. GPS, for example, is one of these technologies and has proved to be an invaluable service to millions worldwide. In this talk, we will showcase an implementation of another positioning technology very similar to GPS called Wi-Fi positioning, a technique that utilizes Wi-Fi, rather than satellite, to approximate user device location. Additionally, we will discuss how this system is being implemented on campus and ways to further improve its performance.

**Michael Tripp**

Mathematics

Patterson Hall 205, 1:50-2:10

Faculty Sponsor: Adam Blumenthal

**Burning Spiders with Math**

Graph burning is a two-step, round-based process that models how quickly an influence or contagion can spread over a given network, or what we call a graph. The goal of this process is to determine a parameter called the burning number, defined as the minimum number of rounds needed for an influence to spread over an entire graph. This parameter has recently been researched across various graph families. In our research, we introduce the burning number in directed graphs, or digraphs. We establish general bounds for the burning number in digraphs, explore the effect of edge reversal, and identify bounds for various graph families, including bipartite graphs.

**Jacob Trzcinski**

Engineering Physics

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Matteo Luisi

Funding Received from the Drinko Center

Generating Novel Chiplet Designs Utilizing the Wave Function Collapse Algorithm in Python  
Computer algorithms can be used to autonomously generate novel computer chiplet designs. Chiplet designs are very popular in common computers, and include designs such as x86 and x32. The uses for these chips range from smart thermostats to super-computers. The goal of this research is to use the Wave-Function Collapse Algorithm—an algorithm that analyzes a provided image, and produces a similar output image—to produce a new chiplet design by autonomously placing chip features, such as an Arithmetic Logic Unit, and Control Unit, on a two-dimensional die. After providing the program a sample image, loosely based on current designs, it will produce a new image with features from the original sample. These new images are then assessed by various metrics like distance between units, and physical size of the units, to determine the usability of a chiplet if it were fabricated according to the output design.

**Jacob Trzcinski**

Environmental Studies

Co-author(s): Adrian Jimenez, Xavier McDonald, Marcel Smith-Austin

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Peter Smith

Economic and Chemical Feasibility of Using Environmentally-Friendly Supercritical Carbon Dioxide in Solvent Applications.

Chemical extraction processes such as the decaffeination of coffee beans or the extraction of essential oils traditionally use toxic and flammable solvents that can negatively impact the environment. Supercritical carbon dioxide can be used as a safe alternative solvent in these processes. The purpose of our research is to explore the potential economic and chemical effects of industries shifting to supercritical carbon dioxide.

**Lauren Turturice**

Molecular Biology

Patterson Hall 105, 10:40-11:00

Faculty Sponsor: Karen Resendes

Funding Received from the Drinko Center

Centrin2 effects the nuclear export and centrosomal localization of BRCA1/BRCA2 in Hs578t breast cancer cells

Centrin2, a small calcium-binding protein ubiquitously expressed in eukaryotic cells, aids in centrosome stability and microtubule nucleation, as well as functioning in the TREX2 mRNA export complex. We have previously shown that Centrin2 and another member of the TREX2 complex, PCID2, both facilitate nuclear protein export in addition to mRNA export. PCID2, like Centrin2, also localizes to the centrosome during duplication. Therefore, we propose that Centrin2 may play roles in regulating nuclear to centrosomal transport of centrosome duplication regulators similarly to PCID2. We found that siRNA knockdown of Centrin2 led to an accumulation of BRCA1 and BRCA2 in the nuclei of Hs578T breast cancer cells. Co-localization studies with  $\gamma$ -Tubulin also indicated a loss of BRCA1 and BRCA2 at the centrosome after Centrin2 knockdown. These results indicate that Centrin2 is involved in the nuclear export of both BRCA1 and BRCA2.

