

21ST ANNUAL BERKS COUNTY UNDERGRADUATE
RESEARCH &



CREATIVITY

CONFERENCE • SAT. APRIL 18, 2020



Sponsored by the Higher Education Council of Berks County: Albright College, Alvernia University, Kutztown University, Penn State Berks, Reading Area Community College. Hosted by Albright College.



WELCOME TO ALBRIGHT COLLEGE!

Albright College is pleased to host the 21st annual Higher Education Council of Berks County (HECBC) Undergraduate Research and Creativity Conference! This will be a year to remember, as 2020 marks the first time that the conference is taking place completely online.

Each year, hundreds of students from HECBC colleges and other institutions submit work and gather together to discuss peer research. Congratulations to each of you on your independent effort, and the work that you have put into your projects and presentations.

This year, of course, COVID-19 has turned our world upside down. Though we will miss the in-person comradery on campus, hard work should always be recognized and celebrated. The best way to celebrate your achievements during this difficult time is to keep moving forward and keep connecting — even virtually.

Recognizing the enormous value of undergraduate research and creative endeavors — for both students and society — Albright actively fosters research in every area of academics. Many collaborative teams of students and faculty present their research at academic conferences and publish their results in professional journals. Others use what they have learned to confidently take on graduate schools, earning medical or law degrees, artistry fellowships, and a myriad of other master and doctoral degrees. The same is true of our fellow HECBC schools.

At Albright, we invest in experiential educational programs, like our popular Albright Creative Research Experience (ACRE), because it gives our students skills that help them succeed in their chosen fields, as well as the all-important wisdom that comes from making mistakes. And sometimes, these experiences help students discover that their passion is best applied in a different or completely new direction.

Consider the words of Albright alumna Heena Brahmbhatt, Ph.D., who is now a scientist researching the prevention and impact of HIV infection in sub-Saharan Africa. Heena shares, “I always wanted to be a physician, but had no idea, at 18, how diverse the field of public health is. The courses not directly related to my major helped shape me and my ability to think outside the box.”

I thank everyone, faculty and staff both at Albright and at all our HECBC schools, who have helped to make this possible, from the faculty who have advised and mentored students, to staff and faculty who have worked so hard to make the logistics possible, especially during this time. I especially want to thank Kim Justeson, leader of Albright’s undergraduate research and experiential learning programs, who has been instrumental in planning this event and in helping students envision experiences that shape the future.

On behalf of Albright College, please accept my best wishes for continued success and wellness in these difficult times.

Sincerely,



Jacquelyn S. Fetrow, Ph.D., '82
President and Professor of Chemistry and Biochemistry
Albright College



LIVE PRESENTATIONS

Room 1: 10:15 a.m. – 11:15 a.m.

Examining the Negatives of Lobbying on the American Economy | Evan Beckius, Penn State Berks

Mine Transformative Skincare: Product and Package Design for the Transgender Experience | Madison Woodruff, Kutztown University

Studying the Benefits of Digital Payments on the GDP of Developed Countries | Rachel Hartzell, Penn State Berks

The Effect of Mobile Payments on China's Recent Economic Growth | Zirui Wang, Penn State Berks

Room 2: 11:30 a.m. – 12:30 p.m.

Correlation Between Theragun Percussive Therapy on the Quadricep Muscles and Vertical Jump Height in NCAA Division III Men's Volleyball Players
Adrian Gutierrez, Emma Linsenbigler, Holly Speaker-Cadugan, Nik Henson, Bryce Miceli and Alanna Kazmierski, Alvernia University

Utilizing Kinesthetic Learning in the 21st Century Classroom | Kelly Groth, Kutztown University

Artificial Intelligence and Google's Impact on Health Privacy | Amie Croteau, Penn State Berks

Consumer Perception of New Technology and Its Applications | Zirui Wang, Penn State Berks

Examining the Positive Effects of Climate Change on Economies | Arabella Cairnie, Penn State Berks

Room 3A: 1 p.m. – 2:15 p.m.

Social Penetration and Privacy Behaviors Inside Relationship Development on Snapchat | Daniel Hamm, Kutztown University

Vertical Jump Height Following Self Myofascial Release (Foam Rolling) of the Quadriceps Muscles in NCAA Division III Male Basketball Players
Gabrielle Montefiore, Matthew Moran, Jamison Wendel, Martin Thompson Riggins and Jared Koechell, Alvernia University

Examining the Effects of a Reinforcement Schedule Implemented on Adaptive Behavior | Madison Dailey, Kutztown University

The Liberal Order Will Not Fall, But Evolve | Evan Beckius, Penn State Berks

The Issue with Foreign Aid | Joshua Flores, Penn State Berks

Room 3B: 1 p.m. – 2:15 p.m.

Side Effects: A Memoir of a Young Adult's Journey with Cancer | Abigail Gray-Army, Albright College

Cultural Appropriation: Cultural Homage or Cultural Theft? | Andrea Nguyen, Albright College

Variant Fairy Tale Literary Analysis and Illustration | Eleanor Anderson, Kutztown University

Writing and Illustrating a Children's Book Using Firsthand Travel Experiences and Reference Imagery | Morgan Nadin, Kutztown University

Story-Telling and Music: Compositional Alchemy | Peyton Williams, Kutztown University

▶ Indicates a live presentation in the following abstracts.



KEYNOTE SPEAKER



Charnita Zeigler-Johnson, Ph.D. '92
Epidemiologist & Assistant Professor
of Population Science
Department of Medical Oncology,
Thomas Jefferson University

The Higher Education Council of Berks County is pleased to announce that Albright College alumna and trustee, Charnita Zeigler-Johnson, Ph.D. '92 has been named keynote speaker for the 21st annual Undergraduate Research and Creativity Conference.

Zeigler-Johnson is an epidemiologist and assistant professor of population science in the Department of Medical Oncology at Thomas Jefferson University. Her research focuses on defining cancer risk factors and better understanding racial and socioeconomic disparities locally and internationally. She leads the Environment and Genetics in African Ancestry Working Group for the African-Caribbean Cancer Consortium (AC3). Zeigler-Johnson served as a member of the PA Prostate Cancer Task Force. She is currently a member of the Pennsylvania Department of Health's Data Advisory Committee and the Pennsylvania Cancer Coalition where she serves as co-chair of the Disparities Subcommittee.

PRESENTATION ABSTRACTS

Kristin Abbott, Kutztown University

Faculty Sponsor: Professor Sandra Leonard

AN UNTITLED FANTASY NOVEL

My project is a fantasy novel intended for a wide age range that I wrote for my capstone project for Kutztown University's Honors Program. It's a story about a girl who grew up in isolation with her brother, who leaves home to find her mother after receiving a message in a bottle. Armed only with a necklace that makes her invulnerable to magic, she encounters pirates, magical creatures, an evil queen, and two of the world's four wielders. In the world of my story, there is magic present in the environment, but people known as wielders are the only people able to wield and use magic however they want, almost without limits. For my presentation, I will read a small section of my book and explain some of the research that went into it, to show that even the most far-fetched stories in made up worlds still require research and planning.

Zoey Adam, Kutztown University

Faculty Sponsor: Professor Brandon Krieg

SCIENCE AND POETRY: THE INTERSECTION OF LOGIC AND ART

The following are two words that the average person would not see as compatible: science and poetry. Science embodies logic, facts, and data. There are rules and regulations, even among aspects as nebulous as theories, and there is reason. Poetry is made up of images, sounds, and abstract thoughts. There is no defined set of protocols that poetry must adhere to, nor are there limitations in what can be done with it. Thus, the two seem like they cannot be reconciled. However, the opposite is true. They each produce results that they would not be able to form on their own. This critical approach will analyze the works and essays of two poets, A. R. Ammons and Alison Hawthorne Deming. This presentation will also include a sample of the presenter's poems written over the duration of the paper's creation that are influenced by the poets' work. Poems used in the critical portion are collected from "A.R. Ammons: The Selected Poems" and "Garbage" by A. R. Ammons and "Science," "Science and Poetry: A View from the Divide," and "Rope" by Alison Hawthorne Deming.

Sheba Ali, Kutztown University

Faculty Sponsor: Professor Kristin Bremer

AFGHANISTAN DEMOCRATIZATION: WHY IT IS A FAILED STATE

The Afghan government is one of the weakest countries in the world due to the ongoing war against the Taliban. The major factor contributing to the ongoing war in Afghanistan is the failed government institutions and the separate division among the ethnicities and the religious people, which leads to internal hostilities. The Afghanistan constitution is considered to be one of the strongest foundations in Afghanistan, but the main issue is that the laws are not followed due to the war and corruption in the country. Afghanistan fails to follow their own laws due to the influence of the religious and ethnic people are the ones making the change within their own country. As the constitution states, Afghanistan is considered an Islamic Republic that follows the Islamic religion and allows a form of democracy to be formed in the country such as freedom of speech and freedom of rights. Islam permits democratization, and the choice of practicing their own religion. The issue with democratization is that Afghan society pushes its people to accept Islam fully. Sometimes, they have no choice but to accept and follow it thoroughly. There are so many different political, religious, and ethnic factors that is not allowing.

Ronald Andanje, Albright College

Faculty Sponsor: Professor Amy Greene

THE GROWTH CURVE OF CRITHIDIA FASCICULATA

We studied the growth curve of *Crithidia fasciculata*. They have similar characteristics to *Trypanosoma brucei* which are the parasites responsible for the African Trypanosomiasis. Understanding how *C. fasciculata* grows and replicates may help us in understanding how its parasitic counterparts, *Trypanosoma brucei rhodesiense* and *Trypanosoma brucei gambiense* may behave and grow in humans. We used OD600 to measure its optical density in a spectrophotometer. We also used a hemocytometer to measure the cell count. We used data from both to come up with a formula to predict the cell number using the OD600 for future experiments. The formula was $OD600 = 0.0513(\text{cells} \times 10^6)$. This formula also provided a faster way of finding out how they divided. We also found out that they doubled every 4.3 hours. We plan to use the data to find other ways as to how the cells would grow in response to oxidative stress.

Eleanor Anderson, Kutztown University

Faculty Sponsor: Professor Elaine Cunfer

VARIANT FAIRY TALE LITERARY ANALYSIS AND ILLUSTRATION

▶ Room 3B: 1 p.m. – 2:15 p.m.

Jacob and Wilhelm Grimm have a worldwide reputation of being the authors of the definitive versions of numerous classic fairy tales. This misconception brushes over hundreds of fairy tale variants, many with earlier oral origins, and overlooks the significant changes made to the tales throughout decades of publication. This research project is comprised of four essays, each analyzing the different historical contexts and literary implications of four well-known Brothers Grimm fairy tales with a corresponding historical or regional variant. The analyses pry into the impact of authorial intent, characterization, and theme in the Grimm versions of “Little Red Cap,” “Little Snow-White,” “Cinderella,” and “Rapunzel” when compared to their variants, “The Story of Grandmother,” “The Crystal Casket,” “Donkey Skin,” and “Petrosinella.” The completed iteration of the entire research and illustration project is a 5x8 in. perfect-bound, fully formatted book. The illustrations are digital ink and watercolor, consisting of twenty-four spot illustrations and eight full-page illustrations to dramatically highlight plot elements of the fairy tales and thematic focuses of the essays. The strategically minimal use of stark red in the illustrations draws attention to the violence often found in these tales. “True” versions of stories don’t exist, but their differences are compelling.

Tiffany Assanowicz, Brandon Chang, Logan Bell, Penn State Berks

Faculty Sponsor: Professor Rungun Nathan

SERVO BASED HAPTICS

This project follows the development of an economically affordable haptic device. The device is powered by the use of servos and has a user interface that everyone can learn to use.

Edmer Astacio, Jakob Fischer, Penn State Berks

Faculty Sponsor: Professor Terry Speicher

AUTONOMOUS GOLF CADDIE

The goal of this project is to create an autonomous golf caddie capable of carrying a load and following a user across a golf course environment on its own volition.

Autonomous, self-moving robots are devices that are becoming more commonplace every day. The aim of this autonomous caddie is to be capable of moving a bag of golfing equipment over delicately maintained golfing greens while remaining stable and rugged enough to survive moving into rougher, unexpected conditions. In addition, it must be able to follow a user around via two GPS signals while navigating around potential obstacles on its own. By doing so, a basis can be established for future mover-type robots. The design process itself was based off of previous hobby projects, so it stands to reason that the final product could potentially be upgraded to be mass-produced into a helpful, quality product.

Evan Beckius, Penn State Berks

Faculty Sponsor: Professor Jui-Chi Huang

EXAMINING THE NEGATIVES OF LOBBYING ON THE AMERICAN ECONOMY

▶ Room 1: 10:15 a.m. – 11:15 a.m.

In the modern United States, free-market economics seems to be under attack from almost every side of the political spectrum; the left believes the market should be more heavily regulated by the government to provide for citizens. On the other hand of the spectrum, the once free-market right now believes in “saving” American jobs instead of keeping prices low. However, there is a more significant threat to the economy, corporate lobbyists. Throughout American history, corporate lobbying has always been a divisive force that seeks to regulate or deregulate the market or to remove the foreign or local competition from large companies, all by using the increasingly interventionist government. This lobbying has developed in a multitude of practices that hurt the economy, such as increasing the prices for American consumers, preventing competition from rising, and limiting the availability of foreign goods for Americans. My research will examine how the government has impacted industries in lobbying companies’ favor. As a result of this study, a warning can be given to the general populace about the dangers of government and companies mixing their agenda undermining the capitalist cornerstone of competition.

Evan Beckius, Penn State Berks

Faculty Sponsor: Professor Randall Newnham

THE LIBERAL ORDER WILL NOT FALL, BUT EVOLVE

▶ Room 3A: 1 p.m. – 2:15 p.m.

The thesis of my term paper is describing how I believe the liberal order will adept during the 21st century, and as a result, stay strong and dominant around the world. The essay will start with an explanation of how the liberal order is standing on strong foundations as of today and how it is still spreading. It will then transition to explaining some belief that the order is falling. Some of these I will discuss include, the growing power of China, the expanding use of tariffs in the United States, and an increase government involvement in local economies. In the next section of my essay, I will rebut these points and show ways that the liberal order is growing and changing instead. Some of these changes and rebuttals will include, more development in the second world, growing revolts in China’s sphere of influence, and the growing strength of globalization.