#### **Lauren Turturice**

Biology

Co-author(s): Simone Izzo, Morgan Tenney, Emma Stewart

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Kristen Amick

Funding Received from the Drinko Center

Genome Sequencing, Species Identification, and Investigation of Mechanisms of Antibiotic Resistance in *Pseudomonas protegens*

Naturally occurring antibiotics have been manipulated and synthetically engineered to serve as a revolutionary hallmark in the fields of medical, chemical, and biological knowledge. Furthering the understanding of possible mechanisms of antibiotic resistance is essential to combating these naturally occurring substances. In this study, bacterial samples from Britain lake were obtained, amplified, and gram stained. Following DNA extraction and sequencing, bacterial species identification, genome assembly, annotation, and analysis was performed with the sequencing data with the use of online software programs. The species was identified as gram-negative *Pseudomonas protegens* with the ability to resist ampicillin intrinsically through decreased membrane permeability, efflux porins, and the production of beta-lactamase. This study demonstrates a computational approach to discovering mechanisms of antibiotic resistance that can further assist molecular biology and microbiology research.

#### **Madison Utiss**

Marketing & Professional Sales

Co-author(s): Natalie Franke, Allison Dean, Elise Jordan

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Robert Zullo

### Saving the World One Shot at a Time: Sustainability in the Liquor Industry

As consumer awareness about the impact of their purchasing decisions on the environment grows, the liquor industry is facing increasing pressure to adopt sustainable practices. This poster examines four brands Greenbar Distillery, Jack Daniel's, Bacardi, and Gray Whale Gin which have responded to this challenge and implemented innovative sustainable marketing practices. The liquor industry has traditionally been associated with elevated levels of environmental impact, but these brands have implemented strategies to reduce their carbon footprint and promote sustainability. These sustainable marketing practices not only benefit the environment but also appeal to consumers who are increasingly conscious of the impact their purchases have on the planet. Through these efforts, these brands are making a positive impact on the environment while continuing to provide high-quality spirits.

#### **Cody Vetter**

Creative Media Production

Co Authors: Bethany Edwards, Jack Mickle, Reid Sanderson, Emily Reed.

McKelvey Campus Center Mueller, 9:55-10:00

Faculty Sponsor: Kandice Hartner

Funding Received from the Drinko Center

Encore

Produced in the Single Camera Video Class, this film was entered into the 48 Hour Film Festival in Fall of 2022. Encore represents the genre of creepy kid/creepy toy and required the use of these elements in the film:

- **Character:** Skip or Skipper Carle - Plumber
- **Prop:** a family ring
- **Line:** "I wish I still loved you like I used to."

Shot over a 48 hour weekend, the team had to write, director, edit, and produce a short film starting Friday at 7:30 PM and ending Sunday at 7:30 PM.

#### **Lane Voytik**

Environmental Science

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Joseph Balczon

Funding Received from the Drinko Center

Identifying Beta-lactam antibiotic resistant E.coli using Immunofluorescence with antibodies specific to Beta-lactamase

Bacterial antibiotic resistance is a global phenomenon with significant implications for human health. Resistance has been proposed to result from horizontal gene transfer from non-pathogenic resistant organisms. Resistance genes are common in natural microbiomes, however, their distribution in nature is not well-characterized. The goal of this project was to develop a sensitive immunofluorescence assay to detect bacterial resistance to beta-lactam antibiotics. *Escherichia coli* cells were transformed using a plasmid containing a gene for beta-lactamase. Resistant and non-resistant *E. coli* were fixed and exposed to antibodies specific for the enzyme TEM-beta lactamase. Fluorescence microscopy was used to detect the presence of cells containing beta-lactamase. Our results showed that immunofluorescence was useful in detecting beta-lactamase expressing *E. coli* cells. Our results indicate that immunofluorescence is a promising technique for detecting bacterial resistance to penicillin.

### **Payton Waight**

Biology

Co-author(s): Mike Roman

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Anthony Accardi

### **Birding Buddies**

My Birding buddy will be my friend Mike Roman. Mike is one of my good friends here in campus, he is also my teammate and fraternity brother. You will often here me refer to him as Philly because he is from Philadelphia. I'm going to take him birding out in nature and teach him how to identify birds. One thing I hope to come of this, it's for him to develop an interest in birding and expand his scientific knowledge. When we go to the field we will go to various locations and do our own bird count. I'd also like to promote going outside in nature.

### **Kevin Walker**

History

Co-author(s): Charlie Barefield, Cassandra Evans

Patterson Hall 208, 10:00-10:45

Faculty Sponsor: Angela Lahr

### **Public Memory and African-American Activism**

Public memory, group memory of a shared past that reflects sometimes conflicting values, is expressed in various forms. This roundtable discussion focuses on the public memory of African American history. We will share our research projects (which will include public memory site designs) on James Baldwin, the first African American Girl Scout troop, and African American

poets, inviting discussion on the development of African American involvement in the public eye.

**Ryan Wasilko**

Fine Art

McKelvey Campus Center Atrium, 1:00-2:00

Faculty Sponsor: Summer Zickefoose

**The Unnatural in Nature**

This collection will feature a number of mixed media works that explore what it means to exist in nature today. Subjects featured range from the purely organic to the familiar inanimate, suggesting the incorporation of artifice in what was once free of human influence/destruction. Works will present Man as both a component of nature (as animalistic) and a threat toward it. The display will reflect on the precarious role of the human condition as it affects the world around us, for better or for worse. The aim is to depict an environment that challenges ordinary notions of our place on Earth and raise questions such as: Are humans distinct from other forms of life? What responsibilities do we have in interacting with our environment? Is nature no longer natural?

**Aryanna Weller**

Biology

Co-author(s): Aryanna Weller

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: John Robertson

**Osteopathic Manipulative Medicine: Ideology and Application**

Osteopathic Manipulative Medicine (OMM) is a hands-on form of treatment that involves manipulation of the body to help trigger and regulate the body's ability to self-heal. Doctor of Osteopathic Medicine (DO) education requires an additional 200 hours of training in OMM, alongside standard, general medical education. This poster aims to explain the background of OMM, the training received by osteopathic physicians, the uses of OMM to treat illnesses, and the benefits of OMM on the different systems in the body. Literature resources will be used to describe theory underlying OMM, training practices, and how this approach is used in treating specific conditions. Traditionally, OMM has been used to treat skeletal-muscle illnesses in the body, however recent research has been conducted to extend the uses of OMM to the other systems in the body. New uses of osteopathic manipulation can potentially contribute to new non-invasive and effective treatments for people of all walks of life.

**Lindsey Wheaton**

Biology

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Marosh Furimsky

Funding Received from the Drinko Center

**The Effect of Bisphenol F on Zebrafish Eye Development**

Bisphenols, a type of chemical used in the manufacturing of plastic products, fall under the category of Endocrine Disrupting Chemical. Bisphenol F affects the thyroid hormone signaling pathway, which is directly related to the development of the visual system in vertebrates. In this study, zebrafish (*Danio rerio*) were used as a model organism for aquatic vertebrates. In order to determine the effect of BPF exposure on zebrafish, embryos were exposed to different concentrations of BPF and observed using various types of microscopies. Different sectioning and staining techniques were utilized to determine the effect of exposure on retinal cell differentiation and health. Exposed embryos were observed to have smaller eye diameter as well as significant depigmentation of the eye in early developmental stages. These observations further support the idea that BPF exposure has a negative impact on the eye development of zebrafish, and further expands on the harmful effects of bisphenols.

**Makyla Wheeler**

Professional Communication & Leadership

McKelvey Campus Center Berlin, 1:10-1:20

Faculty Sponsor: Randy Richardson

Funding Received from the Drinko Center

**I'm Just a Bill: The American Legislative Exchange Council Exposed**

The 1976 Schoolhouse Rock song "I'm Just a Bill" taught an entire generation the process of a bill becoming a law. However, in the intervening decades the legislative process has been dismantled by bad actors. One of these bad actors is the American Legislative Exchange Council (ALEC). While proclaiming NOT to be a lobbying-group, ALEC takes several avenues to subvert the democratic system. Public as well as media ignorance allows ALEC's actions to go unnoticed and worse, unremedied. Reform at the state and federal level spurred on by public support must be undertaken to hold ALEC and its affiliates accountable. I will be presenting a 10-minute persuasive speech exposing the misdeeds, causes, and solutions regarding ALEC.