Josiah Belfield, Albright College

Faculty Sponsor: Professor Pamela Artz

COMBINING CHEMISTRY AND ART: VISUALIZATION, ANALYSIS, AND USE OF PIGMENTS AND NATURAL DYES

The intention is the combination of chemistry and art to create a lab science class. Inorganic pigments were made and tested with binders with varying abilities to suspend the pigments. In exploring the chemistry, students understand the energy transitions that result in different frequencies of electromagnetic radiation making different colors. We will use these and purchased pigments in making frescos with lime plaster on terra cotta. Students will explore fresco technique and understand base resistant pigments. Natural dyes were extracted from red cabbage and onion skin. Absorbance of these dye solutions was investigated at varying pH affecting color and absorbance. This experiment demonstrates the effect of pH on electronic structure impacting energy transitions, light absorbance, and color. The red cabbage juice transitions from purple to green as the pH increases. The onion dye color intensifies as the pH increases. We observed the fluorescence of red cabbage juice at pH 4.5 and 7.2 finding emission maxima at ~440 nm and ~515 nm for excitation at 300 nm and 410 nm, respectively. Using GC-MS, we found polyphenolic compounds that provide color and are putative anti-inflammatory compounds. The onion skin dye was used to color eggs with patterns using small plants as “resists.”

Michael Beyer, Alvernia University

Faculty Sponsor: Professor Caroline Fitzpatrick

NEWSPWORTHY OR CLICKWORTHY: A CRITICAL ANALYSIS OF MEDIA PRACTICES

Does the media use the idea of something being “newsworthy” as an excuse to publish anything that would make a profit? Newsworthiness has become interchangeable with public interest, and anything that interests the public could be considered “public entertainment”. Therefore, any article the public may find entertaining, regardless of at who’s expense, will almost surely be defended by a judge. Yet the names of rape victims, private information of celebrities, and video footage of physical and mental abuse have been cited as being newsworthy and have been published for the sensational entertainment of the public. What about the publication of salacious facts benefits the general public? In most cases, matters such as these have a tenuous, if any, connection to public interest and substantial importance. The definition of newsworthiness needs revision. Private information that does not substantially benefit the public as opposed to interest them should be unpublishable. Furthermore, journalism is a field that should require a certification so average citizen bloggers without journalistic training cannot defend unscrupulous blogs with the “newsworthy” defense. In this essay, I will apply First Amendment theories and cite multiple court cases.

Arabella Cairnie, Penn State Berks

Faculty Sponsor: Professor Jui-Chi Huang

EXAMINING THE POSITIVE EFFECTS OF CLIMATE CHANGE ON ECONOMIES

▶ Room 2: 11:30 a.m. – 12:30 p.m.

Climate change refers to a current catastrophic disaster in the world today. Due to climate change, the world’s average yearly temperature is increasing annually. This is affecting the world in many different ways, primarily in negative ways. However, in some instances, climate change is actually having a positive effect on certain economics in the world today. In recent studies, climate change has affected economics in the way that: farm households are producing more food annually from their farms, marine life is increasing, which is causing fisheries to boom, and it is promoting treaties and cooperation among nations.

Jamie Camano, Albright College

Faculty Sponsor: Professor Julia Heberle

IMAGINARY FRIENDS: OUTCOMES FOR YOUNG ADULTS

This study focused on examining the relationship between having had an imaginary friend (IF) in childhood and its possible positive outcomes in young adulthood. To investigate whether these IF positive outcomes hold true in adulthood, several assessment materials were used to assess participants on different traits including creativity (Creative Cognition scale and Magical Ideation scale), coping skills (Prototypic Coping Scale and Boredom Coping scale), and perspective taking (Interpersonal Reactivity Index and Social perspective taking scale). Additionally, an adaptation of Hurlock’s Imaginary Playmate Questionnaire was used to gather information on the imaginary friends of participants who indicated that they did have an imaginary friend during childhood. We hypothesized that participants reporting having had an imaginary friend would score higher on each of the measures observed in comparison to participants that report not having had an imaginary friend. In addition, we hypothesized that strength of IF would correlate positively with the various measures. At this point, our data analysis is still in process.

Grace Coleman, Essence Hall, Jubilee Soto, Jessica Zamora, Albright College

Faculty Sponsor: Professor Keith Feigenson

EFFECTS OF VIRTUAL REALITY AND AROMA ON HUMAN PSYCHOPHYSIOLOGY

Previous literature surrounding virtual reality and aromas suggests a link between them that can change human psychophysiology. In the current study, participants from a small liberal arts college were recruited for an in-person study in which they viewed neutral, calming, thrilling, and scary virtual reality simulations while being exposed to either lavender aromas or ammonia inhalants, also known as smelling salts. Participants then rated each simulation on how scary, thrilling, boring, calming, and enjoyable they found it to be. During each simulation, galvanic skin response, heart rate, and oxygen saturation were recorded. After all simulations, they completed the State-Trait Anxiety Index for Adults. Results showed that participants had higher galvanic skin responses and oxygen saturation during the calming virtual reality than the thrilling and scary simulations. However, the aromas had no impact on any physiology measures. These findings suggest that virtual reality can successfully manipulate human physiology, but aroma effects might not be as effective as previous research has suggested.

Grace Coleman, Albright College

Faculty Sponsor: Professor Bridget Hearon

HAPPY, SAD OR HUNGRY? PREDICTORS OF EMOTIONAL EATING IN THE CONTEXT OF EMOTIONAL AFFECT

Emotional eating in response to negative affect is associated with increased BMI, weight gain, low dietary restraint; however, fewer studies have examined eating in response to positive affect. In the present study, we examined emotional eating and dietary restraint in the context of induced positive and negative affect while also randomizing participants to a food or no-food condition post induction. To date, 54 participants completed informed consent, assessments of interest, and BMI measurements. Following these assessments, participants were randomly assigned to watch a sadness-or joy-inducing movie clip, and then were randomized to complete either a sham taste-test that included chocolate and potato chips or a time-matched task that asked participants to rate the aesthetics of non-food images. Positive and negative affect were assessed throughout. Findings indicate that regardless of affect

induced, participants experienced greater positive affect when eating than when rating images, and that dietary restraint, but not self-reported emotional eating may influence the number of calories consumed when in a negative but not positive affective state.

Caroline Collins, Kutztown University

Faculty Sponsor: Professor Christopher Bloh

EXAMINING THE EFFECTS OF POSITIVE REINFORCEMENT TO INCREASE SAFETY BEHAVIOR

This study examined the effectiveness of a combined antecedent and consequence intervention to increase the safety skills of three college students. Visible sticky notes were implemented as the antecedent prompt with general participant reinforcers used as consequences for completion of the target behavior. Results suggest that the intervention was effective, and may have generalized to non – targeted settings.

Bridgett Connolly, Albright College

Faculty Sponsor: Professor Suzanne Palmer

ORGANIC AND SUSTAINABILITY CERTIFICATIONS IN THE HEMP INDUSTRY

Hemp and marijuana are both the plant species *Cannabis sativa*, so variations of the plants can be virtually identical to the eye; however, industrial hemp is distinct from marijuana in that it contains less than 0.3%, on a dry weight basis, of delta-9 tetrahydrocannabinol (THC), the intoxicating component of marijuana. Hemp was grown in the United States from colonial times, and its fiber used for rope and clothing. In 1937 *Cannabis sativa*, regardless of THC level, became illegal in the United States, when it was added to Schedule I of the Controlled Substances Act. Recently there has been federal deregulation of hemp and it is commercially available for use in all types of consumer and industrial products. In this context aspects of industry self-regulation will become important as producers and consumers have the expectation of certifications related to the manner in which the consumer product was derived and its underlying ingredients produced – thus, organic and sustainability certifications. Our research provides an overview and summary of the government regulation and organic and sustainability certifications applicable to the U.S. Hemp industry with a focus on Pennsylvania.

Nick Cornell, Magnus Murray, DJ Ramachandran, Kyle Daniels, Penn State Berks

Faculty Sponsor: Professor Rungun Nathan

CVT DRIVEN BICYCLE

The purpose of this project is to develop a continuously variable transmission that can be applied to a typical bicycle. Through the design process, an existing design (the Edyson CVT from bitraptor.com) was chosen for this project which was then modified to better suit our application. A mathematical model was developed to simulate the motion of the mechanism and to verify it would in fact vary the output speed effectively. After the scaled-down 3-D printed and machined prototype design meets specifications and expectations through iterative development, the end goal is to have a robust design which has a clear path to a mass-manufacturable design aimed toward the consumer market and be of comparable price to the competition.

Carolyn Cortes, Albright College

Faculty Sponsor: Professor Barton Thompson

MODERNITY'S EFFECT ON HUMAN SOCIAL CONNECTIONS FROM AN EVOLUTIONARY PERSPECTIVE

By looking at hunter-gather bands it appears that there would have been selection pressures to cause the evolution of psychological tendencies to maintain and rely on the extended family social unit. Modernity and economic pressures during the course of the industrial revolution have made it harder to maintain the extended family. The strained family unit would likely result in uncomfortable and dissatisfying psychological feelings due to the expected rich social connections to members of the extended family failing to materialize. The hypothesis is that individuals who have less connection with their extended family, will experience greater feelings of loss, insecurity, and loneliness. A survey was administered to students to assess their satisfaction with their social connections to test the hypothesis.

Amie Croteau, Bryan Cruz, Allison Piech, Derek DeTommaso, Penn State Berks

Faculty Sponsor: Professor Abdullah Konak

AIDLY - APPLICATION DESIGNED TO UNITE VOLUNTEERS WITH NON-PROFIT ORGANIZATIONS

Part of being a college student is experiencing the world outside of your own bubble. College students often find that searching for an opportunity to give back takes a large amount of time and energy. A solution needs to exist to ease the process of volunteering, making it a quick, easy-to-use process. In addition, many students would like to take part in volunteering, but they rarely find the motivation to act upon their intentions individually. They become more willing to engage as a part of a team. A solution is needed to inform students about volunteer opportunities proactively and make teammate recommendations for volunteering as a group. Aidly, a mobile and web application, to facilitate the process of volunteering and finding volunteers. Aidly will be built using a variety of technologies but at its core, it is a recommender system that encourages students to proactively take part in volunteering for various social causes. We envision that students will enter their statement of service or a short description of their service interests. Similarly, non-profit organizations (NGOs) will optionally post or update their mission statements as well as descriptions of the projects in need of volunteers.

Amie Croteau, Penn State Berks

Faculty Sponsor: Professor Abdullah Konak

ARTIFICIAL INTELLIGENCE AND GOOGLE'S IMPACT ON HEALTH PRIVACY

📍 Room 2: 11:30 a.m. – 12:30 p.m.

This case study offered an analysis of the lawsuit against the University of Chicago Medical Center and Google. UCMC and Google partnered to collect medical data for research into new artificial intelligence technology in the health sector. The case study highlighted violations of laws, morals, and ethics. HIPPA laws are designed to protect the data of patients given to the providers. In this case, UCMC gave the patients' data that could lead to identification. UCMC offered patients' information with no disclosure to the patients of the fact their information was going to be involved in this research. By combining this data and location data available to Google, patients' identities can be unveiled. This case study illustrated the blatant disregard from the provider to protect the identity of patients and deceit of the provider through informing their patients will not be distributed outside of the hospital. The new wording of HIPPA law must include considerations of artificial intelligence technology and how combined

with readily available information will defeat the purpose of the HIPAA law and reveal the identity of the patients the law was designed to protect. Several loopholes of HIPAA exist, and Google still has the power to use them.

Cynthia Cruz, Penn State Berks

Faculty Sponsor: Professor Nathan Greenauer

SCENTS OF PERCEPTION: THE INFLUENCE OF PHYSIOLOGICAL AND COGNITIVE INTERPRETATION OF ODORS ON MOOD

Both cognitive and physiological interpretation of an odor's scent play a role in scent perception. One's interpretation of an odor as positive or negative influences one's mood. The present study evaluates whether the physiological sensation of an odor (bottom-up) or the cognitive interpretation of the odor (top-down) is more influential on mood. Participants completed mood and anxiety measures before and after smelling either a positive (e.g., vanilla) or negative (e.g., voodoo) odor. Importantly, some participants were provided with an odor label that matched the smell while others were provided with a mismatched label (e.g., the positive odor was labeled bad and the negative odor was labeled good). If a cognitive interpretation of the odor is more influential on mood, then we predicted that when participants were told the odor smells good, they would report a more positive mood regardless of whether the odor was objectively good or bad. Conversely, if the physiological sensation is more influential, then we predicted that participants would report a more positive mood for objectively pleasant odors (and more negative mood for objectively unpleasant odors) regardless of whether they are told the odor smells good (or bad). Results are discussed in the context of these competing predictions.

Thao Dai, Amanda Hadley, Alvernia University

Faculty Sponsor: Professor Michelle Serapiglia

A LITERATURE REVIEW OF THE EFFECTS OF NITROGEN AVAILABILITY ON CELL WALL DEVELOPMENT IN WOODY BIOENERGY CROPS

Due to agricultural industries relying on synthetic fertilizers to boost crop yields, excess run-off into our local waterways has led to eutrophication. Planting agricultural and riparian buffer strips is one method to mitigate this issue. Bioenergy crops, like shrub willow (*Salix* spp.), are good candidates for buffer strips because they can produce large amounts of biomass with minimal inputs and grow on marginal soil. Utilizing these crops as buffers could expose them to high rates of nitrogen and other nutrients, impacting their growth and cell wall development. Research studies have shown that increased nitrogen levels can alter carbon allocation to the cell wall. The focus of this study was to research key genes involved in nitrogen and phenylpropanoid metabolism in response to changes in nitrogen availability. Data from nitrogen studies will be presented focusing on the MYB and WRKY transcription factors, along with the genes arogenate dehydratase (ADT), cinnamate-4-hydroxylase (C4H), phenylalanine ammonia-lyase (PAL), and caffeic O-methyltransferase (COMT). We will present the results of cloning and sequencing these genes from shrub willow. In addition, we will present data from the literature on the impacts of nitrogen on cell wall development.

Madison Dailey, Kutztown University

Faculty Sponsor: Professor Dr. Christopher Bloh

EXAMINING THE EFFECTS OF A REINFORCEMENT SCHEDULE IMPLEMENTED ON ADAPTIVE BEHAVIOR

▶ Room 3A: 1 p.m. – 2:15 p.m.

Reinforcement schedules are used by scheduling the use of positive or negative reinforcers to decrease the occurrence of a behavior. A Differential Reinforcement of Lower Rates of Behavior, DRL, was implemented in this study to decrease the target behavior of an individual throwing food trash into a room trash can. This behavior is an example of an adaptive behavior and is tolerable at low rates but undesirable when it occurs too often. This behavior was targeted by giving specific praise as a response to throwing trash out in a different trash receptacle. Results displayed the effectiveness of changing the schedule of reinforcement and suggest the potential for use in diverse settings.

Dylan Demko, Danielle Delcasale, Sadiq Sistrunk, Albright College

Faculty Sponsor: Professor Amy Greene

THE EFFECTS OF PEP AND PYRUVATE ON GLUCOSE METABOLISM

We studied glucose metabolism in *Crithidia fasciculata* parasites using C-13 labelled glucose and NMR (nuclear magnetic resonance) and a colorimetric GO glucose concentration assay. The goal was to see how downstream glycolytic intermediates PEP and pyruvate effect glucose metabolism in parasites.