**Reaghan Wilkerson**

History

Co-author(s): Isabella Buettner, Amber Cepec, Gavin Jones

Patterson Hall 108, 10:00-11:00

Faculty Sponsor: Shannon Smithey

### Public Memory in the Early 20th Century

Public memory, group memory of a shared past that reflects sometimes conflicting values, is expressed in various forms. This roundtable discussion focuses on the public memory of the early 20th century. We will share our research projects (which will include public memory site designs) on Women's Rights, Eleanor Roosevelt, Holocaust Musicians, and Unity Propaganda inviting discussion on how the past is remembered and how it shapes us as individuals.

### **Benjamin Williams**

History

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Angela Lahr

Chernobyl's Relationship to the Downfall of the Soviet Union and the Ending of the Cold War  
On April 26th, 1986, one of the world's worst nuclear accidents occurred at the Chernobyl Nuclear Power Plant in Ukraine. During the Cold War, the West and the Soviet Union competed to gain the upper hand in weapons, technology and nuclear science. Historians have debated the importance of the Chernobyl disaster to the subsequent fall of the Soviet Union, but the argument that the accident was a major reason for the break-up of the Soviet Union is less common. How did the Chernobyl accident specifically influence the end of the Cold War in relationship to the fall of the Soviet Union? The Soviet inability to release a sufficient public statement about the disaster led to mistrust between the state and civilians. Furthermore, the pressures of competition over nuclear technology, on top of other troubles faced by the communist state, weakened the Soviet Union and helped lead to its fall.

### **Brianna Williams**

Neuroscience

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Eric Fields

### "Fogged Up": Effect of Covid-19 on the Cognitive Functioning in College Students

Reports of forgetfulness, confusion, lack of attention, and sluggishness after Covid-19 infection is an increasing concern, especially for college students. The purpose of this research is to investigate the connection between Covid-19 infection, symptom severity and the phenomenon of "brain fog". We want to know how Covid-19 affects the brain and cognitive functioning, specifically working memory and attention, in college students. Using an online survey, we asked students about their experiences of having Covid-19 and if they personally feel they have encountered "brain fog" since having the virus. Using an operation span measure of working memory capacity, we tested students' cognitive functioning. Analyses examined



whether COVID-19 infection, COVID-19 symptoms, and self-reported experiences of brain fog predicted objective cognitive functioning as measured by the operation span task.

**Paige Williams**

Environmental Science

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Kerri Duerr

Changing yourself, society, and the planet by birding

Society has been intersecting with birds for hundreds of years. We have used them as inspiration for motivational sayings, as a form of communication, and even to identify problems in the environment. Since 1970, there has been a decline in the bird population by 3 billion birds. The goal of this video is to teach my birding buddy and others about the impacts that can be made by birding. We discussed how birds are considered indicator species and help scientists identify problems in the ecosystem. We can learn so much from birds. Not only about the environment, but also about how to work together, communicate, and help one another. The biophilia hypothesis states that humans have an innate tendency to connect with nature. We must continue to take the time to step back from our busy lives and follow that natural urge. Spending just a few minutes of mindfulness by birding can spark change in yourself, society, and even the planet.

**Paige Williams**

Accounting

Co-author(s): Jarred Kohl

Patterson Hall 105, 1:50-2:10

Faculty Sponsor: Jesse Ligo

A Minty Fresh Take on Budgeting

On average an American spends \$18,000 a year on discretionary spending. Do you know what your discretionary spending should be? What is discretionary spending and why does it matter? This presentation aims to answer all these questions as well as provide a free tool to our viewers, Mint. This secure app connects with credit cards and other financial tools to depict your overall financial picture and breakdown your expenses. The interface of Mint is broken down into six categories, Net worth, Spending, Cash, Investments, Credit Cards, and Loans. Mint also has a budget feature where users can set weekly spending targets to aid in controlling discretionary spending. Mint generates fun and interactive alerts that show clients the changes in all these different accounts and whether or not they hit their weekly goals. After this presentation, you will be able to tell if your money bucket has a hole in the bottom.