McKenzie Derby, Albright College

Faculty Sponsor: Professor Hilary Aquino

I DON'T DRINK THAT MUCH: AN ANALYSIS OF STUDENT DRINKING PERCEPTIONS

This paper will discuss the perspectives that Albright College students have toward alcohol and their own drinking habits. This research uses a survey that analyzes binge drinking on campus, as well as face-to-face interviews that measure standard drink sizes are discussed. Students' perceptions are analyzed with the survey, interview results, theory, and historical as well as contemporary literature review. By understanding how college students perceive their drinking behaviors, more beneficial prevention methods can be developed to combat excessive drinking.

Kishan Desai, Tim Gahman, Kevin Gulick, Matt Schlegel, Penn State Berks

Faculty Sponsor: Professor Rungun Nathan

MULTIFUNCTIONAL ROBOTIC ARM

Automation is the future of manufacturing and education on such a topic is important to all engineers. This is because many future engineers will be working on or with new automation systems at internships or their full time jobs, and it is important for them to have previous experience in automation in order to effectively perform their job duties. The goal of this project is to provide a programmable robotic arm that is easily manufactured and assembled while keeping the cost low. This goal stems from the desire to enable entry level engineers, students, or hobbyists to get their hands on a scaled-down version of an automated robotic arm in order for them to gain knowledge and experience in the field of automation.

Elliot Dietrich, Penn State Berks

Faculty Sponsor: Professor Terry Speicher

AUTOMATED SEARCH AND RETRIEVAL

This project's goal is to design a robot with the purpose of retrieving a bomb and returning it to a bomb disposal box all autonomously using sound to track the location. The bomb that is used for this project is a kitchen timer to give a consistent sound and to have it resemble old cartoons. This project has been broken into multiple steps to help with the flow of information. Starting with information gathering, the team research was to accomplish the task from both previous projects and from new ideas brainstormed by the team. Upon the completion of that task, next came idea generation and concept selection where specifics of the devices were written out and a bill of materials was produced. Next came the assembly portion and testing phases of the process in which currently we are still in. In this portion of the project, the robot was assembled and programs are being written and tested to be able to accomplish the task. After these parts are completed, all that is left is the demonstration and closing implementation of the robot, where verification of the tasks will be shown and a final report written.

Anh Duong, Penn State Berks

Faculty Sponsor: Professor Catherine Mello

WHAT'S YOUR PREFERENCE? THE EFFECT OF FOOD, PLATING, AND PRESENTATION ON DESIRE FOR FOOD

This study examined the impact of food visual characteristics on individual's desire for food. Participants viewed different images of food and reported their willingness to consume and purchase specific foods. Results indicated that participants prefer sweet and refined dishes. A preference for elegant ceramic plates and artistic presentation only manifested for refined dishes. These findings suggest that people are responsive to "Instagrammable", stylized dishes but do not apply this standard to everyday dishes.

Madeline England, Kutztown University

Faculty Sponsor: Professor Brandon Krieg

UNRETURNED FEELINGS

The core of my poetry is my fragmented memories of growing up. My poems talk about living with anxiety, old struggles with mental and physical health, complicated family dynamics that don't exist in photo albums, and regret about choices I can't remember making, but all of them are about change. The memories that we take with us and the objects and people in our lives that we can't and how they shape our world. My poetry is written in conversation with great Native American poets of today including, but not limited to, Natalie Diaz, Tacey M. Atsitty, Sherwin Bitsui, and Julian Talamantez Brolaski. I am inspired by their attention to family and its ties to their natural environment.

Abigail Ensslen, Albright College

Faculty Sponsor: Professor Sara Nelson

BERETS, BOOKS AND BROWSING: A GUIDE TO THE BEAT GENERATION, BEATNIKS, AND WIX

The Beat Generation was a social movement of the 1940s to the 1960s in the U.S and Europe consisting of specific fashions, literature, values, and attitudes that opposed mainstream culture. While popular culture mainly associates the Beats with wearing black turtlenecks and sporting goatees, there is a whole precursor to the movement

that consists of a wide range of dress that includes shabby looks as well as business casual and semi-formal looks such as suits. My research into the evolution of the Beat style was organized and presented in a digital format using the Wix platform to create an intriguing and user-friendly website experience. This website showcases several different forms of media that illustrates this counterculture movement known as the Beat Generation as a whole, its subdivisions, and its array of fashions.

Steven Filby, Penn State Berks

Faculty Sponsor: Professor Praveen Veerabhadrapa

RELATIONSHIP BETWEEN VAPE USE AND CARDIOVASCULAR DISEASE RISK

INTRODUCTION: More than one-in-four students in the U.S. use e-cigarettes, as teen vaping rates surge. Because of this recent rise in vaping popularity, it is important to evaluate its effect on physical fitness among college students. The purpose of this study was to assess the relationship between e-cigarette use and physical activity and cardiovascular health. **METHODS:** Twenty-five (13M/12F; ~21yrs) healthy college students were recruited from the Pennsylvania State University, Berks campus. Vapers (current, or use <3months) and non-vapers were assigned based on self-report. Blood pressure and heart-rate were measured to assess cardiovascular health. Fitbit Charge-HR was deployed to evaluate students' weekly physical activity levels. **RESULTS:** Nine-vapers and 16-non-vapers; blood pressure (128/76 vs. 123/75 mmHg), heart-rate (76 vs. 84bpm), step counts (6061 vs. 7878steps), PO2 (97 vs. 98), walking distance (2.81 vs. 3.67mi/day), sedentary (943 vs. 805min/day), lightly activity (178 vs. 213min/day) were recorded without statistical significance due to a small sample. **CONCLUSION:** Vapers were overall pre-hypertensive and 30% less active compared to non-vapers.

Jessica Flanigan, Melanie Lopatin, Ross Cosby, Alvernia University

Faculty Sponsor: Professor Eric Recktenwald

IDENTIFYING CUES USED BY FROGS DURING NAVIGATION

Field experiments suggest frogs are capable of navigating to their home territory following displacement. However, it is unknown which environmental cues frogs use to guide this homing behavior. We designed experiments to identify if homing behavior can be studied in a controlled laboratory setting. Frogs were displaced from their "home pond" and observed for two hours. We recorded the amount of time it took frogs to approach their home pond. As a control, a container similar to the home pond, but empty, was placed in the testing arena. It has been shown that frogs are preferentially attracted to blue light. To test if this behavior is related to their recognition of water, a set of experiments were conducted with a blue light shining on the home pond. It was hypothesized that the frogs would be attracted to the water, and even more so when blue light was used. This study also explored if frogs prefer to jump into the water when confronted with a looming stimulus. Preliminary results suggest frogs are attracted to their home pond more so than the control. However, there is not a difference in attraction under ambient light vs. blue light.

Joshua Flores, Penn State Berks

Faculty Sponsor: Professor Randall Newnham

THE ISSUE WITH FOREIGN AID

📍 Room 3A: 1 p.m. – 2:15 p.m.

The harsh debate on whether or not foreign aid actually benefits struggling countries and their societies has been at play ever since the end of the Cold War. Several top leading officials have become skeptical on the influence foreign aid truly plays in

these developing nations. The structure of foreign aid and its disbursement are the reasons that it has been unable to produce the change and progress that donors and developed nations have sought. I argue that while foreign aid is flawed, it can still produce results as long as it is in the form of targeted aid, specifically in the form of democratic aid. Democratic aid rebuilds a nation's invisible infrastructure, which thus would produce several grassroots initiatives that put the needs of the people up front. The Marshall Plan, a giant foreign aid initiative provided by the United States to aid several European countries and even Japan, was similarly structured. In order to achieve results through foreign aid, its structure must be mended to limit its corruption and its malpractice while also demanding greater transparency and data collection from its donors.

Sania Fontaine, Albright College

Faculty Sponsor: Professor Julia Matthews

LIFE IS A DREAM: ACTOR'S PREPARATION OF A GOLDEN AGE PRODUCTION

After over a month's work of preparation, character development, and analysis, Sania Fontaine documented her journey of bringing the character of Rosaura from Calderon de la Barca's *Life is a Dream* to life for the Domino Player's production in February 2020, as well as reflecting after each performance. This six page monologue was a piece Sania and Julia spent a lot of time analyzing and working to be sure the message was clear to Sania and the audience and helped to drive the story forward.

Laura Gale, Kha Nguyen, Kahlan Tripp, Kutztown University

Faculty Sponsor: Professor Khori Newlander

LITHIC TECHNOLOGICAL AND SOCIOECONOMIC ORGANIZATION IN EAST-CENTRAL PENNSYLVANIA: THE VIEW FROM THE KU SITE

In 2003-2004, Kutztown University students collected artifacts from pedestrian survey and (minimal) excavation at the "KU Site," a Late Archaic through Early Woodland site located on campus property. Most of the artifacts collected from the site are lithics; however, they were subjected to minimal analysis at the time. Here, we present the results of a more extensive analysis of the lithic assemblage from the KU site. We address questions of site use and occupation span, as well as toolstone procurement and conveyance. Together, our analyses illustrate how the analysis of even small lithic assemblages can contribute to an understanding of technological and socioeconomic organization in east-central Pennsylvania ~6000-3000 years ago.

Kristopher Gelsinger, Kutztown University

Faculty Sponsor: Professor Duane Crider

HAND DYNAMOMETER AND PUSH-UP STUDY

Students at Kutztown University, as in other universities across the country, participate in health and wellness fairs, health surveys, fitness initiatives, and wellness expositions. These initiatives provide the students and researchers with information about student's fitness levels, health promotion information and peer into the behaviors and decision making of today's students.

Abigail Gray-Army, Albright College

Faculty Sponsor: Professor Marian Wolbers

SIDE EFFECTS: A MEMOIR OF A YOUNG ADULT'S JOURNEY WITH CANCER

📍 Room 3B: 1 p.m. – 2:15 p.m.

The Side Effects: A Memoir ACRE focused on creative writing about the mind-body effects of cancer. Utilizing knowledge and experience from her 4 years as an English

and communications major, Abigail Army wrote about her experiences with cancer and started mapping out a book of memoirs, which served as a precursor to an independent study in the Spring 2020 semester. Throughout the process of the ACRE, she shared work and developed a set of prompts that would inspire creative writing about cancer's effects on self and loved ones. The main component of Army's book is the process of being taken seriously by doctors as a young woman during diagnosis and treatment. Her presentation centers on reading her work and the prompts she developed.

Abigail Greco, Kutztown University

Faculty Sponsor: Professor Lisa Weckerle

IMPACTFUL ACTING: INCORPORATING READER'S THEATRE INTO THE ELEMENTARY CLASSROOM

Empowering student voice is vital when encouraging children to take an active role in their education. This project incorporates a pre-service teacher's adapted Reader's Theatre scripts into an after-school theatre program, in which college-level students directed short plays with elementary students in kindergarten through fifth grade. Over the course of the rehearsals, I recorded anecdotal notes regarding student empowerment to be used to determine the effectiveness of the Reader's Theatre strategy in a diverse setting. Arts education is an extremely effective way to empower students. Whether visual art or performance art, students have the opportunity to find and express themselves when given the freedom to be creative. This project explores the incorporation of theatre into the elementary setting as a way to influence children's attitudes toward literature, literacy, and performance. Students participating in Reader's Theatre perform a written script that has been adapted from pieces of literature to be read aloud. By doing so, they increase their reading fluency and their ability to make connections, all while developing their self-confidence and public speaking abilities, empowering them to take risks in the classroom setting and to be active participants in their own learning.

Kira Griffenberg, Alexis Quinn, Alvernia University

Faculty Sponsor: Professor Ondra Kielbasa

SHORT TANDEM REPEAT PROFILING: ANIMAL CELL LINE MISIDENTIFICATION USING PCR METHODS

STR profiling is a type of DNA profiling technology used to authenticate human cell lines, stem cells, and tissues. Species need to be able to be identified, and contamination needs to be detected in any scientific research. This study was designed to use PCR-based methods and DNA amplification with STR methods to recognize cells individually. Cell culture practices were followed precisely to reduce cell misidentification and cross-contamination. This study explores and emphasizes the awareness that surrounds the matters of misidentification and contamination, as well as ensuring the identity and purity of cell lines. In this study, genomic DNA samples were amplified using multiple species-specific primers. These primers were used to distinguish between species, and specific bands were examined by agarose gel electrophoresis. The cell lines focused on were human, monkey, mouse, and rat. Results suggest that expected species signature bands were detected, showing a lack of misidentification and cross-contamination.

Stephanie Griffin, Isha Shah, Albright College

Faculty Sponsor: Professor Amy Greene

GLUCOSE AND FRUCTOSE METABOLISM IN CRITHIDIA FASCICULATA

Crithidia fasciculata is a species of parasitic excavate. It has a single host lifecycle

cellin mosquitoes. These cells can metabolize glucose through glycolysis. *Crithidia fasciculata* is a eukaryotic species that is still in the process of being researched. Sugars other than glucose have not yet been studied in this field of research; thus, the purpose of this experiment was to determine if the cells were also able to metabolize fructose. The cells were made in a solution of 33 mM labeled glucose or 33 mM labeled fructose with D₂O, which was added as a solvent. Real time NMR spectrometry was used to observe and analyze the production of labeled ethanol, showing that the sugar went through its metabolic pathway. There was a competition that was performed between labeled glucose and unlabeled fructose, vice versa. This provided information about preference of metabolism in *C. fasciculata*. The results showed that both glucose and fructose were able to be metabolized through glycolysis to ethanol.

Kelly Groth, Kutztown University - Room 2: 11:30 a.m. – 12:30 p.m.

Faculty Sponsor: Professor Catherine McGeehan

UTILIZING KINESTHETIC LEARNING IN THE 21ST CENTURY CLASSROOM

Bodily-kinesthetic learning is one of the eight intelligences that was identified by Howard Gardner in his theory of multiple intelligences. His theory maintains the idea that students grasp new concepts through different methods of learning and these eight methods work together to reach all students through their personal strengths. Bodily-kinesthetic intelligence focuses on using the physical body to connect knowledge between their body and their brains. This study involved two different third grade classes learning the same content about counting and manipulating money using two different methods; one lesson being kinesthetic based and one being traditionally worksheet based. Consistencies were kept with the teacher who taught the lesson, amount of coins counted, pre-test/post-tests given. The difference in the lesson procedures themselves resulted in a change in percentage increase of student scores between the pre-test and post-test. Most importantly, the results showed a dramatic difference in terms of attitudes taken toward the lessons.

Devyn Grube, Kutztown University

Faculty Sponsor: Professor Catherine McGeehan

REGGIO EMILIA APPROACH

Why a Reggio Emilia inspired classroom is important in the year 2020.

Raffaella Gualtieri, Reading Area Community College

Faculty Sponsor: Professor Carol Bean-Ritter

PERCEPTION OF RESILIENCE AND IMPACTS ON STRESS MANAGEMENT

The following paper describes a study on people's perception of their resilience and how that impacts their ability to manage stress. Resilience is a vital concept in the field of mental health, especially when it comes to recovery. People deal with stress on an everyday basis, and certain individuals deal with higher levels of stress than others. It is possible that prefrontal cortex development can play a role into an individual's ability to develop resilience and manage stress better. There will be research subjects from Reading Area Community College who participated by completing an anonymous demographic survey along with a self-report survey.

Adrian Gutierrez, Emma Linsenbigler, Holly Speaker-Cadugan, Nik Henson, Bryce Miceli, Alanna Kazmierski, Alvernia University

Faculty Sponsor: Professor Kimberly Stoudt

CORRELATION BETWEEN THERAGUN PERCUSSIVE THERAPY ON THE QUADRICEP MUSCLES AND VERTICAL JUMP HEIGHT IN NCAA DIVISION III MEN'S VOLLEYBALL PLAYERS

▶ Room 2: 11:30 a.m. – 12:30 p.m.

The purpose of this study was to determine if there is a relationship between Theragun percussive therapy on the quadriceps muscles and vertical jump height in NCAA Division III Men's Volleyball players. Investigators recorded subject's vertical jump height using the Vertec before and after receiving Theragun treatment on the quadriceps muscle group on each leg. Results were pending at the time of abstract submission.

Brandi Haas, Paul Morgan, Ryan Blankenbiller, Robert Schickli, Penn State Berks

Faculty Sponsor: Professor Rungun Nathan

THERMAL PROFILE OF DOUGH THROUGHOUT CONTINUOUS MIXING PROCESS

Reading Bakery Systems (RBS) is a leading manufacturer of bakery equipment. RBS designs and manufactures baking equipment for large scale commercial baking companies. One piece of equipment that RBS manufactures is the continuous mixer. This equipment takes a continuous supply of ingredients and mixes them to provide a constant output of mixed dough. During this mixing procedure, heat is generated due to viscous heating. To combat this heating effect, RBS adds heat exchangers that cool the dough's mixing hull through coolant jackets. These chillers need to be sized appropriately to ensure that the final dough is within its optimal temperature range for best quality. To do this, RBS needs test equipment that can estimate the heat generated for different dough types. This equipment was produced using a small-scale mixer that was fitted with temperature sensors and data logging electronics. This allows for an accurate temperature reading throughout the mixing process. The data is then used in combination with experimental data from The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) to determine thermal properties of different dough types. The heat generated from mixing can be found and then used to estimate the appropriate chiller size needed for each application.

Amanda Hadley, Thao Dai, Alvernia University

Faculty Sponsor: Professor Michelle Serapiglia

A LITERATURE REVIEW OF THE EFFECTS OF NITROGEN AVAILABILITY ON CELL WALL DEVELOPMENT IN WOODY BIOENERGY CROPS

Due to agricultural industries relying on synthetic fertilizers to boost crop yields, excess run-off into our local waterways has led to eutrophication. Planting agricultural and riparian buffer strips is one method to mitigate this issue. Bioenergy crops, like shrub willow (*Salix* spp.), are good candidates for buffer strips because they can produce large amounts of biomass with minimal inputs and grow on marginal soil. Utilizing these crops as buffers could expose them to high rates of nitrogen and other nutrients, impacting their growth and cell wall development. Research studies have shown that increased nitrogen levels can alter carbon allocation to the cell wall. The focus of this study was to research key genes involved in nitrogen and phenylpropanoid metabolism in response to changes in nitrogen availability. Data from nitrogen studies will be presented focusing on the MYB and WRKY transcription factors, along with the genes arogenate dehydratase (ADT), cinnamate-4-hydroxylase (C4H), phenylalanine ammonia-lyase (PAL), and caffeic O-methyltransferase (COMT).

We will present the results of cloning and sequencing these genes from shrub willow. In addition, we will present data from the literature on the impacts of nitrogen on cell wall development.

Daniel Hamm, Kutztown University

Faculty Sponsor: Professor Jessica Robinson

SOCIAL PENETRATION AND PRIVACY BEHAVIORS INSIDE RELATIONSHIP DEVELOPMENT ON SNAPCHAT

▶ Room 3A: 1 p.m. – 2:15 p.m.

The study examines how friendships are developed over time on Snapchat. Altman and Taylor's (1973) Social Penetration Theory and Sandra Petronio's (1991) Communication Privacy Management theory are the study's frameworks. The main claim about SPT is that when two people want to become closer, they should self-disclose and reciprocate more often over time, which could make their interactions more meaningful. CPM discusses how sensitive private information is to someone and that rules should be developed and managed before private information is disclosed. This study mainly focuses on friendship through Snapchat, but also briefly inquires about how a romantic relationship could develop after two people were friends on Snapchat. Snapchat is quite different than Facebook and Instagram, because Snaps and chats expire after so long unless Snaps are screenshotted, or chats are saved. This study incorporated a qualitative approach by using field interviewing and an information sheet as the method. Research participants included individuals who are between 18 and 24 years old, daily users of Snapchat and Snapchatted both male and female friends on a weekly basis. Thematic analysis was used for coding.

Justin Hardy, Alvernia University

Faculty Sponsor: Professor Ondra Kielbasa

DETERMINING THE NEUROPROTECTIVE ABILITY OF CANNABIDIOL ON PC12 CELLS

Cannabidiol, otherwise known as CBD, is the non-psychoactive component found within the tip of the resin glands on the female Cannabis sativa (Indian hemp) plants. The human body can interact with cannabinoids due to the actions and effects of the endocannabinoid system. CBD can inhibit the binding of fatty acid amide hydrolase (FAAH), an enzyme responsible for breaking down the bodies naturally produced endocannabinoid, anandamide. This buildup of anandamide accumulates in the brain, where it can exert its beneficial effects. Because CBD can pass the blood brain barrier, and because PC12 cells contain many of the receptors and macromolecules expressed in neurons, this model of experimentation provides a basis to evaluate the neuroprotective claims of CBD. Established lineages of rat pheochromocytoma (PC12) cells, representing a neuronal cell model, were treated with cannabidiol (CBD) solution so that the neuroprotective claims attributed to CBD solution could be investigated. The cells were visually inspected to determine if CBD could be correlated to any morphologic differences in the differentiated cells. The cells were chemically antagonized to induce apoptosis and caspase-3 levels were evaluated via Western blot to determine if CBD positively or negatively contributed to the caspase cascade apoptosis pathway.

Ann Marie Harkins, Albright College

Faculty Sponsor: Professor Wendy Bartkus

A CRITICAL ANALYSIS OF MUSCLE DYSMORPHIA

This paper examines the many similarities and the single difference between muscle dysmorphia (MD) and anorexia nervosa identified in current research studies. The

research provides evidence for heightened levels of obsessive-compulsive behavior, perfectionism, and dissatisfaction with physical appearance being present in both disorders. Both groups show significantly lower self-esteem and participate in situational avoidance due to potential body exposure. Stigma and the media's glorification of hyper-muscularity prevents diagnosis of MD. Finally, this review criticizes the placement and categorization of MD in the DSM-5 and recommends categorizing the illness under eating disorders.

Jaquan Harley, Albright College

Faculty Sponsor: Professor Amy Greene

THE VORTICELLA CONVALLARIA CONTRACTILE VACUOLE

The central purpose for this research is to determine how different drug concentrations affect the contractile vacuole in Vorticella convallaria and analyze how quickly the contractile vacuole cycles. A contractile vacuole is a sub-cellular structure that expels excess liquid when contracted to maintain osmoregulation. Vorticella are single celled eukaryotes that live in ponds and are part of the protist family I looked at the Contractile vacuole cycling in spring water that the standard deviation was 9.20 ± 3.05 , $n=5$. The three different drugs chosen I plan on using are, tetraethylammonium chloride, tetramethylammonium chloride, and tetrapropylammonium chloride by putting them in a petri dish with spring water containing Vorticella. Tetraethylammonium chloride and tetramethylammonium chloride of 50 mM was used and was observed that the cells died. Once the drugs were introduced the cells started to expand which was an indication that the Vorticella's osmoregulation was hindered. However, a question arose: Could we dilute the drug out and see if they went back to normal? More controls and lower drug concentrations must be done to determine whether the toxicity is due to the inhibition of the contractile vacuole.

Haley Hartline, Reading Area Community College

Faculty Sponsor: Professor Ellen Walter

JOAN OF ARC MONOLOGUE

Joan of Arc is a woman who faces many hardships while fighting for England. In the hundred-year war, she heard voices from angels that were telling her to fight. In this monologue she has been taken prisoner by the Church because they think she is crazy. After battling to protect the King and England she gets stabbed in the back and sentenced to be burned at the stake. But instead of burning her, they promise her life in prison. This monologue from Joan states her feelings of "life" in prison and how it is not really life at all.

Rachel Hartzell, Penn State Berks

Faculty Sponsor: Professor Jui-Chi Huang

STUDYING THE BENEFITS OF DIGITAL PAYMENTS ON THE GDP OF DEVELOPED COUNTRIES

▶ Room 1: 10:15 a.m. – 11:15 a.m.

Mobile payments have revolutionized the convenience of the consumer market. Rather than using physical currency, access to one's money is at their fingertips. Mobile payments are efficient, secure, and provide opportunities for economic growth. These transactions involve point-of-sale (POS) systems interacting with digital wallets on mobile devices in order to provide seamless trades between merchants and consumers. The research that I have conducted studies the correlation between usage of mobile payments in developed countries and the associated GDP. Several scholarly journals were reviewed and used as sources to provide input toward the

overall research in question. The analysis of these sources revealed that there are several different factors that influence the way that mobile payments contribute to the economic prosperity of a country, such as consumer attitudes and more open job markets that increase employment. My research question is not designed to suggest that developing countries do not benefit economically from mobile transactions, but the conclusions from my research suggest that the impact is more significant in higher-income countries.

Zachary Hendricks, Albright College

Faculty Sponsor: Professor Justin Couchman

CROSS-CULTURAL DIFFERENCES IN MEMORY, BELIEFS, AND MENTAL SCHEMAS: THE STORIES WE TELL OURSELVES

Although it is self-evident that one's memories are often fleeting, even sometimes seemingly nonexistent when attempting to be recalled, one of the most extensive faults in human memory is its reconstructive nature. It would not be necessarily true to state that people "recall" memories, as past experiences that are remembered in the present are never concrete reproductions of their original forms. The current research attempts to recapitulate Frederick Bartlett's model of reconstructive memory (1932) to further understand the reliability of memory, the effect of individual cognitive schemas, and the pervasiveness of these factors in the interpretations of different narratives. It utilized two stories of different origins (one being a classic American tale, the other an ancient Incan myth) that acted as the objects for memorization. Participants were read the stories one at a time by the researcher, and then were asked to recall the content of the stories immediately, and then one week later. Memory was operationalized by categorizing the important concepts of both stories into ten distinct elements that occurred in both stories. The accuracy of participant's responses significantly decreased when recalled one week later ($M = 6.9, SE = 0.70$) compared to the immediate recall in both stories.

Miguel Hingada, Penn State Berks

Faculty Sponsor: Professor Ada Leung

SOCIAL RESPONSIBILITY AND FINANCIAL RETURN: A CASE STUDY ON SUSTAINABILITY MARKETING

In today's economic world, sustainability has become increasingly prevalent for businesses. Sustainability in a business can take different forms and is a way for companies to incorporate more socially responsible initiatives into their business model. This study focuses on two forms of social responsibility: environmental factors, which looks into how a company's products, services and practices incorporate the reduction of environmental harm, and philanthropy, which regards companies with an affiliation to certain social causes and not-for-profits. To determine how these forms of social responsibility affect consumer's buying behavior, a survey was used to measure the attitudes, perception, behavior, and buying intention of consumers. The results of the survey showed a negative correlation between materialism and buying intention, but a positive correlation between consumer attitudes and buying behavior. This signifies that the more materialistic a consumer, the less likely they are to purchase sustainable products, but consumers who saw themselves or a certain company as socially responsible, are more likely to purchase sustainable products. While sustainable behavior, such as recycling, has no direct relation to sustainable buying intention, price was found to have a significant influence. Suggestions for further research is also discussed, along with the implications for businesses and companies.

Aaron Hinsey, Albright College

Faculty Sponsor: Professor Mariam Wolbers

PINE CONES AND CHERRY BLOSSOMS

My story, Pine Cones and Cherry Blossoms, involves an American boy, named Ash, who transfers to a Japanese school and meets Hanako, a girl in his new class. The plot of the story also involves their friends Nakama, a rebel student who loves 1980s American culture, and Shien, Hanako's best friend who has an upbeat personality, as they try to understand each other and their different social customs. Applying my knowledge of both American and Japanese societies, I had decided to include a number of comedic mishaps involving the misunderstandings of the characters' different worlds. For instance, Ash has trouble entering his classroom day one because he is trying to pull the door open, whereas in Japanese schools most doors open from side to side. The characters are also mesmerized by each other's lunches, since American lunches usually involve a sandwich, whereas in Japan their lunches include rice and vegetables. I had also taken the time to draw out all the characters of the story and certain scenes from the plot as well, formatted as short comic strips. I hope whoever reads my story in the future will come to enjoy the content of my work.

Briana Hocker, Alvernia University

Faculty Sponsor: Professor Rosemarie Chinni

THE EFFECTS OF PHOTODYNAMIC THERAPY ON LONGEVITY OF CHOLANGIOCARCINOMA PATIENTS

Cholangiocarcinoma (CCA) is a rare cancer of the bile duct. The only cure is total resection, which is typically not recommended because of its invasiveness, complications and long recovery period. It had been found that stenting patients with CCA decreases many side effects (pain, jaundice, etc.) and increases longevity. Photodynamic Therapy (PDT) is a palliative treatment that many CCA patients will undergo. PDT has been thought to increase life with the addition to stenting. Forty cases of CCA that were treated with PDT at Thomas Jefferson University Hospital were reviewed. Data on the number of treatments, date of diagnosis and death, and cause of death were gathered. The survival time quadrupled for patients who only received two treatments. Thus, PDT does increase the length of survival, and the more PDT treatments longevity continues to increase.

Sarah Hohl, Albright College

Faculty Sponsor: Professor Justin Couchman

FANTASY AND REALITY DISTINCTION IN CHILDREN AND ADULTS

Imagination is not easily defined to children because it is an abstract concept that cannot be seen to be taught. When telling a child to "go play with their toys", they need to understand what play is and how to make an inanimate object "come to life" in their minds. By making an inanimate object "come to life" for a child, they are developing their imagination while playing. We tested twenty-nine children on their ability to understand real vs. imaginary objects and attempted to improve their understanding with a short intervention. Results supported previous findings showing that younger children have a harder time understanding real and imaginary. Preliminary research for fantasy and reality distinction was conducted in a second experiment. Participants categorized pictures of actors and movie characters and reaction time was measured. Results indicated participants were more accurate when categorizing imaginary pictures but tended to have slower reaction times to imaginary pictures.