**Harmony Wilson**

Biology

Co-author(s): Emma Parker

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Diana Ortiz

Funding Received from the Drinko Center

Determining the diversity and host preference of mosquitoes collected at the Tabogas Forest Reserve, Costa Rica

Several neotropical monkey species act as hosts for mosquito-borne pathogens and have a long co-evolutionary history with insect vectors and partaking in “fur rubbing” or “anointing.” This act of masticating plant and invertebrate parts across the fur is suspected to release insect-repelling volatile compounds. Most studies of it are behavioral; few exist on the ecological interface between organisms. This multiyear international collaboration was initiated in 2017 to better understand these ecological interactions. Field work began in July of 2022 near monkey habitats at Tabogas Forest Reserve in Guanacaste Province, Costa Rica with objectives to evaluate collection methods, determine the region’s mosquito diversity, and gather blood-fed samples for host preference studies. Collections occurred using multiple trapping methods to attract mosquitoes of various species and developmental states. Our preliminary data about the mosquito fauna diversity will be built upon in following years.

**Ian Wilt**

Physics

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Craig Caylor

Replication of A 3D-Printed Ellipsometer

Ellipsometry is an optical analysis technique that utilizes measurement of the change in polarization state of light after being reflected from a thin-film sample of interest. These measurements are used to infer properties of the film such as thickness and complex refractive index; useful for evaluating quality and consistency of a film. Ellipsometers are expensive and, because of their somewhat specialized nature, the cost can be hard to justify for individuals or smaller institutions. This presentation covers the replication of a paper by Matthew Mantia and Teresa Bixby of Lewis University, published in the American Journal of Physics, that details the construction and operation of a 3D-printed rotating-analyzer ellipsometer (RAE) using affordable components. They, and I, come to the conclusion that a servicable RAE can be built for under \$200.

**Ian Wilt**

Chemistry

McKelvey Campus Center Witherspoon, 3:00-4:00

Faculty Sponsor: Peter Smith

Funding Received from the Drinko Center

Functionalization of Carbon Nanotubes by 1,3-Dipolar Cycloaddition and their use in Electrodeposited Metal Matrix Composites for Reinforcement of Metal Contacts in Space Photovoltaic Cells

One degradation mode of photovoltaic systems is the fracture of metal contacts used to carry electric current. An area of research is the incorporation of carbon nanotubes (CNTs) into these contacts, which can be used to maintain electrical continuity by bridging cracks. In previous literature the CNTs were functionalized with carboxyl groups to improve wetting to the metal. Because of the negative surface charge created by these carboxyl groups, electrodeposition onto a metal surface would cause that surface to degrade due to opposite charges of the CNTs and metal ions. Positive surface charged CNTs functionalized with amine groups displayed poor solubility. By functionalizing CNTs with pyrrolidine groups by 1,3-dipolar cycloaddition of an azomethine ylide, it is expected that they will have a positive surface charge and acceptable solubility. A gold-CNT metal matrix composite (MMC) will be fabricated and its ability to maintain electrical continuity after cracking will be evaluated.

**Noah Yates**

Sports Management

Co-author(s): Saadiq Ferrell, Deondre McKeever

Patterson Hall 110, 1:30-1:50

Faculty Sponsor: Robert Zullo

Forget Jalen Hurts and Patrick Mahomes: The Real MVP in the NFL is Environmental Sustainability

The National Football League is the most popular watched sport in the U.S. and might be overseas in a couple years too. The NFL has many opportunities to have sustainability in their league if it involves using their stadium, or team facilities. The four teams that we spotlight in this poster that really do well with sustainability in their stadium are the Seattle Seahawks, Las Vegas Raiders, Philadelphia Eagles, and the Minnesota Vikings. Some of the newer stadiums will of course have sustainability within in their stadium since the United States wants to help the world; but the older stadiums truly have to adapt by making changes. Out of these four teams, only two teams have a newer stadium, and the other two are older. But the NFL is hoping that moving forward all teams can find a way to help push for more sustainability in their league.