Lauren Huber, Albright College

Faculty Sponsor: Professor John Pankratz

SPANISH LESSONS: THE TRANSLATION OF SALLY MCKEAN

This poster examines Sally McKean as she moved from life as a prominent young woman in the “republican court” of early national Philadelphia into her marriage to an aristocratic Spanish diplomat. Born in 1777, Sally was the daughter of Thomas McKean – Representative of Delaware in the Continental Congress, Signer of the Declaration of Independence, Chief Justice of the Pennsylvania Supreme Court, and Governor of Pennsylvania – and his second wife, Sarah Armitage. Her marriage, in 1798, to Carlos Maria Martínez de Irujo y Tacón, the Minister of Spain to the US obliged Sally to negotiate a series of transitions, which the poster details: from Presbyterianism to Catholicism; from Philadelphia to Washington to Madrid, from an evolving American elite to an established Spanish aristocracy, and from the Governor's daughter to the Marquise de Casa Irujo. Family correspondence and the writings of contemporary observers help to trace these transitions, these translations, which shed light broadly on female education, the role of women in the politics of the New Nation, and the influence of the Revolution on personal identity. Ultimately, Thomas McKean's keen sense of ambition and Sally's own eased and normalized these transitions and influenced the woman in her endeavors.

Helen Kerschner, Kutztown University

Faculty Sponsor: Professor Victor Massad

STUDYING SELF-EFFICACY AND PROPENSITY TO AVOID SOFT DRINKS

Efficacy is a reflection of our sense of self-esteem and capability to control our actions. This research investigates whether the self-efficacy levels of consumers are directly related to self-control and propensity to avoid soft drink products. From there I will explore whether it is possible to increase consumer self-control and intention to avoid soft drinks by using positive priming of existing efficacy levels, working under the belief that priming will moderate the relation between efficacy and intention. Furthermore, the effects of positive self-control priming on those with low soft-drink avoidance efficacy, and negative self-control priming on those with high soft-drink avoidance efficacy, will demonstrate how effective or detrimental priming is to a consumer's self-control. The results of this study will establish whether marketers should consider means of reassuring consumers that they ultimately have power over their choices of whether to buy products that are damaging to their health. This would be an alternative to attempts of restriction the choices of consumers in efforts to guide them toward healthier products or alternatives.

Muskan Khatiwala, Penn State Berks

Faculty Sponsor: Professor Tami Mysliwiec

IDENTIFICATION OF ISOLATED ANTIBIOTIC RESISTANCE GENES WITHIN THE BLUE MARSH WATERSHED

Bacteria can be found everywhere. Most bacteria are benign or beneficial, however, some are pathogenic. The threat begins when a pathogen acquires antibiotic resistance. Antibiotic resistance occurs when bacteria develop a mechanism to render antibiotics ineffective. When pathogenic antibiotic-resistant bacteria are introduced to an area of high-water usage it poses a public health risk. Watersheds like Blue Marsh are potential reservoirs for antibiotic-resistant pathogens. The primary objective of this project is to determine the prevalence of antibiotic-resistant genes in the Blue Marsh reservoir. Three areas within the reservoir serve as sites for analysis of antibiotic-resistant genes. All sites are exposed to agricultural, industrial,

or recreational uses making them potential areas where high levels of antibiotic-resistant pathogens may be found. We analyzed the microbial population within the Blue Marsh watershed. For the analysis, we isolated genomic DNA from sediment samples collected over a period of one year. Isolated genomic DNA was analyzed for antibiotic-resistant genes using PCR techniques. Tetracycline resistant genes were found in several samples. The presence of the antibiotic resistance genes found in the Blue Marsh watershed sediment samples suggests that potential pathogens may be present due to the human action in and around this waterway.

Emmeline Knowlan, Kutztown University

Faculty Sponsor: Professor Angela Cirucci

CELEBRITY ENDORSEMENT, PARASOCIAL RELATIONSHIPS AND NONPROFIT ORGANIZATIONS

Celebrity endorsements have been part of marketing strategies for over 100 years, and have been used in political marketing, brand/product marketing, health communication and more. As with consumer products, celebrity endorsements are also used as marketing tools for nonprofit organizations looking to fundraise or gain volunteers. Celebrities such as television personas, radio hosts, and film stars often give spectators the illusion that they take part in a personal, two-way relationship. This relationship is referred to as parasocial interaction and is always one-sided, with the celebrities controlling the messages. Much of the current research on parasocial interaction and its implications for marketers using celebrity endorsement tactics focuses on social media. Twitter is a popular platform for both celebrities and fans, and allows fans a greater form of communication with celebrities than ever before. Using the lens of parasocial interaction theory, this study looks at how nonprofit organizations use celebrity endorsements on Twitter. The identification of celebrity endorsement “best practices” for nonprofit organizations to implement on social media is also discussed.

Angela Kozma, Todd Lichtenberg, Kutztown University

Faculty Sponsor: Professor Dale Parson

A GRAPHICAL, ORBITAL GRAVITY SIMULATOR FOR PLANETARIUM

The planetarium director at Kutztown University has expressed interest in having a way to allow public attendees to control a game-like, graphical gravity simulation on the dome. The present project is the design and implementation of that system, with attendees using hand-held Android tablets as controllers for the projected graphical simulator. Novel aspects of this proposal include the creation of an interdisciplinary team project from two or more disciplines, and design, construction, deployment, and support of a set of graphical applications to be used in a planetarium or similar immersive environment. The poster illustrates the animated orbit of planets around their star and highlights the graphical Android user interface and the user experience. The presentation also includes an interactive demo using a laptop and an Android tablet.

Kayla Kreider Mealy, Molly Corrigan, Alvernia University

Faculty Sponsor: Professor Diane Kraft

A COMPARISON OF THE DOSES OF CALCIUM AND VITAMIN D IN CALCIUM GUMMY AND CHEW SUPPLEMENTS

The effective doses of calcium and vitamin D were examined in 13 calcium chews and 17 calcium gummy dietary supplements. Independent samples tests were utilized to determine whether there was a significant difference in both calcium and vitamin D content between the calcium gummies and chews. Both

the recommended dose on the Nutrition Facts panel as well as the amount per individual chew or gummy were analyzed.

Josh Leid, Jake Oberholtzer, Bret Landis, John Hosler, Penn State Berks

Faculty Sponsor: Professor Rungun Nathan

DROP WEIGHT IMPACT TESTER

We created a low-cost drop-weight impact tester to study the strength of composite materials under electrical impulses and/or magnetic fields. The tester outputs the impact energy, impact force, and deflection of the test specimen. The non-ferrous aluminum profile that the tester is comprised of allows for no interference with the test being performed and endless customization to the test rig. Although the test rig was specifically designed for composite materials, it could be easily changed to test a variety of other materials.

Justin Leinbach, Brandon Jarsocrak, Todd Hetrick, Thomas Scully, Penn State Berks

Faculty Sponsor: Professor Rungun Nathan

OXYGEN HOSE REEL

Many people have conditions that require oxygen therapy in their homes. These individuals can be on oxygen from several hours at a time up to constant oxygen supply from a concentrator. The hose from the concentrator to the individual is often between fifty and one hundred feet long and can be dangerous to the patient. The excess hose is a major tripping hazard, can be crushed or block oxygen flow to the patient, and can get caught on obstacles. Our device offers remedies to all these problems by neatly and efficiently storing the hose, dispensing only what is needed by the patient. The device is user friendly and can be produced at an affordable price point. This is our third iteration of design, and we have applied lessons learned at every step of the way. We have had consultation from the Departments of Occupational Therapy and Business at Penn State Berks Campus, as well as medical professionals at Penn State St. Joseph's Medical Center. Our product can solve a problem for individuals who depend on their oxygen treatments, improving their quality of life.

Jamin Levan, Penn State Berks

Faculty Sponsor: Professor Terry Speicher

PIEZOELECTRIC HEARING AID

Piezo devices turn mechanical energy into electrical energy through vibrations created from any mechanical input source. This project's goal is to create a combination of a hearing aid as well as a piezo device (with supporting hardware) to create a hearing aid that the user would need to charge much less frequently and/or not at all in a nontraditional way. The scope of this project has changed a few times throughout the course of this semester. It began as trying to charge a large battery, then to a medium battery, but it has been scaled down to try and charge small button batteries. A testing device will need to be assembled, which has been created using 3-D modeling software. Through the assembly and testing of next semester, the viability of how well this device will work will be known.

JoAnnah Lim, Alvernia University

Faculty Sponsor: Professor Eric Recktenwald

IDENTIFYING THE PHYSIOLOGICAL EFFECT OF INTRODUCED VISUAL AND AUDIO STIMULATION TO FROGS AND QUANTIFYING THEIR BEHAVIOR IN RESPONSE TO THIS STIMULATION

The stress response is an important physiological mechanism for surviving in challenging environments. In humans the main stress hormone, cortisol, is released by the adrenal gland and acts to direct energy to cells associated with mitigating stress, such as large skeletal muscles and the brain while decreasing activity of the immune, urinary, reproductive, and digestive systems. Cortisol levels fluctuate throughout the day but chronically high cortisol levels due to consistent psychological stress is linked to heart disease, depression, and other serious illnesses. In frogs the main stress hormone released by the adrenal gland in response to stress is corticosterone (CS) (De Boer, 2017). CS is known to modify reproductive behaviors in frogs by rapidly suppressing reproductive grasping (Moore and Zoeller, 1985). However, the effect of CS on other behaviors is unknown. This study seeks to assess the effects of stress on frogs' responses to prey and predator stimuli. The robustness and consistency of stimuli will be measured and compared to levels of CS in urine. Urine CS concentrations will be measured using an enzyme immune assay (Lemaire and Moal, 2005). CS levels will be measured under different conditions. A correlation will be made to CS levels and changes in behavior.

Kallie Lutz, Albright College

Faculty Sponsor: Professor Susan Hughes

EFFECTS OF SEASONAL CHANGES AND ACTIVITY LEVELS ON THE PERCEPTION OF MOOD

We examined perceptions of mood based on seasonal changes and activity levels. Overall, those shown engaging in active pastimes were rated as being more energetic and happier than if engaged in non-active pastimes. When a person was shown in a winter setting, they were perceived as being happier and enjoying the activity more if engaged in active pastimes as opposed to non-active ones. The opposite was true for those engaged in activities depicted during summertime.

Kierra MacLeod, Kutztown University

Faculty Sponsor: Professor Kim Shively

PARENT-CHILD RELATIONSHIPS IN COMPETITIVE SPORTS

In my paper, I take an anthropological perspective to better understand the relationships that develop between parents and their children who participate in competitive sports. Based on interviews with college athletes about their past relationships with parents, I found that factors like symbolic completion, the expectation of parent involvement, and perceived benefits of the outcome significantly impact parent-child relationships. When parents' and children's ideals and expectations do not align, the parent-child bond formed through sports acts as a catalyst for friction. On the other hand, when both parties agree on expectations of involvement, sports reinforce and bolster parents' relationships with their children.

Jason Masteller, Wyatt Ritchie, Penn State Berks

Faculty Sponsor: Professor Terry Speicher

THERMOELECTRIC CHARGING CASE

The plan for this project is to design and create a thermoelectric charging phone case. Phones have become an essential tool in today's society, which is always on

the move. Having to take time and charge your device can be sometimes prohibit other activities, so by enabling the consumer with the opportunity to charge their device through the heat that is naturally emitted by their body, is big. This theoretically eliminates the need for having to use a wall outlet, which is sometimes not available depending on the location. There are portable chargers/power banks available on the market, but they require to be charged, which will eventually run out. This project would eliminate the need for a wall outlet, power bank, and save the consumer time.

Erich Miller, Alvernia University

Faculty Sponsor: Professor Eric Recktenwald

NEFARIOUS NAUSEA: A SYSTEMATIC REVIEW AND META-ANALYSIS OF THE RISKS OF NAUSEA IN THE TREATMENT OF MDD, OCD, AND ANXIETY DISORDERS WITH SELECTIVE SEROTONIN RE-UP TAKE INHIBITORS (SSRI)

Selective serotonin re-uptake inhibitors (SSRI) are a fundamental first-line treatment for major depressive (MDD), obsessive-compulsive (OCD), and anxiety disorders (AD). A pervasive side-effect common to this drug class is nausea. Nausea, loosely defined as the feeling of imminent vomiting, is a key-player in clinical trial attrition and medication reluctance in clinical practice. This experiment performed a systematic review and meta-analysis to provide insights into the risks of nausea associated with SSRI's. Random-effects meta-analysis and relative risk (RR) measures were used to quantify risk. Significant associations for increased risk of nausea due to SSRI intake were identified ($p < .01$). No significant differences between individual SSRI's were identified ($p > .01$). These results were affirmed regardless of diagnostic indication. Panic disorder was identified as a powerful modifier and had a significantly lower risk of nausea relative to other anxiety disorders. Majority of studies contributing to effect estimates were classified as "high-risk," according to Cochrane Systematic Review standards. Thus, this analysis has showed that SSRI's significantly increase the risk of nausea across multiple conditions. This analysis has also provided an up to date quality assessment of SSRI literature.

Gabrielle Montefiore, Matthew Moran, Jamison Wendel, Jared Koechell,

Martin Thompson Riggins, Alvernia University

Faculty Sponsor: Professor Kimberly Stoudt

VERTICAL JUMP HEIGHT FOLLOWING SELF MYOFASCIAL RELEASE (FOAM ROLLING) OF THE QUADRICEPS MUSCLES IN NCAA DIVISION III MALE BASKETBALL PLAYERS

▶ Room 3A: 1 p.m. – 2:15 p.m.

A form of self myofascial release (foam rolling) can be useful when treating skeletal muscle immobility and pain. This may also improve blood and lymphatic circulation and stimulate the stretch reflex in muscles. Vertical jump height is important for basketball players, therefore, research was conducted to see if foam rolling for thirty seconds on each leg would contribute to an increase in vertical jump height in NCAA Division III Men's Basketball players. The study was conducted by having athletes perform a baseline vertical jump, foam roll each leg and perform a vertical jump again. Results were pending at the time of abstract publication.

Kaleigh Moran, Kutztown University

Faculty Sponsor: Professor Dannel MacIlwraith

THE HISTORY OF COLLAGE QUEENS — INTERPRETING THE LEGACY OF WOMEN'S CRAFTS INTO THE ART OF WEB DESIGN

For centuries, women have utilized the technique of collage, a form of art in which

miscellaneous materials are attached to a supporting surface. I have designed and coded a website entitled, "The History of Collage Queens" which displays a timeline of the history of women's involvement in collage. My goal was to create a way to share this relatively unknown part of art history in an accessible and approachable way. The information is paraphrased in my own voice to offer a casual tone, often with an air of whimsy and humor. Throughout my website, I celebrate female collage artists by referring to them as "collage queens". Because of this, I use crowns as a motif. My design includes collaged elements throughout the website to explore the possibilities of traditional media in interactive spaces. To organize my timeline, I divided my research into distinct time periods. Each time period is represented by a collage I created with physical materials and digitized. These collages contain images that supplement the topics discussed in the research. The unique challenges of this endeavor has allowed me to discover and participate in a legacy of collage queens.