**Felix Zamborsky**

## Environmental Studies

Co-author(s): Kent Dunn, Andres Martinez, Brayan Ramonez

Patterson Hall 107, 1:50-2:10

Faculty Sponsor: Peter Smith

### An Economic and Environmental Perspective Regarding Plastic Recycling: Commentary on Feasible and Probable Measures.

Since their reemergence in the 1960s, plastics have proliferated in many of the critical products that we use every day. This has been motivated by production efficiency, from low density polyethylene bottles to polymer based bio-conjugate therapeutics. In spite of a multi-decade environmental movement to improve recyclability, as little as 9% of plastics are recycled today. Our team, as a part of the environmental chemistry and economics cluster course, has endeavored in identifying contemporary and emerging solutions regarding the terminal destination of plastic waste. Regarding the well-established mechanical recycling method, we seek to find possible paths to economic efficiency greater than have already been established. Further, we seek to address both economic and environmental concerns in emerging chemical recycling.

## Felix Zamborsky

Sports Management

Co-author(s): Connor Dale, Katie Henningsen

McKelvey Campus Center Witherspoon, 11:00-12:00

Faculty Sponsor: Robert Zullo

### Get Fit with Environmental Sustainability in Recreation

Regarding sports, recreation encapsulates all of us. It cannot be escaped, yet nobody seems to complain. Recreational sport is a necessity for solid and sound personal development, one that should be embraced. Therefore, making note of how recreation can be sustained through environmental practices is of high priority, as its sustainment directly corresponds to our personal sustainment. A view often tied to sport, one of ultra-competitiveness, is not always applicable to recreation. Emphasis on enjoyment by the participants, as opposed to the audience, seems to encompass the majority of recreation. Our team utilizes the Pennsylvania state parks and recreation system as well as a few collegiate venues in spotlighting examples of best practices in environmental sustainability which in turn support the necessity of recreational sport and its maintenance to all stakeholders.

## Jordan Zupko

Sports Management

Co-author(s): Brendan Donnelly, Frankie Manios

McKelvey Campus Center Witherspoon, 1:00-2:00

Faculty Sponsor: Robert Zullo

### **Sustainability and the NBA – A Dynamic Duo of Best Practices in the National Basketball Association (NBA)**

The NBA is one of the best pro sports organizations at providing sustainability to the economy not just in the U.S., but around the world. With their program NBA Green, their mission is to promote awareness and funds for protecting the environment. The NBA continues to work on this process today with players from all around the league providing assistance in the act towards sustainability. This poster will examine the following teams' effort to enhance sustainability: Orlando Magic, Milwaukee Bucks, Atlanta Hawks, and an eco-friendly facility in Senegal.

### **Jordan Zupko**

Environmental Studies

McKelvey Campus Center Mueller, 11:00-12:00

Faculty Sponsor: Kerri Duerr

### **Student-Athlete Turns Birder**

Never would I have thought that in my 4 years as a college business major that I would be learning about birds. Understanding that ornithology is the scientific study of birds but can provide methods of relaxation and calmness are quite beneficial. Starting out there are first some basics of birding that you need to take care of. One of those would be bird identification and being able to name that specific species when seeing it outside. Looking at things like size, shape, and color can all help identify what type of species of bird you are looking at. Also being able to know how to use binoculars will make your birding experience that much better. Introducing someone completely new to birding shouldn't be that much of a challenge considering everyone was new at one point.

### **Where They Are From: A Poetry Collection by the Class of 2026**

Westminster's Orientation Program is designed to help First Year students acclimate to all aspects of campus life. Part of that process asks students to consider who they are becoming by reflecting on the people and places that have shaped them. In their first Westminster 101 classes held during Orientation Weekend, the 2022 First Year students began their Westminster journey by reading the poem "Where I'm From" by Kentucky Poet Laureate George Ella Lyon. In response to that work, the students then composed their own "Where I'm From" poems, and shared them with their classmates. This activity allowed the students to see not only the commonalities and connections they have with their peers, but also to understand the diversity of backgrounds and experiences that they bring to campus. This display offers a selection of the "Where I'm From" poems from the class of 2026. Please note the variety of backgrounds, experiences, and guiding principles that comprise our Westminster community.

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