Morgan Nadin, Kutztown University

Faculty Sponsor: Professor Elaine Cunfer

WRITING AND ILLUSTRATING A CHILDREN'S BOOK USING FIRSTHAND TRAVEL EXPERIENCES AND REFERENCE IMAGERY

▶ Room 3B: 1 p.m. – 2:15 p.m.

Children's books and illustrations can be a powerful tool in helping young readers experience places or understand concepts they would not normally have access to. The children's book to be presented, "Around the World with the Whisker Sisters", stands to visualize that concept. Using experience gained firsthand through a study abroad experience as well as substantial cultural and literary research, this book was written and illustrated to introduce the culture of Poland to children in a visual and easily understood format. Through firsthand interactions and experiences in the topic country Poland, the classic novel "Around the World in 80 Days" by Jules Verne was reimagined as a children's book that centers around three mice that travel with Mr. Fogg around Poland. They experience customary food and dances and see traditional clothing and vendors. Authentic visual imagery was referenced in order to create a unique but visually accurate depiction of the culture of Poland that is accessible to children. To make these experiences and depictions accessible to children is to help relieve potential apprehension or anxiety in children regarding traveling to or learning about unknown cultures and show that other cultures can be fun and exciting.

Andrea Nguyen, Albright College

Faculty Sponsor: Professor Doreen Burdalski

CULTURAL APPROPRIATION: CULTURAL HOMAGE OR CULTURAL THEFT?

▶ Room 3B: 1 p.m. – 2:15 p.m.

What is cultural appropriation? It is the unacknowledged or inappropriate adoption of the customs, practices, and ideas of one culture or society by members of another and typically more dominant people or society. Through the years, designers have given the world memorable pieces that have had to be retracted due to cultural appropriation. Cultural appropriation in designs in the fashion industry has been a recent discussion whether it pays homage to a specific culture or it is a cultural theft. Brands have made the mistake of appropriating a culture and have quickly apologized to only make a similar mistake again. The research on this topic provides cases of cultural appropriation and initiatives companies have taken to avoid cultural appropriation in their designs. To succeed in the future, brands need to learn how to celebrate a culture that pays homage without stealing from or degrading that culture.

Cao Nguyen, Maddie Fennelly, Lukas Hoffman, Jon Capato, Penn State Berks
Faculty Sponsor: Professor Rungun Nathan

ORNITHOPTER WING

This project focuses on designing and simulating a wing with an integrated joint and motor assembly to represent the motion of a bird. The hinge would allow the wing to only bend 90 degrees and lock when the flapping happens. The model is made with the intention of mimicking a robin.

Kha Nguyen, Laura Gale, KahlanTripp, Kutztown University

Faculty Sponsor: Professor Khori Newlander

SOURCING CHERT ARTIFACTS IN EAST-CENTRAL PENNSYLVANIA

In Pennsylvania, archaeologists have long sourced chert artifacts back to their geographic-geologic origin based on the visual analysis of macroscopic attributes. On this basis, archaeologists have documented the movement of stone over enormous distances, defining vast territories or trade networks that stretched across much of the Middle Atlantic. But is it really that simple? While our colleagues in other regions subject their chert artifacts to microscopic and chemical analyses to determine from where they originated, are we in Pennsylvania lucky because our rocks are easily distinguishable macroscopically? Probably not. Focusing on a Late Archaic-early Woodland site in east-central Pennsylvania (the "KU Site"), we explore some of the challenges of sourcing chert artifacts in the region. In particular, we note the necessity of determining the intra-source variability that exists in chert quarries across the region as a first step for confidently sourcing chert artifacts and interpreting their conveyance.

Rachel Nye, Inayah Clay, Albright College

Faculty Sponsor: Professor Amy Greene

THE EFFECTS OF TEMPERATURE ON THE METABOLISM OF CRITHIDIA FASCICULATA

Crithidia fasciculata are insect parasites, primarily infecting mosquitoes, that grow at an optimal temperature of 27 degrees Celsius, the body temperature of the mosquito. Growth and metabolism can happen at a variety of temperatures, and we are trying to find if 27 degrees is the true temperature for metabolism of these parasites. The test to determine this is to incubate the cells at specific temperature points ranging from almost freezing to a bit above room temperature with labelled C-13 glucose as the source of food for the cells. Every thirty minutes for two hours the cells were spun, and the supernatant was tested by C-NMR for the presence of metabolic wastes produced by the Crithidia fasciculata, which includes ethanol, succinate and glycerol. Overall, it seems that cells grown at our highest temperature point tested, 32 degrees Celsius, showed the most production of these metabolic wastes. The other temperatures tested were 5 degrees and 21 degrees. It makes sense that the 32-degree samples showed the most metabolic waste because it is the point we measured that is closest to the temperature of the literature optimal temperature of growth for Crithidia fasciculata.

Liam O'Brien, Kutztown University

Faculty Sponsor: Professor Dr. Matthew McKeague

GOOD NIGHT: AN INTERACTIVE STORYTELLING EXPERIENCE

Good Night is, in its entirety, a 50+ minute choose-your-own adventure story experience. My presentation will consist of a shot synopsis & clips from the final presentation. In addition, I will present a behind the scenes look into the production of the piece, from concept to distribution.

Ifeoluwa Ogunyinka, Penn State Berks

Faculty Sponsor: Professor Kirwin Shaffer

NOLLYWOOD IN OBODO OYIBO (WHITE MAN'S LAND): HOW NIGERIAN COMEDIES CRITIQUE THE NIGERIAN DIASPORIC EXPERIENCE IN THE WEST

Globalization facilitates the sharing and transfer of information and culture, making it possible for countries to experiment and connect with tenets of other cultures. In the film industry, directors possess the creative license to draw inspiration from other cultures and engulf their audience in new experiences. However, the role to inform in these cross-cultural films is usually one-sided, reductive of the culture in discussion, and often controlled and funded by the western film industry, especially Hollywood, with little acknowledgement of the nuanced experiences of people from these cultures living in the west. As Africa's largest film industry, Nigerian Nollywood employs comedy to satirize the trends and highlight the lives of Nigerians in the diaspora in western countries, specifically in the United Kingdom. Four popular and pivotal Nollywood comedies about Nigerian migration and diaspora, Kingsley Ogoro's *Osuofia in London* (2003), Simisola Opeoluwa's *London Boy* (2004), Destiny Ekaragha's *Gone Too Far* (2013), and Sunkanmi Adebayo's *Lost in London* (2017), highlight the themes of glamorization and eventual rejection of western culture. Through comedy, Nollywood directors offer a counter-voice to the portrayal of the Nigerian diaspora in ways that reflect contemporary Nigerian attitudes about both the West and the diasporic experience.

Kenneth Orrego, Albright College

Faculty Sponsor: Professor Brenda Ingram-Wallace

THIRTEEN REASONS DIE: ANALYZING THE GLORIFICATION OF ADOLESCENT SUICIDE IN THIRTEEN REASONS WHY

Adolescent suicide has recently received more attention with the release of the show *Thirteen Reasons Why*. The show was adapted from the book of the same name by Jay Asher, and this project draws information from both sources. Qualitative and quantitative data gathered from viewings of the show and readings of the book highlight several instances of romanticizing both the act of teen suicide and the aftermath of the action on those who knew the victim. There are also instances where factors preceding Hannah's suicide are also shown in a negative fashion. These factors include sexual assault and harassment, physical assault, bullying, and psychopathology. Analyzing all of these factors highlighted that *Thirteen Reasons Why* has had an overall negative effect on decreasing adolescent suicide rates. Furthermore, the show has been linked to an increase in adolescent suicide rates since its release, showing that the show presents a real danger to the public.

Brandon Orzech, Alvernia University

Faculty Sponsor: Professor Darren Koch

THE UNDERLYING CAUSES OF CARDIOVASCULAR INFLAMMATION LEADING TO DEGENERATION

One person dies about every 37 seconds in the United States due to cardiovascular disease. Cardiovascular inflammation contributes to degeneration of the cardiovascular system and there are key components that play a role in inflammation. High triglyceride levels, high cholesterol levels, obesity, genetic influences, and hyperinsulinemia and diabetes are hypothesized to all play an integral role in the degeneration of the cardiovascular system. Useful tools, such as the TyG index and the BMI index are readily used by health professionals to monitor patients that are at a higher risk of a CVD. While it is known that keeping all of these different components

in check are important, the main goal of this literature review is to examine the main underlying cause for cardiovascular inflammation leading to degeneration and the possible ways to combat it. Some of these components give rise to other ones, such as obesity normally proceeding type 2 diabetes. These five different areas are all intertwined and the main goal is to see which area is the main source for cardiovascular inflammation.

Nicole Maria Paredes, Reading Area Community College

Faculty Sponsor: Professor Carol Bean Ritter

MEMORY BIAS

The following paper describes a study based on memory bias. There will be subjects from Reading Area Community College who participated by trying to recall as many words as they possibly can from two different lists while reading two different short paragraphs as a distraction method.

Serenah Pauliuc, Penn State Berks

Faculty Sponsor: Professor Amir Barakati

FABRICATION AND TESTING OF BIO-COMPOSITES

Natural fibers are emerging as strong sustainable candidates to reinforce composite materials. Bio-composites, composed of natural fibers and bio-based resins, are ecofriendly alternatives to synthetic materials derived from petroleum. However, in their natural untreated state, bio-based materials are generally limited to lightly loaded applications in dry environments. Further investigation should be conducted on bio-composite materials to improve their mechanical properties, especially in wet environments. The goal of this study is to fabricate and test different bio-composite laminated plates in order to measure and enhance their stiffness and strength in dry and wet conditions. A bio-composite laminate made of woven jute fiber (burlap) and plant-based polymer matrix is manufactured through vacuum assisted resin transfer molding (VARTM). This laminate is then subjected to the tensile testing, microscopic void content examination, and 24-hour soaking in de-ionized water. The results show that the void content of the laminate is very low and the use of burlap in the bio-composite makes the bio-resin polymer stiffer although it has little effect on the strength. Furthermore, the water saturated bio-composite showed decline in stiffness and strength in the warp direction by about 26% and 6%, respectively.

Kimberly Peralta, Reading Area Community College

Faculty Sponsor: Professor Carol Bean-Ritter

MEDIA INFLUENCE ON EMOTION AND BEHAVIOR

The following paper describes a study on how people's beliefs about the media influence their emotions and behavior. There will be 30 subjects from Reading Area Community College who participated by taking a 3-question survey about the media and how it affects them.

Jenna Phillips, Penn State Berks

Faculty Sponsor: Professor Praveen Veerabhadrapa

BLOOD PRESSURE CATEGORIES AND WAIST CIRCUMFERENCE AMONG COLLEGE FEMALE EMPLOYEES

College campuses are large and growing, and likely involve at-risk employees due to the sedentary nature of office-based occupations. There is limited evidence on the occupational health needs of college female employees. High waist-circumference in women: >88cm increases cardiovascular risk. The purpose of this study was

to investigate the link between waist-circumference and different blood pressure categories. Thirty-five apparently healthy female staff, without any prior clinical diagnosis, were recruited from the Pennsylvania State University, Berks-campus. After 5 minutes of rest, three automated BP measurements were obtained using the Welch Allyn Connex ProBP digital device in a seated position and the average of the three measurements were calculated. Waist circumference measurements were taken around the abdomen at the level of the umbilicus after expiration. Our primary findings indicate that there was direct relationship between waist circumference with the newly formed four BP categories, per 2017 ACC/AHA High BP Guidelines. A simple and non-invasive health screening method such as measuring waist circumference could quickly and easily identify those at increased health risk to allow for earlier interventions to improve long-term health outcomes for female employees.

David Pierce, Alvernia University

Faculty Sponsor: Professor Stephen Campion

EVOLUTION OF PROTEIN STRUCTURE AND FUNCTION: CONSERVED DOMAINS

This study is part of an ongoing exploration into the evolution of protein structure and function. Individual proteins that share a common element or domain of protein structure have been compiled and compared in order to characterize which of the available chemical functionalities inherent in the twenty common amino acids, are most heavily preserved throughout evolution, as proteins diverge over time to generate diverse proteins functions from a common primordial ancestor. This study focuses specifically on a compiled family of protein structures containing one or more LINK domains within their overall protein architecture. These domains are unique to extracellular matrix (ECM) proteins that comprise the "core" of a variety of proteoglycan structures that are critical to cellular organization and communication within biological tissues and organs. The conservation of both polar and non-polar amino acids have been identified at strategic locations with the LINK domain consensus sequence. Mapping of these amino acids within the LNK 3D structure is currently limited by the unavailability of diverse LINK structural data.

Blake Reed, Albright College

Faculty Sponsor: Professor Michael Armato

WINTER IS COMING: PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUDGETING FOR ROAD MAINTENANCE IN RURAL AND URBAN COUNTIES

The purpose of this paper is to explore whether urban or rural counties are underfunded in terms of budgeted winter road maintenance costs. This paper utilizes data from the Pennsylvania Department of Transportation's Winter Service Guide from 2017 and 2018. This paper argues that the resources budgeted to both urban and rural areas do not appear to be a political calculation based on government actors rewarding their political bases, but rather a function of service delivery based on apolitical factors. Thus, our paper calls into question whether urban or rural resentment of state resources is justified, which should spark more research on this timely topic.

Tajae Reese, Albright College

Faculty Sponsor: Professor Nick Ungson

INGROUP BIAS IN THE APPLICATION OF HISTORICAL INFORMATION TO BLAME JUDGMENTS

The purpose of this study was to examine the psychology of blame and punishment among Black Americans. The current study builds on previous research that shows that individuals reduce blame of a moral transgressor (e.g., murderer, office bully)

when exposed to a historicist narrative: a storied account of how a moral transgressor acquired their personality (e.g., troubled childhood). Furthermore, past research indicates that White participants were less likely to reduce blame for Black—but not White--transgressors in the presence of a historicist narrative. We replicated this study among members of the Black community at Albright College. Participants were asked to read a crime committed by either White or Black transgressor. Half of the participants also read a historicist narrative in addition to the crime. We then measured variable such as blame and punishment. The current study sought to replicate past work, as well as broaden the scope of this research question to Black participants. In other words, do Black participants exhibit a similar racial bias in the application of historicist information?

Sarajeon Reinert, Albright College

Faculty Sponsor: Professor Michael D'Errico

THE MUSIC PRODUCTS INDUSTRY AFTER #METOO

The music industry has always been a hostile environment for female-identifying workers. Following popular feminist campaigns such as the #metoo movement in 2017, many media industries started to make concerted efforts to address gender inequity and workplace sexism. Even as more women gain employment, though, many have trouble feeling comfortable within such male-dominated spaces, resulting in lower than average retention rates. By combining existing research on gender in the music industry, with the development of a community outreach and social networking website for women in the music industry, this project built on the excellent work of the non-profits and music products companies that have begun to think through gender equity following the #MeToo movement.

Mackenzie Rice, Penn State Berks

Faculty Sponsor: Professor Nathan Greenauer

THE EFFECTS OF SUPERSTITION ON MOTOR SKILL PERFORMANCE

The present study explored the development of superstitious beliefs in college students and evaluated what, if any, impact such beliefs had on motor performance. In a putting task, participants were implicitly (shown) and explicitly (verbal cue) exposed to a superstition about a colored golf ball (e.g., yellow). Following this manipulation, participants were asked to make several putts with different colored golf balls (e.g., yellow and orange). Putting accuracy, operationalized as the distance (in centimeters) and direction (degrees) from the hole, were measured for each putt. We hypothesized that implicit and explicit exposure to a(n) lucky/unlucky stimulus will lead to a performance increase/decrease in a putting accuracy task. Our results are discussed in the context of implicit and explicit cognitive processes, as well as top-down influence on motor skill performance.

ZenaRae Ross, Penn State Berks

Faculty Sponsor: Professor Nathan Greenauer

THE ADDITIVE EFFECTS OF COPING TECHNIQUES IN DEALING WITH PRESSURE IN ATHLETICS

To date, little or no research has examined the relative efficacy of coping strategies or the potential additive nature of employing multiple strategies. The present study investigated the relative effectiveness of coping techniques in athletic pressure situations and, additionally, evaluated whether employing two coping techniques simultaneously produced an additive benefit relative to using only one technique. Participants were asked to putt golf balls at a target before and after a training

session which taught them techniques to cope with stress. The training sessions included watching a video on putting (control), positive self-talk, visualization, or a combination of self-talk and visualization. Importantly, the second putting session was completed under pressure. We hypothesized that the combination training condition would demonstrate the best performance under pressure, followed by the individual techniques. Potential moderating effects of mindfulness, body awareness and state-trait anxiety were also examined. The results of this study could encourage coaches to give their athletes more coping techniques and advise them to use all of them thusly improving their overall performance. This could also lead to future research into the implications with different coping techniques.

Cameron Rupert, Albright College

Faculty Sponsor: Professor Denise Meister

INSTRUCTIONAL PRACTICES OF HIGH SCHOOL PHYSICS TEACHERS

In this study, the researcher sought to solicit information from secondary physics teachers in Berks, Lehigh, and Schuylkill counties in Pennsylvania to ascertain their instructional practices. Fifteen participants completed a digital questionnaire, adapted from the eighth-grade science teacher questionnaire from Trends in International Mathematics and Science Study 2015, to include items related to their role as a physics teacher. Results provided insight into both instructional methods they implemented and frequency of use of these strategies. Results suggested that many different techniques, both traditional and constructivist in nature, were implemented by the teachers. Several issues related to instruction were also identified. A majority of the participants felt they needed more time to prepare their lessons and to help students individually. Furthermore, time spent in science-related professional development varied greatly with participants reporting zero to over 35 hours in the last two years.

Bex Sammartino, Albright College

Faculty Sponsor: Professor Jayanthi Rajan

THE IMPACT OF IGEN INCLUSIVITY AND INDIVIDUALITY ON THE AMERICAN MUSIC ECONOMY

For decades, the American music economy has relied on the nation's youth to support its endeavors. Adolescents are the life blood of musical trends, feeding those that please them or starving them as they see fit. In the 90s, the internet was born and mobile listening devices revolutionized the landscape of the music economy. Business strategies, especially in the field of marketing, have had to adapt to this new landscape. The current generation, referred to fondly as the iGeneration, has grown up in this new era of music. They are raised on customization, tired of discrimination, and care much less about what is mainstream or popular. As a result, the music economy must shift to accommodate the adolescents it so desperately relies upon. Recent trends in the music industry reveal increased genre diversity among the iGeneration populace which suggests that the individualism and inclusivity of today's youth may be driving the American Music Economy.

Liz Sanchez, Penn State Berks

Faculty Sponsor: Professor Nathan Greenauer

THE EFFECTS OF BINAURAL BEATS ON ALPHA AND BETA BRAINWAVES

Several previous studies have demonstrated the effect of music on the overall psychological well-being of a person. A number of recent studies have indicated that binaural beats with an appropriate frequency could also produce positive

psychological effects. In many cases, voluntary brainwave oscillation improves with biofeedback, it seems likely that binaural beats could be a useful tool for promoting voluntary shifts in brainwave activity. The present study evaluated this possibility by using binaural beats in conjunction with biofeedback during voluntary brainwave oscillation training. Alpha and beta waves were monitored using the muse EEG, and this information was provided to participants in real-time to facilitate training. We hypothesized that participants would have better control over their state of mind (alpha being relaxation, and beta alertness), after training which used binaural beats compared to training that did not use binaural beats. A qualitative analysis of alpha and beta patterns for participants in each training condition are presented. Potential applications for education are also discussed.

Roimer Santana, Titus Foglia, Jacob Schaefer, Penn State Berks

Faculty Sponsor: Professor Rungun Nathan

MEASURING PROPERTIES OF DOUGH FOR COMPARISON AND QUALIFICATION

The goal of this project was to create a device that would consistently quantify the properties of dough. This device had to do this while meeting the constraints set by sponsor. This will be the culmination of designing, researching, testing, modifying, and prototyping in order to consistently quantify a dough.

Sylvia Sarceno, Albright College

Faculty Sponsor: Professor Joycelyn Burdett

GUATEMALAN TEXTILES AND CLOTHING: PAST AND PRESENT

This paper examines the different Guatemalan indigenous groups and how their clothing identifies the specific community to which they belong. It explains the types of fabrics, colors, and textures they use to achieve the specific patterns which help identify them. The paper goes in depth about how the women hand weave fibers together along with different accessories to help differentiate themselves. When the Spanish came and colonized Central America, they made the communities follow their rules, the men were more affected by this because they were the ones communicating with settlers. Since the women rarely had communication with the Spanish, they kept their "trajes", which is what they call the women's traditional clothes. The research elaborates on the traditional dress of Guatemalan women, what types of fibers and natural dyes that were used to create their fabrics and how the costume varies by the indigenous groups and regions. Also, how they have changed their dress but have remained the same throughout the centuries. Key words: Guatemala, indigenous group, fabric, textures, colors, fibers, traditional dress, trajes, communities, languages, hand weaving, natural dyes, patterns, identification, culture.

Serena Schade, Jenna Philips, Penn State Berks

Faculty Sponsor: Professor Praveen Veerabhadrapa

THE EFFECTS OF FITBIT GROUPS ON COLLEGE STUDENTS' ATTITUDES TOWARD PHYSICAL ACTIVITY

The purpose of this research is to assess the effect of Fitbit groups on attitudes toward exercise and daily physical activity patterns using wearable technology amongst college students. College students are known for having a sedentary lifestyle due to coursework and leisure activities. Social networks may be used to influence physical activity behaviors. Upon consent and participation screening, the subject will complete the Attitude Toward Exercise Measure survey and metabolic measurements will be performed. They will be given a Fitbit Inspire device, activity log, and assigned to a group. The experimental group will participate in an online Fitbit

group and utilize a Fitbit device. They will receive daily encouragements from the researcher and compare activity levels with others. The control group will only utilize the Fitbit device. Upon completion of the 10-day study, the participants will repeat the Attitude Toward Exercise Measure and metabolic measurements. The analysis determines if the online Fitbit group affected the student's attitude toward exercise, as well as their physical activity levels. The results of this study could affect how colleges or organizations utilize online groups to increase their student's attitudes and activity levels. This study is in progress; data is to be presented.

Brooke Schlott, Albright College

Faculty Sponsor: Professor Gwendolyn Seidman

THE EFFECT OF SEXUAL ORIENTATION ON PERCEPTIONS OF RELATIONSHIP COMMITMENT AND SEXUAL SATISFACTION

The purpose of this study is to examine how the sexual orientation of a couple influences others' perception of the relationship's success. Previous research has shown that the relationships of sexual minorities, such as homosexuals and bisexuals, are perceived as less stable. Past research also shows that bisexual men are perceived more negatively than bisexual women, yet little research has been conducted concerning the social perceptions of the quality of their relationships. The current study is an experiment in which participants read seven randomized scenarios describing a heterosexual couple, a lesbian couple, a gay couple, a same-sex couple consisting of a bisexual female and lesbian female, a same-sex couple consisting of a bisexual male and gay male, an opposite-sex couple consisting of a bisexual female and heterosexual male, and an opposite-sex couple consisting of a bisexual male and heterosexual female. Participants will rate the overall stability of the relationship, sexual satisfaction of each partner, and the commitment of each partner. I predict that the heterosexual couple will be perceived the most positively, followed by the gay and lesbian couples, followed by the opposite-sex couples containing a bisexual individual, and then followed by the same-sex couples containing a bisexual individual. Data for this study are currently being collected and have not yet been finalized.

Morgan Schwartz, Nick Francone, Nathaniel Keebler, Kyle Trupe, Michael Isaac, Penn State Berks

Faculty Sponsor: Professor Terry Speicher

AUTONOMOUS LIVESTOCK MANAGEMENT SYSTEM

The Autonomous Livestock Management System serves as the first conceptual design or proof of concept to create a system that integrates all aspects of what a rancher would do autonomously. Another very important aspect of this design is all the normally independent moving components are now all interconnected through one system, where robots exist today to clean one area and another robot feed, they do not work together. This system includes three major components when taking care of livestock; feeding, waste, and water management. This system works sequentially on one timer where all three processes work together and where the automated systems are integrated into the structure of the ranch.

Robert Schwartz, Albright College

Faculty Sponsor: Professor Ian Cost

GETTING A GRASP FOR THE AVIAN TENDON LOCKING MECHANISM

Birds make use of their lower limbs for functions such as grasping, climbing, and nest building along with many other actions. The tendon-locking mechanism (TLM) underlying the closing of digits of bird feet is essential for aspects of the avian

lifestyle. A number of studies have previously investigated the mechanics of the TLM across multiples species. This project describes forces underlying the TLM mechanism. We use properties of the flexor muscles of the leg used for grasping behaviors in related avian species, Red-tailed hawk (*Buteo jamaicensis*) and Cooper's hawk (*Accipiter cooperii*) to address this mechanism. Using traditional dissection and muscle evaluation techniques, flexor muscles of the left leg were collected to estimate the physiological cross-sectional area (PCSA) and muscle force in Newtons. Muscles were removed at proximal and distal attachments. Pennation angles and mass for each muscle were measured before muscles were immersed in HNO₃ to facilitate muscle fiber separation. Mean muscle fiber length, pennation angle, and PCSA were used to calculate forces muscles are capable of contributing to the TLM. A wider sampling of species is necessary to gain a better understanding of how the forces contributing to the TLM affect the lifestyle of various species of birds.

Emily Seisler, Penn State Berks

Faculty Sponsor: Professor Nathan Greenauer

UNDERSTANDING CRIMINAL SENTENCING: DEFENDANT CHARACTERISTICS IMPACTING SENTENCE OUTCOME

An increasing amount of research has focused on understanding factors affecting sentence determination in criminal cases (e.g., Warling & Peterson-Badali, 2003; Borenstein & Greene, 2011;Slane & Dodson, 2019). Understanding if and how defendant characteristics influence conviction and sentencing is particularly important for not only the prosecutor, but the defense when selecting jury members. Characteristics of the defender related to the trial outcome include age, race, and severity of crime. The present study assessed the extent to which these factors influence perception of criminal sentencing. Participants were presented with mock trial summaries and asked to rate the harshness of the awarded sentence. Using a mixed design, the type of crime and severity of the sentence, as well as the defendant's age and race were systematically manipulated. We hypothesize that minimum sentences would be rated as more appropriate for young, white defendants, committing less severe crimes, while maximum sentences would be rate as more appropriate for black defendants committing more severe crimes, regardless of age. Results are discussed in the context of current Pennsylvania sentencing guidelines. Suggestions for sentencing and jury selection are also discussed.

Logan Shafer, Penn State Berks

Faculty Sponsor: Professor Nathan Greenauer

PARENTAL INVOLVEMENT

The extent to which parents affect their child's emotional and cognitive development has been an area of broad study. While contemporary research has demonstrated a relationship between parenting style and a child's physical and mental health, there is a paucity of research examining the consequences as children transition into emerging adulthood. The present study to examine the effects of parental involvement as a predictor of children's self-esteem and perceived body image as an adult. We were especially interested in whether positive (or negative) recollections of parental involvement could moderate feelings of self-worth. Participants were asked to recall and describe a childhood event during which parents were either positively or negatively involved. Subsequently to the recollection procedure, participants completed self-esteem and body image measures. It was hypothesized that participants who recalled events with high, positive parental involvement would report more positive self-esteem and body image ratings relative to participants

who recalled events with negative or absent parental involvement. The results are discussed in the context of developmental theories and the long-term consequences of parental involvement are explored.

Isha Shah, Albright College

Faculty Sponsor: Professor Bryce Brylawski

THE TOXICOLOGICAL EFFECTS OF P-PHENYLENEDIAMINE (PPD) ON AQUATIC INSECTS USING BEAN BEETLES (*CALLOSBRUCHUS MACULATUS*) AS A PROXY

P-phenylenediamine (PPD) is an aromatic compound, that when oxidized, is used in cosmetics such as hair dyes and black henna. The cosmetic waste containing PPD can pass through standard wastewater treatments, and thus aquatic life can be exposed to it. As a result, it is important to understand the toxicological effects PPD can have on key linkages in the food web, such as aquatic insects. Bean beetle larvae were used as proxy, and a trypan endotoxicological assay was used to determine the percentage of viable cells in samples tested at different toxin concentrations. Repeated trials were run at differing toxin levels to determine the LD50 of PPD. Because cosmetics tend to utilize oxidized PPD, which is present because of the addition of hydrogen peroxide, trials were conducted to test the toxicity of oxidized PPD. Percent mortality was significantly higher than that of unoxidized PPD and increased with the concentration of the toxin. Further trials were then conducted to determine toxicity of PPD over time; we observed that toxicity increased linearly as the sample incubated over time. This work has identified that PPD can have a significant endotoxic effect on larvae and the use may have negative ecological ramifications.

Madeliene Sommer, Alvernia University

Faculty Sponsor: Professor Gerald Vigna

THE SINS OF MAN

Genesis 1-11 the most basic human sins. The cycle in this part of the Bible is that humans sin and God punishes them to show why the people's actions are sins. Based on these sins and punishments Christians can learn morals to live by in everyday life. The stories examined in this paper are those of Adam and Eve and Cain and Abel. They explain that wanting to be like a god, greed, jealousy and insubordination are sins. The punishments that God provides explain that listening to God's word, being faithful to each other and to God and respect for creation are values that he wants humans to live by. These sins are still relevant in the modern world. It is the modern Christians duty to stand up to the injustices of the modern world. Recently religion has become more private and has been put to the back of most people's minds. To rectify this attention must be drawn to the ways that Christians can integrate religion back into daily life. Racism and sexism are two main injustices that Christians must stand up to according to Genesis; societal injustices stem directly from sin.

Tyler Stahl, Camara Owens, Rana Hanno, Peter Shuey, Penn State Berks

Faculty Sponsor: Professor Terry Speicher

ECO-ROBOT

Eco-friendliness is a big center around today's society and saving the planet in any way we can. The Eco-Robot is a smart robot rover capable of providing a mobile location for recyclable trash collection, displaying relevant information to students, staff, and visitors. The main goal of this project would be to promote recycling while informing students about activities going on campus, which gets them more involved. Another goal of this project is to promote eco-friendliness by informing students about recycling and encouraging them to do it in a fun and interactive way. This project

requires multiple different components that will need to be integrated into a system that requires a processor to function. This robot will travel using ultrasonic line and proximity sensors. When stationary the robot will promote recycling and have a bin for trash and/or recycling. Eco-Robot will navigate a path around the eco-friendly Penn State Berks campus and promote recycling through an interactive touch screen. This touch screen will give students the option to go through a flowchart helping them decide if their item is recyclable or not. The touchscreen will also display eco-friendly information.

Julian Stetzler, Alvernia University

Faculty Sponsor: Professor David Shoup

COMPLEX NUMBERS AND QUANTUM MECHANICS

Complex numbers can be written as $a+bi$, where a and b are both real numbers and i is the square root of negative one. By including this nonzero bi term, these numbers now contain irreducible real and imaginary components and can be used to solve real-world problems that are difficult to complete using real numbers alone. As an example, in quantum mechanics the Schrödinger equation describes the state of a particle in a one-dimensional box. Physicists were only able to determine solutions to this differential equation using numbers with imaginary components. This project highlights the importance of complex numbers in solving several fundamental equations in quantum physics.

Morgan Thomas, Reading Area Community College

Faculty Sponsor: Professor Jodi Greene

THE WAVES THAT CRASH ON THE SHORE OF MISOGYNY

This qualitative study examines the effects of American popular culture and Brazilian mass media on the development of Brazilian feminism. Furthermore, it defines the Brazilian feminist waves and contextualizes them within Brazilian history. The author's original hypothesis was that American pop culture was influencing the development of Brazilian feminism. However, while women in Brazil who identified as feminists acknowledged that American pop culture is a prevalent cultural force, its influence does act as a catalyst for reform. Ultimately, the author discovered, through a combination of interviews and research, that it is a need for an accurate representation of feminists in Brazilian mass media that will refine the development of feminism in the country. Keywords: Brazilian feminism, waves of Brazilian feminism, mass media, American popular culture, history of Brazilian feminism, women's movements, radio wave analogy, international women's studies.

Samirah Thompson, Alvernia University

Faculty Sponsor: Professor Eric Recktenwald

EFFECTS OF PREY PIGMENTATION ON FEEDING BEHAVIOR OF LEOPARD FROGS

Northern leopard frogs rely on vision to recognize their prey. It has been shown that objects are recognized as prey based on size, contrast, shape, and movement. A frog will only recognize a visual stimulus as prey if it is a small object of contrast relative to a background, oriented horizontally, and moving. Here we test to see if the color of prey has an effect on response time. Leopard frogs are capable of distinguishing between areas of different colors, but it is unknown if color discrimination plays a role in feeding behavior. We tested responses to prey models of red, blue, green, black, white, and yellow. We hypothesize that the frogs will respond quickest to blue and red prey models. Many insects and small animals use their pigmentation as a defense mechanism to protect themselves against predators (aposematism). An understanding of the frog's responses to colored prey will give insights into the

neural basis for prey recognition in addition to understanding ecological predator-prey relationships. The spotted lanternfly (*Lycorma delicatula*) is an invasive species to Pennsylvania that has brightly colored red wings. We tested frog's responses to spotted lanternflies and found that frogs recognize them as prey.

Christopher Trapp, Penn State Berks

Faculty Sponsor: Professor Dale Litwhiler

INVESTIGATING THE PERFORMANCE OF AN AIRCRAFT MECHANICAL ALTIMETER

This work investigates the performance of an aircraft mechanical altimeter compared to an electronic absolute pressure sensor reference. Both instruments were simultaneously connected to a pressure source that was varied to simulate typical flight conditions. The altimeter dial displays an analog measurement of altitude based on the magnitude of a single pressure input. Similarly, the absolute pressure sensor compares a single pressure input to an internal vacuum and produces a voltage output relative to this comparison. A custom amplifier circuit was designed and used to scale the output signal of the pressure sensor to produce a change of one volt for every change of 1000 feet of altitude displayed on the altimeter. Initially, the two instruments were set to display the same output value. Using a handheld vacuum pump, the two instruments were exposed to a range of pressure magnitudes. The readings of both instruments were recorded across the range and analyzed such that the performance of the two instruments could be compared. While the results demonstrate agreement between the two instruments, the results also indicate hysteresis error present in the performance of the aircraft altimeter.

Allison Ulaky, Albright College

Faculty Sponsor: Professor Brian Jennings

IMMIGRATION AND EMIGRATION IN ECUADOR

Cuenca, Ecuador is the home to thousands of expatriates from the United States who majorly retire to Cuenca, volunteer, or teach English to Cuencanos. Similarly, in 2017, over 1 million Ecuadorians left Ecuador and also sent over \$1 billion in remittances back to Ecuador (Pew Research Center 2019). This relationship of migrants entering and leaving Cuenca creates a fascinating dynamic in the city, with each immigration and emigration causing positive and negative effects for the citizens of Cuenca. Both the Ecuadorians and expatriates have different perceptions of each other depending on how they experience the effects occurring in Cuenca, as well as both of their opinions on immigration to the United States. Twenty interviews were completed in Cuenca, ten with Ecuadorians and ten with expatriates living in Cuenca. These interviews were then analyzed to determine each group's views on immigration and how it affects the local culture. The purpose of this study is to research the perceptions that Ecuadorians and expatriates from the United States have of each other in Cuenca, Ecuador.

Caleigh Van Der Veer, Alvernia University

Faculty Sponsor: Professor Gregory Chown

THE BENEFITS OF NILE TILAPIA (*Oreochromis niloticus*) XENOGRAFTING ON THE OCCUPATIONAL THERAPY PROCESS IN THE REHABILITATION OF SUPERFICIAL PARTIAL THICKNESS BURNS

Occupational therapists are unique members of the interprofessional burn team that remediate burn related impairments, through participation in meaningful occupations, in order to increase a patient's quality of life. Advancements in burn treatment, such as the use of xenografts, have improved survival rates, but are often expensive to import and manage, painful to change, and may leave patients with difficulties in

occupational engagement. The purpose of this literature review is to evaluate the utilization of Nile tilapia (*Oreochromis niloticus*) skin as an optimal biological dressing for the treatment of superficial partial thickness burns and its potential benefits on the occupational therapy process in burn rehabilitation. Nile tilapia skin grafts pose similar and possibly greater benefits than traditional burn treatments, including low-cost, shorter inpatient time, and faster reepithelization rates. These benefits can positively impact the occupational therapy process by reducing costs for the hospital and patient, reducing pain and discomfort during treatment, and enhancing wound healing so that patients can independently reengage in activities. The literature about Nile tilapia skin grafts is limited, but the available research has shown possible benefits and therefore should be further studied for its potential implications on the occupational therapy process and the medical field.

Amanda Vroegindewey, Penn State Berks

Faculty Sponsor: Professor Nathan Greenauer

THE EFFECT OF BINAURAL BEATS ON ANXIETY AND DEPRESSION

Binaural beats are a phenomenon where two different frequency tones are presented to each ear separately yet are processed by the brain as a single unified tone. This is due to binaural integration. Previous research indicates binaural integration brings changes to regions of the brain and can promote feelings of well-being. While a substantial amount of research has shown music, both in clinical and non-professional settings, to be an effective method of therapy, there is a comparative paucity of research examining the efficacy of binaural beats to treat, e.g., anxiety or depression. The proposed study will investigate the effects of binaural beats on levels of anxiety and depression, particularly as compared to classical music. A pre-post design will be utilized, with levels of state anxiety, depression, and mood serving as dependent measures, and binaural beats as the independent variable. A control group will be exposed to classical music. Potential results are discussed in the context of clinical practice and the viability of binaural beats as an alternative to the use of prescription drugs for treating anxiety and depression are explored.

Zirui Wang, Penn State Berks

Faculty Sponsor: Professor Jui-Chi Huang

THE EFFECT OF MOBILE PAYMENTS ON CHINA'S RECENT ECONOMIC GROWTH

▶ Room 1: 10:15 a.m. – 11:15 a.m.

Mobile payments have become an inseparable tool in China nowadays. People utilize digital wallets in every aspect of their life, such as public transportation, restaurant bills, or even traffic tickets. The convenience and usefulness of mobile payments have struck China's cash economy and introduced Chinese people to a faster and more flexible financial transaction era. Many journal articles done in the field have focused on consumer behavior of mobile payment users and factors that impacted the adoption of this new technology. Not much research has been done to find out whether the booming of mobile payments has any relation with China's recent rapid economic growth. By reviewing existing relevant research literature, this paper provides specific data and articles that support the positive effect brought by mobile payment to the Chinese economy. Mobile payments contribute to recent China's rapid economic growth by increasing spending, both online and in stores, and facilitating spending channels for people who may not be able to spend their assets. At the same time, mobile payments can attract investments, improve tourism, and provide employment.

Zirui Wang, Penn State Berks

Faculty Sponsor: Professor Ada Leung

CONSUMER PERCEPTION OF NEW TECHNOLOGY AND ITS APPLICATIONS

▶ Room 2: 11:30 a.m. – 12:30 p.m.

The usage of mobile phones has undoubtedly skyrocketed to an unprecedented level today. People do everything on their phones/tablets such as texting friends, watching entertainment such as Netflix, making restaurant reservations, checking e-mails, shopping online, and so on. The drawback of relying heavily on phone is that phone batteries may lose power quickly before the user has a chance to recharge the phone. This research study is to examine consumers' acceptance toward a relatively new technology, portable charger station, which students can rent out for a short period of time for charging to extend their phone battery. I interviewed 100 college students at Penn State Berks via an online survey. I found that the adoption of the phone chargers is associated with students' innovativeness and their emotions toward their phones.

Caitlin Wernicki, Reading Area Community College

Faculty Sponsor: Professor Carol Bean-Ritter

LIKEABILITY BETWEEN CATS AND DOGS

The following paper describes a study on cat or dog preference and stress of the participants based on their pets. There will be research subjects from Reading Area Community College who participated by completing a survey. The purpose of this research is to see if participants prefer a dog more than a cat, a cat more than a dog, if they prefer both the same, or if there is no preference. There can be a chance of pets helping their owner be less stressed and see how that influences which pet they prefer. In addition, there could be a bias with the participants in what they choose based on their background with the pet or what pets they have owned before.

Peyton Williams, Kutztown University

Faculty Sponsor: Professor Daniel Immel

STORY-TELLING AND MUSIC: COMPOSITIONAL ALCHEMY

▶ Room 3B: 1 p.m. – 2:15 p.m.

Music and story-telling seem to be opposites of each other, but in reality, share a hidden connection. They both have the ability to convey emotion, project qualities of illuminated characters, and ultimately, can be woven together to create a powerful artistic synthesis. In order to demonstrate their differences and similarities, I created five character themes (leitmotifs) that accompany five fictitious characters from a novel that I have recently completed. Each character is represented by different character traits with specific themes that are inspired by focusing on both character and musical development. To this end, the musical representation of each character pays homage to the historical evolution of character leitmotifs by composers in the history of film music.

Alexis Woodard, Kutztown University

Faculty Sponsor: Professor Wendy Rogers

WHEN WORDS FAIL, MUSIC SPEAKS: THE EFFECTS OF MUSIC THERAPY ON THE COMMUNICATION SKILLS OF STUDENTS WITH AUTISM, A LITERATURE REVIEW

This presentation will focus on music therapy and how the use of music effectively develops (language, etc...) of students with ASD. Music therapy isn't a widely known practice yet, so the goal is to make its practices and benefits accessible to the audience, to help them understand the importance of strategic music-making when working with children with autism spectrum disorder. The information provided in the

literature review will help educators who are looking for new strategies to help their students with ASD gain confidence in their communication skills and social skills in a professional setting provided by a licensed music therapist. The significance placed on music doesn't match its power, so my hope is to help future educators, current educators, and those training educational leaders understand why music, something so readily accessible, can be so incredibly beneficial and why it should be used more often when working with students with autism spectrum disorder.

Madison Woodruff, Kutztown University

Faculty Sponsor: Professor Karen Kresge

MINE TRANSFORMATIVE SKINCARE: PRODUCT AND PACKAGE DESIGN FOR THE TRANSGENDER EXPERIENCE

▶ Room 1: 10:15 a.m. – 11:15 a.m.

Transitioning from one gender to another is uncharted territory for most of us. We are content to conform to the gender we were assigned at birth and operate under its norms. For transgender people however, navigating gender is a little more complicated. To help alleviate the stress that can come with exploring and expressing gender identity, I designed a subscription skincare service tailored to a transgender audience. Often beauty and skincare products are strictly gendered, and designed with a cisgender audience in mind. This gendered coding carries across all aspects of product design. It affects the shape and color of the packaging, the scent, and the language used to describe the product. It subtly states that the product not only belongs to a certain brand but belongs to a certain gender as well. I will address customer insights, how I designed my brand's voice and visual elements, package development, and how I intend to reach my target audience through advertisements. By addressing trans people's concerns for both their skin and identity, we can gain a deeper understanding of how someone may transition into a more authentic self and how the skincare industry and the design industry can make it easier.

Kusilishca Yopez, Reading Area Community College

Faculty Sponsor: Professor Ellen Walter

"CLEAR GLASS MARBLES" MONOLOGUE

During a recent class assignment I selected a monologue for performance. The one that I decided to select left an impact on me from the first time I read it. The monologue is called "Clear Glass Marbles" by Jane Martin. Throughout the monologue, Laurie tells the story of her mother who has recently passed. This monologue brings out the vulnerability of Laurie and showcases the raw emotion of someone who has lost their mother. Preparing for, rehearsing, and performing this monologue was definitely a learning experience as I brought Laurie's character to life.

Jieyu Zhang, Madelyn Loftus, Albright College

Faculty Sponsor: Professor Amy Greene

THE DNA SYNTHESIS-INHIBITING DRUG 5-FLUOROURACIL

5-fluorouracil (5FU) has been used to treat cancer by preventing DNA synthesis. We used fluorine-NMR (nuclear magnetic resonance) to investigate whether 5FU killed *Crithidia fasciculata* parasite cells, and whether the cells metabolized the drug. We saw no toxicity or metabolism of 5FU by the parasites.

